

Buffalo Pellet Stove Software Update – 1/27/06

Exhaust Blower On At Power Up

Upon initial power up, the stove will turn the exhaust blower on for 30 minutes. This is being done as a safety precaution in case there is loss of power to the stove. If there is loss of power to the stove and then power is restored, the most important function of the stove (at power up) is for it to evacuate all exhaust gasses that have accumulated within the burn chamber (during the power outage) to outside your home.

At any time during the initial 30 minutes that the exhaust blower is running at power up, the software can take control and initiate a start-up sequence if the software detects that there is a demand for heat.

Start-up (Su)

This new software revision also chooses between two different start-up sequences depending on whether your stove is cold (has not been running) or hot (recently shut down and has been called upon to provide heat). The software determines if the stove has recently been burning by checking a temperature-sensing switch located on the exhaust system.

If the stove is cold, the software will put the stove through a “cold start” sequence. Stove operation cannot be interrupted during this start-up process. It will be evident that the stove is going through a start-up routine because the display will alternately show the current room temperature, then will display Su (Start-up). This “cold start” sequence takes 15 minutes and 30 seconds. Once the stove has completed the start-up sequence, it will transfer control of the stove operation to either Automatic Temperature Control Mode or User Control Mode (manual control) depending upon the mode the stove was in prior to the initiation of the start-up sequence.

If power to the stove has just been turned on and a start-up sequence has been initiated, at the end of the start-up, control of the stove transfers to Automatic Temperature Control Mode (this is the default mode).

If the stove is hot (has recently been burning) and is again called upon to provide heat, the software will put the stove through a “hot start” sequence. Stove operation cannot be interrupted during this start-up process. It will be evident that the stove is going through a start-up routine because the display will alternately show the current room temperature, then will display Su (Start-up). The “hot start” sequence

takes 13 minutes and 30 seconds. Once the stove has completed the start-up sequence, it will transfer control of the stove to either Automatic Temperature Control Mode or User Control Mode (manual control) depending upon the mode the stove was in prior to the initiation of the start-up sequence.

Automatic Temperature Control Mode / User Control Mode

This new revision of the software enables the stove to operate in either Automatic Temperature Control Mode or User Control Mode – Manual Control (both individually described below).

In Automatic Temperature Control Mode, the software will regulate all operational functions of the stove based on the difference between your desired room temperature (set point temperature) and what the stove senses (through the temperature sensing cable) your current room temperature to be. In User Control Mode you will select a continuous burn rate for your stove (0 or between 3 and 7). The stove will burn pellets at the selected feed rate regardless of the current room temperature.

At initial power up the stove will default to Automatic Temperature Control Mode. In Automatic Temperature Control Mode (Ac) the display will cycle between the letters Ac to confirm that the stove is in Automatic Temperature Control Mode and the current room temperature.

If you wish to transfer from Automatic Temperature Control Mode to User Control mode, depress and hold the Low button, then depress and hold the High button. After both the Low and High buttons have been depressed together for 2 seconds the stove will transfer into User Control Mode (Uc). In User Control Mode (Uc) the display will cycle between the letters Uc to confirm that the stove is in User Control Mode, the current User Control Mode setting (0, 3-7) and the current room temperature.

Transfer From Automatic Temp Control Mode to User Control Mode (Manual Control)

- Depress and hold Low button
- Depress and hold High button (in combination with Low button)
- After both Low and High buttons depressed for 2 seconds – transfer to User Control

* **Note** – Upon transfer from Automatic Temperature Control to User Control, the default User Control Mode setting is 3, if the stove is not burning when transfer from Automatic Temperature Control to User Control occurs, a start-up sequence will be initiated.

Automatic Temperature Control Mode / User Control Mode (contd.)

Transfer From User Control Mode (Manual Control) to Automatic Temp Control Mode

- Depress and hold Low button
 - Depress and hold High button (in combination with Low button)
 - After both Low and High buttons depressed for 2 seconds – transfer to Automatic Temperature Control Mode
- * **Note** – Upon transfer from User Control Mode to Automatic Temperature Control Mode, the set point temperature on the stove will default to the current room temperature. Adjustments to the set point temperature can be made using the instructions below once transfer into Automatic Temperature Control Mode is complete.
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Automatic Temperature Control Mode (Ac)

Automatic Temperature Control Mode (Ac) is the self-regulating, operational mode of the stove. In this mode, the software adjusts the feed rate, as well as the exhaust/combustion and circulation blower speeds according to the heat required to bring your home up to the desired set point temperature (as selected on your stove).

Set Point Temperature Adjustment (Automatic Temp Control Mode)

- Depress and hold Set button
- Depress High or Low button (in combination with Set button) to adjust set point temperature* (depressing and holding the High or Low button in combination with the Set button will adjust the set point temperature at a rapid rate)

* Once set point temperature has been set 2.1 degrees or more below the current room temperature, the stove will initiate its controlled shut down procedure.

In Automatic Temperature Control Mode (Ac) the display will cycle between the letters Ac to confirm that the stove is in Automatic Temperature Control Mode and the current room temperature.

