



# **GRILL and SMOKER** **Operation and Maintenance**

**ROYALL**

[www.royallgrills.com](http://www.royallgrills.com)



# Thank You!

for selecting Royall as your wood pellet grill. Your grill has been proudly made in the USA and is designed to provide you years of grilling enjoyment.

We truly enjoy working with you and feel honored to be your chosen supplier. Your business is very much appreciated, and we will do our very best to continue to meet your needs.

Your continued patronage and suggestions are a vital part of our companies growth. And for that, we are most grateful.

We look forward to serving you for many years to come!



Matthew Kouba, MBA  
President  
Royall Products, LLC



# IMPORTANT SAFETY INSTRUCTIONS

## READ ALL INSTRUCTIONS BEFORE INSTALLING AND USING YOUR NEW GRILL OR SMOKER

Please read this entire Royall manual before installing or using your wood pellet grill or smoker. Failure to follow these instructions could result in property damage, bodily injury, or even death.

Your new Royall wood pellet grill was conceived and designed to make grilling easier while giving you the optimum performance you deserve.

### **DANGER**

- Hazardous voltage is present, which can shock, burn, or cause death. Disconnect the power cord before servicing the grill unless otherwise noted in this manual.
- Never use or store flammable liquids near the grill.
- Never use gasoline or lighter fluid to manually light your grill.
- Plug into an appropriate 3-prong electrical outlet with GFCI protection only, to protect against shock hazard.
- When using an extension cord with your grill or smoker, utilize at least a 14-gauge grounded cord designed for outdoor usage.

### **WARNING**

#### **SMOKE HAZARD**

A pellet overflow condition can occur during the start up process resulting in unusually thick smoke that is retained inside the cooking area for a lengthy time period. If this happens, power down your grill and unplug from the power source. If this condition continues for a long enough time period, gases will build up from a partial ignition condition and suddenly fully ignite, causing the grill to flash over. If this flash over occurs and your grill has not been properly cleaned and maintained, a grease fire could result. To resolve this condition, let the grill or smoker cool down completely, remove all internal grill components, and thoroughly clean all ash and pellets from the grill and firepot.

#### **BURN HAZARD**

Many parts of the grill will become very hot during operation. Care must be taken to avoid burns, both during operation and afterwards, while the grill is still hot.

- Never leave the grill unattended when young children are present.
- Never move the grill when it is operating.
- Let the grill cool thoroughly before moving or attempting to transport.

# FIRST TIME FIREUP INSTRUCTIONS

**We know you're anxious to get started, but you need to do this FIRST!**

- Open the grill lid (except for RG5000VS and RG7000VS models), and fill the hopper with your favorite pellets.
- Make sure the auger tube is full of pellets, and a few pellets are in the burn pot.  
If not follow the next directions for your controller type:

**Ortech Controllers:**

Turn the grill ON (set to 300 degrees for digital controllers, or to HIGH for 3-speed controllers) and wait for pellets to begin falling into the firepot. During this time the igniter will become hot. Once the pellets begin to fall into the firepot (a few minutes), the igniter will have cycled OFF. Turn the grill back OFF and then ON again to recycle the igniter and begin pellet ignition.

**Roanoke Controllers:**

Power on the grill by pressing the power button and wait for the "Power Up Mode" to complete (about 3 seconds) Press and hold the "Prime" button on the controller to continuously power the auger until the auger tube is full of pellets and pellets begin dropping into the firepot. If the igniter has cycled OFF during the time, turn off the grill by pressing the power button. Wait 10 seconds and power the grill back ON.

- Once the grill lights, continue to let the grill burn for a 30 minute time period. (The wait period is for the very first usage only)

# Start Grilling and Enjoy

# CONTROLLER OPERATION - ORTECH DIGITAL

## UNDERSTANDING THE DISPLAY

### LED READOUT

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

### SMOKE CONTROL KNOB

Select one of 16 smoke fuel feed rates.

### MICROPROCESSOR CONTROLLED

The temperature of the grill is constantly monitored by a microprocessor that operates the fan and auger fuel feed rate to maintain a constant grill temperature. A 10 minute cool down cycle is also controlled by the microprocessor.



### TEMPERATURE DISPLAY

In all cooking modes, the grill temperature is displayed in 5 degree (Fahrenheit) increments.

