

# *Grizzly* **Industrial, Inc.**®

## **MODEL G0895 4' X 8' CNC ROUTER OWNER'S MANUAL**

*(For models manufactured since 04/22)*



COPYRIGHT © DECEMBER, 2019 BY GRIZZLY INDUSTRIAL, INC., REVISED DECEMBER, 2022 (KS)  
**WARNING: NO PORTION OF THIS MANUAL MAY BE REPRODUCED IN ANY SHAPE  
OR FORM WITHOUT THE WRITTEN APPROVAL OF GRIZZLY INDUSTRIAL, INC.**  
#AI20540 PRINTED IN CHINA

V3.12.22

**\*\*\*Keep for Future Reference\*\*\***



# **WARNING!**

**This manual provides critical safety instructions on the proper setup, operation, maintenance, and service of this machine/tool. Save this document, refer to it often, and use it to instruct other operators.**

**Failure to read, understand and follow the instructions in this manual may result in fire or serious personal injury—including amputation, electrocution, or death.**

**The owner of this machine/tool is solely responsible for its safe use. This responsibility includes but is not limited to proper installation in a safe environment, personnel training and usage authorization, proper inspection and maintenance, manual availability and comprehension, application of safety devices, cutting/sanding/grinding tool integrity, and the usage of personal protective equipment.**

**The manufacturer will not be held liable for injury or property damage from negligence, improper training, machine modifications or misuse.**



# **WARNING!**

**Some dust created by power sanding, sawing, grinding, drilling, and other construction activities contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm. Some examples of these chemicals are:**

- **Lead from lead-based paints.**
- **Crystalline silica from bricks, cement and other masonry products.**
- **Arsenic and chromium from chemically-treated lumber.**

**Your risk from these exposures varies, depending on how often you do this type of work. To reduce your exposure to these chemicals: Work in a well ventilated area, and work with approved safety equipment, such as those dust masks that are specially designed to filter out microscopic particles.**

# Table of Contents

<b>INTRODUCTION</b> .....	<b>2</b>	Changing Cutter.....	34
Contact Info.....	2	Securing Workpieces.....	35
Manual Accuracy.....	2	Using a Spoilboard.....	37
Identification.....	3	Adjusting Axis Positions Manually.....	39
Controls & Components.....	4	Homing Axes.....	39
Controller Functions.....	6	Setting Work Origin.....	40
Glossary Of Terms.....	7	Creating G-Code File.....	41
Machine Data Sheet.....	9	Uploading and Running G-Code.....	42
<b>SECTION 1: SAFETY</b> .....	<b>11</b>	Manually Setting Spindle Speed.....	43
Safety Instructions for Machinery.....	11	Changing Advanced Settings.....	44
Additional Safety for CNC Routers.....	13	Using Advanced Controls.....	44
<b>SECTION 2: POWER SUPPLY</b> .....	<b>14</b>	<b>SECTION 5: ACCESSORIES</b> .....	<b>45</b>
<b>SECTION 3: SETUP</b> .....	<b>17</b>	<b>SECTION 6: MAINTENANCE</b> .....	<b>48</b>
Needed for Setup.....	17	Schedule.....	48
Unpacking.....	17	Cleaning & Protecting.....	48
Inventory.....	18	Lubrication.....	48
Site Considerations.....	20	<b>SECTION 7: SERVICE</b> .....	<b>51</b>
Lifting & Placing CNC Router.....	21	Troubleshooting.....	51
Leveling.....	22	Testing Proximity Switches.....	55
Connecting Controller.....	22	Updating RichAuto Controller Software.....	56
Lifting & Mounting Vacuum Pump.....	23	<b>SECTION 8: WIRING</b> .....	<b>57</b>
Anchoring Vacuum Pump to Floor.....	23	Wiring Safety Instructions.....	57
Installing Vacuum Pump.....	24	Wiring Diagram.....	58
Dust Collection.....	25	Electrical Components.....	59
Power Connection.....	26	<b>SECTION 9: PARTS</b> .....	<b>61</b>
Test Run.....	28	Frame & Bed.....	61
Verifying Parameters.....	30	Gantry & Spindle.....	63
<b>SECTION 4: OPERATIONS</b> .....	<b>32</b>	Electrical Cabinet.....	65
Operation Overview.....	32	Labels & Cosmetics.....	66
Workpiece Inspection.....	33	<b>WARRANTY &amp; RETURNS</b> .....	<b>69</b>
Choosing Cutter.....	33		

# INTRODUCTION

## Contact Info

We stand behind our machines! If you have questions or need help, contact us with the information below. Before contacting, make sure you get the **serial number** and **manufacture date** from the machine ID label. This will help us help you faster.

Grizzly Technical Support  
1815 W. Battlefield  
Springfield, MO 65807  
Phone: (570) 546-9663  
Email: techsupport@grizzly.com

We want your feedback on this manual. What did you like about it? Where could it be improved? Please take a few minutes to give us feedback.

Grizzly Documentation Manager  
P.O. Box 2069  
Bellingham, WA 98227-2069  
Email: manuals@grizzly.com


## Manual Accuracy

We are proud to provide a high-quality owner's manual with your new machine!

We made every effort to be exact with the instructions, specifications, drawings, and photographs in this manual. Sometimes we make mistakes, but our policy of continuous improvement also means that **sometimes the machine you receive is slightly different than shown in the manual.**

If you find this to be the case, and the difference between the manual and machine leaves you confused or unsure about something, check our website for an updated version. We post current manuals and manual updates for free on our website at [www.grizzly.com](http://www.grizzly.com).

Alternatively, you can call our Technical Support for help. Before calling, make sure you write down the **manufacture date** and **serial number** from the machine ID label (see below). This information is required for us to provide proper tech support, and it helps us determine if updated documentation is available for your machine.

		MODEL GXXXX MACHINE NAME	
SPECIFICATIONS		▲ WARNING!	
Motor:		To reduce risk of serious injury when using this machine:	
Specification:		1. Read manual before operation.	
Specification:		2. Wear safety glasses and respirator.	
Specification:		3. Make sure power is connected to grounded circuit before starting.	
Specification:		4. Make sure the motor has stopped and disconnect power before adjustments, maintenance, or service.	
Weight:		5. DO NOT expose to rain or dampness.	
		6. DO NOT modify this machine in any way.	
		7.	
		8.	
		9. Do not use while under the influence of drugs or alcohol.	
		10. Maintain machine carefully to prevent accidents.	
		Manufactured for Grizzly in Taiwan	

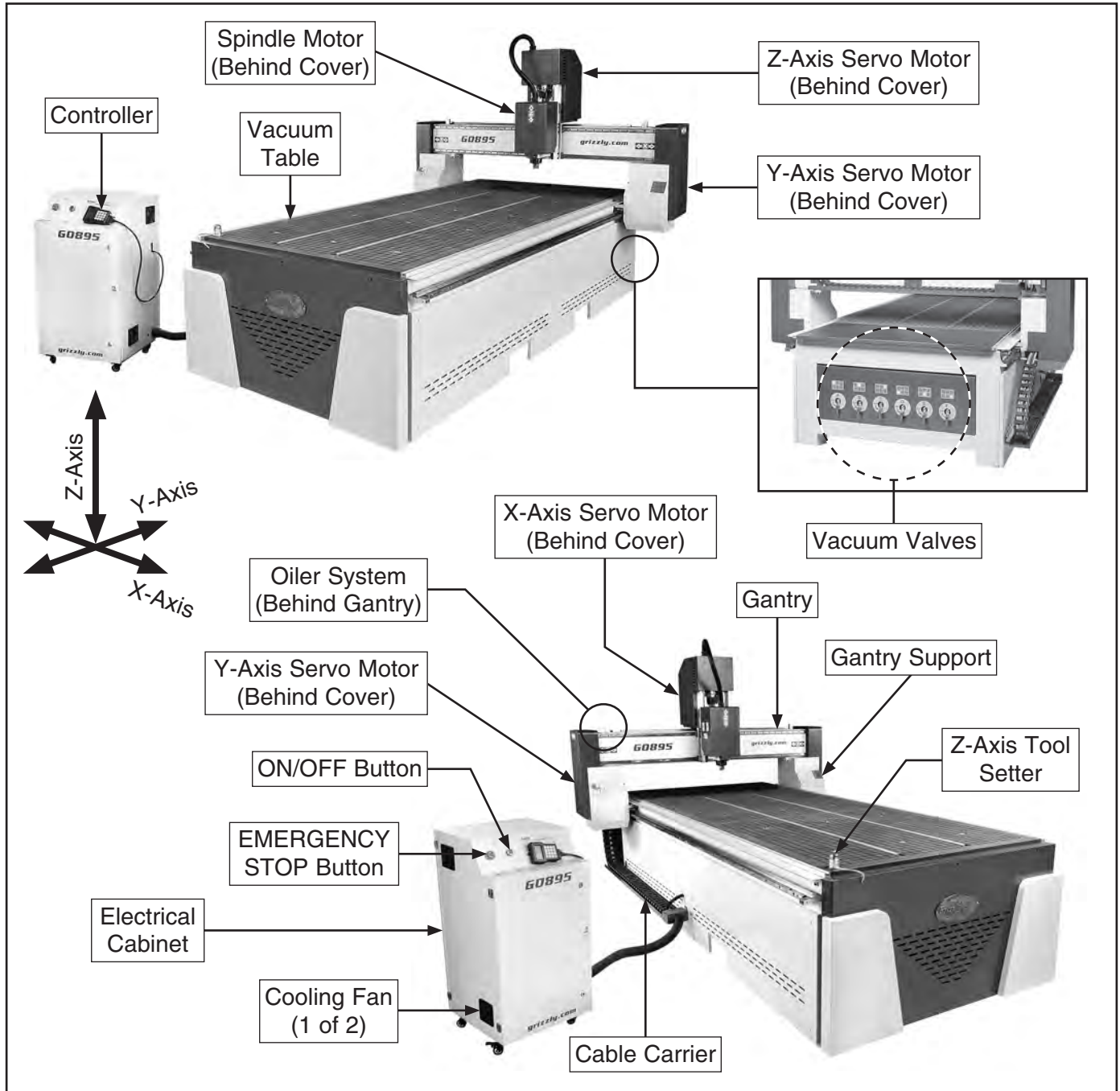
Manufacture Date

Serial Number



# Identification

Become familiar with the names and locations of the controls and features shown below to better understand the instructions in this manual.



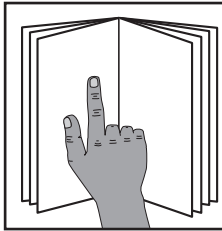


**⚠ WARNING**

To reduce your risk of serious injury, read this entire manual **BEFORE** using machine.



# Controls & Components



## **!WARNING**

To reduce your risk of serious injury, read this entire manual **BEFORE** using machine.

Refer to the following figures and descriptions to become familiar with the basic controls and components of this machine. Understanding these items and how they work will help you understand the rest of the manual and minimize your risk of injury when operating this machine.

## Power Controls

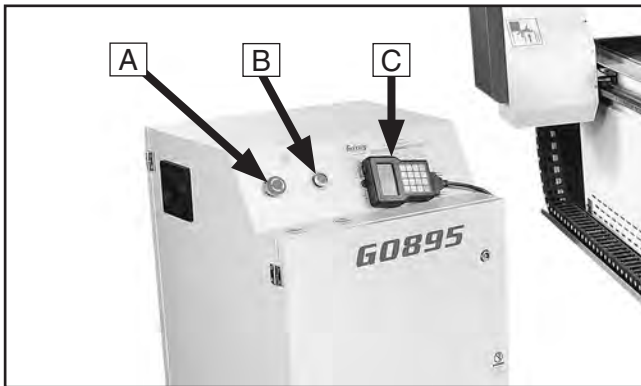


Figure 1. Power controls on electrical cabinet.

- A. EMERGENCY STOP Button:** Disables power to machine when in depressed position. To reset, twist button clockwise until it pops out.
- B. ON/OFF Button:** Enables/disables power to machine.
- C. RichAuto A11 Controller:** Controls machine functions.

## Spindle Assembly

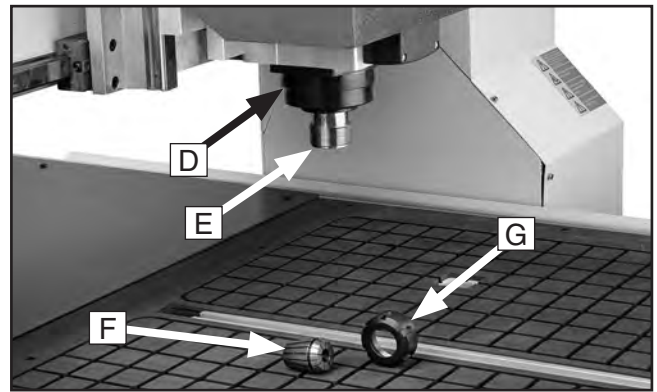


Figure 2. Spindle components.

- D. Spindle Motor:** A 6 HP motor capable of turning the cutting tool at 0–18,000 RPM.
- E. Spindle:** Motor shaft that holds the cutting tool, spindle nut, and collet.
- F. ER32 Collet:** Holds cutting tool.
- G. Spindle Nut:** Secures collet and cutting tool on spindle.

## Vacuum Table Components

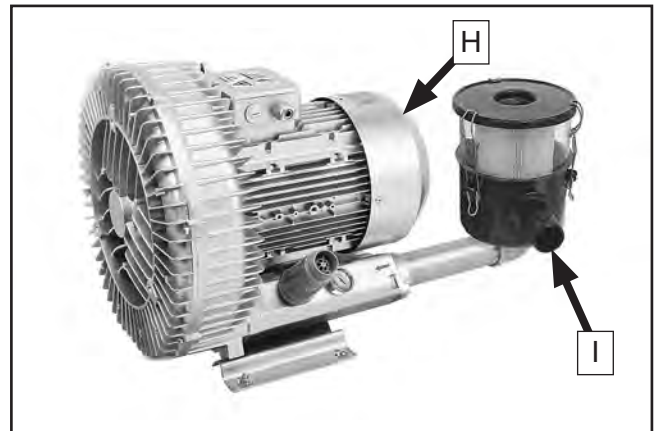


Figure 3. Vacuum pump.

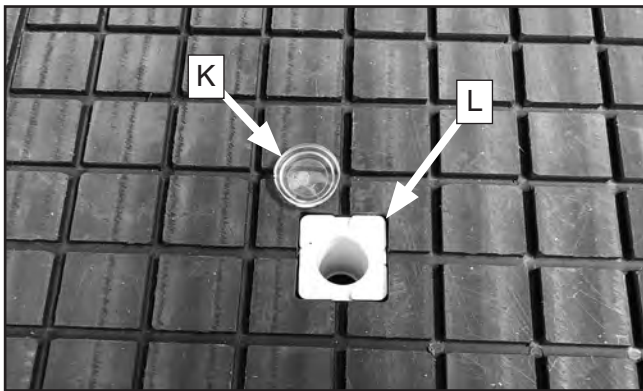
- H. Vacuum Pump Motor:** Creates suction to hold workpiece to table.
- I. Vacuum Pump Filter:** Cleans air as it is pulled through vacuum pump motor.





**Figure 4.** Vacuum valves at rear of machine.

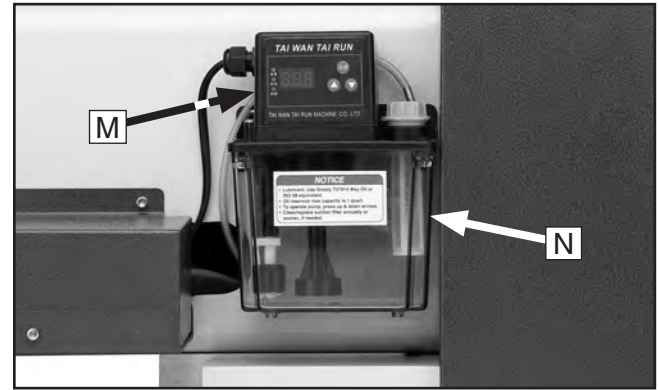
- J. Vacuum Valve (1 of 6):** Each valve enables/disables vacuum to one vacuum zone. Drawings above each valve indicate zone controlled by corresponding valve.



**Figure 5.** Vacuum port and plug.

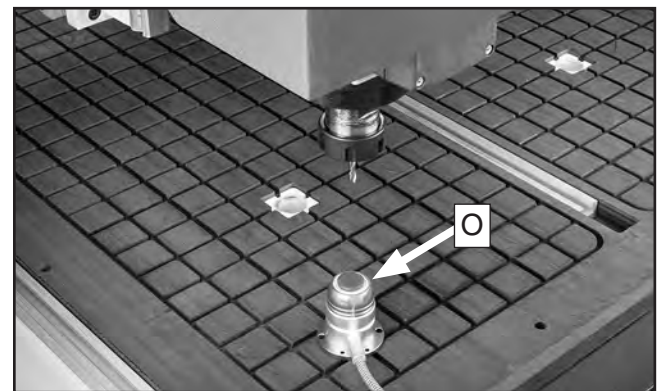
- K. Vacuum Plug:** Keeps debris out of unused ports. Remove plug when using port in that vacuum zone.
- L. Vacuum Port:** Holds workpiece to table to prevent workpiece movement during operation.

## Additional Components



**Figure 6.** Oiler components.

- M. Oiler System Control Panel:** Controls volume of lubricating oil on linear guide rails and ball screws.
- N. Oil Reservoir:** Holds one quart ISO 68 machine oil.



**Figure 7.** Z-axis tool setter.

- O. Z-Axis Tool Setter:** Establishes Z-axis origin based on surface tool setter is placed on.



# Controller Functions

The following commands are used for the basic navigation of the machine and controller. Additional functions can be accessed with multi-button commands. See **Using Advanced Controls** on **Page 44** for more information.

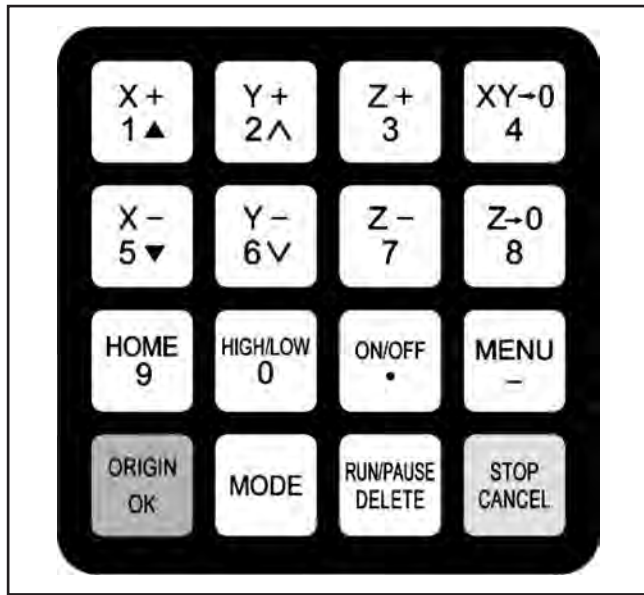


Figure 8. Controller buttons.

**X+** or **1**: Moves spindle along X-axis in positive direction. Scrolls menu up. Input for "1".

**Y+** or **2**: Moves gantry along Y-axis in positive direction. Increases feed rate during process. Scrolls sub-menu up. Input for "2".

**Z+** or **3**: Moves spindle along Z-axis in positive direction. Increases spindle speed during process. Input for "3".

**XY→0** or **4**: Sets work origin of X- and Y-axes (see **Page 40**). Input for "4".

**X-** or **5**: Moves spindle along X-axis in negative direction. Scrolls menu down. Input for "5".

**Y-** or **6**: Moves gantry along Y-axis in negative direction. Decreases feed rate during process. Scrolls sub-menu down. Input for "6".

**Z-** or **7**: Moves spindle along Z-axis in negative direction. Decreases spindle speed during process. Input for "7".

**Z→0** or **8**: Sets work origin of Z-axis (see **Page 40**). Input for "8".

**HOME** or **9**: Returns all axes to home position (see **Page 39**). Input for "9".

**HIGH/LOW** or **0**: In manual mode, selects high or low speed for axis movement. Input for "0".

**ON/OFF** or **(.)**: Turns spindle **ON** or **OFF**. Input for decimal point.

**MENU** or **(-)**: Enters setup menus. Input for the negative symbol.

**ORIGIN** or **OK**: Returns all axes to work origin (see **Page 40**). Confirms motions, inputs, or operations.

**MODE**: Toggles between three jogging modes: Continuous, Step, or Distance.

**RUN/PAUSE** or **DELETE**: Runs or pauses processing. Used to load a program from either the USB drive or internal memory.

**STOP** or **CANCEL**: Stops a running program. Cancels commands.





# Glossary Of Terms

---

The following is a list of common definitions, terms and phrases used throughout this manual as they relate to this CNC router and woodworking in general. Become familiar with these terms for assembling, adjusting or operating this machine. Your safety is VERY important to us at Grizzly!

**Axis:** Direction of movement. On a three-axis milling machine, axes are typically X (left-right), Y (front-back) & Z (up-down). Axis directions are described as positive or negative. On this machine, positive movement is defined as movement towards the rear (Y), right (X), and top (Z) of the working envelope.

**Ball End (Ball Nose):** A cutting tool that has a rounded cutting arc, where the arc diameter is equal to the cutting diameter.

**Ball Screw:** Drive system component. The ball screw is rotated by the servo motor and provides the means for moving the gantry and spindle along the axes.

**Bed:** The bed of the CNC consists of a welded steel frame, an extruded aluminum table top, and a tongue-and-groove table top with integrated T-slots.

**CAD:** Computer aided design. CAD software is used to create a digital model of a project.

**CAM:** Computer aided manufacturing. CAM software converts CAD models into a toolpath defined by G-code that CNC machines can interpret.

**Chip Load:** Chip load is the measure of the thickness of chips a tool will cut. Chip load is equal to:  $\text{Feed Rate} \div (\text{Spindle Speed} \times \text{Number of Flutes})$ .

**Climb Cut:** Cut that occurs when the rotation of the cutter moves in same direction as the workpiece.

**CNC:** Computer numerical control. Manufacturing controlled by a computer via coded instructions.

**Collet:** Metal collar that holds the cutting tool in place within a spindle nut.

**Conventional Cut:** Cut that occurs when the rotation of the cutter moves in opposite direction as the workpiece.

**Compression Bit:** A cutting tool with a combination of up and down shear cutting edges. Typically used for cutting laminate material to prevent tear-out on both sides of the sheet.

**Down-Cut Bit:** A cutting tool with edges that carve downward on the face of the tool-path. Reduces the potential for tear-out, but requires a slower feed rate.

**Dust Shoe:** An accessory that channels dust and debris directly from the cutting tool through an attached dust collection system.

**Dwell:** Part of an operation in which axis movement stops while the spindle is running and the cutter is within the workpiece. Dwells should be avoided as they can lead to tool and workpiece damage.

**End Mill:** A cutting tool with a straight end, typically with spiral flute(s). It creates a channel with a flat bottom perpendicular to the sides.

**Feed Rate:** The speed at which the cutting tool moves along a workpiece.

**Finish Cut:** A 3D toolpath that reduces or eliminates the irregular contours left by a rough cut.

**Flutes:** The cutting edges or inserts of a router bit or cutting tool.

**Flute Length:** The length of the cutting portion on a router bit or cutting tool.

**Form Bit:** A bit that carves a standard profile such as a roundover, ogee, or similar contour.



**Gantry:** The structure that straddles the bed and carries the spindle. It moves the full length of the bed along the Y-axis.

**G-Code:** A machine language that uses axis points and commands, which the machine uses to move and perform functions.

**Hold-Down:** A clamp used to firmly hold a workpiece or fixture to the table.

**Home Position:** A fixed point on the machine set with proximity switches. It is the machine zero point on all axes.

**Iron Pipe Size (IPS):** Pipe sizing system based on the inside diameter (ID) of pipe.

**Letter Address:** The first letter of a G-code command. Commands with similar functions are usually grouped within the same letter address. For example, the "G" letter address deals with preparatory functions that define the machine's operation, while the "M" letter address handles miscellaneous machine functions such as turning on spindles, pumps, and other auxiliary tasks.

**Origin:** User designated zero point for a workpiece from which the router will reference the positioning of all cutting.

**Plunge:** Distance on the Z-axis that the spindle and cutting tool moves toward, into, or along the workpiece.

**Pocket Toolpath:** A toolpath that creates a cavity in the horizontal surface of a workpiece.

**Post Processor:** Software function that formats G-code into machine-specific information.

**Profile Toolpath:** A toolpath that cuts along the profile of a set of vectors. Typically used to cut out the shape of a design.

**Proximity Switch:** A magnetic limit switch that is used to find home position.

**Rapid:** The maximum speed of each axis. Higher rapid rates decrease machining times.

**Rough Cut:** Toolpath where initial cut removes unwanted material, leaving a rough contour.

**Soft Limits:** Axis limits imposed by the work space boundaries and based on controller settings and the location of home. An "out of soft limits error" implies that there is not enough room to move in a designated direction based on the positioning of the workpiece.

**Spindle Speed:** Rotational speed of cutting tool (RPM).

**Spoilboard:** Sacrificial material placed under the workpiece that allows the cutting tool to go past the workpiece to ensure a full, clean cut without damaging the work table. Usually made of MDF.

