MODEL G0932
4' X 8' CNC ROUTER w/VACUUM TABLE
OWNER'S MANUAL
(For models manufactured since 02/21)

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#KS22128 PRINTED IN CHINA V1.12.22

******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.

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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

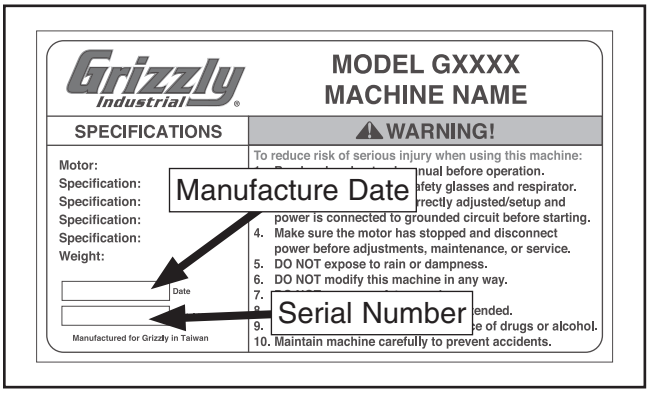
Manual Accuracy

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**.

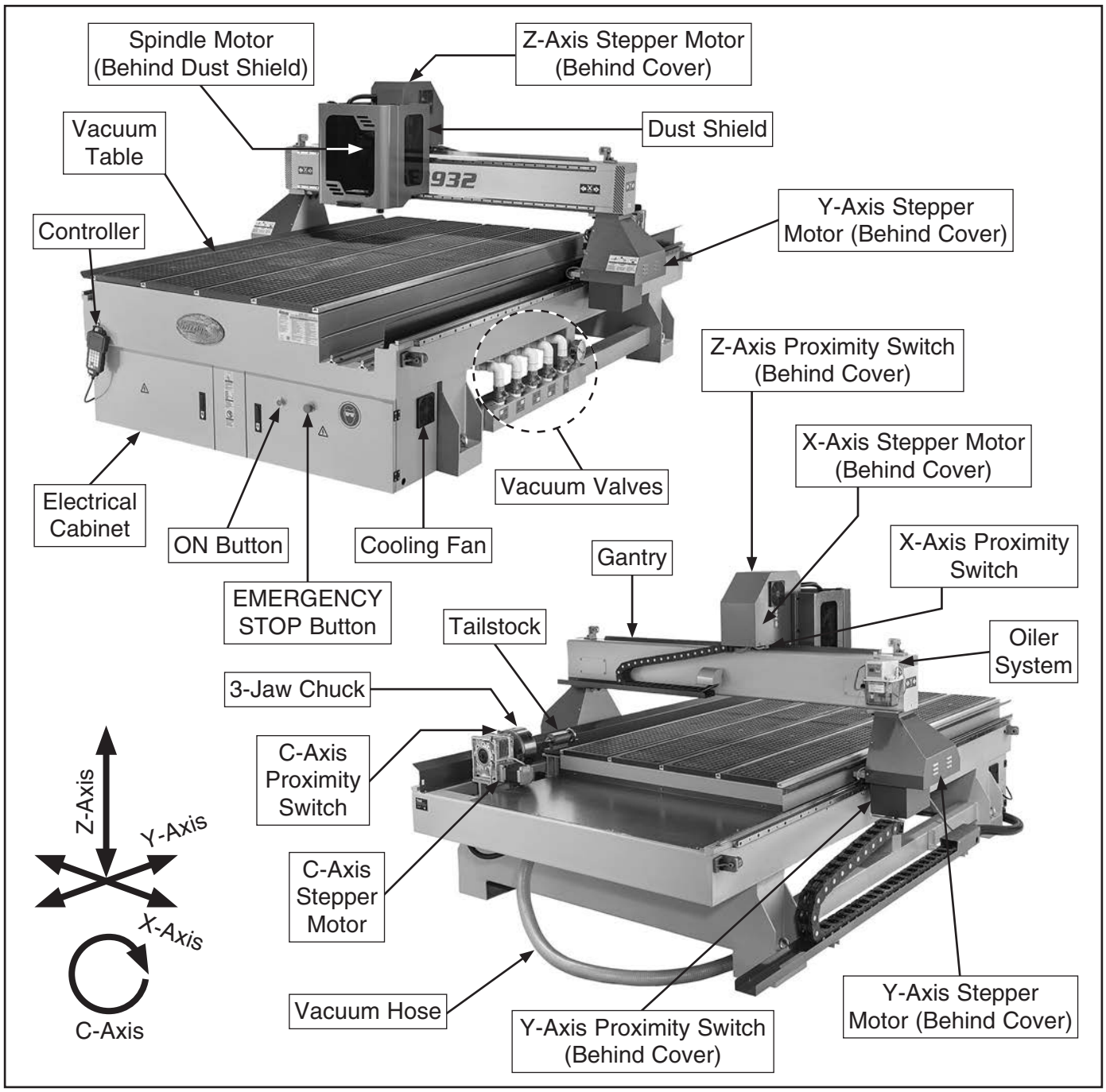
If you find this to be the case, and the difference between the manual and machine leaves you confused or unsure about something, check our website for an updated version. We post current manuals and manual updates for free on our website at **www.grizzly.com**.

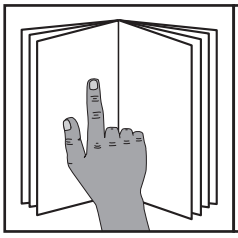
Alternatively, you can call our Technical Support for help. Before calling, make sure you write down the **manufacture date** and **serial number** from the machine ID label (see below). This information is required for us to provide proper tech support, and it helps us determine if updated documentation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



Identification

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

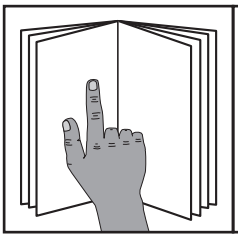




⚠WARNING

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

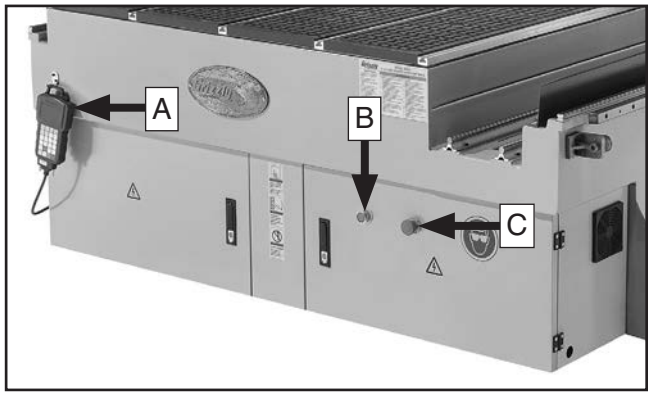


Figure 1. Power controls on electrical cabinet.

A. RichAuto B18 Controller: Controls machine functions.

B. ON Button: Enables power to machine.

C. EMERGENCY STOP Button: Disables power to machine when in depressed position. To reset, twist button clockwise until it pops out.

Spindle Assembly

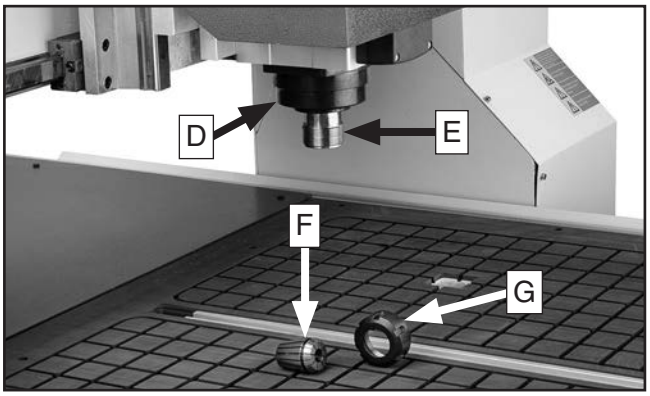


Figure 2. Spindle components.

D. Spindle Motor: A 4 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. ER25 Collet: Holds cutting tool.

G. Spindle Nut: Secures collet and cutting tool on spindle.

Vacuum Table Components

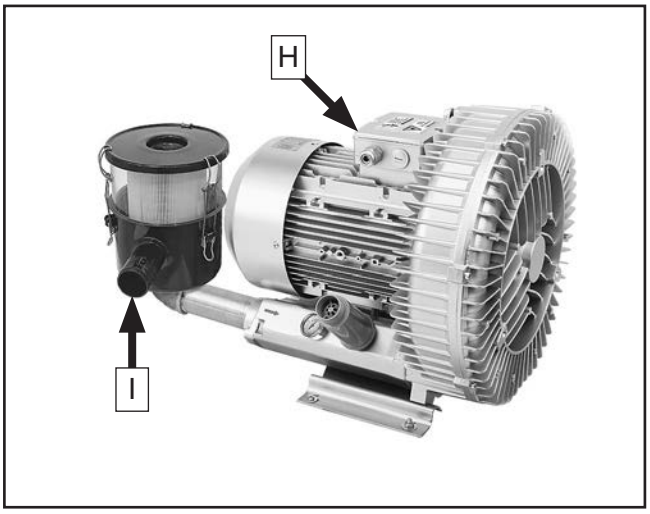


Figure 3. Vacuum pump.

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.

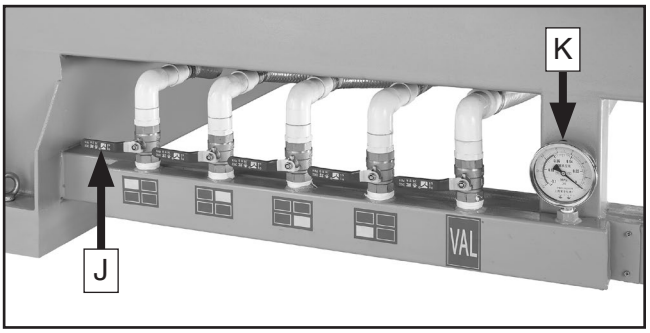


Figure 4. Vacuum valves at side of machine.

J. Vacuum Valve (1 of 5): Each valve enables/disables vacuum to one vacuum zone. Drawings below each valve indicate zone.

K. Vacuum Pressure Gauge: Displays vacuum pressure in MPa/PSI.

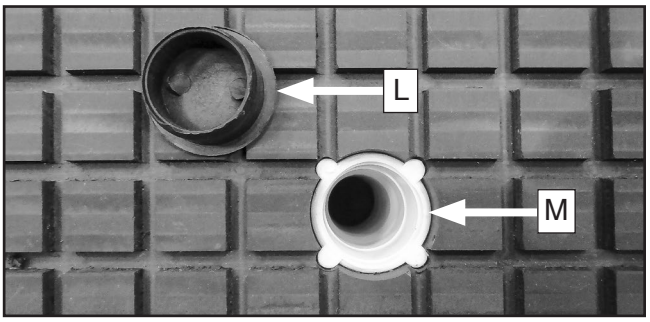


Figure 5. Vacuum port and plug.

L. Vacuum Plug: Keeps debris out of unused ports. Remove plug when using port in that vacuum zone.

M. Vacuum Port: Holds workpiece to table to prevent movement during operation.

Additional Components

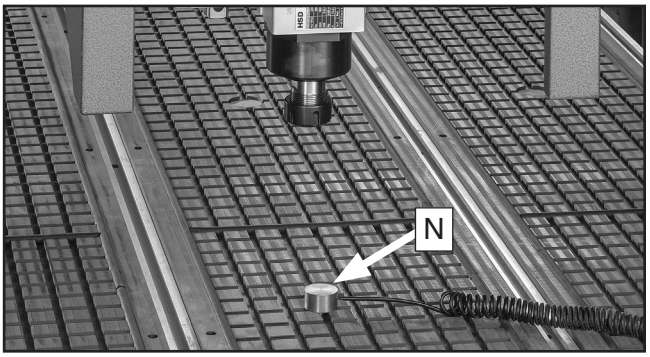


Figure 6. Z-axis tool setter.

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

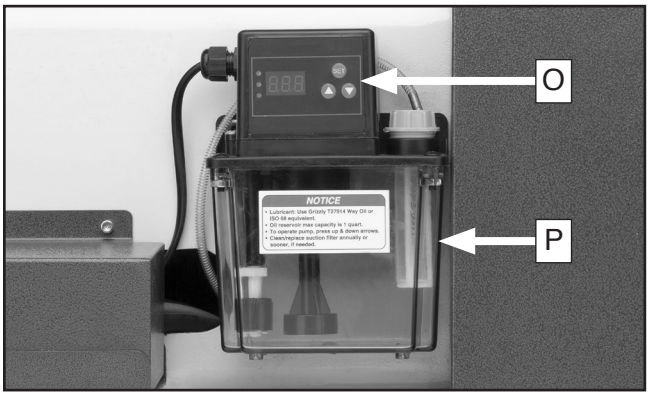


Figure 7. Oiler system components.

O. Oiler System Control Panel: Controls amount of lubricating oil on linear guide rails and ball screws.

P. Oil Reservoir: Holds one quart of T27914 ISO 68 machine oil.

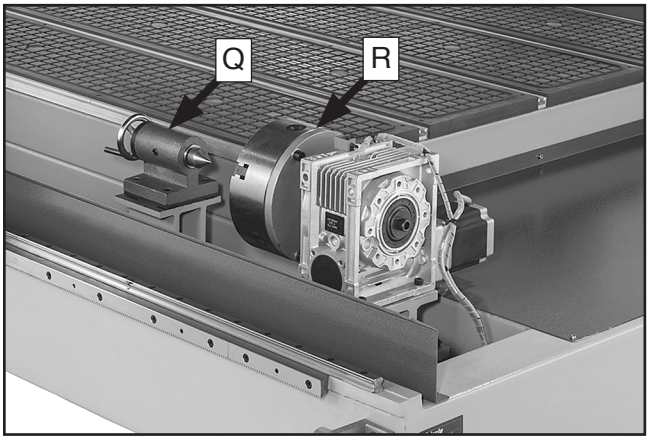


Figure 8. C-axis components.

Q. Tailstock: Repositions along the length of the guide rails to support workpieces. Handwheel moves live center toward or away from the chuck before being locked in position.

R. 3-Jaw Chuck: Uses inside or outside hardened steel jaw sets to center and secure a concentric workpiece.

Controller Functions

The following commands are used for navigation of the machine and controller. Additional functions can be accessed with multi-button commands (see **Using Advanced Controls** on **Page 49**).

Note: *Button descriptions are referenced from left to right, and from top to bottom.*

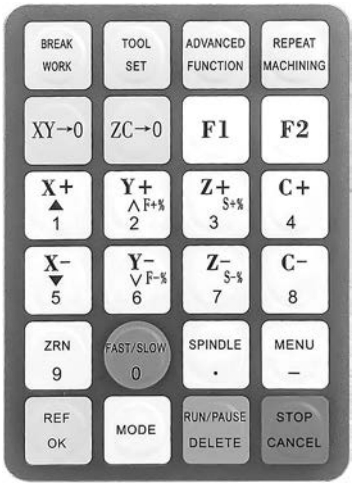


Figure 9. Controller buttons.

BREAK WORK: Resumes work at last known system position in the event of power failure, job termination, or broken tooling.

TOOL SET: Activates Z-axis tool setter function.

ADVANCED FUNCTION: Accesses Advanced Functions menu (see **Page 49**).

REPEAT MACHINING: Repeats last machine operation.

XY->0: Sets work origin of X- and Y-axes (see **Page 44**).

ZC->0: Sets work origin of Z- and C-axes (see **Page 44**).

F1: User-defined function key.

F2: User-defined function key.

X+ or **1:** Moves spindle along X-axis in positive direction (see **Page 7**). Scrolls menu up. Input for numeral "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".

C+ or **4:** Moves rotary spindle along C-axis in positive direction. 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".

C- or **8:** Moves rotary spindle along C-axis in negative direction. Input for "8".

ZRN or **9:** Returns all axes to home position (see **Page 44**). Input for "9".

FAST/SLOW or **0:** In manual mode, selects high or low speed for axis movement. In auto mode, switches operational coordinates. Input for "0".

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

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

REF or **OK:** Returns all axes to work origin (see **Page 44**). 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 four-axis machine, axes are typically X (left-right), Y (front-back), Z (up-down), and C (rotational). Axis directions are described as positive or negative. On this machine, positive movement is defined as movement towards the rear (Y), right (X), top (Z), and clockwise (C) direction 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 stepper 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: Feed Rate ÷ (Spindle Speed X 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 toolpath. 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.

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: The 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: A software function that formats G-code into a dialect understood by a specific machine.

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: A 3D toolpath where the initial cut is designed to remove 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.

Stepper Motor: DC motor that moves in precise steps when pulses are received. Has very accurate positioning and speed control.

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: A cutting tool with edges that carve upward on the face of the toolpath. This 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 G0932
4' X 8' CNC ROUTER WITH VACUUM TABLE

Product Dimensions:

Weight	2646 lbs.
Width (side-to-side) x Depth (front-to-back) x Height	93-1/2 x 123 x 63 in.
Footprint (Length x Width)	106-1/2 x 76 in.

Shipping Dimensions:

Type	Wood Crate
Content	Machine and Electrical Cabinet
Weight	3087 lbs.
Length x Width x Height	128 x 89 x 67 in.
Must Ship Upright	Yes

Electrical:

Power Requirement	220V, 3-Phase, 60 Hz
Full-Load Current Rating	20A
Minimum Circuit Size	30A
Connection Type	Permanent (Hardwire to Shutoff)
Switch Type	ON/OFF Push Button w/E-stop
Inverter (VFD) Type	Delta VFD037E23A
Inverter (VFD) Size	5 HP

Vacuum Pump Electrical:

Power Requirement	220V, 3-Phase, 60 Hz
Full-Load Current Rating	21A
Minimum Circuit Size	30A
Connection Type	Permanent (Hardwire to Shutoff)

Motor:

Spindle Motor

Type	Spindle
Horsepower	4 HP
Voltage	220V
Phase	3-Phase
Amps	12.5A
Speed	0 - 18,000 RPM
Number Of Speeds	Variable
Power Transfer	Direct

X-Axis Motor

Frame Size	NEMA 34
Amps	4.2A
Speed	0 - 2000 RPM
Type	Stepper (Brushless, Permanent Magnet)
Power Transfer	Belt
Step Resolution	1.8 deg. Per Step

Y-Axis Motor

Frame Size	NEMA 34
Amps	4.2A
Speed	0 - 2000 RPM
Type	Stepper (Brushless, Permanent Magnet)
Power Transfer	Belt
Step Resolution	1.8 deg. Per Step

Z-Axis Motor

Frame Size	NEMA 34
Amps	4.2A
Speed	0 - 2000 RPM
Type	Stepper (Brushless, Permanent Magnet)
Power Transfer	Belt
Step Resolution	1.8 deg. Per Step

Rotary C-Axis Motor

Frame Size	NEMA 34
Amps	4.2A
Speed	0 - 2000 RPM
Type	Stepper (Brushless, Permanent Magnet)
Power Transfer	Gearbox Reducer (20:1)
Step Resolution	1.8 deg. Per Step

Main Specifications:

Axis Information

X-Axis Travel	51-3/16 in.
Y-Axis Travel	98-7/16 in.
Z-Axis Travel	7-7/8 in.
Max. Rotary C-Axis Diameter	7-7/8 in.
XY Rapid Speed	1181 IPM
Z Rapid Speed	400 IPM
Rotary C-Axis Rapid Speed	472 IPM

Construction

Table	Phenolic
Body Construction	Steel
Paint.	Enamel

Cutting Information

XYZ Work Envelope	51-3/16 x 98-7/16 x 7-7/8 in.
Max Distance Spindle to Table	7-7/8 in.
Cutting Accuracy	+/-0.002 in.

Table Information

Table Length	99 in.
Table Width	49 in.
Number of Vacuum Zones	4

Other Specifications:

Country of Origin	China
Warranty	1 Year
Approximate Assembly & Setup Time	4 Hours
Serial Number Location	ID Label

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.

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

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

⚠CAUTION **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 4-Axis 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.

CHUCK CAPACITY AND CLAMPING. Avoid exceeding capacity of the chuck by clamping an oversized workpiece. If the workpiece is too large to safely clamp with the chuck, use a faceplate or a larger chuck. Maximum clamping force is achieved when the chuck is properly maintained and lubricated, all jaws are fully engaged with the workpiece, and the maximum chuck clamping diameter is not exceeded.

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.

⚠WARNING

Electrocution, fire, shock, or equipment damage may occur if machine is not properly grounded and connected to power supply.

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 G0932 at 220V, 3-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.)

⚠CAUTION

For your own safety and protection of property, consult an electrician if you are unsure about wiring practices or electrical codes in your area.

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.*

Model G0932 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 208V, 220V, 230V, 240V
Cycle ..... 60 Hz
Phase 3-Phase
Power Supply Circuit ..... 30 Amps
Connection ..... Hardwire with Locking Switch

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 208V, 220V, 230V, 240V
Cycle ..... 60 Hz
Phase 3-Phase
Power Supply Circuit ..... 30 Amps
Connection ..... Hardwire with Locking Switch

Connection Type

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.

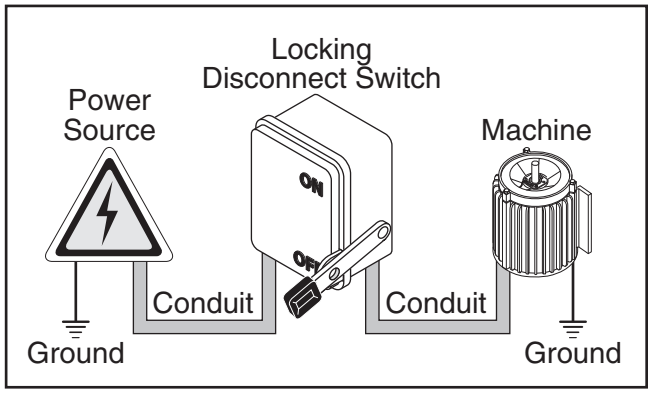


Figure 10. Typical setup of a permanently connected machine.

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.

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.

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 find the Model G7979, a compatible phase converter from on our website at **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.

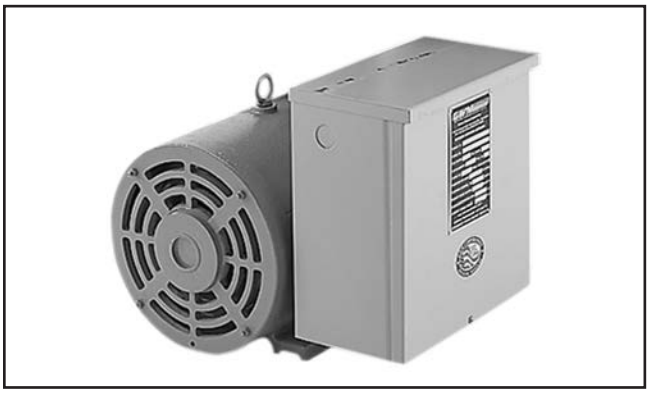
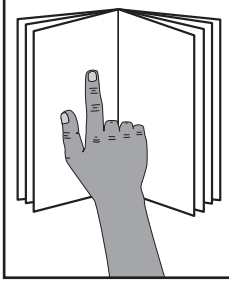


Figure 11. Model G7979 20 HP Rotary Phase Converter.

Extension Cords

Since this machine must be permanently connected to the power supply, an extension cord cannot be used.

SECTION 3: SETUP

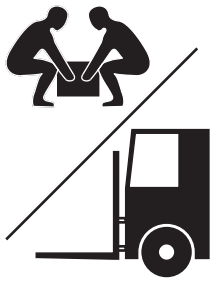


⚠WARNING

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, get help from other people and 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 3800 lbs.)	1
• Additional People	2
• Safety Glasses (for each person)	1
• Level	1
• Phillips Head Screwdriver #2	1
• Open-End Wrenches 8, 24mm	1 Ea.
• Scissors	1
• Dust Collection System	1
• Dust Hose 4"	1
• Hose Clamps 4"	2
• PTFE Thread Sealant Tape	As Needed
• Mounting Hardware (**Page 24**)	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.

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.