### FLASHING DOTS IN LOWER PORTION OF THE DISPLAY

The 3 flashing dots indicate that the igniter is currently powered ON

### FLASHING TEMPERATURE IN THE DISPLAY

In cook mode, the the displayed temperature flashes if the grill temperature is below 150 degrees  
In smoke mode, the the displayed temperature flashes if the grill temperature is below 110 degrees

### FLASHING "ErH" IN THE DISPLAY

The controller has detected grill temperatures in excess of 615 degrees.

### FLASHING "ErP" IN THE DISPLAY

The controller was not switched to the OFF position when the grill was connected to AC power.

## COOKING WITH YOUR DIGITAL CONTROLLER

Simply set the cook control to the desired temperature, the digital display will display the current temperature inside the grill or smoker.

Once the ignition sequence is completed, the igniter will turn off. The auger will continue to feed wood pellets into the fire pot to maintain the temperature.

If the cook control is set to HIGH, the grill will attempt to operate at 450 degrees. If the grill is unable to attain 450 degrees due to ambient temperature and/or humidity, fuel type and quality, or thermal characteristics of the grill or smoker, the auger will continue to feed wood pellets continuously in order to allow the grill or smoker to operate at it's maximum temperature.

# **CONTROLLER OPERATION - ORTECH DIGITAL**

## **(Continued)**

### **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**

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

### **IGNITING THE GRILL OR SMOKER**

To ignite the grill, set the cook control switch to between 250 - 350 degrees. Wait for the unit to reach temperature. Do not attempt to start the grill on SMOKE, you can dial down once the grill starts producing smoke.

#### **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 currently on

#### **THE IGNITER WILL TURN OFF WHEN ONE OF THE FOLLOWING CONDITIONS ARE MET**

- The igniter has been on for (4) minutes and the grill temperature has increased by 30 degrees
- The igniter has been on for (4) minutes and the grill temperature is greater than 150 degrees
- The igniter has been on for (5) minutes.

### **REPLACING THE CONTROLLER**

#### **UNPLUG THE GRILL OR SMOKER**

Remove the hopper access cover (located on the side of the hopper) by removing the (2) screws in order to gain access to the wiring.

Disconnect the (4) plastic wire connectors from the controller.

Remove the (2) screws from the controller faceplate. Carefully, pull the controller out of the hopper taking care not to put undo stress on the temperature probe connection while removing.

Disconnect the (2) temperature probe wires from the back of the controller.

Reassemble the replacement controller in the reverse order of removal.

# CONTROLLER OPERATION - ORTECH DIGITAL

(Continued)

## ORTECH DIGITAL CONTROLLER COMPONENT CONNECTIONS



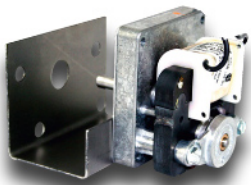
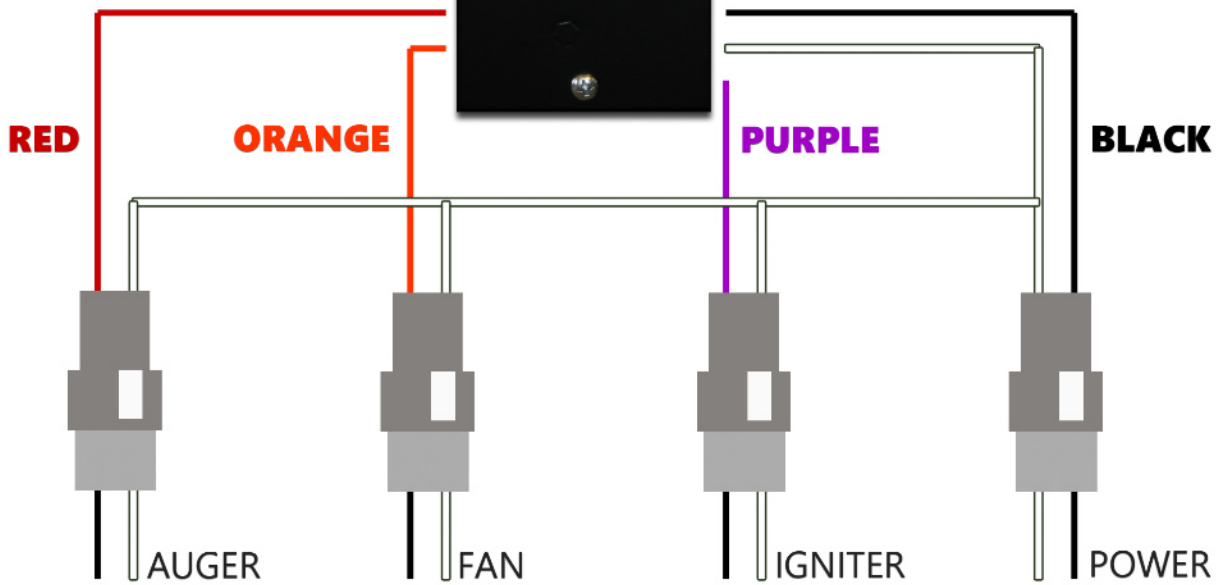
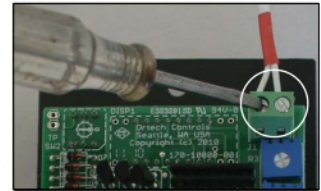
Fuse is located on the back of the controller



