



# WOOD PELLET GRILL OWNER'S MANUAL

DESIGNED FOR RESIDENTIAL OUTDOOR USE ONLY. USE FOOD GRADE WOOD PELLETS.  
MODEL: RG5000VS (Side Hopper Construction)



RG5000VS

**CAUTION DO NOT USE** OR STORE NEAR COMBUSTIBLE MATERIALS  
INCLUDING GASOLINE, THINNER, OIL, PAINTS OR FLAMABLE LIQUIDS



Thank you for selecting ROYALL for your wood pellet grill purchase.  
Your grill is proudly made in America and is designed to provide years of grilling enjoyment.

## **GETTING READY FOR THE FIRST TIME FIRING OF YOUR GRILL**

**CAUTION:** Locate your new grill such that all surfaces are at least 18" from any combustible material. Also consider winds and proximity to windows so that exhaust is not directly entering your home.

- STEP# 1:** Move the grill to your cooking location. Remove the bottom two layers of grates, drip pan and heat shield. Note: A 110 volt grounded electrical outlet will be needed within 6 feet of the grill.
- STEP# 2:** Place the control switch in the off position and plug in the unit. Visually check the Pellet hopper to see that no foreign objects are present (like packing material).
- STEP# 3:** Turn the control switch to the 180 position. Visually check to see that the auger is turning (it revolves once/min).
- STEP# 4:** Check that the fan is blowing by listening and feeling air exit the firepot.
- STEP# 5:** AFTER 2-3 minutes of power the hotrod in the firepot should be emitting a little heat and may have a faint glow to it.
- STEP# 6:** Add food grade pellets into the hopper and let the unit run. Allow unit to run until pellets start dropping into the firepot, then turn it off.
- STEP# 7:** With the unit off place the heat detector over the firepot so that it is centered over the firepot.
- STEP# 8:** Install the **DRIP PAN** with one end sloping towards the catch drain.  
**NOTE: For easy clean up, place a layer of aluminum foil over the drip pan.**

**STEP# 9:** Place the GRILL GRATES back into the rack supports.



## **YOU ARE READY TO START GRILLING**

FIRST USE: WE RECOMMEND RUNNING THE GRILL FOR 20 MINUTES ON 350 TO SEASON THE GRILL

**WITH THE DOOR OPEN, SET THE CONTROL SWITCH TO 180 TO START YOUR GRILL. THE HOTROD WILL HEAT FOR ABOUT 3-4 MINUTES AND SHUT OFF. NORMALLY THIS IS ENOUGH TIME TO IGNITE THE PELLETS. ONCE THE PELLETS ARE LIT, CLOSE THE DOOR. AFTER 10-12 MINUTES OF BURNING, YOU CAN SET THE CONTROL TO YOUR DESIRED TEMPERATURE AND WAIT A FEW MINUTES UNTIL THE SET POINT IS REACHED.**

**IF IT DIDN'T START, TURN IT OFF. CHECK THE FIREPOT TO ENSURE EXCESS PELLETS HAVE NOT PILED UP. THEN YOU MAY TURN IT BACK ON AGAIN TO REPEAT THE START CYCLE.**

## **OPERATING DO'S & DON'TS**

### **EACH TIME YOU START YOUR GRILL:**

**CHECK PELLET HOPPER TO ENSURE PELLETS ARE DRY AND READY TO USE (Wet pellets can swell and damage the auger or shear the pin).**

Apply a new foil to the drip pan for easy clean up.

Check for and remove any excessive drippings or build up to avoid flare ups and grease fires.

If the auger has been previously charged as described above, you should be able to turn the power switch on with the cook setting on 180 to ignite the pellets. Smoke should appear within 3 minutes. It's usually good to leave unit run at your set cooking temperature for 10-15 minutes prior to adding food.