Crate 1 (Figure 12)	**Qty**
A. CNC Router (Not Shown)	1
B. Gantry Column Covers	2
C. Y-Axis Stepper Motors	2
D. Y-Axis Drive Belts	2

Box 1 (Figure 13)	**Qty**
E. Vacuum Pump	1
F. Vacuum Filter	1
G. Elbow Fitting 2 IPS	1
H. Threaded Pipe 2 IPS X 3"	1

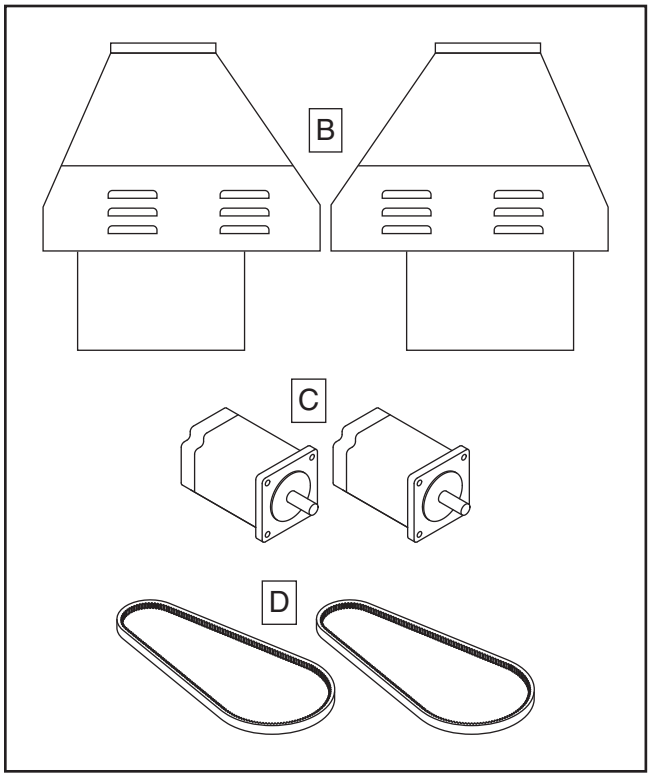


Figure 12. Crate 1 inventory.

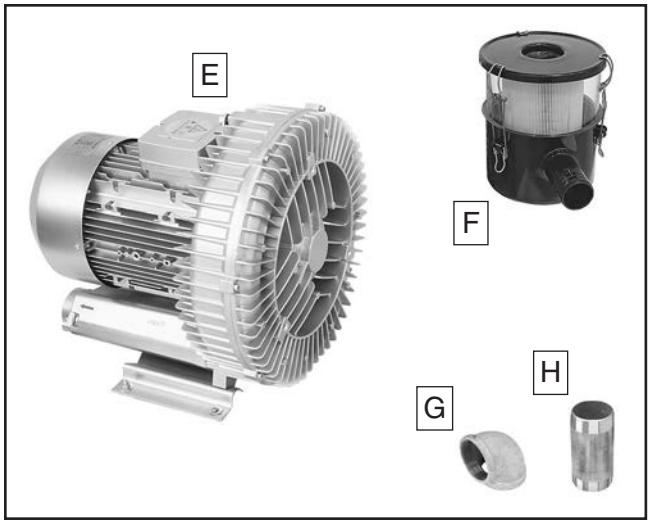


Figure 13. Box 1 inventory.

Box 2 (Figure 14)		Qty
I.	ER25 Collet ⅛"	1
J.	ER25 Collet ½"	1
K.	ER25 Collet 4mm	1
L.	ER25 Collet 6mm	1
M.	Spoilboard Cutter 6 x 22mm	1
N.	V-Groove Cutter 6 x 22mm	1
O.	Engraving Bits ⅛" (19-Pc.)	1
P.	Power Cord	1
Q.	Open-End Wrench 27/30mm	1
R.	ER25 Collet Wrench	1
S.	Hex Wrenches 3, 4, 5, 6mm	1 Ea.
T.	Hex Nut M5-.8	1
U.	Cap Screw M5-.8 x 45	1
V.	Fuses 10A (Spares)	2
W.	Hold-Down Clamps	8
X.	Leveling Feet	4
Y.	RichAuto B18 Controller	1
Z.	Dust Shoe	1
AA.	USB-B Cable	1
AB.	50-Pin Cable	1
AC.	3-Jaw Chuck Internal Jaw Set (3-Pc.)	1
AD.	3-Jaw Chuck Key	1
AE.	Door Keys	2
AF.	Hose Clamps 2"	2
AG.	Gasket Tube	68 ft.
AH.	Proximity Switch (Spare)	1

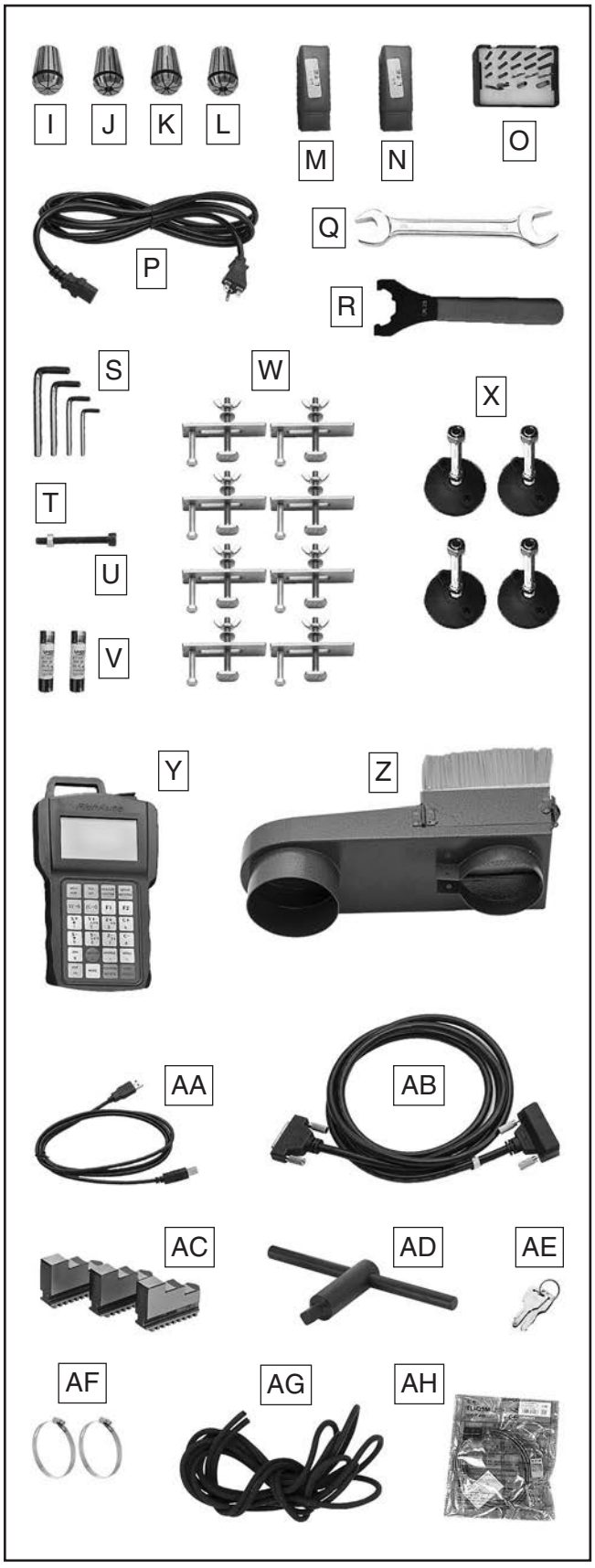


Figure 14. Box 2 inventory.

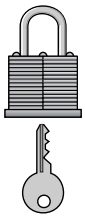
Site Considerations

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.**



⚠CAUTION

Children or untrained people may be seriously injured by this machine. Only install in an access restricted location.

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.

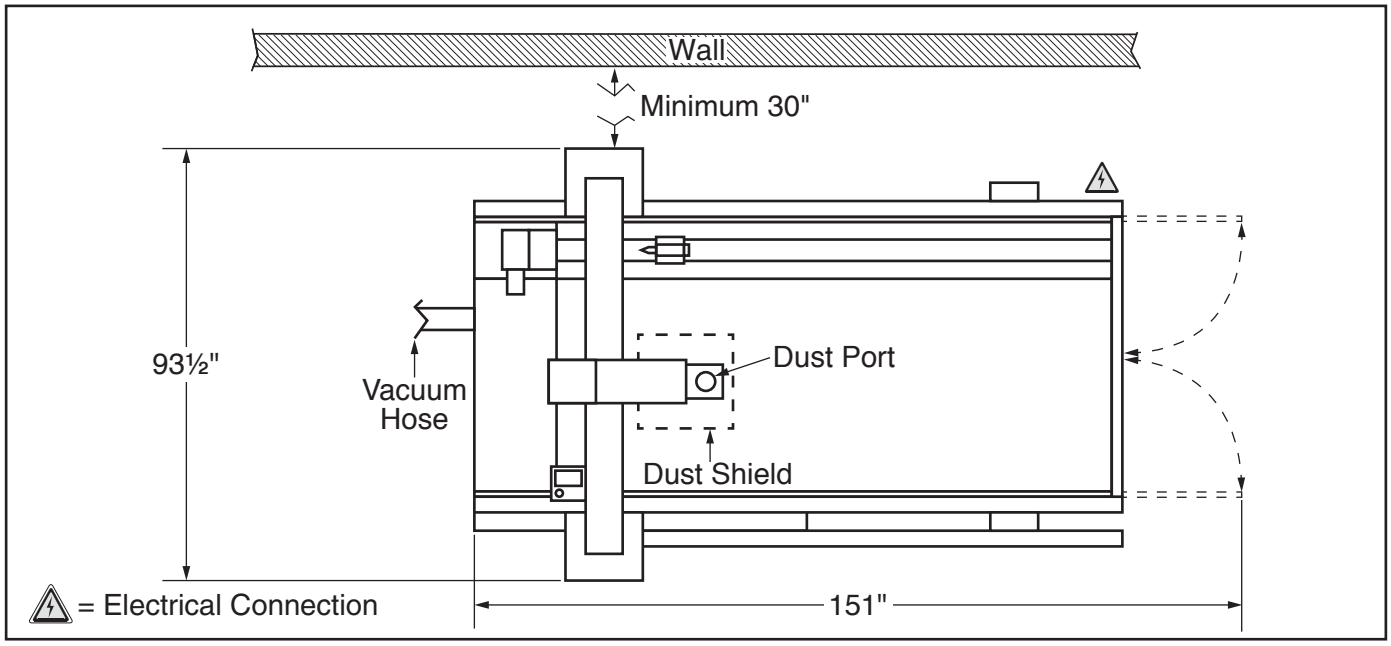
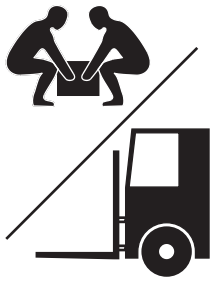


Figure 15. Minimum working clearances.

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 3800 lbs.** to support dynamic loads that may be applied while lifting. Refer to **Needed for Setup** on **Page 16** for complete list of needed equipment for setup and installation.

Tools Needed	**Qty**
Forklift or Hoist (rated for 3800 lbs.)	1
Lifting Straps	As Needed

To lift and place CNC 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. Connect lifting straps to (4) eyebolts on mounting legs and secure (see **Figure 16**).

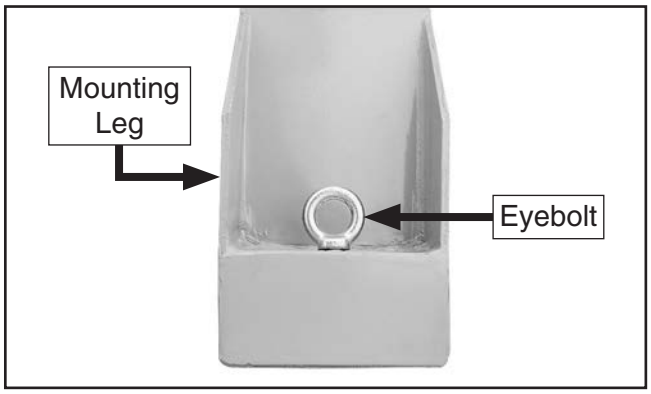


Figure 16. Eyebolt location on mounting leg.

5. Verify lifting straps do not catch on any machine components and lift machine with forklift or hoist just enough to clear pallet, then move pallet out of the way.

6. Have an additional person tighten hex nuts on leveling feet halfway on threaded bolt, then thread leveling feet into machine mounting legs (see **Figure 17**).

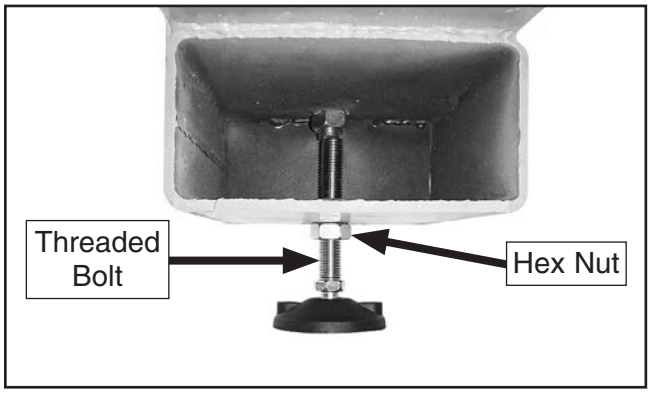


Figure 17. Rear view of leveling foot threaded into mounting leg.

7. Lower machine on leveling feet and proceed to **Assembly** on **Page 21**.

Assembly

⚠WARNING

This machine and its components are very heavy. Get lifting help or use power lifting equipment such as a forklift to move heavy items.

DO NOT attempt to lift or move machine parts without using the necessary assistance from other people. Refer to **Needed for Setup** on **Page 16** for complete list of needed equipment for setup and installation.

To assemble router:

1. Remove any support straps, parts inside plastic wrap, and tie straps holding gantry column drive belts and stepper motors.

2. Remove drive pulley covers and brackets securing gantry on left and right gantry columns (see **Figure 18**).

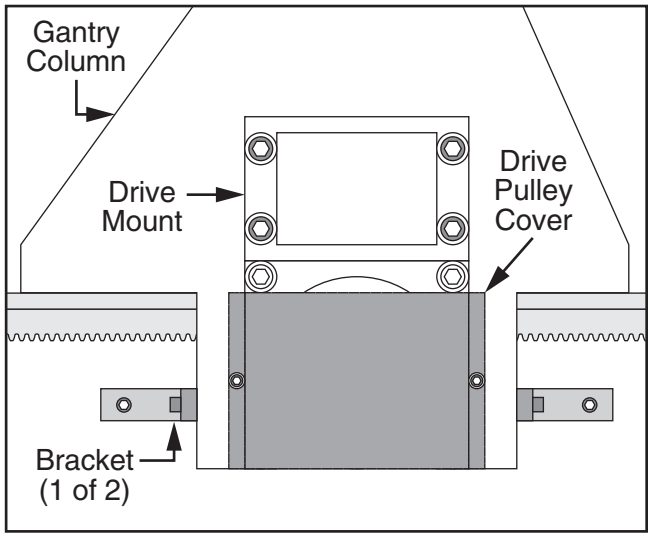


Figure 18. Gantry column drive pulley cover and brackets location.

3. Install (1) stepper motor on either gantry column using (4) M8-1.25 x 24 cap screws, 8mm lock washers, and 8mm flat washers pre-installed on gantry column (see **Figure 19**). DO NOT fully tighten cap screws at this time.

4. Fully seat drive belt on drive pulley (see **Figure 19**), then roll drive belt onto stepper motor pulley.

5. Lift stepper mount to tension drive belt, then tighten cap screws installed in **Step 3** (see **Figure 19**).

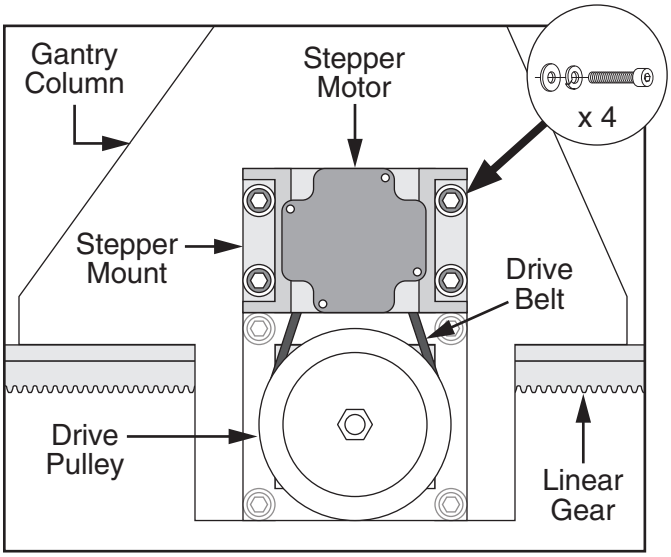


Figure 19. Gantry column components location.

6. Verify drive belt teeth have fully meshed with stepper pulley cogs (see **Figure 20**).

   — If drive belt *is* meshed with stepper pulley, proceed to **Step 7**.

   — If drive belt *is not* meshed with stepper pulley, loosen stepper mount then repeat **Steps 5**–**6**.

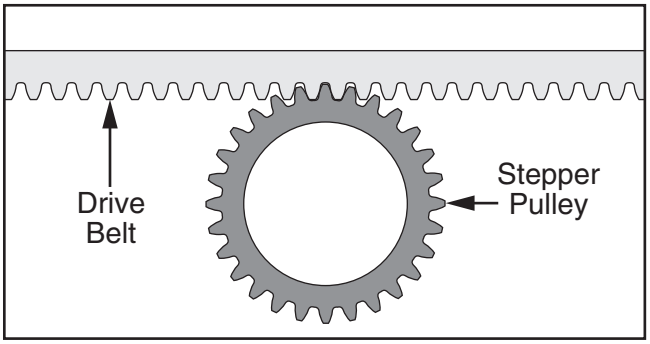


Figure 20. Stepper pulley meshed with drive belt.

7. Check belt tension on drive belt and verify there is approximately ¼" deflection when belt is pushed with moderate pressure (see **Figure 21**).

— If belt tension deflection *is* approximately ¼" when belt is pushed with moderate pressure, proceed to **Step 8**.

— If belt tension deflection *is not* approximately ¼" when belt is pushed with moderate pressure, loosen stepper mount and repeat **Steps 5–6** on **Page 21**.

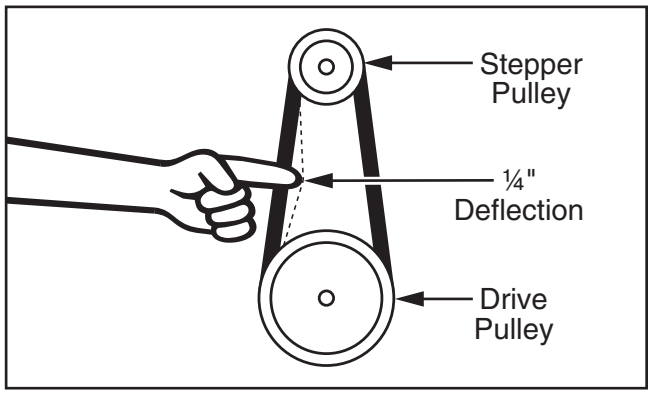


Figure 21. Checking belt tension.

8. Perform **Steps 3–7** on opposite gantry column, then proceed to **Step 9**.

9. Re-install drive pulley covers on left and right gantry columns.

10. Install gantry column covers on gantry columns using (5) M6-1 x 8 button head cap screws pre-installed on each gantry column (see **Figure 22**).

Note: *Each gantry column cover will be numbered to match the corresponding number on gantry column.*

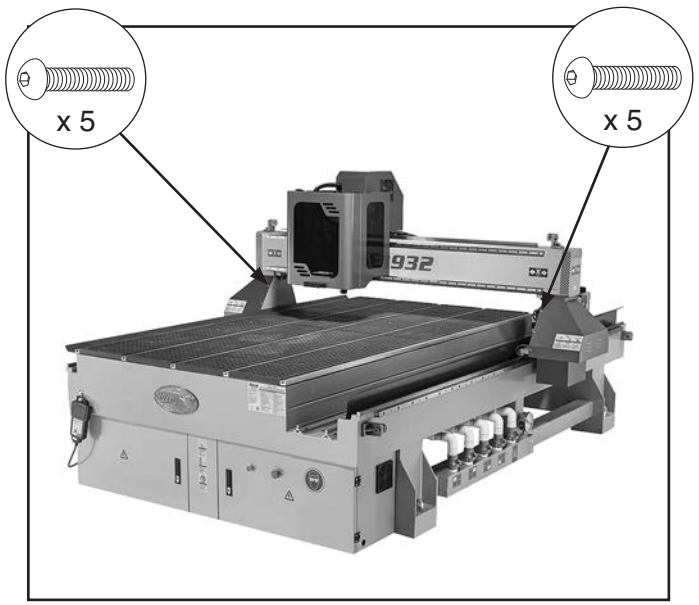


Figure 22. Gantry column covers installed on gantry columns.

11. Remove all setup tools from area and proceed to **Leveling** on **Page 23**.

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. Loosen top leveling foot hex nut and adjust fixed nut on threaded bolt (see **Figure 23**). Tighten hex nut against mount leg to secure.

   Note: *Tighten fixed nut to raise machine, and loosen fixed nut to lower machine.*

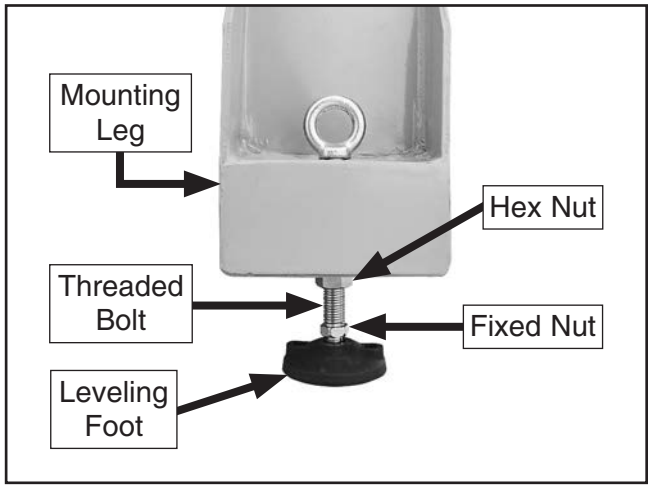


Figure 23. Leveling foot components.

3. Use level to check X- and Y-axes. Repeat as needed.

Connecting Controller

The Model G0932 includes a RichAuto B18 controller that controls all machine functions using G-code. The RichAuto control system uses an interface board located in the electrical cabinet (see **Figure 24**), a 50-pin data transmission cable, and a USB-B communication cable.

To connect controller:

1. Connect 50-pin cable to interface board in electrical cabinet, then route cable through side of cabinet (see **Figure 24**).

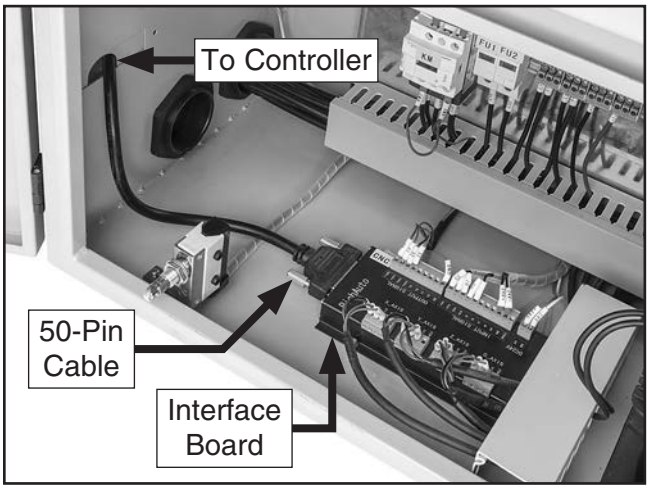


Figure 24. Interface board connections.

2. Connect opposite end of 50-pin cable to controller (see **Figure 25**).

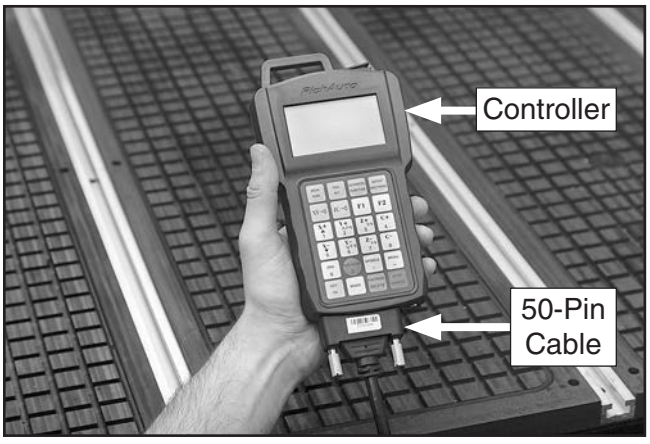


Figure 25. Controller connected to cable.