TEMP PROBE



Temp Probe connection is located on the back of the controller



AUGER



FAN



IGNITER



POWER

# CONTROLLER OPERATION - ORTECH DIGITAL

(Continued)

## FUEL FEED RATES and "P" SETTINGS

### FUEL FEED RATE WHILE ON

This is the rate at which the auger delivers fuel while the grill or smoker is under the set temperature. In cook mode, the feed rate is designed to drive the temperature up towards the set temperature while limiting temperature overshoot. The fuel feed rates are preprogrammed into the controller and are not adjustable.

### Temperature Feed Rates

Setting	Auger ON	Auger OFF
180	15 Seconds	15 Seconds
225	always ON	0 Seconds
250	always ON	0 Seconds
275	always ON	0 Seconds
300	always ON	0 Seconds
325	always ON	0 Seconds
350	always ON	0 Seconds
375	always ON	0 Seconds
HIGH	always ON	0 Seconds

### IDLE FEED RATE AND "P" SETTINGS

The idle feed rate at which 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 knob.

The fuel feed rate setting is displayed momentarily when the controller is switched to the SMOKE position. The feed rate is also displayed whenever the smoke control knob is adjusted. The setting is designated with the letter "P" and a number. The greater the "P" setting, the greater the auger off is. You must use care when changing "P" settings, if the setpoint is set too high pellet starvation can result.

The selected "P" setting effects both the SMOKE mode fuel feed rate, and the cook mode idle fuel feed rate. We recommend a default setting of "P2" as a baseline while in cook mode.

For the experienced user, the auger idle fuel feed rate can be adjusted to improve the grills performance. To optimize temperature stability at a high temperature setting, select "P1" or "P0" to increase the auger idle fuel rate by reducing the time between auger delivery cycles. If due to ambient conditions, the grill or smoker is unable to cool down enough to reach a low temperature setting such as 180 degrees, select "P3" or "P4", or higher to increase the time between auger delivery cycles allowing the grill or smoker to cool down.

### P-setting Feed Rates

Setting	Auger ON	Auger OFF
P0	15 Seconds	45 Seconds
P1	15 Seconds	55 Seconds
P2	15 Seconds	65 Seconds
P3	15 Seconds	75 Seconds
P4	15 Seconds	85 Seconds
P5	15 Seconds	95 Seconds
P6	15 Seconds	105 Seconds
P7	15 Seconds	115 Seconds
P8	15 Seconds	125 Seconds
P9	15 Seconds	135 Seconds
P10	15 Seconds	140 Seconds
P11	15 Seconds	145 Seconds
P12	15 Seconds	150 Seconds
P13	15 Seconds	155 Seconds
P14	15 Seconds	160 Seconds
P15	15 Seconds	165 Seconds

# CONTROLLER OPERATION - ORTECH DIGITAL

## (Continued)

## Error Modes and Messages

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

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

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

If the grill temperature exceeds 615 degrees, the control 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 (RTD) is not functioning normally. Check the connection between the RTD and the controller for nicks or scratches that may be grounding the RTD to the body of the grill or smoker. Ensure the RTD is connected to the controller.

### **Flashing Temperature Display**

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.

These are not error conditions and do not affect the operation of the grill. The flashing display is designed to alert the operator that there is some slight risk of the fire going out.

### **(C10) - Cool Down Timer**

The grill is cooling down. This is not an error condition.

