MODEL G0873/G0874
CNC LASER CUTTER/ENGRAVER
OWNER'S MANUAL
(For models manufactured since 01/19)

(G0873)

(G0874)

Meets FDA Safety Standards

#KS21889 PRINTED IN CHINA V1.06.24

******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

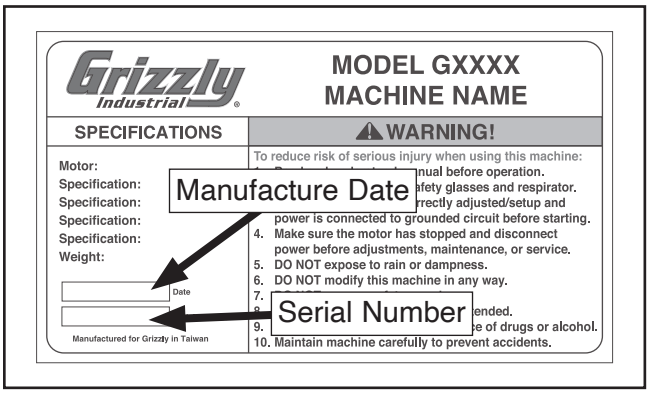
Manual Accuracy

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**.

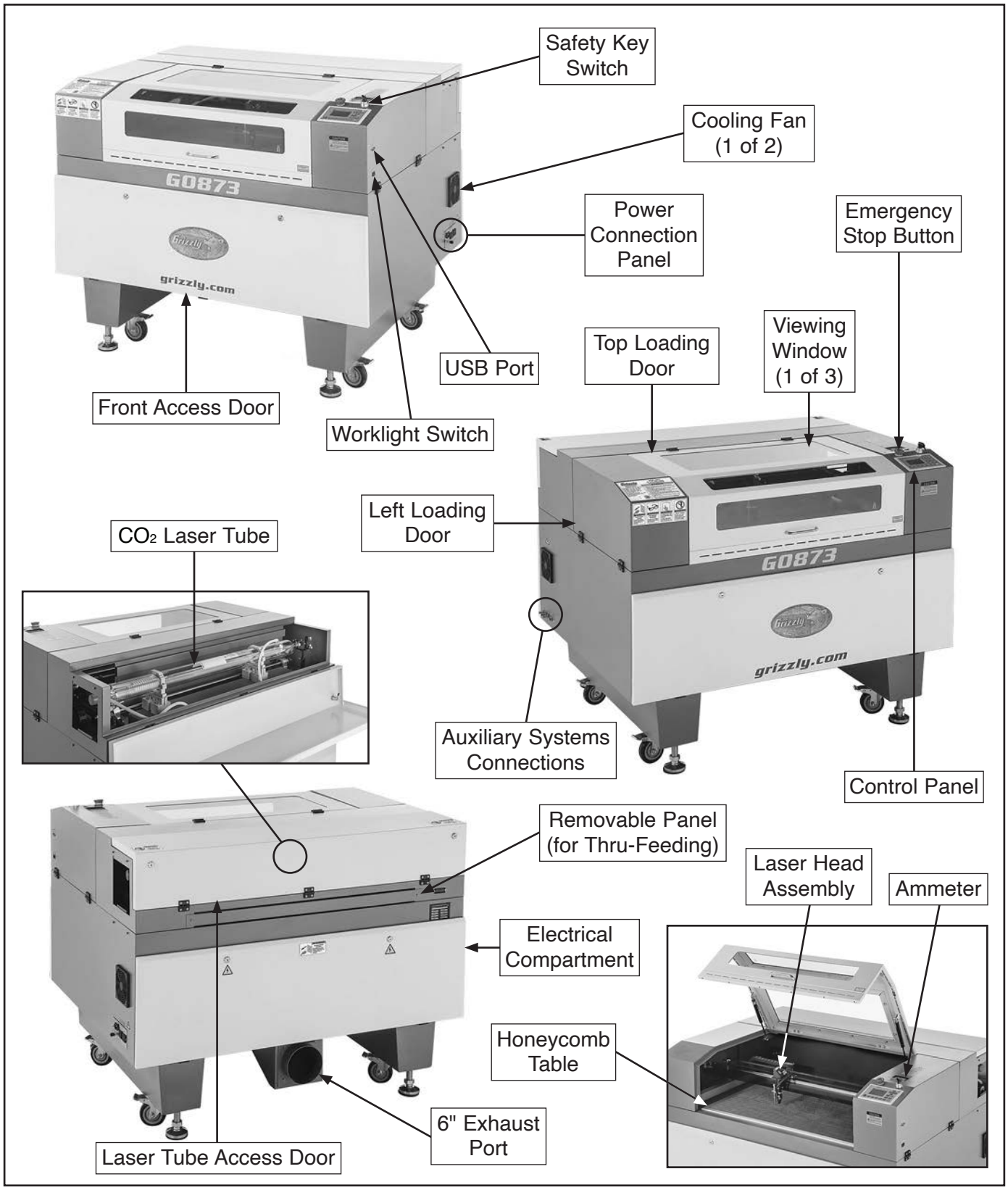
If you find this to be the case, and the difference between the manual and machine leaves you confused or unsure about something, check our website for an updated version. We post current manuals and manual updates for free on our website at **www.grizzly.com**.

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.

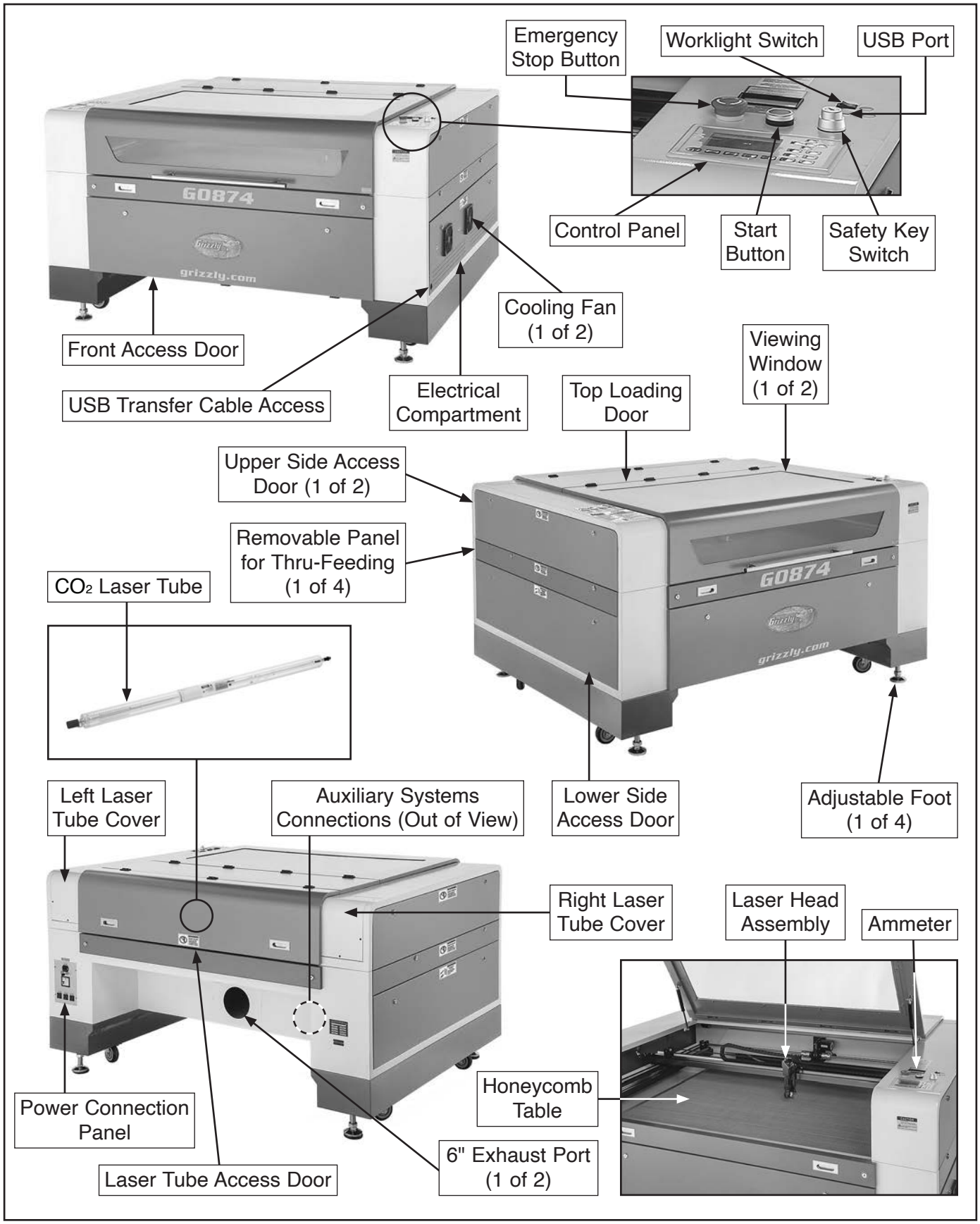


G0873 Identification

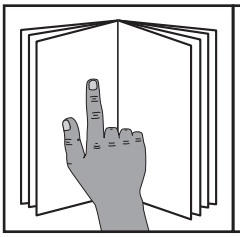
Become familiar with the names and locations of the controls and features shown below to better understand the instructions in this manual.



G0874 Identification



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.

Control Panel

The control panel (see **Figure 1**) is used for controlling machine operations and allows access to direct commands and selectable menu functions. Refer to **Command Tree** on **Page 98** for an extended map of menu features.

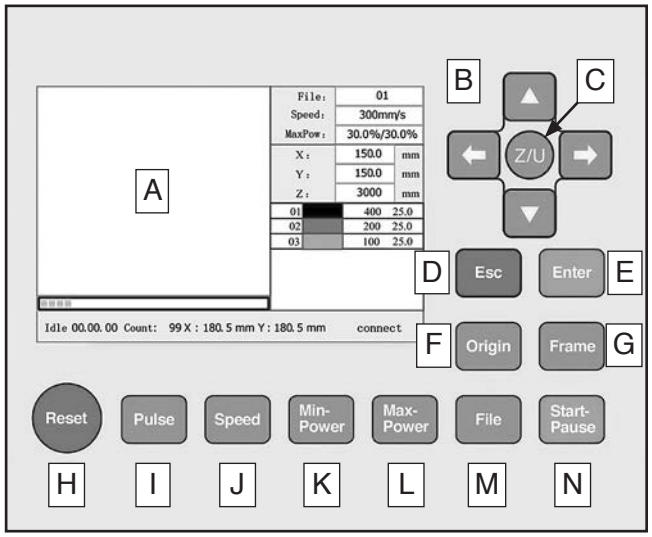


Figure 1. Control panel.

A. Screen Display: Visual interface between user and current machine state.

B. Arrow Nav Buttons: Navigate through menu items or manually move laser head.

C. Z/U Button: Shows operational menu interface when machine is idle.

D. Esc Button: Exits selected command or stops currently running operation.

E. Enter Button: Opens currently highlighted command.

F. Origin Button: Designates current physical location of laser head assembly as origin.

G. Frame Button: Instructs laser head to trace working envelope of current operation according to designated location of origin.

H. Reset Button: Restarts machine.

I. Pulse Button: Powers laser for a fraction of a second to assist with laser alignment or general troubleshooting purposes.

J. Speed Button: Sets speed of current working layer or arrow nav button movement.

K. Min-Power Button: Sets minimum laser power of current working layer.

L. Max-Power Button: Sets maximum laser power of current working layer.

M. File Button: Shows file management interface when machine is idle.

N. Start-Pause Button: Starts or pauses current operation.

Additional Controls

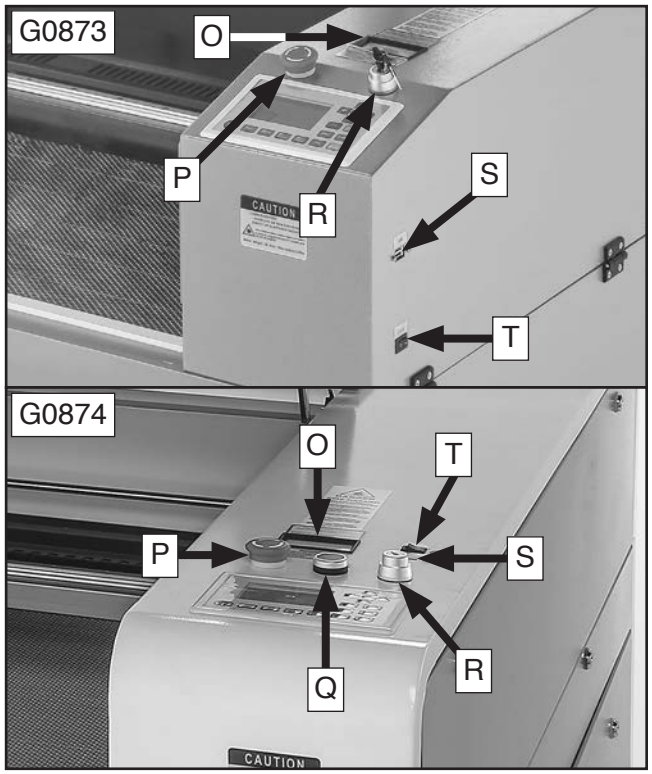


Figure 2. Location of additional controls.

O. Ammeter: Displays current used by laser tube in milliamperes (mA).

P. Emergency Stop Button: Disables power to machine. To reset, twist button clockwise until it pops out.

Q. Start Button (G0874): Turns machine ***ON*** once safety key switch is engaged.

R. Safety Key Switch: Turns machine ***ON*** or ***OFF***, and helps prevent unauthorized use.

S. USB 2.0 Port: Dedicated USB port for transferring files to machine.

T. Worklight Switch: Turns worklight under laser head assembly gantry ***ON*** or ***OFF***.

Power Components

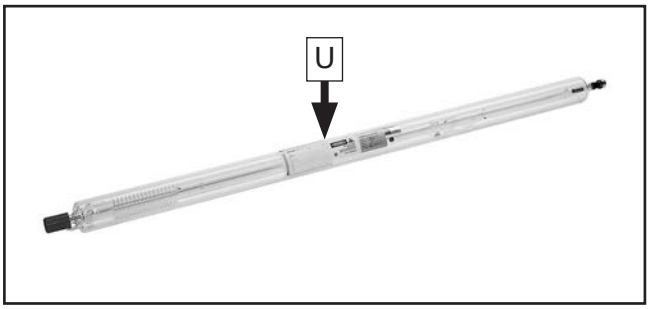


Figure 3. Laser tube (removed from machine for clarity).

U. CO_2 Laser Tube: CO_2 gas-filled laser tube rated for 100W (G0873) or 150W (G0874) output. Operates at 10,600 nm (10.6 μm) infrared wavelength.

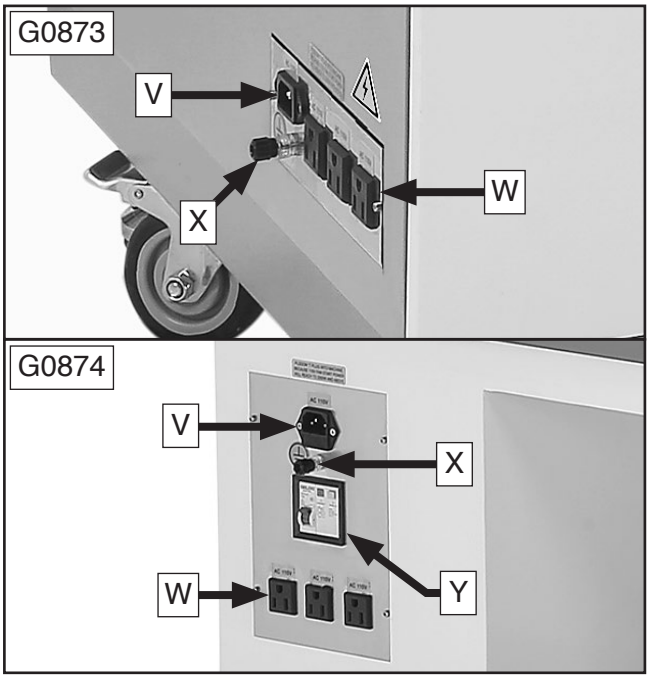


Figure 4. Power connections location.

V. Power Connection: Receptacle with 20A fuse for connecting machine to power supply.

W. Auxiliary Power Connections: Connect auxiliary systems to machine power circuit.

X. Earth Ground Post: Dissipates static electricity generated during operation.

Y. Circuit Breaker (G0874): Provides overload protection for machine electrical system. To reset, place safety key switch to OFF position, then flip circuit breaker switch.

Auxiliary Systems Connections

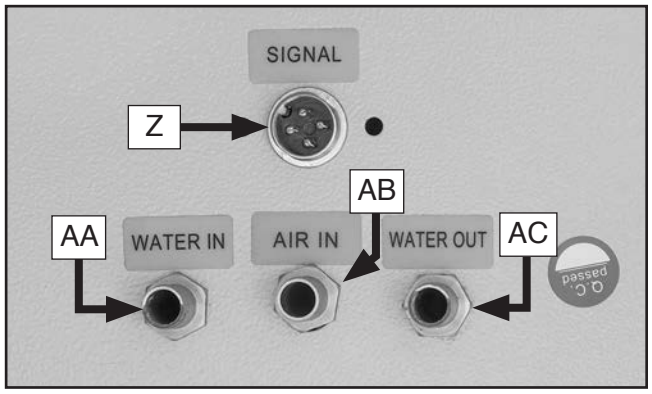


Figure 5. Auxiliary systems connection panel (G0874 shown).

Z. Water Chiller Signal Connector: Provides flow and temperature alarms when connected to water chiller.

AA. Water Inlet Fitting: Supply connection for water chiller system.

AB. Air Inlet Fitting: Supply connection for air pump.

AC. Water Outlet Fitting: Return connection for water chiller system.

Auxiliary Systems

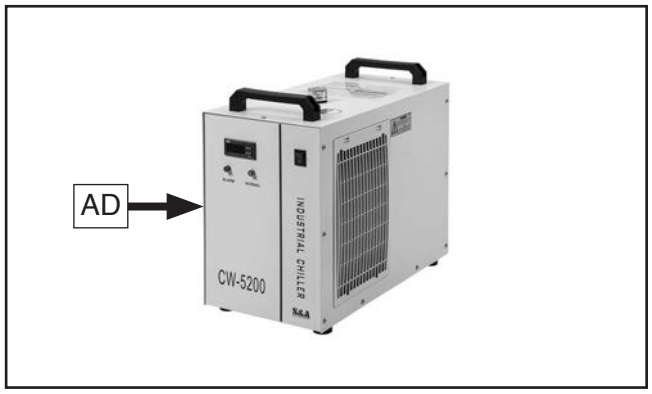


Figure 6. Water chiller system.

AD. Water Chiller: Cools laser tube by continuously circulating water through internal loop of supply and return hoses.

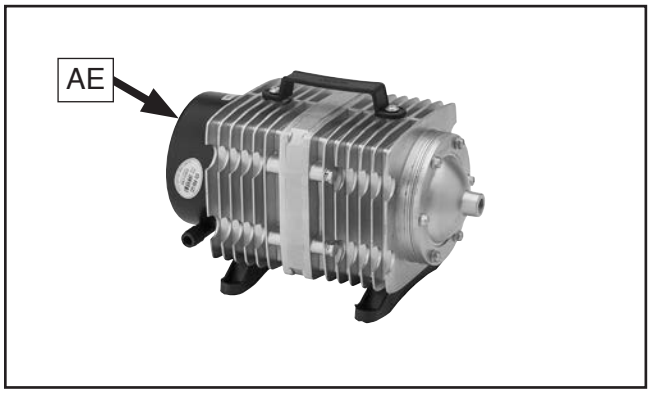


Figure 7. Diaphragm-style air pump.

AE. Air Pump: Blows debris and fumes away from point of laser burn using air produced by diaphragm-style pump.

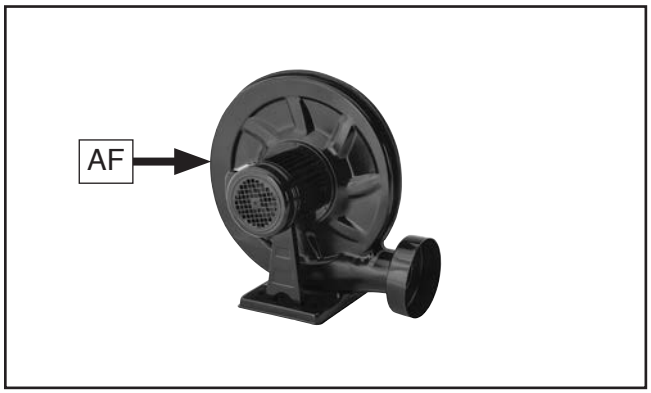


Figure 8. Centrifugal-style extraction fan.

AF. Extraction Fan: Vents debris, gases, and fumes created during laser operations from machine interior using negative airflow produced by centrifugal-style impeller.

IMPORTANT: Extraction fan has a high current draw and is required to operate on a separate circuit from the Model G0873/G0874. Always refer to a certified electrician for electrical circuit requirements, if needed.

NOTICE

Grizzly Industrial requires connecting extraction fan to a dedicated power circuit independent from the Model G0873/G0874 to prevent interrupting power.

Glossary of Terms

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

Anode: The positive (+) terminal, electrode, or element of an electron tube or electrolytic cell.

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

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 code that CNC machines interpret.

Cathode: The negative (-) terminal, electrode, or element of an electron tube or electrolytic cell.

CNC (Computer Numerical Control): Automated operation of a machine by a computer program via written instructions.

ESD (Electrostatic Discharge): A sudden flow of electricity between two electrically charged objects caused by contact, an electrical short, or dielectric breakdown.

Focal Length: The distance from the focal point of a lens or mirror to the corresponding principal plane.

Frame Slop: Machine error code that indicates travel exceeds working envelope of X- and Y-axes.

Home Position: Machine designated zero point on all axes.

Name Over Lap: Machine error code which indicates file with same name is detected in destination memory location.

Origin: User designated zero point for a workpiece from which laser will reference positioning of all cutting/engraving.

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

Right-Hand Rule: A rule that uses the shape of the right hand to establish the standard orientation of vector quantities normal to a plane.

Soft Limits: Axis limits imposed by workspace boundaries based on controller settings and the location of home.

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

Thermal Lens Effect: When energy from a laser beam passing through a sample is absorbed, causing heating of the sample along the beam path.

Toolpath: User-defined route that the laser follows to cut or engrave a workpiece.

Track/Frame: Machine command which verifies toolpath boundaries of loaded image do not exceed available working envelope of workpiece.

Working Envelope: Total area that laser tip can travel within that does not exceed physical machine boundaries.

XSlop Over: Machine error code that indicates travel exceeds working envelope of X-axis.

YSlop Over: Machine error code that indicates travel exceeds working envelope of Y-axis.

MACHINE DATA SHEET

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

MODEL G0873/G0874 CNC LASER CUTTER/ENGRAVER

Model Number	G0873	G0874
Product Dimensions		
Weight	620 lbs.	844 lbs.
Width (side-to-side) x Depth (front-to-back) x Height	54 x 43 x 43-1/2 in.	74 x 61 x 42 in.
Footprint (Width/Depth)	42 x 39 in.	54-1/2 x 66-1/2 in.
Shipping Dimensions		
Container Type	Wood Crate	
Content	Machine	
Weight	705 lbs.	1288 lbs.
Length x Width x Height	59 x 59 x 50 in.	82 x 66 x 50 in.
Machine Electrical		
Power Requirement	110V, Single-Phase, 60 Hz	
Full-Load Current Rating	13.6A	
Minimum Circuit Size	20A	
Connection Type	Cord & Plug	
Power Cord Included	Yes	
Power Cord Length	72 in.	
Power Cord Gauge	16 AWG	
Plug Included	Yes	
Included Plug Type	5-15	
Switch Type	Control Panel w/Safety Key Switch	
Water Chiller Electrical		
Power Requirement	110V, Single-Phase, 60 Hz	
Full-Load Current Rating	6.5A	
Extraction Fan Electrical		
Power Requirement	110V, Single-Phase, 60 Hz	
Full-Load Current Rating	6.8A	
Air Pump Electrical		
Power Requirement	110V, Single-Phase, 60 Hz	
Full-Load Current Rating	1.5A	

Model Number	G0873	G0874
X-Axis Motor		
Frame Size	NEMA 23	
Amps	5.8A	
Speed	0–1600 RPM	
Type	Stepper (Brushless, Permanent Magnet)	
Power Transfer	Belt	
Step Resolution	1.2º Per Step	
Y-Axis Motor		
Frame Size	NEMA 23	
Amps	5.8A	
Speed	0–1600 RPM	
Type	Stepper (Brushless, Permanent Magnet)	
Power Transfer	Belt	
Step Resolution	1.2º Per Step	
Z-Axis Motor		
Frame Size	NEMA 34	
Amps	4.2A	
Speed	0–1000 RPM	
Type	Stepper (Brushless, Permanent Magnet)	
Power Transfer	Belt	
Step Resolution	1.8º Per Step	
Laser Information		
Type	Sealed CO_2 Laser Tube	
Wattage	100W	150W
Wavelength	10,600 nm	
Focus	Automatic	
Cooling System	Distilled Water	
Cutting Information		
Cutting Area	23 x 35 in.	35 x 51 in.
Cutting Speed	0–30,480mm/min. (0–1200 in./min.)	0–24,000mm/min. (0–945 in./min.)
Minimum Cutting Thickness	0.5mm (0.02 in.)	
Maximum Cutting Thickness	20mm (0.8 in.)	31.75mm (1.25 in.)
Minimum Cutting Width	1mm (0.04 in.)	
Maximum Cutting Width	2mm (0.08 in.)	
Max Cutting Height Capacity	7 in.	
Min Shaping Character Size	1 x 1mm (0.04 x 0.04 in.)	
Repeat Position Accuracy	+/-0.05mm (+/-0.002 in.)	
Table Information		
Table Length	35-1/2 in.	51-1/2 in.
Table Width	23-1/2 in.	35-3/4 in.
Table Adjustment	Motorized	

Model Number	G0873	G0874
Construction Materials		
Table	Steel	
Cabinet	Steel	
Gantry	Aluminum	
Paint Type/Finish	Enamel	
Other Related Information		
Number of Exhaust Ports	1	2
Exhaust Port Size	6 in.	
Included Design Software	RDWorks	
Other Specifications		
Country of Origin	China	
Warranty	1 Year	
Approximate Assembly & Setup Time	2 Hours	
Serial Number Location	Machine ID Label	
ISO 9001 Factory	Yes	
Certification	FDA Material Processing Laser Product	
Features		
Ruida LCD Control Panel		
Leadshine Stepper Motors		
HIWIN Linear Guideways		
II-VI Optical Lenses		
Wireless Networking Connectivity		
RDWorks Laser Cutting/Engraving Software		
USB 2.0 Port		
Auxiliary Power Receptacles for Air Pump and Water Chiller		
Steel Blade Table		
Automatic Focusing		
180mm (7 in.) Height Capacity w/Powered Z-Axis Adjustment		
Accessories		
Water Chiller for Cooling Laser Tube		
Extraction Fan for Fume Removal from Laser Compartment		
Air Pump for Removing Debris During Operations		
(2) Flexible Exhaust Ducts 6" x 60"		
Exhaust Port Adapter (G0874 Only)		
Aluminum Honeycomb Table		
USB Flash Drive 512MB		
Toolbox w/Setup Accessories		

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 loose clothing, gloves, neckties, or jewelry that can become entangled in moving parts. Always tie back or cover long hair. Wear non-slip footwear to reduce risk of slipping and losing control or accidentally contacting cutting tool or moving parts.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Additional Safety for CNC Laser Cutters/Engravers

⚠WARNING

Severe eye injury or blindness can occur from looking directly into laser beam, or staring at laser contact point for more than a few seconds. Touching hot machine parts and workpieces can cause serious skin burns. To reduce these risks, operator and bystanders MUST completely heed the warnings below.

EYE INJURIES. Operator and bystanders MUST wear ANSI-approved eye protection rated for use with a Class 4 laser when machine is operating. DO NOT look directly into laser beam, or stare at laser contact point for more than a few seconds, or severe eye injury or blindness may result.

AVOID SKIN BURNS. NEVER put hands in or near path of laser. Material cut by a laser can be hot. ALWAYS wear leather gloves when handling processed material. Allow machine to cool before starting any adjustment or service/maintenance procedure.

FIRE HAZARD. Laser beam produces extremely high temperatures and significant amounts of heat as material is cut. DO NOT process materials that are highly flammable or explosive. Keep flammable materials well away from machine during operations. If materials do catch fire during operations, extinguish immediately. ALWAYS keep a properly maintained fire extinguisher nearby.

REFLECTIVE MATERIALS. DO NOT process materials with reflective surfaces. These materials will redirect the laser beam, exposing operator and bystanders to serious injury, and causing damage to mechanical and electrical components inside machine.

UNATTENDED MACHINE. DO NOT leave machine unattended during operation. Materials may catch fire during operation. Fires MUST be extinguished immediately to prevent personal injury or property damage.

SAFETY DEVICES. DO NOT modify or disable safety devices on machine. Laser is designed to shut off if cover is opened. Severe injury may occur if operator or bystanders come into contact with laser beam during operation.

SAFE OPERATING LOCATION. DO NOT place machine where it can be exposed to rain or moisture. Exposure to water creates a shock hazard and will reduce life of machine.

POWER DISCONNECT. To reduce risk of electrocution or injury from unexpected startup, make sure machine is turned OFF and disconnected from power before starting any inspection, adjustment, or service/maintenance procedure.

PROPERLY MAINTAIN MACHINE. Keep machine in proper working condition to help ensure all safety components function as intended. Perform routine inspections and all necessary maintenance indicated in owner's manual. Never operate machine with damaged or worn parts.

⚠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.

⚠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.

Additional Safety for Toxic Fumes Generated by Laser Cutting

⚠WARNING

Long-term respiratory damage, toxicity, cancer, or birth defects can occur from inhaling fumes, vapors, and particulates generated while cutting substrates without adequate ventilation, exhaust, and fume extraction. All users must be properly trained on the potential hazards, control measures, manufacturer's operating procedures, use of personal protective equipment (PPE), emergency procedures, and safety precautions for CNC laser operations. To reduce these risks, operator and bystanders MUST completely heed the warnings below.

TOXIC MATERIALS. Exposure to certain types of fumes can result in serious, potentially deadly health effects. To reduce this risk, research toxicity of material types you work with, and always seek to minimize/eliminate exposure to yourself and others. Obtain the Safety Data Sheet (SDS) from material manufacturer BEFORE operations, and never knowingly engrave or cut a workpiece that has been treated with or contains material that releases toxic byproducts when heated.

TOXIC FUMES. Cutting or engraving metals and plastics give off highly toxic fumes, vapors, and air particulates containing zinc, lead, beryllium, cadmium, mercury, fluorine, hexavalent chromium, chlorine gas, and many others. These fumes and air contaminants can damage the machine and harm your health. If the fume extractor or extraction fan is malfunctioning, immediately stop operations and correct the issue.

ADEQUATE VENTILATION. Only use CNC lasers in spaces with adequate ventilation. Some materials can produce vapors and fumes that may irritate the nose, throat, and respiratory tract, or cause suffocation. Only operate CNC lasers with a fully functioning extraction fan and fume extractor. Use additional personnel to monitor operator from outside the operating area in the event of equipment failure.

EXTRACTION FAN. To effectively extract fumes and particulates from the machine during operations, use an extraction fan rated for a minimum of **200 CFM** (Cubic Feet per Minute) at 6" static pressure.

FUME EXTRACTION. CNC lasers must be equipped with a fume extractor that uses MERV 15+ or HEPA filters. NEVER modify fume extractor or bypass safety features. Only operate fume extractor with all filters and covers in place during operation. If any filter is missing or has been replaced with a non-specification filter, the fume extractor will not properly filter contaminated air and will be unsafe to use.

INSPECTIONS/MAINTENANCE. Always inspect exhaust ducting and fume extractor for leaks prior to operations. Repair or replace defective components before starting.

FILTER CLEANING/DISPOSAL. Filters must be changed regularly according to the frequency of use, or as specified by the manufacturer. When servicing filters, make sure operator and any bystanders are wearing Personal Protective Equipment (PPE). When vacuuming filters and cabinet, only use a shop vacuum that is equipped with a MERV 15+ or HEPA filter, or dangerous particulates may be spread throughout the area and contaminate the air. Wrap all waste filters in air-tight plastic bags, then mark and dispose of according to current laws and regulations.

EXPERIENCING DIFFICULTIES. Keep in mind that CNC laser hazards are intensified in a confined space. If you are experiencing difficulties performing the intended operation, stop using the equipment, and contact the Occupational Safety and Health Administration (OSHA) at (800) 321-6742, or online at **www.osha.gov** to find out how to design and maintain the best overall CNC laser toxic fume extraction system for your needs.

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 G0873/G0874 at 110V ..... 13.6 Amps
Water Chiller at 110V ..... 6.5 Amps
Extraction Fan at 110V ..... 6.8 Amps
Air Pump at 110V ..... 1.5 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.*

G0873/G0874 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 110V, 115V, 120V
Cycle ..... 60 Hz
Phase ..... Single-Phase
Power Supply Circuit ..... 20 Amps
Plug/Receptacle ..... 5-15 (Included)

Water Chiller, Extraction Fan, & Air Pump Circuit Requirements

The auxiliary systems are prewired to operate on a power supply circuit that has a verified ground and meets the following requirements:

Nominal Voltage 110V, 115V, 120V
Cycle ..... 60 Hz
Phase ..... Single-Phase
Power Supply Circuit ..... 15 Amps
Plug/Receptacle ..... 5-15 (Included)

Grounding Requirements

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.

This machine is equipped with a power cord that has an equipment-grounding wire and a grounding plug. Only insert plug into a matching receptacle (outlet) that is properly installed and grounded in accordance with all local codes and ordinances. DO NOT modify the provided plug!

Laser machines generate strong electrical fields that can charge the machine housing with micro voltages. These voltages must be allowed to dissipate through a separate, physical earth ground connection (see **Figure 9**) other than what is provided by the power cord.

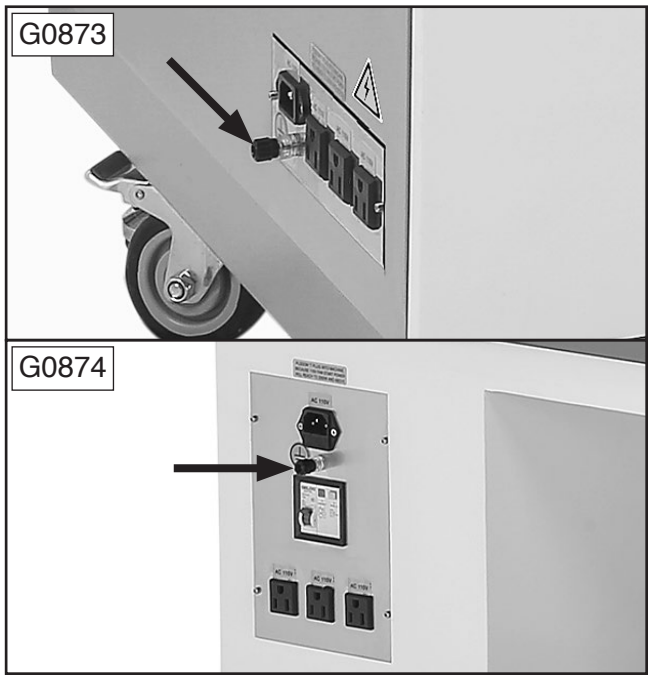


Figure 9. Earth ground post location.

Resistance to ground of a single-made electrode is **25 Ohms or less**. Refer to an electrician for guidance and testing, if required.

NOTICE

Choose a location where the physical earth ground can be made with an anti-static grounding rod (not included) for communication and digital equipment.

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.

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

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

Extension Cords

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

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

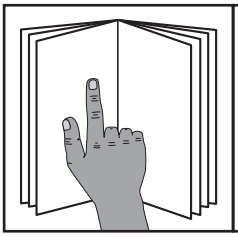
Any extension cord used with this machine must be in good condition and contain a ground wire and matching plug/receptacle. Additionally, it must meet the following size requirements:

G0873/G0874 Requirements
Minimum Gauge Size ..... 12 AWG
Maximum Length (Shorter is Better) ..... 50 ft.

Water Chiller/Extraction Fan Requirements
Minimum Gauge Size ..... 16 AWG
Maximum Length (Shorter is Better) ..... 50 ft.

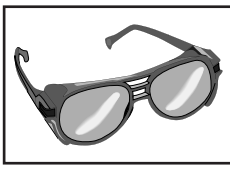
Air Pump Requirements
Minimum Gauge Size ..... 16 AWG
Maximum Length (Shorter is Better) ..... 50 ft.

SECTION 3: SETUP



⚠WARNING

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



⚠WARNING

Wear safety glasses during the entire setup process!

⚠WARNING

HEAVY LIFT!

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

Needed for Setup

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

Description	Qty
• Additional Person	1
• Safety Glasses (for each person)	1
• Class 4 Laser Eye Protection (for each person during **Test Run**)	1
• Forklift (rated for 1600 lbs.)	1
• Power Drill w/Phillips Bit #2 (for crate)	1
• Crowbar (for crate)	1
• Level	1
• Adjustable Wrench	1
• Utility Knife	1
• Flashlight	1
• Fume Extractor (**Page 46**)	1
• Scrap Iron or Steel (G0874)	As Needed
• Scrap Wood	As Needed
• Distilled Water	3 Gal.

