Understanding your stove

How your stove works

Your ***King/Ashley*** stove utilizes a inclined auger fuel feed system that is operated by a microprocessor controlled digital circuit board. The digital circuit board allows the inclined auger fuel feed system to run in a timer-based, non-continuous cycle; this cycling allows the auger to run for a predetermined period of seconds. The auger pushes pellets up a chute located at the front/bottom of the hopper which in turn falls through another chute into the burnpot. Your stove is equipped with an automatic ignition system that should ignite the fuel within 5-10 minutes from pressing the ON button. As pellets enter the burn pot and ignite, outside air is drawn across the fuel and heated during the combustion process which is then pulled through the heat exchanger by the exhaust motor or draft fan. As the stove heats up, room air is circulated around the heat exchanger by means of a room air blower, distributing warm air into the room.

The amount of heat produced by the stove is proportional to the rate of the fuel that is burned, and this rate is controlled by the "HEAT RANGE" setting. In order to maintain combustion of the fuel at a desired rate, the air provided to the burn chamber by the exhaust or draft fan must be maintain precisely. Too little air will result in a flame that is non-energetic or lazy. If the fuel continues to flow with too little air for long enough, the burn pot will fill with too much fuel and the fire will smother out. To much air will result in a flame that is overactive or aggressive. The flame in this situation is typically very blue at the bottom and resembles a blow torch. If this situation continues, the fuel in the burn pot will be consumed and the fire will go out.

Matching the amount of air required for proper combustion to the fuel rate is the primary objective in effectively burning pellets of various brands and qualities in your stove. The air to fuel ratio can be adjusted to allow almost any fuel quality to burn effectively by following the procedures detailed in the remainder of this manual.

Because a forced draft pressure is required for the combustion process inside your stove, it is extremely important that the exhaust system be properly installed and maintained. And, that when operating your stove, you make sure that the viewing door is properly sealed.