During cool down, a timer is displayed and decremented for 10 minutes. The flashing timer is designed to alert the operator that the grill is cooling down.

### **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 currently on.

### **(P0 - P15) - Displays current P-setting when in Smoke Position.**

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 mode setting is displayed for 3 seconds.  
If you adjust the Smoke control switch while in Cook mode, the Idle Feed Rate setting is displayed for 3 seconds.

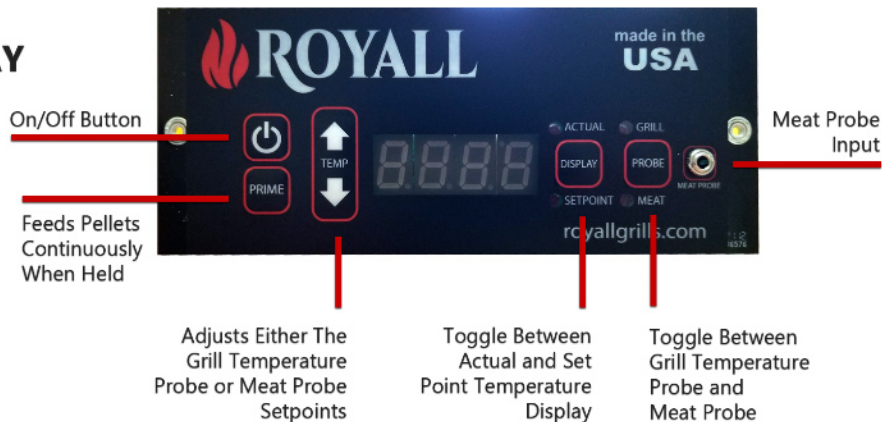
# CONTROLLER OPERATION - ROANOKE DIGITAL

## UNDERSTANDING THE DISPLAY

### POWER UP MODE

When power is applied by plugging into an AC outlet, the grill controller will display the following software information:

**ROYALL** Identifies (3) Seconds  
**1120** Model (3) Seconds  
**U1.01** Version (3) Seconds



### USING THE ROANOKE CONTROLLER

On startup, the system will attempt to light the grill for a maximum of 30 minutes. During the time, the auger will run (ON for 1 second, OFF for 6.7 seconds). If after 30 minutes the grill temperature probe has not exceeded 160 degrees, the system will display the error code for failure to start (Er-2). When the grill temperature probe exceeds 160 degrees the igniter will turn off, and the controller begins to control the temperature to the setpoint target.

The grill temperature probe setpoint can be adjusted with the UP and DOWN buttons. The grill temperature setpoint defaults to 350 degrees, but can be adjusted between 180 and 650 degrees in 5 degree increments.

Press the Temp Display button to toggle the actual measured temperature of the grill on the display, and setpoint

If the meat probe is detected, pressing the PROBE display button will change the display to the meat probe and the target temperature for the meat probe is displayed. The Temp UP and DOWN buttons can be used to adjust the meat probe setpoint between 80 and 180 degrees in single degree increments.

Press the Temp display button to change back to the actual display state.

### SHUTDOWN MODE

It is strongly suggested that the controller shutdown procedure be used instead of simply unplugging it when done.

To initiate shutdown, press the ON/OFF button. Over a period of time, the amount of fuel provided will gradually reduce to nothing. The fan will turn on continuously to reduce the temperature. If the temperature is found to be less than 130 degrees at the end of the shutdown cycle, the fan will turn OFF. The shutdown procedure will not be attempted if the system has not reached the initial 160 degree startup temperature.

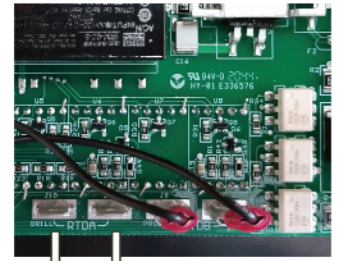
# CONTROLLER OPERATION - ROANOKE DIGITAL