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.*

To prevent machine damage to sensitive parts and ensure your safety: prior to assembly, it is mandatory that the installer read, understand, and apply best practices and safeguards. It is also highly recommended that the operator is included in the assembly process because some day-to-day operational adjustments are linked to areas being assembled.

- Use a flashlight to inspect hidden machine areas for any stray packing materials, zip-ties on belts, and any debris that could catch fire or jam mechanisms during operation.
- Only make adjustments when instructed.
- DO NOT touch or wipe mirrors. If a mirror needs to be cleaned, refer to **Cleaning Laser Optics** on **Page 52**.
- While assembling machine, familiarize yourself with machine component locations and recognize their purpose.
- DO NOT use any type of power tool on machine to avoid overtightening fasteners.
- DO NOT overtighten factory-installed fasteners and components that are associated with laser system, or misalignment and component damage may occur.

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 Inventory (Figure 10)		Qty
A.	CNC Laser Cutter/Engraver	1
B.	Laser Tube	1
C.	Honeycomb Table	1
D.	Water Chiller	1
E.	Water Tubing 8ID x 11OD x 1725L	2
F.	Water Chiller Power Cord	1
G.	Water Chiller Signal Cord	1
H.	Collapsible Ducting 6" x 24"	1
I.	Flexible Ducting 6" x 60"	
	G0873	1
	G0874	3
J.	Exhaust Port Adapter 6" (G0874)	1

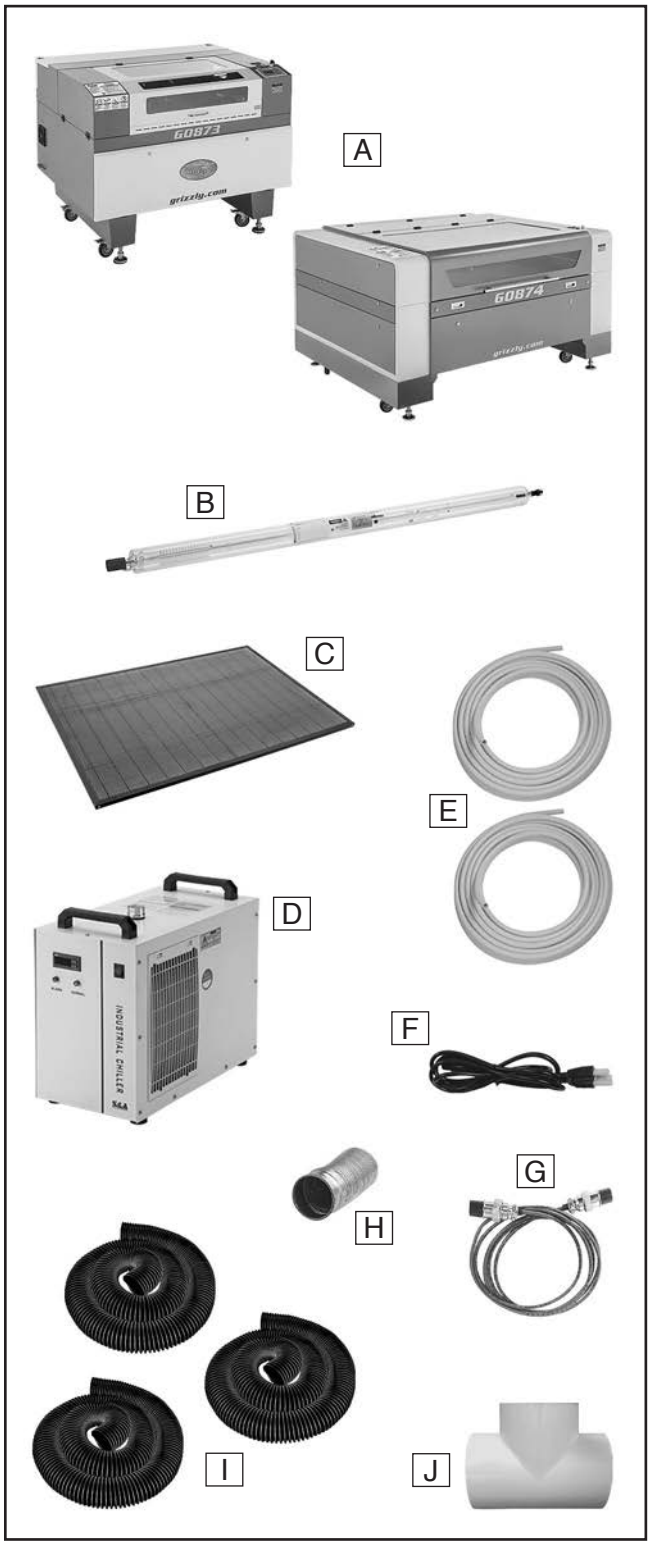


Figure 10. Crate inventory.

Box 1 Inventory (Figure 11)	Qty
K. Extraction Fan	1
L. Air Pump	1
M. Air Tubing 8ID x 11OD x 1420L	1
N. Straight Barbed Fitting ½" NPT	1

Toolbox Inventory (Figure 12)	Qty
O. Toolbox	1
P. Laser Cutting Depth Gauge	1
Q. Mirror Alignment Gauge	1
R. Focus Gauge	1
S. Power Cord 72"	1
T. USB Flash Drive 512MB	1
U. Adjustable Airflow Adapter	1
V. Laser Beam Alignment Gauge	1
W. Hex Wrenches 2.5, 3, 4, 5mm	1 Ea.
X. Flat Head Screwdriver ⅛"	1
Y. Hose Clamps 6"	6
Z. Proximity Switch (Spare)	1
AA. Locking Door Keys	4
AB. Safety Switch Keys	2
AC. Optics Cotton Rolls	2
AD. Light Emitting Diodes (Spare)	2
AE. Optics Disassembly Tool (Small)	1
AF. Optics Disassembly Tool (Large)	1

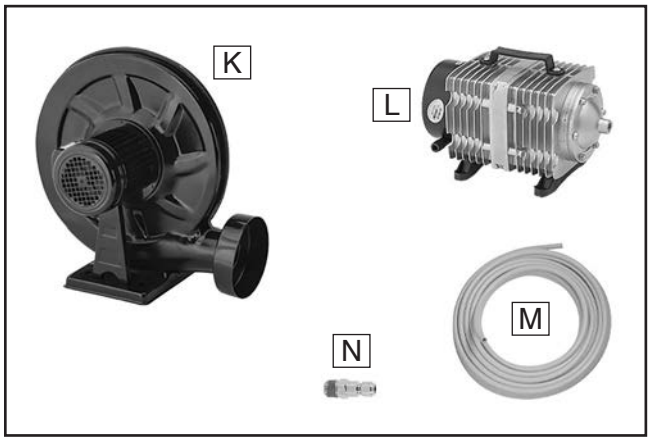


Figure 11. Box 1 inventory.

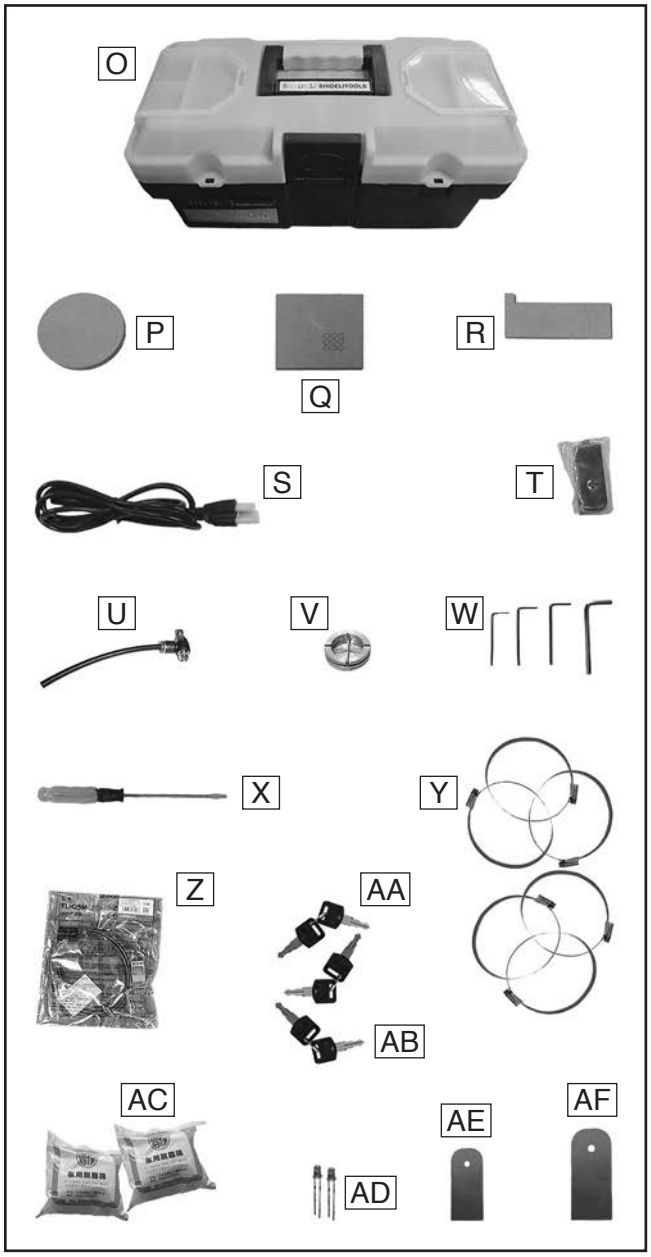


Figure 12. Toolbox inventory.

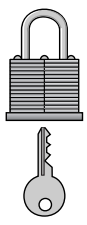
Site Considerations

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.

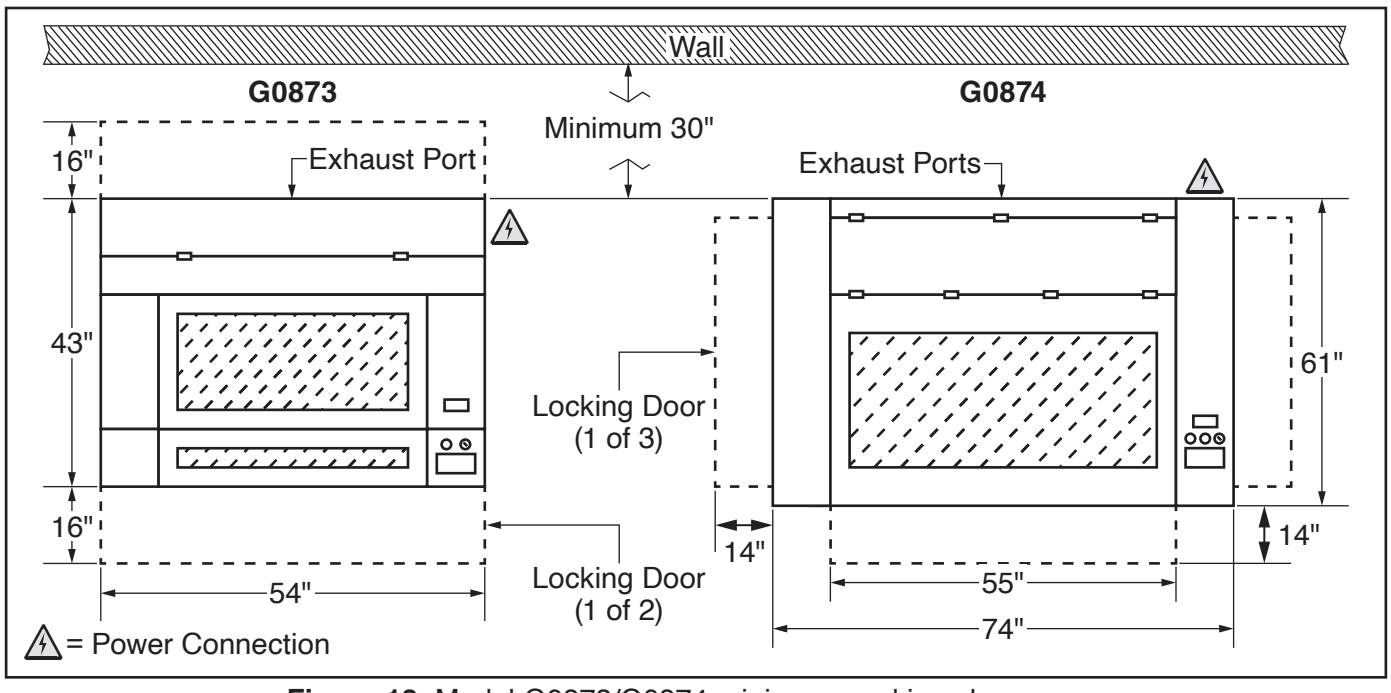


Figure 13. Model G0873/G0874 minimum working clearances.

Lifting & Placing

⚠WARNING

HEAVY LIFT!

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

DO NOT attempt to lift or move this machine without using the proper lifting equipment (such as a forklift) or the necessary assistance from other people. Each piece of lifting equipment must be rated for **at least 1600 lbs.** to support dynamic loads that may be applied while lifting. Refer to **Needed for Setup** on **Page 18** for complete list of needed equipment for setup and installation.

Verify location meets the following conditions:

- Adequate ventilation so machine does not fill an enclosed area with toxic fumes from cutting certain types of materials.
- Immediate access to auxiliary systems for verifying operation and ease of maintenance.

To lift and place machine:

1. Using forklift and assistance from an additional person, move crate to machine work site location.
2. Remove crate top and sides, components inside crate, and blocks near machine base.

   Note: *To reduce weight, remove honeycomb table, blade table, and any loose parts from cabinet. Table components are not permanently mounted and require no tools to remove or install.*
3. Lift machine with forklift just enough to clear pallet, then move pallet out of the way.
4. Lower machine and proceed to **Leveling** on this page.

Leveling

Leveling machinery helps precision components remain straight and flat during the lifespan of the machine. The table of a machine may slowly twist over time, causing inadequate workpiece cutting and variations in engraving quality.

To level machine:

1. Place level on table and align to either X- or Y-axis.
2. Loosen hex nut on each adjustable foot threaded bolt, then rotate fixed nut until measured axis is level (see **Figure 14**).

   Note: *Rotate fixed nut clockwise to raise machine, and counterclockwise to lower machine.*

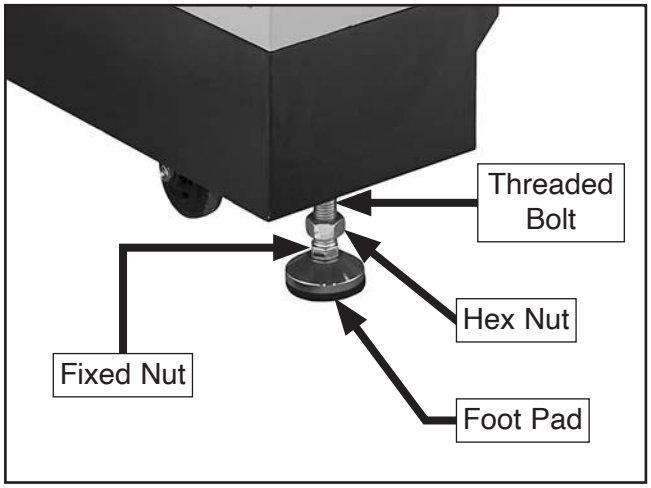


Figure 14. Adjustable foot components.

3. Align level on table to opposite axis. Repeat **Step 2** as needed.
4. Tighten hex nut on each adjustable foot threaded bolt against machine base to secure position.

Installing Laser Tube

The CO_2 gas-filled laser tube is supported by two soft-mount saddles and straps and has four connection points: two for water inlet/outlet hoses, and two for electrical connections.

On new machines, the laser tube must be installed before additional setup procedures can be completed. Perform **Steps 1–10** of **Installing Laser Tube** on **Page 69** before proceeding to **Installing Water Chiller System** on this page.

Installing Water Chiller System

The water chiller system should be located away from any area where freezing temperatures may occur. This includes locations where winter power outages allow work areas to drop below freezing. In cold environments, the low water temperature alarm will activate when water temperature falls below 50ºF (10ºC). To prevent water from freezing, add 50/50 *non-corrosive* anti-freeze to the water chiller reservoir.

IMPORTANT: Always use a single brand of anti-freeze that is listed as *non-corrosive* to prevent water hoses from prematurely deteriorating. Never mix brands or types of anti-freeze, and flush and replace anti-freeze with distilled water as soon as temperatures stabilize.

In hot locations where ambient temperatures can rise over 100ºF (37ºC), you may be required to purchase a dedicated refrigeration-style water cooler, have bags of ice readily available and replaced, or incorporate additional water chilling equipment in the same loop. The water temperature MUST be kept below 122ºF (50ºC) for proper laser operation and maximum tube life.

The work area must be properly cleaned to prevent contaminants from being drawn into the water chiller and restricting airflow to the radiator. Keep the water chiller a minimum of 12" away from all obstructions.

IMPORTANT: WATER IN and WATER OUT fittings for the auxiliary systems are NOT reversible. Correct hose orientation is required (see **Figure 15** for typical water chiller system setup).

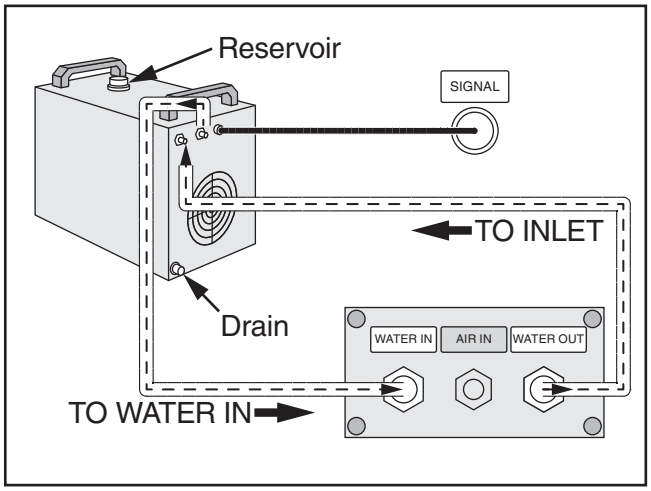


Figure 15. Typical water chiller system setup.

To install water chiller system:

1. Remove any dust caps or plugs (if equipped) from lines and fittings on auxiliary systems connections, laser tube, and water chiller.

2. Install water tubing onto water chiller INLET and OUTLET fittings, then connect signal cord to ALARM OUTPUT receptacle (see **Figure 16**).

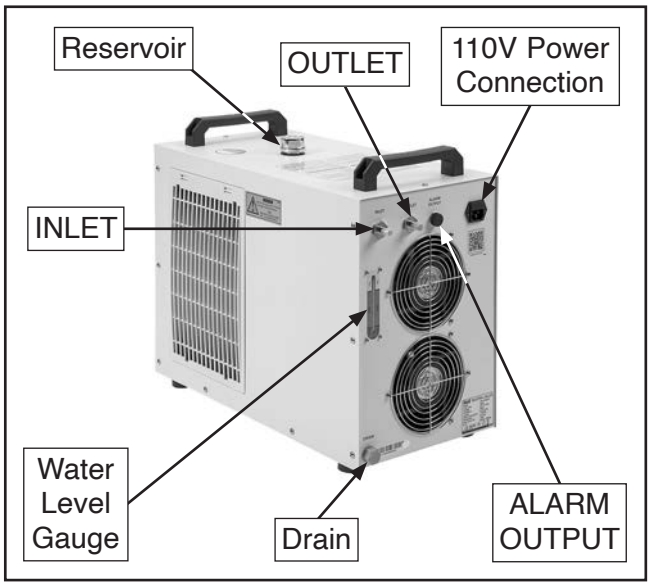


Figure 16. Water chiller connections.

3. Connect opposite end of OUTLET hose to auxiliary systems WATER IN fitting (see **Figure 17**).

4. Connect opposite end of INLET hose to auxiliary systems WATER OUT fitting, as shown in **Figure 17**.

5. Connect signal cord to SIGNAL receptacle on machine (see **Figure 17**).

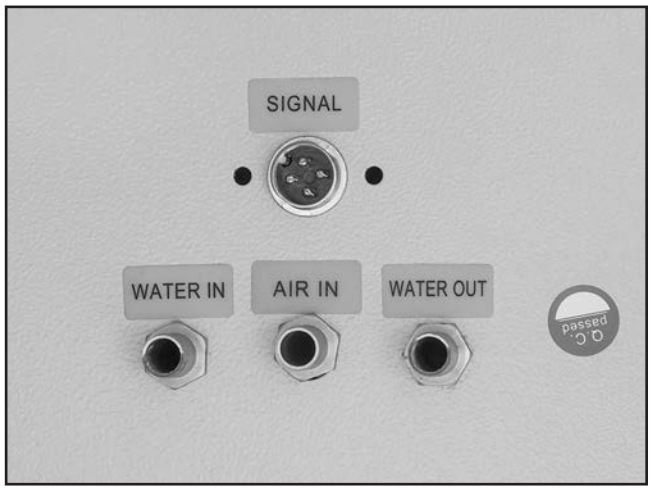


Figure 17. Water and air fittings for auxiliary systems connections (G0874 shown).

6. Fill water chiller reservoir with 1½ gallons of distilled water.

   IMPORTANT: The cooling system requires distilled water to prevent scaling and contaminant build-up. Water quality and effective cooling directly contribute to the operational life of the laser tube.

7. Connect power cord to 110V power connection on water chiller (see **Figure 18**).

8. Connect water chiller system to power and turn ***ON***. Allow water to cycle for one minute and continue filling reservoir with distilled water until water level is in green area on water level gauge (see **Figure 18**).

   Note: *Water chiller can be connected to auxiliary power connection on rear of machine.*

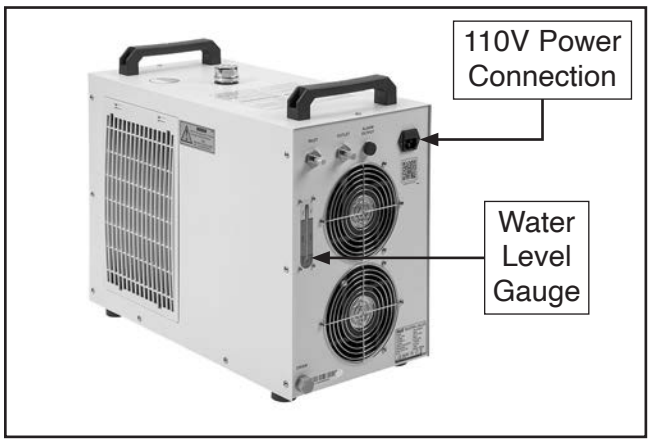


Figure 18. Water level gauge location.

9. Open laser tube access door and verify large air bubbles have released from laser tube (see **Figure 19**).

   Note: *If needed, loosen laser tube saddle straps then slowly rotate laser tube while slightly raising tube at cathode-end to release persistent air bubbles.*

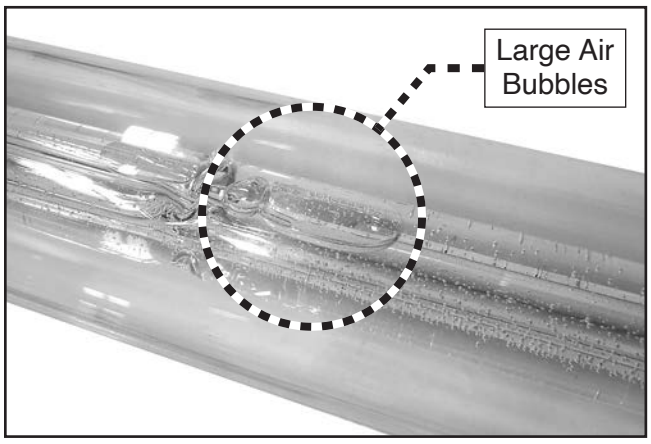


Figure 19. Air bubbles present in laser tube.

Installing Air Pump

The air pump is designed to blow air directly on the laser focal point. Place the air pump away from areas where dust can be drawn in through the inlet port.

Note: *A barbed fitting on the inlet port can be fitted with a hose to draw air from an alternate source, if required.*

The pump has cooling fins to release heat during operation and should NEVER be located inside of an unventilated compartment, or any area where temperature will increase from pump operation.

To install air pump:

1. Thread barbed fitting into air pump outlet port and tighten (see **Figure 20**).

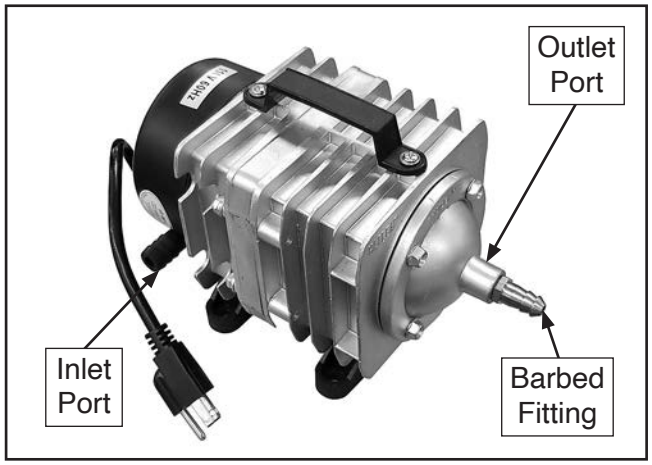


Figure 20. Air pump components.

2. Install air pump tubing onto outlet port barbed fitting and connect to auxiliary systems AIR IN fitting (see **Figure 17** on **Page 24**).

3. Connect air pump to an available 110V grounded power source.

4. Place air pump, electrical cord, and hoses in a location that prevents tripping hazards, hose kinks, and abrasive damage.

   Note: *The air pump generates vibrations and should be secured to prevent pump from "walking" during operation.*

Installing Extraction Fan

The extraction fan vents debris and fumes created during laser operations using a centrifugal-style fan. The extraction fan should be mounted in a fixed location that reduces vibration, and the inlet and outlet ducting should be secured at each end to prevent separation. Extending ducting over six feet, or adding multiple elbow connections is NOT recommended due to reduced extraction efficiency.

The extraction fan *does not* remove residual odors from the machine when not in use. If materials have an unpleasant odor while being cut, consider re-locating the machine to an area with greater ambient ventilation.

If mandated by local fire codes, a spark arrester may have to be incorporated into the extraction system. One example of this is when the outlet duct is connected to a vented container partially filled with water. Inside the vented container, one or more baffles are used to direct smoke and embers toward the water, which will then naturally rise up and outward from a vent on top of the container.

IMPORTANT: The machine and extraction fan are only to be used for laser cutting operations. DO NOT use machine as a downdraft table for sanding or other operations.

⚠WARNING

Gases and fumes generated by laser machines are hazardous to your health. It is your responsibility to install a dedicated and rated fume extractor if toxic gases or fumes are produced during laser cutting operations.

⚠WARNING

Dust and embers from laser machines present a fire hazard. DO NOT direct exhaust ports anywhere combustible materials exist, or combine laser extraction fan with woodworking dust collection systems.

NOTICE

If extraction outlet ducting is routed outside, install a metal screen on duct opening to prevent invasive animals from nesting in extraction system.

Minimum CFM at Exhaust Port: 850 CFM
DO NOT confuse this CFM recommendation with the rating of the fume extractor. To determine the CFM at the exhaust port, you must consider these variables: (1) CFM rating of the fume extractor, (2) hose type and length between air filters (MERV 15+, HEPA, Carbon, etc.) 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 dedicated CNC laser "how-to" book.

To install extraction fan:

1. **G0874 Only:** Insert exhaust port adapter into upper and lower exhaust ports on rear of machine and secure with (1) 6" hose clamp on upper exhaust port (see **Figure 21**).

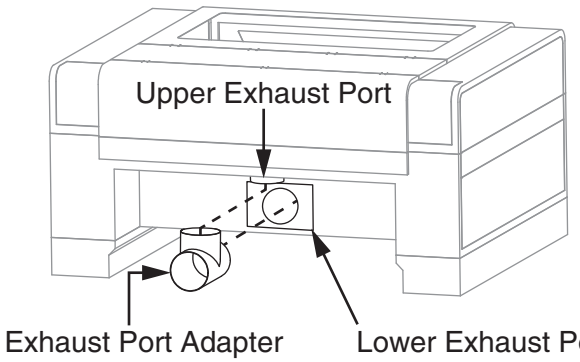


Figure 21. Installing exhaust port adapter.

2. Place extraction fan, electrical cord, and ducting in a location that prevents tripping hazards, duct kinks, and abrasive damage.

   Note: *Ensure ducting is kept as straight as possible for maximum efficiency.*

3. Use (2) 6" hose clamps to connect and secure one end of ducting to exhaust port/exhaust port adapter on machine, then connect and secure other end of ducting to inlet port of extraction fan (see **Figure 22**).

4. Use (1) 6" hose clamp to connect and secure remaining ducting to extraction fan outlet port (see **Figure 22**).

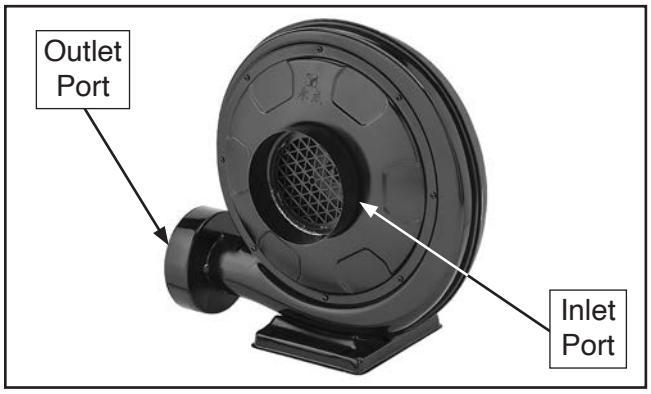


Figure 22. Extraction fan inlet and outlet ports.

5. Route and connect ducting to fume extractor that utilizes a MERV 15+ or HEPA filter (see **Additional Safety for Toxic Fumes Generated by Laser Cutting** on **Page 15**). Secure ducting to fume extractor using (1) 6" hose clamp.

6. Secure extraction fan in accessible location where ducting can be removed and cleaned during maintenance.

NOTICE

Grizzly Industrial recommends connecting extraction fan to a dedicated power circuit independent from the Model G0873/G0874 to prevent interrupting power.

7. Connect extraction fan to available 110V grounded power source separate from Model G0873/G0874 power connection circuit.

   IMPORTANT: Extraction fan has a high current draw and must operate on a separate circuit from the Model G0873/G0874. Always refer to a certified electrician for electrical circuit requirements, if needed.

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.

⚠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.

The Test Run consists of verifying the following: 1) Auxiliary systems power up and run properly, 2) stepper motors run correctly and machine properly homes, 3) proximity and limit switches function correctly, 4) top loading door interlock switches operate properly, and 5) Emergency Stop button functions correctly.

Items Needed	Qty
Additional Person	1
Class 4 Laser Eye Protection (for each person)	1
Scrap Iron or Steel (G0874)	As Needed
Scrap Wood	As Needed

To test run machine:

1. Clear all setup tools away from machine.
2. Press Emergency Stop button in.

NOTICE

The Model G0873/G0874 has many sensitive electrical components that may become loose or dislodged during shipping. Verify electrical system connections and components are secure before applying power.

3. Open electrical compartment door, verify all electrical components and connections are secure, then close door.
4. Connect machine to power by inserting power cord plug into matching receptacle.
5. Turn all auxiliary systems ***ON.*** Verify auxiliary systems power ***ON*** and operate correctly.
6. Twist Emergency Stop button clockwise until it springs out (see **Figure 23**).

Figure 23. Resetting Emergency Stop button.

NOTICE

When directed, cancel startup homing feature of control panel by pressing ESC button *after* machine has been turned *ON*, but *before* startup homing is completed.

7. **G0873:** Insert safety key into safety key switch on top of machine and rotate clockwise to ON position to turn machine ***ON***.

   G0874: Insert safety key into safety key switch on top of machine and rotate clockwise to ON position. Press start button to turn machine ***ON***.

8. Verify machine starts up and runs smoothly without any unusual problems or noises. **Press Esc button on control panel once laser head assembly begins moving, but *before* machine completes startup homing procedure.**

   — Screen display will show system status (see **Figure 24**), and after one audible *beep*, laser head assembly will begin homing to upper right corner of table.

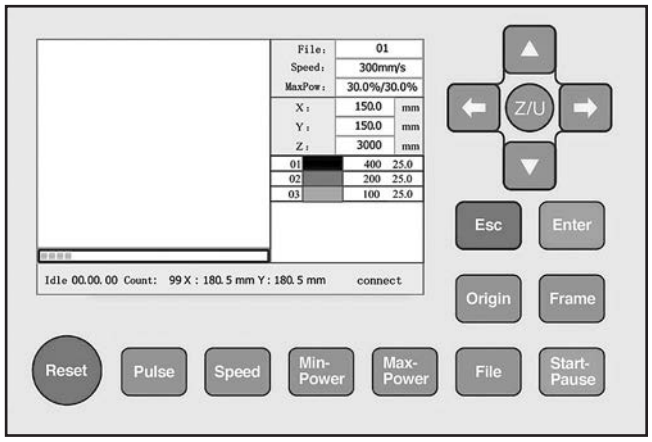


Figure 24. Example of screen display during startup.

IMPORTANT: The Model G0873 uses lever-type limit switches for calculating X- and Y-axis movement. The Model G0874 uses magnetic-type proximity switches. Both limit switch types are identical in function.

9. Press right arrow nav button (➡) on control panel until laser head assembly activates X-axis limit/proximity switch. Verify "hard Limit Prot" error is displayed and further axis movement is suspended (see **Figure 25**).

   — If axis movement *does* stop at limit/proximity switch, X-axis limit/proximity switch is working correctly. Press Esc button before proceeding.

   — If axis movement *does not* stop at limit/proximity switch, disconnect machine from power. Limit/proximity switch is not working correctly. Contact Grizzly Tech Support before further using machine.

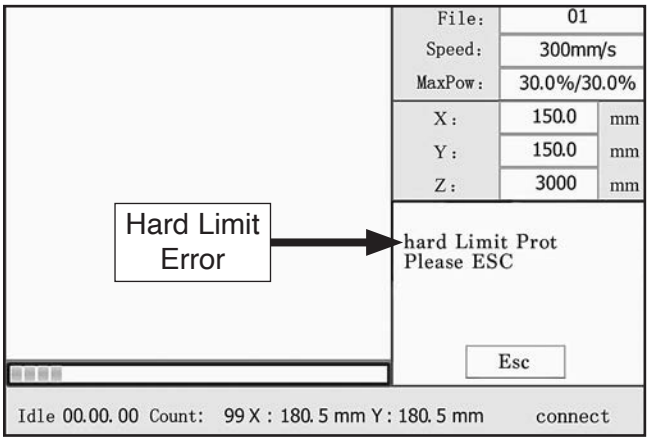


Figure 25. Example of screen displaying hard limit error.

10. Repeat **Step 10** for Y-axis using up arrow nav button (▲) on control panel until laser head assembly activates Y-axis limit switch.

11. Press Reset button on control panel to reset machine and test startup homing procedure. Verify machine starts up and runs smoothly without any unusual problems or noises.

    — Screen display will show system status (see **Figure 24**), and after one audible *beep*, laser head assembly will home to upper right corner of table before moving to origin (or position of last cut).

12. Open top loading door. Locate X- and Y-axis proximity switches, and top loading door interlock switches, as shown in **Figure 26**.

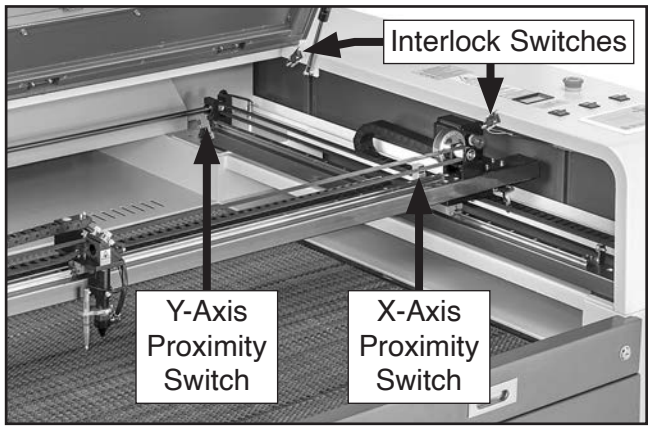


Figure 26. Example of upper safety switch component locations.

13. **G0874 Only:** Touch X-axis proximity switch target (see **Figure 27**) with scrap piece of iron or steel.

    Note: *Proximity switches have red indicator lights that will illuminate when proximity switch is activated.*

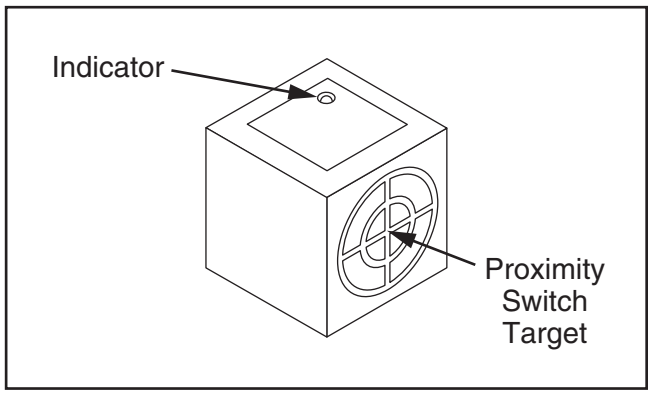


Figure 27. Typical proximity switch components.