**Servo Motor:** DC motor that allows for precise control of angular or linear position, velocity and acceleration.

**Surfacing:** The process of leveling the surface of a workpiece or spoilboard so it is perpendicular to the spindle.

**Toolpath:** User defined route that the cutter follows to machine a workpiece.

**Tool Deflection:** Tool deflection occurs when the spindle speed and feed rate exert sufficient force to deflect the cutting tool. Deflection leads to excessive wear and chatter, which can shorten tool life and leave unwanted tooling marks on the material.

**Tool Setter:** A device used to set the zero point (origin) for the Z-axis.

**Up-Cut Bit:** Cutting tool with edges that carve upward on the face of the toolpath. Removes chips from the material, but can pull the material off the bed and splinter the top edge.

**VFD:** Variable frequency drive that controls the speed (RPM) of the spindle. Enables the fine tuning of the spindle during the operation of a toolpath.

**Working Envelope:** The three-dimensional area that the spindle can travel within while cutting or milling.





# MACHINE DATA SHEET

Customer Service #: (570) 546-9663 · To Order Call: (800) 523-4777 · Fax #: (800) 438-5901

## MODEL G0895 4' X 8' CNC ROUTER

### Product Dimensions:

Weight ..... 2315 lbs.  
Width (side-to-side) x Depth (front-to-back) x Height ..... 85 x 124 x 72 in.  
Footprint (Length/Width) ..... 122-1/2 x 56-1/2 in.

### Shipping Dimensions:

Type ..... Plywood Crate  
Content ..... Machine, Controller, and Vacuum Pump  
Weight ..... 2535 lbs.  
Length x Width x Height ..... 132 x 91 x 78 in.  
Must Ship Upright ..... Yes

### Electrical:

Power Requirement ..... 220V, Single-Phase, 60 Hz  
Full-Load Current Rating ..... 20A  
Minimum Circuit Size ..... 30A  
Connection Type ..... Cord & Plug  
Power Cord Included ..... No  
Recommended Power Cord ..... "S"-Type, 3 Wires, 12 AWG, 300 VAC  
Plug Included ..... No  
Recommended Plug Type ..... L6-30  
Switch Type ..... ON/OFF Push Button w/E-stop  
Inverter (VFD) Type ..... Delta VFD055E23A  
Inverter (VFD) Size ..... 7.5HP  
Recommended Phase Converter (Vacuum Pump) ..... G7979

### Motor:

#### Spindle Motor

Type ..... Spindle  
Horsepower ..... 6 HP  
Voltage ..... 220V  
Phase ..... 3-Phase  
Amps ..... 16A  
Speed ..... 0 - 18,000 RPM  
Number Of Speeds ..... Variable  
Power Transfer ..... Direct

#### X-Axis Motor

Type ..... AC Servo  
Amps ..... 7.1A

#### Y-Axis Motor 1

Type ..... AC Servo  
Amps ..... 7.1A



**Y-Axis Motor 2**

Type..... AC Servo  
Amps ..... 7.1A

**Z-Axis Motor**

Type..... AC Servo  
Amps ..... 7.1A

**Main Specifications:**

**Axis Information**

X Axis Travel ..... 51 in.  
Y Axis Travel ..... 98.5 in.  
Z Axis Travel ..... 11 in.  
XY Rapid Speed..... 1500 IPM  
Z Rapid Speed ..... 400 IPM

**Construction**

Table..... Phenolic  
Body Construction ..... Steel  
Paint ..... Enamel

**Cutting Information**

Cutting Area ..... 51 x 98-1/2 in.  
Max Distance Spindle to Table ..... 7 in.  
Cutting Accuracy ..... +/-0.005 in.

**Table Information**

Table Length ..... 120-1/4 in.  
Table Width ..... 53-3/4 in.  
Number of Vacuum Zones ..... 6

**Other Related Information**

Number of Dust Ports..... 1  
Dust Port Size ..... 4 in.  
Number of Leveling Feet..... 8  
Collet Type ..... ER32

**Other Specifications:**

Country of Origin..... China  
Warranty..... 1 Year  
Approximate Assembly & Setup Time ..... 3 Hours  
Serial Number Location ..... ID Label

**Features:**

- Table with 6 Vacuum Zones and 4 T-Track
- Digital Display w/USB Port and Keypad
- Air Cooled Spindle
- Tool Setter

**Accessories:**

- 10 HP Vacuum Pump with Separate, Independent 3-Phase Power Supply
- Collets: 1/4" and 1/2"
- Wrenches: Open-End 30/32 and ER32 Collet Wrench
- T-Track Hold-Down Clamps (6)
- Vacuum Table Plugs



# SECTION 1: SAFETY

## For Your Own Safety, Read Instruction Manual Before Operating This Machine

The purpose of safety symbols is to attract your attention to possible hazardous conditions. This manual uses a series of symbols and signal words intended to convey the level of importance of the safety messages. The progression of symbols is described below. Remember that safety messages by themselves do not eliminate danger and are not a substitute for proper accident prevention measures. Always use common sense and good judgment.



Indicates an imminently hazardous situation which, if not avoided, **WILL** result in death or serious injury.



Indicates a potentially hazardous situation which, if not avoided, **COULD** result in death or serious injury.



Indicates a potentially hazardous situation which, if not avoided, **MAY** result in minor or moderate injury. It may also be used to alert against unsafe practices.

**NOTICE**

Alerts the user to useful information about proper operation of the machine to avoid machine damage.

## Safety Instructions for Machinery

### **WARNING**

**OWNER'S MANUAL.** Read and understand this owner's manual **BEFORE** using machine.

**TRAINED OPERATORS ONLY.** Untrained operators have a higher risk of being hurt or killed. Only allow trained/supervised people to use this machine. When machine is not being used, disconnect power, remove switch keys, or lock-out machine to prevent unauthorized use—especially around children. Make your workshop kid proof!

**DANGEROUS ENVIRONMENTS.** Do not use machinery in areas that are wet, cluttered, or have poor lighting. Operating machinery in these areas greatly increases the risk of accidents and injury.

**MENTAL ALERTNESS REQUIRED.** Full mental alertness is required for safe operation of machinery. Never operate under the influence of drugs or alcohol, when tired, or when distracted.

**ELECTRICAL EQUIPMENT INJURY RISKS.** You can be shocked, burned, or killed by touching live electrical components or improperly grounded machinery. To reduce this risk, only allow qualified service personnel to do electrical installation or repair work, and always disconnect power before accessing or exposing electrical equipment.

**DISCONNECT POWER FIRST.** Always disconnect machine from power supply **BEFORE** making adjustments, changing tooling, or servicing machine. This prevents an injury risk from unintended startup or contact with live electrical components.

**EYE PROTECTION.** Always wear ANSI-approved safety glasses or a face shield when operating or observing machinery to reduce the risk of eye injury or blindness from flying particles. Everyday eyeglasses are **NOT** approved safety glasses.



## **WARNING**

**WEARING PROPER APPAREL.** Do not wear clothing, apparel or jewelry that can become entangled in moving parts. Always tie back or cover long hair. Wear non-slip footwear to reduce risk of slipping and losing control or accidentally contacting cutting tool or moving parts.

**HAZARDOUS DUST.** Dust created by machinery operations may cause cancer, birth defects, or long-term respiratory damage. Be aware of dust hazards associated with each workpiece material. Always wear a NIOSH-approved respirator to reduce your risk.

**HEARING PROTECTION.** Always wear hearing protection when operating or observing loud machinery. Extended exposure to this noise without hearing protection can cause permanent hearing loss.

**REMOVE ADJUSTING TOOLS.** Tools left on machinery can become dangerous projectiles upon startup. Never leave chuck keys, wrenches, or any other tools on machine. Always verify removal before starting!

**USE CORRECT TOOL FOR THE JOB.** Only use this tool for its intended purpose—do not force it or an attachment to do a job for which it was not designed. Never make unapproved modifications—modifying tool or using it differently than intended may result in malfunction or mechanical failure that can lead to personal injury or death!

**AWKWARD POSITIONS.** Keep proper footing and balance at all times when operating machine. Do not overreach! Avoid awkward hand positions that make workpiece control difficult or increase the risk of accidental injury.

**CHILDREN & BYSTANDERS.** Keep children and bystanders at a safe distance from the work area. Stop using machine if they become a distraction.

**GUARDS & COVERS.** Guards and covers reduce accidental contact with moving parts or flying debris. Make sure they are properly installed, undamaged, and working correctly **BEFORE** operating machine.

**FORCING MACHINERY.** Do not force machine. It will do the job safer and better at the rate for which it was designed.

**NEVER STAND ON MACHINE.** Serious injury may occur if machine is tipped or if the cutting tool is unintentionally contacted.

**STABLE MACHINE.** Unexpected movement during operation greatly increases risk of injury or loss of control. Before starting, verify machine is stable and mobile base (if used) is locked.

**USE RECOMMENDED ACCESSORIES.** Consult this owner's manual or the manufacturer for recommended accessories. Using improper accessories will increase the risk of serious injury.

**UNATTENDED OPERATION.** To reduce the risk of accidental injury, turn machine **OFF** and ensure all moving parts completely stop before walking away. Never leave machine running while unattended.

**MAINTAIN WITH CARE.** Follow all maintenance instructions and lubrication schedules to keep machine in good working condition. A machine that is improperly maintained could malfunction, leading to serious personal injury or death.

**DAMAGED PARTS.** Regularly inspect machine for damaged, loose, or mis-adjusted parts—or any condition that could affect safe operation. Immediately repair/replace **BEFORE** operating machine. For your own safety, **DO NOT** operate machine with damaged parts!

**MAINTAIN POWER CORDS.** When disconnecting cord-connected machines from power, grab and pull the plug—**NOT** the cord. Pulling the cord may damage the wires inside. Do not handle cord/plug with wet hands. Avoid cord damage by keeping it away from heated surfaces, high traffic areas, harsh chemicals, and wet/damp locations.

**EXPERIENCING DIFFICULTIES.** If at any time you experience difficulties performing the intended operation, stop using the machine! Contact our Technical Support at (570) 546-9663.



# Additional Safety for CNC Routers

## **WARNING**

You can be seriously injured or killed by getting clothing, jewelry, or long hair entangled with rotating cutter/spindle. You can be severely cut or have fingers amputated from contact with rotating cutters. You can be blinded or struck by broken cutting tools, wood chips, improperly secured workpieces, or adjustment tools thrown from rotating spindle with great force. To reduce risk of serious injury when operating this machine, heed and understand the following:

**UNDERSTAND ALL CONTROLS.** Make sure you understand the function and proper use of all controls before starting. This will help you avoid making mistakes that result in serious injury.

**AVOIDING ENTANGLEMENT.** DO NOT wear loose clothing, gloves, or jewelry, and tie back long hair. Keep all guards in place, secure, and properly operating. Always allow spindle to stop on its own. DO NOT stop spindle using your hand or any other object.

**WEAR EYE PROTECTION.** Always wear safety glasses. This provides protection for your eyes from wood chips or broken cutting tools.

**USE CORRECT SPINDLE SPEED.** Use proper speeds and feeds for each size and type of cutting tool as recommended by tool manufacturer. This helps avoid injury risk from tool breakage during operation and ensures best cutting results.

**FIRE HAZARD.** To reduce risk of fire, always use proper feeds and speeds for cutting tool and workpiece type. Avoid operations that dwell in one place. Be aware of signs of fire and keep fire extinguisher nearby. Chips and dust collection can disguise embers and smoke. Prepare a fire safety plan and ensure it is practiced by all operators. Never operate machine unattended unless workspace has a lights-out fire prevention system.

**INSPECT CUTTING TOOL.** Inspect cutting tools for sharpness, chips, or cracks before each use. Replace dull, chipped, or cracked cutting tools immediately. Do not use damaged tools as they are likely to break apart and could hit user with great speed and force.

**PROPERLY SECURE CUTTER.** Firmly secure cutting tool so it does not fly out of spindle during operation.

**PROPERLY COLLECT DUST.** Only use dust collector to clear chips while spindle is turning. DO NOT clear chips by hand when cleaning. Only use a brush or shop vacuum when spindle/axes are NOT turning or moving.

**SECURE WORKPIECE TO TABLE.** Secure workpiece to table so workpiece cannot unexpectedly move or spin during operation. NEVER hold workpiece by hand during operation.

**PROPERLY MAINTAIN MACHINE.** Keep machine in proper working condition to help ensure that it functions safely and all guards and other components work as intended. Perform routine inspections and all required maintenance. Never operate machine with damaged or worn parts that can break or result in unexpected movement during operation.

**DISCONNECT POWER FIRST.** To reduce risk of electrocution or injury from unexpected startup, make sure CNC router is turned **OFF**, disconnected from power, and all moving parts are completely stopped before changing cutting tools or performing any inspection, adjustment, or maintenance procedure.

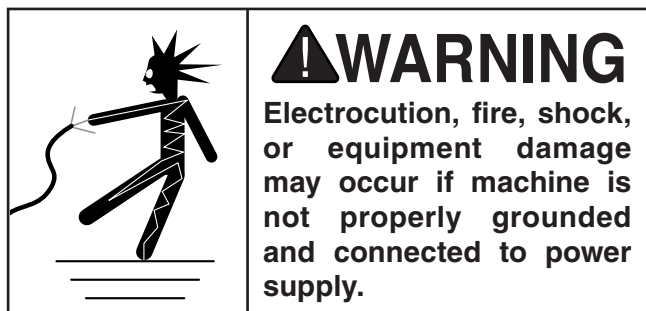
**REMOVE SPINDLE TOOLS.** Always remove wrenches and other tools used on the spindle immediately after use. This will prevent them from being thrown by the spindle upon startup.



# SECTION 2: POWER SUPPLY

## Availability

Before installing the machine, consider the availability and proximity of the required power supply circuit. If an existing circuit does not meet the requirements for this machine, a new circuit must be installed. To minimize the risk of electrocution, fire, or equipment damage, installation work and electrical wiring must be done by an electrician or qualified service personnel in accordance with all applicable codes and standards.



## Full-Load Current Rating

The full-load current rating is the amperage a machine draws at 100% of the rated output power. On machines with multiple motors, this is the amperage drawn by the largest motor or sum of all motors and electrical devices that might operate at one time during normal operations.

**Model G0895 at 220V, 1-Ph ..... 20 Amps**  
**Vacuum Pump at 220V, 3-Ph ..... 21 Amps**

The full-load current is not the maximum amount of amps that the machine will draw. If the machine is overloaded, it will draw additional amps beyond the full-load rating.

If the machine is overloaded for a sufficient length of time, damage, overheating, or fire may result—especially if connected to an undersized circuit. To reduce the risk of these hazards, avoid overloading the machine during operation and make sure it is connected to a power supply circuit that meets the specified circuit requirements.

## Circuit Information

A power supply circuit includes all electrical equipment between the breaker box or fuse panel in the building and the machine. The power supply circuit used for this machine must be sized to safely handle the full-load current drawn from the machine for an extended period of time. (If this machine is connected to a circuit protected by fuses, use a time delay fuse marked D.)



**Note:** *Circuit requirements in this manual apply to a dedicated circuit—where only one machine will be running on the circuit at a time. If machine will be connected to a shared circuit where multiple machines may be running at the same time, consult an electrician or qualified service personnel to ensure circuit is properly sized for safe operation.*

## Grounding Instructions

This machine **MUST** be grounded. In the event of certain malfunctions or breakdowns, grounding reduces the risk of electric shock by providing a path of least resistance for electric current.

Improper connection of the equipment-grounding wire can result in a risk of electric shock. The wire with green insulation (with or without yellow stripes) is the equipment-grounding wire. If repair or replacement of the power cord or plug is necessary, do not connect the equipment-grounding wire to a live (current carrying) terminal.

Check with a qualified electrician or service personnel if you do not understand these grounding requirements, or if you are in doubt about whether the tool is properly grounded. If you ever notice that a cord or plug is damaged or worn, disconnect it from power, and immediately replace it with a new one.



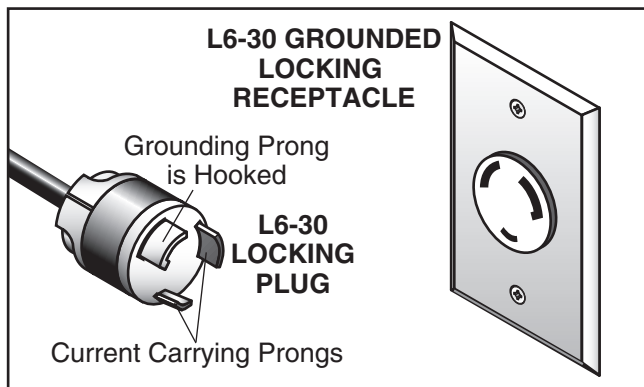


## Model G0895 Circuit Requirements

This machine is prewired to operate on a power supply circuit that has a verified ground and meets the following requirements:

**Nominal Voltage** ..... 220V, 230V, 240V  
**Cycle** ..... 60 Hz  
**Phase** ..... Single-Phase  
**Power Supply Circuit** ..... 30 Amps  
**Plug/Receptacle** ..... NEMA L6-30  
**Cord** ..... "S"-Type, 3-Wire, 12 AWG, 300 VAC

This power cord and plug used on this machine must have an equipment-grounding wire and grounding prong. The plug must only be inserted into a matching receptacle (outlet) that is properly installed and grounded in accordance with all local codes and ordinances (see figure below).



**Figure 9.** Typical L6-30 plug and receptacle.

**⚠ CAUTION**

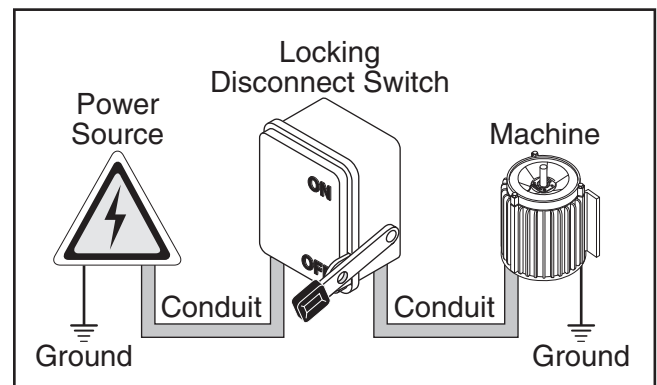
**No adapter should be used with plug. If plug does not fit available receptacle, or if machine must be reconnected for use on a different type of circuit, reconnection must be performed by an electrician or qualified service personnel, and it must comply with all local codes and ordinances.**

## Vacuum Pump Circuit Requirements

This machine is prewired to operate on a power supply circuit that has a verified ground and meets the following requirements:

**Nominal Voltage** ..... 220V, 230V, 240V  
**Cycle** ..... 60 Hz  
**Phase** ..... 3-Phase  
**Power Supply Circuit** ..... 30 Amps  
**Connection** ..... Hardwire with Locking Switch

A permanently connected (hardwired) power supply is typically installed with wires running through mounted and secured conduit. A disconnecting means, such as a locking switch (see following figure), must be provided to allow the machine to be disconnected (isolated) from the power supply when required. This installation must be performed by an electrician in accordance with all applicable electrical codes and ordinances.



**Figure 10.** Typical setup of a permanently connected machine.

In the event of a malfunction or breakdown, grounding provides a path of least resistance for electrical current to reduce the risk of electric shock. A permanently connected machine must be connected to a grounded metal permanent wiring system; or to a system having an equipment-grounding conductor. All grounds must be verified and rated for the electrical requirements of the machine. Improper grounding can increase the risk of electric shock!



## **!WARNING**

**Serious injury could occur if you connect machine to power before completing setup process. DO NOT connect to power until instructed later in this manual.**

### **Extension Cords**

We do not recommend using an extension cord with this machine. If you must use an extension cord, only use it if absolutely necessary and only on a temporary basis.

Extension cords cause voltage drop, which can damage electrical components and shorten motor life. Voltage drop increases as the extension cord size gets longer and the gauge size gets smaller (higher gauge numbers indicate smaller sizes).

Any extension cord used with this machine must be in good condition and contain a ground wire and matching plug/receptacle. Additionally, it must meet the following size requirements:

**Model G0895..... 12 AWG, 50ft. or less**  
**Vacuum Pump..... N/A (Hardwired)**

### **Phase Converters**

DO NOT use a static phase converter to create 3-phase power—it can quickly decrease the life of electrical components on this machine. If you must use a phase converter, only use a rotary or digital phase converter.

You can purchase the Model G7979, a compatible rotary phase converter, from our website at [www.grizzly.com](http://www.grizzly.com).

#### **G7979—20 HP Rotary Phase Converter**

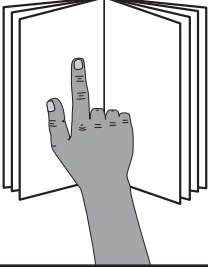
This rotary phase converter allows you to operate 3-phase machinery from a single-phase power source at 100% power and 95% efficiency.



**Figure 11.** Model G7979 20 HP Rotary Phase Converter.




# SECTION 3: SETUP



**⚠️ WARNING**  
 This machine presents serious injury hazards to untrained users. Read through this entire manual to become familiar with the controls and operations before starting the machine!



**⚠️ WARNING**  
 Wear safety glasses during the entire setup process!



**⚠️ WARNING**  
**HEAVY LIFT!**  
 Straining or crushing injury may occur from improperly lifting machine or some of its parts. To reduce this risk, use a forklift (or other lifting equipment) rated for weight of this machine.

**⚠️ CAUTION**  
 No list of safety guidelines can be complete. Every shop environment is different. Always consider safety first, as it applies to your individual working conditions. Use this and other machinery with caution and respect. Failure to do so could result in serious personal injury, damage to equipment, or poor work results.

## Needed for Setup

The following items are needed, but not included, for the setup/assembly of this machine.

Description	Qty
• Forklift or Hoist w/Lifting Straps (rated for at least 3200 lbs.).....	1
• Additional People .....	2
• Safety Glasses (for each person).....	1
• Crowbar .....	1
• Level .....	1
• Open-End Wrenches 8mm.....	2
• Dust Collection System .....	1
• Dust Hose 4" .....	1
• Hose Clamps 4" .....	2
• Scissors.....	1
• PTFE Thread Sealant Tape.....	As Needed

## Unpacking

This machine was carefully packaged for safe transport. When unpacking, separate all enclosed items from packaging materials and inspect them for shipping damage. ***If items are damaged, please call us immediately at (570) 546-9663.***

**IMPORTANT:** Save all packaging materials until you are completely satisfied with the machine and have resolved any issues between Grizzly or the shipping agent. ***You MUST have the original packaging to file a freight claim. It is also extremely helpful if you need to return your machine later.***



# Inventory

The following is a list of items shipped with your machine. Before beginning setup, lay these items out and inventory them.

If any non-proprietary parts are missing (e.g. a nut or a washer), we will gladly replace them; or for the sake of expediency, replacements can be obtained at your local hardware store.

Crate (Not Shown)	Qty
A. CNC Router.....	1
B. Vacuum Hose 2".....	1

Box 1 (Figure 12)	Qty
C. RichAuto A11 Controller .....	1
D. Hose Clamps 2" .....	2
E. 50-Pin Cable .....	1
F. ER32 Collet 1/4".....	1
G. ER32 Collet 1/2".....	1
H. Spindle Nut.....	1
I. Dust Shoe.....	1
J. Cap Screw M5-.8 x 30 .....	1
K. Dust Shoe Bracket .....	1
L. Hex Nut M5-.8 .....	1
M. Gasket Tube .....	68 ft.
N. Open-End Wrench 30/32mm .....	1
O. ER32 Collet Wrench.....	1
P. USB-B Cable.....	1
Q. T-Slot Bolts M8-1.25 x 80 .....	6
R. Clamp Plates .....	6
S. Flat Washers 8mm .....	6
T. Wing Nuts M8-1.25.....	6
U. Hex Bolts M8-1.25 x 40 .....	6

***NOTICE***

If you cannot find an item on this list, carefully check around/inside the machine and packaging materials. Often, these items get lost in packaging materials while unpacking or they are pre-installed at the factory.