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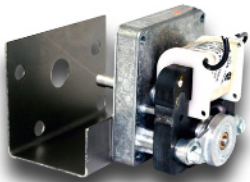
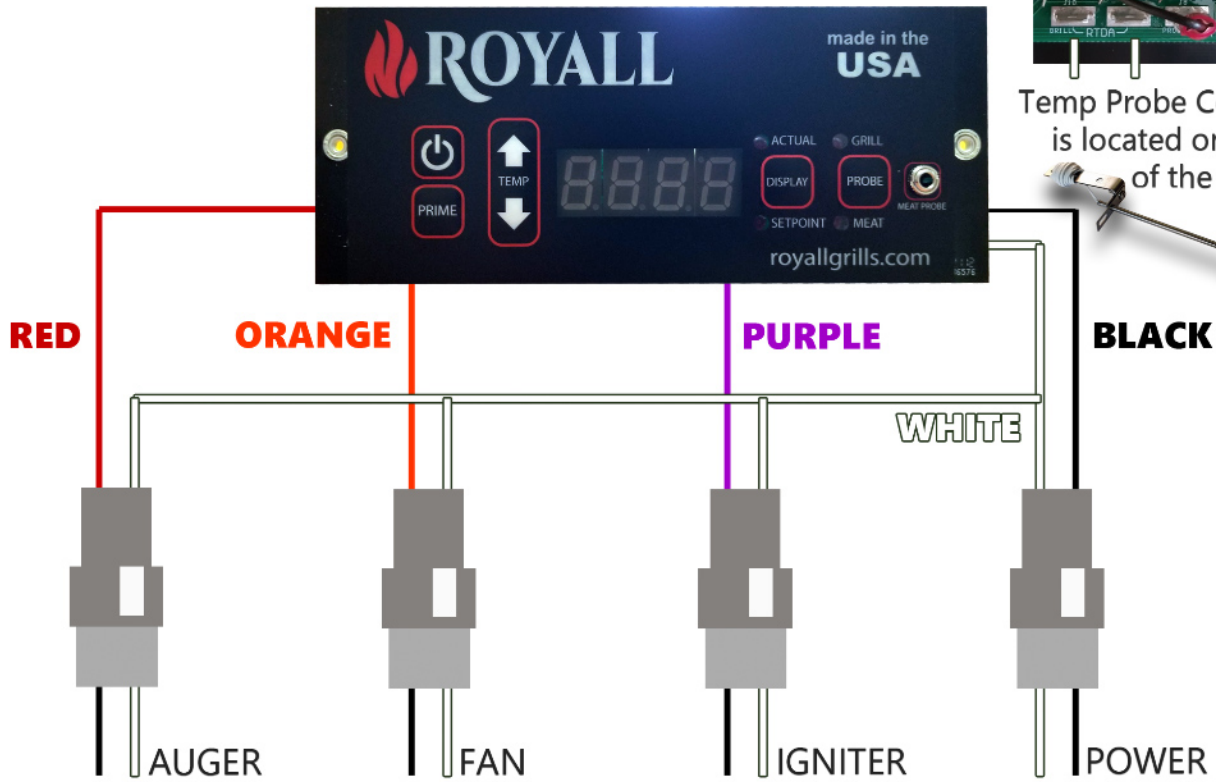
## ROANOKE DIGITAL CONTROLLER COMPONENT CONNECTIONS



Fuse is located on the back of the controller



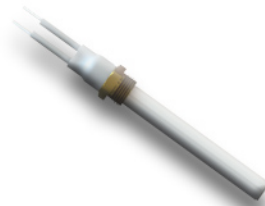
Temp Probe Connection is located on the back of the controller



AUGER



FAN



IGNITER



POWER

# **CONTROLLER OPERATION - ROANOKE DIGITAL**

**(Continued)**

## **Error Modes and Messages**

If an error condition is detected, the system will perform the normal shutdown procedure regardless of the error condition. If an error has been detected, it can be cleared by pressing the ON/OFF button to enter the normal run mode. If the error is still present, the system will enter into the error mode again.

### **ER-1**

Over temperature error, the grill temperature probe has detected a temperature exceeding 700 degrees. This error can also happen due to an open connection between the controller and temperature probe.

### **ER-2**

Failure to start error, this occurs when the ignition procedure fails to increase the grill temperature above 160 degrees within the 30 minute startup window.

### **ER-3**

Power failure error, this occurs when the power is lost during normal operation.

### **ER-4**

Grill temperature probe short circuit, this occurs when the system detects a shorted temperature probe connection that cannot be reliably used to measure temperature,

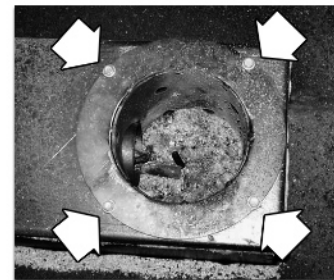
# IGNITER REPLACEMENT - STEEL IGNITER

## Unplug the Grill or Smoker!

Remove the grate(s), drip pan, and heat deflector from inside of the grill.