14. **G0874 Only:** With proximity switch activated, press right arrow nav button (➡) on control panel to test laser head assembly movement.

    — If laser head assembly *does not* move, proximity switch is functioning correctly.

    — If laser head assembly *does move*, disconnect machine from power. Proximity switch safety feature is not working. Call Grizzly Tech Support before further using machine.

15. **G0874 Only:** Repeat **Steps 14–15** for Y-axis using up arrow nav button (▲) on control panel to test laser head assembly movement.

16. Open front access door and locate Z-axis limit switch (see **Figure 28**).

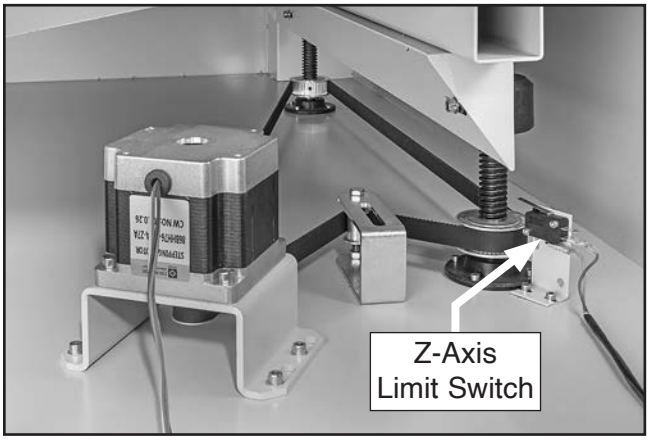


Figure 28. Example of location of Z-axis limit switch (G0874 shown).

17. Press Z/U button on control panel to access Z/U menu, then use arrow nav buttons to highlight "Z move".

18. Have an additional person verify Z-axis limit switch is functioning correctly by pushing in switch lever until audible "click" is heard (see **Figure 29**).

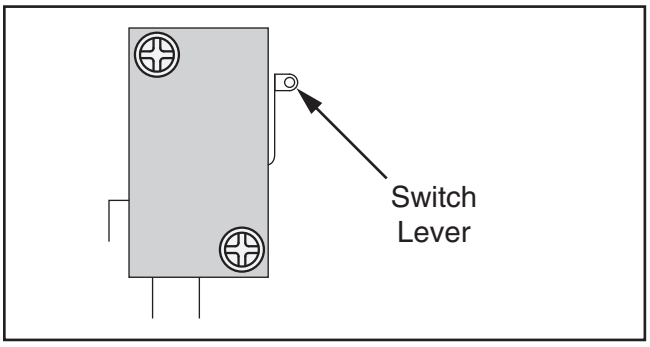


Figure 29. Example of typical limit switch lever.

19. With limit switch activated, press left and right arrow nav buttons (⬅ and ➡) on control panel to test movement of table.

— If table *does not* move, limit switch is functioning correctly.

— If table *does move*, disconnect machine from power. Limit switch safety feature is not working. Call Grizzly Tech Support before further using machine.

20. Place scrap piece of wood under laser head assembly prior to testing pulse function.

⚠DANGER

Operator and bystanders MUST wear ANSI-approved eye protection rated for 10,600 nm (10.6 μm) wavelength CLASS 4 infrared lasers when machine is operating. NEVER look directly into laser beam or stare at laser contact point, or severe eye injury or blindness will occur!

21. Put on Class 4 laser eye protection rated for 10,600 nm (10.6 μm) infrared wavelength lasers (see **Figure 30**).

Figure 30. Example of Class 4 laser eye protection.

22. With top loading door open, press Pulse button on control panel to test fire laser.

— If laser *does not* briefly pulse ***ON***, top loading door interlock switches are functioning correctly.

— If laser *does* briefly pulse ***ON***, disconnect machine from power. Top loading door interlock switches safety feature is NOT working. Call Grizzly Tech Support before further using machine.

NOTICE

Control panel may audibly *beep* during pulse function, but *is not* an indication that laser is firing. Visually inspect scrap wood placed under laser head assembly to see if laser has fired.

23. Close top loading door and press Emergency Stop button to turn machine ***OFF***.

24. WITHOUT resetting Emergency Stop button, try to start machine. Machine should not start.

— If machine *does not* start, safety feature of Emergency Stop button is working correctly. Congratulations! The Test Run is complete.

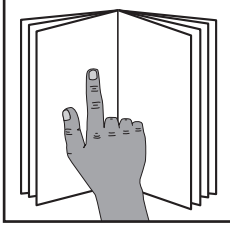
— If machine *does* start, immediately turn it ***OFF*** and disconnect power. Safety feature of Emergency Stop button is not working properly and must be replaced. Call Grizzly Tech Support before further using machine.

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

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.

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 performs the following:

1. Creates artwork using desired design software, prepares artwork for cutting/engraving using RDWorks software, and exports *.RD* file for upload.
2. Inspects auxiliary systems (water chiller, air pump, and extraction fan) before every use.
3. Turns machine and auxiliary systems ***ON***, then verifies systems are operational.
4. Transfers design to machine and loads file for cutting/engraving (**Page 36**).
5. Selects and installs appropriate table for operation.
6. Verifies workpiece is suitable for cutting/engraving.
7. Places workpiece between table and laser head assembly.
8. Sets laser focal length (**Page 38**).
9. Sets origin by pushing Origin button on control panel.
10. Verifies working envelope by performing "Track" function (**Page 39**).
11. Verifies total operation time by performing "Work time" function (**Page 40**).
12. Puts on Class 4 laser eye protection.
13. Begins laser operations (**Page 43**).
14. Removes workpiece and scrap material from cabinet once operations are completed.
15. Turns machine and auxiliary systems ***OFF***.
16. Cleans and prepares machine for additional operations.

Preparing Artwork in RDWorks Software

The Model G0873/G0874 uses RDWorks software to format artwork into numerical code that the laser uses to cut or engrave a design. The following procedure will guide you through basic RDWorks controls, importing artwork into RDWorks, and exporting it to an *.RD* format file for transferring to the machine.

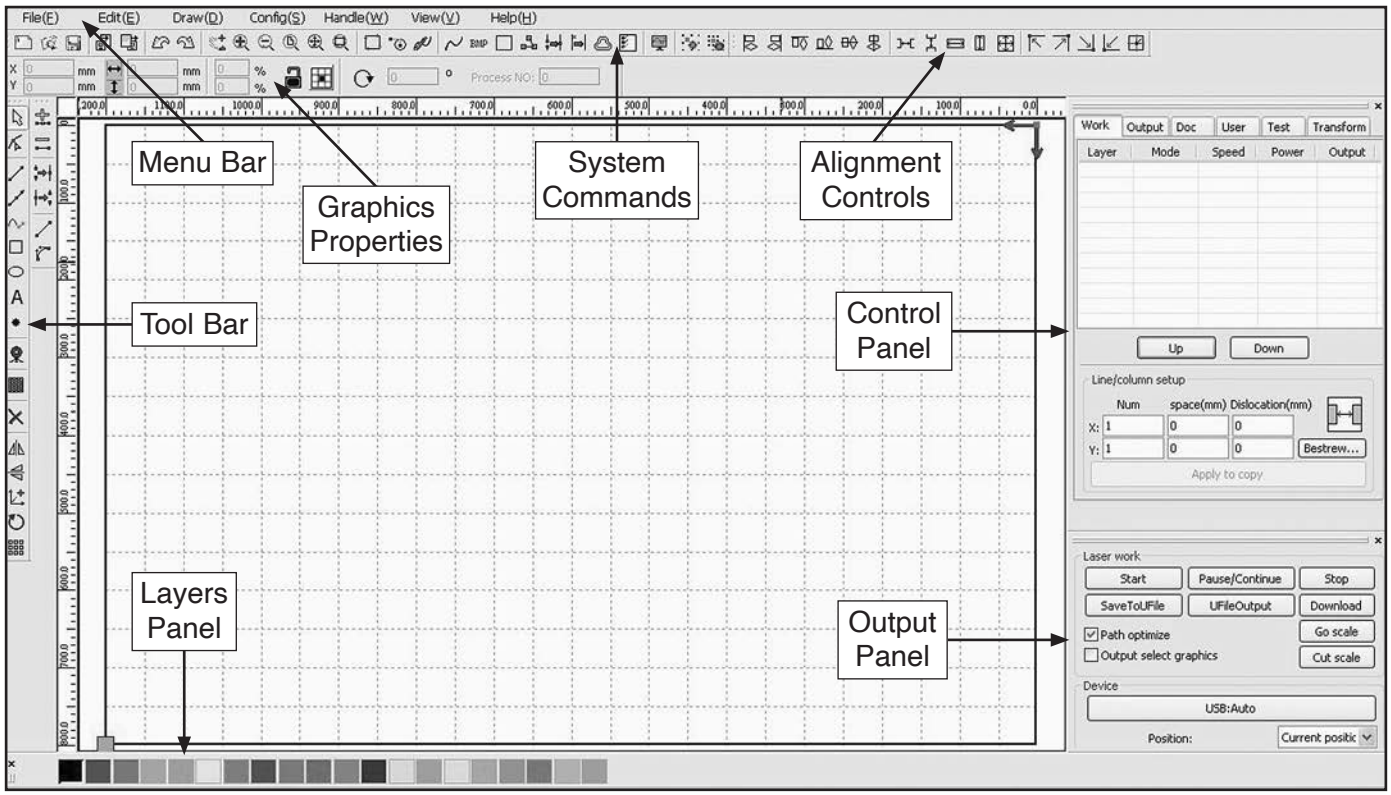


Figure 31. RDWorks software main interface.

Menu Bar: Location of main software functions. Includes: File, Edit, Draw, Config, Handle, View, and Help.

Graphics Properties: Contains basic attributes of graphics operations, including location, size, scale, and reference points.

System Commands: Commonly used command buttons derived from Menu Bar.

Alignment Controls: Used for aligning objects and optimizing type settings.

Control Panel: Contains settings for toolpath layers, cut types, feeds, and cutting speeds.

Output Panel: Contains settings for saving files and transferring files over a network.

Layers Panel: Assigns layer properties to an object based on color codes.

Tool Bar: Location of frequently-used tools for artwork design and editing.

Importing Artwork

For a complete guide to all of the capabilities of the RDWorks software, refer to the **RDWorks V8 User Manual** on the installation disc included with your machine.

Supported File Formats
- **Vector** .....dxf, ai, plt, dst, and dsb
- **Bitmap .....** bmp, jpg, gif, png, and mng

To import artwork into RDWorks:

1. On RDWorks main interface, select "File" in menu bar, then select "Import" from drop-down list.

2. Navigate to desired file and select it. File will now be highlighted (see **Figure 32**).

   Note: *Check "Preview" to see preview image of selected file.*

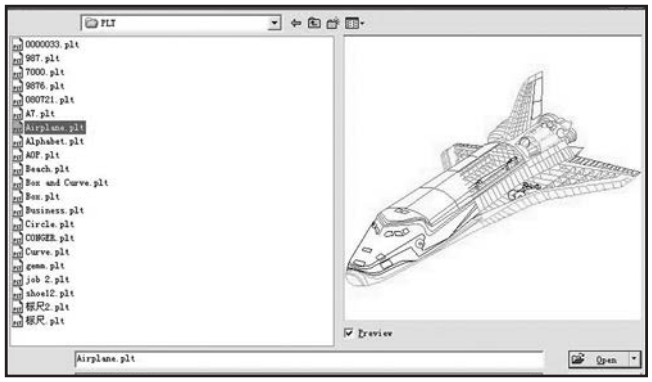


Figure 32. Selecting file to import.

3. Select "Open" to import selected file.

   Note: *Vector files will automatically import as separate layers. DST/DSB will be imported onto currently selected layer.*

4. Imported file will be displayed in RDWorks main interface. Proceed to **Preparing Artwork** on this page.

Preparing Artwork

The Model G0873/G0874 accepts *.RD* files saved using the included RDWorks software. The file can be saved to a USB flash drive, or transferred to the machine over a local area network.

Before saving, all layer operating parameters must be input into the RDWorks control panel. These parameters are used by the Model G0873/G0874 to control laser power, work speed, and many other settings. Imported files are assigned default layer parameters which must be adjusted to match operational requirements.

Items Needed
USB Flash Drive (Included w/Machine) 1
USB Transfer Cable (Included w/Machine)..... 1
Ethernet Cable 1

To prepare artwork:

1. Select "Work" tab located in top section of control panel (see **Figure 33**).

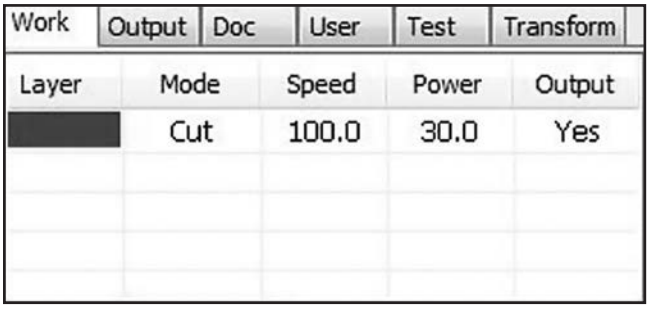


Figure 33. Control panel "Work" tab selected.

2. Double-click layer to open "Layer Parameter" dialog box (see **Figure 34**).

3. Set "Is Output" to "Yes" (see **Figure 34**).

   Note: *Setting layer output to "No" will prevent that layer from being cut/engraved.*

4. Set desired cutting/engraving speed in mm/s (see **Figure 34**).

   Note: *Slower speeds will create darker engravings and deeper cuts on workpiece (see **Cutting/Engraving Tips** on **Page 41** for more details). This setting can be changed during operation on Model G0873/G0874's control panel.*

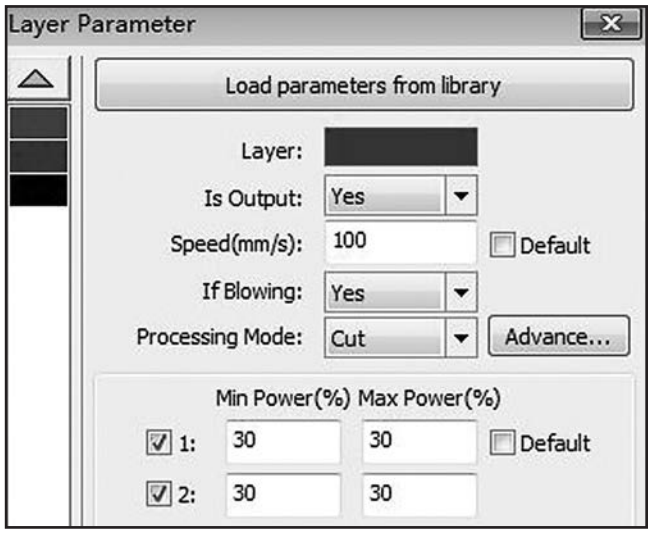


Figure 34. Layer Parameter dialog box.

5. Set "If Blowing" to "Yes."

   IMPORTANT: This setting enables external extraction fan to be turned ***ON*** (Yes) or ***OFF*** (No) when selected layer is running and should always be set to "Yes" for safest operation.

6. Set "Processing Mode" to "Cut" or "Scan" as desired (see **Figure 34**).

   Note: *Choose "Cut" mode for outline burns through a workpiece, or "Scan" mode for fill layers used in engraving.*

7. Set "Min Power (%)" and "Max Power (%)" as desired (see **Figure 34**).

   Tip: *Test scrap workpiece material with lower power settings (below 20%) and slowly increase power to determine best setting for workpiece material (see **Cutting/Engraving Tips** on **Page 41** for more details). This setting can be changed during operation on Model G0873/G0874's control panel.*

8. Select "Ok" at bottom of dialog box to return to control panel.

   — If saving to included USB flash drive, proceed to **Saving .RD File to USB Flash Drive** on **Page 35**.

   — If saving directly to machine using USB transfer cable, proceed to **Saving .RD File to Machine w/USB Transfer Cable** on **Page 35**.

   — If saving directly to machine using an ethernet cable (not included), proceed to **Saving .RD File Using Ethernet Cable** on **Page 36**.

Saving .RD File to USB Flash Drive

1. Change "Device" setting of output panel to "USB:Auto" (see **Figure 35**).

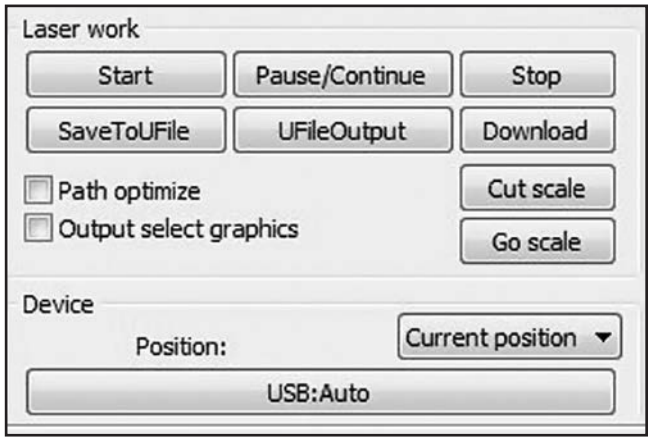


Figure 35. Output panel controls.

2. Insert USB flash drive into an open USB port on your personal computer.

3. Select "SaveToUFile" (see **Figure 35**), navigate to USB flash drive, and select "Save."

4. Safely remove USB flash drive from personal computer.

5. Proceed to **Transferring Artwork** on **Page 36**.

Saving .RD File to Machine w/USB Transfer Cable

1. Connect machine to personal computer running RDWorks with USB transfer cable located in electrical compartment.

2. Turn machine ***ON*** and wait for startup procedure to complete.

3. In RDWorks output panel, select "USB:Auto" to open "Device Ports" dialog box, as shown in **Figure 36**.

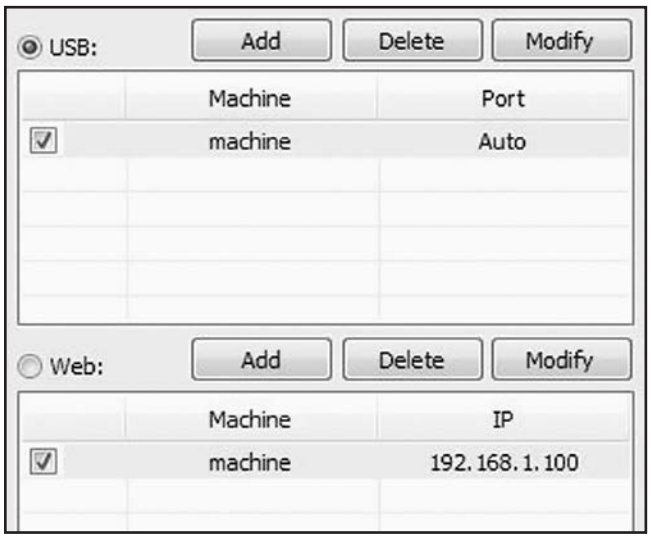


Figure 36. Device port dialog box.

4. Select "USB" and click "Add" button to open USB Port Setting dialog box (see **Figure 37**).

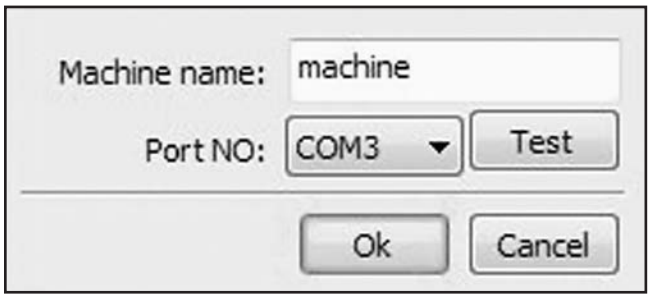


Figure 37. USB port setting dialog box.

5. Designate machine name and change port number to Auto, then click "Ok".

   Note: *Press "Test" button to verify USB connection has been established.*

6. Click "Ok" to return to output panel (see **Figure 36**).

7. Select "Download", and then proceed to **Loading .RD File From Machine Memory** on **Page 37**.

Saving .RD File Using Ethernet Cable

1. Connect ethernet cable to controller ethernet port (see **Figure 38**), then connect opposite end of cable to a personal computer running RDWorks.

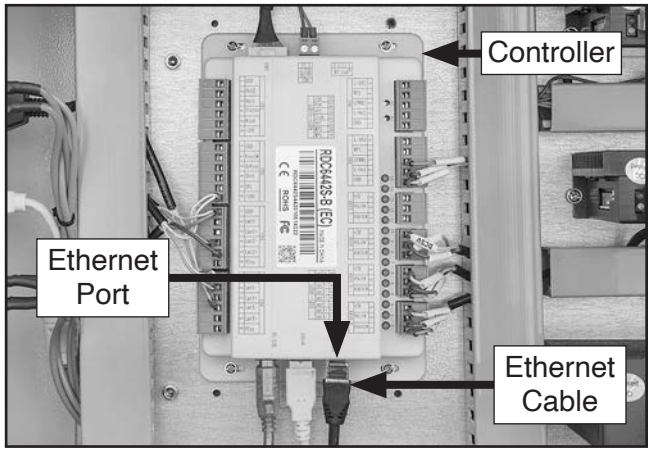


Figure 38. Example of controller ethernet port location.

2. Turn machine ***ON*** and wait for startup procedure to complete.

3. In RDWorks output panel, select "USB:Auto" to open "Device Ports" dialog box (see **Figure 36** on **Page 35**).

4. Select "Web" then "Add" button to open IP Address Setting dialog box (see **Figure 39**).

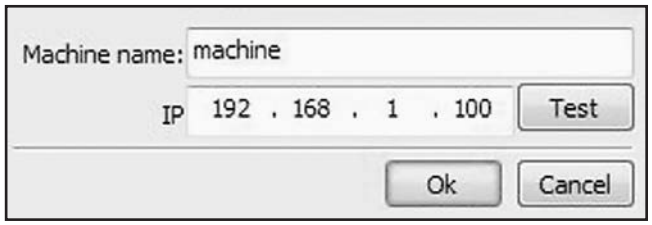


Figure 39. IP address setting dialog box.

5. Designate machine name and enter IP address of machine as determined by network connection, then click "Ok".

   Note: *Press "Test" button to verify network connection has been established.*

6. Click "Ok" to return to output panel (see **Figure 35** on **Page 35**).

7. Select "Download", and then proceed to **Loading .RD File From Machine Memory** on **Page 37**.

Transferring Artwork

Before operations on the Model G0873/G0874 can begin, a *.RD* file must be created using the included RDWorks design software, and then either transferred from a flash drive to machine memory, or sent over a local area network.

While navigating through machine operations, you will be using push buttons on the control panel shown in **Figure 40**.

Note: *For a complete list of CNC laser commands, a Command Tree diagram is located in* ***SECTION 10: APPENDIX*** *on* ***Page 98****.*

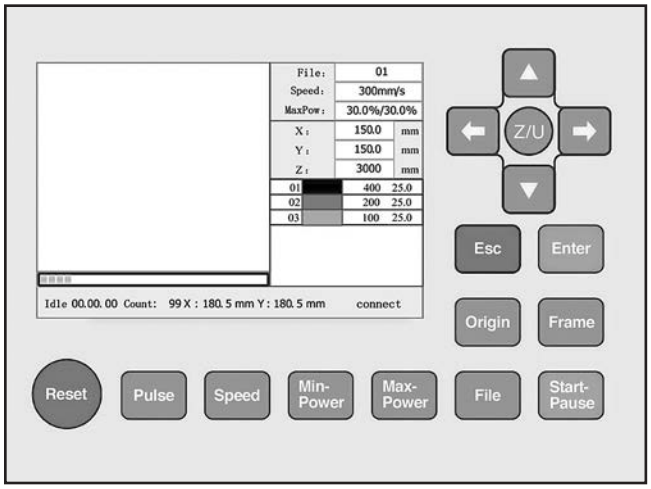


Figure 40. Control panel layout.

Item Needed
USB Flash Drive (Included w/Machine) 1

Transferring .RD File w/USB Flash Drive

1. Turn machine ***ON*** and wait for startup procedure to complete.

2. When machine startup is completed, status screen will be displayed (see **Figure 41**).

   Note: *If a .RD file has been previously loaded, it will be displayed as a numeral (e.g. "File: 01"), and show any attributes assigned to that file.*

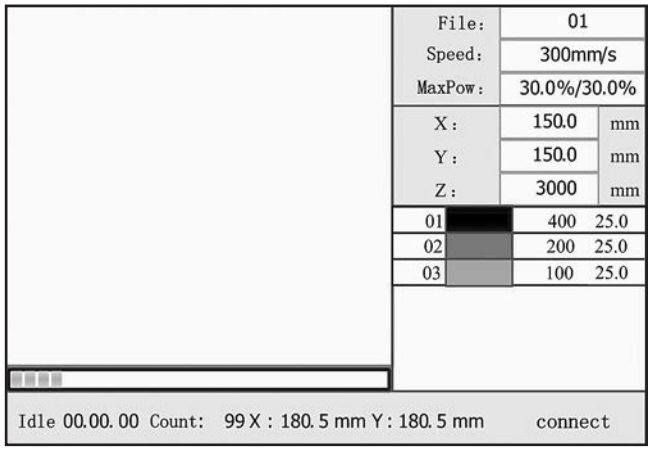


Figure 41. Example of status screen.

3. Insert USB flash drive into USB port on machine.

4. Press File button on control panel to display file management screen (see **Figure 42**).

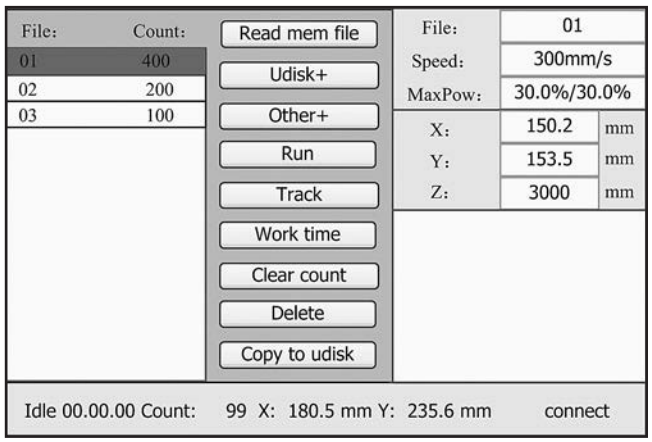


Figure 42. Example of file management screen.

5. Use arrow nav buttons on control panel to select "Udisk+", then press Enter.

6. Screen will display files currently on USB flash drive (see **Figure 43**).

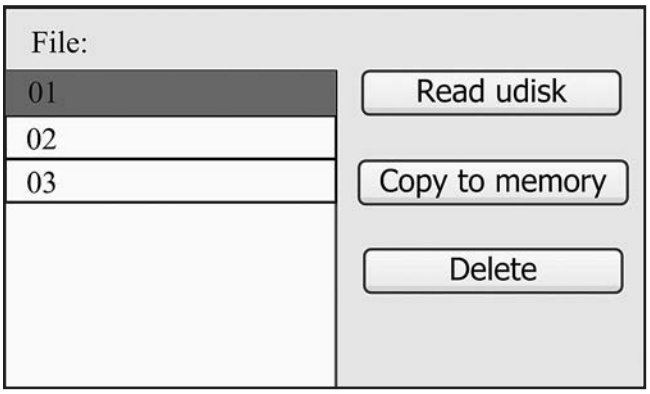


Figure 43. Example of Udisk+ screen.

7. Use up and down arrow nav buttons (▼ and ▲) on control panel to highlight desired file, and use left and right arrow nav buttons (⬅ and ➡) to select "Copy to memory", then press Enter.

8. Once file transfer message is displayed, press Esc button to return to status screen. File is now ready for laser operations.

Loading .RD File From Machine Memory

1. Turn machine ***ON*** and wait for startup procedure to complete.

2. When machine startup is completed, status screen will be displayed (see **Figure 41**).

   Note: *If a .RD file has been previously loaded, it will be displayed as a numeral (e.g. "File: 01"), and show any attributes assigned to that file.*

3. Press File button on control panel to display file management screen (see **Figure 42**).

4. Use up and down arrow nav buttons (▼ and ▲) on control panel to highlight desired file, and use left and right arrow nav buttons (⬅ and ➡) to select "Read mem file", then press Enter.

5. Once file transfer message is displayed, press Esc button to return to status screen. File is now loaded and ready for laser operations.

Setting Focal Length

Focal length is the distance between the tip of the laser head and the workpiece (see **Figure 44**). It must be set before every cutting/engraving operation for optimum laser performance.

IMPORTANT: Excessive/insufficient focal length will diffuse laser beam output and cause weak cutting/engraving results.

Note: *For workpieces with varying height, it may be necessary to manually focus separate cutting/engraving operations for each height tier to maintain consistent focal length.*

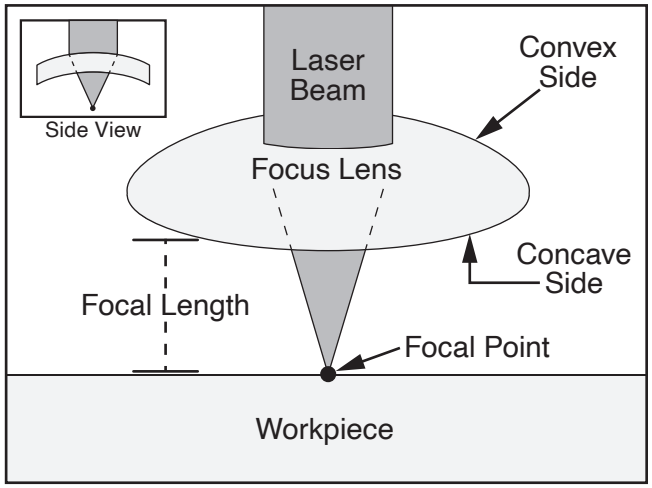


Figure 44. Focal point of laser on workpiece.

Items Needed	Qty
Class 4 Laser Eye Protection (per person)	1
Focus Gauge	1
Hex Wrench 2.5mm	1
Workpiece	As Needed

Using Auto Focus

1. Turn machine ***ON*** and wait for startup procedure to complete.

2. Open top loading door and move laser head assembly to easily accessible area.

3. Load flat, even workpiece onto table under laser head assembly.

4. Press Z/U button on control panel to display Z/U menu screen (see **Figure 45**).

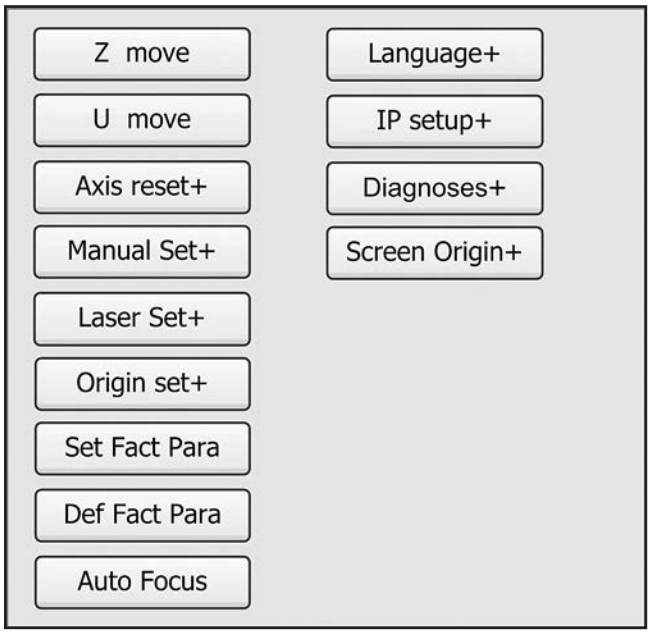


Figure 45. Example of Z/U menu screen.

5. Use arrow nav buttons to highlight "Auto Focus" and press Enter.

6. Table will raise until tip of auto focus sensor contacts workpiece surface before lowering to correct focal length.

7. Focal length is now correctly set, close top loading door before beginning operations.

Setting Manual Focus

1. Turn machine ***ON*** and wait for startup procedure to complete.

2. Open top loading door and move laser head assembly to easily accessible area.

3. Load flat, even workpiece onto table under laser head assembly.

4. Press Z/U button on control panel to display Z/U menu screen, then use arrow nav buttons to highlight "Z move" (see **Figure 45**).

5. Use left and right arrow nav buttons (⬅ and ➡) on control panel to raise or lower table until distance between workpiece surface and air nozzle is approximately 9mm.

6. Loosen (1) cap screw on auto focus sensor mount, raise auto focus sensor even with tip of air nozzle, then tighten cap screw (see **Figure 46**).

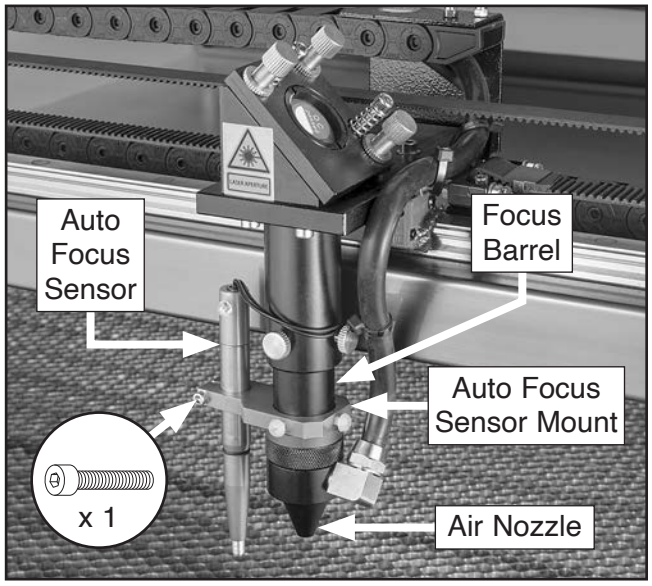


Figure 46. Auto focus sensor components.

7. Use arrow nav buttons to highlight "Z move" (see **Figure 45** on **Page 38**).

8. Place bottom of focus gauge on workpiece, and raise or lower table using left and right arrow nav buttons (⬅ and ➡) on control panel until tab on focus gauge rests on top of auto focus sensor mount (see **Figure 47**).

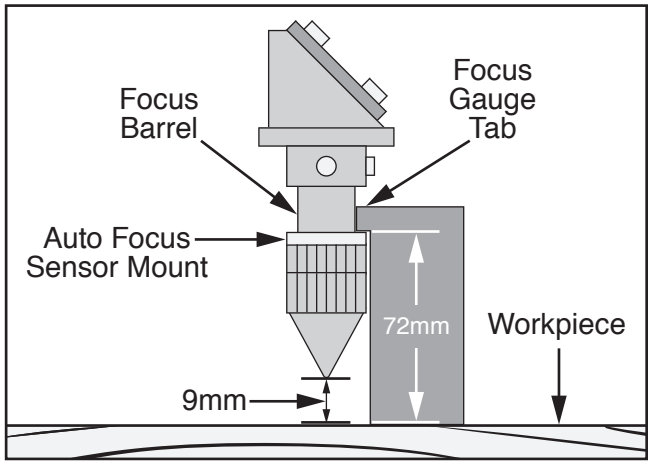


Figure 47. Focus gauge resting on workpiece and auto focus sensor mount.

9. Loosen (1) cap screw on auto focus sensor mount, lower auto focus sensor flush with workpiece, then tighten cap screw (see **Figure 46**).

10. Focal length is now correctly set. Remove focus gauge and setup tools before closing top loading door.

Performing Track Function

The "Track" function verifies the working envelope of a selected file to prevent exceeding available table area.

Note: *This optional function is useful for setting origin, and for reducing delays from travel errors during cutting/engraving operations.*

To perform "Track" function:

1. Turn machine ***ON*** and wait for startup procedure to complete.

2. Load *.RD* file from machine memory (see **Loading .RD File From Machine Memory** on **Page 37**).

3. Position workpiece so loaded file fits within working envelope.

4. Move laser head assembly to location of origin defined in RDWorks, in reference to working envelope.

   Note: *For example, if operator set origin to center of image in RDWorks software, position laser head assembly over center of table.*

5. Press Origin button on control panel. Machine will audibly *beep* to indicate origin has been properly set.

6. Press File button on control panel to display file management screen (see **Figure 48**).

7. Use arrow nav buttons to highlight "Track" and press Enter (see **Figure 48**).

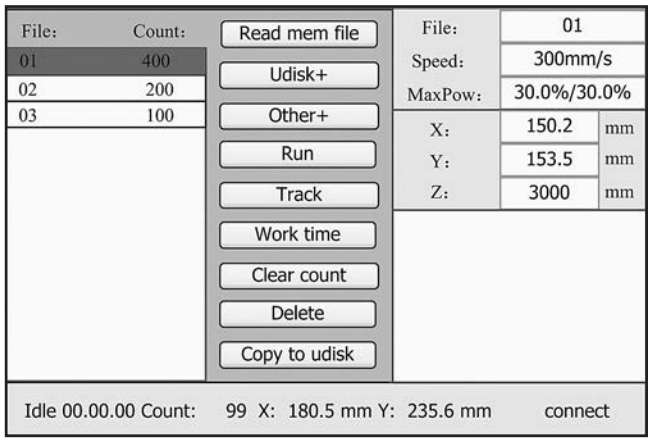


Figure 48. Example of file management screen.