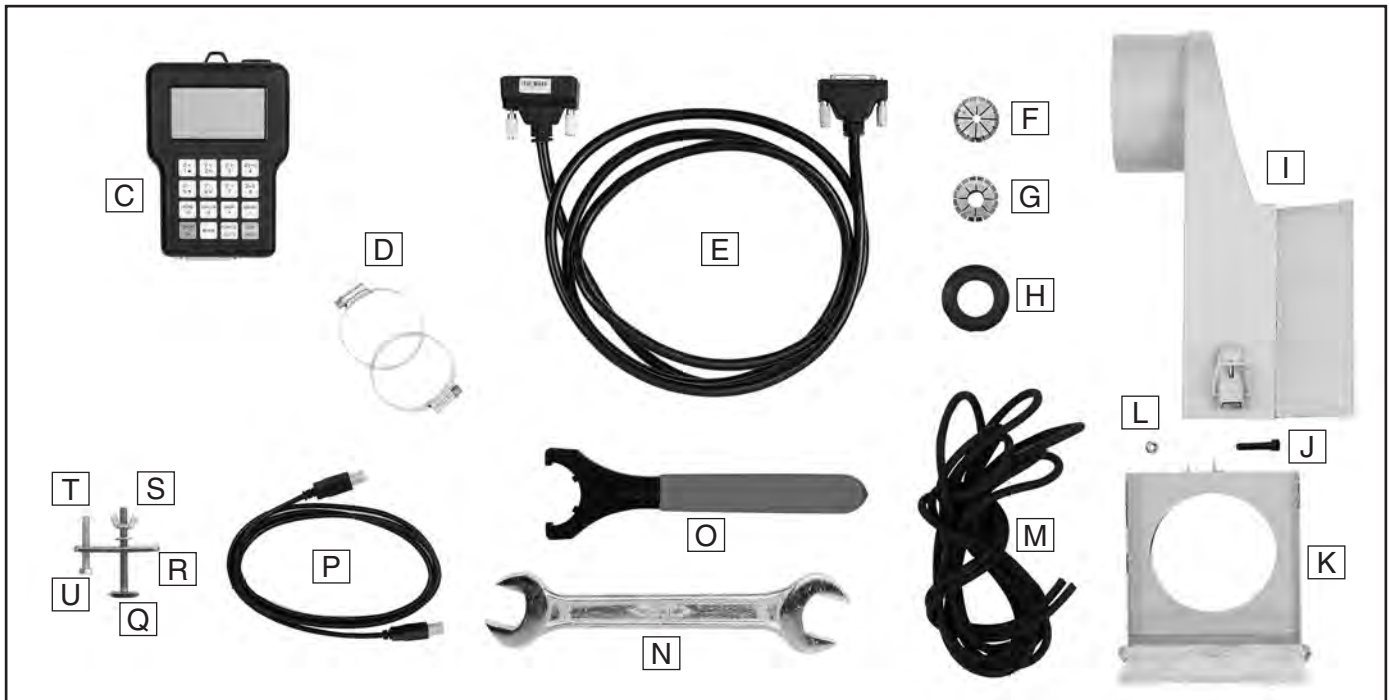
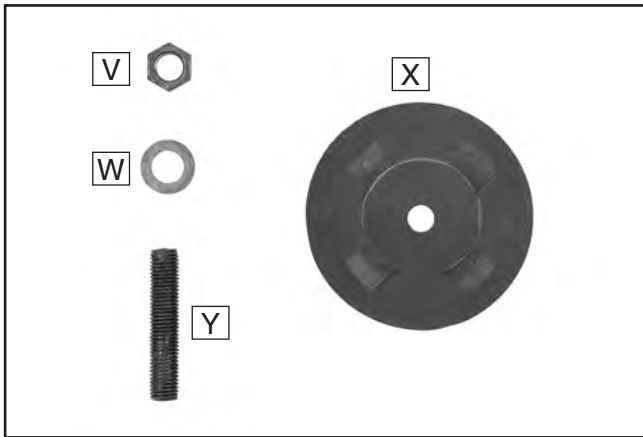


Figure 12. Model G0895 inventory.

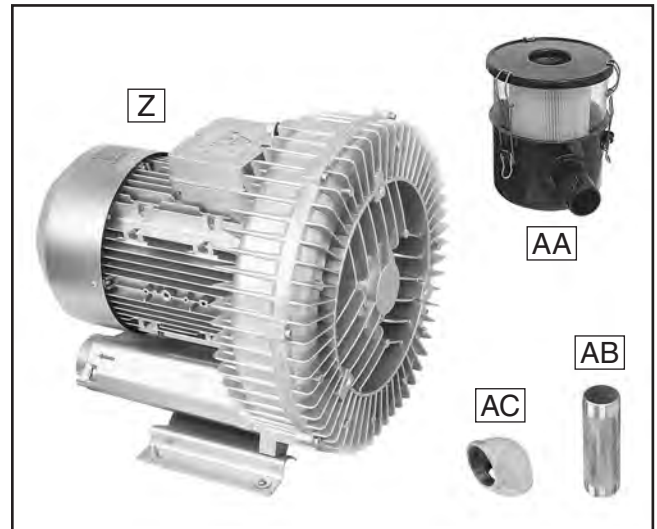


<b>Box 2 (Figure 13)</b>	<b>Qty</b>
<b>V.</b> Hex Nuts M20-2.5 .....	6
<b>W.</b> Flat Washers 20mm .....	6
<b>X.</b> Leveling Feet.....	6
<b>Y.</b> Threaded Rods M20-2.5 x 100 .....	6



**Figure 13.** Foot components.

<b>Box 3 (Figure 14)</b>	<b>Qty</b>
<b>Z.</b> Vacuum Pump .....	1
<b>AA.</b> Vacuum Filter .....	1
<b>AB.</b> Threaded Pipe 2½ IPS.....	1
<b>AC.</b> 90° Elbow Fitting .....	1



**Figure 14.** Vacuum pump components.



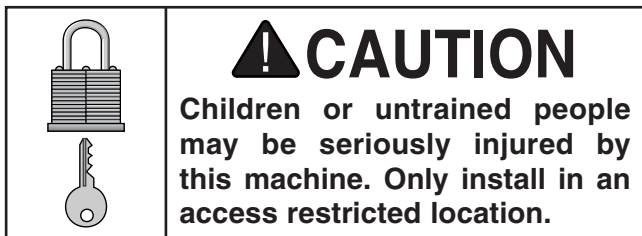
# Site Considerations

## Weight Load

Refer to the **Machine Data Sheet** for the weight of your machine. Make sure that the surface upon which the machine is placed will bear the weight of the machine, additional equipment that may be installed on the machine, and the heaviest workpiece that will be used. Additionally, consider the weight of the operator and any dynamic loading that may occur when operating the machine.

## Space Allocation

Consider the largest size of workpiece that will be processed through this machine and provide enough space around the machine for adequate operator material handling or the installation of auxiliary equipment. With permanent installations, leave enough space around the machine to open or remove doors/covers as required by the maintenance and service described in this manual. **See below for required space allocation.**



## Physical Environment

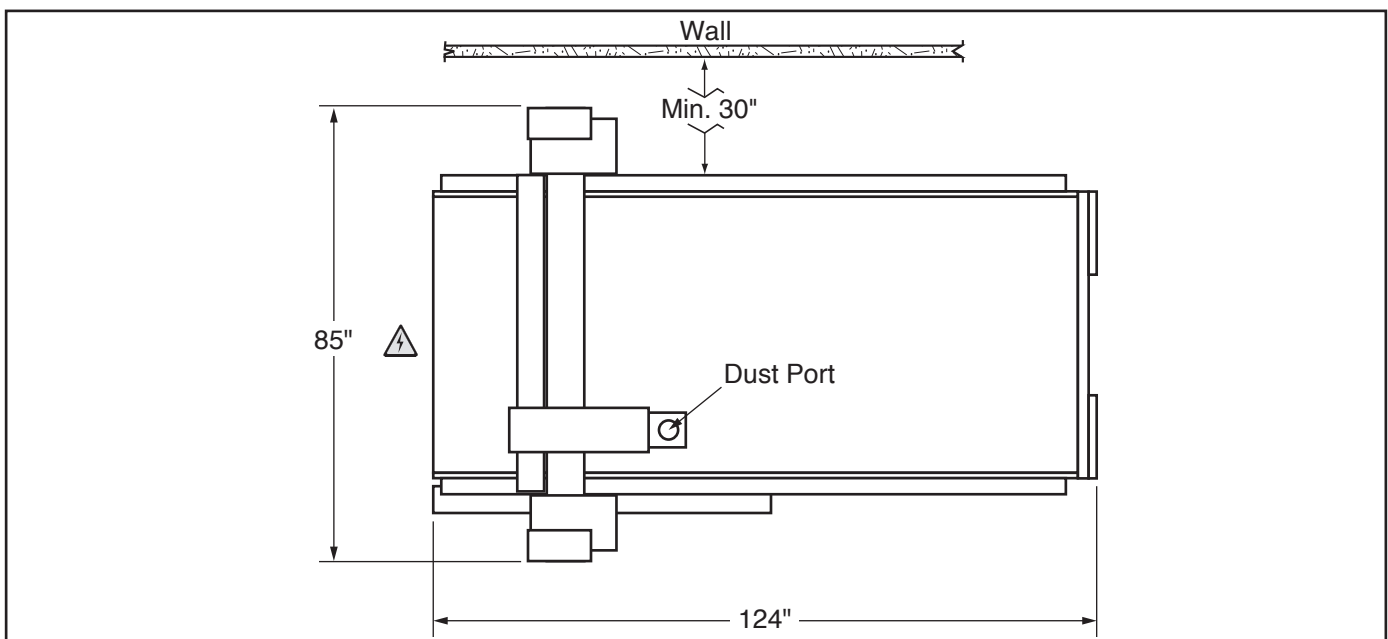
The physical environment where the machine is operated is important for safe operation and longevity of machine components. For best results, operate this machine in a dry environment that is free from excessive moisture, hazardous chemicals, airborne abrasives, or extreme conditions. Extreme conditions for this type of machinery are generally those where the ambient temperature range exceeds 41°–104°F; the relative humidity range exceeds 20%–95% (non-condensing); or the environment is subject to vibration, shocks, or bumps.

## Electrical Installation

Place this machine near an existing power source. Make sure all power cords are protected from traffic, material handling, moisture, chemicals, or other hazards. Make sure to leave enough space around machine to disconnect power supply or apply a lockout/tagout device, if required.

## Lighting

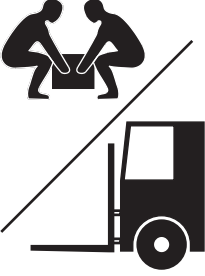
Lighting around the machine must be adequate enough that operations can be performed safely. Shadows, glare, or strobe effects that may distract or impede the operator must be eliminated.



**Figure 15.** Minimum working clearances.



# Lifting & Placing CNC Router



**⚠ WARNING**  
**HEAVY LIFT!**

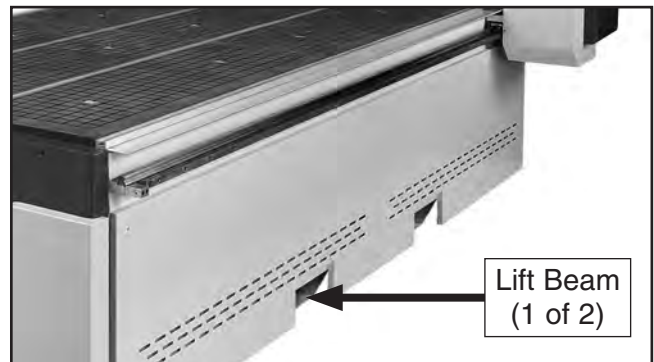
Straining or crushing injury may occur from improperly lifting machine or some of its parts. To reduce this risk, get help from other people and use a forklift (or other lifting equipment) rated for weight of this machine.

Do not attempt to lift or move this machine without using the proper lifting equipment (such as forklift or hoist) or the necessary assistance from other people. Each piece of lifting equipment must be rated for **at least 3200 lbs.** to support dynamic loads that may be applied while lifting. Refer to **Needed for Setup** on **Page 17** for complete list of needed equipment for setup and installation.

Tools Needed	Qty
Forklift or Hoist (rated for 3200 lbs.).....	1
Lifting Straps .....	As Needed

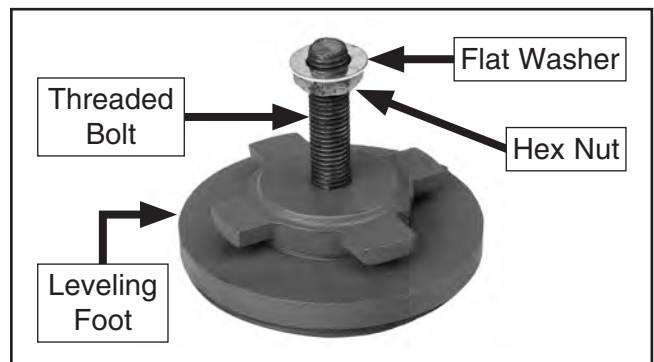
## To lift and place router:

1. Move crate to machine work site.
2. Remove crate top and sides, small items inside crate, and blocks on machine base.
3. With help from additional people, lift vacuum pump box and set aside.
4. Lift machine by lift beams on underside of machine body (see **Figure 16**) with forklift or hoist. Only lift machine enough to clear pallet, then move pallet out of the way.



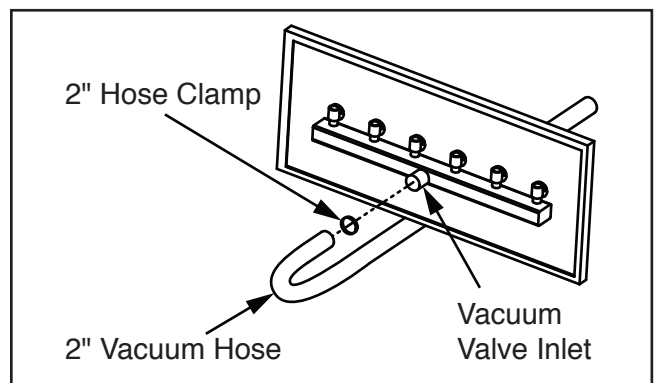
**Figure 16.** Lift beams under machine body.

5. Have an additional person assemble leveling feet and tighten hex nuts halfway on threaded bolts, then install threaded bolts in mounting holes on bottom of machine (see **Figure 17**).



**Figure 17.** Leveling foot components.

6. Have an additional person connect 2" vacuum hose to vacuum valve inlet with 2" hose clamp. Then route hose out from under rear of machine (see **Figure 18**).



**Figure 18.** Hose connection at rear of machine shown from underneath table.

7. Lower machine on leveling feet and proceed to **Leveling** on **Page 22**.



# Leveling

## **NOTICE**

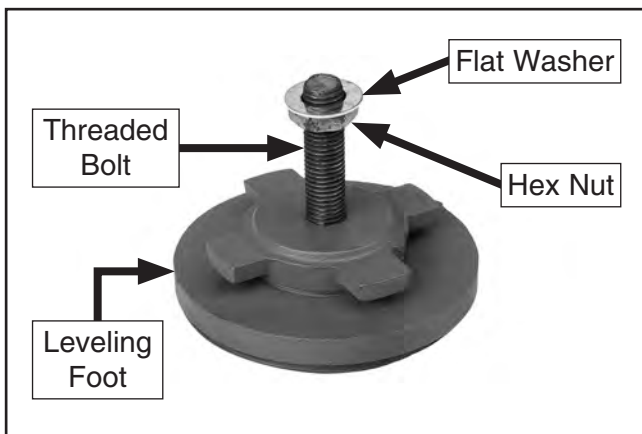
For accurate cutting results and to prevent gradual warping of the table and frame, machine **MUST** be leveled from side to side and from front to back on both ends. Check the table and frame 24 hours after installation, two weeks after that, and then annually to make sure they remain level.

Leveling machinery helps precision components remain straight and flat during the lifespan of the machine. Components on a machine that are not level may slowly twist due to the dynamic loads placed on the machine during operation.

### To level router:

1. Place level on table and align to either X- or Y-axis.
2. Rotate each leveling foot to level machine (see **Figure 19**). Tighten hex nut against mounting hole to secure.

**Note:** Rotate leveling foot clockwise to raise machine, and rotate counterclockwise to lower machine.



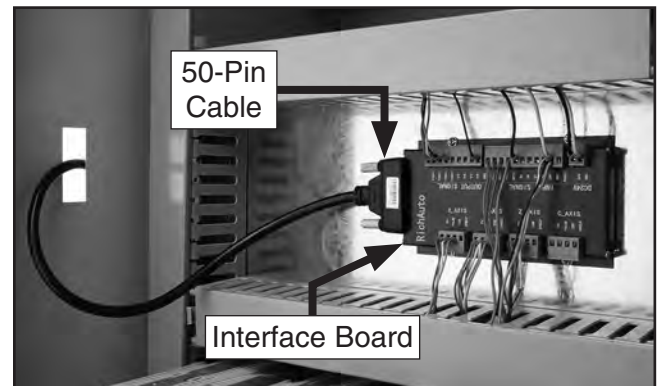
**Figure 19.** Leveling foot components.

# Connecting Controller

The controller connects to the interface board in the electrical cabinet via a 50-pin cable.

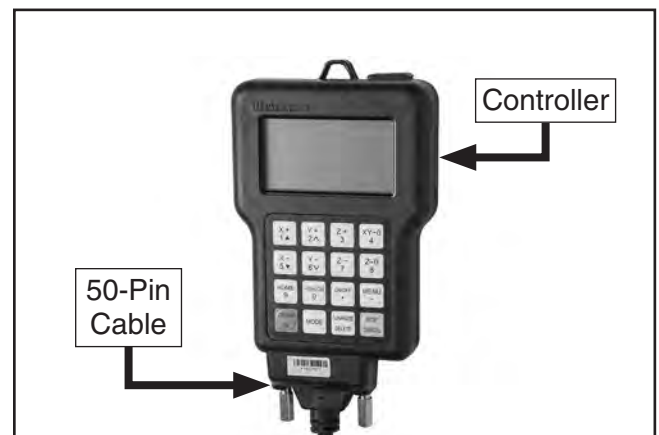
### To connect controller:

1. Connect 50-pin cable to interface board in electrical cabinet, then route cable through back of cabinet (see **Figure 20**).



**Figure 20.** Interface board connections.

2. Connect opposite end of 50-pin cable to controller (see **Figure 21**).

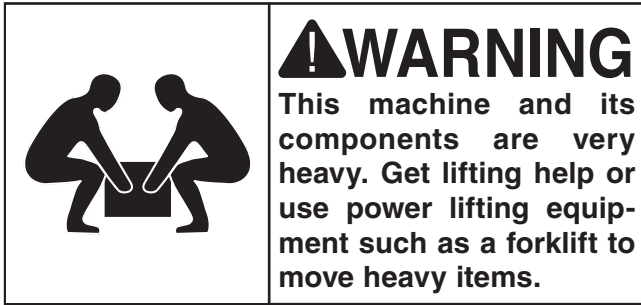


**Figure 21.** Controller connected to cable.





# Lifting & Mounting Vacuum Pump



**NOTICE**  
The vacuum pump can be mounted horizontally or vertically as long as the mounting surface can support the full weight of the pump. Grizzly Industrial recommends concrete floors for horizontal mounting, and steel I-beams for vertical mounting.

DO NOT attempt to lift or move the vacuum pump without assistance from other people.

## To lift and mount vacuum pump:

1. Move vacuum pump box to work site mounting location.
2. Remove box cover, small items inside box, and any hardware securing vacuum pump to pallet base.
3. With help from an assistant, lift vacuum pump off pallet base, move pallet out of the way, then place vacuum pump on concrete floor.
4. Secure vacuum pump to concrete floor as instructed in **Anchoring Vacuum Pump to Floor** on this page.

# Anchoring Vacuum Pump to Floor

Number of Mounting Holes ..... 4  
Diameter of Mounting Hardware..... 1/2"

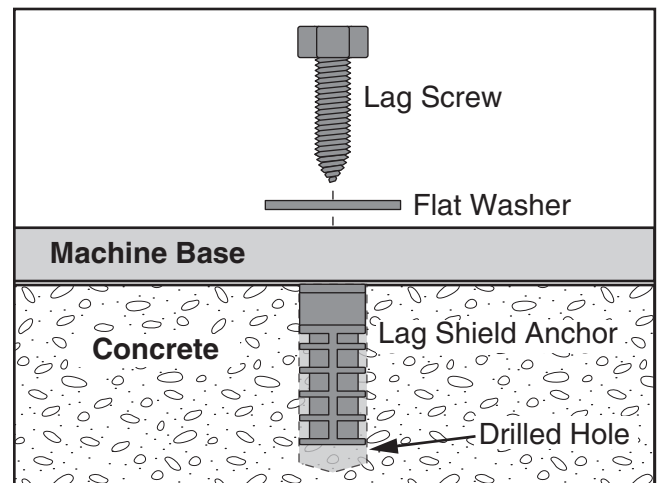
Anchoring machinery to the floor prevents tipping or shifting and reduces vibration that may occur during operation, resulting in a machine that runs slightly quieter and feels more solid.

If the machine will be installed in a commercial or workplace setting, or if it is permanently connected (hardwired) to the power supply, local codes may require that it be anchored to the floor.

If not required by any local codes, fastening the machine to the floor is an optional step. If you choose not to do this with your machine, we recommend placing it on machine mounts, as these provide an easy method for leveling and they have vibration-absorbing pads.

## Anchoring to Concrete Floors

Lag shield anchors with lag screws (see below) are a popular way to anchor machinery to a concrete floor, because the anchors sit flush with the floor surface, making it easy to unbolt and move the machine later, if needed. However, anytime local codes apply, you **MUST** follow the anchoring methodology specified by the code.



**Figure 22.** Popular method for anchoring machinery to a concrete floor.

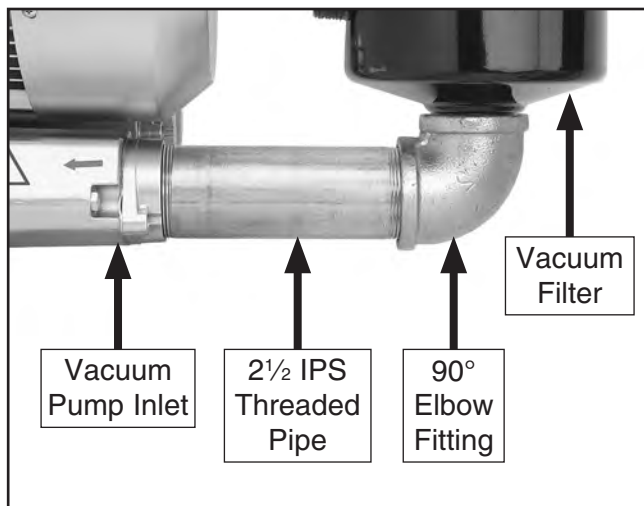


# Installing Vacuum Pump

Threaded pipe is provided to connect the vacuum pump to the vacuum pump air filter, and the air filter to the vacuum hose that runs to the vacuum table. Wrap pipe threads with PTFE tape (plumber's tape) to seal all pipe connections.

## To install vacuum pump:

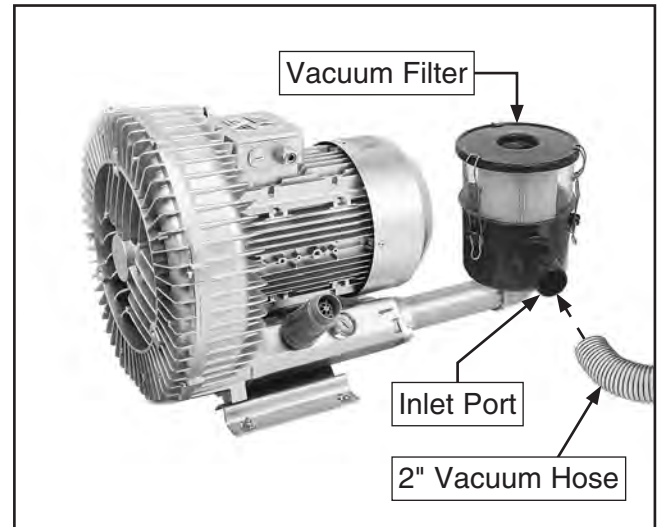
1. Connect 90° elbow fitting to 2½ IPS threaded pipe (see **Figure 23**).
2. Connect 2½ IPS threaded pipe to vacuum pump inlet (see **Figure 23**).
3. Connect vacuum filter to 90° elbow fitting (see **Figure 23**).



**Figure 23.** Pump to filter connection.

4. Connect 2" vacuum hose from machine to vacuum filter inlet port and secure with 2" hose clamp (see **Figure 24**).

**IMPORTANT:** Verify 2" hose clamp and end of vacuum hose are over smooth portion of vacuum filter inlet port before securing to prevent air leaks during operation.



**Figure 24.** Vacuum filter inlet port location.

## **NOTICE**

**DO NOT** connect vacuum pump to power without verifying junction box terminal configuration (see Page 27). Operating vacuum pump in incorrect configuration can cause severe machine damage.



# Dust Collection

## ⚠ CAUTION

This machine creates a lot of wood chips/dust during operation. Breathing airborne dust on a regular basis can result in permanent respiratory illness. Reduce your risk by wearing a respirator and capturing the dust with a dust-collection system.

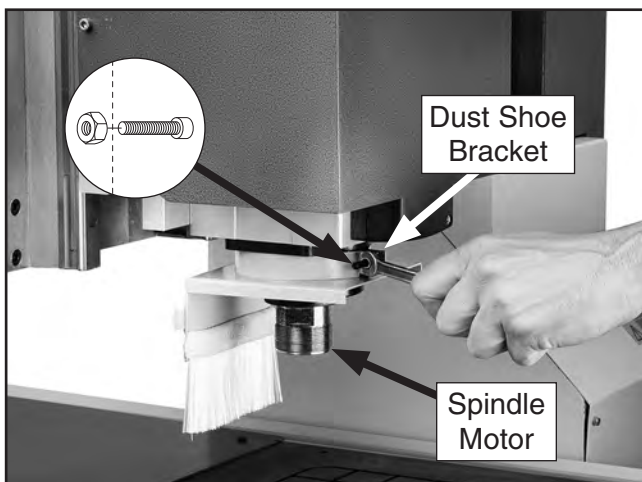
### Minimum CFM at Dust Port: 400 CFM

Do not confuse this CFM recommendation with the rating of the dust collector. To determine the CFM at the dust port, you must consider these variables: (1) CFM rating of the dust collector, (2) hose type and length between the dust collector and the machine, (3) number of branches or wyes, and (4) amount of other open lines throughout the system. Explaining how to calculate these variables is beyond the scope of this manual. Consult an expert or purchase a good dust collection "how-to" book.