### **GRILL MAINTENANCE**

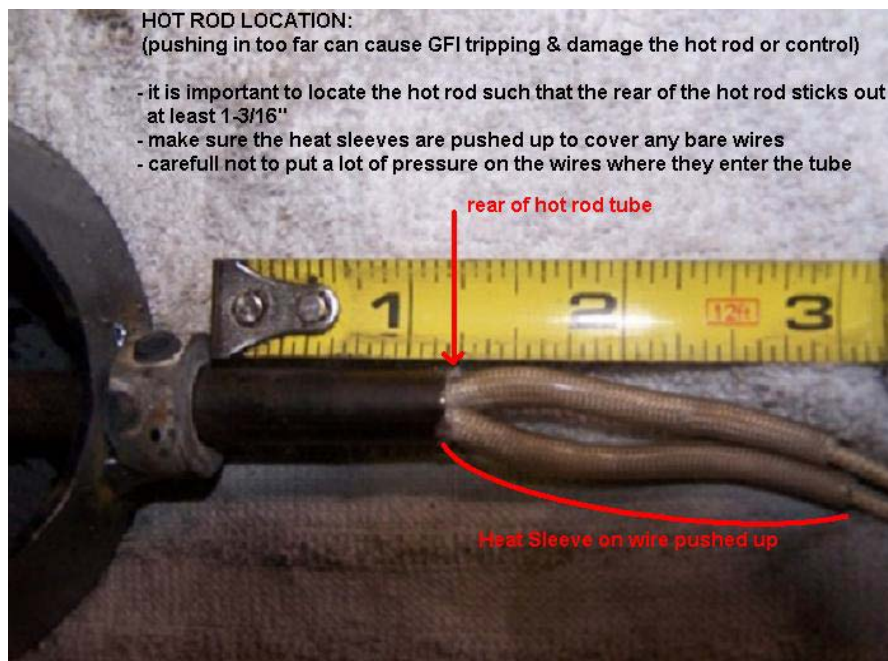
Wipe cool grill exterior down with warm soapy water just as you would any interior cooking appliance.

Monitor grease build up on the grill interior and drip rail and remove when any surfaces that have build ups exceeding 1/16 to 1/8 of an inch to avoid grease fires.

Before lighting grill, occasionally check ash build up in and around the firepot. Excessive ash can get distributed to food and can reduce the efficiency of the firepot. To remove ash, use a shop vacuum.

**Cover the grill with a water proof cover when not in use.** Or store under roof. Controls should not be exposed to the elements for long periods.

**TROUBLE SHOOTING** GROUND FAULT ON OUTLET TRIPS: Turning the unit off and back on while cooking will restart the hotrod timer and may provide too much resistance to the circuit causing a fault. (Avoid returning to the off position while cooking). Hotrods need to be installed with at least 1.25 inches protruding out the rear of the lock collar on the fire pot. This tends to minimize resistance to the system if the control is accidentally turned to off and back on during cooking.



## PELLETS DID NOT IGNITE:

- Turn control to OFF. CHECK to make sure pellets are dry and being delivered to the firepot
  - o If pellets are not being delivered, make sure hopper is full and auger is not jammed (is turning).
- DANGER: DO NOT STICK FINGERS INTO MOVING AUGER**
- CHECK to see if hotrod glows red after a couple minutes
  - o If hotrod does not glow. Unplug grill, and check fuse on back of control board. NOTE: a spare is wire tied to the functioning fuse at the connection point.
  - o If fuse is ok and hotrod does not get hot, a new HOTROD will be needed. Manual lighting of pellets can be done at owner's discretion.

## GRILL FIRE GOES OUT:

- CHECK that P setting is not too low (Normally 0-5) reference control page.
- CHECK that supply of pellets has not been interrupted.
- CHECK that pellets are dry and designed for grilling applications.
- CHECK that excessive wind is not affecting burning.
- CHECK Visually verify that auger is turning properly.
  - o Auger not turning: check that cotter pin holding shaft to motor is not broke.
  - o Set to high mode and visually recheck that auger is not turning. If not, unplug grill and check motor connector plug to see that it is properly connected (connector with RED wire). If connections are tight, a new auger drive motor will be needed.
  - o Check fan to see if it's spinning. If not, unplug grill and check fan connector with ORANGE wire to ensure that it has not come loose. If connection is tight, turn power back on and check fan. NOT turning indicates a new fan motor will be needed.