8. Observe perimeter of toolpath being traced by laser head movement. Verify display shows "Tracking Frame" during operation.

   — If "Track Frame Completed" displays on file management screen, "Track" function has completed successfully.

   — If "XSlop over," "YSlop over," or "Frame slop" errors are displayed on screen, review *.RD* file in RDWorks for dimensional/positioning errors, then repeat **Steps 2–7**.

   Note: *Once "Track" function is completed, you may physically reposition workpiece in reference to position of laser head. This helps ensure laser head has available room for maneuvering over workpiece.*

NOTICE

If "XSlop Over," "YSlop Over," or "Frame slop" errors are displayed on file management screen, machine has determined that currently loaded file is outside working envelope of machine, based on origin.

Performing Work Time Function

The "Work time" function instructs the controller to review all toolpath settings of the currently loaded file and estimate the total time required for completing the cutting/engraving operations.

Note: *This optional function is useful for calculating the cost-per-unit, or for estimating the remaining life of machine consumables.*

To perform "Work time" function:

1. Turn machine ***ON*** and wait for startup procedure to complete.

2. Load *.RD* file from machine memory (see **Loading .RD File From Machine Memory** on **Page 37**).

3. Press File button on control panel to display file management screen (see **Figure 48**).

4. Use arrow nav buttons to highlight "Work time" and press Enter (see **Figure 48**).

5. File management screen will display "Calculating Work Time, Please Wait" during function.

6. When controller finishes calculating total cutting/engraving time, job duration is displayed on file management screen.

   Tip: *RDWorks software has a similar work time function that will also simulate the entire operation in real-time. Select the "Preview" icon in the System Commands menu to start simulation.*

Inspecting Workpiece

Some materials are not safe for laser cutting, or may be outside the capabilities of your machine. **Before cutting/engraving, inspect all workpieces for the following:**

- ***Engraving Material:*** This machine is capable of engraving natural wood, MDF, glass, acrylic, PVC, rubber, ceramic, leather, cloth, and paper. This machine is NOT designed to engrave metal; engraving this material with this machine may lead to machine damage or personal injury.

- ***Cutting Material:*** This machine is capable of cutting natural wood, MDF, acrylic, PVC, rubber, leather, cloth, and paper. This machine is NOT designed to cut metal, glass, or ceramics; cutting these materials with this machine may lead to machine damage or personal injury.

- ***Foreign Objects:*** Nails, staples, dirt, rocks, and other foreign objects are often embedded in wood. Always visually inspect your workpiece for these items. If they cannot be removed, DO NOT use the workpiece.

- ***Wood Knots:*** Knots in wood are denser than the natural grain surrounding them, and may cause unpredictable cutting/engraving results. Always use wood workpieces that do not have knots, or position working envelope away from visibly knotted areas to maintain consistent cutting/engraving quality.

- ***Wet or "Green" Wood:*** Avoid using wood with a high water content. Wood exposed to excessive moisture (such as rain or snow), will cut/engrave poorly and cause large clouds of smoke and debris inside the machine.

- ***Excessive Warping:*** Workpieces with excessive cupping, bowing, or twisting are difficult to cut/engrave due to inconsistent surface height negatively affecting focal length. Always use flat stock to maintain consistent cutting/engraving depth.

Cutting/Engraving Tips

- When cutting/engraving acrylic, use a raised, nonreflective surface that promotes airflow underneath the workpiece. This will help prevent refracted laser rays from melting the surface and causing blemishes.

- Plywoods are formed from bonding many different wood types together using adhesive. The adhesive used to bond the plies will regularly ignite during cutting/engraving and cause unwanted surface defects. Use solid wood for optimal finish quality.

- Use the **Material Cutting Power/Speed Chart** below as a guide for determining optimal power/speed settings for cutting ¼" thick wood or plastic with your machine. Always test new settings on scrap material first, then make adjustments as necessary until desired cutting results are achieved.

  Note: *Engraving settings require too many variables to effectively list here. A good starting point for most hardwoods is 30% power and 300mm/s speed.*

Material Cutting Power/Speed Chart		
Material Type	**G0873 Power/Speed**	**G0874 Power/Speed**
Hardwood	70% - 15mm/s	65% - 20mm/s
Softwood	55% - 25mm/s	40% - 25mm/s
MDF	75% - 15mm/s	65% - 20mm/s
Acrylic	75% - 15mm/s	65% - 20mm/s
PVC	60% - 50mm/s	50% - 60mm/s
Rubber	75% - 15mm/s	70% - 20mm/s
Leather	75% - 10mm/s	70% - 15mm/s
Cloth	20% - 150mm/s	20% - 200mm/s
Paper	20% - 150mm/s	20% - 200mm/s

Figure 49. Material cutting power and speed settings.

Water Chiller Overview

During operation, water is circulated through the laser tube cooling chambers. As the water flows through the laser tube, it absorbs heat along the way. The returned water dissipates heat through an refrigerant-cooled radiator before returning to the reservoir and being cycled through the laser tube again.

The water temperature must be kept below 122º F (50º C), or the water chiller will sound an audible alarm and suspend circulating water. If an overheat alarm occurs regularly, a larger water chiller system may be required, or a refrigeration-type water chiller may have to be installed in environments susceptible to extreme heat.

IMPORTANT: Always use a single brand of anti-freeze that is listed as *non-corrosive* to prevent water hoses from prematurely deteriorating. Never mix brands or types of anti-freeze, and flush and replace anti-freeze with distilled water as soon as temperatures stabilize.

Air Pump Overview

Laser cutting operations require an air nozzle to focus a jet of air that blows fumes, smoke, dust, and other materials away from the laser beam focal point. This jet of air also prevents combustion by continuously cooling the area and limiting fuel at the source of ignition.

During operation, air enters the rear of the pump through a barbed-fitting on the filter cover. The air passes through a washable-foam air filter, and exits out of a metal barbed fitting at the front of the pump. The air then travels through a hose to the AIR IN fitting on the auxiliary systems connection panel, before continuing on to the laser beam focal point.

Extraction Fan Overview

⚠WARNING

Gases and fumes generated by laser machines are hazardous to your health. It is your responsibility to install a dedicated and rated fume extractor if toxic gases or fumes are produced during laser cutting operations.

⚠WARNING

Dust and embers from laser machines present a fire hazard. DO NOT direct exhaust ports anywhere combustible materials exist, or combine laser extraction fan with woodworking dust collection systems.

The extraction fan is a simple centrifugal-type fan that blows a large volume of air away from the machine when operating.

During operation, the extraction fan creates a negative-airflow vacuum in the machine interior, which extracts smoke and particulates from the worktable down through the lower cabinet and exits the machine via the exhaust ducting.

Operating Laser

⚠DANGER

Operator and bystanders MUST wear ANSI-approved eye protection rated for 10,600 nm (10.6 μm) wavelength CLASS 4 infrared lasers when machine is operating. NEVER look directly into laser beam or stare at laser contact point, or severe eye injury or blindness will occur!

⚠WARNING

NEVER leave machine unattended; materials could catch fire during operation. Fires MUST be extinguished immediately to prevent personal injury and machine damage.

⚠WARNING

To prevent exposure to toxic fumes and particulates during operation, CNC lasers MUST be equipped with a fume extractor that utilizes MERV 15+ or HEPA filters.

Once the *.RD* file is transferred to machine memory, the artwork file must be loaded before operating the laser.

Note: *For a complete list of CNC laser commands, a Command Tree diagram is located in* ***SECTION 10: APPENDIX*** *on* ***Page 98****.*

Items Needed	**Qty**
Class 4 Laser Eye Protection	1
Hex Wrench 2.5mm	1

To operate laser:

1. Clear all setup tools away from machine.
2. Turn machine ***ON*** and wait for startup procedure to complete.
3. Open top loading door.
4. Select applicable table for current job:
   - — For light materials such as wood, cloth, leather, and thin veneers that need close support, use honeycomb table.
   - — For heavy/rigid self-supporting material hard enough to damage honeycomb table, or heat-sensitive materials like acrylic and plastic which require high airflow to prevent damaging surface, use blade table.
   - — For irregularly-shaped workpieces incapable of being self-supported, build a custom support or design a jig to prevent workpiece movement during operation.
5. Press Z/U button and use arrow nav buttons to highlight "Z move".
6. Use left and right arrow nav buttons (⬅ and ➡) on control panel to raise or lower table.

NOTICE

Before loading workpiece, measure and verify that sufficient space exists between laser head tip and workpiece. Inadvertent contact with laser head assembly during workpiece loading can damage machine.

7. Measure thickness of workpiece and verify adequate space exists between workpiece and laser head assembly, then place workpiece on table.

Note: *Excess space will be adjusted later when setting focal length.*

8. Load *.RD* file from machine memory (see **Loading .RD File From Machine Memory** on **Page 37**).

9. Use arrow nav buttons on control panel to move laser head assembly to origin, then push Origin button on control panel.

IMPORTANT: Controller requires laser head assembly to be moved using arrow nav buttons to accurately determine position.

10. Set focal length as instructed in **Setting Focal Length** on **Page 38**.

11. Perform "Track" function (see **Performing Track Function** on **Page 39**).

12. Perform "Work time" function (see **Performing Work Time Function** on **Page 40**).

13. Turn ***ON*** all auxiliary systems and verify operation.

14. Put on Class 4 laser eye protection.

15. Close top loading door and press Start-Pause button to begin laser operations.

Note: *If problems arise, or job must be stopped for a period of time, press Start-Pause button to pause or resume operations. In case of power interruption, or Emergency Stop button is pressed, machine will resume operations exactly where the event occurred once power is restored.*

16. During operation, verify ammeter indicator *does not* exceed mA rating listed above ammeter (see **Figure 50**).

IMPORTANT: An ammeter indication exceeding mA rating may be caused by impending laser tube failure or electrical faults.

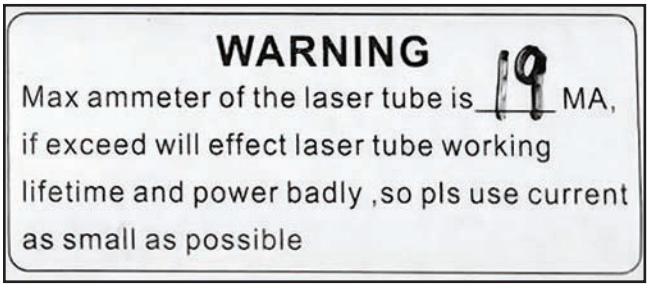


Figure 50. Example of ammeter mA rating.

17. When laser operations are completed, turn machine ***OFF***.

18. Turn ***OFF*** all auxiliary systems.

19. Remove workpiece and scrap parts, put all tools away, and clean area for next operation.

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.

T30340—150W Laser Tube for G0874
Replacement 150W laser tube for use with the Model G0874 CNC Laser Cutter/Engraver.

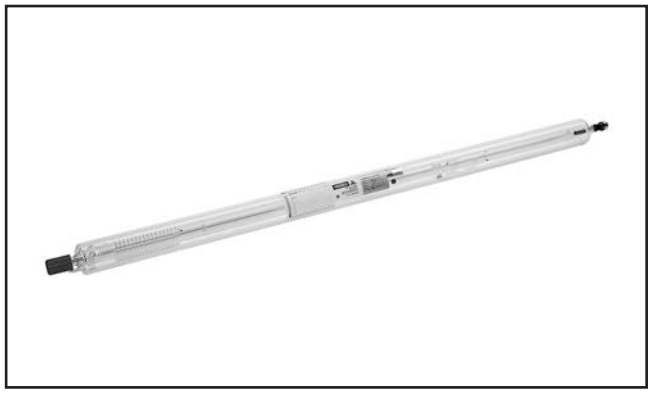


Figure 51. T30340 150W Laser Tube.

T30341—100W Laser Tube for G0873
Replacement 100W laser tube for use with the Model G0873 CNC Laser Cutter/Engraver.

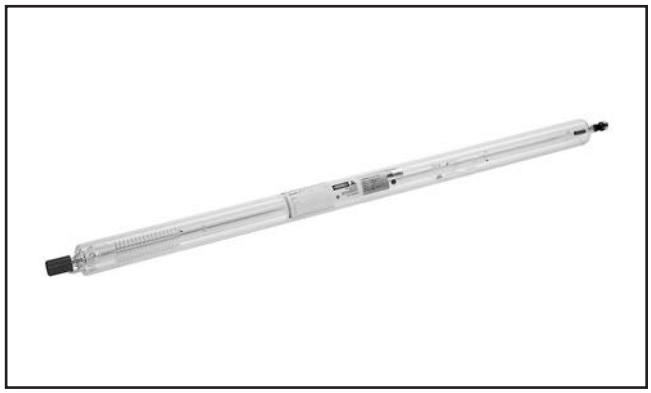


Figure 52. T30341 100W Laser Tube.

T30332—35" x 51" Honeycomb Table (G0874)
T30333—23" x 35" Honeycomb Table (G0873)
Replacement honeycomb tables for use with the Model G0873/G0874 CNC Laser Cutter/Engraver.

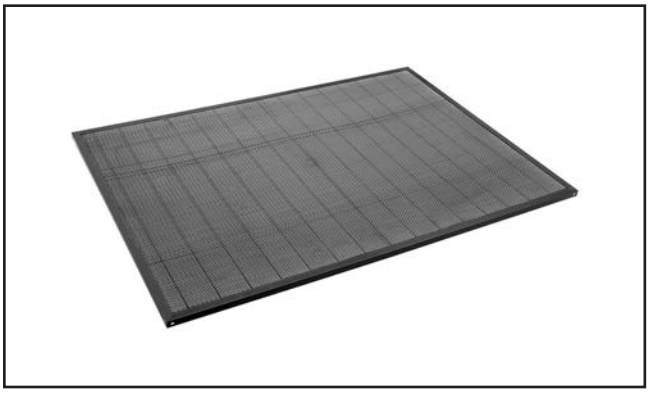


Figure 53. T30332 Honeycomb Table.

T30338—Water Chiller System (G0873)
T30339—Water Chiller System (G0874)
Replacement water chiller systems for use with the Model G0873/G0874 CNC Laser Cutter/Engraver.

Figure 54. T30339 Water Chiller System.

T30336—Extraction Fan for CNC Lasers
Replacement extraction fan for use with the Model G0873/G0874 CNC Laser Cutter/Engraver.

Figure 55. T30336 Extraction Fan.

T30335—Air Pump for CNC Lasers
Replacement air pump for use with the Model G0873/G0874 CNC Laser Cutter/Engraver.

Figure 56. T30335 Air Pump.

T32363—Replacement 20mm Mirror (G0873)
T32364—Replacement 25mm Mirror (G0874)
Replacement mirror for use with the Model G0873/G0874 CNC Laser Cutter/Engraver.

Figure 57. T32364 25mm Mirror.

T32362—Replacement Focal Lens (63.5mm Focal Length) for G0873/G0874
Replacement focal lens for use with the Model G0873/G0874 CNC Laser Cutter/Engraver.

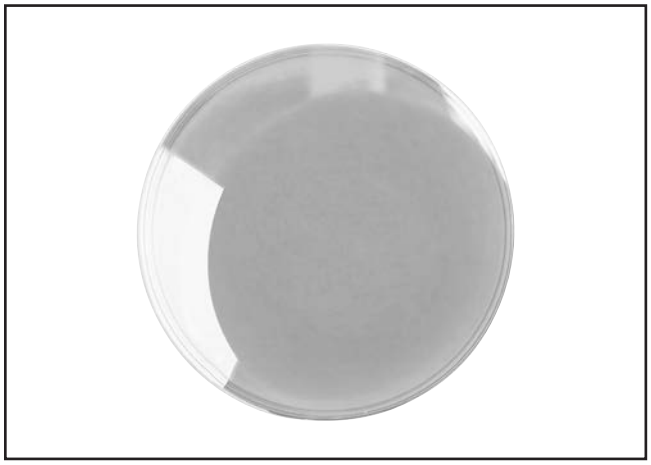


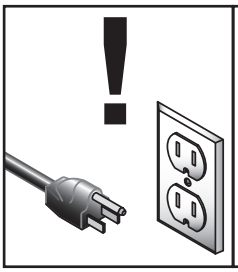
Figure 58. T32362 Focal Lens.

G0953—Portable HEPA Fume Extractor
Pulls fumes and particulates through eight types of filters within three housings, filtering the air of harmful odors, chemicals, and particulates.

Airflow capacity (6" inlet): 423 CFM @ 0.38" SP
Airflow capacity (4" inlet): 335 CFM @ 0.91" SP

Figure 59. G0953 Portable HEPA Fume Extractor.

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 laser optics.
- Worn or damaged wires.
- Any other unsafe condition.

Daily Maintenance
- Wipe down interior cabinet area before and after use.
- Clean and vacuum dust buildup on table, inside cabinet, and on shafts and rails.
- Verify laser tube connections are secure and no air bubbles are present in tube.
- Check auxiliary systems for proper function and fill water reservoir, as required.

Weekly Maintenance
- Clean and vacuum dust buildup on auxiliary systems and air pump filter.
- Wipe shaft and rail metal surfaces with light sewing machine oil.

Monthly Check
- Verify fasteners on moving parts are secure.
- Inspect laser optics and clean as required.
- Inspect condition of electrical system.
- Verify proximity switches are operational.
- Check synchronous belts for wear.

Cleaning & Protecting

The Model G0873/G0874 only requires a general cleaning before and after each use. After one month of use, perform a comprehensive inspection and verify all fasteners on all moving parts have not come loose.

Over the life of the machine, longevity is reduced by moisture, abrasive material, corrosion, dust, and fumes generated by laser operations.

The following sections summarize the cleaning and lubrication required for each area.

NOTICE
DO NOT clean belts with acids, alkalis, oils, or solvents. Contact with chemicals and oils will accelerate belt deterioration.

NOTICE
Avoid harsh solvents like acetone or brake parts cleaner that may damage painted surfaces. Always test on a small, inconspicuous location first.

Lubrication

Grizzly recommends sewing machine oil (ISO 10 or less) for its light viscosity, odorless application, and anti-corrosive properties.

General machine oil or mineral oil is NOT recommended for use on this machine due to the high volume of particulates produced by laser cutting and engraving.

Items Needed	Qty
Flashlight	1
Soft Paintbrush	1
Stiff-Bristled Brush	1
Window Cleaner	As Needed
Mineral Spirits	As Needed
Sewing Machine Oil	As Needed
Clean Shop Rags	As Needed

Cabinet Cleaning Best Practices

Vacuum accumulated dust, ash, and scrap material. DO NOT use compressed air as it contains atomized oil and water, and will obscure machine optics over time.

Note: *A soft paintbrush paired with a vacuum nozzle works well for cabinet cleaning.*

The cabinet interior should be wiped down before and after every use with a quality window cleaner. DO NOT use solvents or soap and water. Solvent will damage paint, Plexiglas, and labels. Water can short electronics and corrode parts.

⚠WARNING

If materials that produce toxic dust or ash are cut, verify that a MERV 15+ or HEPA filter is installed in your vacuum. Hazardous particles can quickly spread through enclosed areas when expelled from a vacuum.

⚠WARNING

Under certain conditions, residual ash particles and wood chips may continue to smolder long after igniting. To help prevent vacuum container from smoldering and possibly catching fire, incorporate these safety steps in the cleanup schedule:

- **After machine use, wait for a period of time to allow any smoldering chips to naturally expire.**
- **Immediately empty and dispose of collected waste in a steel container.**
- **Use a vacuum with a steel drum, and avoid using vacuums with paper bags or existing combustible material.**

Shaft & Rail Metal Surfaces

By design, the shafts, rails, 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 sewing machine oil 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.*

Moving Parts

Use a flashlight to inspect belts, pulleys, guideways, rails, drive couplings, tracks, and slides before and after every use. Look for evidence of loose or missing parts, ensure mechanical connections and fasteners are tightened, and verify that the X, Y, and Z axes operational paths are clean and unobstructed.

Tip: *If you must vacuum immediately after laser operations, and if using a wet/dry shop vacuum, the collection drum can be filled with 1" of water at the bottom to extinguish any smoldering particles.*

Tip: *Using a flashlight, even in well-lit areas, greatly improves the quality of inspection. In busy and visually-distracting areas, the light beam serves as a focal point and highlights the area being inspected.*

X- & Y-Axis Linear Guideways

IMPORTANT: When performing lubrication procedures, make sure to protect laser optics and belts from any cleaning fluid or lubricating oil.

To clean and lubricate X & Y linear guideways:

1. DISCONNECT MACHINE FROM POWER!
2. Place clean shop rags under areas to be cleaned and lubricated.
3. Slowly push laser head assembly to left-most X-axis position.

   Note: *If you move any component driven by a stepper motor too quickly, it will promptly stop moving. Once charge dissipates, try moving component again at slower pace.*

4. Using clean shop rag lightly covered with sewing machine oil, wipe linear guideway and carriage until clean (see **Figure 60**).

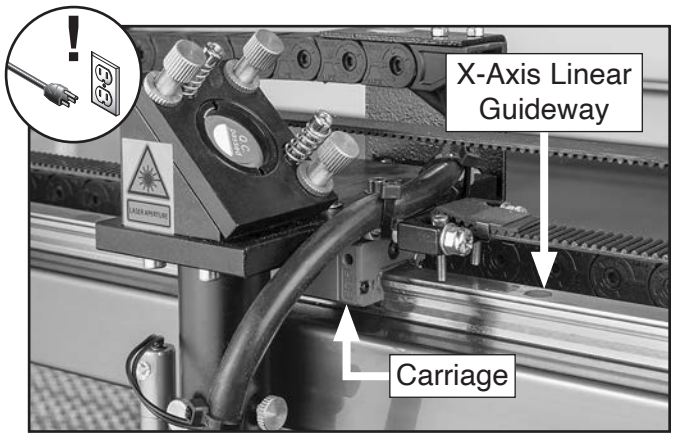


Figure 60. X-axis linear guideway and carriage.

5. Slowly push laser head assembly to right-most X-axis position.

6. Using clean shop rag lightly covered with sewing machine oil, wipe linear guideway and carriage until clean.

7. Dip rag in oil and apply a thin coating across entire surface of linear guideway.

8. Repeat **Steps 3–7** on left and right Y-axis linear guideways and carriages (see **Figures 61–62**).

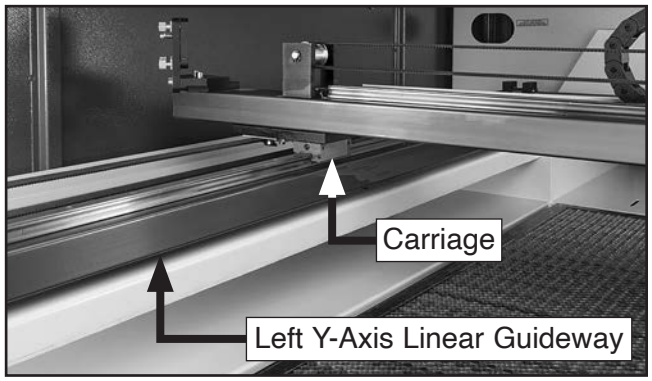


Figure 61. Left Y-axis linear guideway and carriage.

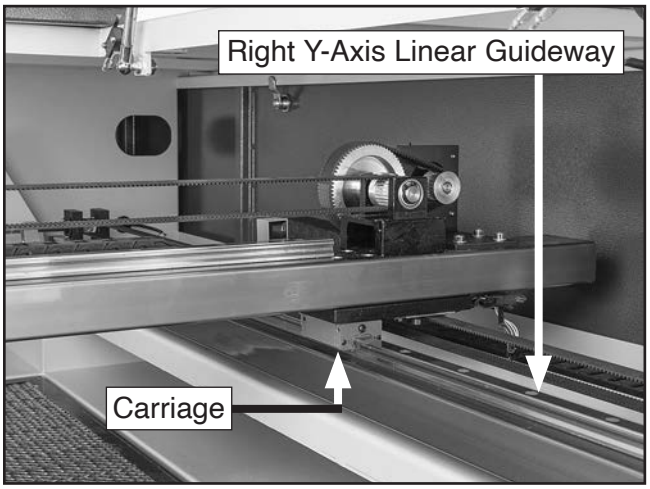


Figure 62. Example of right Y-axis linear guideway and carriage.

9. Remove and dispose of any shop rags left in area when finished.

Z-Axis Table Lift

The Model G0873/G0874 table is raised using the left and right arrow nav buttons (⬅ and ➡) on the control panel. At each corner of the table, a leadscrew threaded through a leadscrew nut raises and lowers the table.

A pair of leadscrews on the left and right side are timed with one another by a synchronous belt, belt tensioner, and stepper motor (see **Figure 63**).

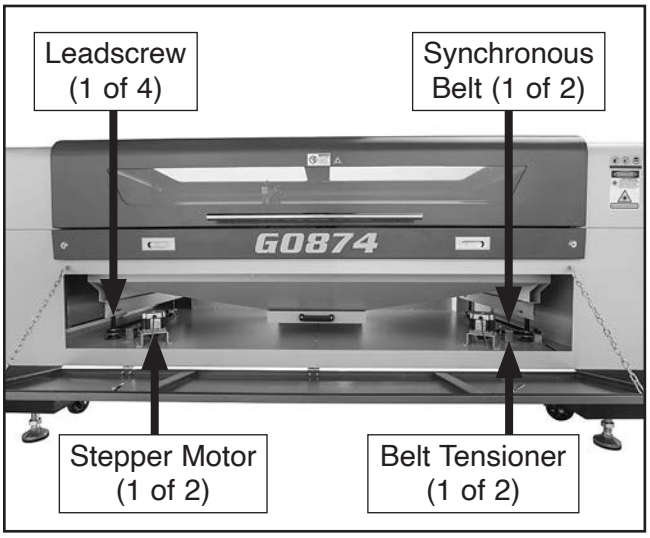


Figure 63. Z-Axis table lift assemblies.

To clean and lubricate Z-Axis table lift:

1. DISCONNECT MACHINE FROM POWER!

2. Access lower cabinet by opening front access door.

3. Use stiff brush to loosen existing build-up and vacuum all contaminants from leadscrews, synchronous belts, belt tensioners, and stepper motors (see **Figures 64–65**).

4. Use clean shop rags to protect synchronous belts from cleaning fluids and lubricating oil (see **Figures 64–65**).

   — If leadscrews have heavy contamination, use stiff-bristled brush and rag with mineral spirits to clean threads.

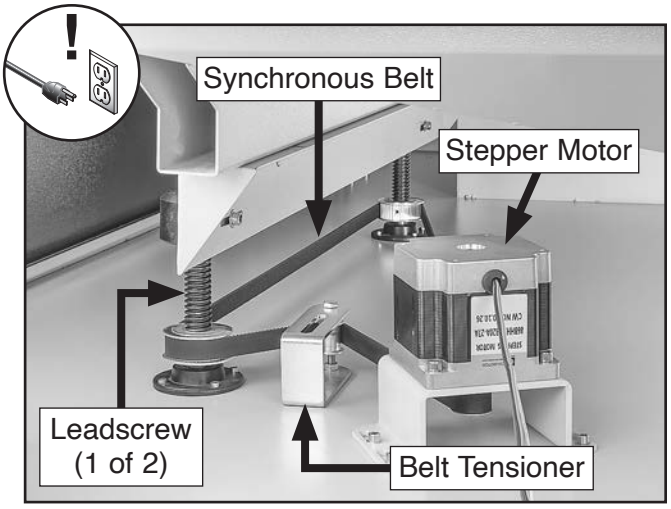


Figure 64. Example of left Z-Axis table lift components.

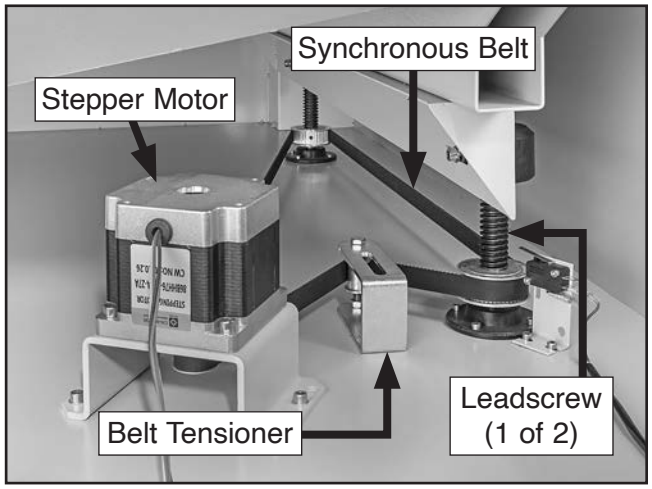


Figure 65. Example of right Z-Axis table lift components.

5. Allow leadscrews to dry after cleaning, and apply light coating of sewing machine oil.

6. Move table up and down the full range of movement to distribute oil over leadscrews.

Belts & Pulleys

The rotational direction of pulleys is controlled by the X and Y stepper motors, which are given directional coordinates by the CNC software.

The pulleys are toothed and engage with cogged synchronous belts to prevent slipping when the laser head moves along the linear guideways (see **Figure 66**). The bearings for these pulleys are sealed and maintenance-free.

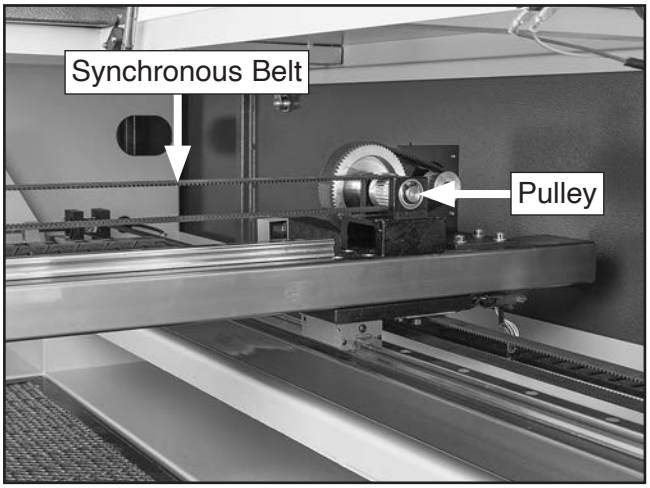


Figure 66. Example of synchronous belt and pulley.

NOTICE

DO NOT clean belts with acids, alkalis, oils, or solvents. Contact with chemicals and oils will accelerate belt deterioration.

To inspect and clean pulley belts and cogs:

1. DISCONNECT MACHINE FROM POWER!

2. Slowly move laser head along X- and Y-axes while inspecting condition of belts and pulley cogs with flashlight.

3. Check for belt deflection (see **Adjusting Synchronous Belts** on **Page 60**).

4. Verify that left and right belts (where used) have same deflection, or binding may occur.

5. Remove any contaminants in crevices of cogs or teeth by using a firm-bristled toothbrush while supporting underside of belt with your finger to prevent stretching.

   Note: *Material build-up on cogs or teeth can cause bumps or notches in cutting path.*

6. If any belts have cracks or damaged teeth, replace as instructed in **Replacing Synchronous Belts** on **Page 62**.

Maintaining Laser Components

The laser tube on the Model G0873/G0874 has no maintenance requirements other than protecting it from freezing when filled with water, and periodic inspection to verify water connections are secure, large air bubbles are not present in the tube, and electrical contacts are clean and free from corrosion.

The laser tubes, lenses, and mirrors are consumable parts and are covered under warranty only for defects that occur during shipping. Periodic replacement is required and should be done as a complete set.

The life expectancy of the laser tube is affected by laser burn-time, laser strength setting, heating and cooling cycles, and the natural dissipation of gas from the laser tube.

IMPORTANT: Grizzly Industrial *does not* recommend having a second laser tube on hand for longer than **three months**. Laser tubes are perishable and will lose their efficiency over time by just sitting on the shelf.

Tip: *To cover the operating cost of a replacement laser tube, divide the price of a replacement laser tube by the amount of units you expect to produce. This calculation does not take into account length of laser run time, or power settings required for different types of widgets, but it will provide a baseline value to add to each unit to cover laser tube operating costs.*

Laser Optics Introduction

CNC laser cutters and engravers are a new generation of highly sensitive machines available for the general consumer market, and require special attention to properly maintain.

Note: *When replacing the laser tube, it is highly recommended that lenses and mirrors are also replaced.*

The beam emitted from the laser tube is reflected three times before reaching the focal point on the workpiece. This alternating direction of laser travel is achieved by mirrors. Optimum performance of the machine is largely affected by the ability of these lenses and mirrors to focus and reflect the beam without diffusion.

Over time, smoke, fumes, and dust will coat the reflective surfaces and diffuse the beam, resulting in low-quality cuts.

If the lenses and mirrors are not kept clean, any ash or dust on the surface will absorb laser energy. This energy converts to heat, causing a "thermal lens effect," where the optics will become permanently pitted after normal use. As a result, laser machine optics are considered consumable.

Once the optics have begun degrading, the user will have to increase laser power over time to achieve the same cutting results. The longer the laser tube is operated at higher power settings, the sooner the tube will require replacing.

Treat laser optics with care and protect delicate surfaces from improper cleaning methods, and ambient contaminants. Even the smallest dust particle can cause microscopic scratching if the surface is wiped by hand. Microscopic scratches will increase the damage caused by "thermal lens effect."

Follow these best practice guidelines when cleaning laser optics:

- DO NOT use compressed air to clean optics. Compressed air contains microscopic oil and water particles.
- DO NOT use a vacuum nozzle with an attached brush. Even soft brushes can scratch laser lenses and mirrors.
- DO NOT blow on the optics. Moisture droplets can stain the surface.
- DO NOT touch the film layer of the lens when removing. Hold lenses and mirrors by the edges when transporting.
- Keep all optics in a clean, dry container protected with soft lens paper prior to cleaning.
- Prepare all cleaning surfaces with several layers of new lens cotton or paper. DO NOT use shop rags, newspapers, or paper towels, which might be contaminated with microscopic abrasives.
- Set up the cleaning area indoors, away from wind and airborne particulates.
- DO NOT eat or drink while cleaning optics.

Cleaning Laser Optics

The most important step when working around optics is to thoroughly wash and dry hands. In the event you have to handle lenses or mirrors, wearing sterile, disposable gloves is recommended.

Items Needed	Qty
Small Bellows	1
Optics-Grade Cotton Swabs	As Needed
Lens Paper	As Needed
Denatured/Isopropyl Alcohol	As Needed
Clean Shop Rags	As Needed

Method 1 (Optics Installed)

When lenses and mirrors are installed, they can be cleaned using a cotton swab (see **Figure 67**).

IMPORTANT: While cleaning optics, make sure to protect the pulley belts from all cleaning fluids. Belts will deteriorate from contact with chemicals and oils.

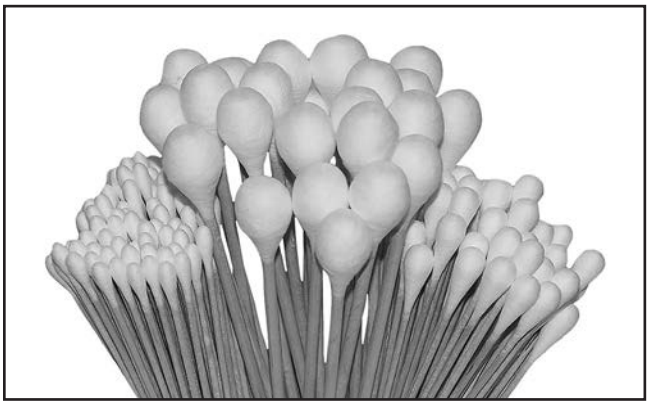


Figure 67. Typical optics-grade cotton swabs.

To clean installed laser optics:

1. DISCONNECT MACHINE FROM POWER!
2. Use small bellows to blow any particulates off lens/mirror surface.

   IMPORTANT: DO NOT physically wipe lenses or mirrors.
3. Soak ends of several cotton swabs in denatured or isopropyl alcohol. Saturate swabs with enough solution to be moist, but when pressed against a surface, solution does not squeeze out and drip.
4. With gentle rolling motion, roll swab across surface of lens/mirror to absorb any particulates stuck to surface (see **Figure 68**).

   Tip: *Dislodge and lift particulates off of surface by rolling cotton swab, which exposes clean cotton as you progress. Rubbing or dragging swab across surface without rolling it can create scratches and damage lens and mirrors.*

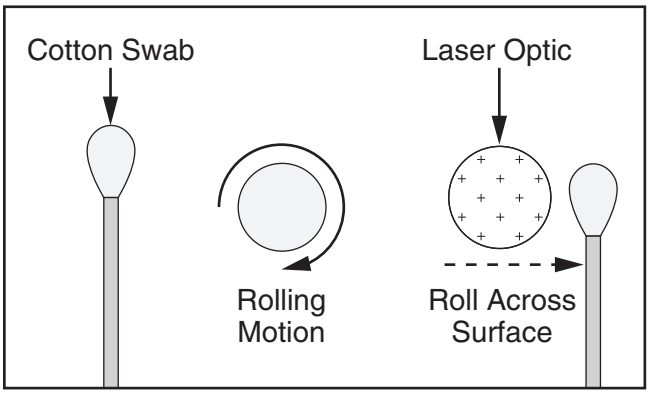


Figure 68. Rolling swab across surface.

5. Moisten dry swab with 1–3 drops of same solution, roll swab across surface of lens/mirror, and allow surface to air dry.

6. Inspect lens/mirror surface:

   — If any particulates or surface stains remain, repeat **Steps 2–5**.