**Note:** Ensure dust hose is long enough for full range of spindle movement prior to installation.

### To connect dust collection system to router:

1. Attach dust shoe bracket to spindle motor with included M5-.8 hex nut and M5-.8 x 30 cap screw (see **Figure 25**).



**Figure 25.** Attaching dust shoe bracket.

2. Fit 4" dust hose over dust shoe and secure in place with hose clamp (see **Figure 26**).

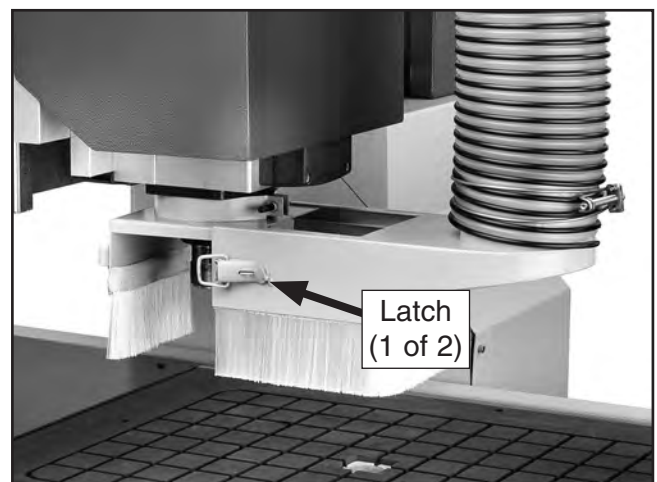


**Figure 26.** Tightening dust hose clamp.

3. Tug the hose with light/medium force to make sure it does not easily come off.

**Note:** A tight fit is necessary for proper performance.

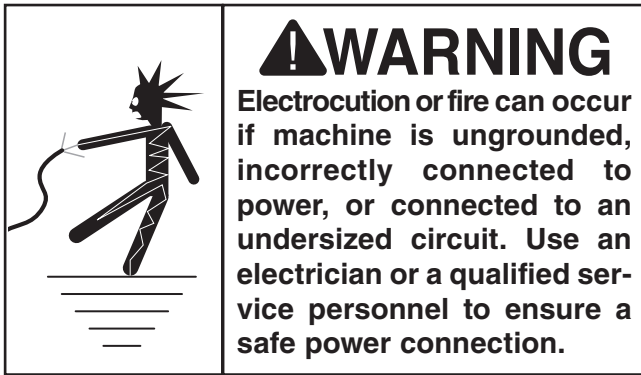
4. Slide dust shoe onto bracket and secure in place with latches (see **Figure 27**).



**Figure 27.** Dust shoe attached.



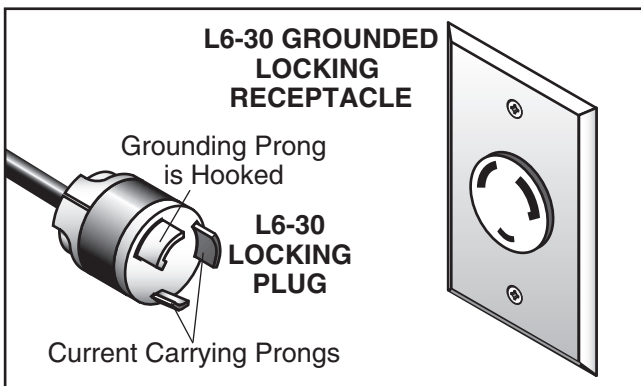
# Power Connection



Before the machine can be connected to the power source, an electrical circuit must be made available that meets the minimum specifications given in **Circuit Requirements** on **Page 15**. If a power circuit has not been prepared for the machine, do that now. To ensure a safe and code-compliant setup, we strongly recommend that all electrical work be done by an electrician or qualified service personnel.

## Model G0895 Power Connection

Insert plug into a matching NEMA receptacle (see **Figure 28**). The machine is now connected to the power source.



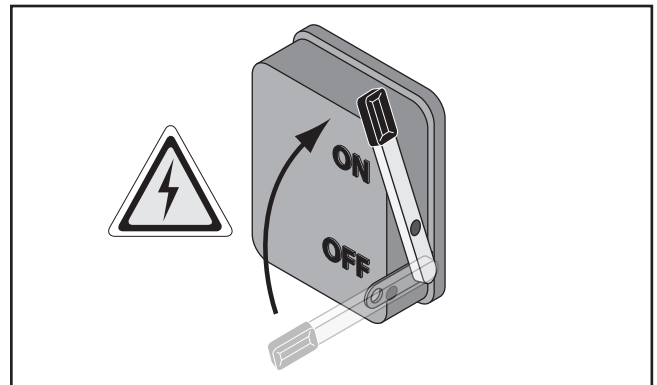
**Figure 28.** Typical L6-30 plug and receptacle.

## Vacuum Pump Power Connection

### **NOTICE**

**DO NOT** connect vacuum pump to power without verifying junction box terminal configuration (see **Page 27**). Operating vacuum pump in incorrect configuration can cause severe machine damage.

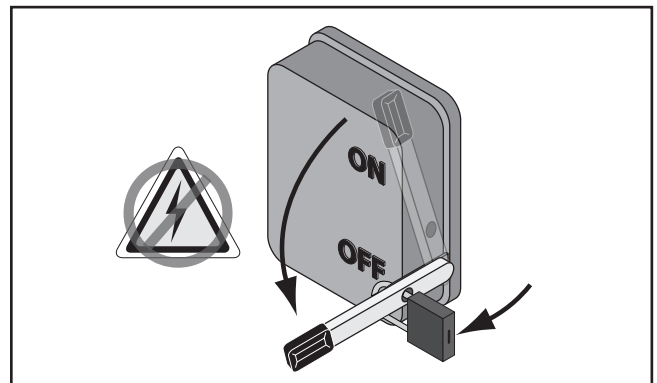
Move the disconnect switch handle to the ON position, as illustrated below. The machine is now connected to the power source.



**Figure 29.** Connecting power to machine.

Move the disconnect switch handle to the OFF position, as illustrated below. The machine is now disconnected from the power source.

**Note:** Lock the switch in the OFF position to restrict others from starting the machine.

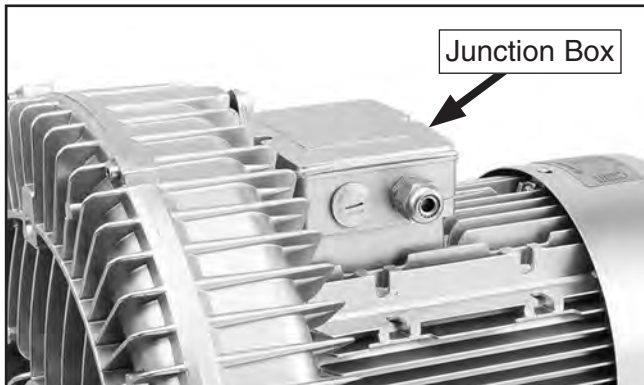


**Figure 30.** Disconnecting power from machine.



**To connect incoming power wires:**

1. Open vacuum pump junction box (see **Figure 31**).



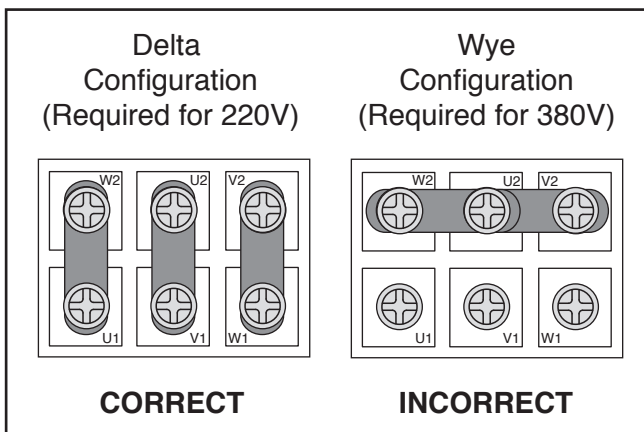
**Figure 31.** Vacuum pump junction box.

2. Verify terminal jumpers are arranged in correct configuration (see **Figure 32**).

**IMPORTANT:** Machines running on 220V power **MUST** be in delta configuration. Machines running on 380V power **MUST** be in wye configuration.

**NOTICE**

United States customers should **ONLY** use a 220V delta configuration for their vacuum pumps due to voltage availability in North America. Connecting a vacuum pump with a wye configuration to 220V power will damage the vacuum pump!



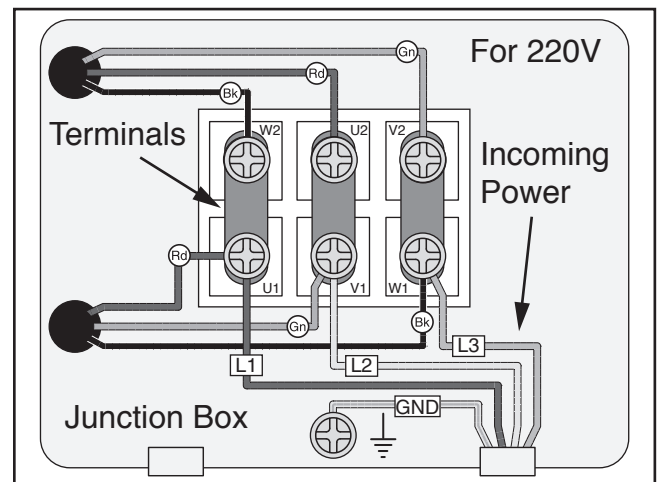
**Figure 32.** Vacuum pump junction box configurations.

3. Loosen strain relief on junction box, then insert incoming power wires into junction box.

**!WARNING**

During next step, make sure incoming ground wire is connected to correct terminal to ensure machine will be properly grounded (see "GND" in **Figure 33**). An ungrounded or improperly grounded machine can cause electrocution if live electrical wires make contact with frame or other parts touched by operator.

4. Connect incoming power wires to terminals as shown in **Figure 33**.



**Figure 33.** Vacuum pump junction box connection in delta configuration for 220V.

5. Tighten strain relief on junction box against conduit, then close cover. Leave some slack in wires inside box.



# Test Run

Once assembly is complete, test run the machine to ensure it is properly connected to power and safety components are functioning correctly.

If you find an unusual problem during the test run, immediately stop the machine, disconnect it from power, and fix the problem BEFORE operating the machine again. The **Troubleshooting** table in the **SERVICE** section of this manual can help.

The test run consists of verifying the following:  
1) the vacuum pump is wired correctly, 2) the spindle motor powers up and runs correctly, 3) the servo motors for each axis (X, Y, and Z) run correctly and the machine properly homes, 4) the EMERGENCY STOP button safety feature functions properly, 5) the electrical cabinet safety switch features work correctly.

## WARNING

Serious injury or death can result from using this machine BEFORE understanding its controls and related safety information. DO NOT operate, or allow others to operate, machine until the information is understood.

## WARNING

DO NOT start machine until all preceding setup instructions have been performed. Operating an improperly set up machine may result in malfunction or unexpected results that can lead to serious injury, death, or machine/property damage.

### To test run machine:

1. Clear all setup tools away from machine.
2. Ensure controller and vacuum pump are connected to machine.
3. Press EMERGENCY STOP button (see **Figure 34**).



**Figure 34.** Location of EMERGENCY STOP button.

4. Connect machine and vacuum pump to power as shown in **Power Connection** on **Page 26**.

**IMPORTANT:** Vacuum pump junction box must be in correct configuration before connecting vacuum pump to power.

5. Verify vacuum pump is pulling air through filter in correct direction (air should be blowing from outlet port near base of vacuum pump).

— If air is moving in wrong direction, stop machine and DISCONNECT FROM POWER! Phase of incoming power supply is reversed. Remove vacuum pump junction box cover and swap incoming power wires at U1 and V1 terminals (see **Figure 33** on **Page 27**), then re-install junction box cover and reconnect vacuum pump to power.

6. Twist EMERGENCY STOP button (pressed in **Step 3**) clockwise until it springs out (see **Figure 35**). This resets the switch so the machine can start.



**Figure 35.** Resetting the EMERGENCY STOP button.



7. Press ON/OFF button on electrical cabinet (see **Figure 1** on **Page 4**) to turn machine **ON**.
8. Controller will display "HomeTypeAtStart." Press CANCEL button on controller to skip homing axes.
9. Verify machine parameters on controller match those shown on **Page 30**.
10. Press ON/OFF button on controller to start spindle motor. Verify spindle starts and runs smoothly without any unusual problems or noises. Press ON/OFF to stop spindle motor.
13. Press HOME button on controller, then select "Home all" and press OK. Verify that each axis motor operates smoothly and all axes move to machine zero.
14. Press EMERGENCY STOP button on electrical cabinet to turn machine **OFF**.
15. WITHOUT resetting EMERGENCY STOP button, try to start machine by pressing the ON/OFF button. The machine should not start.
  - If the machine *does not* start, the safety feature of the EMERGENCY STOP button is working correctly. Congratulations! The Test Run is complete.
  - If the machine *does* start, immediately turn it **OFF** and disconnect power. The safety feature of the EMERGENCY STOP button is NOT working properly and must be replaced before further using the machine.

## **NOTICE**

**DO NOT drive gantry or spindle at high rate of speed to limit of axis travel! High-impact physical contact (crashing) with limit stops can trigger a servo alarm. If alarm occurs, press Emergency Stop button in and then reconnect machine to power to clear alarm.**

11. Press X+ and X- buttons on controller to test full range of X-axis movement. Verify axis motor operates smoothly through its full range of motion.
  - If axis movement *does not* bind or crash through full range of motion, axis movement is working correctly.
  - If axis movement *does* bind or crash, or an alarm has stopped machine operation, axis movement is NOT working correctly. Contact Grizzly Tech Support before further using machine.
12. Repeat **Step 11** for Y- and Z-axes using axis movement buttons on controller (Y+, Y-, Z+, and Z-).
16. Fully open rear electrical cabinet door and twist EMERGENCY STOP button clockwise until it springs out. Try to start machine by pressing the ON/OFF button. The machine should not start.
  - If machine *does not* start, rear safety switch feature is working correctly. Close rear electrical cabinet door.
  - If machine *does* start, immediately turn it **OFF** and disconnect power. Safety switch is NOT working properly and must be replaced before further using the machine.
17. Fully open front electrical cabinet door. Try to start machine by pressing the ON/OFF button. The machine should not start.
  - If machine *does not* start, front safety switch feature is working correctly. Close front electrical cabinet door. Congratulations! Test Run is complete.
  - If machine *does* start, immediately turn it **OFF** and disconnect power. Safety switch is NOT working properly and must be replaced before further using machine.



# Verifying Parameters

Machine parameters are essential to any operation. If the parameters are wrong, the machine will not produce accurate results, and damage to the machine and workpiece may occur.

The machine parameters were initially set at the factory, but they can be changed or lost due to hardware, software, or power issues. Consult this section and **Controller Functions** on **Page 6** to verify and reset parameters.

## NOTICE

Verify machine parameters before running any operation whenever machine is powered ON. Parameters can be changed or lost when power cycling occurs, and operating with incorrect parameters may result in damage to machine or workpiece.

### To verify machine parameters:

1. Press MENU on controller, then scroll to Machine Setup using the X+ and X- buttons, and press OK.
2. Scroll to each parameter shown on this page and press OK to verify.  
  
— To change a parameter, press RUN/PAUSE, enter the new parameter, then press OK to save.

### Pulse Equivalent:

X Equival ..... 200.000  
Y Equival ..... 200.000  
Z Equival..... 200.000

### Table Size:

X Equival ..... 1300.000  
Y Equival ..... 2500.000  
Z Equival..... 250.000

### Home Setup:

#### Home Speed

X Equival ..... 6000.000  
Y Equival ..... 6000.000  
Z Equival..... 6000.000

#### Set Home Direction

X Equival .....Neg  
Y Equival .....Neg  
Z Equival..... Pos

### Max Speed Limit:

#### X Speed Limit

-Dir ..... 4000.00  
+Dir ..... 4000.00

#### Y Speed Limit

-Dir ..... 4000.00  
+Dir ..... 4000.00

#### Z Speed Limit

-Dir ..... 3000.00  
+Dir ..... 1800.00





## Verifying Voltage Parameters

The Voltage Setup screen enables the opening or closing of input and output signals to machine components. The upper row of arrows represents the input side, and the lower row represents the output side (see **Figure 36**).

Voltage Parameters							
1	2	3	4	5	6	7	8
↓	↓	↓	↑	↑	↓	↓	↓
1	2	3	4	5	6	7	8
↓	↓	↓	↓	↓	↓	↓	↓

**Figure 36.** Voltage parameter settings.

### To verify voltage parameters:

1. Press MENU on the controller, then scroll to Machine Setup and press OK.
2. Scroll to Voltage Setup and press OK to enter voltage parameter screen.
3. Verify arrows in voltage parameters match the table in **Figure 36**.
  - Arrow down indicates normally open circuit. Arrow up indicates normally closed circuit. Numbers 1–8 correspond to X1–X8 inputs shown in **Verifying Input Parameters** on this page.
4. Press X+ or X- buttons to scroll left or right, and Y+ or Y- to scroll up or down, and highlight desired parameter.
5. Press RUN/PAUSE to cycle arrow direction up (normally closed) or down (normally open).
6. Press OK to save changes and return to menu screen.

## Verifying Input Parameters

The input configuration screen shows electrical inputs sent by various machine components during operation (see **Figure 37**).

Input Parameters		
X1:	Enable	X-Axis Proximity Switch
X2:	Enable	Y-Axis Proximity Switch
X3:	Enable	Z-Axis Proximity Switch
X4:	Enable	Tool Setter
X5:	Enable	Driver Alarm
X6:	Disable	Hard Limit
X7:	Enable	Emergency Stop
X8:	Disable	Pedal Switch

**Figure 37.** Input parameter settings.

## **NOTICE**

**Failure to properly configure machine input parameters may cause system errors.**

### To verify input parameters:

1. Press MENU on the controller, then scroll to Machine Setup and press OK.
2. Scroll to Input Confi and press OK to enter input configuration screen.
3. Verify parameters in Input Confi match the table in **Figure 37**.
4. Press X+ or X- buttons to scroll up or down, and highlight desired parameter.
5. Press RUN/PAUSE to change setting.
6. Press OK to save changes and return to menu screen.

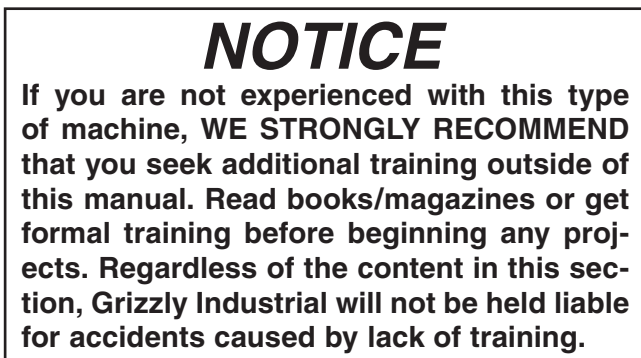
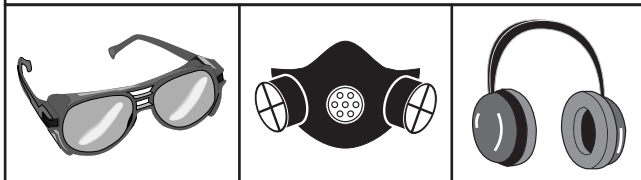
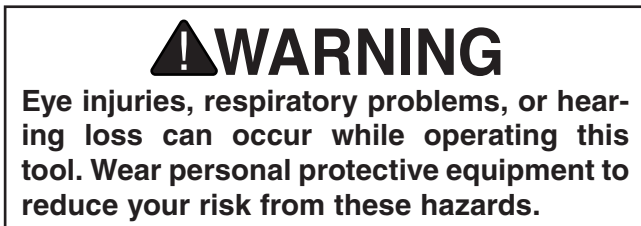


# SECTION 4: OPERATIONS

## Operation Overview

The purpose of this overview is to provide the novice machine operator with a basic understanding of how the machine is used during operation, so the machine controls/components discussed later in this manual are easier to understand.

Due to the generic nature of this overview, it is **not** intended to be an instructional guide. To learn more about specific operations, read this entire manual, seek additional training from experienced machine operators, and do additional research outside of this manual by reading "how-to" books, trade magazines, or websites.



To complete a typical operation, the operator does the following:

1. Designs/writes G-code that defines toolpath.
2. Uploads G-code to USB drive.
3. Examines workpiece to make sure it is suitable for cutting.
4. Installs appropriate cutter for type of material and operation.
5. If necessary, cuts workpiece with table saw or other machine to fit within working envelope of this machine.
6. Secures workpiece to table. If using vacuum table, turns vacuum pump **ON**.
7. Turns machine **ON**.
8. Homes all axes and verifies parameters (see **Page 30**).
9. Connects USB drive to controller.
10. Sets work origin. Uses Z-axis tool setter to set Z-axis relative to workpiece or table, depending on toolpath requirements.
11. Connects dust shoe and dust collection system to spindle.
12. Puts on safety glasses, respirator, and hearing protection.
13. Turns dust collection system **ON**.
14. Runs G-code. Spindle will automatically start and follow toolpath.
15. When toolpath is complete, spindle will stop and return to position defined by G-code.



## **WARNING**

Like all machinery there is potential danger when operating this machine. Accidents are frequently caused by lack of familiarity or failure to pay attention. Use this machine with respect and caution to decrease the risk of operator injury. If normal safety precautions are overlooked or ignored, serious personal injury may occur.

## Workpiece Inspection

---

Some workpieces are not safe to cut or may first require modification. Before cutting, inspect all workpieces for the following:

- **Material Type:** This machine is only intended for cutting natural and man-made wood products, laminate covered wood products, and some plastics. Cutting drywall or cementitious backer board creates extremely fine dust and may reduce the life of the bearings. This machine is NOT designed to cut metal, glass, stone, tile, etc.; cutting these materials with this machine may lead to injury or damage.
  - **Foreign Objects:** Nails, staples, dirt, rocks, tramp metal, and other foreign objects are often embedded in wood. While cutting, these objects can become dislodged, break the cutter, or cause workpiece kickback—all of which could fly out and strike the operator or bystanders. Always visually inspect workpiece carefully before cutting it. If foreign objects can not be removed, DO NOT cut the workpiece.
  - **Large/Loose Knots:** Loose knots can become dislodged during cutting operation. Large knots can cause cutter or machine damage. Only use workpieces that do not have large/loose knots or plan ahead to avoid cutting through them.
- **Wet or "Green" Stock:** Cutting wood with a moisture content over 20% causes unnecessary wear on the cutter and yields poor results.
  - **Excessive Warping:** Workpieces with excessive cupping, bowing, or twisting are dangerous to cut because they are unstable and can come loose or move unexpectedly when being cut. DO NOT cut workpieces with excessive warping!
  - **Minor Warping:** Workpieces with slight cupping can be safely supported if cupped side is facing table and workpiece is firmly clamped to table. On the contrary, a workpiece with bowed side facing table will rock during a cut and could cause severe injury.

## Choosing Cutter

---

There are many types of cutters available. Be sure to choose the right one for your application and material. Read all manufacturer instructions before installing and using a cutter.

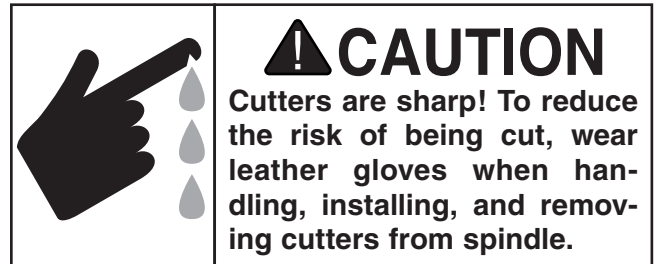
### When choosing a cutter, consider:

1. **Material Type:** Most cutters are designed for specific material. Choose a unique bit for plywood, engineered wood products, hardwood, and composite woods to improve overall results. If a general-purpose bit is needed, a two-flute, upcut, spiral bit is a good choice.
2. **Application:** Many design features are best cut using specific tools. For example:
  - Use a V-bit for cutting signs and lettering.
  - Use a spoilboard cutter or fly cutter for surfacing a spoilboard or finishing a smooth, flat workpiece, such as a counter top.
  - Use a form bit to cut a profile with a uniform contour, such as an ogee or round over.
  - Use a chipbreaker or rougher for rough cuts and quickly removing a large amount of material when the finish does not matter.