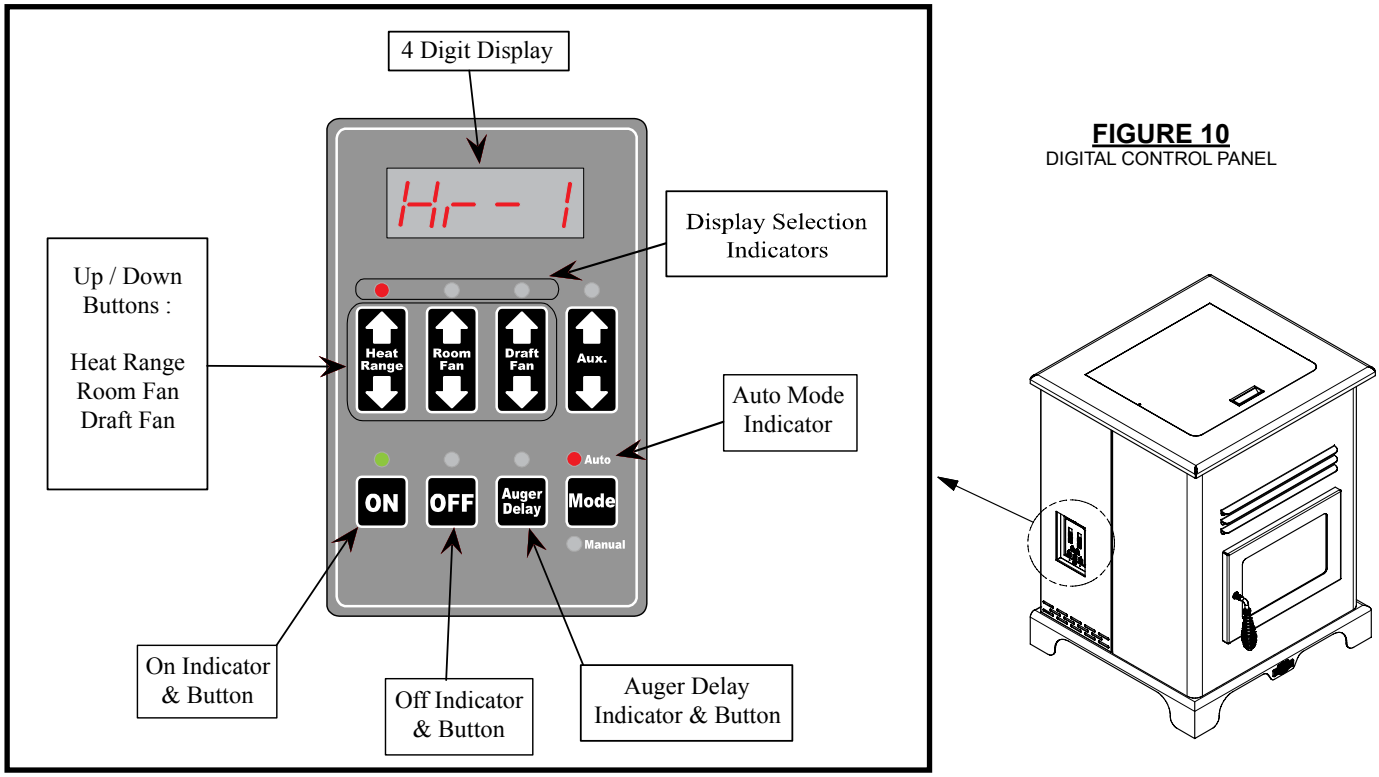

FIGURE 10
DIGITAL CONTROL PANEL

Control Panel Overview

Turning the heater ON/OFF, as well as adjustments for the fuel feed rate and room fan speed are performed by pressing the appropriate button(s) on the control panel which is located on the lower left-hand side of your heater.

This unit can be changed between an automatic operation or a manual operation. The controller comes default in the automatic mode.

- **ON/OFF**

  Pressing the “ON” button on the control panel will begin the start-up sequence for the heater. Fuel will begin to feed through the auger feed system after 3 minutes. Pressing and holding the “ON” button will rotate the auger continuously until button is released, which feeds additional fuel.

  Pressing the “OFF” button on the control panel will cause the heater to enter its shut-down sequence. The fuel feed system will stop pulling fuel from the hopper and, once the fire goes out and the heater cools down, the fans will stop running.

- **HEAT RANGE**

  Pressing the “Heat Range” arrows, up or down, will adjust the amount of fuel being delivered to the burnpot.

- **DRAFT FAN**

  The draft fan (exhaust) will come on as soon as the “ON” button is pressed. The fan will automatically adjust its speed in accordance to the heat range setting. However, this speed can be manually operated by pressing the “Draft Fan” arrows up or down. “Draft Fan” when pressed, the display will show “Df-A”, which is automatic. Press the arrows again to adjust fan speed. When the heater is in the manual mode, the optional thermostat will not properly control the unit. When adjusting the Draft Fan setting, try only 1 setting above or below the heat setting. It is better to leave the stove in the automatic mode.

- **ROOM FAN**

  The room fan will come on once the unit has reached operating temperature. By pressing the “Room Fan” buttons, the display will show “Rf-A” which is automatic or “Rf-1” through “Rf-9” for manual settings. In auto mode, the room fan’s speed will automatically be adjusted in accordance with the heat range setting. By pressing the “Room Fan” up arrow, you can adjust the fan speed setting up to “Rf-9”. The room fan must operate at a level greater than or equal to the heat range setting.

- **AUX** - USED TO RETURN THE STOVE TO THE FACTORY SETTINGS

  To return the stove to it’s original factory settings, press and hold the AUX UP and AUX DOWN buttons simultaneously for 3 seconds.

- **AUGER DELAY**

  The “Auger Delay” button can be used to pause rotation of the Auger for approx. 1 minute. This can be cancelled by pressing the “ON” button. The “Auger Delay” is normally used only during the start up cycle to slow the fuel delivery down during the initial ignition.

- **MODE**

  The “Mode” button is used to switch between manual and automatic mode. When in auto mode, the fans and auger will operate at preset intervals unless changed manually using the buttons mentioned above. When in manual mode, the draft fan (exhaust) will operate at full speed (100%).