   — If any particulates or surface stains are still present after second cleaning, they are most likely permanently burned into surface. Replace optics as instructed in **Removing/Replacing Laser Optics** on **Page 78**.

Method 2 (Optics Removed)
When lenses and mirrors are removed, they can be cleaned using the "Drop and Drag" method used for cleaning camera and microscope lenses.

To clean removed laser optics:

1. DISCONNECT MACHINE FROM POWER!

2. Use small bellows to blow any particulates off lens/mirror surface.

   IMPORTANT: DO NOT physically wipe lenses or mirrors.

3. Place small drop of denatured/isopropyl alcohol on center of lens cleaning paper.

   Note: *Flooding paper with solvent only leaves residual streaks. Only place enough solvent so that paper conforms to surface, and solvent does not absorb to edge of paper.*

4. Grab edge of paper and slowly pull across lens/mirror surface (see **Figure 69**). Allow surface to air dry.

   Note: *Dry edge of paper removes any residual solvent and streaking. This method does not scratch optics since no downward force is being applied to paper.*

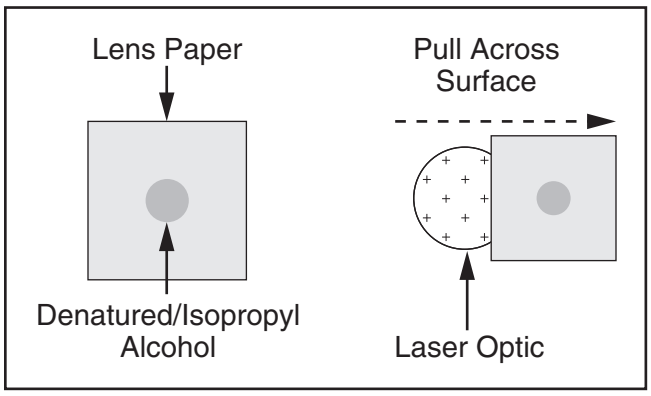


Figure 69. Pulling lens paper across surface.

5. Inspect lens/mirror surface:

   — If any particulates or surface stains remain, repeat **Steps 2–4** using clean sheet of lens cleaning paper for every pass.

   — If any particulates or surface stains are still present after second cleaning, they are most likely permanently burned into surface. Replace optics as instructed in **Removing/Replacing Laser Optics** on **Page 78**.

Water Chiller System

Water quality and effective cooling directly contribute to the operational life of the laser tube. The cooling system requires distilled water to prevent scaling and contaminant build-up. Due to oxygenation and warm temperatures inherent in the system, water needs to be checked regularly for evidence of algae or unpleasant odors. Mildew growth can reduce cooling efficiency and decrease tube life.

NOTICE

DO NOT use chemical additives such as automotive antifreeze or bleach to prevent freezing and algae growth. Additives can degrade cooling efficiency, damage components, and cause excess electrical conductivity within the laser tube.

Operational load determines actual maintenance intervals. General maintenance of the water chiller system is as follows.

To inspect and maintain water chiller system:

1. DISCONNECT WATER CHILLER SYSTEM FROM POWER!

2. Inspect radiator fan intake screen for blockage, and clean as required.

3. Inspect hoses and connections for leaks or damage, and repair or replace as required.

4. Inspect water for discoloration and evidence of algae. If contaminated, drain water, clean reservoir, and refill with distilled water.

5. Reconnect water chiller system to power and turn ***ON***. Allow water to cycle for 1 minute and verify air bubbles have released from laser tube.

6. Verify water level is in green area on water level gauge.

   Note: *For additional information on alarm codes and troubleshooting guidelines, see owner's manual included with water chiller.*

Cleaning Air Pump Filter

The air pump requires no internal maintenance, but uses a foam filter to maintain clean air delivery to the laser focal point.

Operating time and cleanliness of the air drawn into the pump determines actual maintenance intervals.

To clean air pump filter:

1. DISCONNECT AIR PUMP FROM POWER!

2. At intake-end of air pump, loosen Phillips head screw, and remove cover plate.

3. Remove foam filter (see **Figure 70**), and soak in solution of warm water and dish soap.

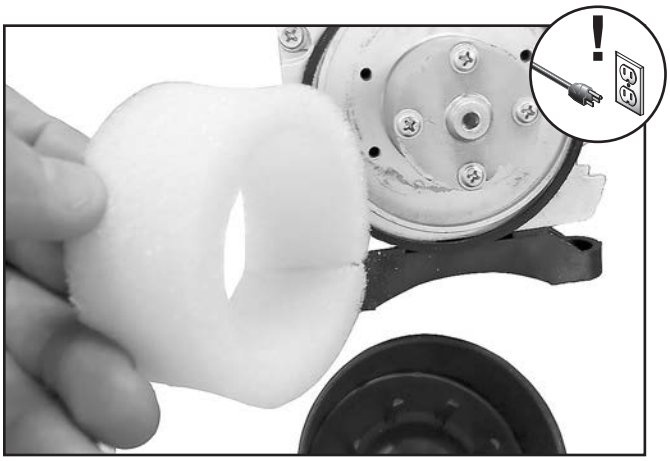


Figure 70. Typical air pump foam filter.

4. Wrap clean shop rag around foam filter and dry with a few firm squeezes.

   Note: *DO NOT use compressed air to dry filter or damage may occur.*

5. Inspect foam filter for holes, rips, or tears. Replace as required.

6. Inspect tubing and filter cover for cracks and leakage. Replace as required.

7. Re-install filter and secure cover with screw removed in **Step 2**.

Extraction Fan

The extraction fan requires no internal maintenance, and only regular visual inspections and light cleaning to remain operational.

Operating time and cleanliness of the air drawn through the fan determines actual maintenance intervals.

To inspect and clean extraction system:

1. DISCONNECT EXTRACTION FAN FROM POWER!

2. Inspect ducting for evidence of leaks. Patch or replace ducts as required.

   Note: *If screens have been attached to inlet/outlet ducts to prevent pest infestation, inspect and clean them as required.*

3. Verify duct clamps and power cord are secure and undamaged.

4. Verify extraction fan is securely mounted in accessible location where ducting can be removed and cleaned during maintenance.

5. Disconnect ducting and separate from extraction fan far enough to gain access to input and output ports.

6. Vacuum chips, dust, and ash from extraction fan intake screen.

7. Vacuum deposits at bends in ducting.

8. Re-attach ducting to extraction fan and secure.

NOTICE

If extraction outlet ducting is routed outside, install metal screen on duct opening to prevent invasive animals from nesting in extraction system.

Machine Storage

For long-term machine storage, or when not in operation during winter months, it is MANDATORY that ALL water is drained from the laser tube. Freezing temperatures can be encountered even in heated buildings or storage facilities from power outages. Water left in the laser tube may freeze and break the internal glass cooling coils. Damage to the laser tube after shipping is NOT covered under warranty.

Grizzly Industrial recommends that the Model G0873/G0874 be stored in a sealed, wooden crate for long-term storage over a year. Place generous quantities of desiccant bags in the laser cabinet, electrical boxes, and in the crate before sealing.

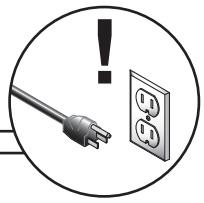
Perform ALL maintenance procedures for cleaning and lubrication as outlined in **SECTION 6: MAINTENANCE** on **Page 47** before placing machine into storage.

When bringing machine out of storage, follow all procedures for setup and testing as instructed in **SECTION 3: SETUP** on **Page 18**.

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. Safety key removed or switch in OFF position. 3. Machine circuit breaker tripped or at fault (G0874 Only). 4. Blown fuse. 5. Incorrect power supply voltage or circuit size. 6. Power supply circuit breaker tripped or fuse blown. 7. Auxiliary system(s) has a short. 8. Control/ground wiring broken, disconnected, or corroded. 9. Start button at fault (G0874 Only). 10. Safety key switch at fault. 11. Circuit breaker switch at fault (G0874 Only). 12. Control panel/controller at fault. 13. Laser tube at fault. 14. Power supply at fault. 15. Motor or motor bearings at fault.	1. Rotate Emergency Stop button head to reset. Replace if at fault. 2. Insert safety key and turn to ON position. 3. Ensure circuit is free of shorts. Reset circuit breaker. 4. Replace fuse/ensure no shorts. 5. Ensure correct power supply voltage and circuit size (**Page 16**). 6. Ensure circuit is free of shorts. Reset circuit breaker or replace fuse. 7. Inspect/test/replace if at fault. 8. Fix broken control/ground wires or disconnected/corroded connections. 9. Replace button. 10. Replace switch. 11. Replace circuit breaker switch. 12. Inspect/test/replace if at fault. 13. Inspect for arcing at laser tube connections. Verify wire insulation is preventing discharge to frame. 14. Inspect/test/replace if at fault. 15. Replace motor.
Machine stalls or is underpowered.	1. Laser beam path not aligned. 2. Machine undersized for task. 3. Pulley slipping on shaft. 4. One or more synchronous belt(s) are damaged, binding, or slipping. 5. Motor overheated. 6. Extension cord too long. 7. Stepper motor at fault.	1. Properly align laser beam path (**Page 72**). 2. Increase power settings/decrease speed/use thinner workpiece (**Page 41**). 3. Tighten/replace loose pulley. 4. Inspect synchronous belt(s) on each axis for damage or debris. Adjust belt(s) (**Page 60**). 5. Clean motor, let cool, and reduce workload. 6. Move machine closer to power supply; use shorter extension cord. 7. Test wire continuity between stepper motor and stepper driver; repair/replace if at fault. Test/repair/replace stepper motor.

Motor & Electrical (Cont.)

Symptom	Possible Cause	Possible Solution
Machine has vibration or noisy operation.	1. Guideway(s) contaminated or damaged.	1. Clean and lubricate guideways (**Page 48**). Inspect guideway(s) for damage; replace.
	2. Stepper motor or component loose.	2. Replace damaged or missing fasteners or tighten if loose.
	3. Machine incorrectly supported.	3. Adjust feet, shim, or tighten mounting hardware.
	4. Synchronous belt(s) worn, loose, pulleys misaligned, or belt slapping component.	4. Inspect/replace synchronous belt(s) (**Page 60**). Realign pulleys if necessary.
	5. Pulley loose.	5. Secure pulley on shaft.
	6. Workpiece loose.	6. Use holding fixture/secure workpiece with clamps.
	7. Stepper motor bearings at fault.	7. Test by rotating shaft; rotational grinding/loose shaft requires bearing replacement.
	8. Table and/or components misaligned.	8. Test/replace.

Laser Operations

Symptom	Possible Cause	Possible Solution
Flash drive is not read by controller, or file unable to load.	1. Incorrect file structure or wrong file format.	1. Use a FAT16/FAT32 formatted flash drive with artwork saved in RDWorks (.RD) format.
	2. Artwork file not saved using RDWorks software.	2. Save artwork file using included RDWorks software (**Page 32**).
	3. Controller memory is full.	3. Delete files from controller memory (**Page 98**).
	4. USB extension cable faulty.	4. Controller memory is full.
Laser beam has poor cutting or engraving quality.	1. Path, layer, or other CAD error exists.	1. Review RDWorks settings and verify that artwork file is free of errors.
	2. Incorrect laser speed or laser power setting.	2. Review RDWorks speed/power settings (**Page 33**) and verify that speed/power is set properly for current workpiece material (**Page 41**).
	3. Focal length is not set correctly.	3. Inspect/adjust focal length (**Page 38**). Inspect/adjust table level (**Page 67**).
	4. Laser beam path not aligned.	4. Verify mirrors are secure; reflective side is facing outward (**Page 78**). Align laser beam path (**Page 72**). Clean laser optics (**Page 52**).
	5. Laser path is obstructed by smoke or debris.	5. Verify air supply hose is unobstructed and connected to air nozzle. Verify extraction fan is functional and ducting is unobstructed.
	6. Laser unable to cut or engrave workpiece.	6. Workpiece beyond machine ability (**Page 41**).
	7. Laser cut is too wide.	7. Verify mirrors are secure and reflective side is facing outward (**Page 78**). Align laser beam path (**Page 72**). Clean laser optics (**Page 52**). Inspect/adjust table level (**Page 67**).
	8. Laser head has vibration or lash (workpiece path shows distortion/overlap).	8. Adjust/replace belts (**Page 62**). Inspect/adjust gantry components for loose fasteners or binding. Set origin in different location.
	9. Workpiece buckling or moving.	9. Use honeycomb table for thin workpiece support. Use clamps to secure workpiece.
	10. Laser output creating sawtooth pattern on cuts or engravings.	10. Increase laser power (**Page 33**). Inspect workpiece for impurities that ignite (**Page 41**).
	11. Laser tube at fault.	11. Inspect/test/replace laser tube (**Page 67**). Inspect/test/replace high-voltage power supply.
	12. Controller, power supply, or control panel at fault.	12. Inspect/test/replace as required.

Laser Operations (Cont.)

Symptom	Possible Cause	Possible Solution
Laser tube inoperative or laser powers ***OFF*** while machine is operating.	1. Top loading door open or interlock switch activated. 2. Water chiller system not cooling laser tube; temperature switch activates or water chiller alarm sounds. 3. Water chiller flow sensor inoperative. 4. Laser tube electrical connections at fault. 5. Laser tube at fault. 6. Auxiliary system(s) has a short. 7. Electrical system at fault.	1. Close top loading door; replace top loading door interlock switch and test operation (**Page 27**). 2. Inspect/test/replace water chiller system (**Page 54**). Reduce ambient temperature of machine environment. Add ice to reservoir or add additional water chilling equipment, as required. 3. Test/replace water flow sensor. 4. Verify laser tube electrical connections are correct and secure. 5. Inspect/test/replace laser tube (**Page 67**). 6. Inspect/test/replace if at fault. 7. Inspect/test/replace electrical system components, as required.

Machine Operations

Symptom	Possible Cause	Possible Solution
One axis will not move after control panel receives commands.	1. Axis limit/proximity switch activated or at fault. 2. Faulty electrical connection. 3. Incorrect vendor parameters.	1. Test limit/proximity switch operation (**Page 27**). Replace if at fault 2. Check connection to stepper motor. Check control panel connection to controller. Adjust stepper driver DIP switch configuration (**Page 79**). 3. Verify vendor parameters; contact Grizzly Tech Support.
All axes will not move after control panel receives commands.	1. Faulty electrical connection or component. 2. Incorrect vendor parameters.	1. Check control panel connection to controller. Adjust stepper driver DIP switch configuration (**Page 79**). Inspect/replace power supply to stepper motors. Inspect/replace gantry components. 2. Verify vendor parameters; contact Grizzly Tech Support.
Axis movement and location not repeatable.	1. Origin incorrectly set in artwork file. 2. One or more stepper driver(s) have incorrect DIP switch configuration. 3. Guideway(s) contaminated or damaged. 4. One or more synchronous belt(s) are damaged or binding.	1. Review RDWorks settings and verify that origin is set correctly. 2. Adjust stepper driver DIP switch configuration (**Page 79**). 3. Clean and lubricate guideways (**Page 48**). Inspect guideway(s) for damage; replace if at fault. 4. Inspect/replace synchronous belt(s) (**Page 62**). Realign pulleys if necessary.
One or more axes only move in one direction.	1. Controller/stepper motor connection loose. 2. Incorrect vendor parameters. 3. Control panel/controller at fault. 4. Stepper motor(s) at fault. 5. Stepper driver(s) at fault.	1. Inspect connections and ensure all are secure. 2. Verify vendor parameters; contact Grizzly Tech Support. 3. Inspect/replace control panel/controller. 4. Inspect/replace stepper motor(s). 5. Adjust stepper driver DIP switch configuration (**Page 79**). Replace if at fault.

Machine Operations (Cont.)

Symptom	Possible Cause	Possible Solution
One or more axes will not move.	1. Direction wire and pulse wire switched on controller connector. 2. Stepper motor(s) disconnected. 3. Stepper motor(s) at fault. 4. No pulse signal from controller.	1. Rewire direction/pulse wire on controller connector. 2. Reconnect stepper motor(s). 3. Inspect/replace stepper motor(s). 4. Inspect/replace controller.
Machine fails to home, or moves beyond soft limits when homing.	1. Incorrect vendor parameters. 2. Faulty electrical connection. 3. Limit/proximity switch not aligned. 4. Loose limit/proximity switch wire. 5. Limit/proximity switch at fault. 6. Controller at fault.	1. Verify vendor parameters; contact Grizzly Tech Support. 2. Find/secure electrical connection. 3. Inspect/adjust limit/proximity switch. 4. Find/secure electrical connection. 5. Test limit/proximity switch (**Page 27**). Repair/replace limit/proximity switch. 6. Inspect/replace if at fault.

Auxiliary Systems Operations

Symptom	Possible Cause	Possible Solution
Auxiliary system does not start, or machine circuit breaker immediately trips after startup.	1. Machine circuit breaker tripped or at fault (G0874 Only). 2. Extraction fan connected to same power supply as machine. 3. Incorrect power supply voltage or circuit size. 4. Power supply circuit breaker tripped or fuse blown. 5. Control/ground wiring broken, disconnected, or corroded. 6. Power supply at fault. 7. Auxiliary system at fault.	1. Reset machine circuit breaker; connect auxiliary systems to power supply separate from machine (**Page 16**). 2. Connect extraction fan to power supply separate from machine (**Page 16**). 3. Ensure correct power supply voltage and circuit size; connect auxiliary systems to power supply separate from machine (**Page 16**). 4. Ensure circuit is free of shorts. Reset circuit breaker or replace fuse. 5. Fix broken control/ground wires or disconnected/corroded connections. 6. Inspect/test/replace if at fault. 7. Inspect/test/replace if at fault.

Adjusting Synchronous Belts

The Model G0873/G0874 uses toothed synchronous belts that engage with a cogged drive pulley.

After long-term use, one or more synchronous belts may have to be adjusted. To maximize belt life, and maintain adequate cut quality, follow these recommended guidelines:

- Unlike V-belts, the synchronous belts *must not* be allowed to slip under any circumstances, or the workpiece will be ruined due to laser coordinates straying from the programmed path. Synchronous belt tension only needs to keep the belt teeth engaged with the pulley cogs under a light load.
- Excessive belt tension will wear out delicate pulley bearings and stretch the belt.
- Insufficient belt tension will cause noisy directional changes due to belt slip, and reduce resolution quality of the cut.

The following sections show proper belt tension deflection values for each axis. See **Figure 71** for a typical method of testing belt deflection using moderate pressure.

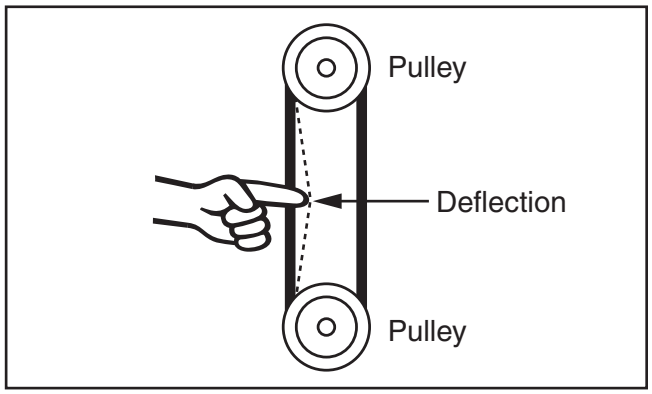


Figure 71. Testing belt deflection.

Items Needed	Qty
Caliper or Precision Ruler	1
Hex Wrenches 2.5, 3mm	1 Ea.
Open-End Wrench 7mm	1
Phillips Head Screwdriver #2	1
Clean Shop Rags	As Needed

X-Axis Belt Adjustment

1. DISCONNECT MACHINE FROM POWER!
2. Open top loading door and center laser head assembly over table.
3. Test for approximately 10mm of deflection on top side of belt at its center (see **Figure 72**).
   - — If belt deflection is approximately 10mm, no adjustment is required.
   - — If belt deflection is *greater than* or *less than* 10mm, proceed to **Step 4**.

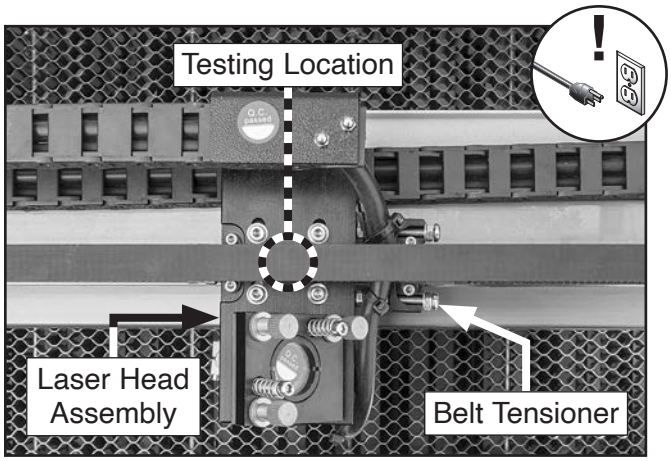


Figure 72. X-axis belt deflection testing location.

4. To adjust belt tension, loosen (4) jam nuts on belt tensioner, loosen or tighten (2) Phillips head screws, then secure jam nuts (see **Figure 73**). Repeat **Step 3**.

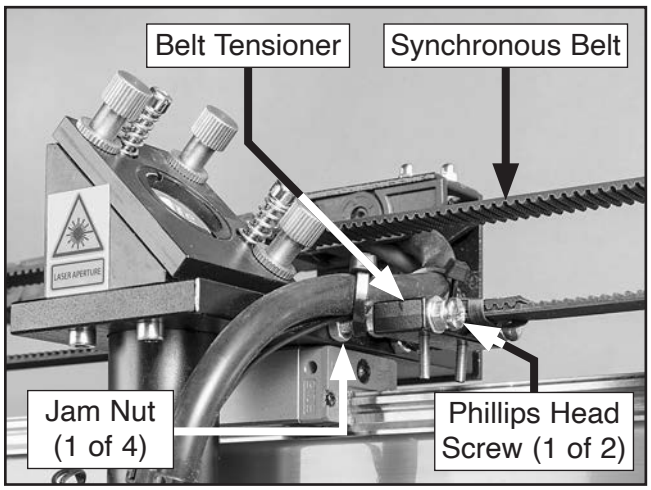


Figure 73. X-axis belt tensioner components.

Y-Axis Belts Adjustment

1. DISCONNECT MACHINE FROM POWER!

2. Open top loading door and center laser head assembly over table.

   Note: *Y-axis synchronous belt components are the same on left and right sides.*

3. Test for approximately 8mm of deflection on bottom side of Y-axis belt at its center (see **Figure 74**).

   — If belt deflection is approximately 8mm, no adjustment is required.

   — If belt deflection is *greater than* or *less than* 8mm, proceed to **Step 4**.

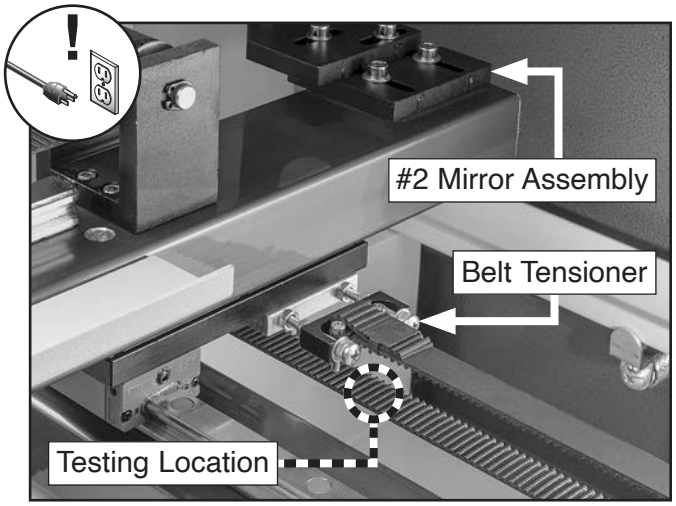


Figure 74. Right Y-axis belt deflection testing location.

4. To adjust belt tension, loosen (4) jam nuts on belt tensioner, loosen or tighten (2) Phillips head screws, then secure jam nuts (see **Figure 75**). Repeat **Step 3**.

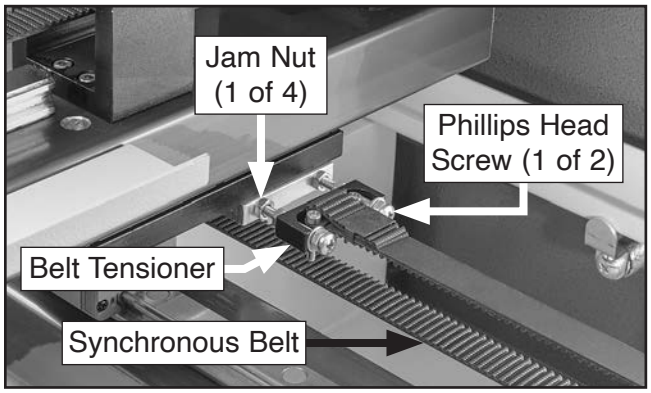


Figure 75. Y-axis belt tensioner components.

5. Repeat **Step 3** on opposite Y-axis synchronous belt.

Z-Axis Belts Adjustment

1. Turn machine ***ON***, press Z/U button on control panel to access Z/U menu, then highlight "Z move".

2. Press left arrow nav button (⬅) on control panel to raise table all the way up.

3. DISCONNECT MACHINE FROM POWER!

4. Open front access door.

   Note: *Z-axis synchronous belt components are the same on left and right sides.*

5. Test for approximately 8mm of deflection on top side of Z-axis belt at its center between table leadscrews (see **Figure 76**).

   — If belt deflection is approximately 8mm, no adjustment is required.

   — If belt deflection is *greater than* or *less than* 8mm, proceed to **Step 6**.

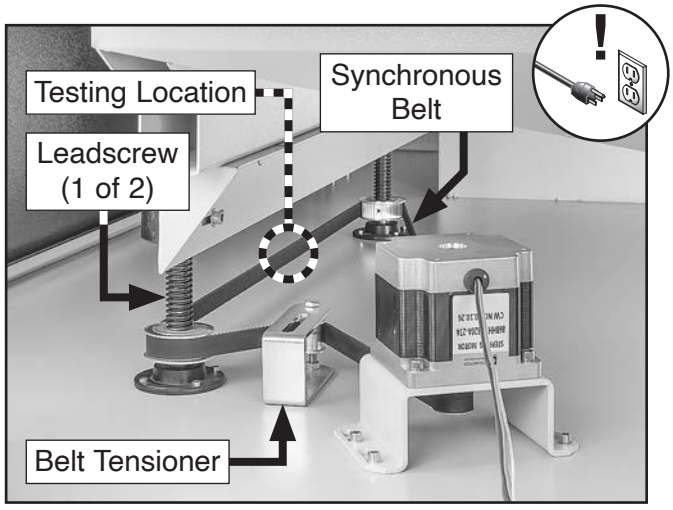


Figure 76. Example of left Z-axis belt deflection testing location.

6. To adjust belt tension, loosen (2) cap screws on belt tensioner, adjust belt tensioner towards or away from belt, then secure cap screws (see **Figure 77**). Repeat **Step 5**.

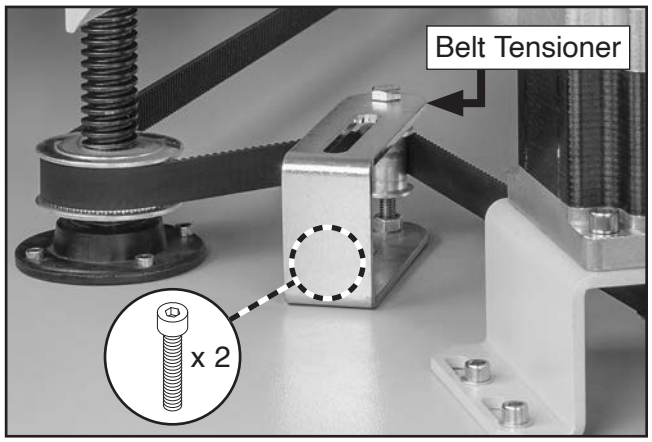


Figure 77. Example of Z-axis belt tensioner components.

7. Repeat **Step 5** on opposite Z-axis synchronous belt.

Replacing Synchronous Belts

If a synchronous belt begins to slip or has frayed after long-term use, the belt should be replaced. The following section outlines procedures for replacing the synchronous belts on the Model G0873/G0874.

Items Needed	Qty
Hex Wrenches 2.5, 3, 5mm	1 Ea.
Scissors	1
Wood Blocks	As Needed
Replacement Synchronous Belts	As Needed
Clean Shop Rags	As Needed

X-Axis Belt Replacement

1. DISCONNECT MACHINE FROM POWER!

2. Open top loading door and center laser head assembly over table.

3. Remove (2) cap screws on right belt mounting bracket securing X-axis synchronous belt, then remove bracket from belt, as shown in **Figure 78**.

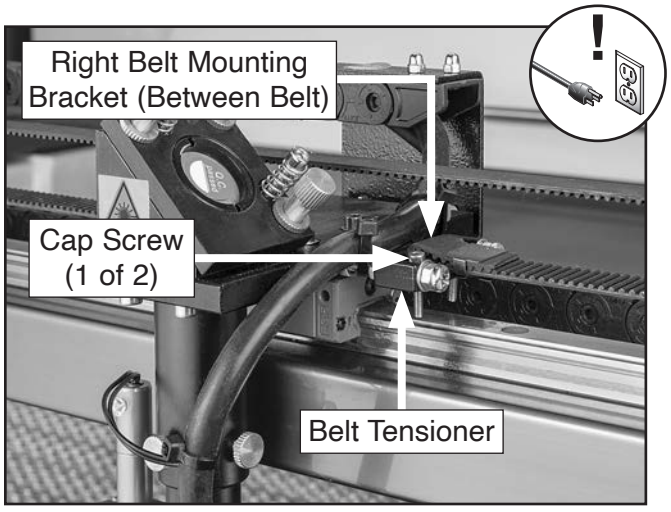


Figure 78. X-axis right belt mounting bracket location.

4. Remove (2) cap screws on left belt mounting bracket securing X-axis synchronous belt, then remove bracket from belt, as shown in **Figure 79**.

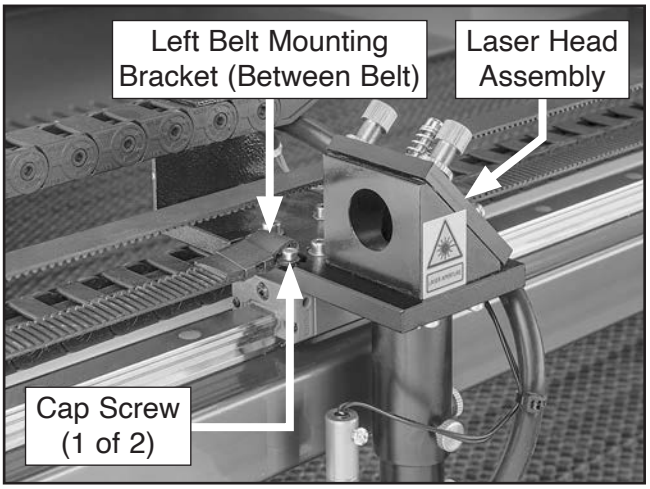


Figure 79. X-axis left belt tensioner bracket location.

5. Remove belt from idler pulleys on both sides of gantry, then remove belt from machine (see **Figure 80**).

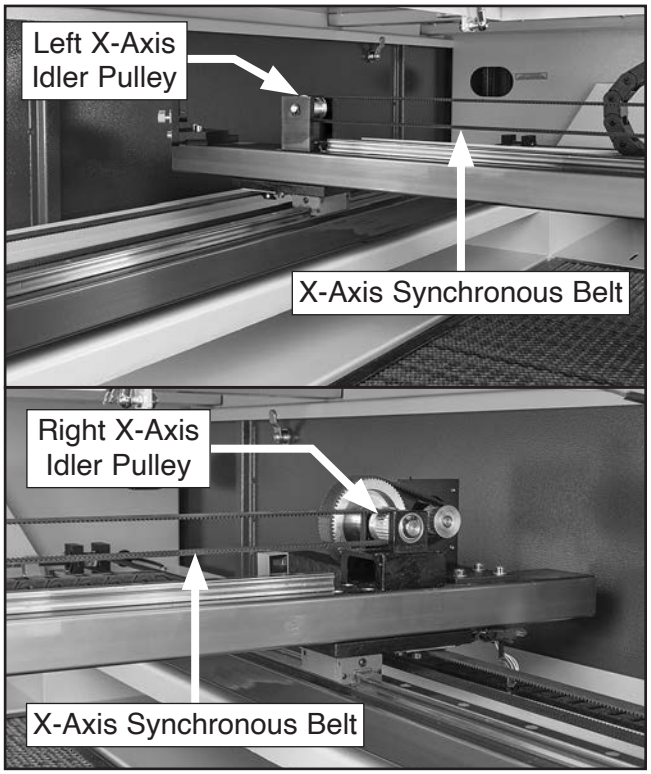


Figure 80. Left and right X-axis idler pulley locations.

6. Install replacement synchronous belt through left and right idler pulleys and verify belt meshes with pulley teeth (see **Figure 81**).

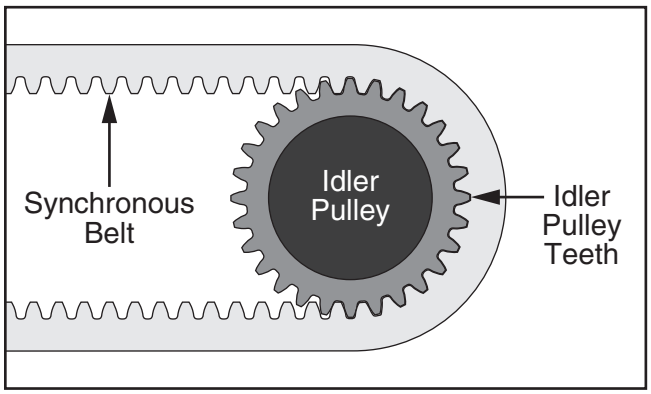


Figure 81. Synchronous belt meshing with idler pulley teeth.

7. Insert right belt mounting bracket between right belt loop and install bracket using (2) cap screws removed in **Step 3** (**Page 62**).

8. Insert left belt mounting bracket between left belt loop and install bracket using (2) cap screws removed in **Step 4**.

9. Verify correct X-axis synchronous belt deflection, as shown in **X-Axis Belt Adjustment** on **Page 60**.

Y-Axis Belt Replacement

1. DISCONNECT MACHINE FROM POWER!

2. Open top loading door and center laser head assembly over table.

3. Open left or right upper side access door depending on which belt needs to be replaced.

   Note: *Y-axis synchronous belt components are the same on left and right sides.*

4. Remove (2) cap screws on rear belt mounting bracket securing Y-axis synchronous belt, then remove bracket from belt, as shown in **Figure 82**.

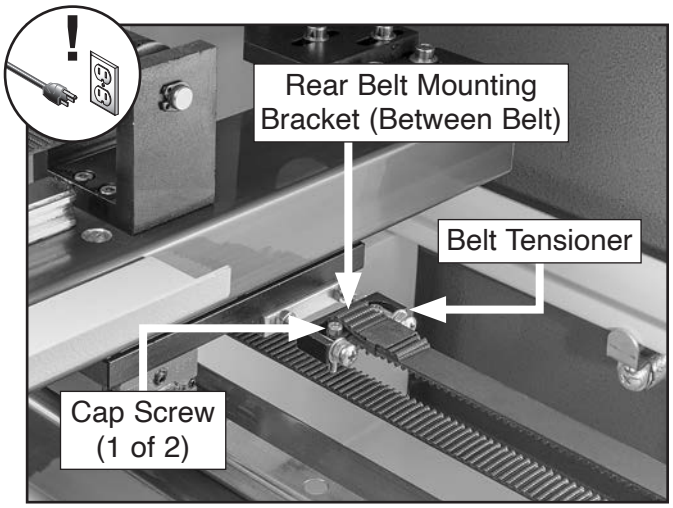


Figure 82. Y-axis rear belt mounting bracket location.

5. Remove (2) cap screws on front belt mounting bracket securing Y-axis synchronous belt, then remove bracket from belt, as shown in **Figure 83**.

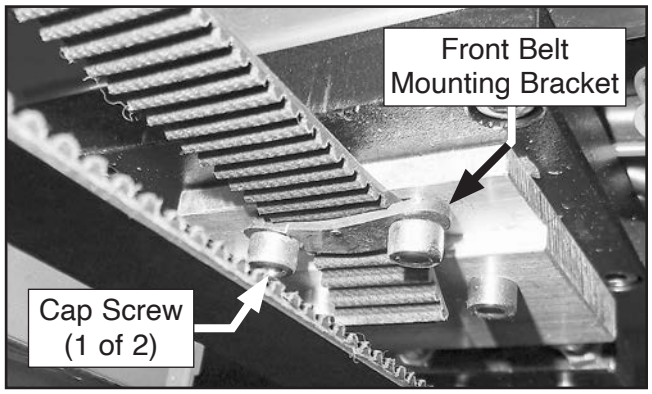


Figure 83. Y-axis front belt mounting bracket location.