# RG-DIGITAL CONTROL MAJOR FEATURES

- Three Digit Temperature Display
- Front Panel Cook Control
- Eight Cook Temperature Settings (180 through 375 degrees)
- "High" Cook Temperature Setting
- Front Panel Smoke Control
- Sixteen Smoke Settings (P0 Warmest - P15 Coldest)
- Ignition Indicator
- Smoke Setting Indicator
- Cook Idle Fuel Rate Indicator
- Low Temperature Indicator
- Inadvertent Start Protection
- Over Temperature Protection



## How It Works

**Cook Mode** In Cook Mode, the temperature of the grill is constantly monitored and a microprocessor operates the draft fan and fuel feed auger to maintain a constant grill temperature.

**Smoke Mode** In Smoke Mode, the fuel feed rate is set manually by the operator. The grill operates at low temperature to provide maximum smoke.

**RG-Digital Control comes standard in the following Royall Grills:**



**RG-Three Speed comes standard in the following Royall Grills:**



# RG-DIGITAL CONTROL OPERATION OVERVIEW

## LED Readout

Displays grill temperature, smoke settings, idle fuel feed settings, igniter status, low temperature status, and error messages.

## Cook Control Switch

Selects off, smoke mode, or one of nine cook mode grill temperatures.

## Smoke Control Switch

Selects one of sixteen smoke/idle fuel feed rates.

## Cook Mode

Maintains the selected cook temperature.

## Smoke Mode

Produces maximum smoke at a low grill temperature.

## Microprocessor Control

In cook mode, the temperature of the grill is constantly monitored and a microprocessor operates the draft fan and fuel feed auger to maintain a constant grill temperature.

## Manual Control

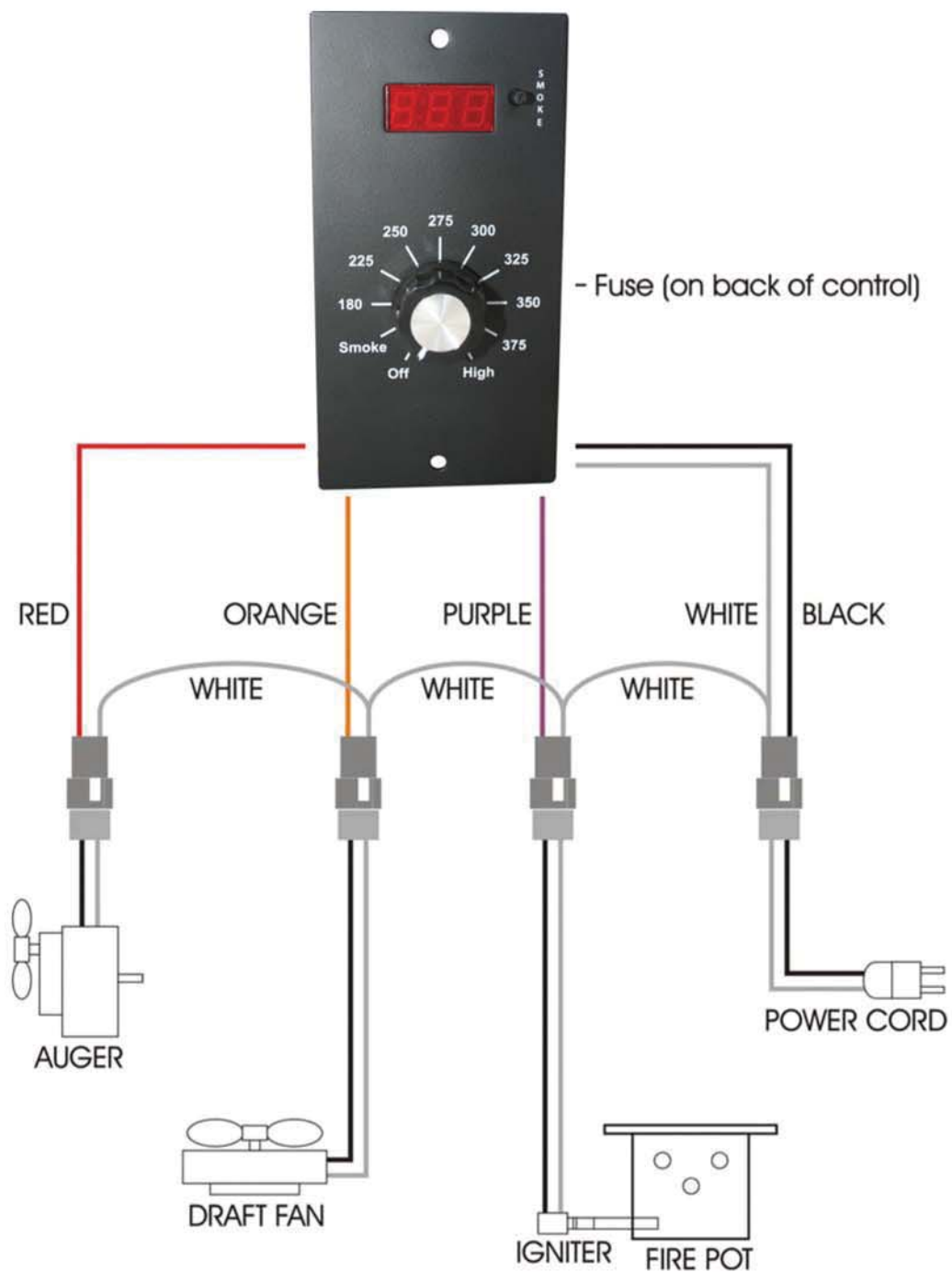
In smoke mode, the fuel feed rate is set manually by the operator. The grill operates at low temperature to provide maximum smoke.