3. **Feed and Speed Rates:** Feed rate, spindle speed, and number of flutes on the cutter determine chip load. The chip load affects the best diameter bit to use to get the highest quality finish while minimizing wear. Most manufacturers will list the recommended chip load for their cutters.
4. **Depth and Width of Cut:** The cutter must be long enough to reach the maximum plunge depth of the operation and small enough to cut the details of the piece. However, shorter, wider bits will deflect less, leading to more accurate cuts, and they are less prone to wear and breakage.
5. **Finish:** If a high-quality finish is a priority, use a cutter with more flutes. Four-flute cutters work well for this in most cases. Do not forget that number of flutes is a component of calculating chip load.
6. **Chip Displacement:** Up-cut bits keep the workpiece clear of chips, but on composite materials the upward force of the operation will chip and fray the top surface of the workpiece. Down-cut bits leave a smooth finish on the top of the workpiece, but pressing chips down creates more heat during the cut and frays the bottom of the workpiece on through cuts. Compression bits are fluted to cut up on the bottom, and down on the top, compressing the workpiece during a cutting operation. Compression bits are ideal for cutting materials like plywood and other composites.

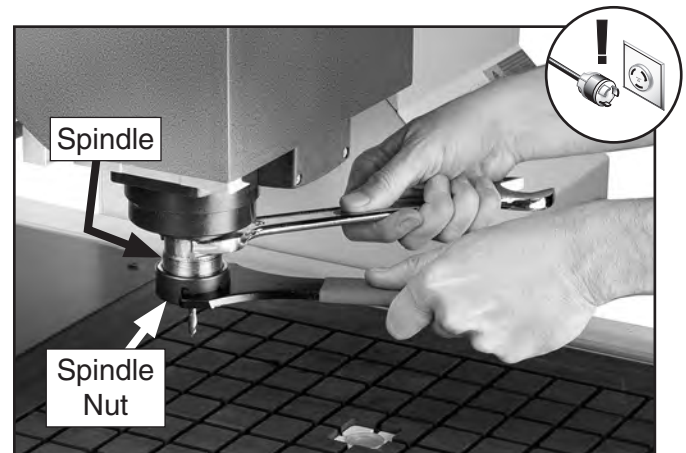
## Changing Cutter



Items Needed	Qty
Open-End Wrench 30mm .....	1
ER32 Collet Wrench .....	1

### To change cutter:

1. Home all axes (see **Homing Axes** on **Page 39**), then turn machine **OFF**.
2. DISCONNECT MACHINE FROM POWER!
3. Place scrap material or shop rag under spindle to catch cutter.
4. Hold spindle with 30mm open-end wrench, remove spindle nut with ER32 collet wrench (see **Figure 38**), then remove collet and cutter.



**Figure 38.** Changing cutter.

5. Insert new cutter in collet, then tighten spindle nut to secure cutter.



# Securing Workpieces

The Model G0895 comes with a vacuum table that has 6 vacuum zones separated by T-slots. Workpieces with a wide range of shapes and sizes can be secured using clamps, the vacuum table, or both. Always secure the workpiece to the table to avoid injury and damage to the machine and cutter.

Clamps are the most consistent method to secure a workpiece, but the vacuum table is an excellent option when cutting a workpiece edge where clamps would normally get in the way. However, a flat surface on the bottom of the workpiece is required to create a strong vacuum seal. For workpieces with rough or uneven bottoms, clamps are required. There is no harm in using both clamps and the vacuum table at the same time.

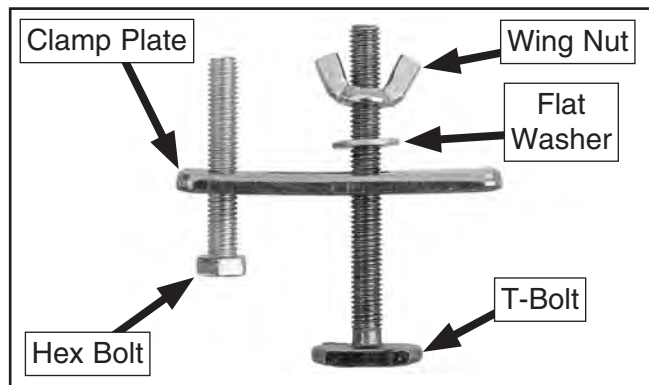
## Using Clamps

Always use at least four clamps when clamping a workpiece to the table.

Items Needed	Qty
Clamps .....	4 or more

### To clamp workpiece to table:

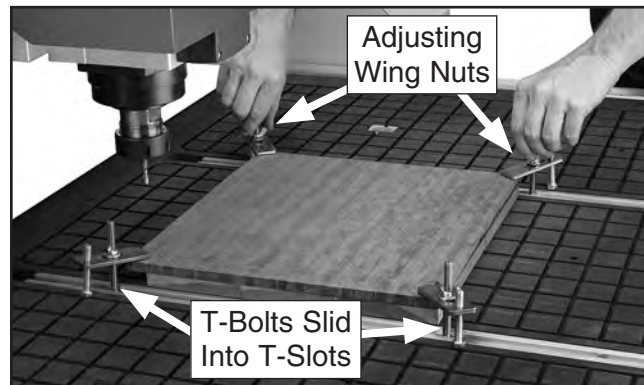
1. Clear dust, wood chips, and tools from table surface and T-slots.
2. Thread hex bolt into clamp plate, then insert T-bolt through clamp plate and thread on flat washer and wing nut (see **Figure 39**).



**Figure 39.** T-slot clamp components.

3. Place workpiece on table. Joint or shim if necessary to ensure a flat work surface.

4. Slide T-bolts into T-slots, then adjust wing nuts and hex bolts so clamp plates are higher than workpiece (see **Figure 40**).



**Figure 40.** Clamping workpiece to table.

5. Position clamps so workpiece is stable and does not rock. Take into consideration axis positions when G-code runs.
6. Tighten wing nuts until workpiece is secure and flat against table on all four sides/corners.

## Using Vacuum Table

The vacuum table is an alternate way to hold material to the work surface for cutting. It is especially useful when clamps are in the way or the workpiece is irregular in shape. However, if workpiece does not have a tight enough seal with vacuum table, an alternative method must be used to secure it.

Items Needed	Qty
Flat Scrap Material .....	As Needed
Gasket Tube .....	As Needed
Vacuum Port Plugs.....	As Needed

***NOTICE***

A tight seal is required between vacuum table and workpiece for vacuum table to function properly. Always follow setup procedure to ensure seal is achieved and avoid machine damage. Always keep table clean and unused vacuum ports plugged to prevent dust from entering vacuum system and damaging vacuum pump.



### To secure workpiece using vacuum table:

1. Inspect workpiece and ensure bottom of material is flat. Joint or plane bottom of workpiece if needed.

**Note:** Porous material and workpieces with knot holes may not create a tight enough seal for vacuum table to function.

2. Clear dust, wood chips, and tools from table surface and T-slots with wet/dry vac or dust collector.
3. Position workpiece on table so that it covers as few vacuum zones as possible.

— If workpiece does not fully cover vacuum zones it is over, use included gasket tube to seal the outside of the workpiece. Arrange tube on table so it fits just underneath outer edge of workpiece, then cut tube to size (see **Figure 41**).



**Figure 41.** Gasket tube cut to size to seal workpiece to vacuum zone.

— If workpiece does not cover all vacuum ports in zones it is in, place flat scrap material over uncovered ports.

4. Only open vacuum valves (see **Figure 42**) for each zone covered by workpiece. Close all other vacuum valves, and plug all unused vacuum ports.



**Figure 42.** Vacuum zone control valves.

**Note:** Using as few zones as possible and turning off unused zones will improve vacuum strength and better secure the workpiece to the table.

5. Turn vacuum pump **ON**.
  6. Push edge of workpiece with moderate pressure to verify workpiece is properly secured by vacuum system with enough strength to withstand cutting forces.
- If workpiece is not well secured, repeat **Steps 1–6**. If workpiece is still not secure, use hold down clamps to augment vacuum.



# Using a Spoilboard

A spoilboard should be used with any operation in which the cutter cuts completely through the workpiece. Typically, a spoilboard is made of MDF that has been surfaced perfectly flat. Even a new piece of material should be surfaced before use.

The vacuum table can be used with an MDF spoilboard that is properly prepared. The vacuum pulls air through the porous spoilboard, causing workpieces to be secured to the top of the spoilboard.

## NOTICE

Moisture will swell and warp MDF spoilboards. Using a warped spoilboard will result in damaged or inaccurately cut workpieces and could result in damage to the machine. If liquid is spilled on spoilboard, it must be dried and resurfaced, or replaced.

### Preparing a Vacuum Spoilboard

Items Needed	Qty
MDF 3/4" (sized for table or workpiece) .....	1
Sealant (epoxy or rubberized paint).....	As Needed

#### To create a vacuum spoilboard:

1. Surface both sides of MDF to remove at least 0.5mm of sealant. See **Surfacing** on **Page 38** for instructions on how to use your Model G0895 to surface the spoilboard.
2. Seal all four edges of spoilboard using epoxy or rubberized paint.

**Note:** Spoilboards can be resurfaced and reused until thickness is reduced to approximately 1/4" or less.

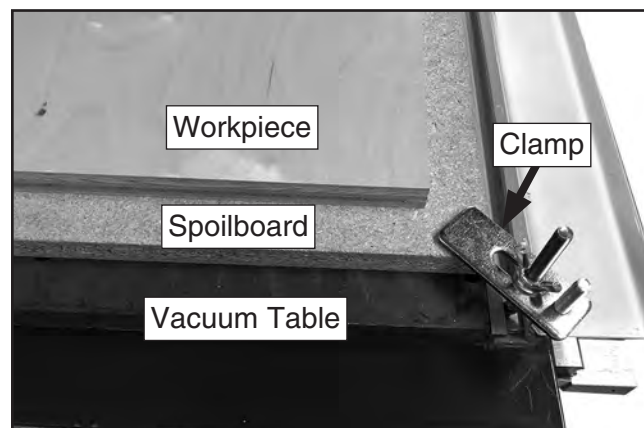
### Clamping Spoilboard

Clamps can be used in combination with the vacuum table if spoilboard does not create a strong seal with the vacuum table.

Items Needed	Qty
MDF (sized for table or workpiece) .....	1
Clamp Set, Double-Sided Tape, or Wood Screws .....	As Needed

#### To clamp a spoilboard:

1. Clamp surfaced spoilboard to machine bed using included hold-down clamps (see **Figure 43**). If vacuum table is used, secure spoilboard as described in **Using Vacuum Table** on **Page 35**.



**Figure 43.** Spoilboard clamped to router bed.

2. Secure workpiece to spoilboard.

**Note:** Depending on the needs of the workpiece and G-code, it could be appropriate to use additional hold-down clamps, double-sided tape, or mount the workpiece directly to the spoilboard with screws. If vacuum table is used, the suction through the spoilboard may be sufficient to secure workpiece. Always verify workpiece is secure before beginning work operations.



## Surfacing

The Model G0895 can be used to surface a spoilboard or workpiece, using the mill plane feature and an appropriate cutter (see **Choosing Cutter** on **Page 33**).

Items Needed	Qty
Spoilboard Cutter or Fly Cutter .....	1

### To surface using the mill plane operation:

1. Hold down RUN/PAUSE, press HIGH/LOW, then release both buttons at the same time to open advanced processing menu.
2. Scroll to "Mill plane" and press OK.
3. Choose "Scan mill" or "Encircle mill" and press OK. A list of operation parameters will appear.

**Note:** A "Scan mill" operation runs back and forth from one end of the defined workpiece to the other. An "Encircle mill" operation runs from the outside to the inside of the defined workpiece.

4. Define operation parameters. Press RUN/PAUSE to change a parameter and OK to save. Distances are measured in millimeters.
  - Scan Type changes the direction of the operation. For scan milling, "X Scan" runs back and forth across the X-axis, and "Y Scan" runs back and forth across the Y-axis. For encircle milling, "AC" runs counterclockwise around the workpiece and "C" runs clockwise around the workpiece.
  - Height and Width defines the size of the area to be surfaced.
  - Diameter defines the diameter of the surfacing tool used.
  - Depth defines the total depth of material removed.
  - Z Step defines how much material is removed per pass. For example, a Depth of 1 and Z Step of 0.25 would remove 1mm of material over four passes.
  - TRatio defines the stepover, which is the amount of overlap the cutting tool makes per pass.
5. Press OK after all parameters have been saved to start the mill plane operation.





# Adjusting Axis Positions Manually

---

Knowing how to manually control axis movement is an essential part of operating the Model G0895. Axes must be positioned manually whenever a work origin is set.

Use axis movement buttons on controller (X+, X-, Y+, Y-, Z+, and Z-) to move axes. See **Controller Functions** on **Page 6** for detailed button descriptions.

Manual axis movement can be performed at two speeds and in three motion modes: Continuous, Step, and Distance.

## **NOTICE**

**Manual axis movement allows movement beyond soft limit proximity switches, which can damage the machine. Always be aware of axis locations during manual movement, and be prepared to stop machine if axes move unexpectedly.**

## Changing Axis Movement Speed

1. Press HIGH/LOW to toggle between fast and slow speeds.

## Changing Axis Movement Mode

1. Press MODE to toggle between Continuous, Step, and Distance modes.
  - In Continuous mode, press and hold axis movement buttons to move axes. Release button to stop movement.
  - In Step mode, press button to move axis one step. Step size is determined by speed mode.
  - In Distance mode, press button to move axis a user-defined distance. Set distance by toggling to Distance mode, then input distance and press OK. Controller will display current setting.

## Homing Axes

---

Homing the machine returns all three axes to "home" position or the machine-specific zero point. Home is determined by magnetic proximity switches and will not change.

Since all machine movement is calculated from home, always home axes and verify machine parameters before each operation.

### To home axes:

1. Press HOME. Verify all axes move to their farthest positions.
2. Verify all machine parameters listed in **Verifying Parameters** on **Page 30**.



# Setting Work Origin

Work origin is the workpiece-specific zero point—the starting point for your toolpath. All three axes need to be zeroed at the work origin before running code for any particular operation.

The Z-axis can be set in relation to either the table surface or the workpiece surface, but it must correspond to what is established in the G-code. If this is not done properly, the cutter may crash into the material or the table, causing damage to the workpiece or the table.

## **NOTICE**

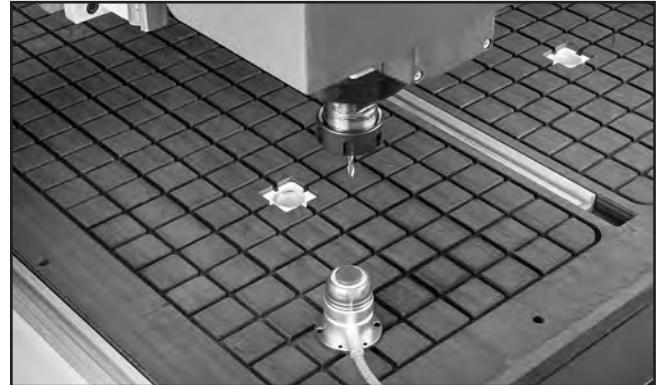
**Always set work origin before each unique operation. The work origin of all axes must match the origin of the toolpath established in the G-code. Failure to set the work origin may cause the cutter to crash and damage the workpiece, table, or cutter.**

### To set work origin:

1. Clamp workpiece to table, insert cutter, and load G-code to controller.
2. Manually move X- and Y-axes to toolpath origin established in G-code.
3. Manually move Z-axis down to  $\frac{1}{8}$ " above workpiece or table surface (as determined by G-code).
4. Place piece of paper between cutter tip and workpiece/table surface. Slowly step Z-axis down while sliding paper until paper cannot move.
5. Press XY->0 to set X- and Y-axis origin.
6. Press Z->0 to set Z-axis origin.

### To set Z-axis origin using tool setter:

1. Clamp workpiece to table, insert cutter, and load G-code to controller.
2. Place tool setter on top of table or workpiece.
3. Manually move X- and Y-axes so cutter is directly above tool setter (see **Figure 44**).



**Figure 44.** Spindle over tool setter.

4. Hold down MENU, then press ON/OFF and release buttons together. Spindle will lower until it presses button on tool setter, then raise slightly. Z-axis origin is set at base of tool setter.



# Creating G-Code File

---

Before operations can be run on the Model G0895, a toolpath must be designed and converted to G-code.

CAM software converts a CAD model into G-code, which defines a toolpath for the project, and then formats the G-code into a machine specific dialect via a post-processor.

This machine does not read advanced formatting. By default, it only runs letter addresses for simple axis movement. Review **Changing Advanced Settings** on **Page 44** for information about turning on additional G-code functions.

An operator could also write G-code manually. Often, this is more efficient than designing and processing through CAD/CAM. In addition, knowledge of G-code is integral to refining toolpaths produced by CAM software.

Items Needed	Qty
CAD/CAM Software or text editor.....	1
USB Drive 16GB or less.....	1

**IMPORTANT:** DO NOT use a USB drive larger than 16GB. The controller is designed to read USB drives below 16GB capacity.

## To create G-Code:

1. Load CAD file into CAM software. Take into consideration what type of material will be cut and what type of cutter will be used. Make note of where you will place clamps.
2. Run post-processing application to export G-code.

**Note:** Use post-processing options specific to the Model G0895 or the RichAuto A11 controller when available. If a post-processor for this machine is not available, use a post-processor with minimal formatting.

3. Do a practice run within software to identify any areas of concern (double-check feed/speed rates, depth of cut, and the direction the cutter will be traveling).
4. Review G-code and simplify it if needed.

**Note:** Simplifying G-code can significantly reduce processing time. Different CAM software and different post-processors will write code differently and some operations require a human eye to find the most efficient method. Learning where code can be improved is a matter of practice and experience.

5. Export G-code to USB drive in **.NC**, **.PLT**, **.TAP**, or **.TXT** format.



# Uploading and Running G-Code

Once G-code is created, it is transferred to the controller via USB drive. The code is then processed from the controller.

## Uploading G-Code to Controller Internal Memory

1. Turn machine **ON**.
2. Insert USB drive loaded with G-code into controller (see **Figure 45**).



**Figure 45.** USB drive connected to controller.

3. Press MENU, scroll to "Operate File" on the controller, and press OK.
4. Scroll to "Copy File" and press OK.
5. Scroll to "Udisk File" and press OK, then navigate to G-code file and press OK.

## Running G-Code From Controller Internal Memory

1. Press RUN/PAUSE.
2. Scroll to "Internal File" and press OK, then scroll to G-code file and press OK.
3. Screen will display "SetWorkParam" and the following parameters:
  - WorkSpd (feed rate in mm/sec.).
  - FastSpd (movement speed between cuts in mm/sec.).
  - SpdScale (spindle speed ratio).
  - FallDown (Z-axis speed ratio).
4. Scroll to desired parameter and press RUN/PAUSE to change value, then press OK.
5. Press OK again to begin operation.
  - Press RUN/PAUSE to pause axis movement. Spindle will continue to spin. Axes can be manually moved while paused. Press RUN/PAUSE again to resume, then OK to resume from new axis position, or STOP to return to original position.
  - Press Y+ and Y- during operation to manually change spindle speed ratio from 0.1 (stopped) to 1.0 (full speed).
  - Press STOP to completely stop operation. Choose between "Save break" to save breakpoint to return to later, or "Discard break" to stop operation without saving. Resume saved processing through the advanced processing menu (see **Using Advanced Controls** on **Page 44**).



## Running G-Code From USB Drive

1. Press RUN/PAUSE.
2. Scroll to "Internal File" and press OK, then scroll to G-code file and press OK. The screen will display "Set Work Param".
  - To change a work parameter, scroll to the parameter and press "RUN/PAUSE", then input the new value and press OK to save.
3. Press OK to begin operation.
  - Press RUN/PAUSE to pause axis movement. Spindle will continue to spin. Axes can be manually moved while paused. Press RUN/PAUSE again to resume, then OK to resume from new axis position, or STOP to return to original position.
  - Press Y+ and Y- during operation to manually change spindle ratio. Spindle ratio ranges from 0.1 (stopped) to 1.0 (full speed).
  - Press STOP to completely stop operation. Choose between "Save break" to save breakpoint to return to later, or "Discard break" to stop operation without saving. Resume saved processing through the advanced processing menu (see **Using Advanced Controls** on **Page 44**).

## Manually Setting Spindle Speed

---

Pressing ON/OFF and Z+ or Z- buttons together while the spindle is running will increase or decrease the spindle speed through a range of eight user-defined speed settings.

This action can be performed any time the spindle is running.

### To manually set spindle speed:

1. Verify S-code processing is turned on (see **S-Code Processing** on **Page 44**).
2. Press MENU, then scroll to "MACHINE SETUP" and press OK.
3. Scroll to "Spindle Setup" and press OK.
4. Scroll to "Spindle State" and press OK.
5. Press STOP button *twice* to access "Spindle Speed" menu.
6. Scroll through each spindle speed and set as desired using RUN/PAUSE button and numbered keys.

**Note:** Set RPM values in ascending order from 1–8. Speed 1 should be set to the lowest RPM value, and Speed 8 should be set to the highest RPM value.
7. Press OK to save changes.



# Changing Advanced Settings

## **NOTICE**

Changing advanced settings will change the default functions of your machine and how it processes files. Changing advanced settings is only recommended for experienced operators. After changing settings, monitor machine operation carefully to prevent damage to the machine, workpiece, or cutter.

Many advanced functions of the Model G0895 are turned off by default. Notably, S and F letter addresses are ignored unless intentionally turned on in the controller.

Advanced settings are accessible through the "AUTO PRO SETUP" menu.

### **F-Code Processing**

1. Press MENU, then scroll to "AUTO PRO SETUP" and press OK.
2. Scroll to "G Code Setup" and press OK.
3. Scroll to "F Read" and press RUN/PAUSE. "Ign F" will change to "Read F". Press OK to save.

### **S-Code Processing**

1. Press MENU, then scroll to "AUTO PRO SETUP" and press OK.
2. Scroll to "G Code Setup" and press OK.
3. Scroll to "S Read" and press RUN/PAUSE. "Ign S" will change to "Read S". Press OK to save.

# Using Advanced Controls

All basic controls of the Model G0895 are performed through single-button commands on the controller, but some advanced features require multi-button commands to access.

### **Advanced Processing Menu**

Advanced tool functions are accessed through the advanced processing menu. Functions include array work, resuming stopped jobs, surfacing a workpiece, calculating bounds of a file, and calculating processing time of a file.

#### **To access advanced processing menu:**

1. Hold down RUN/PAUSE, press HIGH/LOW, then release both buttons at the same time.

### **Switching Coordinate Systems**

Up to nine work coordinate systems can be saved at a time. When work origin is set, it is set for the active coordinate system. If the absolute coordinate system is active, work origin cannot be set.

#### **To switch coordinate systems:**

1. Hold down MENU, press a single 0-9 number button, then release both buttons at the same time.
  - Press MENU + 0 to activate absolute coordinate system (mechanical coordinates).
  - Press MENU + 1-9 to activate work coordinate systems.

### **Repeat Last Process**

The last process run can be quickly selected to operate again.

#### **To repeat last process:**

1. Hold down RUN/PAUSE, press 9, then release both buttons at the same time.



# SECTION 5: ACCESSORIES

## **⚠️ WARNING**

Installing unapproved accessories may cause machine to malfunction, resulting in serious personal injury or machine damage. To reduce this risk, only install accessories recommended for this machine by Grizzly.

## **NOTICE**

Refer to our website or latest catalog for additional recommended accessories.

### **V-Carve CNC Router Software**

**T28100—V-Carve Desktop Software**

**T28101—V-Carve Pro Software**

V-Carve provides a powerful but intuitive software solution for cutting parts on a CNC Router. It combines CAD and CAM so you can design your work and create your toolpath in one interface. V-Carve includes the functionality demanded for complex work while remaining incredibly easy to use and affordably priced.



Figure 46. T28100 V-Carve Desktop Software.

### **Cutters**

**C1921—Router Bit Set for Sign Making**

**T30941—CNC Router Bit Starter Set #1**

**T32931— $\frac{1}{4}$ " X-CARVE CNC Router Bit Set**

**DC1808— $\frac{3}{16}$ " Solid Carbide Upcut Spiral**

**DC1809— $\frac{1}{4}$ " Solid Carbide Upcut Spiral**



Figure 47. C1921 Router Bit Set for Sign Making.

### **Basic Eye Protection**

**T32323—Woodturners Face Shield**

**T32401—EDGE Brazeau Safety Glasses, Clear**

**T32402—EDGE Khor G2 Safety Glasses, Tint**

**T32404—EDGE Mazeno Safety Glasses, Clear**



Figure 48. Assortment of basic eye protection.

**order online at [www.grizzly.com](http://www.grizzly.com) or call 1-800-523-4777**



### **G0860—1½ HP Portable Cyclone Dust Collector**

This compact unit features an impressive 868 CFM and up to 9.7" of static pressure—perfect for handling up to two large machines at once. The 20-gallon collection drum with quick-release handle catches large particulate for quick and clean bag changes, and the pleated 1-micron filter captures remaining dust.