Lifting & Mounting Vacuum Pump

⚠WARNING

This machine and its components are very heavy. Get lifting help or use power lifting equipment such as a forklift to move heavy items.

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 necessary 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..... ½"

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.

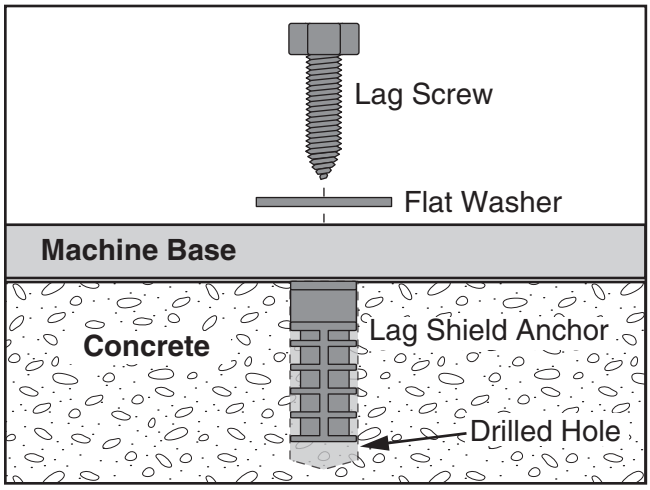


Figure 26. Popular method for anchoring machinery to a concrete floor.

Connecting Vacuum Pump & Filter

The vacuum pump is connected to the Model G0932 with a 2" diameter vacuum hose located underneath the table. The vacuum pump air filter removes particulates and debris created during operations. Wrap pipe threads with PTFE tape (thread sealing tape) to seal all pipe connections.

NOTICE

DO NOT connect vacuum pump to power without verifying junction box terminal configuration (see Page 29). Operating vacuum pump in incorrect configuration can cause severe machine damage.

To connect vacuum pump and filter:

1. Connect 2 IPS elbow fitting to 2 IPS threaded pipe (see **Figure 27**).

2. Connect 2 IPS threaded pipe to vacuum pump inlet (see **Figure 27**).

3. Connect vacuum filter to 2 IPS elbow fitting (see **Figure 27**).

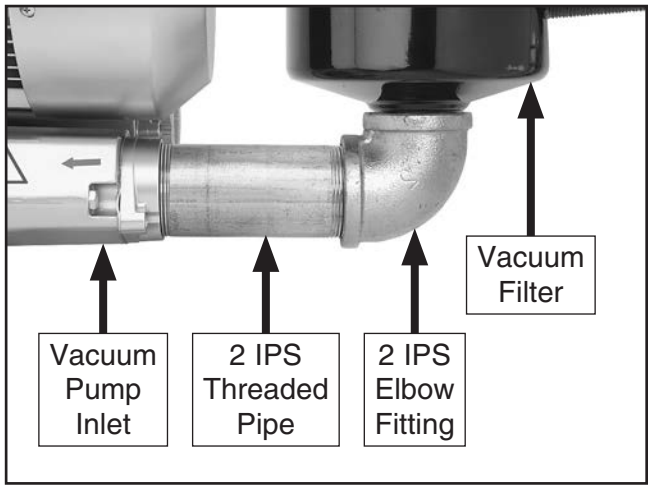


Figure 27. Pump to filter connection.

4. Connect 2" vacuum hose from machine (see **Figure 28**) to vacuum filter inlet port (see **Figure 29**) and secure with 2" hose clamp.

   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.

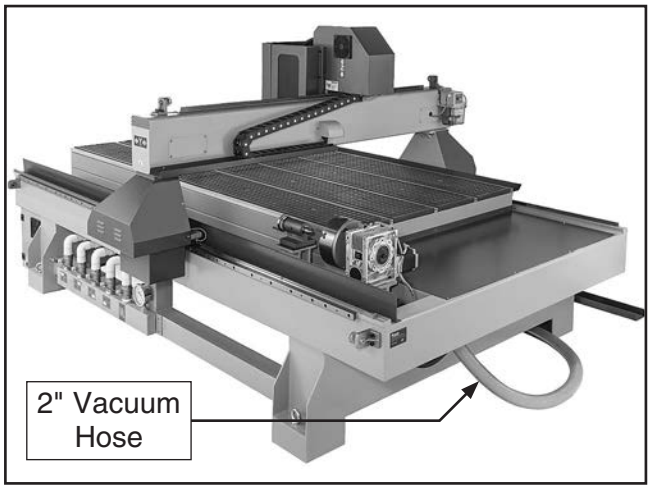


Figure 28. Vacuum hose location.

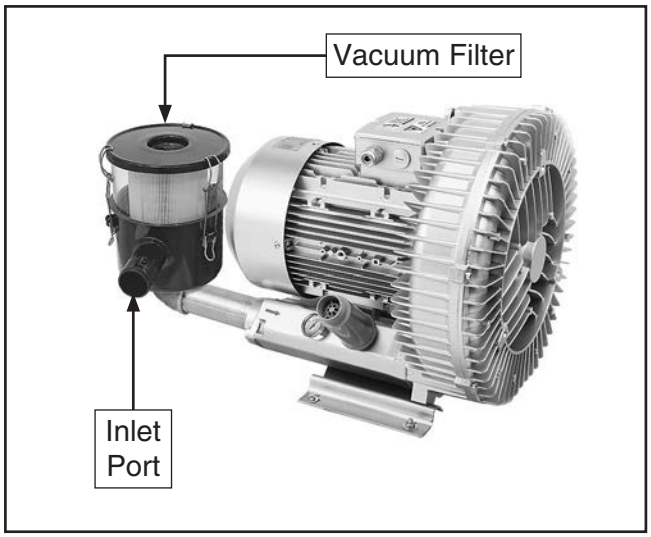


Figure 29. Vacuum filter inlet port location.

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 machine:

1. Open dust shield access door (see **Figure 30**).

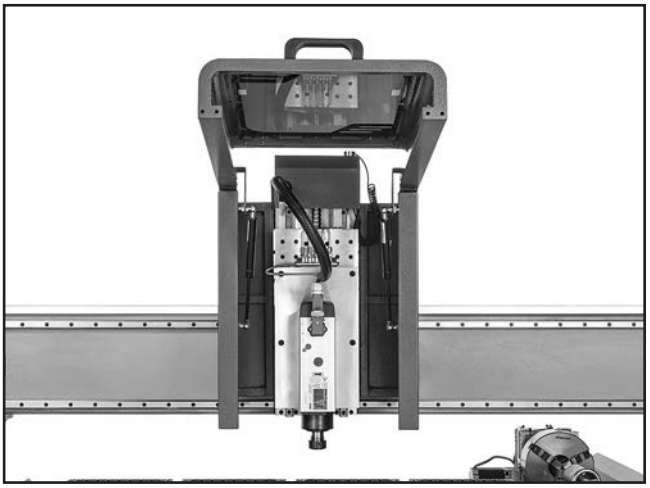


Figure 30. Dust shield access door opened.

2. Attach dust shoe bracket to spindle motor with included M5-.8 hex nut and M5-.8 x 30 cap screw (see **Figure 31**).

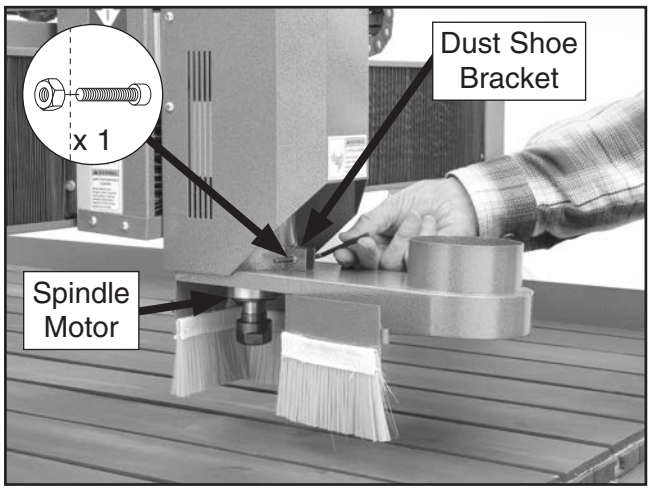


Figure 31. Example of attaching dust shoe bracket (dust shield removed for clarity).

3. Fit 4" dust hose over dust shoe, as shown in **Figure 32**, and secure in place with hose clamp.

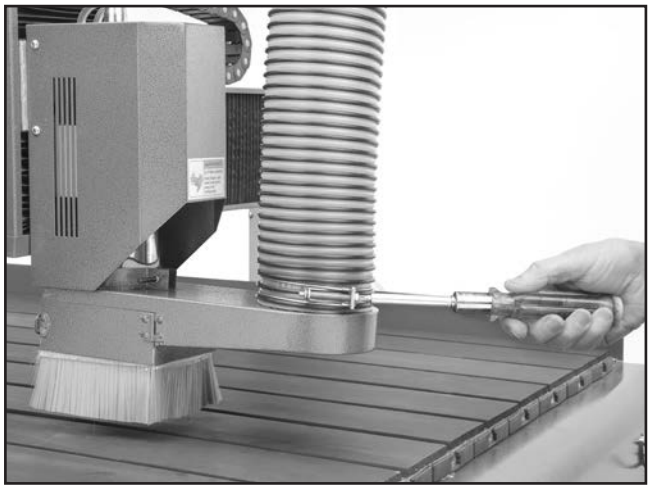


Figure 32. Example of dust shoe attached (dust shield removed for clarity).

4. 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.*

Power Connections

⚠WARNING

Electrocution or fire can occur if machine is ungrounded, incorrectly connected to power, or connected to an undersized circuit. Use an electrician or a qualified service personnel to ensure a safe power connection.

⚠WARNING

Connecting power supply wires to machine without first disconnecting power supply may result in serious injury or death.

Before the Model G0932 and vacuum pump can be connected to separate power sources, two electrical circuits must be made available that meet the minimum specifications given in **Circuit Requirements** on **Page 14**. If power circuits have 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 G0932 Power Connection

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

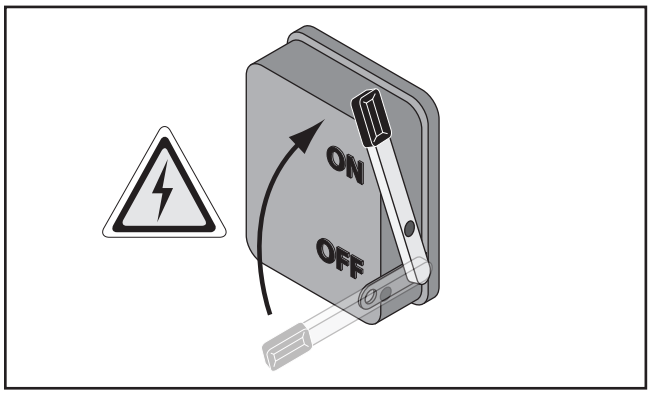


Figure 33. Connecting power to machine.

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.*

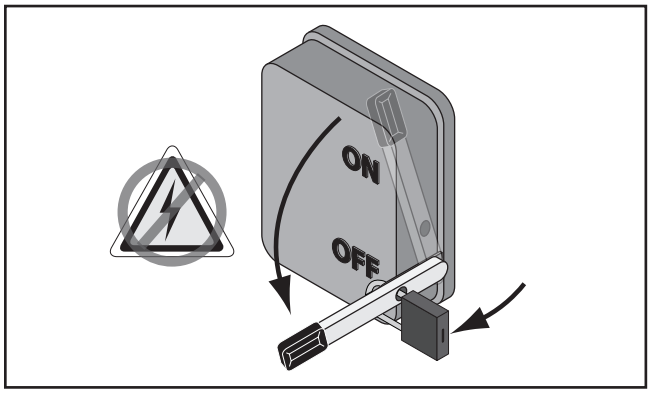


Figure 34. Disconnecting power from machine.

To connect incoming power wires:

1. DISCONNECT POWER SUPPLY WIRES OR LOCK DISCONNECT SWITCH BOX IN OFF POSITION!

2. Open Model G0932 electrical cabinet and route incoming power wires through cabinet pass-through (see **Figure 35**).

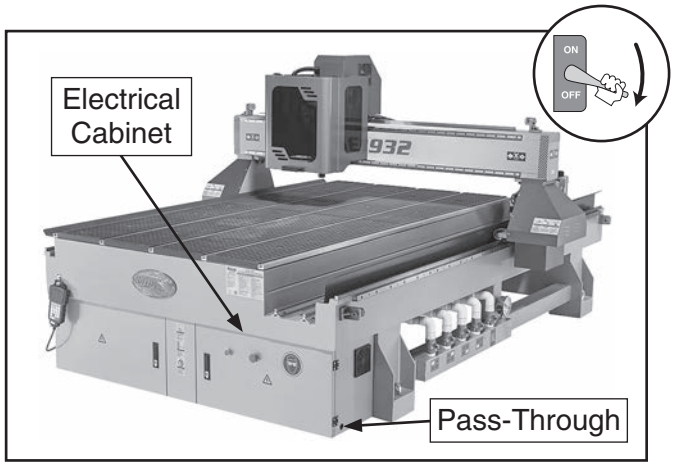


Figure 35. Model G0932 electrical cabinet and pass-through location.

3. Connect incoming power wires to electrical cabinet terminal block (see **Figure 36**).

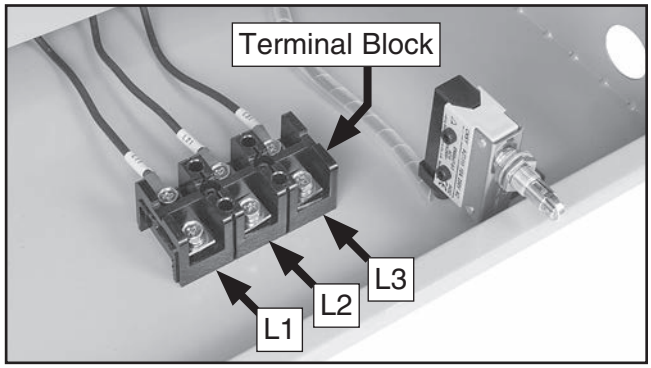


Figure 36. Electrical cabinet terminal block.

4. Connect incoming ground wire to electrical cabinet ground block (see **Figure 37**).

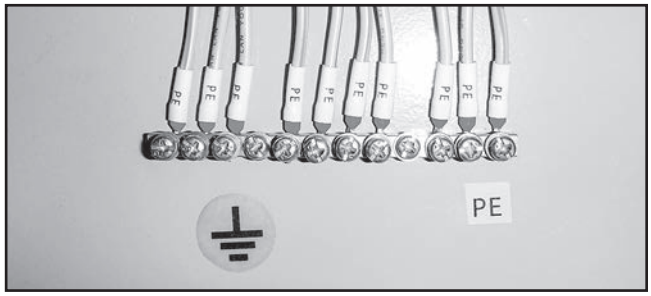


Figure 37. Electrical cabinet ground block.

Vacuum Pump Power Connection

NOTICE

DO NOT connect vacuum pump to power without verifying junction box terminal configuration (see next page). 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.

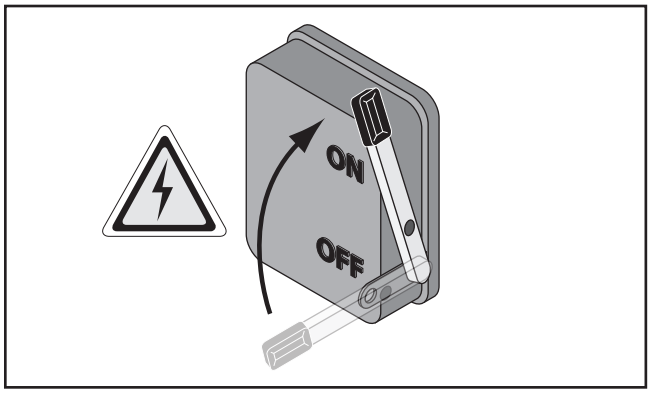


Figure 38. Connecting power to vacuum pump.

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.*

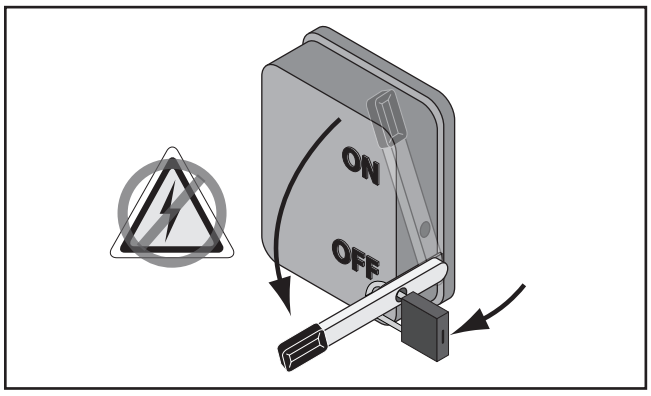


Figure 39. Disconnecting power from vacuum pump.

To connect incoming power wires:

1. DISCONNECT POWER SUPPLY WIRES OR LOCK DISCONNECT SWITCH BOX IN OFF POSITION!

2. Open vacuum pump junction box (see **Figure 40**).

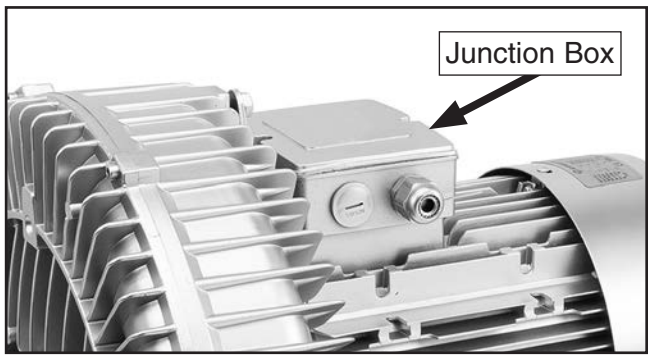


Figure 40. Vacuum pump junction box.

3. Verify terminal jumpers are arranged in 220V delta configuration (see **Figure 41**).

   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!

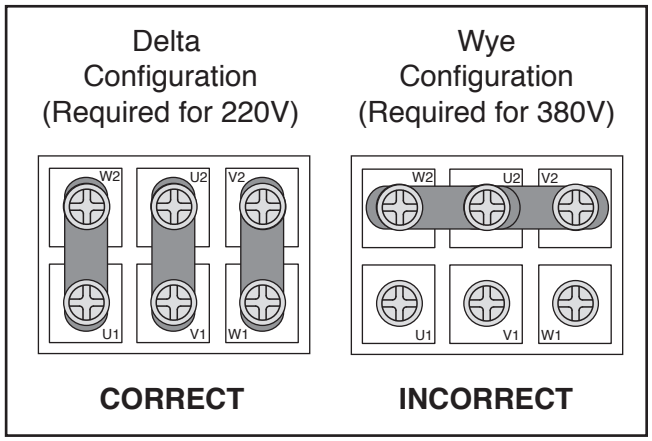


Figure 41. Vacuum pump junction box configurations.

4. 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 42). An ungrounded or improperly grounded machine can cause electrocution if live electrical wires make contact with frame or other parts touched by operator.

5. Connect incoming power wires to terminals, as shown in **Figure 42**.

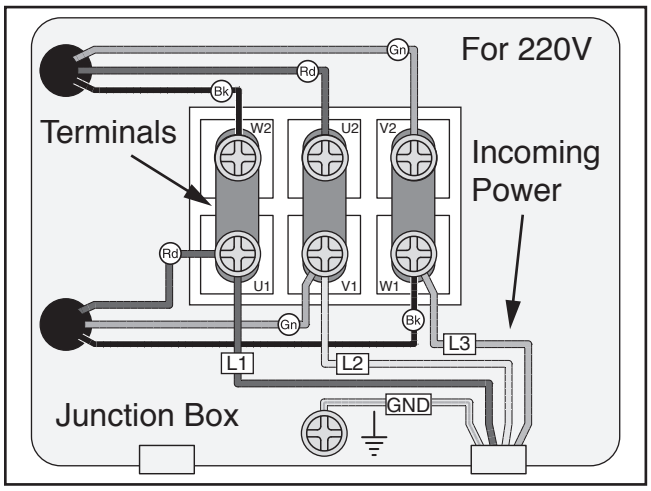


Figure 42. Vacuum pump junction box connection in delta configuration for 220V.

6. 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 and CNC router phase polarity is correct, 2) the spindle motor powers up and runs correctly, 3) the stepper motors for each axis (X, Y, Z, and C) run correctly and the machine properly homes, and 4) the EMERGENCY STOP button safety feature functions properly.

⚠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 43**).

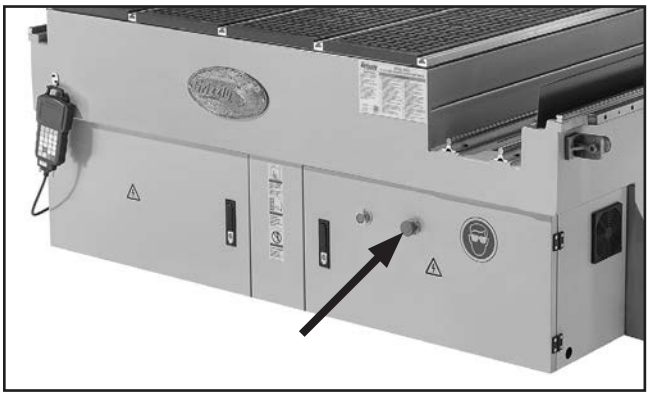


Figure 43. Location of EMERGENCY STOP button.

4. Connect machine and vacuum pump to power as shown in **Power Connections** on **Page 27**.

   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 42** on **Page 29**), 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 44**). This resets the switch so the machine can start.

Figure 44. Resetting EMERGENCY STOP button.

7. Press ON 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 32**.

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.

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 error code has stopped machine operation, axis movement is NOT working correctly. Contact Grizzly Tech Support before further using machine.

12. Repeat **Step 11** for Y-, Z-, and C-axes using axis movement buttons on controller (Y+, Y–, Z+, Z–, C+, and C–).

13. Press ZRN button on controller. 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.

— 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.

16. Fully open left 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, left safety switch feature is working correctly. Close left 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. Repeat **Step 16** for right electrical cabinet door.

18. Congratulations! Test Run is complete.

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:

Unit Pulse Per MM:
X Equival 104.370
Y Equival 104.370
Z Equival..... 200.000
C Equival 111.113

Table Size:
X Size 1300.000
Y Size 2500.000
Z Size 200.000
C Size 99999999

Home Setup

Home Speed
X Spd..... 3000.000
Y Spd..... 3000.000
Z Spd..... 1800.000
C Spd 3000.000

Set Home Direction
X Dir .....Neg
Y Dir .....Neg
Z Dir..... Pos
C Dir .....Neg

Max Speed Limit

Unit MM/Min.
X-MaxSpd..... 20000.00
X+MaxSpd..... 20000.00
Y-MaxSpd..... 20000.00
Y+MaxSpd 20000.00
Z-MaxSpd 8000.00
Z+MaxSpd 8000.00
C-MaxSpd 6000.00
C+MaxSpd..... 6000.00

Toolset Setup

C.A.D. Thickness
FlrHght..... 15.000

C.A.D. Pickup
PckupHgh..... 10.000

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 45**).

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

Figure 45. 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 45**.

   — 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 46**).

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

Figure 46. 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 46**.

4. Press X+ or X- buttons to scroll up or down, and highlight desired parameter.

5. Press RUN/PAUSE to change setting.

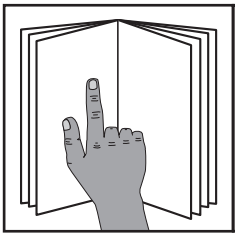
6. Press OK to save changes and return to menu screen.

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.



⚠WARNING

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

⚠WARNING

Eye injuries, respiratory problems, or hearing loss can occur while operating this tool. Wear personal protective equipment to reduce your risk from these hazards.

NOTICE

If you are not experienced with this type of machine, WE STRONGLY RECOMMEND that you seek additional training outside of this manual. Read books/magazines or get formal training before beginning any projects. Regardless of the content in this section, Grizzly Industrial will not be held liable for accidents caused by lack of training.