## Wiring Diagram

## RG Digital Grill Control Model TR100 Comes Standard: RGPRO RG2000 RG3000 RG5000VS





# RG-DIGITAL CONTROL UNDERSTANDING THE DISPLAY

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## **Numbers**

When the grill is connected to AC power, the model number and software version of the control are displayed momentarily.

## **Temperature**

In cook mode and smoke mode, the grill temperature is displayed in 5 degree (Fahrenheit) increments.

## **Flashing Temperature**

In cook mode, the displayed temperature flashes if the grill temperature is below 150 degrees.

In smoke mode, the displayed temperature flashes if the grill temperature is below 110 degrees.

## **Flashing Dots**

The igniter is on.

## **"P0" - "P15"**

When the cook control switch is set to the smoke position, the smoke setting is displayed for 3 seconds.

If you adjust the smoke control switch while in smoke mode, the smoke setting is displayed for 3 seconds.

If you adjust the smoke control switch while in the cook mode, the idle fuel feed rate setting is displayed for 3 seconds.

## **Flashing "ErH"**

The grill temperature exceeded 615 degrees.

## **Flashing "ErP"**

The cook control switch was not in the off position when the grill was connected to AC power.

# CONNECTING THE GRILL TO AC POWER

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## Turn the Grill Off

Set the cook control switch to the off position.

## Plug the Grill In

Connect the grill to AC power. The control displays its model number and software version.

## If you see “ErP”

If the cook control switch is in the smoke position or any temperature setting when the grill is plugged in, the control will display “ErP” indicating an inadvertent start error. The standard ignition sequence is halted. This feature prevents an inadvertent start. For example, if the grill is stored in the garage, the grill will not ignite if plugged in inadvertently. To clear the error, set the cook control switch to off.

# IGNITING THE GRILL

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## Cook Control

To ignite the grill, set the cook control switch to the smoke position or any temperature setting.

## Ignition Sequence

- The draft fan turns on.
- The igniter turns on.
- The fuel feed auger turns on and delivers fuel continuously for two minutes.
- The grill temperature is displayed along with three flashing dots signifying that the igniter is on.

## The igniter will turn off when one of the following three conditions is met:

- The igniter has been on for four minutes and the grill temperature has increased by 30 degrees.
- The igniter has been on for four minutes and the grill temperature is greater than 150 degrees.
- The igniter has been on for five minutes.

Once the igniter turns off, if the cook control switch is set to the Smoke position, the grill operates in smoke mode. If the cook control switch is set to a temperature setting, the grill operates in cook mode. The flashing dots are turned off.