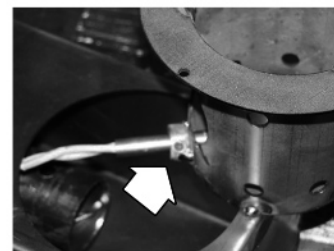
Remove the (4) 1/4" screws holding the Fire Pot in the Auger Supply Box.

Slightly lift the Fire Pot off of the Auger Supply Box, then lift at an angle towards the supply to lift clear.



Use a 1/8" allen wrench to loosen the set screw collar a few turns. You can also use WD40 or a similar lubricant on the collar and igniter to assist with removal. Use pliers on the back of the Igniter to gently rotate it back and forth until it can be removed from the Fire Pot.

Set the Igniter Down in place, and remove the Igniter wiring by first unplugging it from the controller, carefully remove the plug at the end of the Igniter wire by cutting it off. Carefully work the the Igniter wire back thru the unit and remove the entire Igniter from the grill.



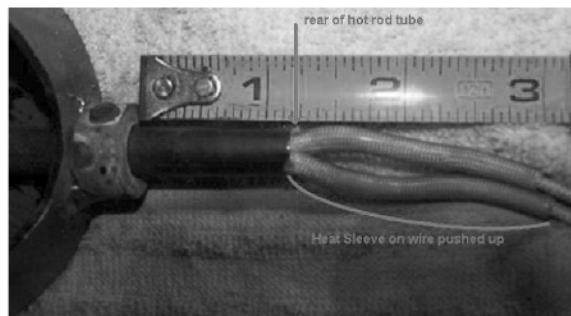
Re-install the new Igniter by running the wire back from the the Auger Supply Box to the controller. Once the wire has been run to the controller, install the plastic connector to the end of the wire by pushing it firmly until it seats on the wire ends.

Locate the Igniter back into the collar leaving 1 3/8" extending out the back.

Tighten the set screw, replace the Fire Pot back into the Auger Supply box, and Install with (4) 1/4" Screws.

### **WARNING**

**PUSHING THE IGNITER TOO FAR INTO THE FIREPOT CAN CAUSE GFI TRIPPING ALONG WITH DAMAGE TO THE IGNITER**



# IGNITER REPLACEMENT - CERAMIC IGNITER

## Unplug the Grill or Smoker!

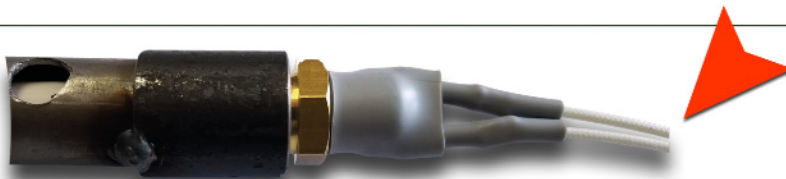
Open the grill and remove the grates, drip tray, and heat shield in order to access the auger box and firepot.



Remove the wingnut that is securing the firepot to the auger box



Remove the firepot assembly by sliding it away from the auger box



Unscrew the old ceramic igniter from the firepot and cut the old igniter leads at the location shown above.

Utilize the old existing igniter leads to pull the new igniter leads thru the auger box until they exit thru the access hole in the side. A bit of tape will secure the connection enough to pull the new igniter wires thru the auger box.

Once the new igniter wires are outside of the access hole, attach the plastic connector by pushing it firmly onto the end of the igniter wires until it snaps on.

Replace the firepot assembly back onto the augerbox, and tighten the wing nut.