User Control Mode / Manual Control (Uc)

User Control Mode (Uc) allows you to select a continuous heat setting on your stove between 3 and 7 (levels 1 and 2 are to be used for diagnostic testing purposes only at this time). The stove will feed pellets and run the exhaust/combustion and circulation blowers at preset speeds regardless of room temperature. User Control Mode 0 will shut the stove down. If the stove is shut down in User Control Mode, changing the User Control Mode setting from 0, to any number between 3 and 7 will initiate a start-up sequence. The lowest burn rate setting is number 3, the highest burn rate setting is number 7. To change the User Control Mode setting (while in User Control Mode) follow the instructions below.

User Control Mode Adjustment

- Depress and hold Set button
- Depress High or Low button (in combination with Set button) to adjust the User Control Mode of the stove (any number between 3 and 7)
- Selecting User Control Mode 0 will shut down the stove

In User Control Mode (Uc) the display will cycle between the letters Uc, to confirm that the stove is in User Control Mode, the current User Control Mode setting (0, 3-7) and the current room temperature.

Set-up Mode - Feed Rate Adjustment

While in Automatic Temperature Control Mode (Ac) it is possible to transfer into a set-up mode, which enables the base feed rate of the stove to be adjusted. If the stove is operating in User Control Mode and the base feed rate requires adjustment, the stove must first be transferred into Automatic Temperature Control Mode, then transferred into Set-Up Mode. The base feed rate adjustment made within set-up mode will apply to all feed rate speeds of the stove. It is necessary to be able to adjust the base feed rate for each stove due to many factors, including varying quality of fuel being burned, the size of the area being heated within the customer's home, the type of installation, as well as other factors. Set-up Mode allows the base feed rate for each stove to be fine tuned to offset the affect of these various factors.

Set-up Mode - Feed Rate Adjustment (contd.)

To get into set-up mode follow the instructions below

Enter Set-up Mode (from Automatic Temperature Control Mode)

- Depress and hold High button
- Depress and hold Set button (in combination with High button)
- Depress and hold Low button (in combination with High and Set buttons)
- After High, Set and Low buttons depressed together for 2 seconds – transfer to Set-up Mode

While in Set-up Mode, the stove will continue to operate in Automatic Temperature Control Mode.

When you transfer into set-up mode, the current base feed rate setting (a number between 1 and 15) of the stove will be displayed, as a number, on the display. In Set-up Mode, the base feed rate of the stove can be adjusted up or down by selecting a higher or lower base feed rate setting number. Selecting a higher number will increase the feed rate, selecting a lower number will decrease the feed rate.

While in set-up mode, change the base feed rate setting by following the instructions below

Base Feed Rate Setting Adjustment

- Depress and hold Set button
- Depress High or Low button (in combination with Set button) to adjust the base feed rate setting (number between 1 and 15)

Once a new base feed rate setting has been selected, follow the instruction below to transfer out of Set-up Mode

Exit Set-up Mode

- Depress and hold High button
- Depress and hold Low button (in combination with High button)
- After High and Low buttons have been depressed together for 2 seconds – transfer out of Set-up Mode

Upon transfer out of Set-up Mode, the new base feed rate settings take effect. To further adjust the base feed rate of the stove, transfer back into Set-up Mode and go back through the procedure outlined above.

FA1 Error

When an FA1 error has been detected, as a safety precaution, the exhaust blower will run for a minimum of 30 minutes. If at the end of 30 minutes, the software determines that the exhaust blower is still removing hot air from the burn chamber, the exhaust blower will continue to run until all hot air has been evacuated from the burn chamber.

Shut Down (Sd)

Once the stove has brought the current room temperature 2.1 degrees above the current set point temperature (in Automatic Temperature Control Mode) or User Control Mode 0 has been selected (in User Control Mode) the stove will go through a controlled Shut Down (Sd) procedure. When the stove goes into Shut Down, the display will cycle between the letters Sd, to confirm that the stove is currently shutting down and the current room temperature.

As a safety precaution, the exhaust blower will run for a minimum of 30 minutes as part of the Shut Down procedure. If at the end of 30 minutes, the software determines that the exhaust blower is still removing hot air from the burn chamber, the exhaust blower will continue to run until all hot air has been evacuated from the burn chamber. Also as part of the standard shut down procedure, the circulation blower will run (at it's pre-shut down speed) for a minimum of 30 minutes. This is done to assure that all available heat is transferred from the burn chamber to the room during the shut down procedure. Once the stove has cooled during shut down, it may seem that the stove is blowing cool air into the room, however, the circulation blower draws room air to pass through the heat exchanger tubes, the air passing through the stove and being blown into the room is no cooler than the current room air temperature. The temperature of the air exiting from the heat exchanger tubes may seem cooler than the current room air temperature but it is simply because the air is moving at a faster velocity than the static room air (same concept as how a fan keeps you cool in the summer).

In Shut Down Mode (Sd) the display will cycle between the letters Sd to confirm that the stove is in the process of shutting down and the current room temperature.