# COOKING

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## Cook Control

Set the cook control switch to the desired temperature. The control displays the grill's current temperature.

Cook sequence once the ignition sequence is complete and the igniter turns off, the auger feeds fuel into the fire pot to maintain the set temperature.



## Temperature Settings

180 180 degrees  
225 225 degrees  
250 250 degrees  
275 275 degrees  
300 300 degrees  
325 325 degrees  
350 350 degrees  
375 375 degrees  
High 450 degrees or Maximum Temperature

## High Temperature Setting

If the cook control switch is set to high, the grill operates at 450 degrees. If the grill is unable to attain 450 degrees due to ambient temperature and humidity, fuel type and quality, and/or thermal characteristics of the grill, the auger feeds fuel continuously allowing the grill to operate at its maximum temperature.

## On Fuel Feed Rate

The on fuel feed rate is the rate the auger delivers fuel while the grill is under the set temperature. In cook mode, the on fuel feed rate is designed to drive the grill's temperature upward to the set temperature and limit temperature overshoot. The on fuel feed rates are preprogrammed into the control and are not adjustable.

## Temperature

Setting	Auger On	Auger Off
180	15 seconds	15 seconds
225	always on	0
250	always on	0
275	always on	0
300	always on	0
325	always on	0
350	always on	0
375	always on	0
High	always on	0

## Idle Fuel Feed Rate

The idle fuel feed rate is the rate the auger delivers fuel while the grill is idling at or above the set temperature. In cook mode, you can manually adjust the idle fuel feed rate using the Smoke Control switch. See "Understanding Idle Fuel Feed Rate and Smoke Settings" for more information.

## Low Temperature

If the grill temperature is less than 150 degrees, the displayed temperature flashes, indicating a low temperature. This is not an error condition and does not affect the operation of the grill. The flashing display is designed to alert the operator that there is some risk of the fire going out.

## High Temperature

If the grill temperature is greater than 615 degrees, a flashing "ErH" is displayed indicating a high limit error and the grill shuts down. Refer to the "Error Modes and Messages" section for details.



# SMOKING

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## **Smoke Control**

Set the cook control switch to smoke. Use the smoke control switch to manually select the auger fuel feed rate. The control displays the grill's current temperature.

Smoke sequence once the ignition sequence is complete and the igniter turns off, the auger delivers fuel at a constant rate determined by the smoke setting (P0 - P15).

## **Smoke Setting**

The smoke fuel feed rate is the rate the auger delivers fuel while the grill is operating in the smoke mode. In smoke mode, manually adjust the fuel feed rate using the smoke control switch to establish the desired temperature and/or smoke output. See "Understanding Idle Fuel Feed Rate and Smoke Settings" for more information.

## **Low Temperature**

If the grill temperature is less than 110 degrees, the displayed temperature flashes, indicating a low temperature. This is not an error condition and does not affect the operation of the grill. The flashing display is designed to alert the operator that there is some risk of the fire going out.

## **High Temperature**

If the grill temperature is greater than 615 degrees, a flashing "ErH" is displayed indicating a high limit error and the grill shuts down. Refer to the "Error Modes and Messages" section for details.

# UNDERSTANDING IDLE FUEL FEED RATE & SMOKE SETTINGS

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## **Smoke Control Switch**

The smoke control switch sets the fuel feed rate (the amount of fuel delivered in a given period of time) when the grill is operating in smoke mode and when the grill is idling in cook mode.

During cook idle or smoke mode, the auger turns on, delivers fuel for 15 seconds, then turns off. The off time is set by the smoke control switch.

## **“P” Settings**

The fuel feed rate setting is displayed momentarily whenever the cook control switch is set to the smoke position. It is also displayed whenever the smoke control switch is adjusted. The setting is designated with the letter “P” and a number. The greater the “P” setting number the greater the auger off time.