Connect the igniter lead to the purple connection on the grill controller, **DONE!**

# REPLACEMENT PARTS

**GENUINE**  
**ROYALL**

# REPLACEMENT PARTS

AVAILABLE AT  
[RoyallGrills.com](http://RoyallGrills.com)

GRI71287 Ortech 3-Speed Controller  
GRI70533 Ortech Digital Controller  
GRI70543 Ortech Replacement Controller Fuse  
GRI70550 Roanoke Digital Controller

GRI70538 Temperature Probe (RTD)  
MOT71898 Auger Motor  
GRI80088 Fan Motor  
GRI71879 Cermic Igniter  
GRI71304 Steel Igniter (Pre 7/1/21)

GRI40189 Steel Fire Pot  
GRI51184 Steel Fire Pot (Pre 7/1/21)  
GRI51183 Stainless Steel Fire Pot (Pre 7/1/21)

GRI51187-00 19.5" x 11" Steel Grill Grate (RG2000, RG3000, RGPRO)  
GRI51187-01 19.5" x 11" Stainless Steel Grate (RG2000, RG3000, RGPRO)  
GRI51189 19.5" x 23" Steel Grill Grate (RG5000)  
GRI52675 19.5" x 23" Stainless Steel Grill Grate (RG5000)  
GRI51191 19.5" x 35" Steel Grill Grate (RG7000)  
GRI52813 19.5" x 35" Stainless Steel Grill Grate (RG7000)  
GRI51256 22" Steel Ironman Cooking Grate  
GRI51255 22" Steel Ironman Baffle Grate



# GRILL and SMOKER WARRANTY



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

Original components found to be defective are shipped to the factory in Reedsburg, WI 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 usage, grill warping, damage caused by using improper fuels, damage to personal property or personal injury through the use of this product.

Electrical Components are warranted for a period of (1) year from the date of purchase by the manufacturer. Warranty replacement requires the return of the non functioning part for inspection to our Reedsburg, WI manufacturing office.

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 exceeds the cost of the unit. Some states do not allow exclusions or limits so this may not apply to you.

If you have questions concerning our warranty please contact us, [info@royallproducts.com](mailto:info@royallproducts.com)

# TROUBLESHOOTING YOUR GRILL OR SMOKER

## ● HOW DO YOU USE A PELLET GRILL?

Pellet grills are incredibly easy-to-use. Just load your favorite pellets into the hopper, program the desired temperature on the controller and put your food on. That's it.

The pellet grill automatically maintains its temperature for as long as there are pellets to burn. Although wood pellet grills and smokers are prized for their ability to achieve a steady and precise temperature, be sure to check on your grill or smoker every once in awhile during use.

## ● HOW LONG DOES A BAG OF PELLETS LAST?

On average, a pound of pellets lasts between an hour and an hour-and-a-half when smoking at 250°F in ideal conditions (75°F, no wind). As you increase the cooking temperature, you burn more pellets. In cold weather, you'll also burn pellets at a faster rate as the grill tries to maintain the desired temperature against the cooler weather.

## ● I'M HAVING DIFFICULTY GETTING MY PELLETS TO LIGHT

The pellet igniter only runs for about 4 minutes when the pellet grill is first turned on. The igniter then stops and will not activate again unless the grill is turned off and then turned back on again. Repeated ignition cycles can adversely affect the overall lifecycle of the igniter. If your grill or smoker is new, the wood pellets have to have time to work their way thru the auger tube into the firepot. If your igniter stops before the pellets reach the firepot, no ignition will take place. Simply turn the grill off and back on again once the pellets begin to drop into the firepot and ignition should start. If your wood pellets have been stored in a damp area and have become damp or wet they will be very difficult to light.

## ● MY GRILL HAS OUTLET TRIPS, OR BLOWS THE FUSE

Occasionally a single component may cause an outlet to trip or a fuse to blow. If this occurs, you need to locate the offending component causing the issue. Begin by unplugging the auger motor, igniter, and fan from the controller. Turn on the controller and see if the problem still exists. If everything is fine, turn off the controller, and plug in only one of the grill components (fan, auger, or igniter) and then turn the unit on again. Continue to try each component individually with the controller until you locate the bad component. Once you have an idea what part needs to be replaced contact us for replacement parts.

## ● THE FAN CONTINUES TO RUN AFTER I'VE TURNED OFF MY GRILL

Both digital controllers utilizes a 10 minutes cool down cycle once the controller has been turned off. The fan will shut off automatically after 10 minutes.

## ● ERROR CODES ARE SHOWING ON THE DIGITAL CONTROLLER

Please refer to the specific controller error section later in this manual

## ● WHERE DO I FIND REPLACEMENT PARTS FOR MY GRILL?

All of our wood pellet grill replacement parts are available online at [www.RoyallGrills.com](http://www.RoyallGrills.com), or call us at 608-768-8508 Monday thru Friday, 8am - 5pm CST for immediate assistance.