**Figure 49.** G0860 Cyclone Dust Collector.

- D4206—Clear Flexible Hose 4" x 10'**
- D4256—45° Elbow 4"**
- D4216—Black Flexible Hose 4" x 10'**
- W1034—Heavy-Duty Clear Flex Hose 4" x 10'**
- D2107—Hose Hanger 4¼"**
- W1015—Y-Fitting 4" x 4" x 4"**
- W1017—90° Elbow 4"**
- W1019—Hose Coupler (Splice) 4"**
- W1317—Wire Hose Clamp 4"**
- W1007—Plastic Blast Gate 4"**
- W1053—Anti-Static Grounding Kit**

Hand-picked selection of commonly used dust collection components for 4" dust ports.



**Figure 50.** Dust collection accessories.

**order online at [www.grizzly.com](http://www.grizzly.com) or call 1-800-523-4777**





### T27914—Moly-D Machine and Way Oil, 1 Gal.

This ISO-68 machine and way oil is one of the best we've found for maintaining bed ways, sliding ways, gearboxes, and leadscrews. Why? It is extremely tacky and includes the superior friction-reducing compound Moly-D to maximize component life and minimize wear.



Figure 51. T27914 ISO-68 Moly-D Machine and Way Oil.

### T26419—NLGI#2 Syn-O-Gen Synthetic Grease

Formulated with 100% pure synthesized hydrocarbon basestocks that are compounded with special thickeners and additives to make Syn-O-Gen non-melt, tacky, and water resistant. Extremely low pour point, extremely high temperature oxidation, and thermal stability produce a grease that is unmatched in performance.



Figure 52. T26419 Syn-O-Gen Synthetic Grease.

### G7979—20 HP Rotary Phase Converter

This rotary phase converters allow you to operate 3-phase machinery from a single-phase power source at 100% power and 95% efficiency. This model operates up to twice its nameplate rating in mixed-motor load. For heavily-loaded or hard-start machinery, such as CNC routers or dust collectors, choose a nameplate rating 3 times the HP of the most heavily loaded motor.



Figure 53. G7979 20 HP Rotary Phase Converter.

### H7617—High Pressure Oil Can w/Flex Nozzle

This high-pressure oil can is perfect for lubricating the ball oilers found on your machine. Each can holds 5 ounces of oil.

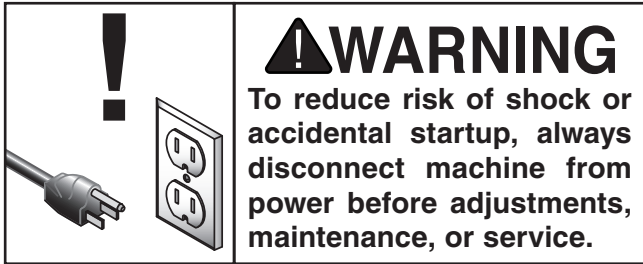


Figure 54. H7617 High-Pressure Oil Can.

**order online at [www.grizzly.com](http://www.grizzly.com) or call 1-800-523-4777**



# SECTION 6: MAINTENANCE



## Schedule

For optimum performance from this machine, this maintenance schedule must be strictly followed.

### Ongoing

To minimize your risk of injury and maintain proper machine operation, shut down the machine immediately if you ever observe any of the items below, and fix the problem before continuing operations:

- Loose mounting bolts.
- Damaged or dull cutter.
- Clogged or dirty collet, spindle nut, or spindle collet hole.
- Blocked dust collection.
- Worn or damaged wires.
- Dirty vacuum pump filter.
- Dust and debris on vacuum table.
- Any other unsafe condition.

### Daily Maintenance

- Check/adjust lubrication level in oiler.
- Clean/lubricate linear guide rails.

### Weekly Maintenance

- Clean/lubricate rack and pinion gear and metal surfaces.
- Clean/vacuum dust buildup in T-slots.
- Inspect spoilboard for defects and flatness.

### Monthly Check

- Inspect wiring connections for loose wires.
- Verify fasteners on moving parts are secure.

### Annual Maintenance

- Check/level frame and table.

## Cleaning & Protecting

Cleaning the Model G0895 is relatively easy. Vacuum excess wood chips and sawdust, and wipe off the remaining dust with a dry cloth.

## Lubrication

By design, the linear guide rails, helical rack and pinion gears, and other metal parts on this machine have hardened surfaces that are highly resistant to corrosion and wear. However, periodically wipe metal parts with light machine oil and synthetic grease (see **ACCESSORIES** on **Page 47**) to extend their life.

**Note:** *Lubrication can cause sludge build-up that will bind moving parts, and corrosion can still occur if catalysts are trapped beneath lubricant. Always clean surfaces before applying any form of lubrication.*

Items Needed	Qty
Protective Gloves.....	1 Pair
Hex Wrench 6mm.....	1
Stiff Brushes.....	4
High-Pressure Oil Can .....	1
Clean Shop Rags .....	As Needed
Mineral Spirits.....	As Needed
T27914 or ISO 68 Equivalent .....	As Needed
T26419 or NLGI#2 Equivalent .....	As Needed



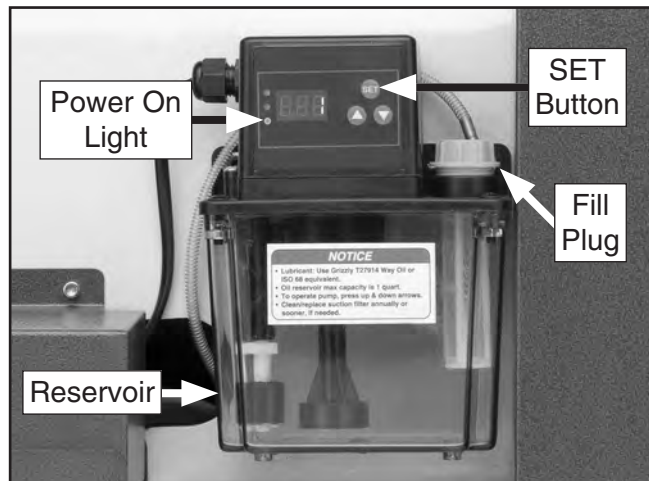
## Oiler System Operation

The Model G0895 linear guide rails require regular lubrication to perform properly. The oiler system (see **Figure 55**) on the rear of the gantry pumps oil to these components.

Lube Type..... T27914 or ISO 68 Equivalent  
 Lube Amount..... As Needed  
 Lubrication Frequency..... Daily  
 Oil Reservoir Max Capacity ..... 1 Qt.

### To operate oiler system:

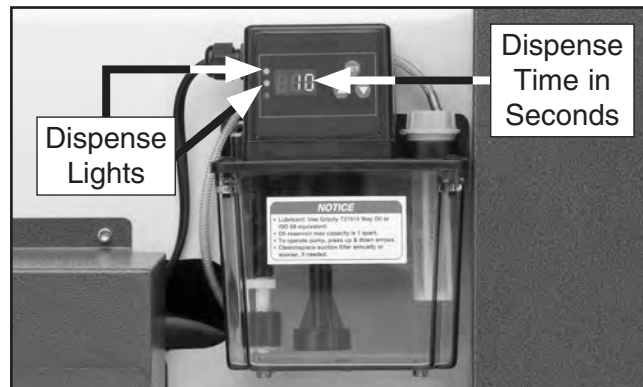
1. Fill oiler reservoir with 1 quart of T27914 machine oil or ISO 68 equivalent and turn router **ON** (see **Figure 55**).
2. Press and hold SET button on oiler until an audible beep is heard (see **Figure 55**).



**Figure 55.** Oiler system control components.

3. Verify upper and middle lights illuminate and oil dispense time (in seconds) is displayed on digital readout (see **Figure 56**). Set desired values using ▲ and ▼ buttons on oiler system control panel.

- To dispense a *small* amount of oil, set the number of seconds to a lower value.
- To dispense a *large* amount of oil, set the number of seconds to a higher value.



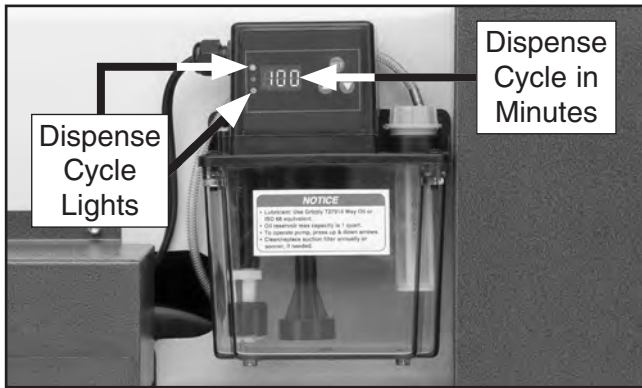
**Figure 56.** Setting oiler dispense time.

4. Press and hold SET button on oiler until an audible beep is heard.



- Verify upper and lower lights illuminate and oil dispense duration (in minutes) is displayed on digital readout (see **Figure 57**). Set desired values using ▲ and ▼ buttons on oiler controls.

- To dispense oil over a *short* amount of time, set the number of minutes to a lower value.
- To dispense oil over a *long* amount of time, set the number of minutes to a higher value.



**Figure 57.** Setting oiler dispense cycle.

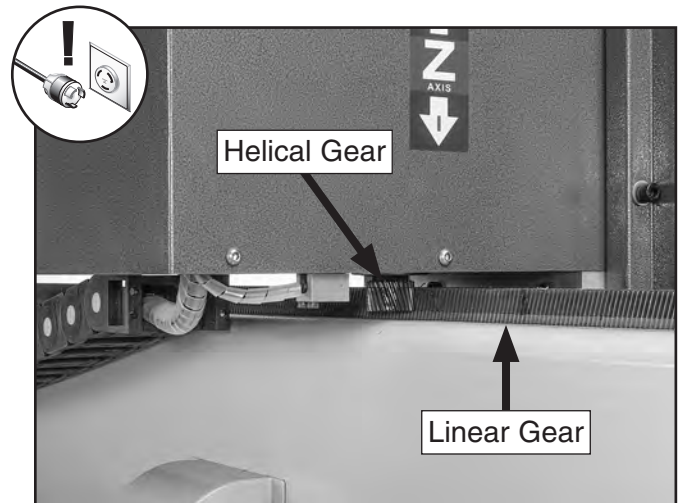
- Press and hold SET button to confirm settings and start oiler system lubrication cycle.

## X-Axis Rack & Pinion

Lube Type..... T26419 or NLGI#2 Equivalent  
 Lube Amount ..... As Needed  
 Lubrication Frequency ..... Weekly

### To clean and lubricate X-axis rack and pinion:

- DISCONNECT MACHINE FROM POWER!
- Clean X-axis helical and linear gear with a brush and mineral spirits to remove grime and old lubrication (see **Figure 58**).
- Use a clean brush to wipe entire length of helical and linear gear with Grizzly T26419 or NLGI#2 Equivalent (see **Figure 58**).



**Figure 58.** Example of rack and pinion lubrication area.

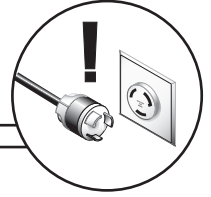
- Turn machine **ON** and move spindle several times over full range of X-axis travel to spread lubricant and ensure smooth movement.



# SECTION 7: SERVICE

Review the troubleshooting procedures in this section if a problem develops with your machine. If you need replacement parts or additional help with a procedure, call our Technical Support. **Note:** *Please gather the serial number and manufacture date of your machine before calling.*

## Troubleshooting



### Motor & Electrical

Symptom	Possible Cause	Possible Solution
Machine does not start, or power supply breaker immediately trips after startup.	<ol style="list-style-type: none"> <li>EMERGENCY STOP button depressed/at fault.</li> <li>Machine circuit breaker tripped or at fault.</li> <li>Blown fuse.</li> <li>Incorrect power supply voltage/circuit size.</li> <li>Electrical cabinet limit switch engaged/at fault.</li> <li>Power supply circuit breaker tripped or fuse blown.</li> <li>Controller/interface board at fault.</li> <li>Contactors not energized/at fault.</li> <li>Control/ground wiring broken, damaged, or disconnected.</li> <li>ON/OFF button at fault.</li> <li>Inverter at fault.</li> <li>Spindle motor/motor bearings at fault.</li> </ol>	<ol style="list-style-type: none"> <li>Rotate EMERGENCY STOP button head to reset. Replace if at fault.</li> <li>Reset circuit breaker on switch.</li> <li>Replace fuse/ensure no shorts.</li> <li>Ensure correct power supply voltage/circuit size.</li> <li>Close and secure electrical cabinet/replace switch.</li> <li>Ensure power supply circuit is not overloaded and is free of shorts. Reset circuit breaker or replace fuse.</li> <li>Inspect/replace if at fault.</li> <li>Test all legs for power; replace if necessary.</li> <li>Fix broken/damaged control/ground wires or disconnected/corroded connections.</li> <li>Replace ON/OFF button.</li> <li>Inspect inverter; replace if at fault.</li> <li>Test/repair/replace.</li> </ol>
Machine stalls or is underpowered.	<ol style="list-style-type: none"> <li>Workpiece material unsuitable for machine.</li> <li>Workpiece loose.</li> <li>Dull cutter or incorrect cutter type for task.</li> <li>Machine undersized for task.</li> <li>Spindle jammed.</li> <li>Spindle motor overheated.</li> <li>Extension cord too long.</li> <li>Servo motor/motor bearings at fault.</li> <li>Contactors not energized/at fault.</li> <li>One or more axes linear guide rail(s)/carriage(s) are damaged or binding.</li> </ol>	<ol style="list-style-type: none"> <li>Only process material rated for machine (<b>Page 34</b>).</li> <li>Secure with clamps and vacuum table (<b>Page 35</b>).</li> <li>Replace/sharpen cutter. Use proper cutter for cutting task (<b>Page 34</b>).</li> <li>Reduce feed rate or depth of cut.</li> <li>DISCONNECT POWER! Turn spindle by hand to identify/fix cause of jam.</li> <li>Turn machine OFF and allow spindle motor to cool.</li> <li>Move machine closer to power supply; use shorter extension cord.</li> <li>Test wire continuity between servo motor and servo driver; repair/replace if at fault. Test/repair/replace servo motor.</li> <li>Test all legs for power; repair/replace if at fault.</li> <li>Inspect linear guide rail(s)/carriage(s) on each axis for damage, corrosion, and debris.</li> </ol>
Machine has vibration or noisy operation.	<ol style="list-style-type: none"> <li>Workpiece loose.</li> <li>Motor or component loose.</li> <li>Incorrect feed rate, spindle speed, or cutter type.</li> </ol>	<ol style="list-style-type: none"> <li>Secure with clamps and vacuum table (<b>Page 35</b>).</li> <li>Replace damaged or missing bolt/nuts or tighten if loose.</li> <li>Incorrect feed rate, spindle speed, or cutter type.</li> </ol>



## Motor & Electrical (Cont.)

Symptom	Possible Cause	Possible Solution
Machine has vibration or noisy operation.	<ol style="list-style-type: none"> <li>4. Cutter or spindle at fault.</li> <li>5. Bit chattering.</li> <li>6. Collet at fault.</li> <li>7. Machine not level.</li> <li>8. Spindle bearings at fault.</li> <li>9. One or more servo driver(s) at fault.</li> <li>10. One or more axes ball screw(s)/bearing(s) are damaged or binding.</li> </ol>	<ol style="list-style-type: none"> <li>4. Replace or sharpen cutter; tighten loose spindle; replace defective spindle, collet, or spindle nut (<b>Page 34</b>).</li> <li>5. Replace/sharpen cutter; index cutter to workpiece; use correct feed rate and spindle speed.</li> <li>6. Replace collet.</li> <li>7. Level machine (<b>Page 22</b>).</li> <li>8. Test by rotating spindle; rotational grinding/loose shaft requires bearing replacement.</li> <li>9. Test wire continuity between servo driver and servo motor; repair/replace if at fault. Test/repair/replace servo driver.</li> <li>10. Inspect ball screw(s)/bearing(s) on each axis for damage, corrosion, and debris.</li> </ol>

## Machine Operations

Symptom	Possible Cause	Possible Solution
Axis will not move after controller receives commands.	<ol style="list-style-type: none"> <li>1. One axis not moving.</li> <li>2. All axes not moving.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check connection to motor. Check 50-pin connection to interface board.</li> <li>2. Inspect 50-pin cable and interface board connection. Inspect power supply to servo motors. Inspect mechanical components.</li> </ol>
Axis movement and location not repeatable.	<ol style="list-style-type: none"> <li>1. Linear guide rail(s) worn.</li> <li>2. Motor coupler(s) worn.</li> </ol>	<ol style="list-style-type: none"> <li>1. Inspect/repair.</li> <li>2. Inspect/repair.</li> </ol>
One or more axes only move in one direction.	<ol style="list-style-type: none"> <li>1. Interface board/motor connection loose.</li> <li>2. Incorrect machine parameters.</li> <li>3. Interface board at fault.</li> <li>4. Servo motor at fault.</li> <li>5. Servo driver at fault.</li> </ol>	<ol style="list-style-type: none"> <li>1. Inspect connections and ensure all are tight.</li> <li>2. Verify machine parameters (<b>Page 30</b>).</li> <li>3. Inspect/replace plugs and sockets.</li> <li>4. Inspect/replace plugs and sockets.</li> <li>5. Inspect/replace servo driver.</li> </ol>
One or more axes will not move.	<ol style="list-style-type: none"> <li>1. Direction wire and pulse wire in wrong place on interface board.</li> <li>2. Servo motor disconnected.</li> <li>3. Servo motor at fault.</li> <li>4. No pulse signal from interface board.</li> </ol>	<ol style="list-style-type: none"> <li>1. Rewire direction/pulse wiring.</li> <li>2. Reconnect servo motor.</li> <li>3. Inspect/repair/replace.</li> <li>4. Replace interface board.</li> </ol>
Inconsistent cutting depth.	<ol style="list-style-type: none"> <li>1. Loose cutter.</li> <li>2. Spoilboard not flat.</li> <li>3. Z-axis linear guide rail(s) has too much movement.</li> <li>4. Workpiece loose.</li> <li>5. Z-axis tool setter at fault.</li> <li>6. Z-axis proximity switch at fault.</li> <li>7. CAM/G-code at fault.</li> </ol>	<ol style="list-style-type: none"> <li>1. Tighten spindle collet (<b>Page 34</b>).</li> <li>2. Clean/resurface spoilboard (<b>Page 38</b>).</li> <li>3. Inspect/tighten/replace if needed.</li> <li>4. Secure with clamps and vacuum table (<b>Page 35</b>).</li> <li>5. Test/replace.</li> <li>6. Test (<b>Page 55</b>)/replace.</li> <li>7. Review G-code and correct errors.</li> </ol>



## Machine Operations (Cont.)

Symptom	Possible Cause	Possible Solution
Machine fails to home, or moves beyond soft limits when homing.	<ol style="list-style-type: none"> <li>1. Incorrect machine parameters.</li> <li>2. Faulty connection.</li> <li>3. Proximity switch not aligned.</li> <li>4. Loose proximity switch wire.</li> <li>5. Proximity switch at fault.</li> <li>6. Interface board at fault.</li> <li>7. 50-pin data cable at fault.</li> </ol>	<ol style="list-style-type: none"> <li>1. Verify machine parameters (<b>Page 30</b>).</li> <li>2. Find/secure connection.</li> <li>3. Inspect/adjust proximity switch.</li> <li>4. Secure connection.</li> <li>5. Test (<b>Page 55</b>)/repair/replace proximity switch.</li> <li>6. Inspect/replace if needed.</li> <li>7. Replace cable.</li> </ol>
Finished workpiece incorrect size.	<ol style="list-style-type: none"> <li>1. Pulse equivalent incorrect.</li> <li>2. Incorrect cutter.</li> <li>3. CAD/CAM dimensional or tooling errors.</li> </ol>	<ol style="list-style-type: none"> <li>1. Verify controller parameters and update pulse equivalence (<b>Page 30</b>).</li> <li>2. Use correct cutter for job.</li> <li>3. Correct CAD/CAM errors as needed.</li> </ol>
Spindle moves in opposite direction when homing.	<ol style="list-style-type: none"> <li>1. Faulty connection between proximity switch and interface board.</li> <li>2. Homing direction set incorrectly in controller.</li> <li>3. Proximity switch at fault.</li> <li>4. Electrical interference triggering proximity switch.</li> <li>5. Interface board at fault.</li> <li>6. 50-pin data cable at fault.</li> <li>7. Servo driver programmed incorrectly.</li> </ol>	<ol style="list-style-type: none"> <li>1. Test wiring to locate bad connection.</li> <li>2. Input correct homing parameters (<b>Page 30</b>).</li> <li>3. Test (<b>Page 55</b>)/replace proximity switch.</li> <li>4. Test wiring and isolate strong interference signals from electrical currents and ground.</li> <li>5. Replace interface board.</li> <li>6. Replace 50-pin data cable.</li> <li>7. Contact Grizzly Technical Support for assistance.</li> </ol>
#5 servo alarm prevents axes movement.	<ol style="list-style-type: none"> <li>1. One or more axes has crashed into limit stop, or system error has occurred.</li> <li>2. Incorrect machine parameters.</li> <li>3. Incorrect voltage parameters.</li> <li>4. Servo driver screen displays "C.90" communication fault.</li> <li>5. Servo driver screen displays "(A).910" or "(A).710" overload faults.</li> </ol>	<ol style="list-style-type: none"> <li>1. Use EMERGENCY STOP button to reset power and clear alarm.</li> <li>2. Verify machine parameters (<b>Page 30</b>).</li> <li>3. Verify voltage parameters (<b>Page 31</b>).</li> <li>4. Verify servo controller cable (green) is properly connected. Test/repair/replace cable. Test/repair/replace servo driver.</li> <li>5. Visually inspect axes for obstructions. Test/repair/replace corresponding servo driver power cable and servo motor.</li> </ol>

## Vacuum Pump Motor & Electrical

Symptom	Possible Cause	Possible Solution
Vacuum pump does not start, or power supply breaker immediately trips after startup.	<ol style="list-style-type: none"> <li>1. Incorrect power supply voltage or circuit size.</li> <li>2. Disconnect switch at fault/wired incorrectly.</li> <li>3. Power supply circuit breaker tripped or fuse blown.</li> <li>4. Vacuum pump junction box wiring incorrect.</li> <li>5. Control/ground wiring broken, damaged, or disconnected.</li> <li>6. Motor or motor bearings at fault.</li> </ol>	<ol style="list-style-type: none"> <li>1. Ensure correct power supply voltage and circuit size (<b>Page 14</b>).</li> <li>2. Test for good contacts; correct the wiring.</li> <li>3. Ensure power supply circuit is not overloaded and is free of shorts. Reset circuit breaker or replace fuse.</li> <li>4. Verify/rewire vacuum pump junction box wiring (<b>Page 27</b>).</li> <li>5. Fix broken/damaged control/ground wires or disconnected/corroded connections.</li> <li>6. Test/repair/replace.</li> </ol>



## Vacuum Pump Motor & Electrical (Cont.)

Symptom	Possible Cause	Possible Solution
Vacuum pump stalls or has weak suction.	<ol style="list-style-type: none"> <li>1. Disconnect switch at fault/wired incorrectly.</li> <li>2. Vacuum pump junction box wiring incorrect.</li> <li>3. Workpiece or spoilboard is dirty or uneven.</li> <li>4. Gasket tube not installed or installed incorrectly.</li> <li>5. Filter is dirty or clogged.</li> <li>6. Leak in hose, fittings, or valves.</li> <li>7. Clog in vacuum hose.</li> <li>8. Motor overheated.</li> <li>9. Motor or motor bearings at fault.</li> </ol>	<ol style="list-style-type: none"> <li>1. Test for good contacts; correct the wiring.</li> <li>2. Verify/rewire vacuum pump junction box wiring (<b>Page 27</b>).</li> <li>3. Clean/resurface workpiece or spoilboard (<b>Page 38</b>).</li> <li>4. Verify gasket tube is installed and seals workpiece correctly (<b>Page 35</b>).</li> <li>5. Clean or replace vacuum filter.</li> <li>6. Inspect/repair/replace.</li> <li>7. Remove hose and clear clog.</li> <li>8. Clean motor, let cool, and reduce workload.</li> <li>9. Test/repair/replace.</li> </ol>
Vacuum pump pushes air in wrong direction.	<ol style="list-style-type: none"> <li>1. Incoming power wires are wired out of phase.</li> </ol>	<ol style="list-style-type: none"> <li>1. Reverse two incoming power wires in vacuum pump junction box (<b>Page 27</b>).</li> </ol>

## Controller Operations

Symptom	Possible Cause	Possible Solution
Controller display shows "out of soft limits error".	<ol style="list-style-type: none"> <li>1. Toolpath outside of working envelope.</li> <li>2. Toolpath too large for working envelope.</li> <li>3. Work origin incorrect in G-code.</li> <li>4. Incorrect machine parameters.</li> <li>5. Incorrect coordinate system in CAM software.</li> </ol>	<ol style="list-style-type: none"> <li>1. Reset work origin and secure workpiece so toolpath falls within working envelope.</li> <li>2. Revise toolpath/break up toolpath into multiple sections.</li> <li>3. Revise toolpath.</li> <li>4. Verify machine parameters (<b>Page 30</b>).</li> <li>5. Set correct coordinates in CAM software.</li> </ol>
Controller not processing correctly.	<ol style="list-style-type: none"> <li>1. Incompatible G-code file.</li> <li>2. Electrical interference.</li> <li>3. Incorrect machine parameters.</li> <li>4. Incompatible post-processor.</li> </ol>	<ol style="list-style-type: none"> <li>1. Reformat G-code and re-upload to controller.</li> <li>2. Test wiring and isolate strong interference signals from electrical currents and ground.</li> <li>3. Verify machine parameters (<b>Page 30</b>).</li> <li>4. Use compatible post-processor. In V-Carve, select "RichAuto A11 DSP" post processor from the drop-down menu.</li> </ol>
Controller screen is dim.	<ol style="list-style-type: none"> <li>1. Power supply disconnected or damaged.</li> <li>2. Power supply voltage too high for controller.</li> <li>3. 50-pin data cable at fault.</li> <li>4. Display at fault.</li> </ol>	<ol style="list-style-type: none"> <li>1. Inspect/replace power supply.</li> <li>2. Use correct power supply. High voltage may damage controller; replace if needed.</li> <li>3. Inspect/clean plugs and sockets and retry. Replace if bad.</li> <li>4. Replace controller.</li> </ol>
Controller display is blank, flickers, or restarts.	<ol style="list-style-type: none"> <li>1. Faulty controller connection.</li> <li>2. Incorrect power supply voltage or circuit size.</li> <li>3. Controller software at fault.</li> <li>4. Display at fault.</li> </ol>	<ol style="list-style-type: none"> <li>1. Inspect/clean plugs and sockets and retry. Replace if faulty.</li> <li>2. Ensure correct power supply voltage and circuit size.</li> <li>3. Update controller software (<b>Page 56</b>).</li> <li>4. Replace controller.</li> </ol>
Controller screen says spindle is <b>ON</b> when spindle is <b>OFF</b> and spindle is <b>OFF</b> when spindle is <b>ON</b> .	<ol style="list-style-type: none"> <li>1. Wrong connections at interface board.</li> </ol>	<ol style="list-style-type: none"> <li>1. Rewire interface board.</li> </ol>





# Testing Proximity Switches

If the Model G0895 is no longer homing properly, or one or more axes is unresponsive, test each proximity switch for proper operation.