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 or rotary C-axis chuck. If using vacuum table, turns vacuum pump ***ON***.
7. Turns machine ***ON***.
8. Homes all axes and verifies parameters (see **Page 32**).
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 operation will chip and fray the top surface of 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

⚠CAUTION

Cutters are sharp! To reduce the risk of being cut, wear leather gloves when handling, installing, and removing cutters from spindle.

Items Needed	Qty
Open-End Wrench 30mm	1
ER25 Collet Wrench	1

To change cutter:

1. Home all axes (see **Homing Axes** on **Page 44**), 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 ER25 collet wrench (see **Figure 47**), then remove collet and cutter.

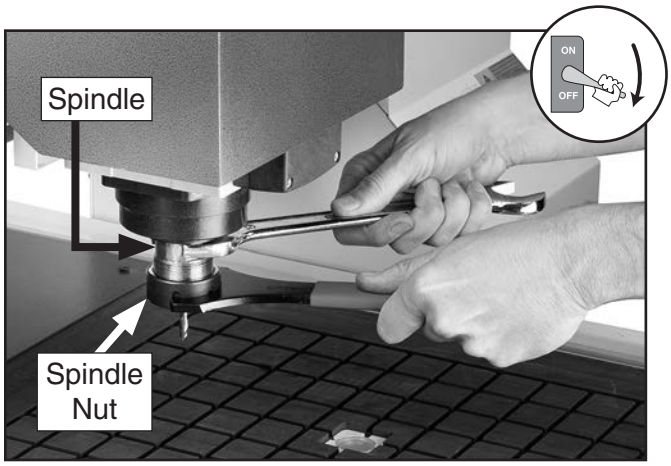


Figure 47. Example of changing cutter.

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

Securing Workpiece on Table

The Model G0932 comes with a vacuum table that has four 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.

Clamps are always the most consistent method to secure a workpiece, but the vacuum table is an excellent option when cutting to the edge of the workpiece 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 a rough or uneven bottom that will not seal, 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
Scrap Wood	As Needed

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 48**).

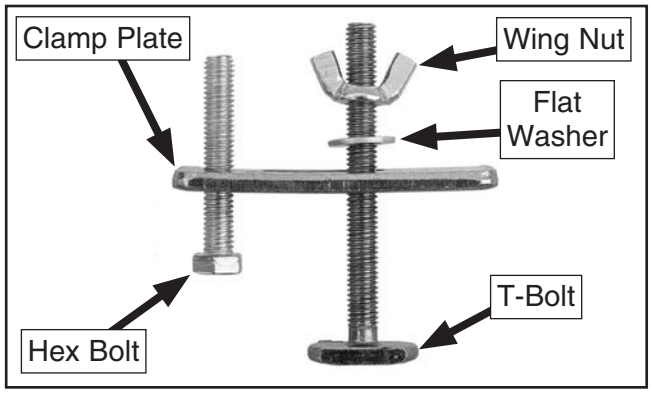


Figure 48. T-slot clamp components.

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 49**).

   Note: *Place a piece of scrap wood under the head of each hex bolt to prevent damaging table surface (see **Figure 49**).*

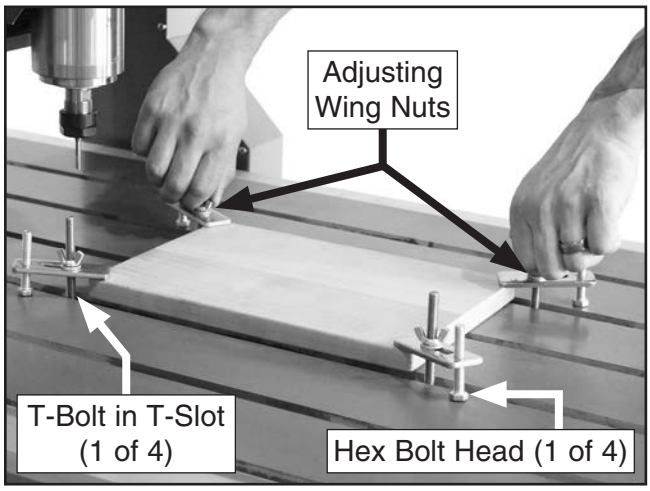


Figure 49. Example of clamping workpiece to table.

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 the workpiece does not have a tight enough seal with the 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 50**).

Figure 50. Example of gasket tube cut to size to seal workpiece to vacuum zone.

4. Only open vacuum valves (see **Figure 51**) for each zone covered by workpiece. Close all other vacuum valves, and plug all unused vacuum ports.

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

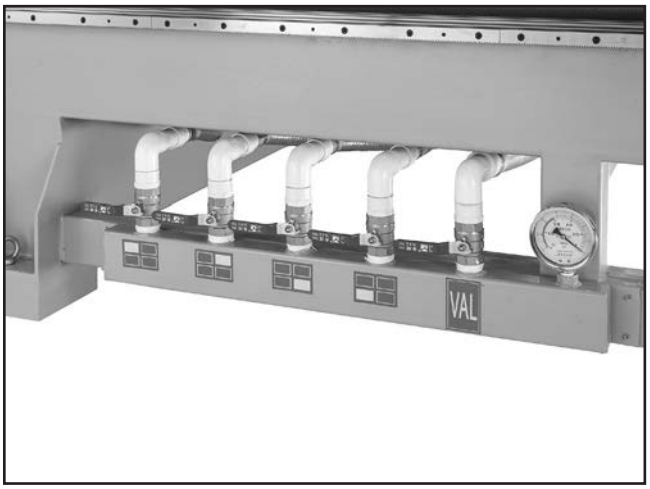


Figure 51. Vacuum zone control valves.

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 ¾" (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 40** for instructions on how to use your G0932 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 ¼" or less.*

Clamping Spoilboard

Clamps can be used in combination with the vacuum table if the 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 52**). If vacuum table is used, secure spoilboard as described in **Using Vacuum Table** on **Page 37**.

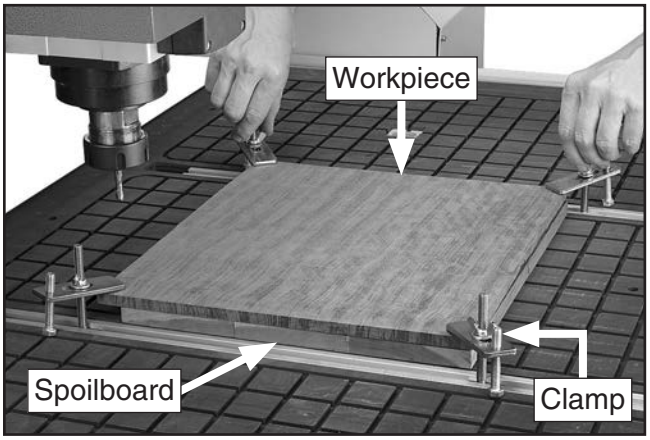


Figure 52. Spoilboard clamped to router bed.

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 G0932 can be used to surface a spoilboard or workpiece, using the mill plane operation and an appropriate cutter (see **Choosing Cutter** on **Page 35**).

Items Needed	Qty
Spoilboard Cutter or Fly Cutter	1

To surface using mill plane operation:

1. Press ADVANCED FUNCTION button 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.

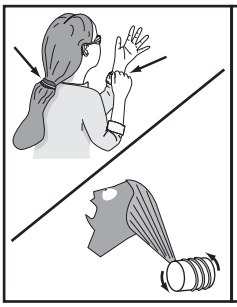
   — Depth defines the total depth of material removed.

   — 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.

Using Rotary C-Axis



⚠WARNING

Keep hair, clothing, and jewelry away from moving parts at all times. Entanglement can result in death, amputation, or severe crushing injuries!

The 3-jaw scroll chuck and tailstock included with the Model G0932 are used to support long workpieces on the rotary C-axis using a live center (see **Figure 53**).

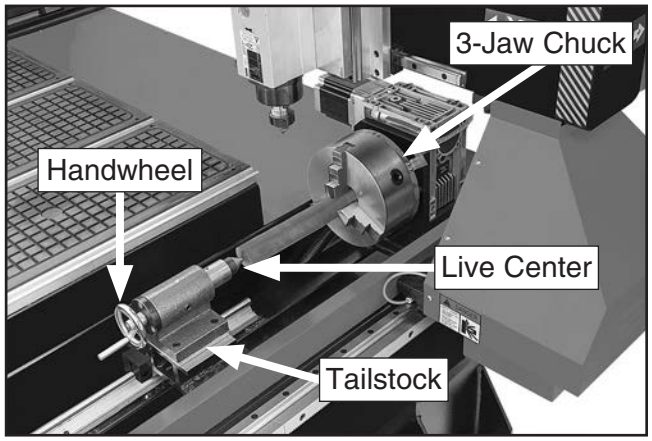


Figure 53. Rotary C-axis components.

The 3-jaw scroll chuck features inside and outside hardened steel jaw sets, which move in unison to center a concentric workpiece.

The tailstock can be repositioned and locked in place along the length of the guide rails to support workpieces. The handwheel moves the live center toward or away from the chuck, before being locked firmly in position.

Items Needed	**Qty**
Hex Wrench 6mm	1
Chuck Key	1

Mounting Workpiece

1. DISCONNECT MACHINE FROM POWER!

2. Loosen (1) cap screw on each guide rail lock to move tailstock along guide rails (see **Figure 54**). DO NOT remove cap screws!

   Note: *Guide rail locks can be repositioned by sliding them on or off the guide rails.*

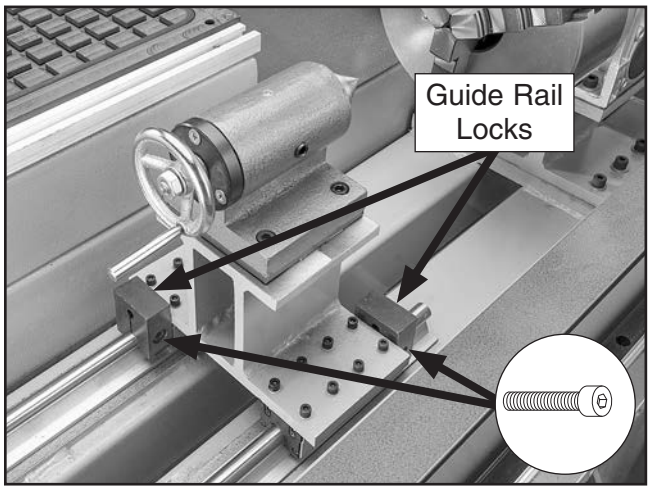


Figure 54. Tailstock guide rail locks location.

3. Insert chuck key into scroll gear and turn to open/close jaws. Center workpiece in jaws and rotate chuck key until secure before removing from machine (see **Figure 55**).

4. Brace tailstock live center against center of workpiece by pushing it along guide rails (see **Figure 55**).

5. Brace both guide rail locks against tailstock and tighten (2) cap screws loosened in **Step 2** to secure tailstock (see **Figure 55**).

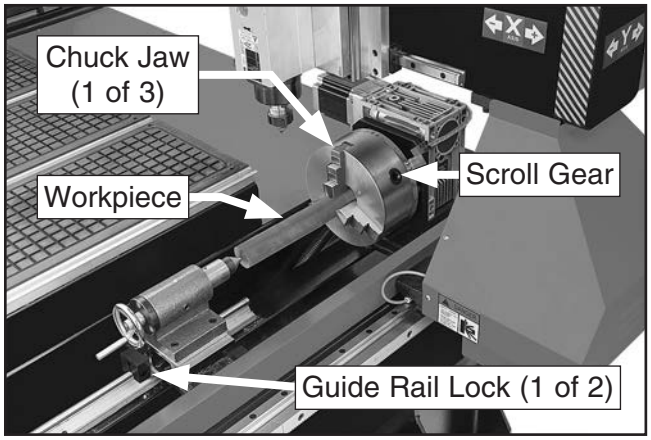


Figure 55. Securing workpiece on rotary C-axis.

Adjusting Live Center

1. Loosen tailstock set screw and rotate handwheel to position live center towards or away from workpiece (see **Figure 56**).

   — Turn handwheel *clockwise* to move live center towards workpiece.

   — Turn handwheel *counterclockwise* to move live center away from workpiece.

2. Tighten tailstock set screw to secure live center position (see **Figure 56**).

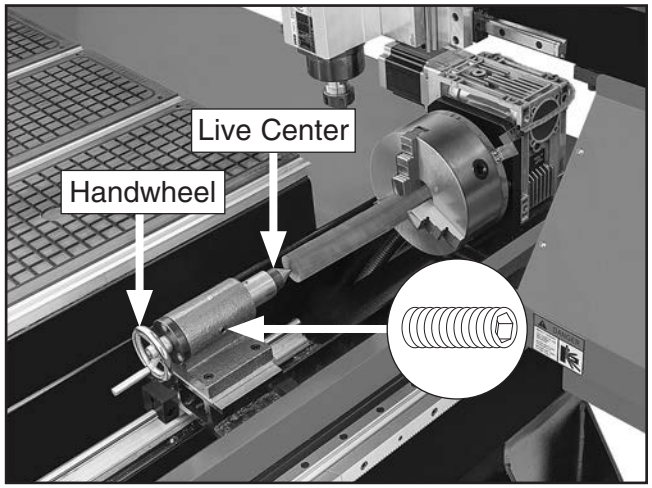


Figure 56. Tailstock positioned to support workpiece.

Changing Jaw Set

When installing the jaws, it is important to make sure they are installed correctly. Incorrect installation will result in jaws that do not converge evenly and are unable to securely clamp a workpiece.

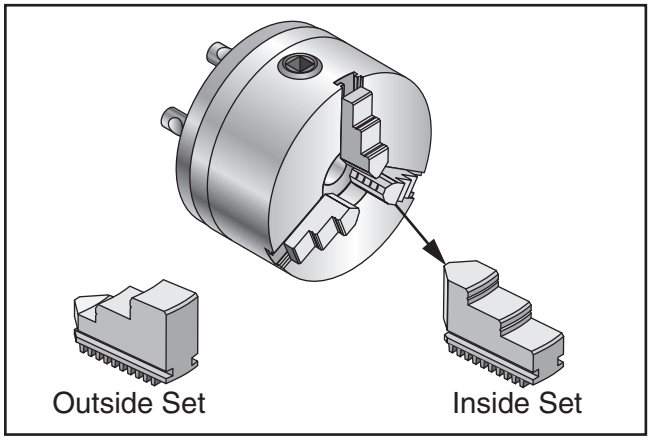


Figure 57. Chuck and jaw selection.

Jaws are numbered from 1–3 (see **Figure** below). The number is typically stamped on the side or bottom. Jaws are designed to be installed counterclockwise in numerical order in the jaw guides, so they will hold a concentric workpiece evenly.

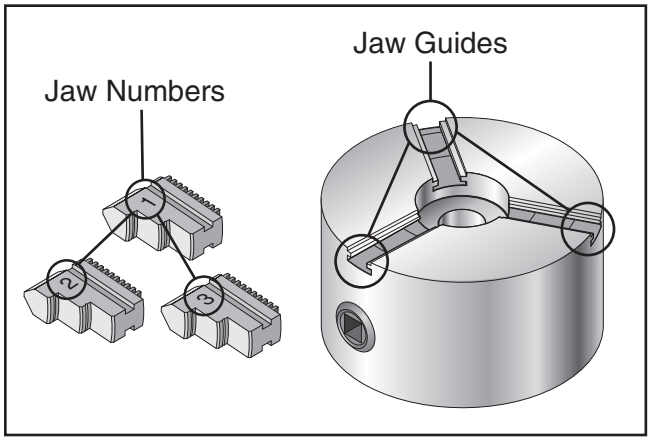


Figure 58. Jaw guide and jaw numbers.

To change jaw set:

1. DISCONNECT MACHINE FROM POWER!

2. Place a thick blanket underneath chuck to catch falling jaws.

3. Insert chuck key and turn it counterclockwise to back jaws out and remove them individually in descending order (i.e., 3, 2, 1).

4. Use mineral spirits to clean debris and grime from jaws and chuck jaw guides.

5. Apply thin coat of NLGI #2 grease to surfaces of removed jaw set. Store in safe place free from moisture and abrasives.

6. Rotate chuck key clockwise until you see tip of outer scroll-gear lead thread about to enter a jaw guide (see below).

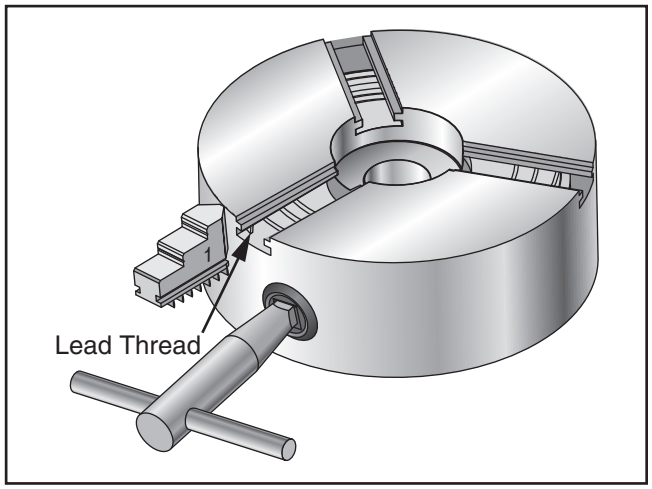


Figure 59. Lead thread on scroll gear.

7. Insert jaw #1 into jaw guide and hold jaw against scroll-gear.

8. Rotate chuck key clockwise one turn to engage tip of scroll-gear lead thread into jaw. Pull jaw; it should be locked into jaw guide.

9. Install remaining jaws in numerical order, in same manner. The jaws should converge evenly at center of chuck.

   — If jaws do not converge evenly, remove them. Re-install jaws sequentially 1–3, and make sure each one engages with scroll-gear lead thread during its first rotation.

Adjusting Axis Positions Manually

Knowing how to manually control axis movement is an essential part of operating the Model G0932. Axes must be positioned manually whenever a work origin is set.

Use the axis movement buttons on the controller (X+, X–, Y+, Y–, Z+, Z–, C+, and C–) 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 FAST/SLOW 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 four 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. Verify all machine parameters listed in **Verifying Parameters** on **Page 32**.

2. Press ZRN. Verify all axes move to their farthest positions.

Setting Work Origin

Work origin is the workpiece-specific zero point—the starting point for your toolpath. All four 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.

The rotary C-axis must be set in relation to the workpiece surface and requirements of the G-code toolpath origin.

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.

Item Needed	Qty
Sheet of Paper	1

Setting Work Origin on Table

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 ⅛" above workpiece or table surface (as determined by G-code).

4. Place sheet 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 ZC->0 to set Z-axis origin.

Setting Work Origin on Rotary C-Axis

1. Support workpiece on rotary C-axis (see **Using Rotary C-Axis** on **Page 41**), insert cutter, and load G-code to controller.

2. Manually move X- and Y-axes over workpiece to toolpath origin established in G-code.

3. Manually move Z-axis down to ⅛" above workpiece (see **Figure 60**).

Figure 60. Spindle ⅛" above workpiece toolpath origin.

4. Place sheet of paper between cutter tip and workpiece 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 ZC->0 to set Z- and C-axis origin.

Setting Z-Axis Origin With Tool Setter

1. Clamp workpiece to table/support workpiece on rotary C-axis, insert cutter, and load G-code to controller.

2. Place tool setter on top of table or workpiece.

   Note: *Tool setter uses a magnet to determine cutter position. Z-axis origin is set at base of tool setter.*

3. Manually move X- and Y-axes so cutter is directly above tool setter (see **Figure 61**).

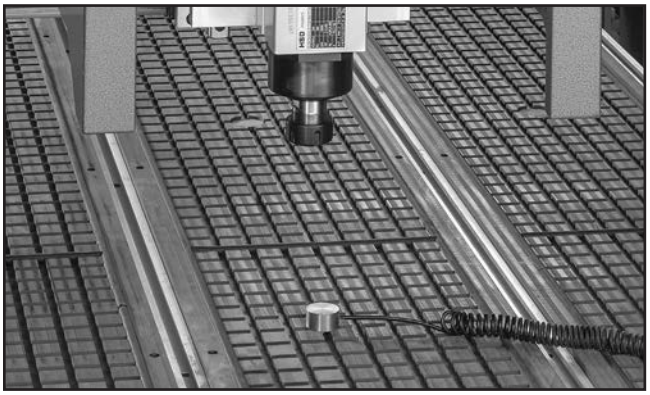


Figure 61. Spindle over tool setter.

4. Verify Z-axis tool setter parameters are correct (see **Verifying Parameters** on **Page 32**).

5. Press TOOL SET on controller. Spindle will lower until cutter reaches tool setter, then raise slightly.

6. Z-axis origin is now set.

Creating G-Code File

Before operations can be run on the Model G0932, 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 49** 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 G0932 or the RichAuto B18 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 & Running G-Code

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

Running G-Code From USB Drive

1. Turn machine ***ON***.

2. Insert USB drive loaded with G-code into controller (see **Figure 62**).

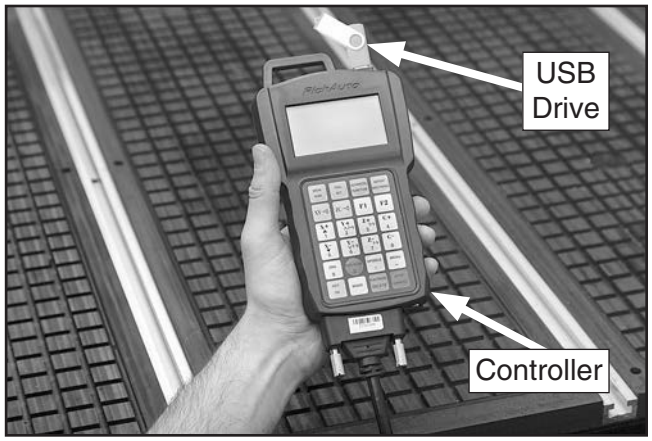


Figure 62. USB drive connected to controller to upload G-code to controller.

3. Press RUN/PAUSE and scroll to "UDisk File", then press OK.

4. Scroll to desired G-code file and press OK.

5. 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).

6. Scroll to desired parameter and press RUN/PAUSE to change value, then press OK.

7. 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 49**).

Uploading G-Code to Controller Internal Memory

1. Perform **Steps 1–2** of **Running G-Code From USB Drive** on this page.

2. Press MENU, then scroll to "Operate File" on the controller and press OK.

3. Scroll to "Copy File" and press OK.

4. Scroll to "UDisk File" and press OK, then navigate to G-code file and press OK.

5. Once upload is complete, remove USB drive and proceed to **Running G-Code From Controller Internal Memory** on **Page 48**.

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 49**).

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 49**).

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 settings of the G0932 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 G0932 are performed through single-button commands on the controller, but some advanced controls 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. Press ADVANCED FUNCTION button to open advanced processing menu.

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 63. T28100 V-Carve Desktop Software.

Cutters

C1921—Router Bit Set for Sign Making
DC1808—3/16" Solid Carbide Upcut Spiral
DC1809—1/4" Solid Carbide Upcut Spiral
T30941—CNC Router Bit Starter Set #1
T32931—1/4" X-CARVE CNC Router Bit Set

Figure 64. 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 65. Eye protection assortment.

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 66. G0860 Cyclone Dust Collector.

T33434—Nitrile Disposable Gloves, Medium
T33435—Nitrile Disposable Gloves, Large
T33436—Nitrile Disposable Gloves, XL
T33437—Nitrile Disposable Gloves, XXL
Nitrile disposable gloves are an inexpensive and effective form of hand protection. These heavy-duty gloves are 9 mil thick, designed with textured fingertips for better grip, and used as a protective barrier against dirt, paint, chemicals, solvents, and more. Sold in boxes of 50.

Figure 67. Nitrile disposable gloves.

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 68. Dust collection accessories.

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 69. T27914 Machine 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 70. 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.