Setting	Auger On	Auger Off
P 0	15 seconds	45 seconds
P 1	15	55
P 2	15	65
P 3	15	75
P 4	15	85
P 5	15	95
P 6	15	105
P 7	15	115
P 8	15	125
P 9	15	135
P10	15	140
P11	15	145
P12	15	150
P13	15	155
P14	15	160
P15	15	165

## **Dual Function**

The selected “P” setting controls both the smoke mode fuel feed rate and the cook mode idle fuel feed rate. They are one and the same.

For example, if “P3” is selected using the smoke control switch, the auger delivers fuel for 15 seconds, turns off for 75 seconds, and repeats in smoke mode. It also delivers fuel for 15 seconds, turns off for 75 seconds and repeats while idling in cook mode.

## **Cook Mode**

The idle fuel feed rate is the rate of fuel delivery that the fuel feed rate maintains the fire in the fire pot without raising the grill’s temperature.

In cook mode, whenever the grill temperature is at or above the set temperature, the auger runs at the idle fuel feed rate. If the grill temperature is below the set temperature, the auger operates per the on fuel feed rate.

We recommend the “P2” setting as the default idle fuel feed rate while in cook mode.

For the experienced operator, the auger idle fuel feed rate can be adjusted to improve the grill’s performance. For example, to optimize temperature stability at a high temperature setting, select “P1” or “P0” to increase the auger idle fuel feed rate or, if due to ambient conditions the grill is unable to cool down enough to reach a low temperature setting such as 180 degrees, select “P3”, “P4”, or higher to decrease the idle fuel feed rate.

## **High Temperature Idle Fuel Feed Rate**

In cook mode, the idle fuel feed rate for the high temperature setting is preprogrammed into the control. The idle fuel feed auger timing at high is 15 seconds on / 15 seconds off and is independent of the smoke control switch “P” setting. The preprogrammed fuel feed rate helps maintain the elevated cooking temperature at the high setting.



### **Smoke Mode Fuel Feed Rate**

In smoke mode, increasing the "P" setting decreases the fuel feed rate, lowering the grill temperature. Start at setting "P2", adjust the "P" setting manually for the desired temperature and/or smoke output.

## **ERROR MODES AND MESSAGES**

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### **Inadvertent Start Error (ErP)**

If the cook control switch is set to Smoke or to a temperature setting at the time the grill is plugged in, the control will display "ErP" indicating an inadvertent start error. The standard ignition sequence is halted.

This feature prevents an inadvertent start. For example, if the grill is stored in the garage, the grill will not ignite if plugged in inadvertently.

To clear the error, set the cook control switch to the off position

### **High Temperature Limit Error (ErH)**

If the grill temperature exceeds 615 degrees, the control limit error (ErH) displays "ErH" indicating a high temperature limit error.

The fuel feed auger is turned off, the igniter is turned off, and the draft fan is turned off.

To clear the error, set the cook control switch to the off position. If the error will not clear, your temperature detector is not functioning normally. See "Display is Flashing 'ErH'" in the "Troubleshooting" section.

Flashing In cook mode, the displayed temperature flashes if the grill temperature is below 150 degrees.

This is not an error condition and does not affect the operation of the grill. The flashing display is designed to alert the operator that there is some risk of the fire going out.

In smoke mode, the displayed temperature flashes if the grill temperature is below 110 degrees.

This is not an error condition and does not affect the operation of the grill. The flashing display is designed to alert the operator that there is some risk of the fire going out.

### **Flashing Dots**

The igniter is on.

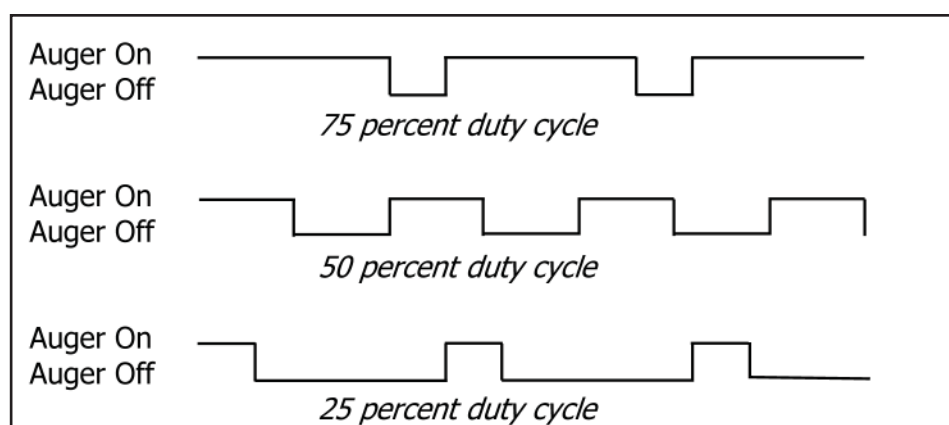
This is not an error condition and does not affect the operation of the grill. The flashing dots are designed to alert the operator that the igniter is on.