Items Needed	Qty
Scrap Iron or Steel .....	1
Multimeter .....	1

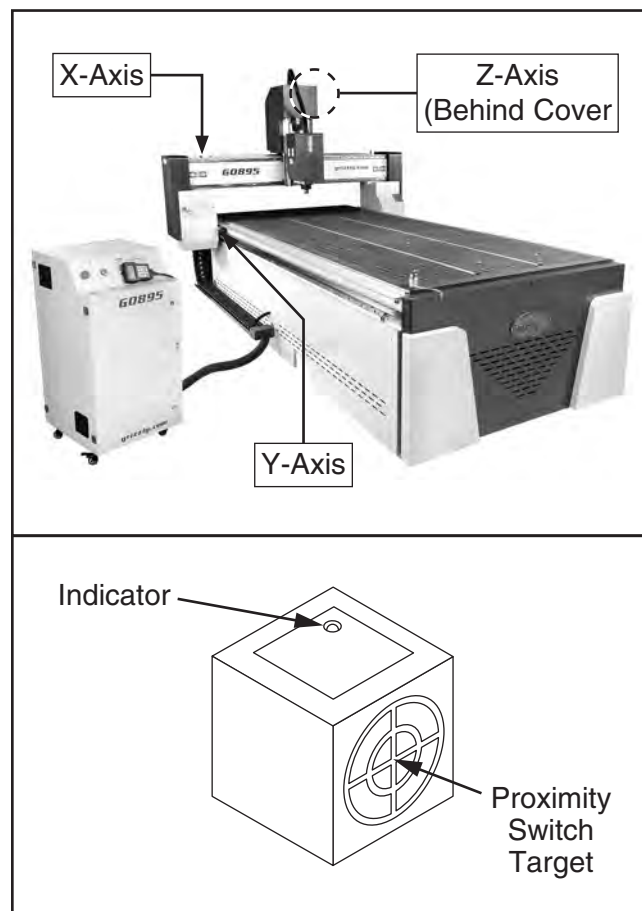
## To test proximity switches:

- Turn machine **ON** and press OK at "HomeTypeAtStart" to home all axes.
  - If machine *does* home properly, all proximity switches are working correctly.
  - If machine *does not* home properly, proceed to **Step 2**.
- Press STOP, then press MENU *twice* to access voltage parameter screen shown in **Figure 59**.

Voltage Parameters							
1	2	3	4	5	6	7	8
↓	↓	↓	↑	↑	↓	↓	↓
1	2	3	4	5	6	7	8
↓	↓	↓	↓	↓	↓	↓	↓

**Figure 59.** Voltage parameter screen.

- Touch each proximity switch target with a scrap piece of iron or steel (see **Figure 60**).



**Figure 60.** Proximity switch locations.

- Verify top row axes 1–3 (1=X-axis, 2=Y-axis, and 3=Z-axis) in **Figure 59** point up when the corresponding proximity switch target is activated.

— If arrow *does* point up, the proximity switch is working properly. Proceed to **Troubleshooting** on **Page 51** and test additional control systems.

— If arrow *does not* point up, and test light on proximity switch *is not* illuminated, proceed to **Step 5**.

**Note:** Proximity switches have a red light that will illuminate when the proximity switch is activated.

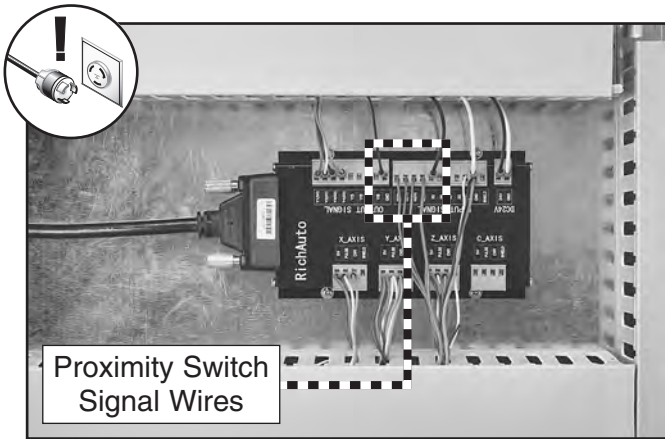
- DISCONNECT MACHINE FROM POWER!**



6. Use a multimeter to check continuity between proximity switches and interface board terminals (see **Figure 61**).

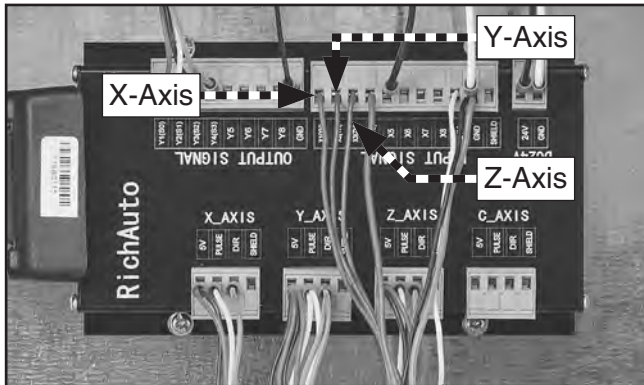
— If continuity *is* confirmed between proximity switches and interface board, proceed to **Step 7**.

— If continuity *is not* confirmed between proximity switches and interface board, repair wiring, then repeat **Steps 1–6**.



**Figure 61.** Interface board proximity switch signal wires.

7. Swap faulty axis proximity switch signal wire on interface board (see **Figure 62**) with any one of the known good axes signal wires (X1=X-axis, X2=Y-axis, X3=Z-axis).



**Figure 62.** Interface board proximity switch axes.

8. Perform **Steps 1–3** on **Page 55** and verify test results.

— If arrow *does* point up on axis swapped in **Step 7**, replace faulty proximity switch.

— If arrow *does not* point up on axis swapped in **Step 7**, replace interface board.

# Updating RichAuto Controller Software

If the RichAuto controller displays a blank screen, the installed A11E software may need to be re-installed to display correctly.

## NOTICE

Contact Technical Support to have a software update file sent directly to you. **DO NOT** install unsupported software or the controller may function erratically.

### Items Needed

Qty

RichAuto A11E Software File (.PKG Format) .... 1  
 USB Drive 16GB or Less..... 1

**IMPORTANT:** DO NOT use a USB drive larger than 16GB. The controller is designed to read USB drives formatted below 16GB.

### To update controller software:

1. Copy software file (.PKG format) to USB drive, then connect USB drive to controller.
2. Press and hold OK button, then turn controller **ON**.

**Note:** Update can be performed at the CNC router, or by using the included USB-B cable connected to a computer.

3. When controller displays "Emergency State" screen, scroll to "Update System" and press OK button.
4. At "SelectUpdateFile" screen, scroll to "UDisk File" and press OK.
5. Select .PKG update file and press OK.
6. Once update is complete, restart controller.
7. Verify machine parameters on controller match those shown on **Page 30**.



# SECTION 8: WIRING

These pages are current at the time of printing. However, in the spirit of improvement, we may make changes to the electrical systems of future machines. Compare the manufacture date of your machine to the one stated in this manual, and study this section carefully.

If there are differences between your machine and what is shown in this section, call Technical Support at (570) 546-9663 for assistance BEFORE making any changes to the wiring on your machine. An updated wiring diagram may be available. **Note:** *Please gather the serial number and manufacture date of your machine before calling. This information can be found on the main machine label.*

## WARNING

### Wiring Safety Instructions

**SHOCK HAZARD.** Working on wiring that is connected to a power source is extremely dangerous. Touching electrified parts will result in personal injury including but not limited to severe burns, electrocution, or death. Disconnect the power from the machine before servicing electrical components!

**MODIFICATIONS.** Modifying the wiring beyond what is shown in the diagram may lead to unpredictable results, including serious injury or fire. This includes the installation of unapproved after-market parts.

**WIRE CONNECTIONS.** All connections must be tight to prevent wires from loosening during machine operation. Double-check all wires disconnected or connected during any wiring task to ensure tight connections.

**CIRCUIT REQUIREMENTS.** You MUST follow the requirements at the beginning of this manual when connecting your machine to a power source.

**WIRE/COMPONENT DAMAGE.** Damaged wires or components increase the risk of serious personal injury, fire, or machine damage. If you notice that any wires or components are damaged while performing a wiring task, replace those wires or components.

**MOTOR WIRING.** The motor wiring shown in these diagrams is current at the time of printing but may not match your machine. If you find this to be the case, use the wiring diagram inside the motor junction box.











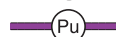

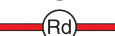

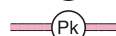
**CAPACITORS/INVERTERS.** Some capacitors and power inverters store an electrical charge for up to 10 minutes after being disconnected from the power source. To reduce the risk of being shocked, wait at least this long before working on capacitors.

**EXPERIENCING DIFFICULTIES.** If you are experiencing difficulties understanding the information included in this section, contact our Technical Support at (570) 546-9663.

#### NOTICE

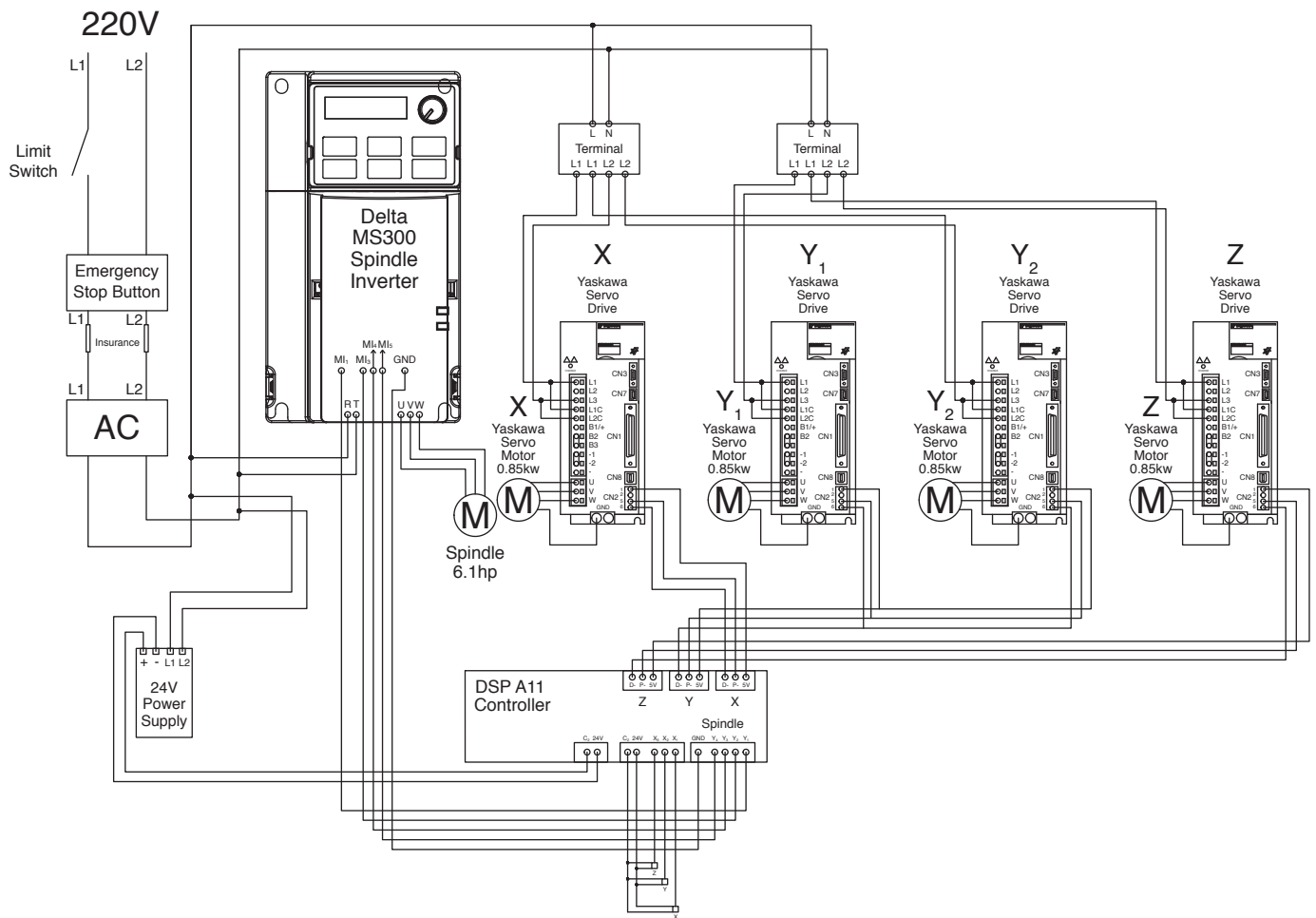
The photos and diagrams included in this section are best viewed in color. You can view these pages in color at [www.grizzly.com](http://www.grizzly.com).

#### COLOR KEY

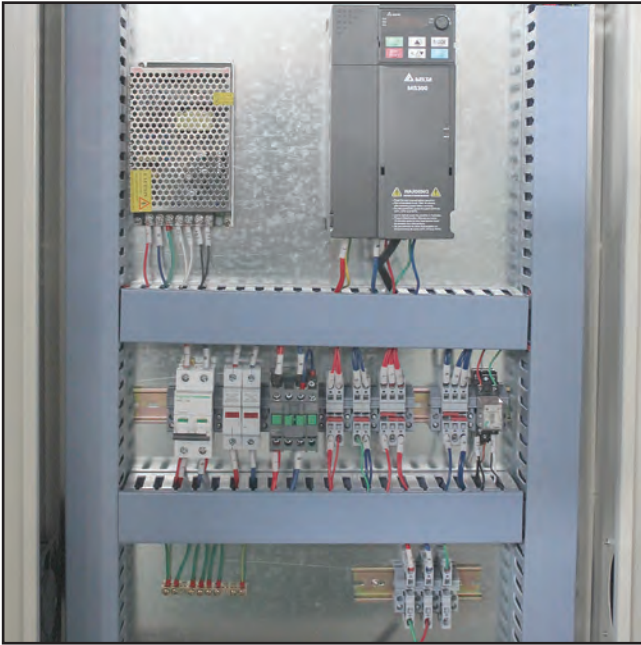
BLACK 	BLUE 	YELLOW 	LIGHT BLUE 
WHITE 	BROWN 	YELLOW GREEN 	BLUE WHITE 
GREEN 	GRAY 	PURPLE 	TURQUOISE 
RED 	ORANGE 	PINK 	



# Wiring Diagram



# Electrical Components



**Figure 63.** Front view of electrical cabinet.



**Figure 65.** Rear view of electrical cabinet.



**Figure 64.** Servo drivers.

# Electrical Components (Cont.)



Figure 66. VFD and power supply.

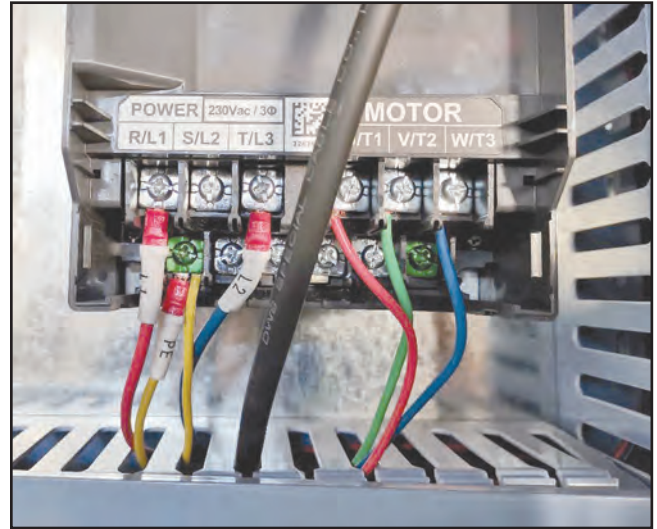


Figure 68. VFD (cover removed).



Figure 67. Circuit breakers, contactor, and fuses.

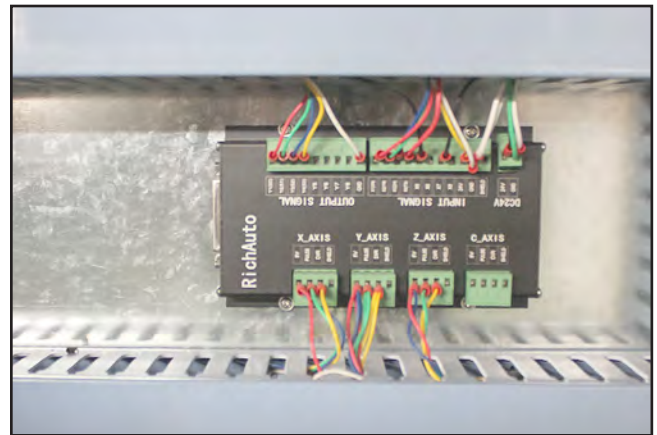


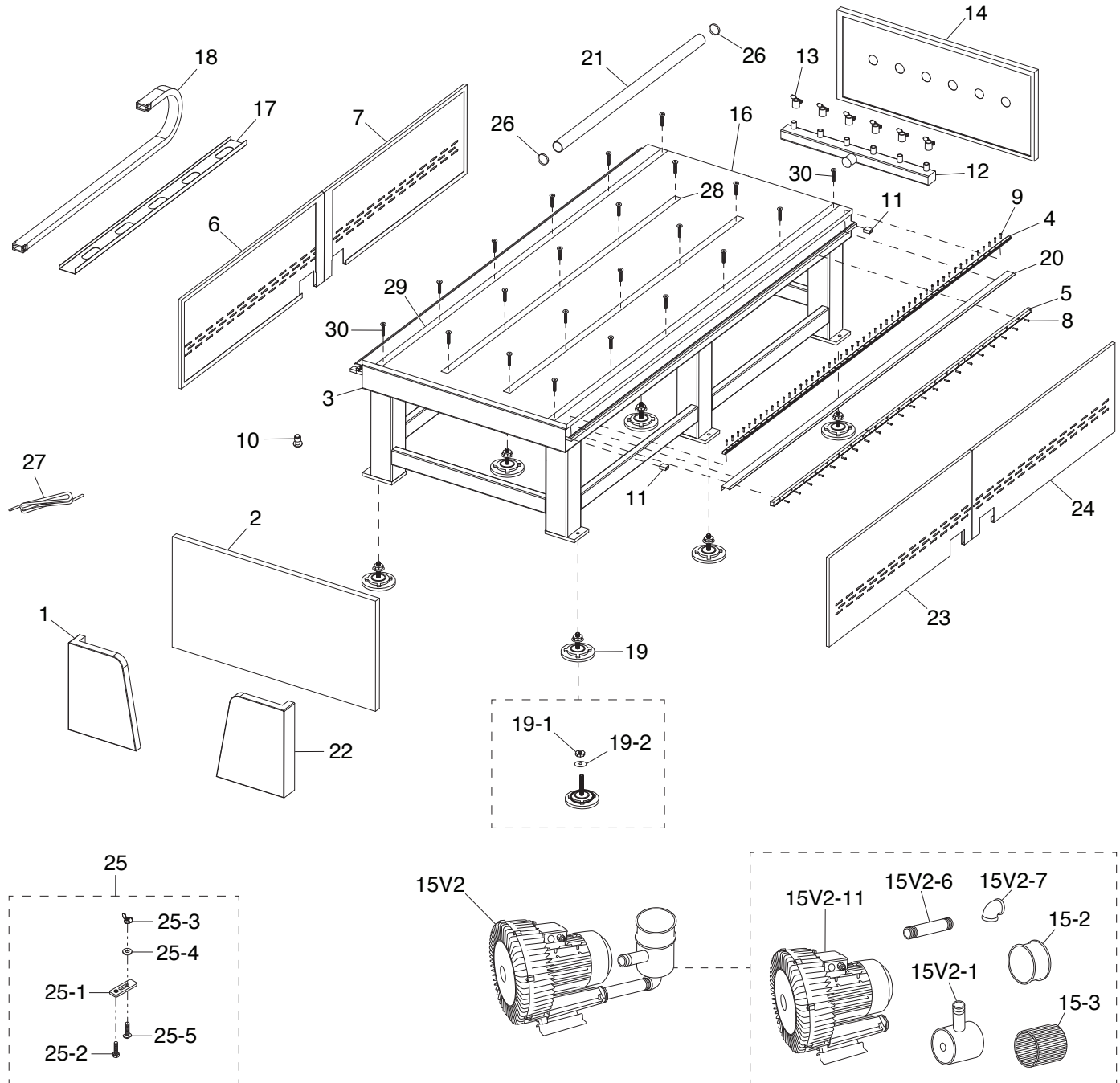
Figure 69. RichAuto interface board.



# SECTION 9: PARTS

We do our best to stock replacement parts when possible, but we cannot guarantee that all parts shown are available for purchase. Call (800) 523-4777 or visit [www.grizzly.com/parts](http://www.grizzly.com/parts) to check for availability.