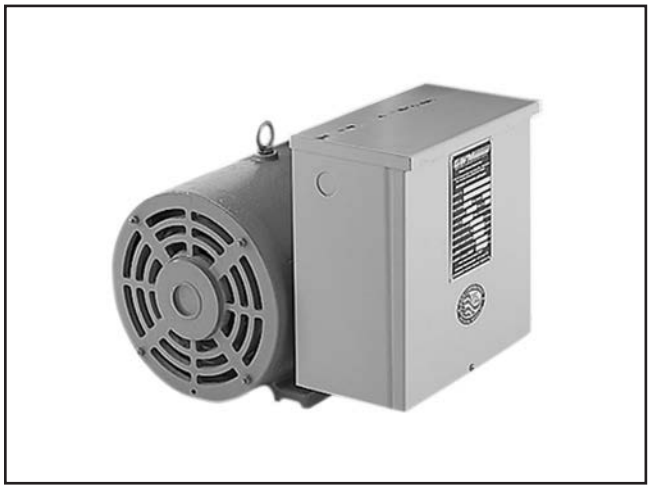
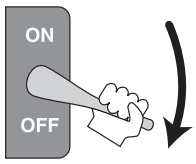


Figure 71. G7979 20 HP Rotary Phase Converter.

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 72. High-pressure oil can for ball oilers.

SECTION 6: MAINTENANCE



⚠WARNING
To reduce risk of shock or accidental startup, always disconnect machine from power before adjustments, maintenance, or service.

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.
- Binding chuck jaws or seized tailstock.
- 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/ball screws.

Weekly Maintenance
- Clean/lubricate rack and pinion gear, tailstock guide rails, 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 G0932 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 52**) 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 G0932 linear guide rails and ball screw require regular lubrication to perform properly. The oiler system (see **Figure 73**) 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 73**).

2. Press and hold SET button on oiler until an audible beep is heard (see **Figure 73**).

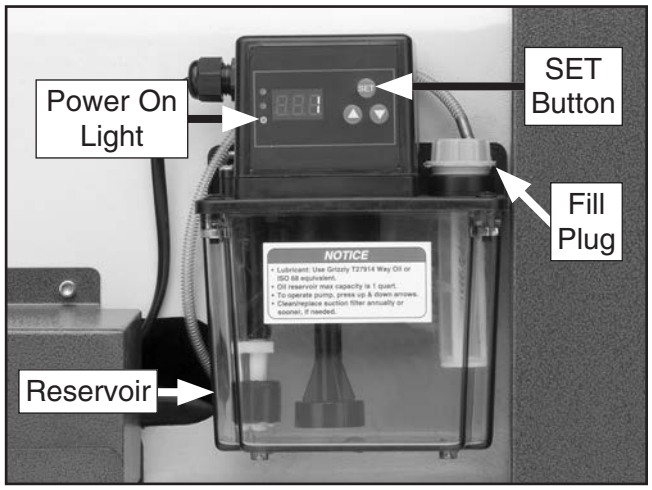


Figure 73. Oiler system control components.

3. Verify upper and middle lights illuminate and oil dispense time (in seconds) is displayed on digital readout (see **Figure 74**). 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.

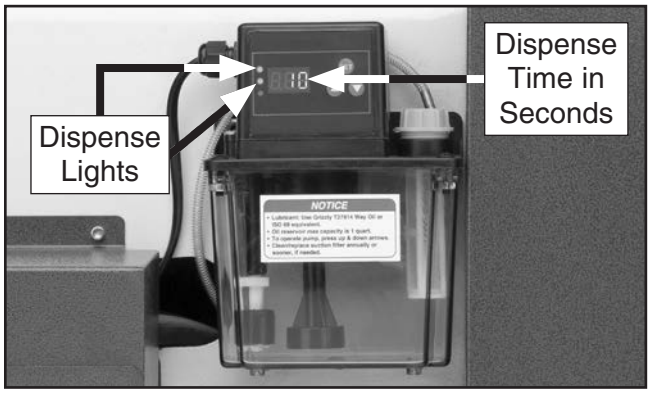


Figure 74. Setting oiler dispense time.

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

5. Verify upper and lower lights illuminate and oil dispense duration (in minutes) is displayed on digital readout (see **Figure 75**). 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.

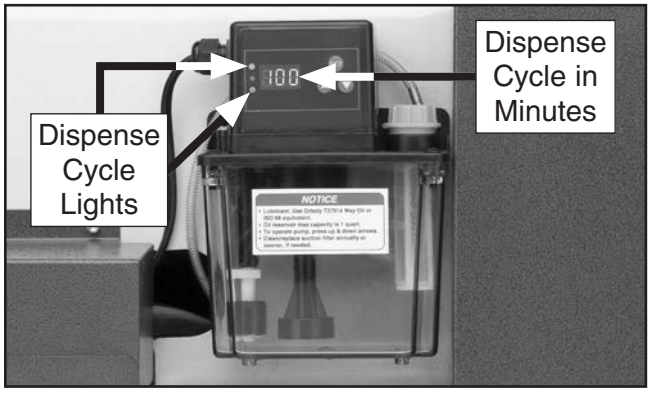


Figure 75. Setting oiler dispense cycle.

6. 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:

1. DISCONNECT MACHINE FROM POWER!

2. Clean X-axis helical and linear gear with a brush and mineral spirits to remove grime and old lubrication (see **Figure 76**).

3. Use a clean brush to wipe entire length of helical and linear gear with Grizzly T26419 or NLGI#2 Equivalent (see **Figure 76**).

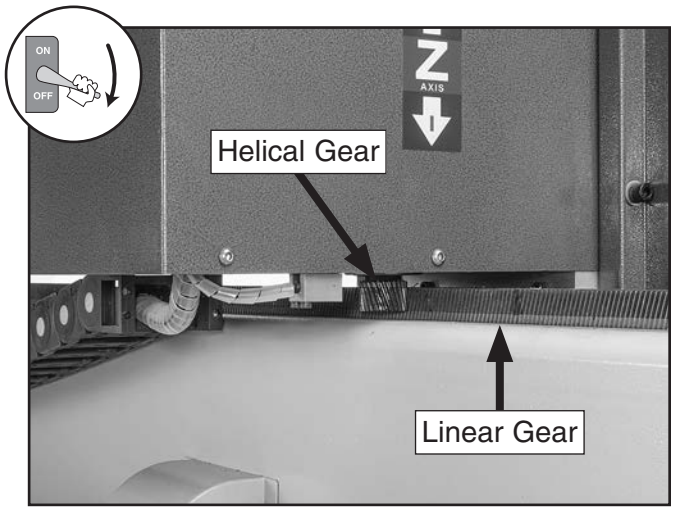


Figure 76. Rack and pinion lubrication area.

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

Tailstock & Guide Rails

Lube Type..... T27914 or ISO 68 Equivalent
Lube Amount ..... As Needed
Lubrication Frequency .....Weekly

To clean and lubricate tailstock and guide rails:

1. DISCONNECT MACHINE FROM POWER!

2. Clean tailstock guide rails with a brush and mineral spirits to remove grime and old lubrication (see **Figure 77**).

3. Use a clean shop rag to wipe entire length of guide rails with Grizzly T27914 or ISO 68 equivalent (see **Figure 77**).

4. Loosen (1) cap screw on each guide rail lock, and move tailstock and locks along entire length of guide rails to spread lubricant and ensure smooth movement (see **Figure 77**). DO NOT remove cap screws!

5. Clean outer surface of tailstock ball oiler (see **Figure 77**) to remove any dust or grime. Push tip of oil can nozzle against ball oiler to create a hydraulic seal, then pump oil can once or twice. When finished, wipe away any excess oil.

   Note: *If sludge and contaminants come out of the lubrication area, keep pumping the oil can until the oil runs clear.*

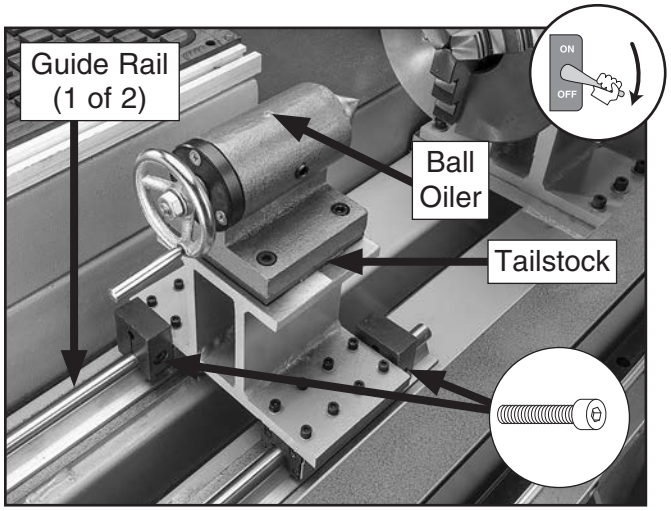


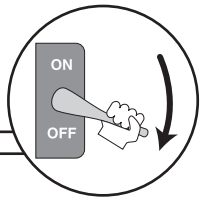
Figure 77. Tailstock guide rails lubrication.

6. Position tailstock as needed and tighten guide rail lock cap screws loosened in **Step 4**.

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.	1. EMERGENCY STOP button depressed/at fault. 2. Blown fuse. 3. Incorrect power supply voltage/circuit size. 4. Electrical cabinet limit switch engaged/at fault. 5. Power supply circuit breaker tripped or fuse blown. 6. Controller/interface board at fault. 7. Control/ground wiring broken, damaged, or disconnected. 8. ON switch at fault. 9. Inverter/contactor at fault. 10. Spindle motor/motor bearings at fault.	1. Rotate EMERGENCY STOP button head to reset. Replace if at fault. 2. Replace fuse/ensure no shorts. 3. Ensure correct power supply voltage/circuit size. 4. Close and secure electrical cabinet/replace switch. 5. Ensure power supply circuit is not overloaded and is free of shorts. Reset circuit breaker or replace fuse. 6. Inspect/replace if at fault. 7. Fix broken/damaged control/ground wires or disconnected/corroded connections. 8. Replace switch. 9. Inspect inverter/contactor; replace if at fault. 10. Test/repair/replace.
Machine stalls or is underpowered.	1. Incorrect power supply voltage or circuit size. 2. Dull cutter or incorrect cutter type for task. 3. Machine undersized for task. 4. Spindle jammed. 5. Spindle motor overheated. 6. Stepper motor at fault. 7. Contactor not energized/at fault. 8. One or more axes ball screw(s)/bearing(s) are damaged or binding. 9. C-axis gearbox reducer at fault.	1. Ensure correct power supply voltage and circuit size. 2. Replace/sharpen cutter. Use proper cutter for cutting task. 3. Use correct cutter/reduce feed rate or depth of cut. 4. DISCONNECT POWER! Turn spindle by hand to identify/fix cause of jam. 5. Turn machine OFF and allow spindle to cool. 6. Test wire continuity between stepper motor and stepper driver; repair/replace if at fault. Test/repair/replace stepper motor. 7. Test all legs for power; repair/replace if at fault. 8. Inspect ball screw(s)/bearing(s) on each axis for damage, corrosion, and debris. 9. Test by rotating chuck; rotational grinding/loose shaft requires gearbox reducer replacement.
Machine has vibration or noisy operation.	1. Incorrect feed rate, spindle speed, or cutter type. 2. Cutter or spindle at fault. 3. Workpiece loose. 4. Bit chattering.	1. Use correct feed rate and spindle speed; use different cutter. 2. Replace or sharpen cutter; tighten loose spindle; replace defective spindle, collet, or spindle nut (**Page 36**). 3. Secure workpiece with clamps (**Page 37**). 4. Replace/sharpen cutter; index cutter to workpiece; use correct feed rate and spindle speed.

Motor & Electrical (Cont.)

Symptom	Possible Cause	Possible Solution
Machine has vibration or noisy operation.	5. Collet at fault. 6. Machine not level. 7. Spindle bearings at fault. 8. One or more stepper driver(s) have incorrect switch configuration. 9. One or more stepper driver(s) at fault. 10. One or more axes ball screw(s)/bearing(s) are damaged or binding. 11. C-axis gearbox reducer at fault.	5. Replace collet. 6. Level machine (**Page 23**). 7. Test by rotating spindle; rotational grinding/loose shaft requires bearing replacement. 8. Adjust stepper driver DIP switch configuration (**Page 62**). 9. Test wire continuity between stepper driver and stepper motor; repair/replace if at fault. Test/repair/replace stepper driver. 10. Inspect ball screw(s)/bearing(s) on each axis for damage, corrosion, and debris. 11. Test by rotating chuck; rotational grinding/loose shaft requires gearbox reducer replacement.

Operation(s)

Symptom	Possible Cause	Possible Solution
Axis will not move after controller receives commands.	1. One axis not moving. 2. All axes not moving.	1. Check connection to motor. Check 50-pin connection to interface board. Adjust stepper driver switch configuration (**Page 62**). 2. Inspect 50-pin cable and interface board connection. Inspect power supply to stepper motors. Inspect mechanical components. Adjust stepper driver switch configuration (**Page 62**).
Axis movement and location not repeatable.	1. Ball screws worn or damaged. 2. Axis motor coupler worn or damaged. 3. Rack and pinion gear(s) worn or damaged. 4. Motor drive pulley(s) worn or loose.	1. Inspect ball screw; replace if at fault. 2. Inspect axis motor coupler; replace if at fault. 3. Inspect rack and pinion gear(s); replace if at fault. 4. Inspect motor drive pulley(s) tension; replace if worn or damaged.
One or more axes only move in one direction.	1. Interface board/motor connection loose. 2. Incorrect machine parameters. 3. Interface board at fault. 4. Stepper motor at fault. 5. Stepper driver at fault.	1. Inspect connections and ensure all are tight. 2. Verify machine parameters (**Page 32**). 3. Inspect/replace plugs and sockets. 4. Inspect/replace plugs and sockets. 5. Adjust stepper driver switch configuration (**Page 62**).
One or more axes will not move.	1. Direction wire and pulse wire in wrong place on interface board. 2. Stepper motor disconnected. 3. Stepper motor at fault. 4. No pulse signal from interface board.	1. Rewire direction/pulse wiring. 2. Reconnect stepper motor. 3. Inspect/repair/replace. 4. Replace interface board.
Inconsistent cutting depth.	1. Loose cutter. 2. Spoilboard not flat. 3. Z-axis ball screw has too much movement. 4. Workpiece loose. 5. Z-axis tool setter at fault. 6. Z-axis proximity switch at fault. 7. CAM/G-code at fault.	1. Tighten spindle collet (**Page 36**). 2. Clean/resurface spoilboard (**Page 39**). 3. Inspect/tighten/replace if needed. 4. Secure workpiece with clamps (**Page 37**). 5. Test/replace. 6. Test (**Page 60**)/replace. 7. Review G-code and correct errors.

Operation(s) (Cont.)

Symptom	Possible Cause	Possible Solution
Machine fails to home, or moves beyond soft limits when homing.	1. Incorrect machine parameters. 2. Faulty connection. 3. Proximity switch not aligned. 4. Loose proximity switch wire. 5. Proximity switch at fault. 6. Interface board at fault. 7. 50-pin data cable at fault.	1. Verify machine parameters (**Page 32**). 2. Find/secure connection. 3. Inspect/adjust proximity switch. 4. Secure connection. 5. Test (**Page 60**)/repair/replace proximity switch. 6. Inspect/replace if needed. 7. Replace cable.
Finished workpiece incorrect size.	1. Pulse equivalence incorrect. 2. Incorrect cutter. 3. CAD/CAM dimensional or tooling errors.	1. Verify controller parameters and update pulse equivalence (**Page 32**). 2. Use correct cutter for job. 3. Correct CAD/CAM errors as needed.
Spindle moves in opposite direction when homing.	1. Homing direction set incorrectly in controller. 2. Faulty connection between proximity switch and interface board. 3. Proximity switch at fault. 4. Electrical interference triggering proximity switch. 5. Interface board at fault. 6. 50-pin data cable at fault.	1. Input correct homing parameters (**Page 32**). 2. Inspect/test wiring to locate bad connection. 3. Test (**Page 60**)/replace proximity switch. 4. Test wiring and isolate strong interference signals from electrical currents and ground. 5. Replace interface board. 6. Replace 50-pin data cable.

Vacuum Pump Motor & Electrical

Symptom	Possible Cause	Possible Solution
Vacuum pump does not start, or power supply breaker immediately trips after startup.	1. Incorrect power supply voltage/circuit size. 2. Disconnect switch at fault/wired incorrectly. 3. Power supply circuit breaker tripped or fuse blown. 4. Vacuum pump junction box wiring incorrect. 5. Control/ground wiring broken, damaged, or disconnected. 6. Motor or motor bearings at fault.	1. Ensure correct power supply voltage/circuit size (**Page 14**). 2. Test for good contacts; correct the wiring. 3. Ensure power supply circuit is not overloaded and is free of shorts. Reset circuit breaker or replace fuse. 4. Verify/rewire vacuum pump junction box wiring (**Page 29**). 5. Fix broken/damaged control/ground wires or disconnected/corroded connections. 6. Test/repair/replace.
Vacuum pump stalls or has weak suction.	1. Incorrect power supply voltage or circuit size. 2. Disconnect switch at fault/wired incorrectly. 3. Vacuum pump junction box wiring incorrect. 4. Workpiece or spoilboard is dirty or uneven. 5. Gasket tube not installed or installed incorrectly. 6. Filter is dirty or clogged. 7. Leak in hose, fittings, or valves. 8. Clog in vacuum hose. 9. Motor overheated. 10. Motor or motor bearings at fault.	1. Ensure correct power supply voltage and circuit size. 2. Test for good contacts; correct the wiring. 3. Verify/rewire vacuum pump junction box wiring (**Page 29**). 4. Clean/resurface workpiece or spoilboard (**Page 39**). 5. Verify gasket tube is installed and seals workpiece correctly (**Page 38**). 6. Clean or replace vacuum filter. 7. Inspect/repair/replace. 8. Remove hose and clear clog. 9. Clean motor, let cool, and reduce workload. 10. Test/repair/replace.
Vacuum pump pushes air in wrong direction.	1. Incoming power wires are wired out of phase.	1. Reverse two incoming power wires in vacuum pump junction box (**Page 29**).

Controller Operations

Symptom	Possible Cause	Possible Solution
Controller display shows "out of soft limits error".	1. Toolpath outside of working envelope. 2. Toolpath too large for working envelope. 3. Work origin incorrect in G-code. 4. Incorrect machine parameters. 5. Incorrect coordinate system in CAM software.	1. Reset work origin and secure workpiece so toolpath falls within working envelope. 2. Revise toolpath/break up toolpath into multiple sections. 3. Revise toolpath. 4. Verify machine parameters (**Page 32**). 5. Set correct coordinates in CAM software.
Controller not processing correctly.	1. Incompatible G-code file. 2. Electrical interference. 3. Incorrect machine parameters. 4. Incompatible post-processor.	1. Reformat G-code and re-upload to controller. 2. Test wiring and isolate strong interference signals from electrical currents and ground. 3. Verify machine parameters (**Page 32**). 4. Use compatible post-processor. In V-Carve, select a compatible 4th-Axis post processor from the drop-down menu.
Controller display is dim.	1. Power supply disconnected or damaged. 2. Power supply voltage too high for controller. 3. 50-pin data cable at fault. 4. Display at fault.	1. Inspect/replace power supply. 2. Use correct power supply. High voltage may damage controller; replace if needed. 3. Inspect/clean plugs and sockets and retry. Replace if bad. 4. Replace controller.
Controller display is blank, flickers, or restarts.	1. Faulty controller connection. 2. Incorrect power supply voltage or circuit size. 3. Controller at fault. 4. Display at fault.	1. Inspect/clean plugs and sockets and retry. Replace if faulty. 2. Ensure correct power supply voltage and circuit size. 3. Update controller software (**Page 61**). 4. Replace controller.
Controller screen says spindle is ***ON*** when spindle is ***OFF*** and spindle is ***OFF*** when spindle is ***ON***.	1. Wrong connections at interface board.	1. Rewire interface board.
Controller screen says spindle is ***ON***, but spindle is not operating.	1. Spindle speed set to lowest setting (0 RPM). 2. VFD frequency parameters not set correctly.	1. Manually increase spindle speed until spindle is operating (**Page 48**). 2. Input correct frequency parameters; contact Grizzly Tech Support for assistance.

Testing Proximity Switches

If the Model G0932 is no longer homing properly, or one or more axes is unresponsive, test each proximity switch for proper operation.

Note: *The rotary C-axis does not have a proximity switch dedicated to limiting machine movement. The proximity switch located behind the chuck is used by the controller to calculate position.*

Items Needed	Qty
Scrap Iron or Steel	1
Multimeter	1

To test proximity switches:

1. 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**.

2. Press STOP, then press MENU *twice* to access voltage parameter screen shown in **Figure 78**.

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

Figure 78. Voltage parameter screen.

3. Touch each proximity switch target with a scrap piece of iron or steel (see **Figure 79**).

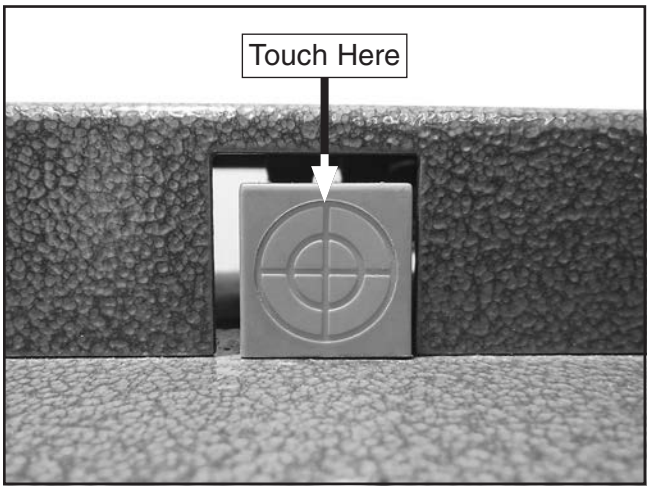


Figure 79. Proximity switch target.

4. Verify top row axes 1–4 (1=X-axis, 2=Y-axis, 3=Z-axis, and 4=C-axis) in **Figure 78** 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 56** 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.*

5. DISCONNECT MACHINE FROM POWER!

6. Use a multimeter to check continuity between proximity switches and interface board terminals (see **Figure 80**).

   — 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**.

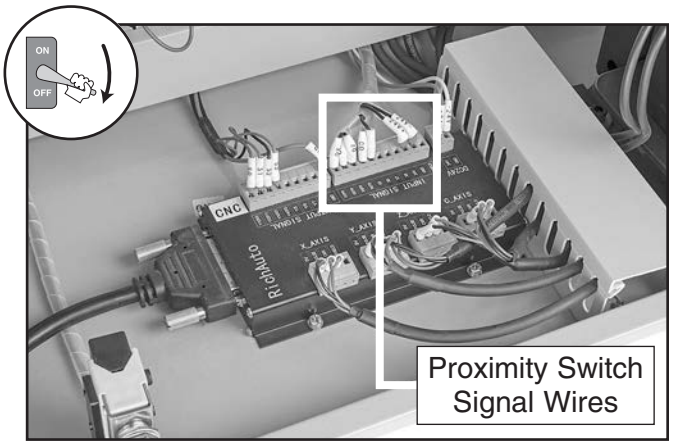


Figure 80. Controller module proximity switch signal wires.

7. Swap faulty axis proximity switch signal wire on interface board (see **Figure 81**) with any known good axes signal wires (X1=X-axis, X2=Y-axis, X3=Z-axis, X4=C-axis).

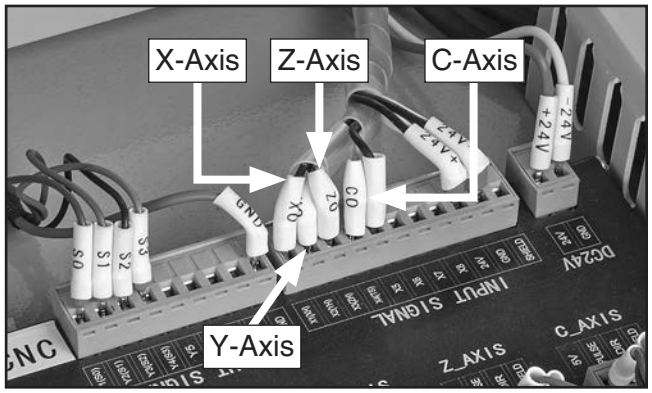


Figure 81. Interface board proximity switch axes.

8. Perform **Steps 1**–**3** on **Page 60** 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 B18E 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 B18E 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 using USB drive:

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 32**.

Configuring Stepper Drivers

The DIP (Dual In-line Package), microstep, and idle switches on the stepper drivers control the step size, current, and speed of the stepper motors. If these switches are not configured properly, erroneous signals will cause the stepper motors to function incorrectly.