6. Remove belt from idler pulleys on front and rear of support rail, then remove belt from machine (see **Figure 84**).

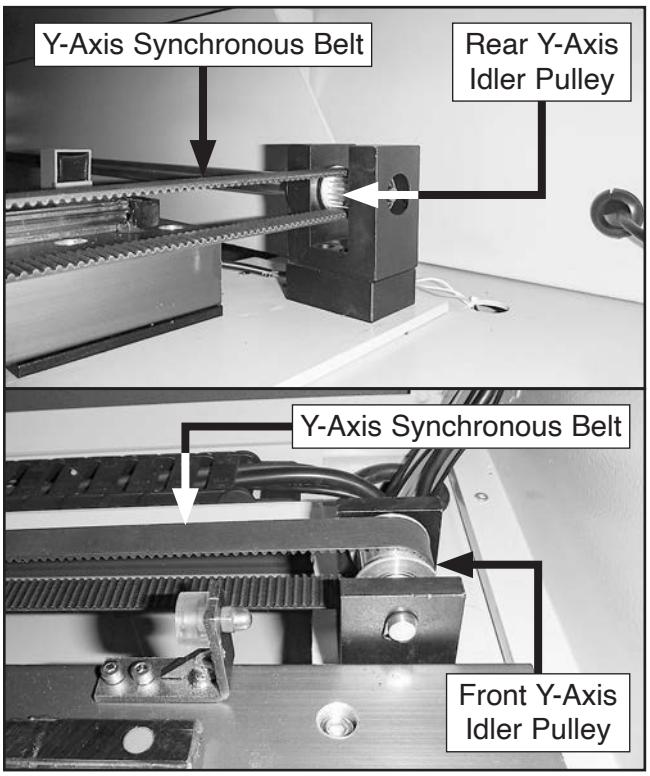


Figure 84. Front and rear Y-axis idler pulley locations.

7. Install replacement synchronous belt through front and rear idler pulleys and verify belt meshes with pulley teeth (see **Figure 81** on **Page 63**).

8. Insert rear belt mounting bracket between rear belt loop and install bracket using (2) cap screws removed in **Step 4**.

9. Insert front belt mounting bracket between front belt loop and install bracket using (2) cap screws removed in **Step 5**.

10. Verify correct Y-axis synchronous belt deflection, as shown in **Y-Axis Belts Adjustment** on **Page 61**.

Z-Axis Belt Replacement

1. Open front access door.

   Note: *Z-axis synchronous belt components are the same on left and right sides.*

2. Turn machine ***ON***, press Z/U button on control panel to access Z/U menu, then highlight "Z move".

3. Press left arrow nav button (⬅) on control panel to raise table enough to fit wood blocks under both table support brackets between leadscrews (see **Figure 85**). Lower table until support brackets rest on wood blocks.

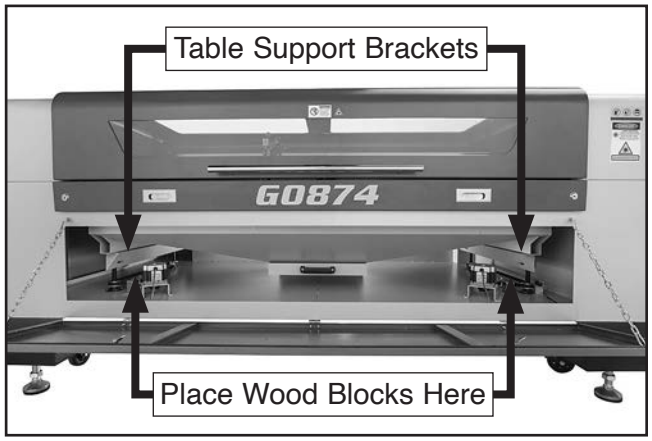


Figure 85. Z-axis table support brackets location (G0874 shown).

4. DISCONNECT MACHINE FROM POWER!

5. Loosen (2) cap screws on belt tensioner, then pull belt tensioner away from belt to release tension (see **Figure 86**).

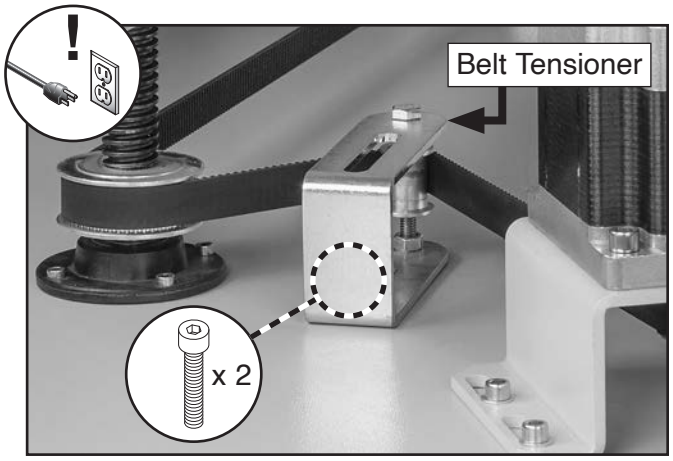


Figure 86. Example of Z-axis belt tensioner components.

6. With belt tension released, cut defective belt and remove from machine.

⚠CAUTION

Only remove one leadscrew at a time to maintain adequate table support or machine damage and personal injury may occur!

7. Remove (4) cap screws on front leadscrew lower mounting base (see **Figure 87**).

8. Remove (2) cap screws on front leadscrew upper mounting base (see **Figure 87**).

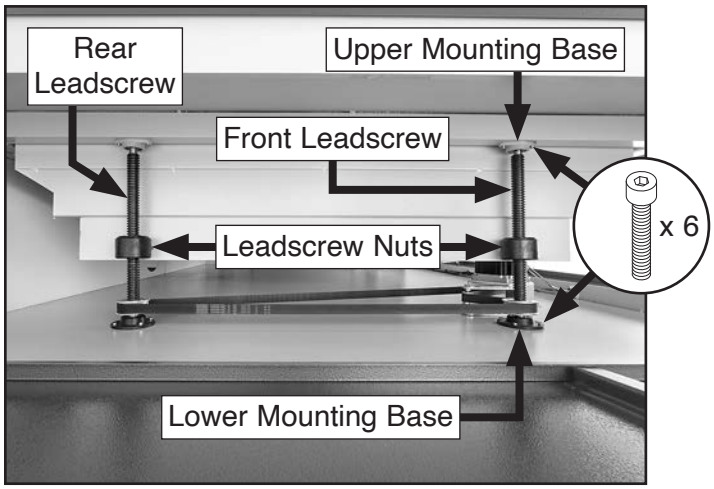


Figure 87. Leadscrew components location.

9. Remove (1) cap screw and flat washer from front leadscrew nut (see **Figure 88**).

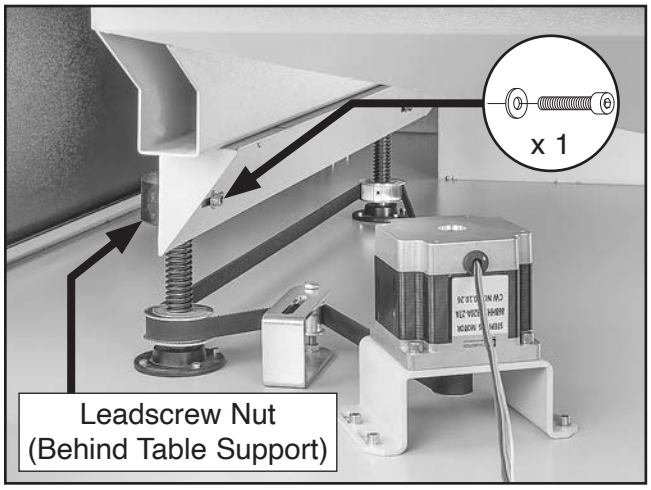


Figure 88. Example of leadscrew nut cap screw location.

10. Lift leadscrew and place replacement synchronous belt around leadscrew lower mounting base.

Note: *Keep synchronous belt out of the way to prevent damage during installation.*

11. Re-install (6) cap screws on leadscrew upper and lower mounting bases removed in **Steps 7–8** on **Page 65**.

12. Re-install (1) cap screw and flat washer on leadscrew nut removed in **Step 9** on **Page 65**.

13. Repeat **Steps 7–12** beginning on **Page 65** on rear leadscrew.

Note: *If replacing left Z-axis synchronous belt, open left lower side access door for easier access to rear leadscrew.*

14. Install replacement synchronous belt around front and rear leadscrew idler pulleys, and stepper motor idler pulley (see **Figure 89**).

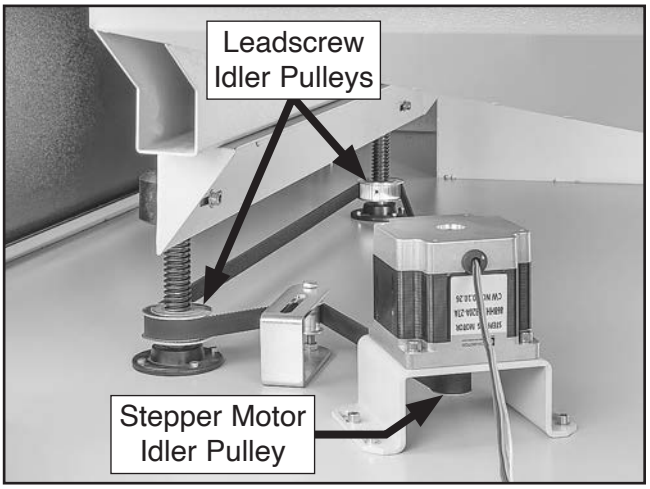


Figure 89. Example of synchronous belt around pulleys.

15. Verify belt meshes with all idler pulley teeth (see **Figure 90**).

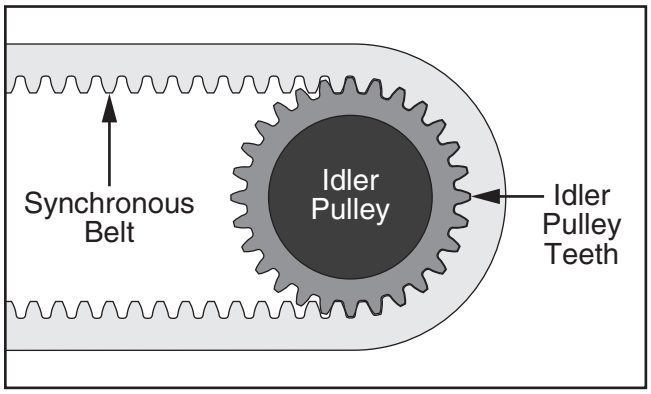


Figure 90. Synchronous belt meshing with idler pulley teeth.

16. Push belt tensioner towards belt, and then secure (2) cap screws (see **Figure 91**).

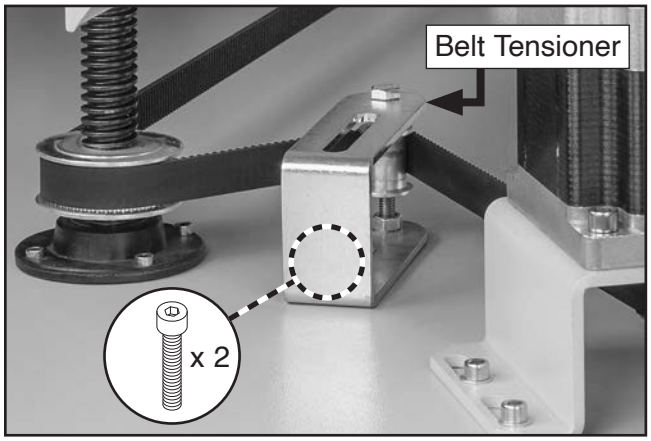


Figure 91. Example of Z-axis belt tensioner components.

17. Verify correct Z-axis synchronous belt deflection, as shown in **Z-Axis Belts Adjustment** on **Page 61**.

Leveling Table

The Model G0873/G0874 table may slowly twist or dip over time, causing inadequate workpiece cutting and variations in engraving quality.

Items Needed	Qty
Protective Gloves	1
Precision Ruler	1

To level table:

1. DISCONNECT MACHINE FROM POWER!

2. Open front access door and lower side access door, then measure distance of each leadscrew nut from bottom of cabinet (see **Figure 92**).

   — If measured distance *is* the same for all leadscrews, no adjustments are required.

   — If measured distance *is not* the same for all leadscrews, proceed to **Step 3**.

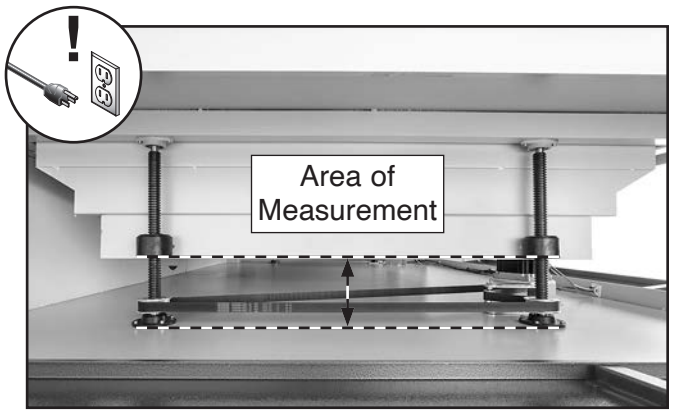


Figure 92. Leadscrew nut measurement.

3. Release Z-axis belt tension on leadscrew(s) requiring adjustment (see **Step 6** of **Z-Axis Belts Adjustment** on **Page 61**).

4. Grasp irregular leadscrew(s) by hand and rotate to raise or lower table until distance measured in **Step 2** is the same for all leadscrews.

5. Tension Z-axis synchronous belt (see **Step 6** of **Z-Axis Belts Adjustment** on **Page 61**).

Removing/Installing Laser Tube

The CO_2 gas-filled laser tube is supported by two soft-mount saddles and straps. The laser tube has four connection points: two for water inlet/outlet hoses, and two for electrical connections.

The following procedure includes steps required for the purpose of long-term storage or machine shipping. If the laser tube has reached the end of its service life and will be discarded, the tube should be placed in a container and tagged for appropriate disposal.

Items Needed	Qty
Hex Wrenches 2.5, 3mm	1 Ea.
Phillips Head Screwdriver #2	1
Utility Knife	1
Bucket	1
Container (for Removed Laser Tube)	1
Isopropyl Alcohol	As Needed

Removing Laser Tube

1. DISCONNECT MACHINE AND AUXILIARY SYSTEMS FROM POWER!

2. Open laser tube access door.

3. Disconnect water hose at INLET port of water chiller, and place end into bucket to collect water runoff (see **Figure 93**).

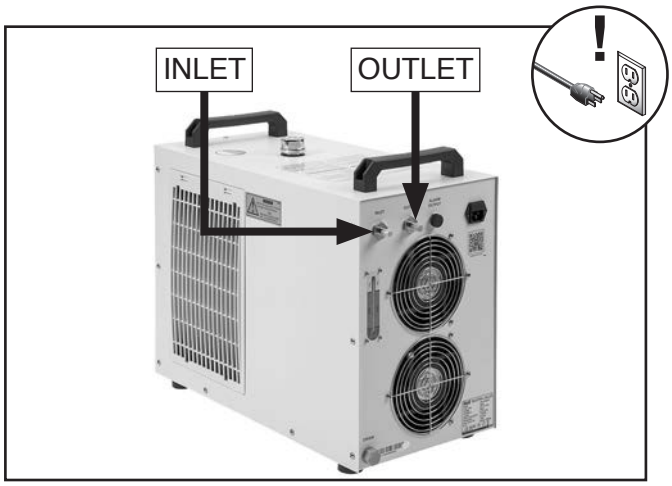


Figure 93. Location of water chiller ports.

4. Disconnect water hose at OUTLET port of water chiller, and manually blow through hose several times to purge laser tube and hoses of water.

   IMPORTANT: Remove as much residual water from laser tube as possible. If freezing temperatures occur, laser tube glass will crack and render laser tube inoperable.

5. Install caps or tape on all open water ports and hoses to keep system sealed and free from contaminants and obstructions.

6. Remove any covers or sleeves on laser tube.

7. Disconnect anode and cathode wires from laser tube (see **Figure 94**).

8. At laser tube INLET and OUTLET water spouts (see **Figure 94**), cut off water hose at end of spout, and with utility knife, carefully slit remaining hose until it can be peeled off.

   IMPORTANT: DO NOT attempt to pull hose directly off of spout. Doing so could break glass water spout.

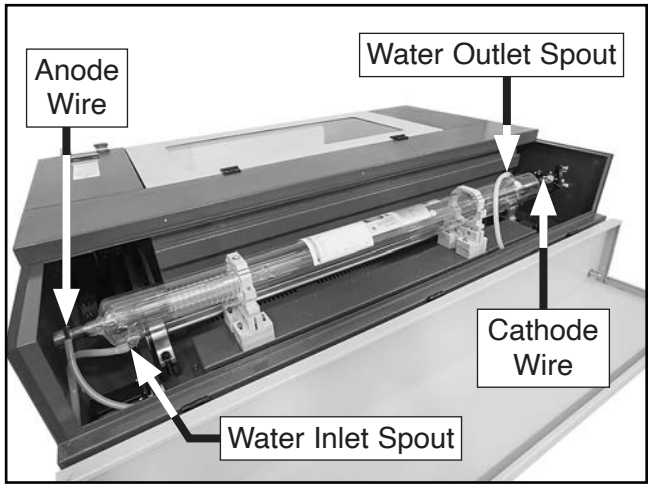


Figure 94. Laser tube component locations (G0873 shown).

9. Install caps or tape on both open water hoses to keep system sealed and free from contaminants and obstructions.

10. Remove saddle-strap cap screws in an alternating pattern, and then remove saddle straps (see **Figure 95**).

    IMPORTANT: When removing saddle straps for laser tube removal, DO NOT loosen or reposition saddles. Saddles are factory-aligned and require many additional steps to re-align if initial alignment is altered.

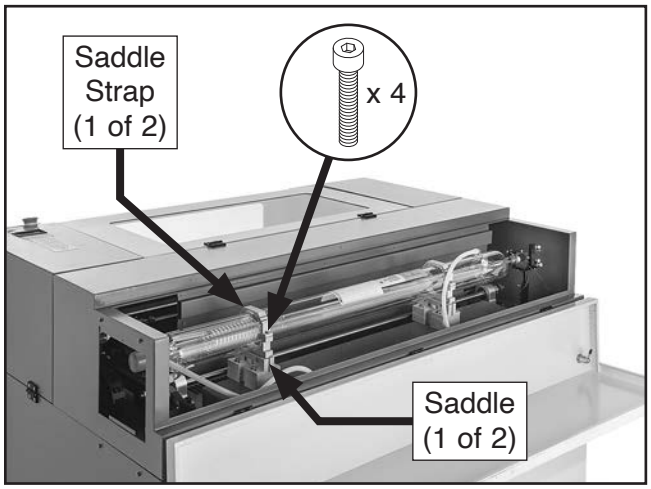


Figure 95. Laser tube saddle components (G0873 shown).

11. Install caps or tape on (2) open water spouts to keep laser tube sealed and free from contaminants and obstructions.

12. Prepare container to hold laser tube after removal from machine.

NOTICE

To avoid damaging laser tube, remove tube from saddles ONLY when ready to place in container. Handle tube carefully in a pre-planned manner to prevent tube contacting machine cabinet.

13. Carefully lift laser tube out of saddles and place into container.

Installing Laser Tube

1. Inspect laser tube saddles and rubber pads for any debris or foreign material, and clean as required (see **Figure 96**).

   IMPORTANT: When inspecting and setting up machine for laser tube installation, DO NOT loosen or reposition laser tube saddles. Saddles are factory-aligned and require many additional steps to re-align if original alignment is altered.

2. Carefully open laser tube shipping container.

   Note: *DO NOT destroy or discard laser tube shipping container. Retain original box for ordering replacement tubes, or in the event of damage caused during shipping.*

3. Remove dust caps or tape (if installed) from laser tube.

   IMPORTANT: DO NOT force caps off water spout if they cannot be removed by hand. Carefully cut them off using utility knife.

NOTICE

To avoid damaging laser tube, remove tube from container ONLY when ready to place in machine. Handle tube carefully in a pre-planned manner to prevent tube contacting machine cabinet.

4. Carefully remove laser tube from shipping container, and position anode-end on anode side of tube compartment (see **Figure 96**).

5. Gently place laser tube in saddles.

6. Position cathode-end of laser tube so there is a gap of approximately 1"–2" between end and center of first mirror (see **Figure 96**).

   Note: *Laser tube has labels showing suggested support location for saddles.*

7. Verify inlet and outlet hoses will not interfere with closed doors or covers, and hoses are free of kinks that could potentially restrict water flow to laser tube.

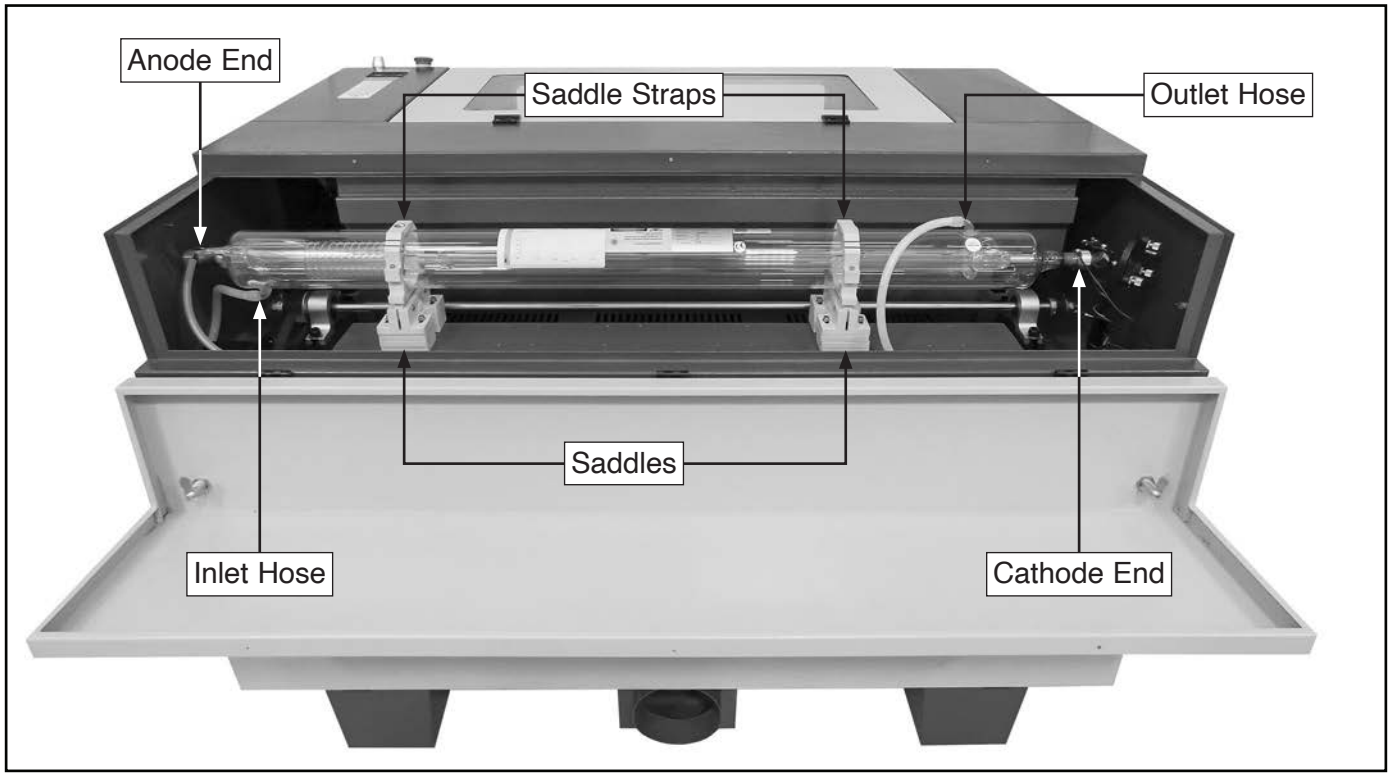


Figure 96. Laser tube compartment identification (G0873 shown).

NOTICE

DO NOT use hose or spring clamps to secure water hoses to laser tube spouts. Compression from clamping can cause glass spout to crack during operation.

8. Carefully install inlet and outlet water hoses over appropriate glass spouts marked INLET and OUTLET until barbed-end is fully covered by hose.

Note: *Water-based lubricant may be applied to exterior of spout to aid installation. DO NOT apply any lubricant to interior of spout where it will enter water chiller system.*

IMPORTANT: If water hose must be removed from laser tube, DO NOT attempt to pull hose directly off of spout. Doing so could break glass water spout. Cut off water hose near end of spout and carefully slit remaining hose segment with utility knife until it can be removed.

9. Rotate and center laser tube in saddles so inlet spout is pointed down, and outlet spout is pointed up, as shown in **Figure 97**.

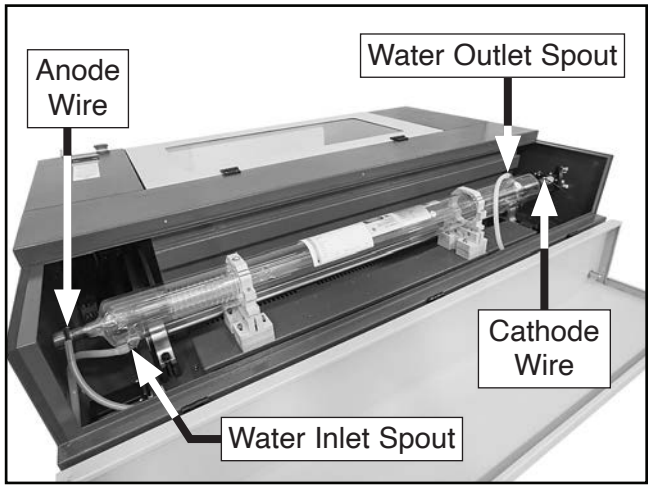


Figure 97. Laser tube water inlet/outlet spouts (G0873 shown).

10. Verify water chiller system inlet and outlet hoses are connected to auxiliary systems connection panel according to **Installing Water Chiller System** on **Page 23.**

Tip: *If you are replacing laser tube, replace distilled water in water chiller system as well. This will prevent accumulation of contaminants in laser tube.*

11. Turn water chiller system ***ON*** and allow system to run. DO NOT apply power to laser.

12. Verify laser tube cooling chambers fill with water and no leaks are visible throughout water chiller system.

13. Wait approximately one minute for water to flow through system, then slowly rotate laser tube while slightly raising tube at cathode-end to release air bubbles.

IMPORTANT: DO NOT tap on laser tube to release air bubbles. Air bubbles will dissipate from cooling chambers once tube begins to warm up during first use.

14. Once all large air bubbles are released, laser tube is primed with water (see **Figure 98**).

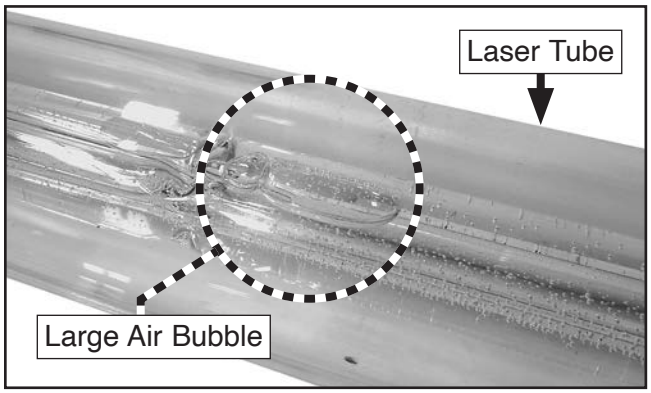


Figure 98. Example of large air bubbles when priming laser tube.

15. Verify water chiller reservoir level is in the green area as described in **Installing Water Chiller System** on **Page 23**.

16. Turn water chiller system ***OFF***.

NOTICE

DO NOT turn laser *ON* with water chiller system turned *OFF*. Laser tube will quickly overheat during laser operations without functioning cooling system.

17. Remove any oxidation on terminals with isopropyl alcohol, then install anode wire on positive (+) terminal (see **Figure 99**).

18. Remove any oxidation on terminals with isopropyl alcohol, then install cathode wire on negative (-) terminal (see **Figure 99**).

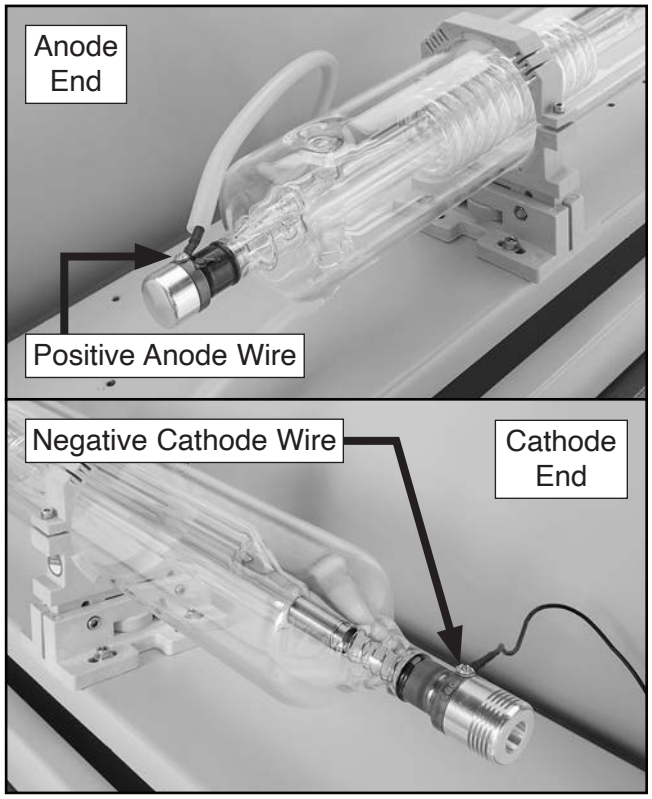


Figure 99. Location of laser tube anode/cathode wires.

19. Verify gap of approximately 1"–2" is still present between cathode-end of laser tube and center of first mirror.

20. Verify laser tube is centered evenly in rubber saddle pads, and no contaminants are visible on pad surfaces.

21. Clean rubber pads on saddle straps and place on laser tube above saddles, as shown in **Figure 100**.

    Note: *Gap between saddle strap and saddle may be necessary for proper fit.*

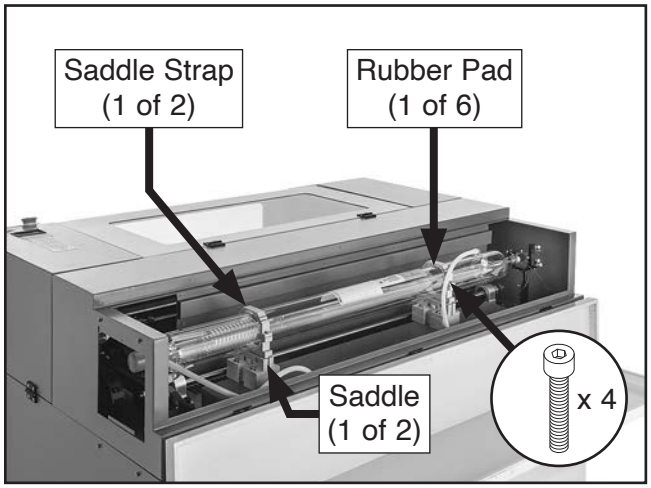


Figure 100. Laser tube saddles installed (G0873 shown).

NOTICE

Laser tube saddles should gently hold laser tube in position. Tightening saddle straps with excessive force WILL break laser tube.

22. Carefully secure saddle straps to saddles by gently tightening cap screws in an alternating pattern until laser tube can no longer be rotated by hand.

23. Align laser tube beam path by performing **Aligning Laser Beam Path** on **Page 72**.

Aligning Laser Beam Path

DANGER

Operator and bystanders MUST wear ANSI-approved eye protection rated for 10,600 nm (10.6 μm) wavelength CLASS 4 infrared lasers when machine is operating. NEVER look directly into laser beam or stare at laser contact point, or severe eye injury or blindness will occur!

The laser beam path is directed by three mirrors before passing through a focus lens to the focal point on the workpiece, as shown in **Figure 101**. The included low-power reference laser connected to Mirror #1 can be used as a visual reference point when adjusting alignment.

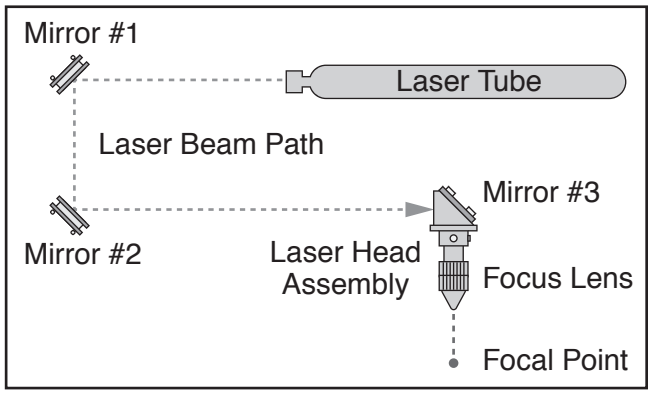


Figure 101. Laser beam path through cabinet.

Proper alignment of the laser beam path is critical to power efficiency, cutting/engraving quality, and laser tube service-life.

Items Needed	Qty
Class 4 Laser Eye Protection (per person)	1
Laser Beam Alignment Gauge	1
Mirror Alignment Gauge	1
Hex Wrenches 2.5, 3mm	1 Ea.
Manila Folder	As Needed
Sheet of Paper	As Needed
Masking Tape	As Needed

To align laser beam path:

1. Prepare machine for operation according to **SECTION 3: SETUP** on **Page 18**.
2. Open top loading door and laser tube access door.
3. **G0874 Only:** Loosen (4) cap screws and remove (1) right laser tube cover to access Mirror #1.
4. Turn machine and water chiller system ***ON***. Allow machine to complete startup cycle.
5. Press Max-Power button. Max-Power setting screen will open (see **Figure 102**).

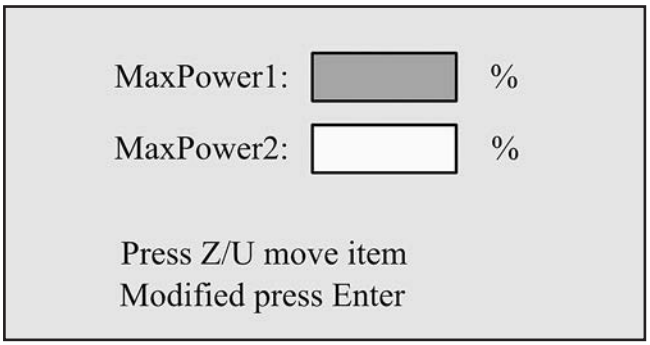


Figure 102. Example of "Max-Power" screen.

6. Press Z/U button to highlight "MaxPower1", and use arrow navigation buttons to set maximum power to 75%, then press Enter.
7. Press Min-Power button. Min-Power setting screen will open (see **Figure 103**).

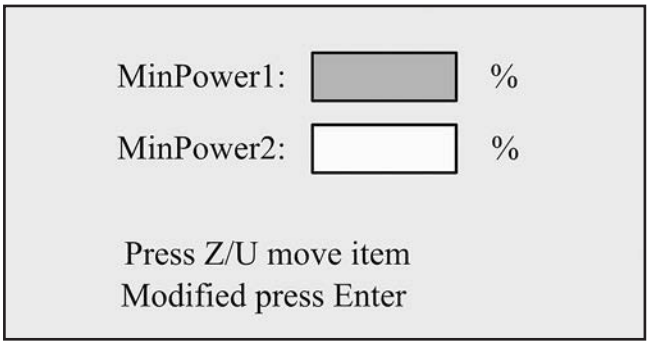


Figure 103. Example of "Min-Power" screen.

8. Press Z/U button to highlight "MinPower1", and use arrow navigation buttons to set minimum power to 50%, then press Enter.

9. Move laser head assembly to upper left corner of table (see **Figure 104**).

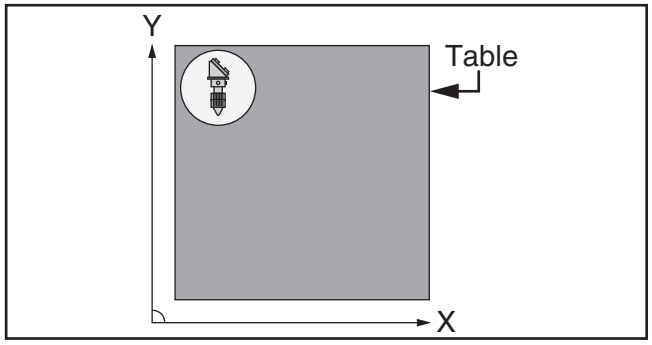


Figure 104. Laser head assembly in upper left corner of table.

10. Insert 1" piece of paper or manila folder into small slot on laser beam alignment gauge behind wire crosshairs, and install gauge in beam inlet on laser head assembly (see **Figure 105**).

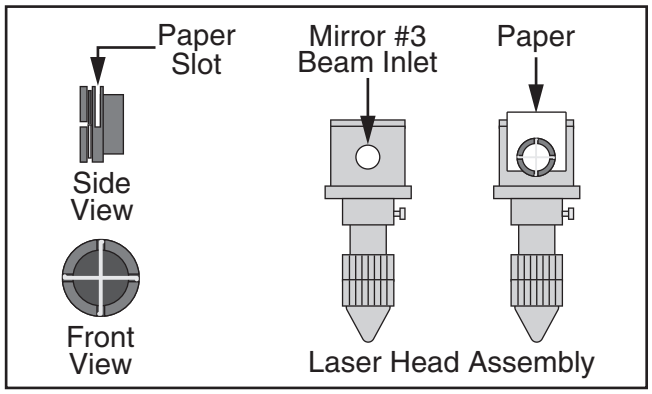


Figure 105. Laser beam alignment gauge installed in beam inlet.