# AC AUGER THEORY OF OPERATION

## AC Auger

The grill is equipped with an AC auger. AC augers operate at a single speed and deliver fuel at a constant rate while on. The fuel feed rate (amount of fuel delivered in a given period of time) is adjusted by varying the on and off time intervals.

**Duty Cycle** The ratio of time the auger is on is sometimes referred to as the duty cycle and is expressed as a percentage. For example, if the auger is always on, its duty cycle is 100 percent. If the auger is on half the time, its duty cycle is 50 percent, etc.



## Idle and Smoke Fuel Feed Rates and "P" Settings

When the TR-100 is in smoke mode or idling in cook mode, the AC auger is turned on and delivers fuel continuously for 15 seconds and is then turned off. The smoke control switch sets the auger off time. The smoke mode/cook mode idle fuel feed rates are as follows:

Setting	Auger On	Auger Off	Duty Cycle
P 0	15 seconds	45 seconds	25.0 percent
P 1	15	55	21.4
P 2	15	65	18.8
P 3	15	75	16.7
P 4	15	85	15.0
P 5	15	95	13.6
P 6	15	105	12.5
P 7	15	115	11.5
P 8	15	125	10.7
P 9	15	135	10.0
P10	15	140	9.7
P11	15	145	9.4
P12	15	150	9.1
P13	15	155	8.8
P14	15	160	8.6
P15	15	165	8.3



# RG-DIGITAL CONTROL TROUBLESHOOTING

## Warning

**Always disconnect the grill from AC power before accessing the control for service or working under the grill.**

Removing the control from the grill, installing the control into the grill, or working under the grill while the grill is connected to AC power could result in shock or could damage the control.

### Digital Control Display is Blank

cook control switch is set to the off position. Set cook control switch to the smoke position or any temperature setting.

Circuit breaker on AC outlet is tripped. Reset wall power outlet circuit breaker.

Control is disconnected from grill AC power. Verify control wiring harness plug with black wire is connected to AC power.

### Digital Control Display is Blank

Control AC line fuse is blown. Replace control's fuse F1 with provided spare fuse or a replacement fuse.

A blown AC line fuse may be caused by several conditions including shorted grill component lead wires, a jammed auger, or a failing igniter. Inspect the grill's components and component lead wires if replacement fuses are continually blown.

### Grill Will Not Ignite

No fuel in firepot. Fill hopper with good, dry fuel. Verify auger is properly connected to control. Clear auger if jammed. Replace auger and/or auger motor if defective.

### No draft air flow

Verify draft fan is properly connected to control and operating normally. Replace draft fan if defective.

### No ignition heat source

Verify igniter is properly connected to control and operating normally.

### Replace igniter if defective

### Control is defective

Contact Royall Grills technical support.

Fuse



**Fire Goes Out**

Set cook control switch to the off position and allow grill to cool.

**No fuel in hopper**

Fill hopper with good, dry fuel.

**No fuel in firepot**

Verify the control is properly connected to auger. Clear auger if jammed. Replace auger and/or auger motor if defective.

**Unburned fuel in firepot**

Adjust smoke control switch (decrease the "P" setting) to increase auger idle fuel feed rate.

**No draft air flow**

Verify the control is properly connected to draft fan and operating normally. Replace draft fan if defective.

**Control is defective**

Contact Royall Grills technical support.