Tool Needed	Qty
Phillips Head Screwdriver #0	1

To configure stepper driver switches:

1. DISCONNECT MACHINE FROM POWER!

2. Open electrical cabinet and locate (5) stepper drivers (see **Figures 82**–**83**).

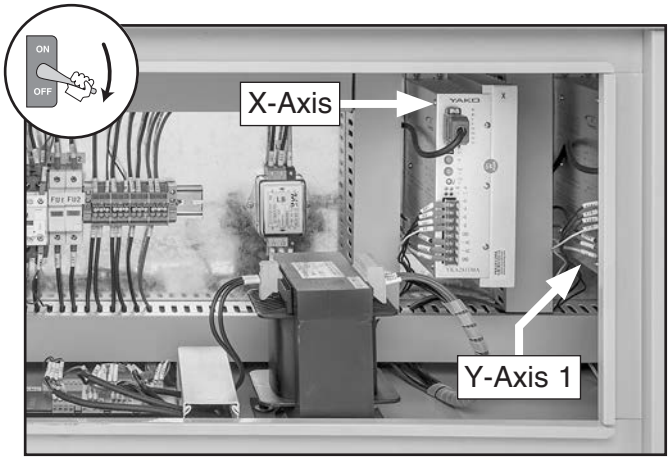


Figure 82. Left electrical cabinet stepper drivers location.

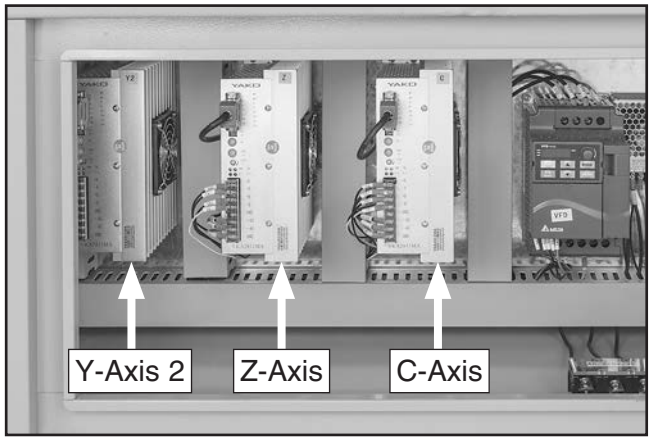


Figure 83. Right electrical cabinet stepper drivers location.

3. Compare each stepper driver configuration to diagram in **Figure 84**.

   — If configuration *does* match diagram, switches are set correctly.

   — If configuration *does not* match diagram, change switches until configuration matches diagram below.

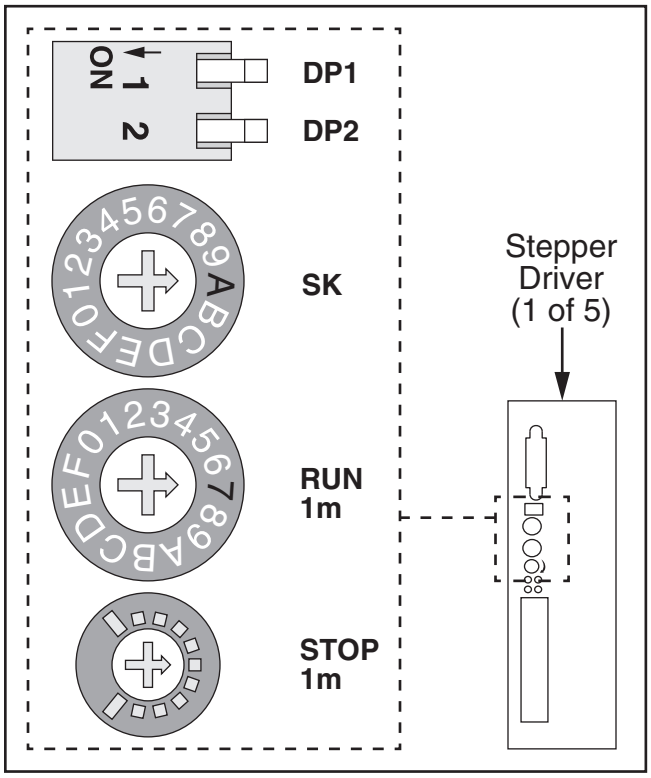


Figure 84. Stepper driver configuration.

4. Close electrical cabinet and proceed to **Test Run** on **Page 30** to verify machine functions properly.

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 aftermarket 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.

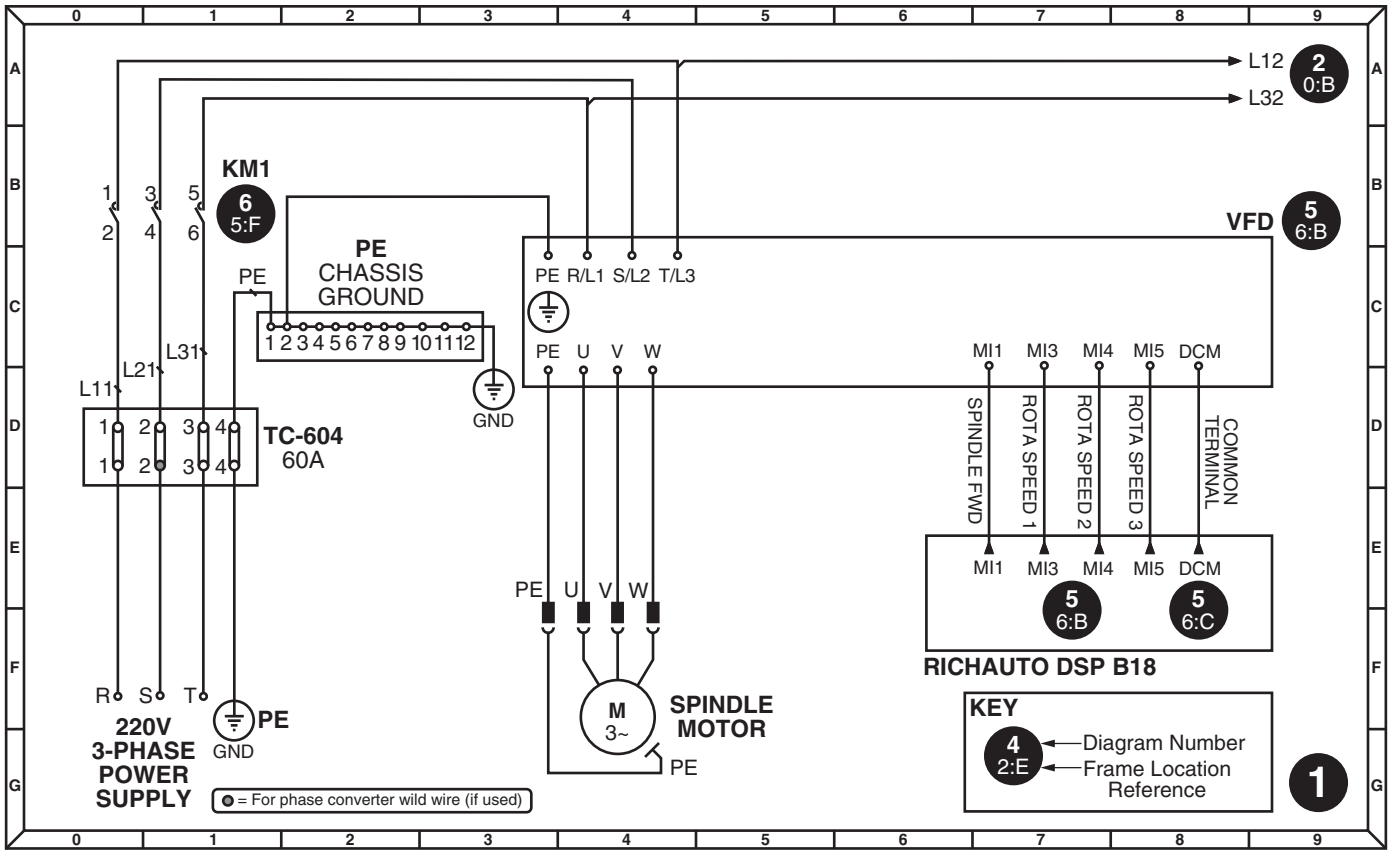
NOTICE

The photos and diagrams included in this section are best viewed in color. You can view these pages in color at www.grizzly.com.

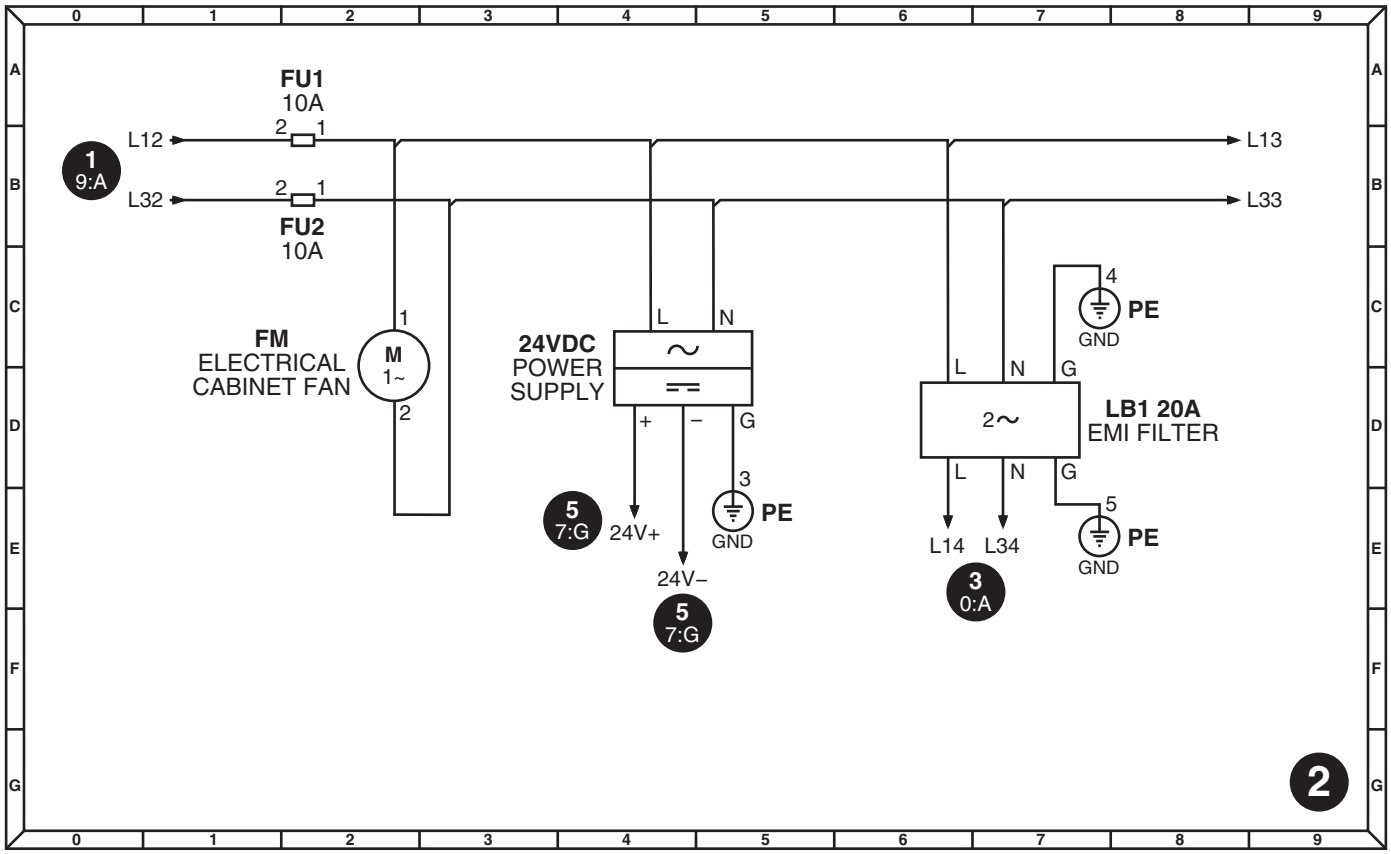
COLOR KEY

BLACK	Bk	BLUE	Bl	YELLOW	Yl	LIGHT BLUE	Lb
WHITE	Wt	BROWN	Br	YELLOW GREEN	Yg	BLUE WHITE	Bw
GREEN	Gn	GRAY	Gy	PURPLE	Pu		
RED	Rd	ORANGE	Or	PINK	Pk	TURQUOISE	Tu

Spindle Motor Wiring Diagram

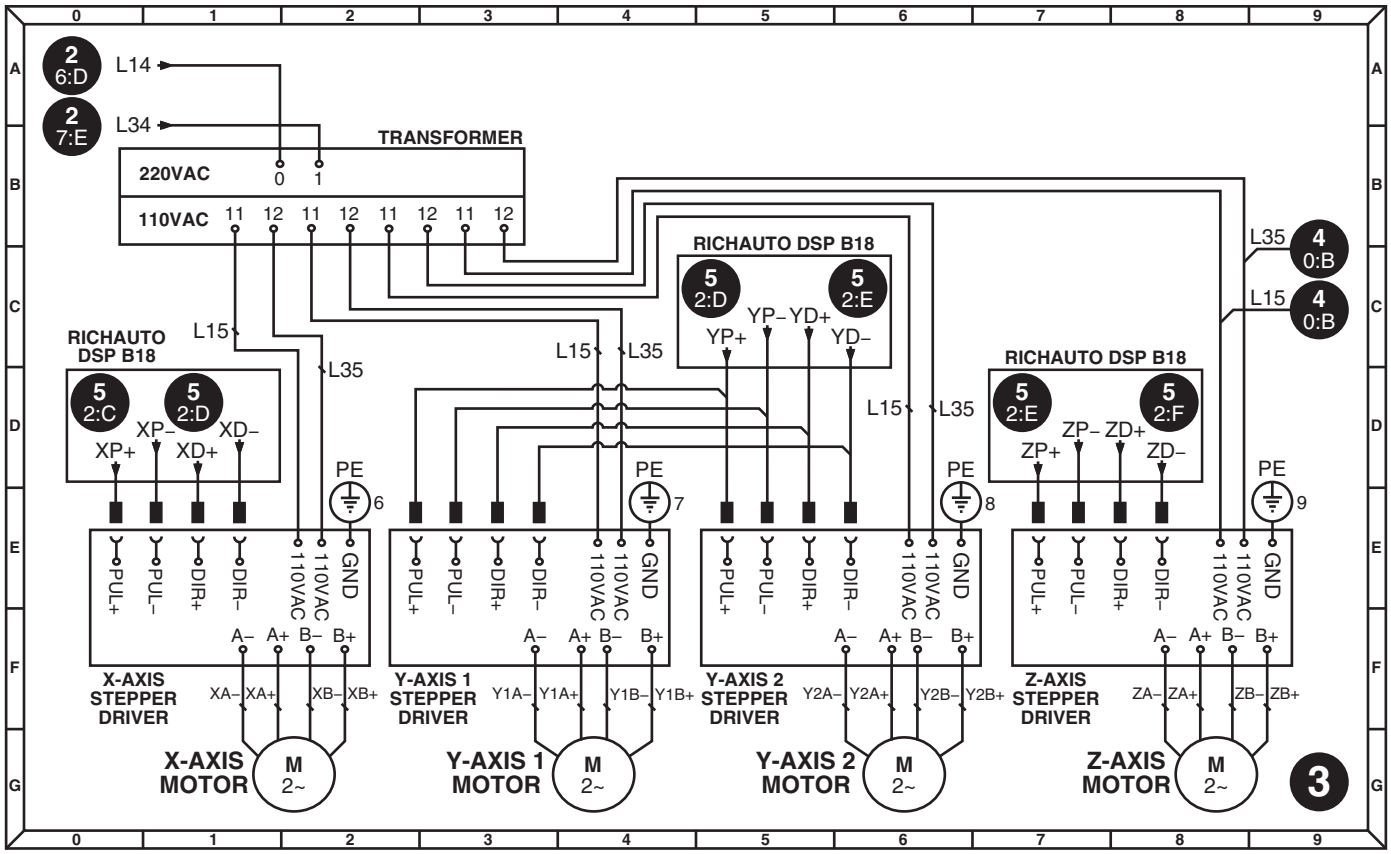


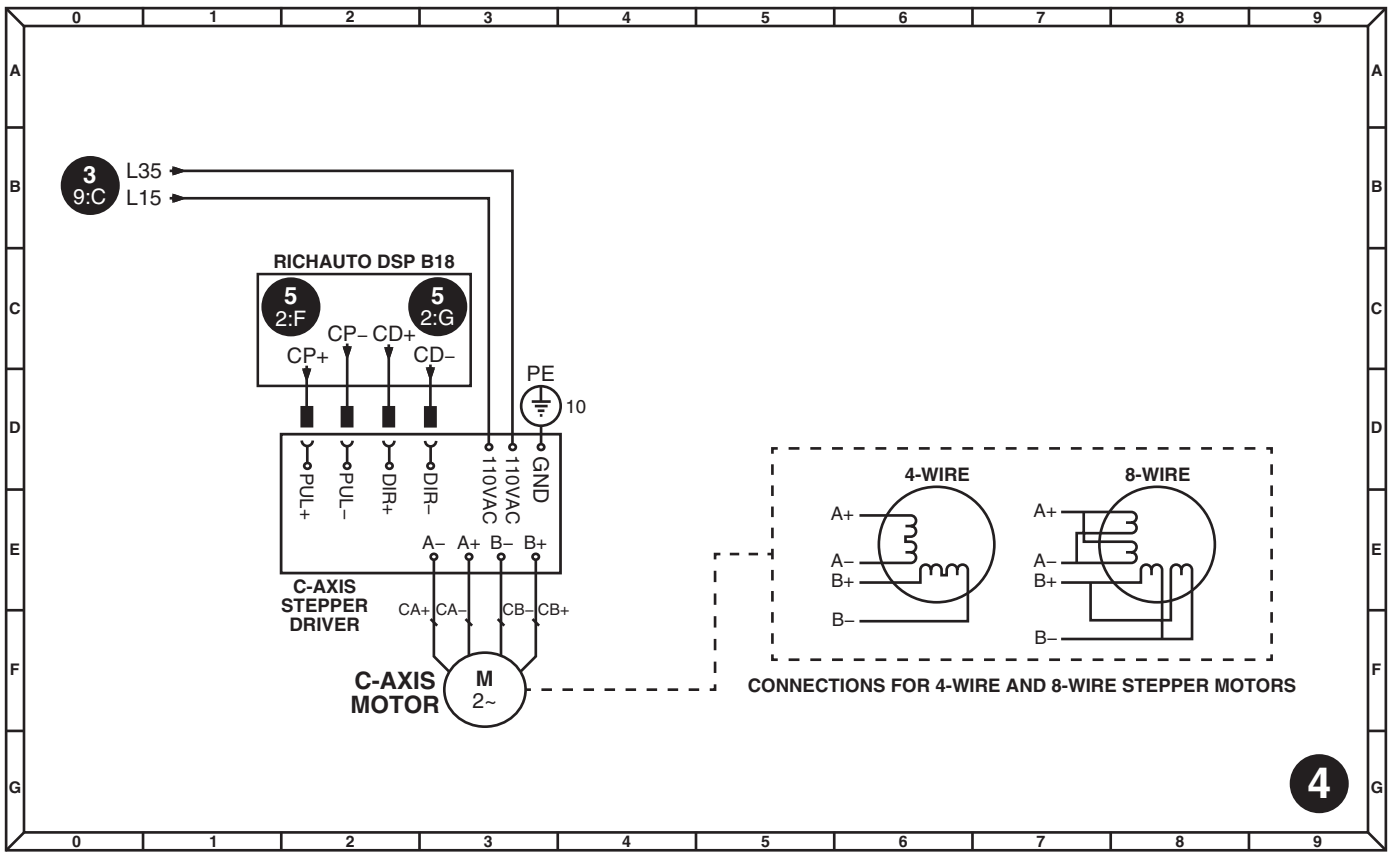
Power Components Wiring Diagram



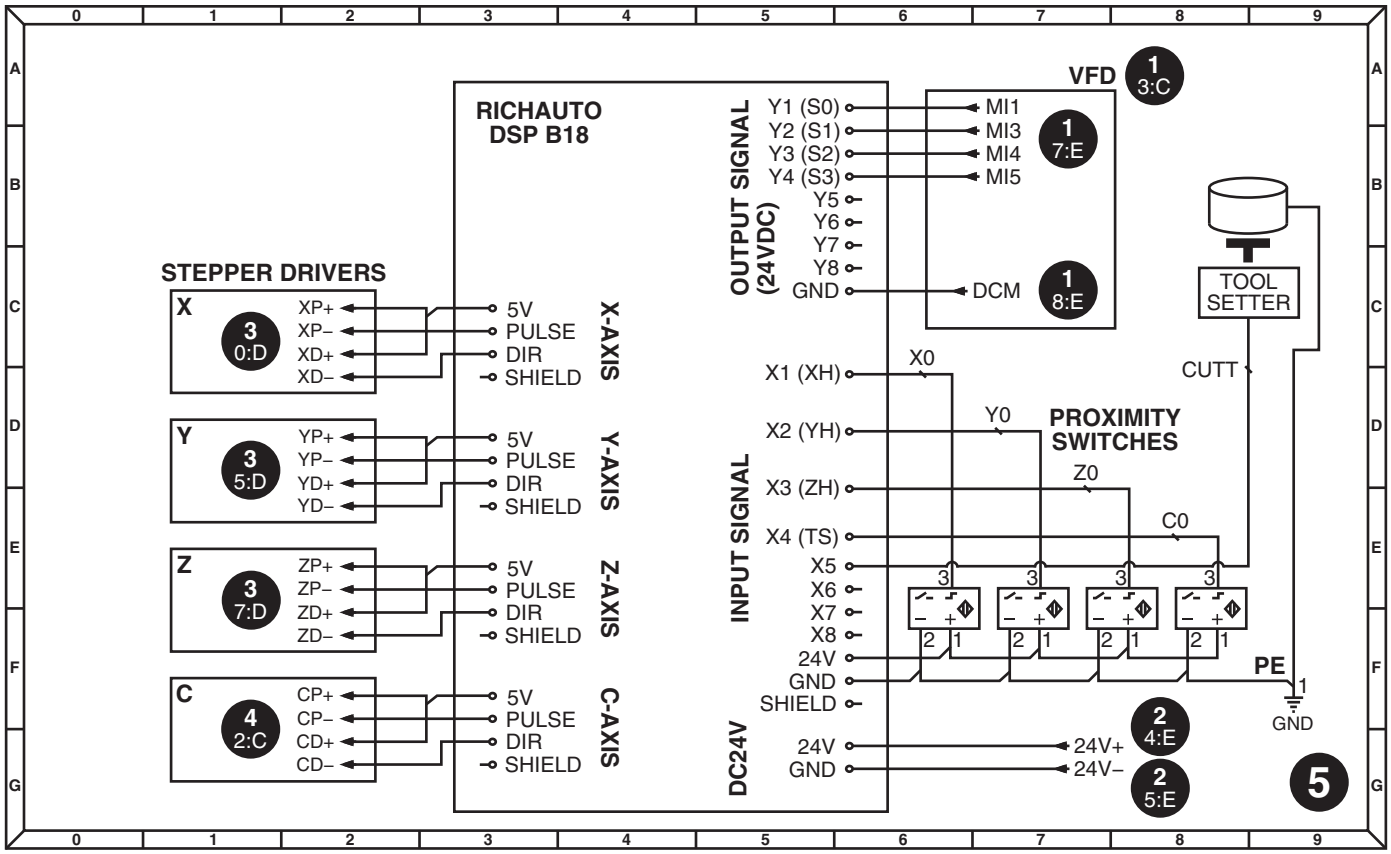
STOP **READ ELECTRICAL SAFETY ON PAGE 63!**

Stepper Motors Wiring Diagram

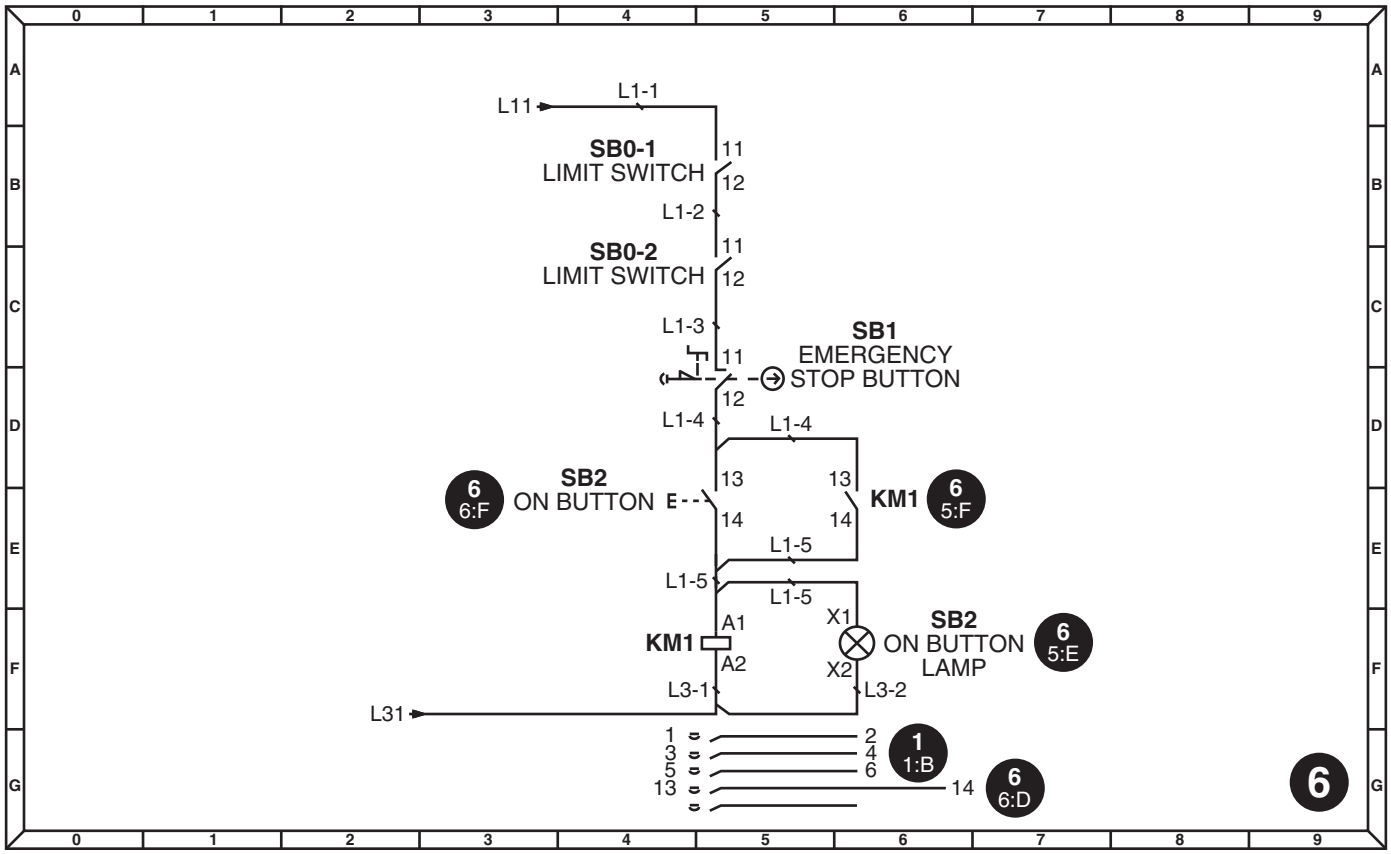




Interface Board Wiring Diagram



Contactor Wiring Diagram



READ ELECTRICAL SAFETY ON PAGE 63!