11. Close top loading door and check alignment by pressing Pulse button on control panel. Compare results with **Figure 106** below.

IMPORTANT: Pulse function will only operate with top loading door closed.

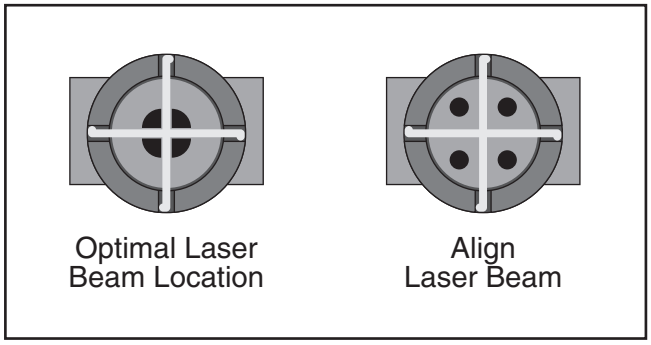


Figure 106. Laser beam alignment marks.

— If laser beam *is* in center of crosshairs, alignment is optimal. Proceed to **Step 15**.

— If laser beam *is not* in center of crosshairs, adjustment is required. Proceed to **Step 12**.

12. Loosen lock nuts on (3) thumbscrews located behind Mirror #1 (see **Figure 107**).

Note: *Tension bolts on mirror assemblies help prevent misalignment during operation. Always keep moderate tension on tension bolts when adjusting alignment.*

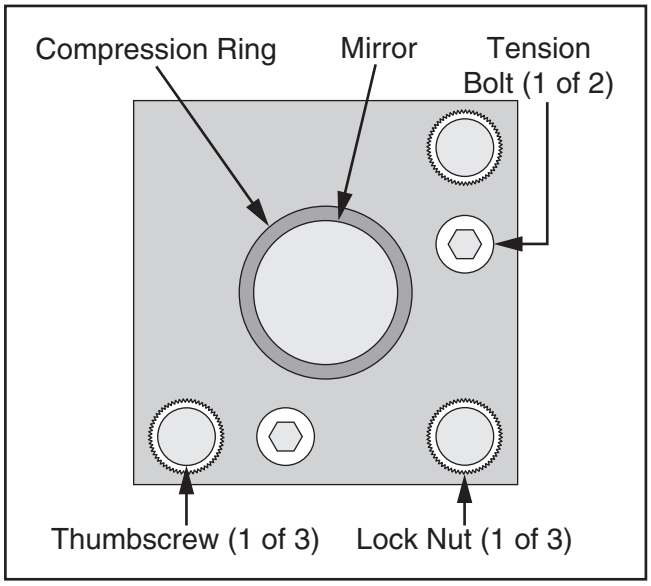


Figure 107. Typical mirror assembly.

13. Adjust direction of beam path by tightening thumbscrews depending on desired direction of beam travel (see **Figure 108**).

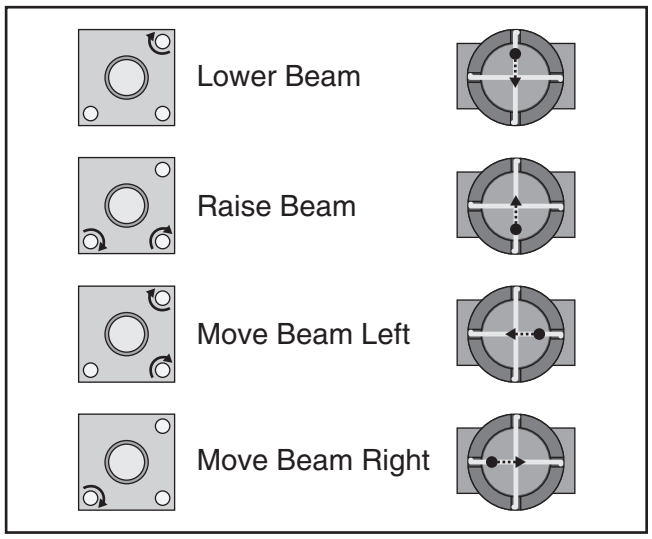


Figure 108. Mirror thumbscrew adjustment.

14. Verify mirror adjustment by pressing Pulse button on control panel. Compare results with those shown in **Figure 106** on **Page 73**.

— If laser beam *is* in center of mirror, alignment is optimal. Proceed to **Step 15**.

— If laser beam *is not* in center of mirror, adjustment is required. Repeat **Step 13**.

15. Move laser head assembly to lower left corner of table (see **Figure 109**).

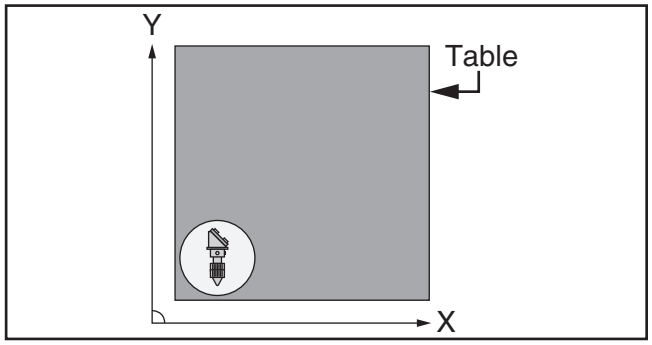


Figure 109. Laser head assembly in lower left corner of table.

16. Check alignment by pressing Pulse button on control panel. Compare results with those shown in **Figure 106** on **Page 73**.

— If laser beam *is* in center of crosshairs, alignment is optimal. Proceed to **Step 22**.

— If laser beam *is not* in center of crosshairs, adjustment is required. Proceed to **Step 17**.

17. Place mirror alignment gauge in front of Mirror #2 and hold in place with masking tape, as shown in **Figure 110**.

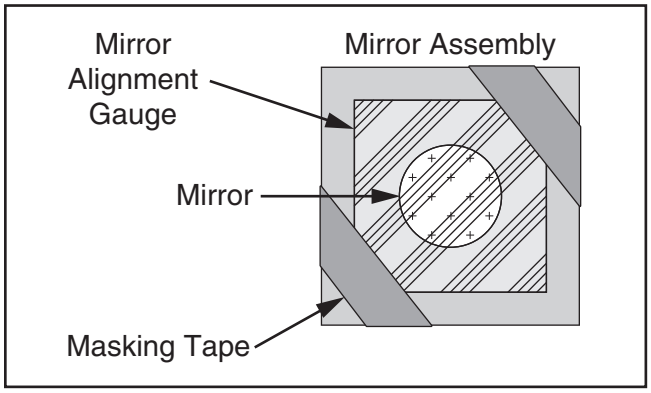


Figure 110. Mirror alignment gauge installed.

18. Verify Mirror #1 and Mirror #2 alignment by pressing Pulse button on control panel.

— If laser beam *is* within center of mirror, alignment is optimal. Remove mirror alignment gauge from Mirror #2, then proceed to **Step 22**.

— If laser beam *is not* in center of mirror, adjustment is required. Proceed to **Step 19**.

19. Loosen lock nuts on (3) brass thumbscrews located behind Mirror #1 assembly (see **Figure 107** on **Page 73**).

20. Adjust direction of beam path by tightening thumbscrews depending on desired direction of beam travel, as shown in **Figure 108**.

21. Repeat **Step 18.**

22. Move laser head assembly to lower right corner of table (see **Figure 111**).

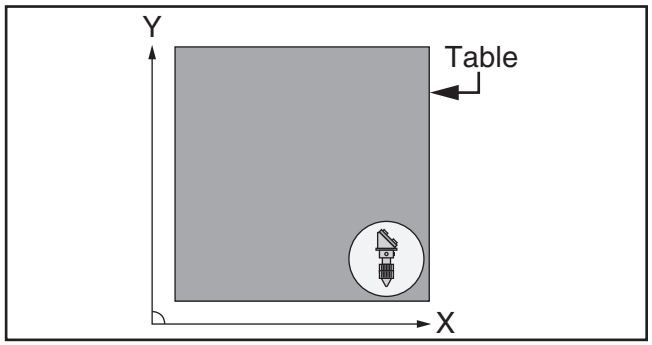


Figure 111. Laser head assembly in lower right corner of table.

23. Verify Mirror #2 and Mirror #3 alignment by pressing Pulse button on control panel.

— If laser beam *is* in center of crosshairs, alignment is optimal. Proceed to **Step 27**.

— If laser beam *is not* in center of crosshairs, adjustment is required. Proceed to **Step 24**.

24. Loosen lock nuts on (3) brass thumbscrews located behind Mirror #2 assembly (see **Figure 112**).

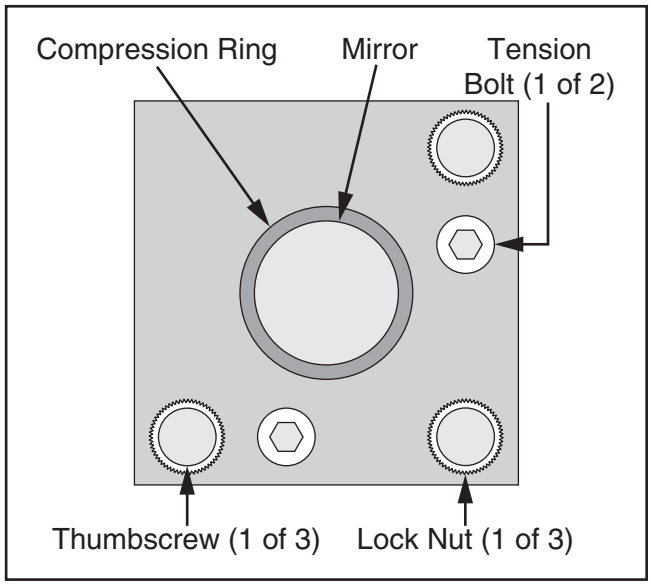


Figure 112. Typical mirror assembly.

25. Adjust direction of beam path by tightening thumbscrews depending on desired direction of beam travel (see **Figure 113**).

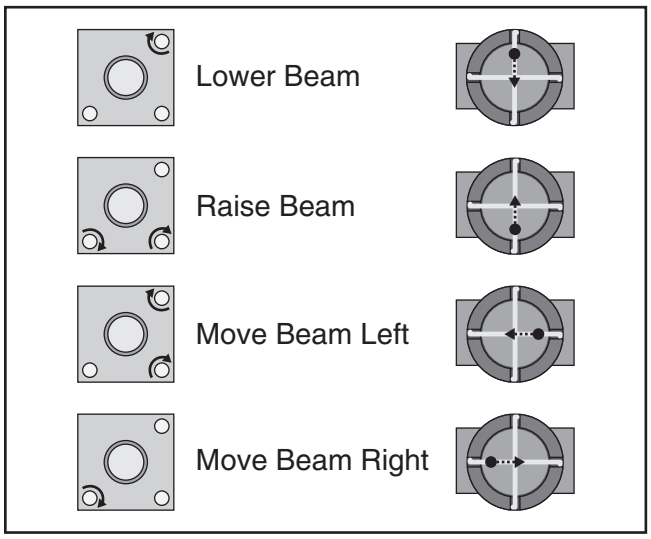


Figure 113. Mirror thumbscrew adjustment.

26. Repeat **Step 23.**

27. Remove laser beam alignment gauge and place a clean sheet of paper or manila folder under laser head assembly.

28. Set focal length as instructed in **Setting Focal Length** on **Page 38**.

29. Verify Mirror #3 and focal point alignment by pressing Pulse button on control panel. Compare results with **Figure 114**.

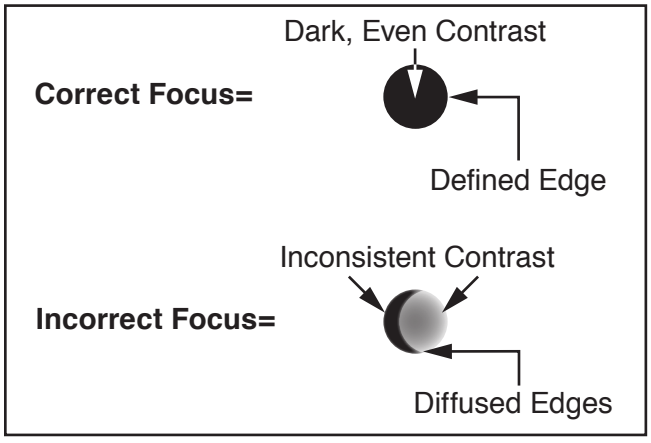


Figure 114. Focal point alignment examples.

— If laser beam focal point *is* dark and even, alignment is optimal. Proceed to **Step 33**.

— If laser beam focal point *is not* dark and even, adjustment is required. Proceed to **Step 30**.

30. Loosen lock nuts on (3) brass thumbscrews located behind Mirror #3 assembly (see **Figure 115**).

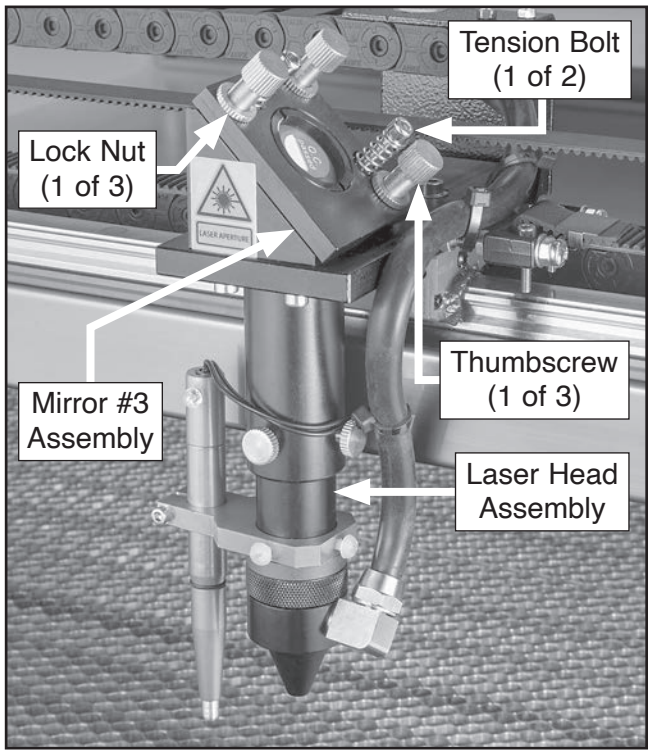


Figure 115. Mirror #3 assembly components.

31. Adjust direction of beam path by tightening thumbscrews depending on desired direction of beam travel (see **Figure 116**).

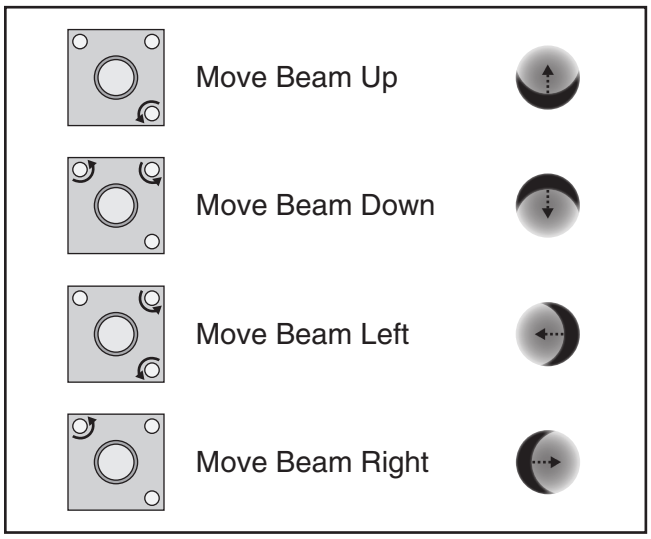


Figure 116. Mirror thumbscrew adjustment.

32. Repeat **Step 29.**

33. Tighten all lock nuts on mirror assembly thumbscrews if loosened for adjustment. DO NOT tighten thumbscrews!

34. Align reference laser beam path as instructed in **Aligning Reference Laser** on **Page 77**.

35. **G0874 Only:** Re-install (4) cap screws and (1) right laser tube cover removed in **Step 3**.

36. Close all doors opened for alignment.

37. Turn machine power ***OFF***.

38. Turn water chiller system ***OFF***.

39. Put all tools and gauges away, then clean area for next operation.

Aligning Reference Laser

⚠WARNING

AVOID DIRECT OR REFLECTED EXPOSURE!

Operator and bystanders MUST wear ANSI-approved eye protection rated for 650 nm CLASS 3B lasers when servicing reference laser. NEVER look directly into laser beam or stare at laser contact point, or eye injury may occur!

The reference laser is a low-power, 650 nm Class 3B red laser used as a visual indicator of the laser beam focal point. The beam is reflected off an anti-reflective lens, directed through the cabinet by three mirrors, then passes through the focus lens to the focal point (see **Figure 117**).

IMPORTANT: The reference laser should only be used as a guide and is not a suitable substitute for verified laser beam path alignment.

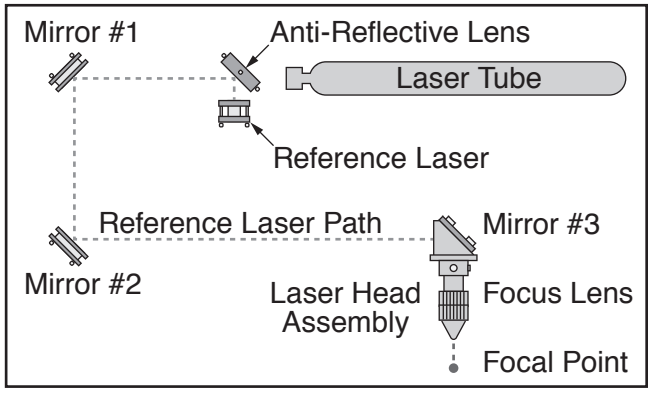


Figure 117. Reference laser path through cabinet.

Items Needed	Qty
Additional Person	1
Class 3B Laser Eye Protection (per person)	1

To align reference laser:

1. Perform **Steps 1**–**34** of **Aligning Laser Beam Path** beginning on **Page 72**.

2. Locate reference laser on Mirror #1 assembly (see **Figure 118**).

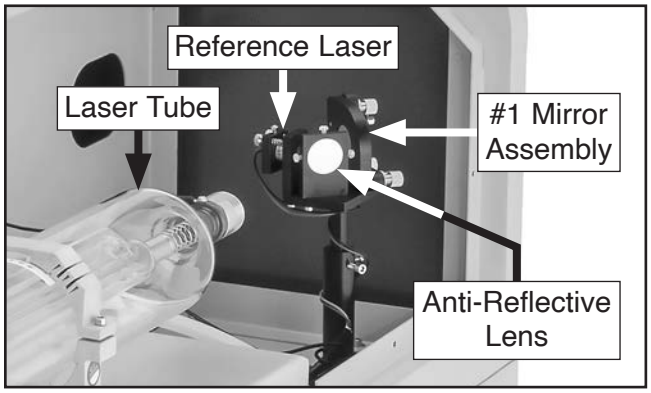


Figure 118. Reference laser components.

3. Locate (3) thumbscrews behind reference laser used to adjust beam path through cabinet (see **Figure 119**).

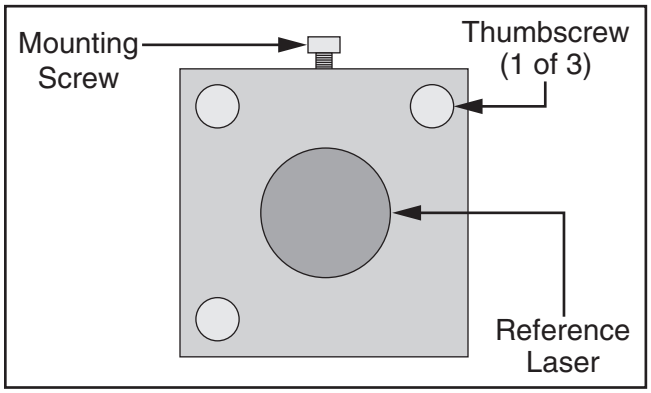


Figure 119. Reference laser adjustment.

4. With help from an additional person, rotate thumbscrews behind reference laser until laser beam focal point matches "Correct Focus" example as shown in **Figure 114** on **Page 75**.

   — If reference laser focal point *is* dark and even, alignment is complete.

   — If reference laser focal point *is not* dark and even, repeat **Step 4**.

Removing/Replacing Laser Optics

Before removing and replacing optical components on the Model G0873/G0874, thoroughly wash and dry hands before putting on sterile disposable gloves. This will help ensure laser optics remain clean during removal and replacing.

Follow all best practices guidelines described in **Maintaining Laser Components** on **Page 51** for handling sensitive optical components.

Items Needed	Qty
Optics Disassembly Tool	1
Hex Wrench 2mm	1
Duct Tape	As Needed
Sterile Disposable Gloves	As Needed
Lens Cleaning Paper	As Needed

Removing/Replacing Mirrors

1. DISCONNECT MACHINE FROM POWER!

2. Remove any covers and open any doors to gain access to mirror assembly.

   IMPORTANT: To avoid re-aligning laser beam, DO NOT remove mirror assembly from its location.

3. Loosen compression ring behind mirror with optics disassembly tool, then remove (see **Figure 120**).

   Tip: *If optics disassembly tool is too large to fit behind mirror assembly, 2mm hex wrench can be used as substitute.*

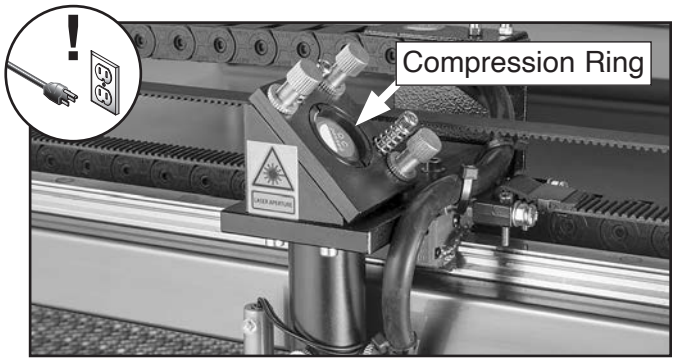


Figure 120. Typical compression ring location.

4. Remove mirror by applying duct tape to non-reflective rear surface and lifting.

5. Install replacement mirror in mirror assembly and re-install compression ring.

6. Close covers and doors opened in **Step 2**.

Removing/Replacing Focus Lens

1. DISCONNECT MACHINE FROM POWER!

2. Open top loading door and move laser head assembly to easily accessible area.

3. Disconnect air supply hose, loosen air nozzle, and set aside (see **Figure 121**).

4. Loosen thumbscrews and remove focus canister and focus sensor (see **Figure 121**).

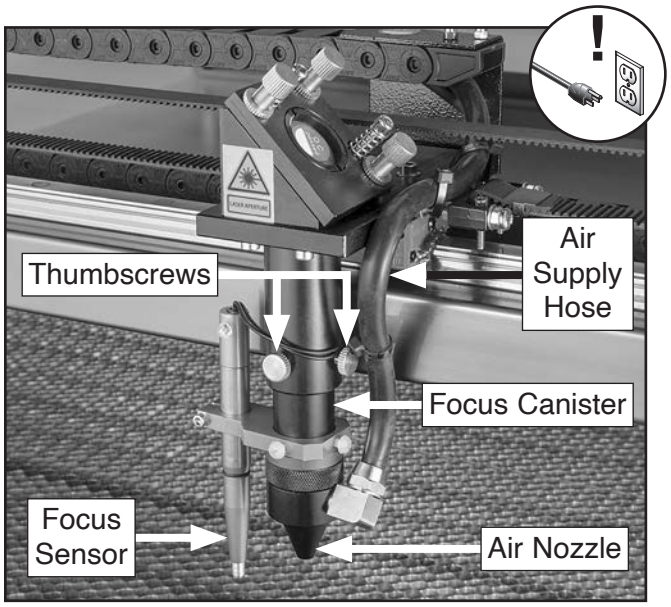


Figure 121. Laser head assembly components.

5. Locate compression ring securing focus lens and remove with optics disassembly tool.

6. Carefully separate focus lens from cushion, and set cushion on sheet of cleaning paper.

7. Install replacement focus lens with convex side facing you, then install lens cushion and compression ring.

8. Install focus canister, focus sensor, and air nozzle, then connect air supply hose.

9. Close top loading door.

Setting Stepper Driver DIP Switches

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

To set stepper driver DIP switches:

1. DISCONNECT MACHINE FROM POWER!

2. Open electrical cabinet and locate (3) stepper driver DIP switches (see **Figure 122**).

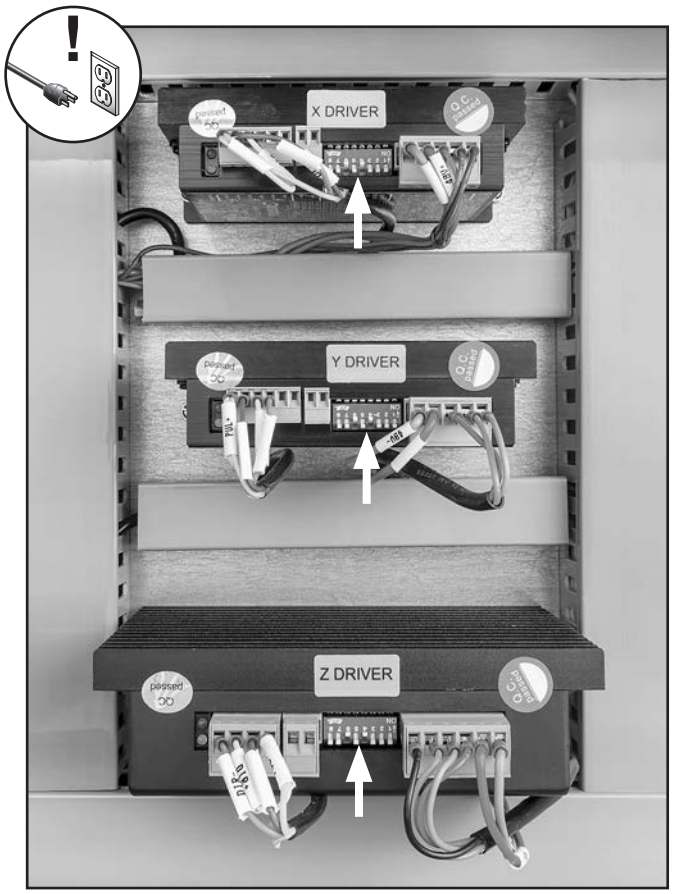


Figure 122. Example of stepper driver DIP switch locations.

3. Compare X-axis stepper driver DIP switch configuration to diagram in **Figure 123**.

   — If DIP switch *does* match diagram, DIP switch is set correctly.

   — If DIP switch *does not* match diagram, flip rocker switches to match diagram.

4. Compare Y-axis stepper driver DIP switch configuration to diagram in **Figure 123**.

   — If DIP switch *does* match diagram, DIP switch is set correctly.

   — If DIP switch *does not* match diagram, flip rocker switches to match diagram.

5. Compare Z-axis stepper driver DIP switch configuration to diagram in **Figure 123**.

   — If DIP switch *does* match diagram, DIP switch is set correctly.

   — If DIP switch *does not* match diagram, flip rocker switches to match diagram.

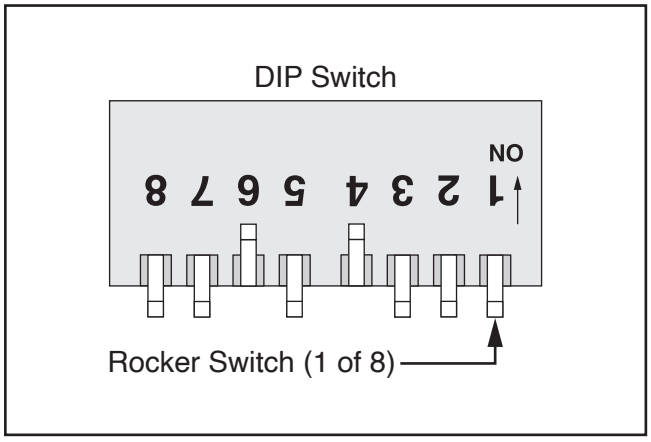


Figure 123. Stepper driver DIP switch configuration.

6. Close electrical cabinet and proceed to **Test Run** on **Page 27** to verify correct machine operation.

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.

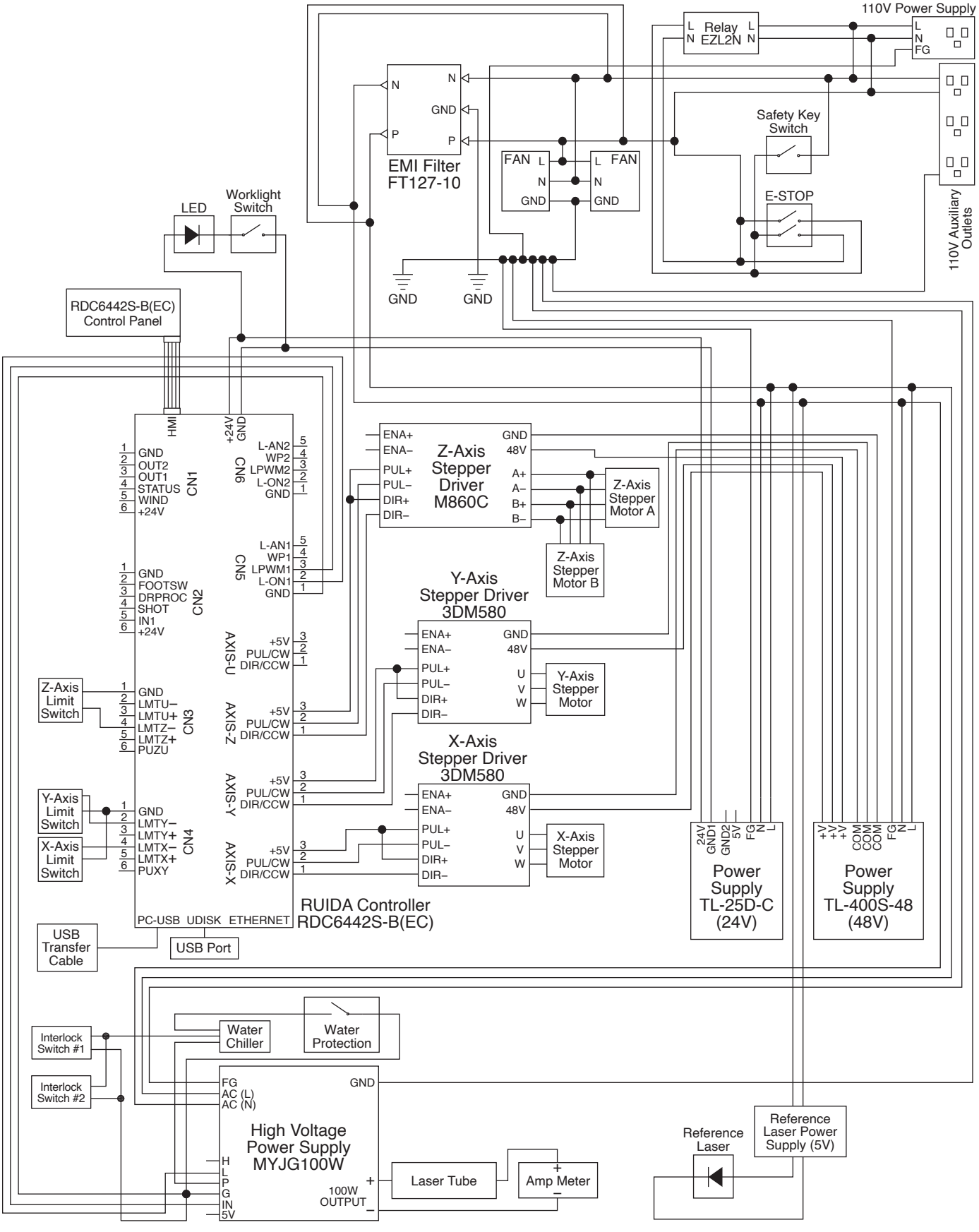
NOTICE

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

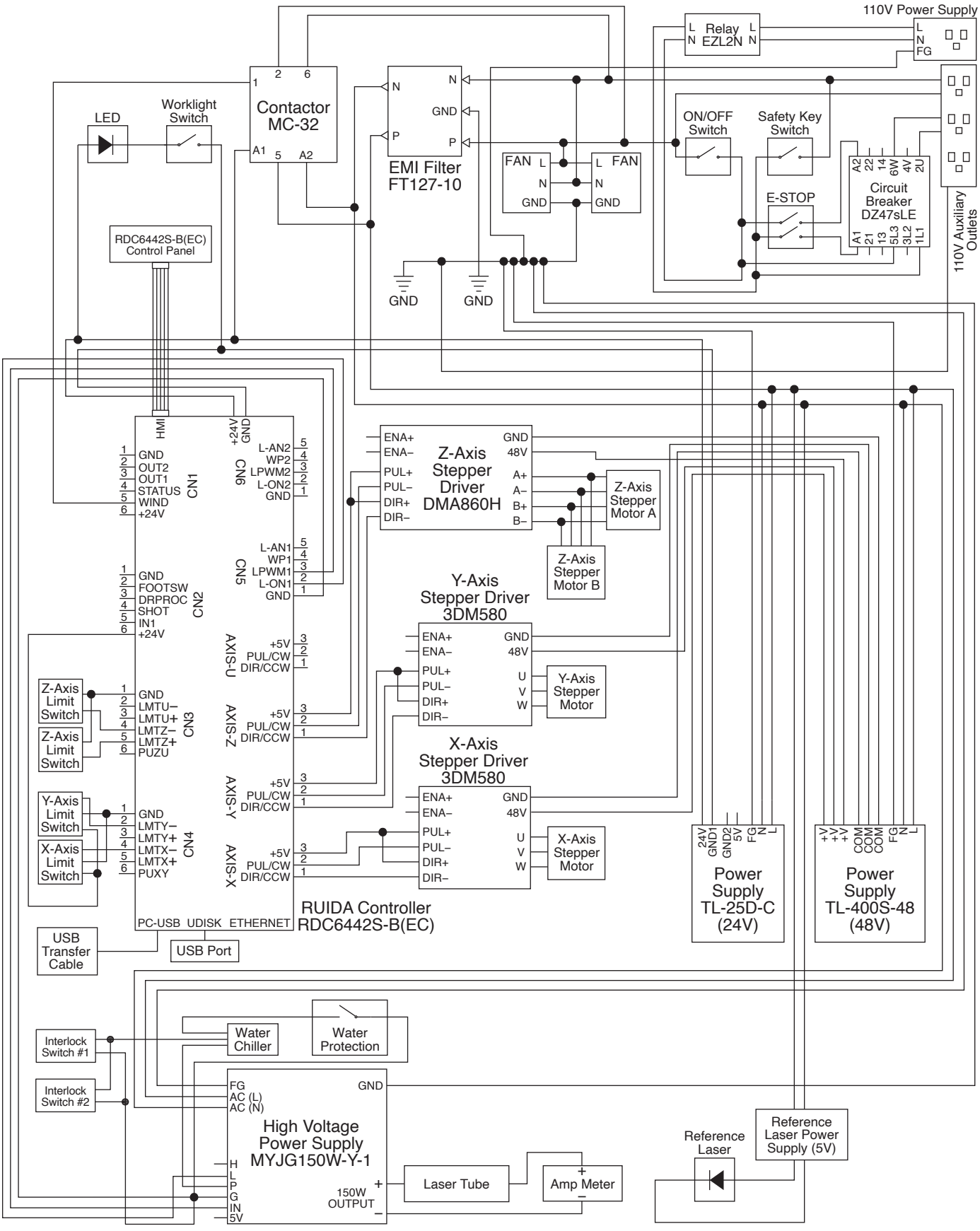
BLACK	Bk	BLUE	Bl	YELLOW	Yl	LIGHT BLUE	Lb
WHITE	Wt	BROWN	Br	YELLOW GREEN	Yg	BLUE WHITE	Bw
GREEN	Gn	GRAY	Gy	PURPLE	Pu	TURQUOISE	Tu
RED	Rd	ORANGE	Or	PINK	Pk		

G0873 Wiring Schematic



STOP READ ELECTRICAL SAFETY ON PAGE 80!