  During normal operation, the unit is constantly monitored for problems. In the event of an error condition, the unit will stop and an error will be displayed. See the list of error codes found at the end of this manual.

Operation

UNIT PREPARATION

After carefully unpacking and reading the instructions for installing your stove, you will need to perform the following steps:

- Attach the included spring handle to the door handle by screwing it on in a respective location.
- Attach the electrical cord to the back of the stove first; then plug it into a 110-volt outlet (an outlet surge protector is highly recommended).

PERFROMING AN INTIAL TEST

This 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”. The “ON” LED is lit. If the hopper switch is open (lid is open), the “HEAT RANGE” LED will turn on. If the lid is closed, the “HEAT RANGE” LED will be off.

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.) Flue gas 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.

PERFORMING A “DRY RUN”

Perform a “dry run” on your stove prior to making the exhaust/inlet connections and starting your stove for the first time.

1.) Check that there is NO fuel or ANY foreign material in the hopper or burn-pot.

2.) Check that the viewing door and hopper lid is securely closed.

3.) Press the “ON” button on the control panel. Verify that the ON LED is lit (blinking) and the display shows HR-1. Also the LED above the HEAT RANGE and the AUTO MODE indicator should be lit. If any other LED’s are lit or flashing, consult the “Display Indicators” in this manual.

4.) You should hear the exhaust (draft) fan running immediately and the auger should begin turning continuously for 1 minute.

5.) The auto fuel ignitor (located inside the backwall of the burnpot) should begin to glow red/orange after 3 minutes.

6.) The Room Fan will not operate at this time since the unit must reach a factory preset temperature.

DO NOT open the viewing door, the **auto-start igniter** will get very hot during this test. The stove will automatically shut down after approximately 23 minutes.

Operation

START-UP PROCEDURE

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

1.) Verify that the hopper is clean and free of foreign matter.

2.) Verify that all of the required exhaust/inlet connections have been made in accordance with this manual and that the stove is plugged into an outlet (an outlet surge protector is highly recommended).

3.) Fill the hopper with wood pellets; do not allow any part of the bag or any other foreign material into the hopper, as this may jam the auger.

4.) Ensure that all pellet matter is cleared from the hopper seating surface.

5.) Close the hopper lid. **The unit WILL NOT feed fuel with the hopper lid open.**

6.) Make sure that the viewing door is securely closed (the safety pressure switch will not allow the stove to feed fuel if there is no draft pressure inside the stove) .

7.) Press the **"ON"** button on the control pad and set the **"HEAT SETTING"** to your desired setting.

8.) The stove will begin to feed fuel and the **auto-start igniter** will ignite the fuel in approximately 5 minutes.

Once a consistent flame has been established, you can adjust the "HEAT RANGE" and "BLOWER SPEED" on the control pad to your desired settings. (Note: The distribution blower will not function until the heat exchanger in the stove reaches the factory preset temperature).

First Fire: Adjust the **"HEAT RANGE"** and **"BLOWER SPEED"** to a **"3"** setting and allow the stove to operate in this manner for approximately three (3) hours (or more if necessary), allowing the stove to "cure out" as the paint and oils from the manufacturing process burn off. We recommend that you open doors and windows in your home during this process. Adjust setting to desired setting.

SHUT DOWN PROCEDURE

WARNING: Never shut down this unit by unplugging it from the power source.

Press the **"OFF"** button on the control pad to put the stove in shut down mode. At this time, the red light above the pad will illuminate. Once this is done, the auger will stop feeding pellets, but the distribution blower and exhaust blower will continue to operate. When the internal temperature of the unit drops below the factory preset temperature, the distribution blower and exhaust blower will cease to operate. The red light will then shut off and the unit will be completely shut down.

The hotter the unit is during its operation, the longer it will take for the stove to complete the shut down cycle. If the stove stays on for more than 2 hours after pressing the **"OFF"** button and you are sure that the fire is out, the stove can be unplugged from the outlet. After approximately 10 seconds, the unit can be re-connected to the power source and the control board will be reset.