Electrical Components

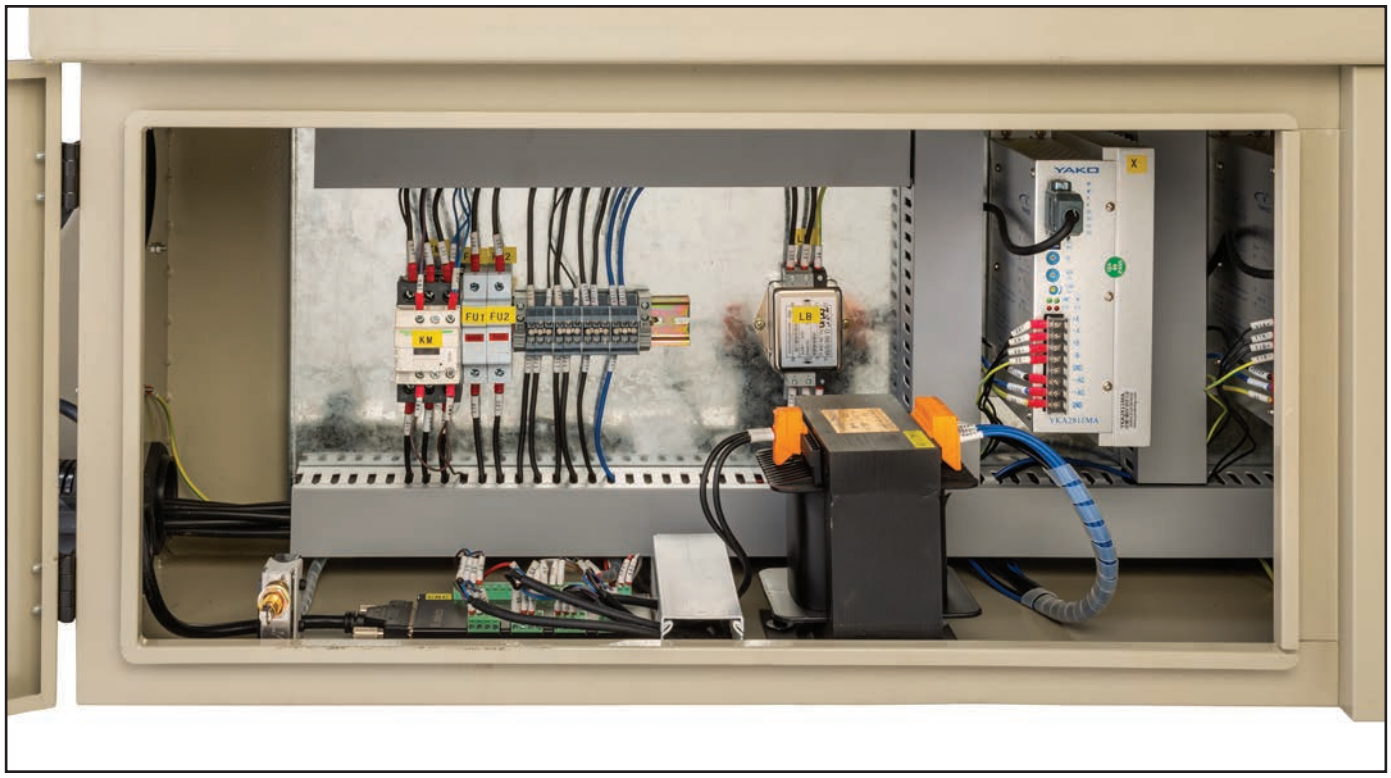


Figure 85. Electrical cabinet components (left).

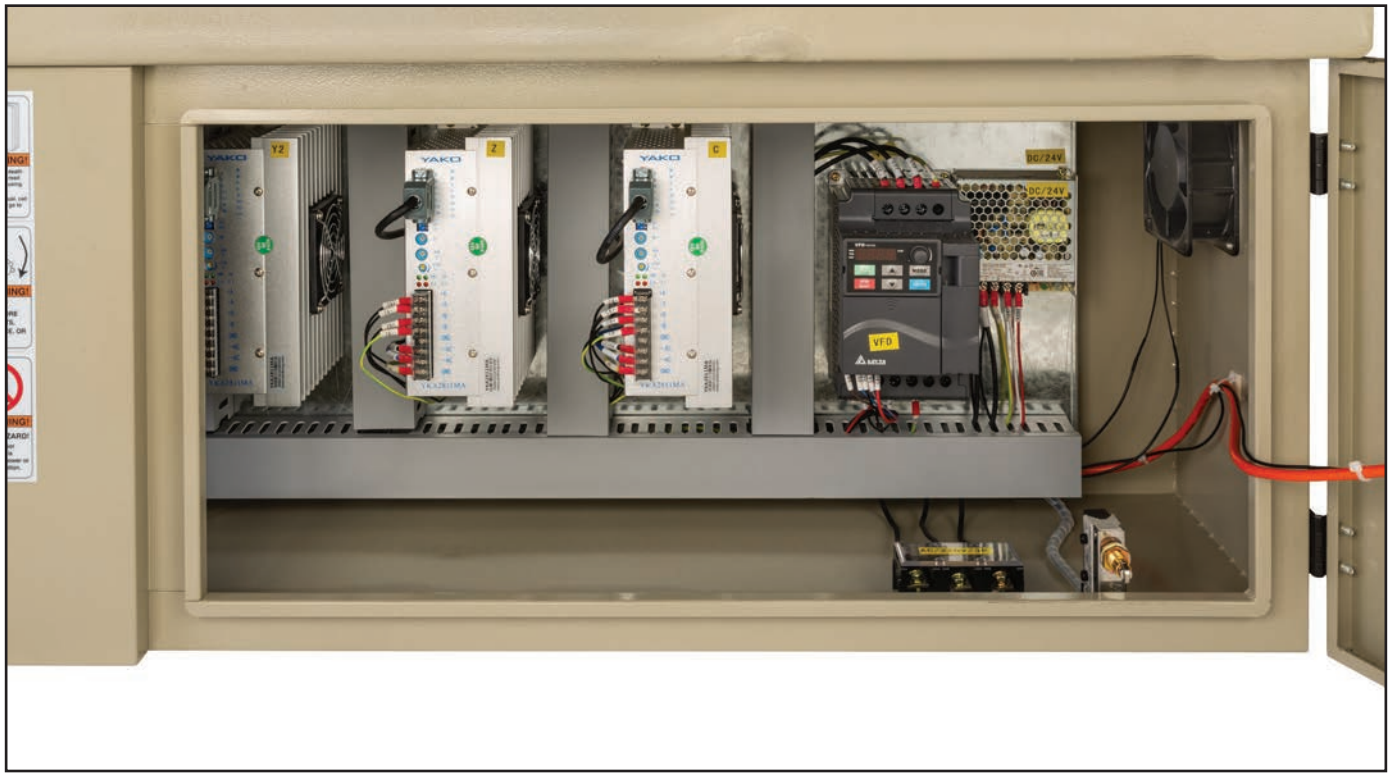


Figure 86. Electrical cabinet components (right).

STOP *READ ELECTRICAL SAFETY ON PAGE 63!*

Electrical Components (Cont.)

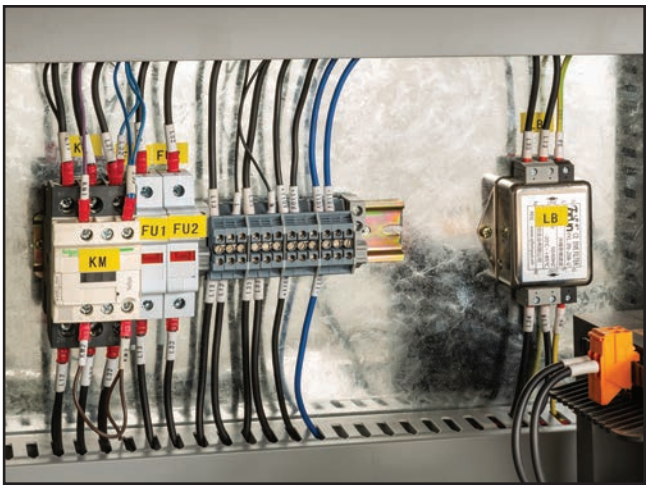


Figure 87. Contactor, fuse holders, terminal blocks, and EMI filter.

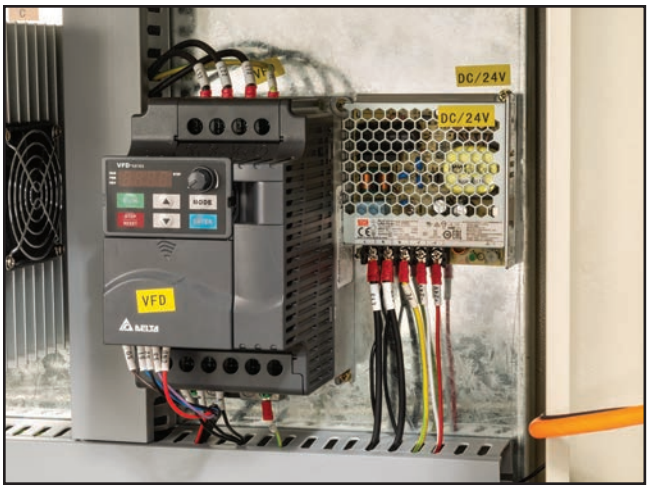


Figure 90. VFD and 24VDC power supply.

Figure 88. Right electrical cabinet stepper drivers.

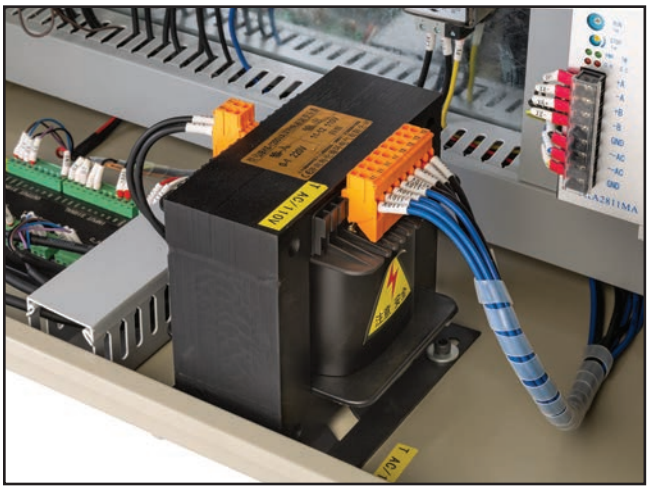


Figure 91. Transformer.

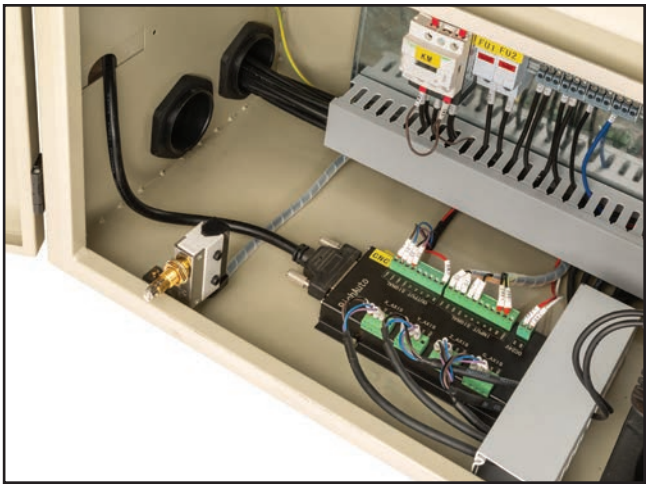


Figure 89. Interface board and limit switch.

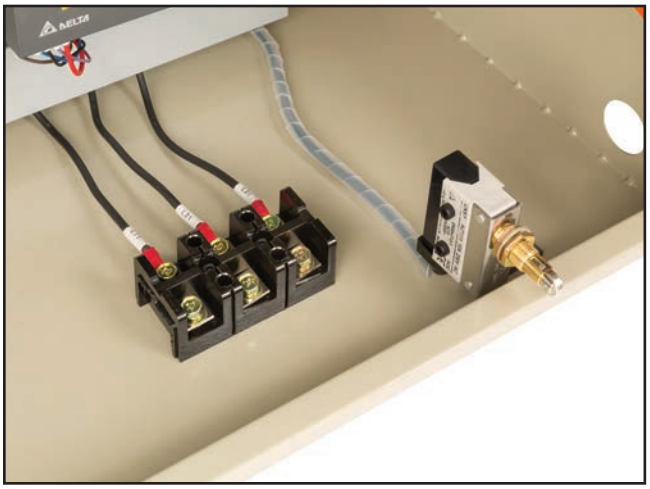


Figure 92. Main power terminals and limit switch.

STOP *READ ELECTRICAL SAFETY ON PAGE 63!*

Electrical Components (Cont.)

Figure 93. Spindle motor.

Figure 94. X-axis proximity switch.

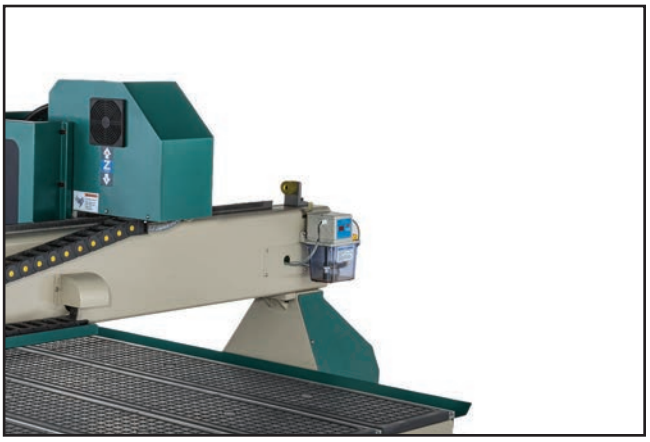


Figure 95. Oiler system.

Figure 96. C-axis proximity switch and stepper motor.

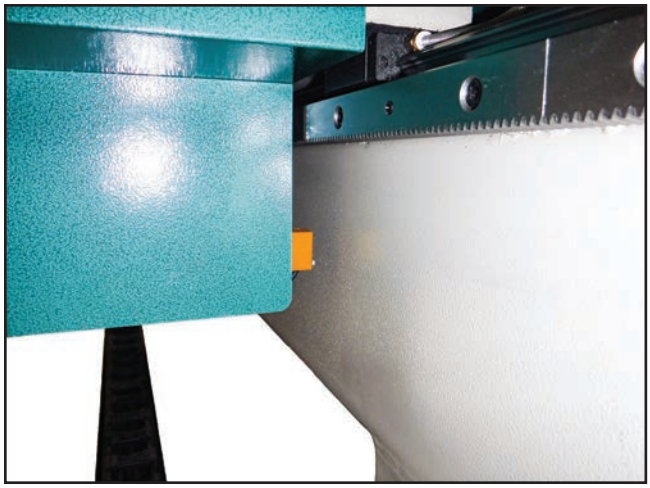
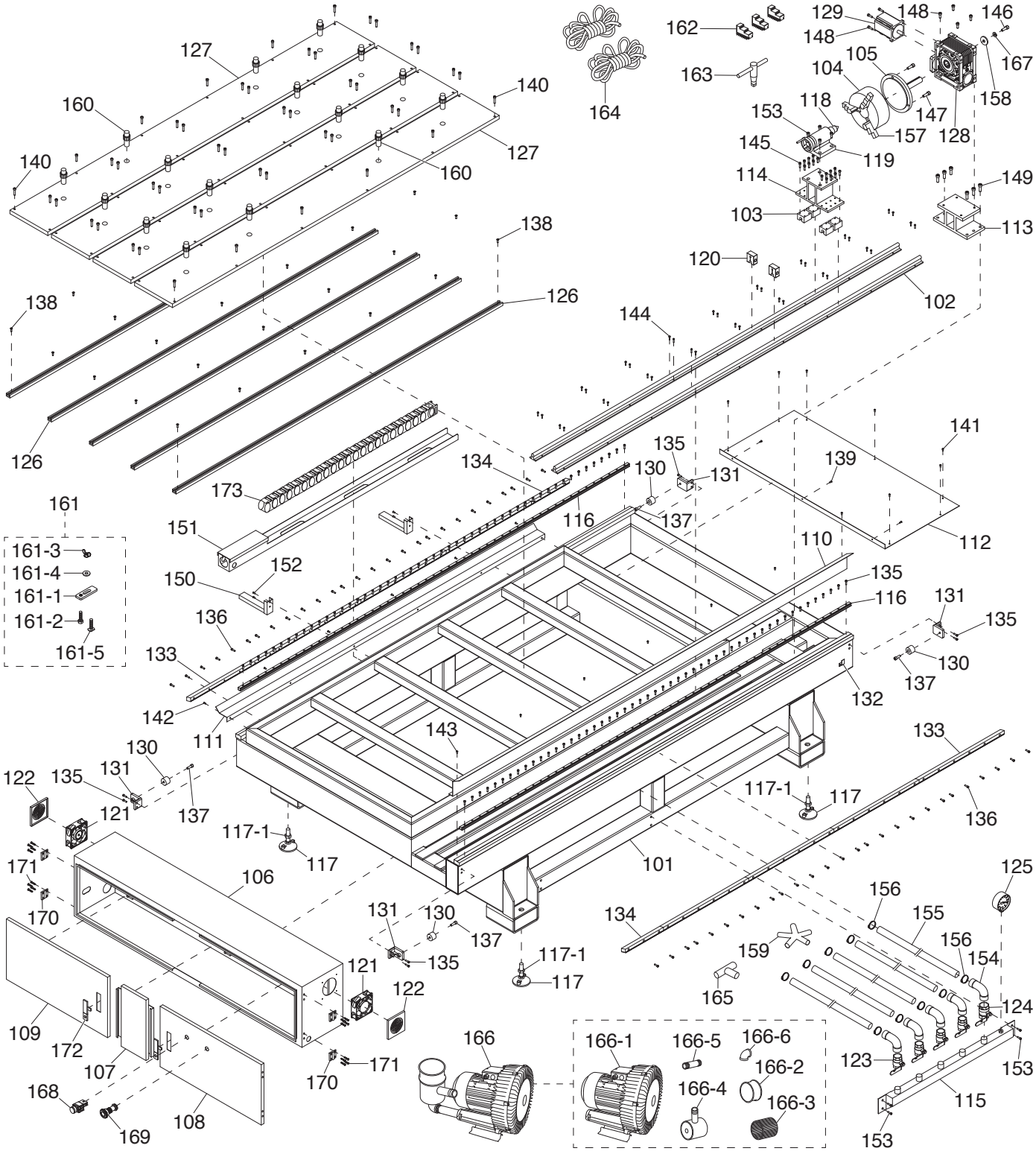


Figure 97. Y-axis proximity switch.

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** to check for availability.