**Grill Temperature at the 180 Degree Cook Setting is too High**

Auger idle fuel feed rate is too high. Adjust smoke control switch (increase the "P" setting) to decrease idle fuel feed rate.

**Probe is defective**

Replace probe

**Control is defective**

Contact Royall Grills technical support.

**Grill Temperature at the High Cook Setting is too Low**

At the high temperature setting, the auger runs continually until the grill temperature reaches 450 degrees.

**Grill lid is open**

Close grill lid. Grill is designed to operate with grill lid closed.

**Insufficient amount of fuel in fire pot**

Clear auger if jammed. Tighten auger connection to auger motor shaft if slipping. Replace auger and/or auger motor if defective.

**Damp fuel source**

Replace damp fuel with good dry fuel.

**Adverse operating conditions**

Shield grill from cold wind and/or rain. Grill may not be able to attain 450 degrees in an extremely cold operating environment.



**Unexpected Temperature Displayed**

Auger idle fuel feed rate is too high. Adjust smoke control switch (increase the "P" setting) to decrease idle fuel feed rate.

**Auger idle fuel feed rate is too low**

Adjust smoke control switch (decrease the "P" setting) to increase idle fuel feed rate.

**Grill lid is open**

Close grill lid. Grill is designed to operate with grill lid closed.

**Probe is defective**

Contact Royall Grills technical support.

**Control is defective**

Contact Royall Grills technical support.

**Grill Temperature Displayed is Different Than Dome Thermometer**

This is normal. The displayed temperature is the precise temperature at the Probe. The dome thermometer is located in a different position inside the grill.

**Displayed Temperature is Flashing**

Low grill temperature. This is not an error condition and does not affect the operation of the grill. The flashing display is designed to alert the operator that there is some risk of the fire going out.

**Display Always Reads 0 Degrees**

Probe wire leads are shorted. Check connection at control terminal J1. Fully open contacts by turning set screw counter clockwise. Reinsert wires and tighten contacts by turning set screw clockwise. Check the insulation for shorts throughout the wire run from detector to control terminal J1.

**Probe is defective**

Contact Royall Grills technical support.

**Control is defective**

Contact Royall Grills technical support.

**Display is Flashing "ErP"**

Inadvertent start error. The grill was plugged in with the cook control switch in the smoke position or set to a temperature setting. Set the cook control switch to the off position.

**Display is Flashing "ErH"**

Overtemperature error. The grill temperature exceeded 615 degrees and shut off automatically. Set the cook control switch to the off position.

**Probe wire leads are open**

Check connection at control terminal J1. Fully open contacts by turning set screw counter clockwise. Reinsert wires and tighten contacts by turning set screw clockwise. Check for breaks in the wire throughout the wire run from probe to control terminal J1.

**Probe is defective**

Contact Royall Grills technical support.

**Control is defective**

Contact Royall Grills technical support.



### **REPAIR PARTS**

Contact your local dealer or contact ***Royall Grills***

**PHONE :** 608-768-8508

**FAX :** 608-768-8433

**e-mail:** [info@royallgrills.com](mailto:info@royallgrills.com)

### **MAIL:**

Royall Grills

325 South Park Street

Reedsburg, WI 53959

## **WARRANTY**

Grills used for residential purposes are warranted by ***Royall Grills*** against factory defects in material and workmanship for a period of 1 year from the date of purchase to the original owner. Effective maintenance and proper storage of grill as outlined in the manual are required for warranty compliance.

Original components found to be defective are shipped to the factory and back to the customer at the customer's expense. This warranty does not cover any owner expense related to diagnosing a repair requirement, removal or installation of defective parts.

Warranty exclusions consist of; normal corrosion, paint fading or flaking due to normal use, grill warping, damage caused by using improper fuels, damage to personal property or personal injury through the use of this product.

***Royall Grills*** obligation for any breach of these warranties is limited to the repair or replacement of it's parts as described in this warranty and in no circumstances exceed the cost of the unit. Some states do not allow exclusions or limits so this may not apply to you.

***Royall Grills*** requires proof of purchase to validate the 1 year terms of the warranty. Therefore your proof of purchase must be retained. A registration card may be submitted for file but does not validate the purchase date.