## Frame & Bed



# Frame & Bed Parts List

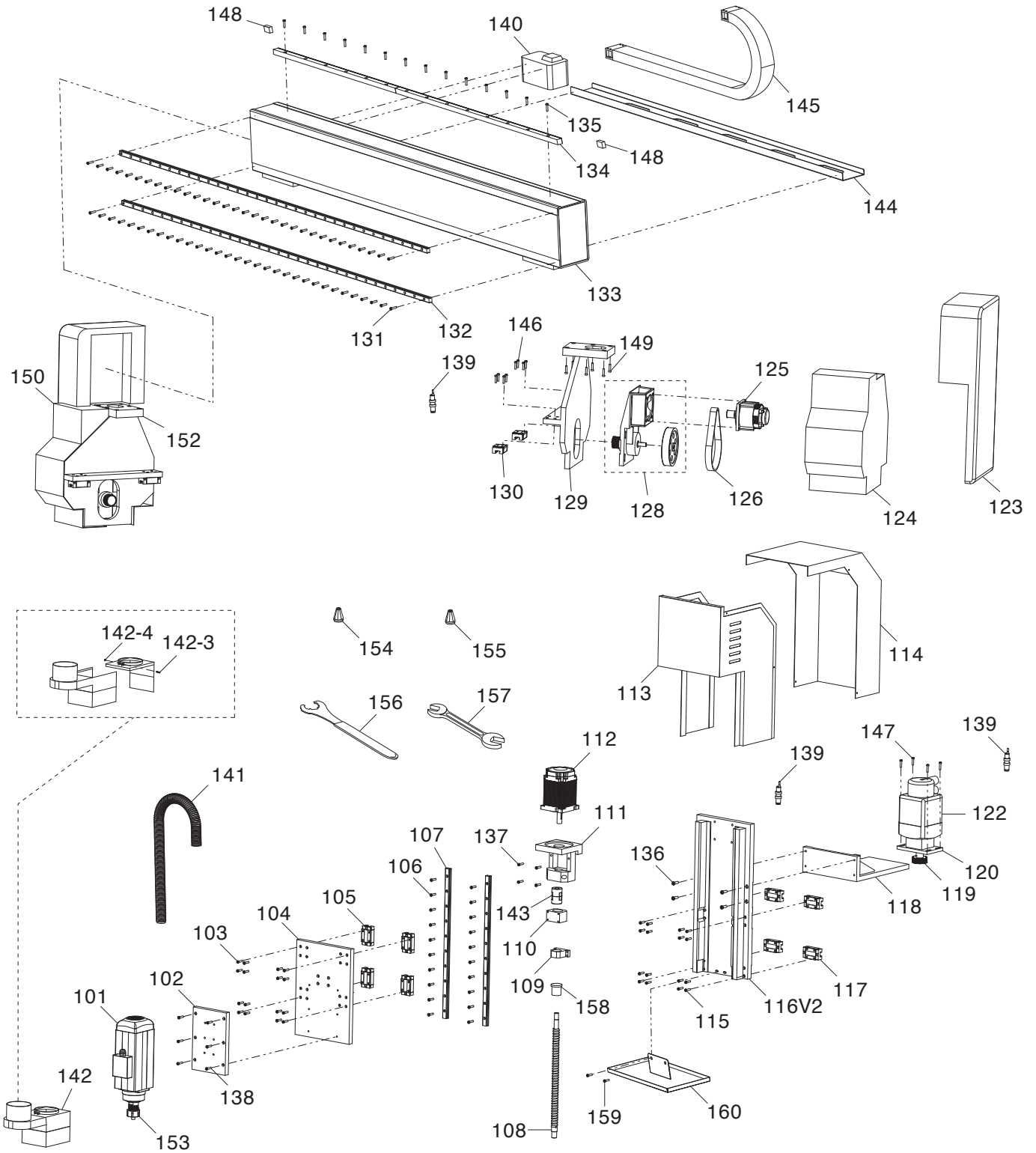
REF	PART #	DESCRIPTION
1	P0895001	CORNER COVER (LEFT)
2	P0895002	PANEL (FRONT)
3	P0895003	BODY
4	P0895004	LINEAR GUIDE 25MM
5	P0895005	RACK
6	P0895006	SIDE PANEL (LEFT, FRONT)
7	P0895007	SIDE PANEL (LEFT, REAR)
8	P0895008	CAP SCREW M6-1 X 30
9	P0895009	CAP SCREW M5-.8 X 25
10	P0895010	Z-AXIS SENSOR
11	P0895011	LIMIT BLOCK
12	P0895012	AIR DISTRIBUTION PIPE
13	P0895013	AIR VALVE
14	P0895014	PANEL (REAR)
15V2	P0895015V2	VACUUM PUMP ASSEMBLY V2.04.22
15V2-1	P0895015V2-1	VACUUM PUMP FILTER BASE V2.04.22
15-2	P0895015-2	PLEXIGLASS COVER W/RUBBER SEAL
15-3	P0895015-3	VACUUM PUMP FILTER
15V2-6	P0895015V2-6	THREADED PIPE 2-1/2 IPS X 7-1/4 V2.04.22
15V2-7	P0895015V2-7	ELBOW REDUCER 2 X 2-1/2 IPS V2.04.22
15V2-11	P0895015V2-11	VACUUM PUMP V2.04.22
16	P0895016	VACUUM TABLE
17	P0895017	CABLE SUPPORT

REF	PART #	DESCRIPTION
18	P0895018	CABLE CARRIER
19	P0895019	LEVELING FOOT
19-1	P0895019-1	HEX NUT M20-2.5
19-2	P0895019-2	FLAT WASHER 20MM
19-3	P0895019-3	STUD-FT M20-2.5 X 100
19-4	P0895019-4	LEVELER
19-5	P0895019-5	FOOT
20	P0895020	DUST COVER
21	P0895021	VACUUM HOSE 2"
22	P0895022	CORNER COVER (RIGHT)
23	P0895023	SIDE PANEL (RIGHT, FRONT)
24	P0895024	SIDE PANEL (RIGHT, REAR)
25	P0895025	T-SLOT CLAMP
25-1	P0895025-1	T-SLOT CLAMP PLATE
25-2	P0895025-2	HEX BOLT M8-1.25 X 50
25-3	P0895025-3	WING NUT M8-1.25
25-4	P0895025-4	FLAT WASHER 8MM
25-5	P0895025-5	T-BOLT M8-1.25 X 80
26	P0895026	HOSE CLAMP 2"
27	P0895027	GASKET TUBE
28	P0895028	INNER T-SLOT TRACK 90-1/2"
29	P0895029	OUTER T-SLOT TRACK 120"
30	P0895030	FLAT HD CAP SCR M5-.8 X 50





# Gantry & Spindle



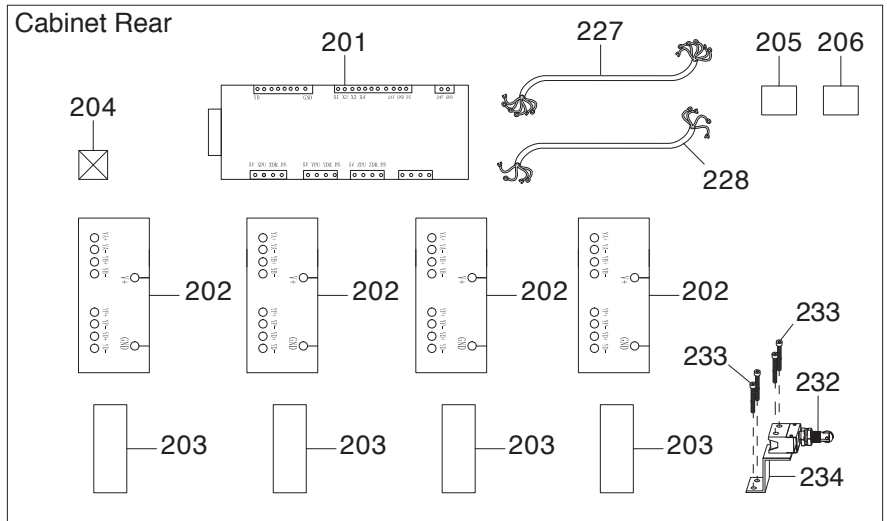
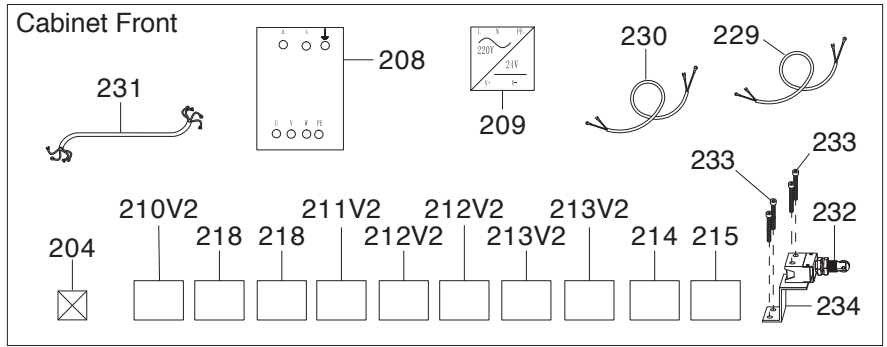
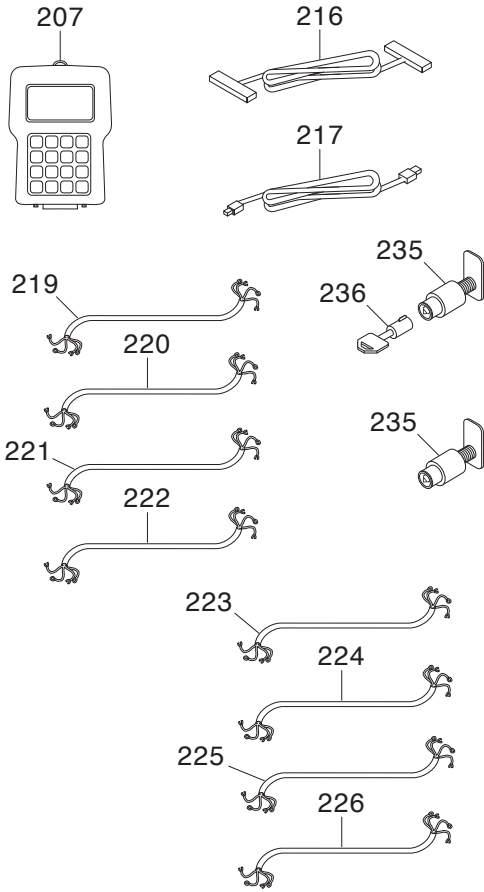
# Gantry & Spindle Parts List

REF	PART #	DESCRIPTION
101	P0895101	SPINDLE MOTOR 6HP 3-PH 220V
102	P0895102	MOTOR MOUNT
103	P0895103	CAP SCREW M5-.8 X 20
104	P0895104	Z-AXIS MOUNT
105	P0895105	SLIDE BRACKET 25MM
106	P0895106	CAP SCREW M5-.8 X 25
107	P0895107	LINEAR GUIDE 25MM
108	P0895108	BALL SCREW 25MM
109	P0895109	BEARING SEAT
110	P0895110	BALL SCREW SEAT
111	P0895111	Z-AXIS MOTOR MOUNT
112	P0895112	Z-AXIS SERVO MOTOR SGM7G-09AFC6C
113	P0895113	SPINDLE COVER (LOWER)
114	P0895114	SPINDLE COVER (UPPER)
115	P0895115	CAP SCREW M5-.8 X 20
116V2	P0895116V2	X-AXIS MOUNT V2.10.21
117	P0895117	SLIDE BRACKET 25MM
118	P0895118	DRIVE BOARD BRACKET
119	P0895119	GEAR
120	P0895120	X-AXIS SERVO MOTOR MOUNTING BOARD
122	P0895122	X-AXIS SERVO MOTOR SGM7G-09AFC61
123	P0895123	Y-AXIS COVER (UPPER, RIGHT)
124	P0895124	Y-AXIS COVER (LOWER, RIGHT)
125	P0895125	Y-AXIS SERVO MOTOR SGM7G-09AFC61
126	P0895126	TIMING BELT 5M 550
127	P0895127	PULLEY
128	P0895128	GEAR BOX & PULLEY
129	P0895129	GANTRY SUPPORT (RIGHT)
130	P0895130	SLIDE BRACKET 25MM
131	P0895131	CAP SCREW M5-.8 X 20

REF	PART #	DESCRIPTION
132	P0895132	LINEAR GUIDE 25MM
133	P0895133	GANTRY
134	P0895134	RACK
135	P0895135	CAP SCREW M6-1 X 25
136	P0895136	CAP SCREW M8-1.25 X 35
137	P0895137	CAP SCREW M6-1 X 45
138	P0895138	CAP SCREW M6-1 X 30
139	P0895139	LIMIT SWITCH TL-Q5MC1-Z
140	P0895140	LUBRICATION PUMP
141	P0895141	CONDUIT
142	P0895142	DUST HOOD ASSEMBLY
143	P0895143	COUPLER
144	P0895144	CABLE CARRIER
145	P0895145	CABLE SUPPORT
146	P0895146	CAP SCREW M5-.8 X 20
147	P0895147	CAP SCREW M8-1.25 X 30
148	P0895148	LIMIT BLOCK
149	P0895149	CAP SCREW M12-1.75 X 60
150	P0895150	Y-AXIS COVERS 2-PC SET
151	P0895151	Y-AXIS COVER (LOWER, LEFT)
152	P0895152	GANTRY SUPPORT (LEFT)
153	P0895153	SPINDLE NUT ER32
154	P0895154	COLLET 6MM ER32
155	P0895155	COLLET 1/2" ER32
156	P0895156	COLLET WRENCH ER32
157	P0895157	WRENCH 30 X 32 OPEN ENDS
158	P0895158	Z-AXIS SHAFT COLLAR
159	P0895159	CAP SCREW M4-.7 X 12
160	P0895160	SPINDLE OIL DRIP PAN



# Electrical Cabinet

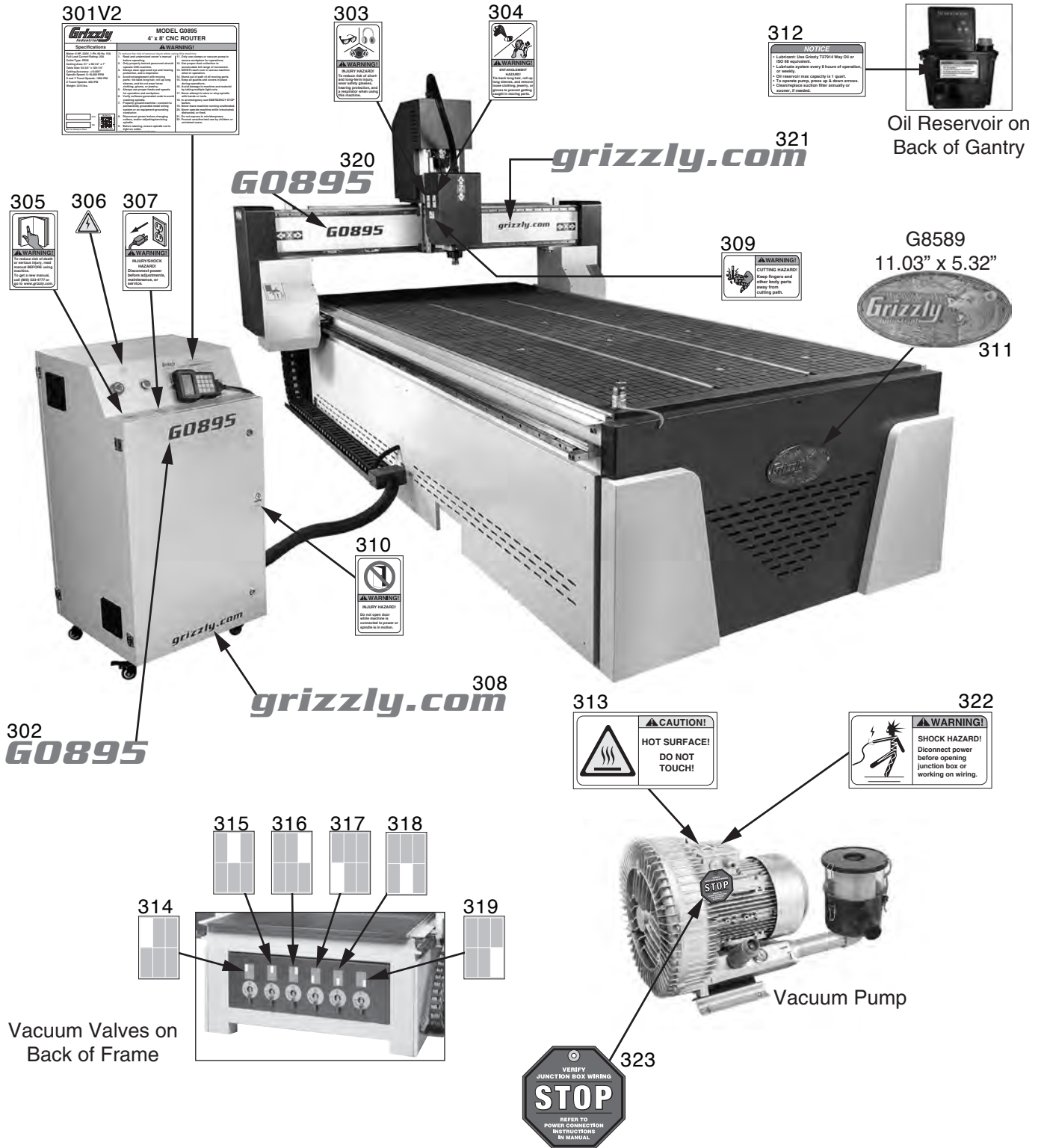


REF	PART #	DESCRIPTION
201	P0895201	DSP CONTROLLER RICHAUTO A11E
202	P0895202	SERVO DRIVER YASKAWA SGD7S-7R6A00A
203	P0895203	BRAKE RESISTANCE 200W
204	P0895204	FAN SUNON 2122HSL
205	P0895205	ON SWITCH YIJIA YJ136-LA38
206	P0895206	E-STOP SWITCH YIJIA YJ136-LA38
207	P0895207	DSP CONTROLLER RICHAUTO
208	P0895208	VFD DELTA MS300 VFD25AMS23ANSAA
209	P0895209	POWER CONVERTER LRS01-150-24D
210V2	P0895210V2	CIRCUIT BREAKER 32A IC65N V2.01.20
211V2	P0895211V2	CONTACTOR LC1R2510 V2.01.20
212V2	P0895212V2	TERMINAL BAR 4P V2.01.20
213V2	P0895213V2	TERMINAL BAR 6P V2.01.20
214	P0895214	RELAY OMRON MY2N-GS 24VDC
215	P0895215	POWER TERMINAL 6P
216	P0895216	CONTROLLER CABLE 50-PIN
217	P0895217	CONTROLLER CABLE USB
218	P0895218	FUSE 32A 690V RT18-32X

REF	PART #	DESCRIPTION
219	P0895219	X SERVO POWER CORD 15G 4W 315"
220	P0895220	Y1 SERVO POWER CORD 15G 4W 236"
221	P0895221	Y2 SERVO POWER CORD 15G 4W 315"
222	P0895222	Z SERVO POWER CORD 15G 4W 315"
223	P0895223	X SERVO CONTROLLER CORD 27G 4W 315"
224	P0895224	Y1 SERVO CONTROLLER CORD 27G 4W 315"
225	P0895225	Y2 SERVO CONTROLLER CORD 27G 4W 315"
226	P0895226	Z SERVO CONTROLLER CORD 27G 4W 315"
227	P0895227	LIMIT SWITCH DATA CORD 24G 5W 236"
228	P0895228	TOOL SETTER DATA CORD 24G 4W 236"
229	P0895229	LUBRICATION PUMP POWER CORD 18G 2W 276"
230	P0895230	Z AXIS BREAKER CORD 18G 2W 315"
231	P0895231	SPINDLE MOTOR CORD 10G 4W 394"
232	P0895232	LIMIT SWITCH PANASONIC AZ7311 10A 250V
233	P0895233	CAP SCREW M4-.7 X 12
234	P0895234	LIMIT SWITCH BRACKET
235	P0895235	TRIANGLE-DRIVE DOOR LOCK
236	P0895236	TRIANGLE-DRIVE DOOR KEY



# Labels & Cosmetics



**301V2**

<b>Grizzly</b>	
<b>MODEL G0895</b>	
<b>4' x 8' CNC ROUTER</b>	
<b>Specifications</b>	<b>WARNING!</b>
Model G0895, 4' x 8' CNC Router 1.5 HP, 115V, 60Hz, 15A Max. Spindle Speed: 10,000 RPM Max. Spindle Torque: 100 in-lb Max. Feed Rate: 1000 IPM Max. Z-axis Travel: 10" (with optional Z-axis extension) Max. X-axis Travel: 80" (with optional X-axis extension) Max. Y-axis Travel: 48" (with optional Y-axis extension) Max. Workpiece Size: 4' x 8' x 10" Max. Weight Capacity: 1000 lbs Max. Spindle Run Time: 10 hours (with optional coolant system) Max. Spindle Run Time: 10 hours (with optional coolant system) Max. Spindle Run Time: 10 hours (with optional coolant system)	1. Read and understand all instructions before using this machine. 2. Do not use alcohol or other volatile liquids on the machine. 3. Do not use the machine if you are under the influence of alcohol or drugs. 4. Do not use the machine if you are tired or fatigued. 5. Do not use the machine if you are wearing jewelry or loose clothing. 6. Do not use the machine if you are wearing safety glasses or eye protection. 7. Do not use the machine if you are wearing a hard hat or other headgear. 8. Do not use the machine if you are wearing a respirator or other breathing apparatus. 9. Do not use the machine if you are wearing a hearing aid or other hearing device. 10. Do not use the machine if you are wearing a prosthetic or other artificial limb. 11. Do not use the machine if you are wearing a medical device or other medical equipment. 12. Do not use the machine if you are wearing a contact lens or other eye device. 13. Do not use the machine if you are wearing a hearing aid or other hearing device. 14. Do not use the machine if you are wearing a prosthetic or other artificial limb. 15. Do not use the machine if you are wearing a medical device or other medical equipment. 16. Do not use the machine if you are wearing a contact lens or other eye device. 17. Do not use the machine if you are wearing a hearing aid or other hearing device. 18. Do not use the machine if you are wearing a prosthetic or other artificial limb. 19. Do not use the machine if you are wearing a medical device or other medical equipment. 20. Do not use the machine if you are wearing a contact lens or other eye device.

**312**

**NOTICE**

- Lubricate the Grizzly T2714 Way Oil or 320-M equivalent.
- Lubricate system every 8 hours of operation.
- Clean machine case regularly to keep it free of dust.
- To operate pump, press up & down arrows.
- Check/replace suction filter annually or sooner, if needed.

**Oil Reservoir on Back of Gantry**

**305**

**WARNING!**

To reduce risk of death or serious injury, read and understand all instructions before using this machine.

**306**

**WARNING!**

SHOCK HAZARD! Disconnect power before adjusting or servicing.

**307**

**WARNING!**

SHOCK HAZARD! Disconnect power before adjusting or servicing.

**308**

**grizzly.com**

**302**

**G0895**

**313**

**CAUTION!**

**HOT SURFACE!**  
DO NOT TOUCH!

**322**

**WARNING!**

**SHOCK HAZARD!**  
Disconnect power before opening junction box or working on wiring.

**323**

**VERIFY JUNCTION BOX WIRING**

**STOP**

REFER TO POWER CONNECTION INSTRUCTIONS IN MANUAL.

**Vacuum Pump**

**314**

**315** **316** **317** **318**

**319**

**Vacuum Valves on Back of Frame**



# Labels & Cosmetics Parts List

REF	PART #	DESCRIPTION
301V2	P0895301V2	MACHINE ID LABEL V2.01.20
302	P0895302	MODEL NUMBER LABEL (SMALL)
303	P0895303	EYE/EAR/LUNG LABEL
304	P0895304	ENTANGLEMENT LABEL
305	P0895305	READ MANUAL LABEL
306	P0895306	ELECTRICITY LABEL
307	P0895307	DISCONNECT POWER LABEL
308	P0895308	GRIZZLY.COM LABEL (SMALL)
309	P0895309	CUTTING HAZARD LABEL
310	P0895310	DO NOT OPEN LABEL
311	P0895311	GRIZZLY NAMEPLATE (LARGE)
312	P0895312	OIL RESERVOIR LABEL

REF	PART #	DESCRIPTION
313	P0895313	HOT SURFACE LABEL
314	P0895314	VACUUM ZONE LABEL (TOP, LEFT)
315	P0895315	VACUUM ZONE LABEL (TOP, CENTER)
316	P0895316	VACUUM ZONE LABEL (TOP, RIGHT)
317	P0895317	VACUUM ZONE LABEL (BOTTOM, LEFT)
318	P0895318	VACUUM ZONE LABEL (BOTTOM, CENTER)
319	P0895319	VACUUM ZONE LABEL (BOTTOM, RIGHT)
320	P0895320	MODEL NUMBER LABEL (LARGE)
321	P0895321	GRIZZLY.COM LABEL (LARGE)
322	P0895322	DO NOT OPEN JUNCTION BOX LABEL
323	P0895323	VACUUM PUMP STOP TAG

## WARNING

Safety labels help reduce the risk of serious injury caused by machine hazards. If any label comes off or becomes unreadable, the owner of this machine **MUST** replace it in the original location before resuming operations. For replacements, contact (800) 523-4777 or [www.grizzly.com](http://www.grizzly.com).





# WARRANTY & RETURNS

---

Grizzly Industrial, Inc. warrants every product it sells for a period of **1 year** to the original purchaser from the date of purchase. This warranty does not apply to defects due directly or indirectly to misuse, abuse, negligence, accidents, repairs or alterations or lack of maintenance. This is Grizzly's sole written warranty and any and all warranties that may be implied by law, including any merchantability or fitness, for any particular purpose, are hereby limited to the duration of this written warranty. We do not warrant or represent that the merchandise complies with the provisions of any law or acts unless the manufacturer so warrants. In no event shall Grizzly's liability under this warranty exceed the purchase price paid for the product and any legal actions brought against Grizzly shall be tried in the State of Washington, County of Whatcom.

We shall in no event be liable for death, injuries to persons or property or for incidental, contingent, special, or consequential damages arising from the use of our products.

The manufacturers reserve the right to change specifications at any time because they constantly strive to achieve better quality equipment. We make every effort to ensure that our products meet high quality and durability standards and we hope you never need to use this warranty.

In the event you need to use this warranty, contact us by mail or phone and give us all the details. We will then issue you a "Return Number," which must be clearly posted on the outside as well as the inside of the carton. We will not accept any item back without this number. Proof of purchase must accompany the merchandise.

Please feel free to write or call us if you have any questions about the machine or the manual.

Thank you again for your business and continued support. We hope to serve you again soon.

To take advantage of this warranty, you must register it at <https://www.grizzly.com/forms/warranty>, or you can scan the QR code below to be automatically directed to our warranty registration page. Enter all applicable information for the product.



# *grizzly.com*<sup>®</sup>

**TOOL WEBSITE**

Buy Direct and Save with Grizzly<sup>®</sup> – Trusted, Proven and a Great Value!  
~Since 1983~

*Visit Our Website Today For  
Current Specials!*

**ORDER  
24 HOURS A DAY!  
1-800-523-4777**