Frame & Bed



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Frame & Bed Parts List

REF	PART #	DESCRIPTION
101	P0932101	MACHINE BODY
102	P0932102	LINEAR SUPPORT RAIL 16 X 2000MM
103	P0932103	SUPPORT RAIL CARRIAGE
104	P0932104	3-JAW SCROLL CHUCK 200MM
105	P0932105	CHUCK MOUNTING PLATE
106	P0932106	ELECTRICAL CABINET
107	P0932107	ELECTRICAL CABINET DIVIDER
108	P0932108	ELECTRICAL CABINET DOOR, RIGHT
109	P0932109	ELECTRICAL CABINET DOOR, LEFT
110	P0932110	DUST COVER, RIGHT
111	P0932111	DUST COVER, LEFT
112	P0932112	DUST COVER, REAR
113	P0932113	GEARBOX REDUCER MOUNT
114	P0932114	TAILSTOCK MOUNT
115	P0932115	VACUUM CONTROL VALVE
116	P0932116	LINEAR GUIDEWAY PMI MSA20-3060
117	P0932117	LEVELING FOOT M16-2
117-1	P0932117-1	HEX NUT M16-2
118	P0932118	LIVE CENTER
119	P0932119	TAILSTOCK
120	P0932120	SUPPORT RAIL LOCK
121	P0932121	ELECTRICAL COOLING FAN DP200A
122	P0932122	FAN COVER
123	P0932123	BALL VALVE DN32
124	P0932124	BALL VALVE DN40
125	P0932125	VACUUM PRESSURE GAUGE
126	P0932126	T-SLOT TRACK 2500MM
127	P0932127	VACUUM TABLE SLAT
128	P0932128	GEARBOX REDUCER NMRV75
129	P0932129	STEPPER MOTOR FL86STH118A-22-LC
130	P0932130	LIMIT STOP BUMPER
131	P0932131	LIMIT STOP BRACKET
132	P0932132	Y-AXIS PROXIMITY SWITCH BRACKET
133	P0932133	HELICAL RACK 1.25M, 670MM
134	P0932134	HELICAL RACK 1.25M, 300MM
135	P0932135	CAP SCREW M6-1 X 20
136	P0932136	CAP SCREW M6-1 X 20
137	P0932137	CAP SCREW M10-1.5 X 30
138	P0932138	FLAT HD SCR M5-.8 X 25
139	P0932139	BUTTON HD CAP SCR M5-.8 X 12
140	P0932140	CAP SCREW M6-1 X 20
141	P0932141	BUTTON HD CAP SCR M5-.8 X 12
142	P0932142	BUTTON HD CAP SCR M5-.8 X 12

REF	PART #	DESCRIPTION
143	P0932143	BUTTON HD CAP SCR M5-.8 X 12
144	P0932144	CAP SCREW M4-.7 X 16
145	P0932145	CAP SCREW M6-1 X 20
146	P0932146	CAP SCREW M10-1.5 X 30
147	P0932147	CAP SCREW M10-1.5 X 30
148	P0932148	CAP SCREW M8-1.25 X 20
149	P0932149	CAP SCREW M10-1.5 X 30
150	P0932150	CABLE CARRIER TRACK BRACKET
151	P0932151	CABLE CARRIER TRACK
152	P0932152	BUTTON HD CAP SCR M5-.8 X 12
153	P0932153	CAP SCREW M5-.8 X 12
154	P0932154	VACUUM ELBOW FITTING 2"
155	P0932155	VACUUM LINE 2"
156	P0932156	HOSE CLAMP 2"
157	P0932157	INSIDE JAW SET (3-PC)
158	P0932158	FENDER WASHER 10 X 45 X 3
159	P0932159	VACUUM HOSE 5-WAY SPLITTER
160	P0932160	VACUUM PORT W/PLUG
161	P0932161	HOLD-DOWN CLAMP
161-1	P0932161-1	CLAMP PLATE
161-2	P0932161-2	HEX BOLT M8-1.25 X 50
161-3	P0932161-3	WING NUT M8-1.25
161-4	P0932161-4	FLAT WASHER 8MM
161-5	P0932161-5	T-BOLT M8-1.25 X 80
162	P0932162	OUTSIDE JAW SET (3-PC)
163	P0932163	CHUCK KEY
164	P0932164	GASKET TUBING
165	P0932165	VACUUM HOSE 3-WAY SPLITTER
166	P0932166	VACUUM PUMP ASSEMBLY
166-1	P0932166-1	VACUUM PUMP 10HP 220V 3-PH
166-2	P0932166-2	PLEXIGLASS COVER W/RUBBER SEAL
166-3	P0932166-3	VACUUM PUMP FILTER
166-4	P0932166-4	VACUUM FILTER BASE
166-5	P0932166-5	THREADED PIPE 2 IPS X 3"
166-6	P0932166-6	ELBOW FITTING 2 IPS
167	P0932167	LOCK WASHER 10MM
168	P0932168	ON BUTTON SCH XB2BW33M1C 22MM GRN
169	P0932169	E-STOP BUTTON SCH XB4BS542 22MM RED
170	P0932170	DOOR HINGE
171	P0932171	FLAT HD CAP SCR M5-.8 X 12
172	P0932172	DOOR HANDLE W/LOCK
173	P0932173	CABLE CARRIER

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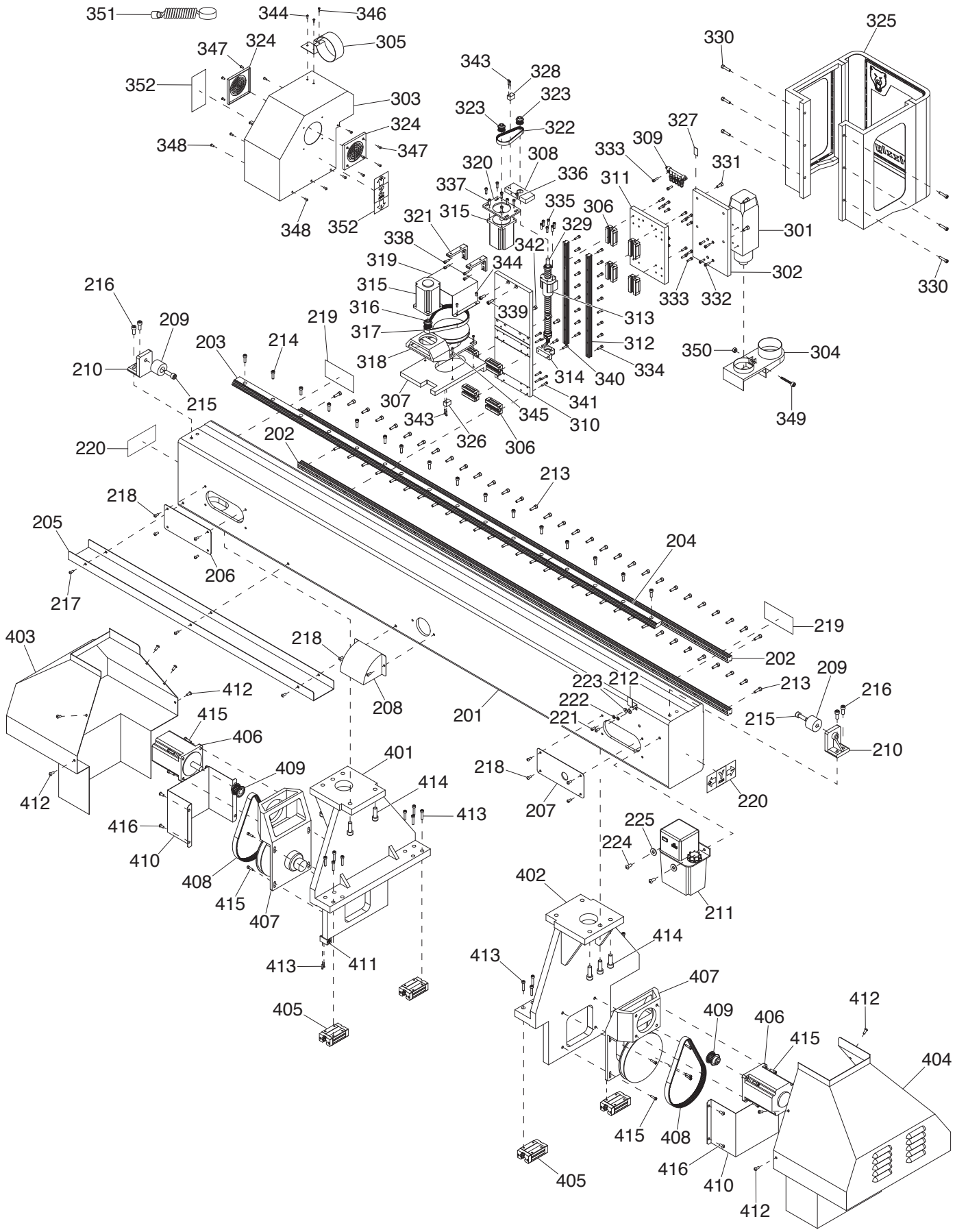
Gantry & Spindle



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Gantry & Spindle Parts List

REF	PART #	DESCRIPTION
201	P0932201	GANTRY BEAM
202	P0932202	LINEAR GUIDEWAY PMI MSA20-1840
203	P0932203	HELICAL RACK 1.25M, 670MM
204	P0932204	HELICAL RACK 1.25M, 470MM
205	P0932205	CABLE CARRIER TRACK 1050MM
206	P0932206	GANTRY ACCESS PANEL, LEFT
207	P0932207	GANTRY ACCESS PANEL, RIGHT
208	P0932208	GANTRY CABLE ACCESS FAIRING
209	P0932209	LIMIT STOP BUMPER
210	P0932210	LIMIT STOP BRACKET
211	P0932211	OILER SYSTEM PUMP
212	P0932212	X-AXIS PROXIMITY SWITCH BRACKET
213	P0932213	CAP SCREW M6-1 X 20
214	P0932214	CAP SCREW M6-1 X 20
215	P0932215	CAP SCREW M10-1.5 X 30
216	P0932216	CAP SCREW M10-1.5 X 30
217	P0932217	BUTTON HD CAP SCR M5-.8 X 12
218	P0932218	BUTTON HD CAP SCR M5-.8 X 12
219	P0932219	X-AXIS MOVEMENT LABEL
220	P0932220	Y-AXIS MOVEMENT LABEL
221	P0932221	PHLP HD SCR M4-.7 X 12
222	P0932222	LOCK WASHER 4MM
223	P0932223	FLAT WASHER 4MM
224	P0932224	BUTTON HD CAP SCR M6-1 X 16
225	P0932225	FLAT WASHER 6MM
301	P0932301	SPINDLE MOTOR HSD 4HP 220V 3-PH
302	P0932302	SPINDLE MOTOR PLATE
303	P0932303	SPINDLE COVER, UPPER
304	P0932304	DUST SHOE
305	P0932305	DUST HOSE CLAMP
306	P0932306	GUIDEWAY CARRIAGE MSA20S
307	P0932307	DRIVE GEARBOX MOUNT
308	P0932308	BALL SCREW END SUPPORT, UPPER
309	P0932309	OILER MANIFOLD
310	P0932310	X-AXIS MOUNTING PLATE
311	P0932311	Z-AXIS MOUNTING PLATE
312	P0932312	LINEAR GUIDEWAY PMI MSA20S-500
313	P0932313	FLANGE BALL NUT
314	P0932314	BALL SCREW END SUPPORT, LOWER
315	P0932315	STEPPER MOTOR FL86STH118A-22-LC
316	P0932316	SYNCHRONOUS WHEEL Z18
317	P0932317	TIMING BELT HTD 550-5M
318	P0932318	DRIVE GEARBOX 1.25M
319	P0932319	GEARBOX COVER
320	P0932320	STEPPER MOTOR MOUNTING PLATE
321	P0932321	STEPPER MOTOR BRACKET
322	P0932322	TIMING BELT HTD 310-5M

REF	PART #	DESCRIPTION
323	P0932323	SYNCHRONOUS WHEEL Z20
324	P0932324	FAN COVER
325	P0932325	DUST SHIELD
326	P0932326	PROXIMITY SWITCH OMRON TL-Q5MCI-Z
327	P0932327	Z-AXIS PROXIMITY SWITCH BRACKET
328	P0932328	PROXIMITY SWITCH OMRON TL-Q5MCI-Z
329	P0932329	BALL SCREW
330	P0932330	CAP SCREW M8-1.25 X 35
331	P0932331	CAP SCREW M8-1.25 X 20
332	P0932332	CAP SCREW M6-1 X 20
333	P0932333	CAP SCREW M6-1 X 20
334	P0932334	CAP SCREW M6-1 X 20
335	P0932335	CAP SCREW M6-1 X 20
336	P0932336	CAP SCREW M4-.7 X 16
337	P0932337	CAP SCREW M6-1 X 20
338	P0932338	CAP SCREW M6-1 X 20
339	P0932339	CAP SCREW M8-1.25 X 20
340	P0932340	CAP SCREW M6-1 X 20
341	P0932341	CAP SCREW M5-.8 X 25
342	P0932342	CAP SCREW M8-1.25 X 20
343	P0932343	CAP SCREW M5-.8 X 25
344	P0932344	BUTTON HD CAP SCR M5-.8 X 12
345	P0932345	CAP SCREW M4-.7 X 16
346	P0932346	CAP SCREW M5-.8 X 12
347	P0932347	BUTTON HD CAP SCR M5-.8 X 12
348	P0932348	BUTTON HD CAP SCR M5-.8 X 12
349	P0932349	CAP SCREW M5-.8 X 45
350	P0932350	HEX NUT M5-.8
351	P0932351	Z-AXIS TOOL SETTER
352	P0932352	Z-AXIS MOVEMENT LABEL
401	P0932401	GANTRY COLUMN, RIGHT
402	P0932402	GANTRY COLUMN, LEFT
403	P0932403	COLUMN COVER, RIGHT
404	P0932404	COLUMN COVER, LEFT
405	P0932405	GUIDEWAY CARRIAGE MSA20S
406	P0932406	STEPPER MOTOR FL86STH118A-22-LC
407	P0932407	DRIVE GEARBOX 1.25M
408	P0932408	TIMING BELT HTD 550-5M
409	P0932409	SYNCHRONOUS WHEEL Z18
410	P0932410	GEARBOX COVER
411	P0932411	PROXIMITY SWITCH OMRON TL-Q5MCI-Z
412	P0932412	BUTTON HD CAP SCR M5-.8 X 12
413	P0932413	CAP SCREW M5-.8 X 25
414	P0932414	CAP SCREW M10-1.5 X 30
415	P0932415	CAP SCREW M4-.7 X 16
416	P0932416	BUTTON HD CAP SCR M5-.8 X 12

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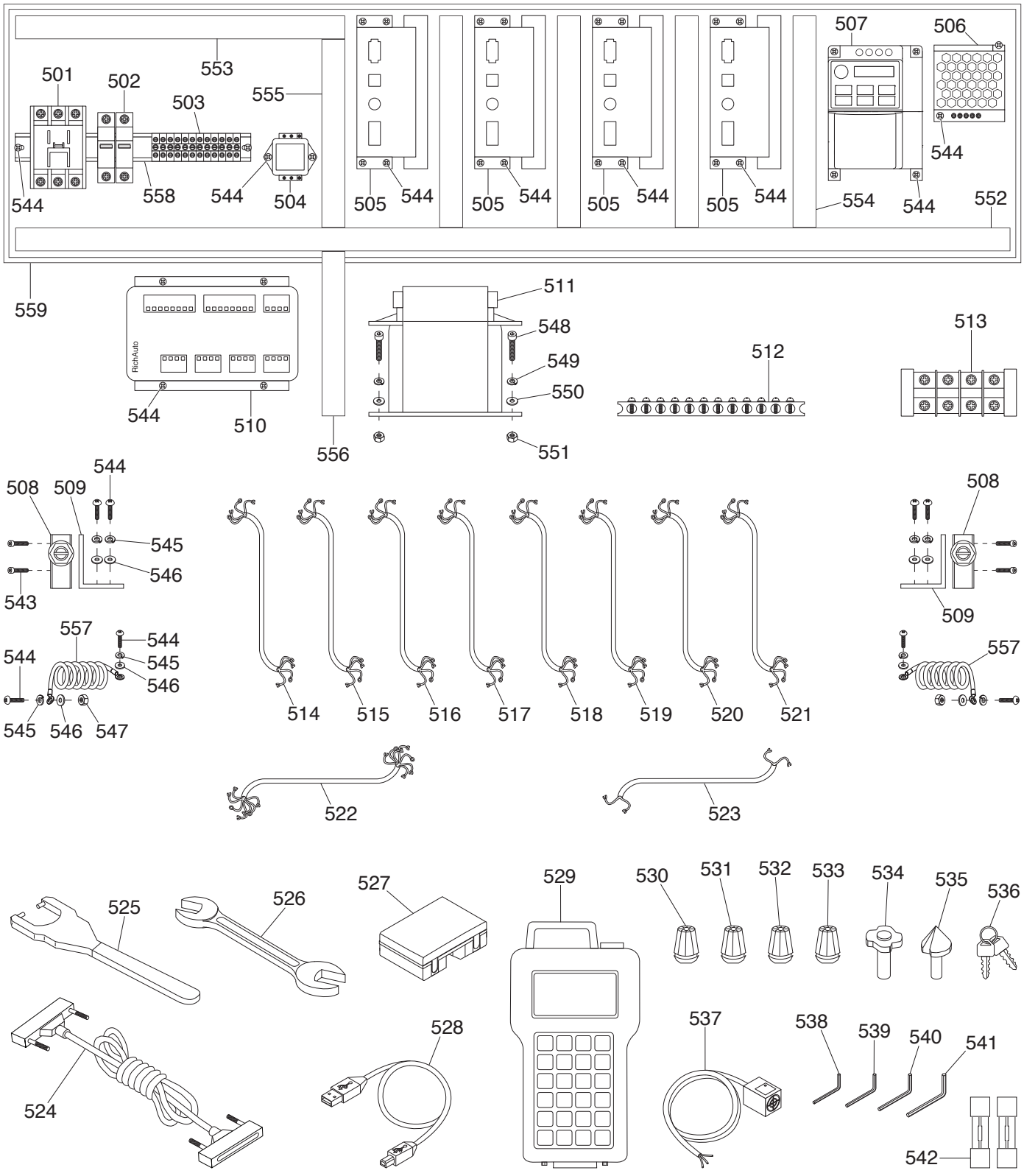
Electrical & Accessories



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Electrical & Accessories Parts List

REF	PART #	DESCRIPTION
501	P0932501	CONTACTOR SCH LC1D32M7C 220V 32A
502	P0932502	FUSE HOLDER YHDA RT18-32X 10A
503	P0932503	TERMINAL BAR 12P DIN38 12-24G
504	P0932504	EMI FILTER TORUN 3N-20A-U
505	P0932505	STEPPER DRIVER YAKO YKA2811MA
506	P0932506	VFD DELTA VFD037E23A 240V 3-PH
507	P0932507	24V DC POWER SUPPLY MEANWELL LRS-75-24
508	P0932508	LIMIT SWITCH PANASONIC AZ-7311
509	P0932509	LIMIT SWITCH BRACKET
510	P0932510	INTERFACE BOARD RICHAUTO A1X/B1X
511	P0932511	TRANSFORMER WIN JBK5-1200VA/A 220V/110V
512	P0932512	TERMINAL BAR 12P M4 X 12 X 12 TM4
513	P0932513	TERMINAL BLOCK TC-604 60A
514	P0932514	SPINDLE POWER CORD TRVVP 18G 4W
515	P0932515	X-AXIS MOTOR CORD TRVVP 19G 4W
516	P0932516	Y-AXIS1 MOTOR CORD TRVVP 19G 4W
517	P0932517	Y-AXIS2 MOTOR CORD TRVVP 19G 4W
518	P0932518	Z-AXIS MOTOR CORD TRVVP 19G 4W
519	P0932519	C-AXIS MOTOR CORD TRVVP 19G 4W
520	P0932520	Y-AXIS LIMIT CORD TRVV 22G 4W
521	P0932521	C-AXIS LIMIT CORD TRVV 22G 4W
522	P0932522	AXES LIMIT CORD TRWP 22G 7W
523	P0932523	OILER PUMP CORD TRVV 20G 2W
524	P0932524	50 PIN CABLE 26G 50W 72"
525	P0932525	COLLET WRENCH ER25
526	P0932526	WRENCH 27 X 30MM OPEN-ENDS
527	P0932527	ENGRAVING BIT 1/8" (20-PC)
528	P0932528	USB-B CABLE 28G 4W 36"
529	P0932529	DSP CONTROLLER RICHAUTO B18
530	P0932530	COLLET ER25 1/8"

REF	PART #	DESCRIPTION
531	P0932531	COLLET ER25 1/2"
532	P0932532	COLLET ER25 4MM
533	P0932533	COLLET ER25 6MM
534	P0932534	SPOILBOARD CUTTER 6 X 22MM
535	P0932535	V-GROOVE CUTTER 6 X 22MM
536	P0932536	DOOR KEY (2-PC)
537	P0932537	PROXIMITY SWITCH OMRON TL-Q5MCI-Z
538	P0932538	HEX WRENCH 3MM
539	P0932539	HEX WRENCH 4MM
540	P0932540	HEX WRENCH 5MM
541	P0932541	HEX WRENCH 6MM
542	P0932542	FUSE 10A 500V 10MM TIME-DELAY, CERAMIC
543	P0932543	CAP SCREW M4-.7 X 30
544	P0932544	PHLP HD SCR M4-.7 X 12
545	P0932545	LOCK WASHER 4MM
546	P0932546	FLAT WASHER 4MM
547	P0932547	HEX NUT M4-.7
548	P0932548	CAP SCREW M6-1 X 16
549	P0932549	LOCK WASHER 6MM
550	P0932550	FLAT WASHER 6MM
551	P0932551	HEX NUT M6-1
552	P0932552	WIRE LOOM 50 X 1370MM
553	P0932553	WIRE LOOM 50 X 480MM
554	P0932554	WIRE LOOM 50 X 280MM
555	P0932555	WIRE LOOM 50 X 230MM
556	P0932556	WIRE LOOM 50 X 200MM
557	P0932557	GROUNDING CABLE
558	P0932558	DIN RAIL DIN38
559	P0932559	ELECTRICAL MOUNTING BOARD

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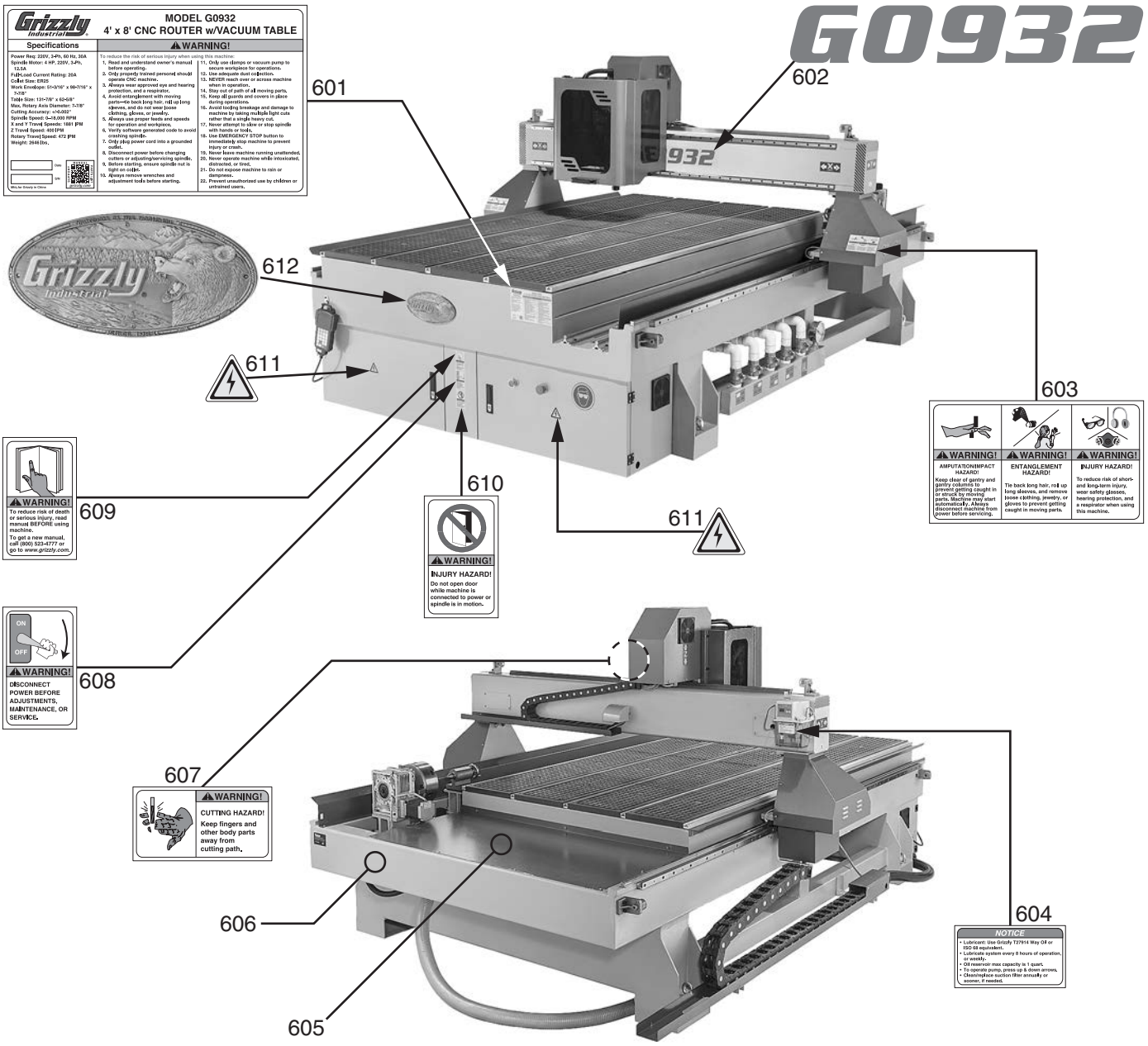
Labels & Cosmetics



REF	PART #	DESCRIPTION
601	P0932601	MACHINE ID LABEL
602	P0932602	MODEL NUMBER LABEL
603	P0932603	COMBO WARNING LABEL
604	P0932604	OIL RESERVOIR LABEL
605	P0932605	TOUCH-UP PAINT, GRIZZLY GREEN
606	P0932606	TOUCH-UP PAINT, GRIZZLY BEIGE

REF	PART #	DESCRIPTION
607	P0932607	CUTTING HAZARD CNC LABEL
608	P0932608	DISCONNECT HARDWIRED LABEL
609	P0932609	READ MANUAL LABEL
610	P0932610	DO NOT OPEN DOOR CNC LABEL
611	P0932611	ELECTRICITY HAZARD LABEL
612	P0932612	GRIZZLY NAMEPLATE, LARGE

⚠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.

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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.

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