G0874 Wiring Schematic

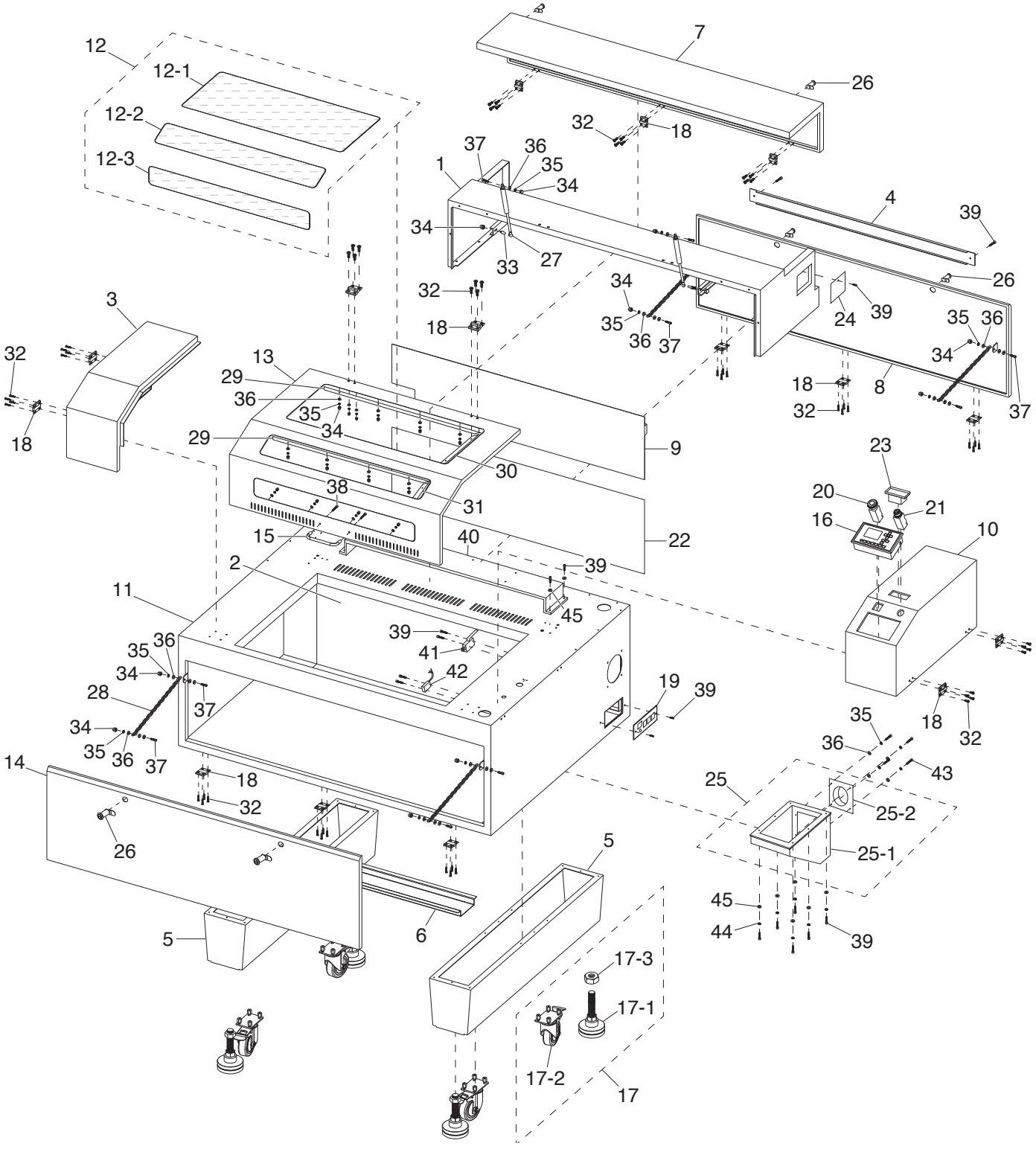


STOP *READ ELECTRICAL SAFETY ON PAGE 80!*

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.

G0873 Main

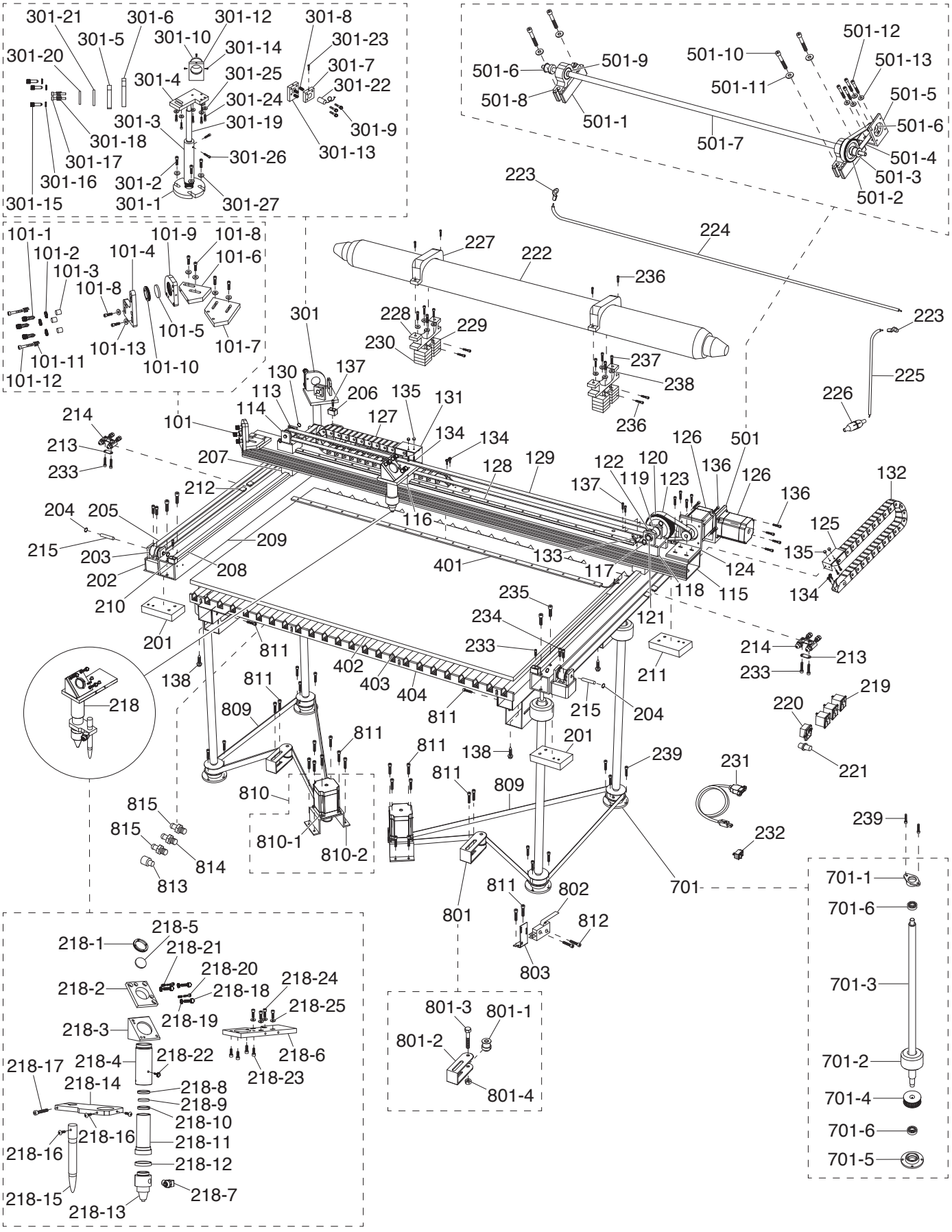


G0873 Main Parts List

REF	PART #	DESCRIPTION
1	P0873001	BODY REAR GUARD, UPPER
2	P0873002	CABINET PARTITION, FRONT
3	P0873003	BODY LEFT GUARD, UPPER
4	P0873004	LOADING DOOR, REAR
5	P0873005	BODY SUPPORT STAND
6	P0873006	BODY SUPPORT BEAM
7	P0873007	LASER TUBE ACCESS DOOR
8	P0873008	ELECTRICAL CABINET DOOR
9	P0873009	CABINET PARTITION, UPPER
10	P0873010	BODY RIGHT GUARD, UPPER
11	P0873011	MACHINE CABINET
12	P0873012	SAFETY WINDOW ASSEMBLY
12-1	P0873012-1	ACRYLIC SAFETY WINDOW, TOP
12-2	P0873012-2	ACRYLIC SAFETY WINDOW, FRONT
12-3	P0873012-3	ACRYLIC SAFETY WINDOW, BOTTOM
13	P0873013	LOADING DOOR, TOP
14	P0873014	ACCESS DOOR, FRONT
15	P0873015	LOADING DOOR HANDLE
16	P0873016	CONTROL PANEL RUIDA RDC6442S-B
17	P0873017	MOBILE SUPPORT ASSEMBLY
17-1	P0873017-1	FOOT PAD M24-3
17-2	P0873017-2	CASTER 4", SWIVEL
17-3	P0873017-3	HEX NUT M24-3
18	P0873018	ACCESS DOOR HINGE
19	P0873019	POWER CONNECTION PANEL
20	P0873020	E-STOP BUTTON YIJIA YJ139-LA38 22MM
21	P0873021	KEY SWITCH YIJIA YJ139-XB2 22MM

REF	PART #	DESCRIPTION
22	P0873022	CABINET PARTITION, LOWER
23	P0873023	AMP METER UXCELL 85C17 50MA
24	P0873024	LASER TUBE ACCESS PANEL
25	P0873025	EXHAUST PORT ASSEMBLY
25-1	P0873025-1	EXHAUST PORT HOUSING
25-2	P0873025-2	EXHAUST PORT PANEL 6"
26	P0873026	KEYED ALIKE CAM LOCK
27	P0873027	GAS STRUT 850N
28	P0873028	STEEL CHAIN 1/8" X 1/4" X 12"
29	P0873029	HORIZONTAL WINDOW BRACKET
30	P0873030	VERTICAL WINDOW BRACKET, LONG
31	P0873031	VERTICAL WINDOW BRACKET, SHORT
32	P0873032	FLAT HD SCR M5-.8 X 14
33	P0873033	BALL STUD M5-.8
34	P0873034	ACORN NUT M5-.8
35	P0873035	LOCK WASHER 5MM
36	P0873036	FLAT WASHER 5MM
37	P0873037	CAP SCREW M5-.8 X 16
38	P0873038	CAP SCREW M4-.7 X 14
39	P0873039	CAP SCREW M4-.7 X 12
40	P0873040	LASER TUBE PLATFORM
41	P0873041	LIMIT SWITCH TMAZTZ V-152-1C25
42	P0873042	PROXIMITY SENSOR PIC MS-324/325
43	P0873043	CAP SCREW M5-.8 X 12
44	P0873044	LOCK WASHER 4MM
45	P0873045	FLAT WASHER 4MM

G0873 Gantry & Optics



G0873 Gantry & Optics Parts List

REF	PART #	DESCRIPTION
101	P0873101	MIRROR ASSEMBLY #2
101-1	P0873101-1	KNURLED THUMB SCREW M7-1 X 14, D10
101-2	P0873101-2	KNURLED PANEL NUT M7-1
101-3	P0873101-3	THREADED INSERT M7-1
101-4	P0873101-4	VERTICAL ADJUSTMENT PLATE
101-5	P0873101-5	PLANO MIRROR 25MM
101-6	P0873101-6	ADJUSTMENT PLATE, UPPER
101-7	P0873101-7	ADJUSTMENT PLATE, LOWER
101-8	P0873101-8	CAP SCREW M5-.8 X 10
101-9	P0873101-9	MIRROR HOUSING
101-10	P0873101-10	COMPRESSION RING 25MM
101-11	P0873101-11	COMPRESSION SPRING 1 X 7.5 X 24
101-12	P0873101-12	CAP SCREW M4-.7 X 25
101-13	P0873101-13	FLAT WASHER 5MM
113	P0873113	TENSIONER PULLEY
114	P0873114	TENSIONER PULLEY MOUNTING BRACKET
115	P0873115	X-AXIS SUPPORT BEAM
116	P0873116	LINEAR GUIDEWAY BLOCK EG15
117	P0873117	EXT RETAINING RING 12MM
118	P0873118	IDLER PULLEY MOUNT
119	P0873119	IDLER PULLEY 24T
120	P0873120	TIMING PULLEY 72T
121	P0873121	PULLEY SHAFT
122	P0873122	PULLEY BUSHING
123	P0873123	TIMING BELT 240-3M
124	P0873124	STEPPER MOTOR MOUNT
125	P0873125	CABLE CARRIER BRACKET
126	P0873126	STEPPER MOTOR LS 573S15-L NEMA23
127	P0873127	X-AXIS CABLE CARRIER
128	P0873128	LINEAR GUIDEWAY EGU15C 170L68-60800
129	P0873129	TIMING BELT 3M-15 15 X 2235MM
130	P0873130	EXT RETAINING RING 8MM
131	P0873131	CABLE CARRIER MOUNTING BRACKET
132	P0873132	Y-AXIS CABLE CARRIER
133	P0873133	LIMIT SWITCH TMAZTZ V-152-1C25
134	P0873134	FLANGE SCREW M3-.5 X 6
135	P0873135	ACORN NUT M3-.5
136	P0873136	CAP SCREW M5-.8 X 10
137	P0873137	CAP SCREW M3-.5 X 12
138	P0873138	LAG BOLT M3 X 12
201	P0873201	SUPPORT BEAM MOUNTING BRACKET, FRONT
202	P0873202	TENSIONER PULLEY MOUNTING BRACKET
203	P0873203	TENSIONER PULLEY
204	P0873204	EXT RETAINING RING 8MM
205	P0873205	TIMING BELT 3M-15 15 X 1625MM
206	P0873206	GUIDEWAY STOP BLOCK, FRONT
207	P0873207	LINEAR GUIDEWAY BLOCK EG15
208	P0873208	LINEAR GUIDEWAY EGU15C 1800YM-50900
209	P0873209	Y-AXIS SUPPORT BEAM
210	P0873210	GUIDEWAY STOP BLOCK, REAR
211	P0873211	SUPPORT BEAM MOUNTING BRACKET, REAR
212	P0873212	BELT CLASP
213	P0873213	BELT BRACKET
214	P0873214	BELT TENSIONER 15MM
215	P0873215	PULLEY SHAFT 8 X 45MM
218	P0873218	LASER HEAD ASSEMBLY
218-1	P0873218-1	COMPRESSION RING 25MM
218-2	P0873218-2	45 DEG ADJUSTMENT PLATE
218-3	P0873218-3	45 DEG MIRROR HOUSING
218-4	P0873218-4	FIXED FOCUS BARREL

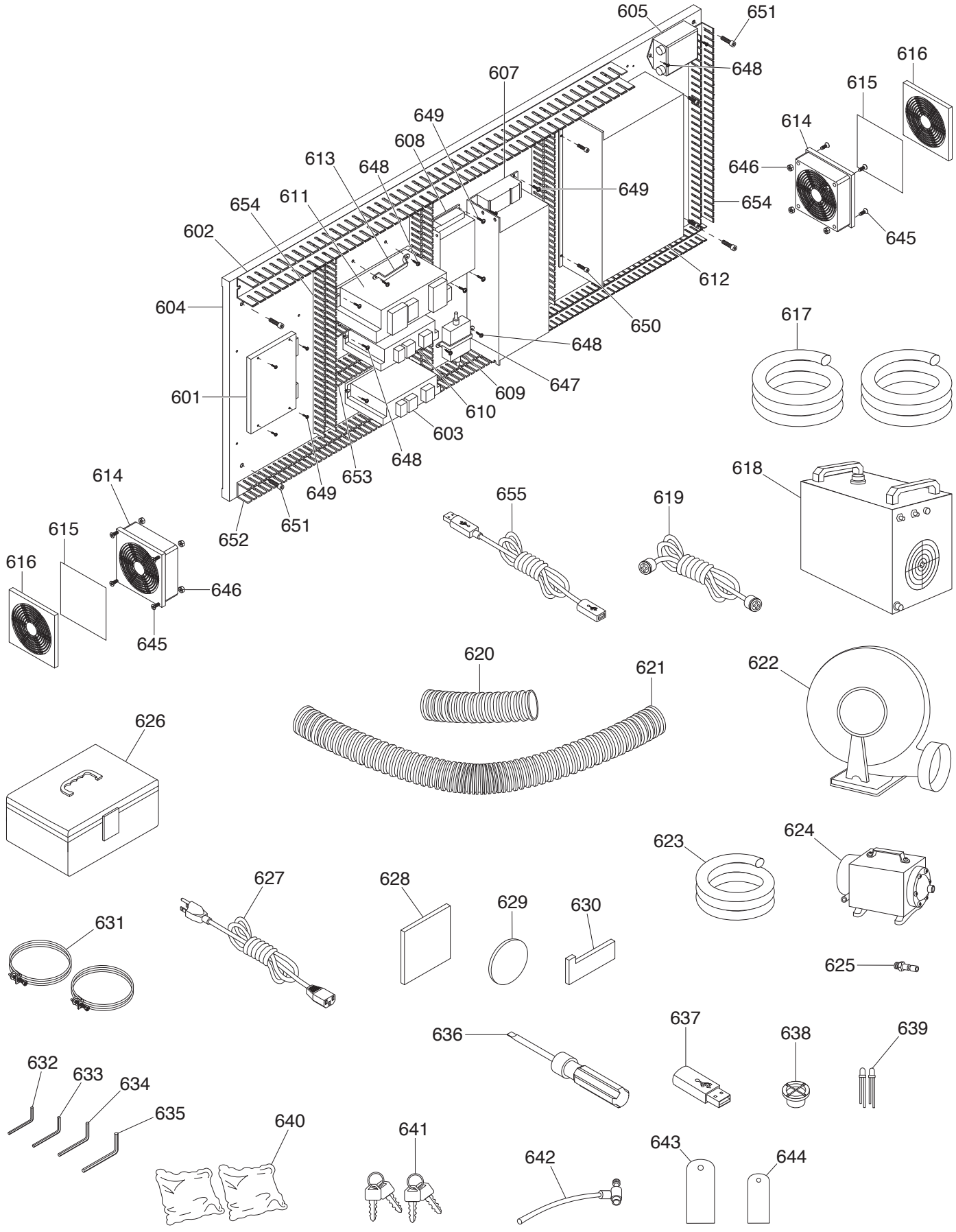
REF	PART #	DESCRIPTION
218-5	P0873218-5	PLANO MIRROR 25MM
218-6	P0873218-6	LASER HEAD MOUNTING PLATE
218-7	P0873218-7	90 DEG AIR ELBOW ADAPTER 1/8" BSPP
218-8	P0873218-8	SILICONE WASHER 22MM
218-9	P0873218-9	FOCAL LENS 63.5 ENGRAVING
218-10	P0873218-10	COMPRESSION RING 22MM
218-11	P0873218-11	TELESCOPING FOCUS BARREL
218-12	P0873218-12	BARREL RING
218-13	P0873218-13	AIR NOZZLE
218-14	P0873218-14	AUTO-FOCUS BRACKET
218-15	P0873218-15	AUTO-FOCUS SENSOR
218-16	P0873218-16	BUTTON HD CAP SCR M3-.5 X 6, NYLON
218-17	P0873218-17	CAP SCREW M3-.5 X 14
218-18	P0873218-18	KNURLED THUMB SCREW M7-1 X 14, D10
218-19	P0873218-19	KNURLED PANEL NUT M7-1
218-20	P0873218-20	CAP SCREW M4-.7 X 25
218-21	P0873218-21	COMPRESSION SPRING 1 X 7.5 X 24
218-22	P0873218-22	KNURLED THUMB SCREW M4-.7 X 6, D10
218-23	P0873218-23	CAP SCREW M4-.7 X 12
218-24	P0873218-24	CAP SCREW M4-.7 X 14
218-25	P0873218-25	FLAT WASHER 4MM
219	P0873219	POWER RECEPTACLE NEMA 5-15 125V 15A
220	P0873220	POWER RECEPTACLE IEC C14 250V 10A
221	P0873221	EARTH GROUND POST
222	P0873222	LASER TUBE 100W
223	P0873223	HIGH VOLTAGE TERMINAL LUG
224	P0873224	CATHODE CABLE 16G 1W 50"
225	P0873225	HIGH VOLTAGE CABLE 7W, 4.2 X 1220MM
226	P0873226	HIGH VOLTAGE CONNECTOR 22.6MM
227	P0873227	LASER TUBE SADDLE
228	P0873228	LASER TUBE CRADLE
229	P0873229	LASER TUBE CRADLE MOUNT
230	P0873230	LASER TUBE CRADLE SPACER
231	P0873231	PANEL-MOUNT USB 2.0 CORD 72"
232	P0873232	ROCKER SWITCH DAIER KCD1-101
233	P0873233	CAP SCREW M3-.5 X 8
234	P0873234	CAP SCREW M4-.7 X 8
235	P0873235	CAP SCREW M6-1 X 50
236	P0873236	CAP SCREW M4-.7 X 14
237	P0873237	CAP SCREW M5-.8 X 25
238	P0873238	FLAT WASHER 5MM
239	P0873239	CAP SCREW M5-.8 X 10
301	P0873301	MIRROR ASSEMBLY #1
301-1	P0873301-1	MIRROR ASSEMBLY BASE
301-2	P0873301-2	CAP SCREW M5-.8 X 14
301-3	P0873301-3	BASE ROD
301-4	P0873301-4	MIRROR SUPPORT PLATE
301-5	P0873301-5	MIRROR MOUNTING PLATE
301-6	P0873301-6	MIRROR ADJUSTMENT PLATE
301-7	P0873301-7	REFERENCE LASER ADJUSTMENT PLATE
301-8	P0873301-8	COMPRESSION SPRING 1 X 5 X 12
301-9	P0873301-9	KNURLED THUMB SCREW M3-.5 X 18, D8
301-10	P0873301-10	ANTI-REFLECTIVE LENS
301-12	P0873301-12	ANTI-REFLECTIVE LENS HOUSING
301-13	P0873301-13	REFERENCE LASER MOUNTING PLATE
301-14	P0873301-14	BUTTON HD CAP SCR M3-.5 X 6, NYLON
301-15	P0873301-15	KNURLED THUMB SCREW M7-1 X 14, D10
301-16	P0873301-16	KNURLED PANEL NUT M7-1
301-17	P0873301-17	CAP SCREW M4-.7 X 25
301-18	P0873301-18	COMPRESSION SPRING 1 X 7.5 X 24

G0873 Gantry & Optics Parts List (Cont.)

REF	PART #	DESCRIPTION
301-19	P0873301-19	ADJUSTMENT ROD
301-20	P0873301-20	COMPRESSION RING 25MM
301-21	P0873301-21	PLANO MIRROR 25MM
301-22	P0873301-22	REFERENCE LASER 650NM
301-23	P0873301-23	CAP SCREW M3-.5 X 8
301-24	P0873301-24	CAP SCREW M4-.7 X 14
301-25	P0873301-25	FLAT WASHER 4MM
301-26	P0873301-26	CAP SCREW M4-.7 X 10
301-27	P0873301-27	FLAT WASHER 5MM
401	P0873401	LED WORKLIGHT STRIP
402	P0873402	HONEYCOMB TABLE 23" X 35"
403	P0873403	TABLE BLADE
404	P0873404	TABLE BLADE CRADLE
501	P0873501	Y-AXIS DRIVE ASSEMBLY
501-1	P0873501-1	BEARING HOUSING MOUNT
501-2	P0873501-2	TIMING PULLEY 72T
501-3	P0873501-3	IDLER PULLEY 24T
501-4	P0873501-4	TIMING BELT 354-3M
501-5	P0873501-5	STEPPER MOTOR MOUNT
501-6	P0873501-6	IDLER PULLEY 24T
501-7	P0873501-7	FLEXIBLE SHAFT
501-8	P0873501-8	BEARING HOUSING
501-9	P0873501-9	BALL BEARING
501-10	P0873501-10	CAP SCREW M10-1.5 X 60
501-11	P0873501-11	FLAT WASHER 10MM

REF	PART #	DESCRIPTION
501-12	P0873501-12	CAP SCREW M5-.8 X 10
501-13	P0873501-13	FLAT WASHER 5MM
701	P0873701	LEADSCREW ASSEMBLY
701-1	P0873701-1	LEADSCREW MOUNT, UPPER
701-2	P0873701-2	LEADSCREW NUT
701-3	P0873701-3	LEADSCREW
701-4	P0873701-4	LEADSCREW PULLEY
701-5	P0873701-5	LEADSCREW MOUNT, LOWER
701-6	P0873701-6	BALL BEARING 6200-2RS
801	P0873801	Z-AXIS BELT TENSIONER
801-1	P0873801-1	TENSIONER PULLEY
801-2	P0873801-2	TENSIONER BRACKET
801-3	P0873801-3	HEX BOLT M10-1.5 X 53
801-4	P0873801-4	HEX NUT M10-1.5
802	P0873802	LIMIT SWITCH TMAZTZ V-152-1C25
803	P0873803	LIMIT SWITCH MOUNTING BRACKET
809	P0873809	Z-AXIS SYNCHRONOUS BELT 1569-3M
810	P0873810	Z-AXIS LIFT ASSEMBLY
810-1	P0873810-1	STEPPER MOTOR LS 57CM21X-M-L200
810-2	P0873810-2	STEPPER MOTOR MOUNTING BRACKET
811	P0873811	CAP SCREW M5-.8 X 10
812	P0873812	CAP SCREW M4-.7 X 14
813	P0873813	CHILLER SIGNAL RECEPTACLE
814	P0873814	AIR FITTING 5/16 NPT STRAIGHT BR
815	P0873815	WATER FITTING 3/8 NPT STRAIGHT BR

G0873 Electrical & Accessories

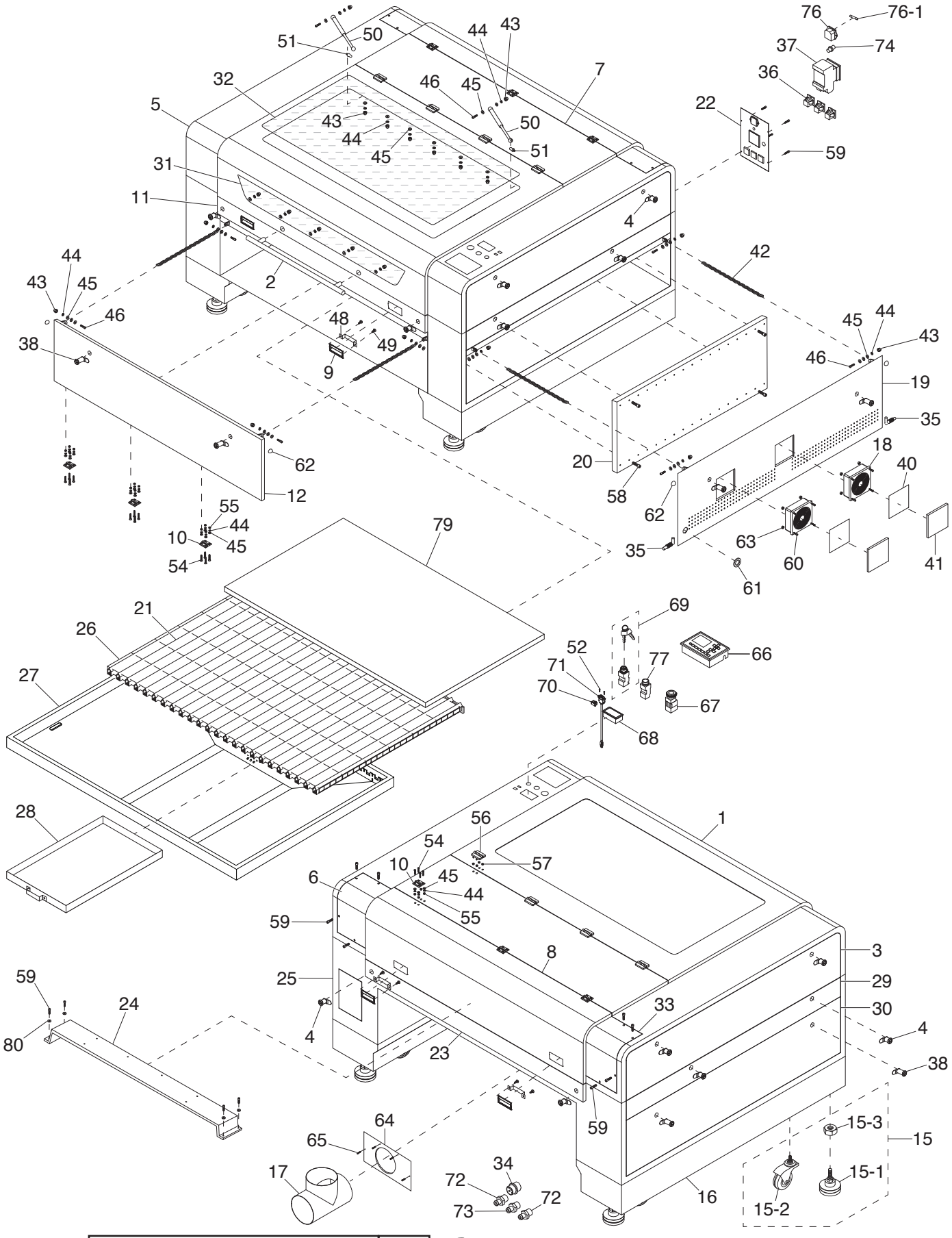


G0873 Electrical & Accessories Parts List

REF	PART #	DESCRIPTION
601	P0873601	CONTROLLER RUIDA RDC6442S-B (EC)
602	P0873602	WIRE LOOM 50 X 815MM
603	P0873603	STEPPER DRIVER LEADSHINE 3DM580
604	P0873604	ELECTRICAL MOUNTING BOARD
605	P0873605	EMI FILTER FILTEMC FT127-10
607	P0873607	POWER SUPPLY TL-POWER TL-400-48
608	P0873608	POWER SUPPLY TL-POWER TL-25D-C
609	P0873609	REFERENCE LASER POWER SUPPLY
610	P0873610	STEPPER DRIVER LEADSHINE 3DM580
611	P0873611	STEPPER DRIVER LEADSHINE M860C
612	P0873612	HIGH VOLTAGE POWER SUPPLY MYJG100W
613	P0873613	CHASSIS GROUND BAR
614	P0873614	ELECTRICAL COOLING FAN GBOC 12025HSL
615	P0873615	ELECTRICAL COOLING FAN FILTER
616	P0873616	ELECTRICAL COOLING FAN COVER
617	P0873617	SILICONE TUBING 8ID X 11OD X 1725L
618	P0873618	WATER CHILLER CW-5000
619	P0873619	SIGNAL CORD 20G 4W 78"
620	P0873620	COLLAPSIBLE DUCTING 6" X 24"
621	P0873621	FLEXIBLE DUCTING 6" X 60"
622	P0873622	EXTRACTION FAN YONGCHENG CZ-TD550
623	P0873623	SILICONE TUBING 8ID X 11OD X 1420L
624	P0873624	AIR PUMP HAILEA AC0-009E
625	P0873625	STRAIGHT BARBED FITTING 1/2" NPT
626	P0873626	TOOLBOX (EMPTY)
627	P0873627	POWER CORD 16G 3W 72" 5-15P
628	P0873628	MIRROR ALIGNMENT GAUGE

REF	PART #	DESCRIPTION
629	P0873629	LASER CUTTING DEPTH GAUGE
630	P0873630	FOCUS GAUGE
631	P0873631	WIRE HOSE CLAMP 6"
632	P0873632	HEX WRENCH 2.5MM
633	P0873633	HEX WRENCH 3MM
634	P0873634	HEX WRENCH 4MM
635	P0873635	HEX WRENCH 5MM
636	P0873636	FLAT HD SCREWDRIVER 1/8"
637	P0873637	USB FLASH DRIVE 512MB
638	P0873638	LASER BEAM ALIGNMENT GAUGE
639	P0873639	RED LED
640	P0873640	OPTICS COTTON ROLLS
641	P0873641	LOCKING DOOR KEYS (2-PC SET)
642	P0873642	ADJUSTABLE AIRFLOW ADAPTER
643	P0873643	OPTICS DISASSEMBLY TOOL, LARGE
644	P0873644	OPTICS DISASSEMBLY TOOL, SMALL
645	P0873645	FLAT HD SCR M4-.7 X 15
646	P0873646	HEX NUT M4-.7
647	P0873647	MOUNTING BRACKET
648	P0873648	FLANGE SCREW M4-.7 X 8
649	P0873649	FLANGE SCREW M3-.5 X 8
650	P0873650	CAP SCREW M4-.7 X 8
651	P0873651	CAP SCREW M6-1 X 20
652	P0873652	WIRE LOOM 50 X 965MM
653	P0873653	WIRE LOOM 25 X 165MM
654	P0873654	WIRE LOOM 50 X 305MM
655	P0873655	USB EXTENSION CABLE 25'

G0874 Main

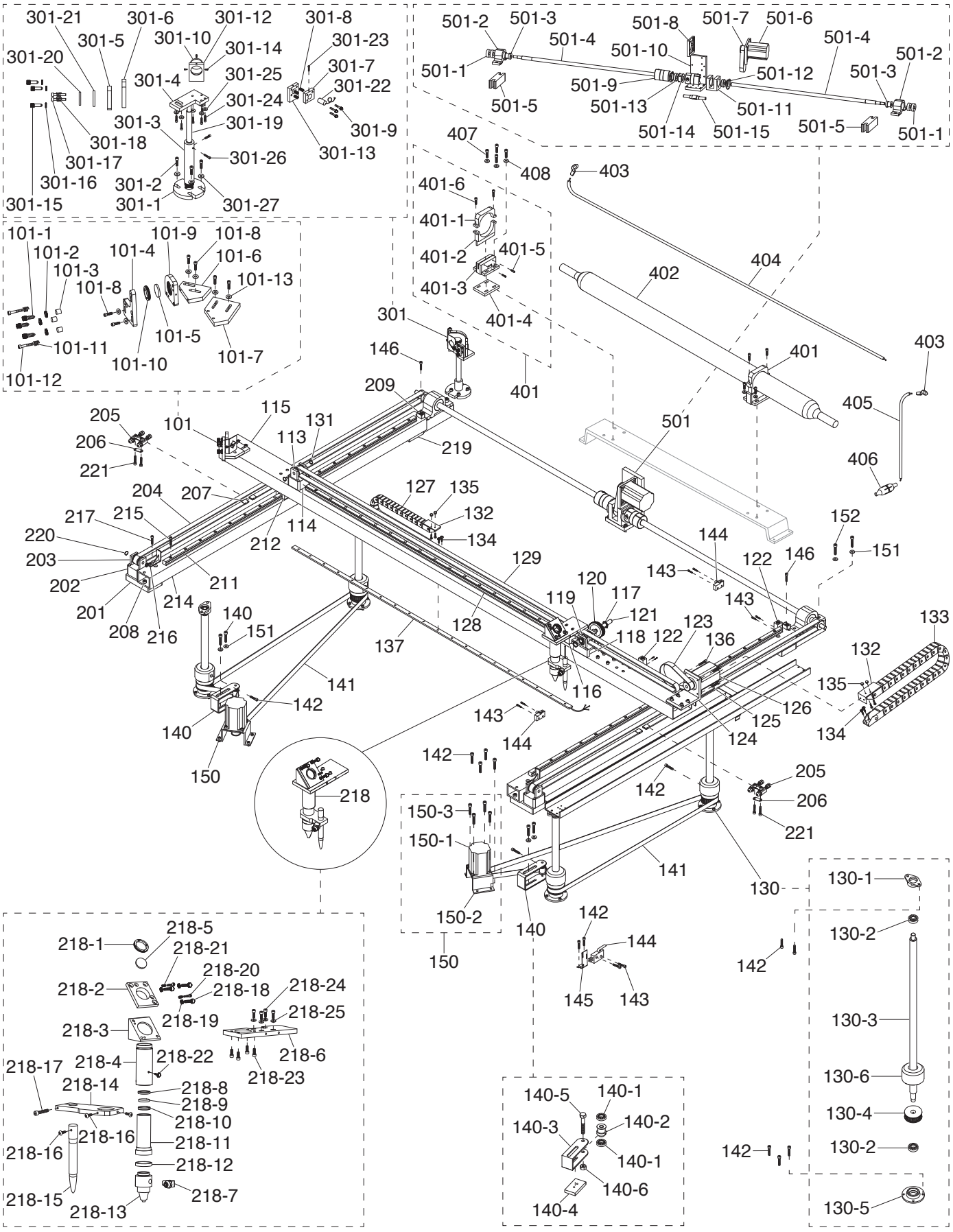


G0874 Main Parts List

REF	PART #	DESCRIPTION
1	P0874001	LOADING DOOR, TOP
2	P0874002	LOADING DOOR HANDLE
3	P0874003	UPPER ACCESS DOOR, SIDE
4	P0874004	SHORT KEYED CAM LOCK
5	P0874005	CABINET FRAME
6	P0874006	LASER TUBE ACCESS COVER, RIGHT
7	P0874007	DOOR MOUNT PANEL
8	P0874008	LASER TUBE ACCESS DOOR
9	P0874009	RECESSED PULL HANDLE
10	P0874010	SMALL HINGE
11	P0874011	LOADING PANEL, FRONT
12	P0874012	ACCESS DOOR, FRONT
15	P0874015	MOBILE SUPPORT ASSEMBLY
15-1	P0874015-1	FOOT PAD M24-3
15-2	P0874015-2	CASTER 4", SWIVEL
15-3	P0874015-3	HEX NUT M24-3
16	P0874016	BODY SUPPORT STAND
17	P0874017	EXHAUST PORT ADAPTER
18	P0874018	ELECTRICAL COOLING FAN SF12025AT
19	P0874019	ELECTRICAL CABINET DOOR
20	P0874020	ELECTRICAL MOUNTING BOARD
21	P0874021	TABLE BLADE
22	P0874022	POWER CONNECTION PANEL
23	P0874023	LOADING PANEL, REAR
24	P0874024	LASER TUBE PLATFORM
25	P0874025	MACHINE CABINET
26	P0874026	TABLE BLADE CRADLE
27	P0874027	TABLE SUPPORT
28	P0874028	TABLE COLLECTION TRAY
29	P0874029	LOADING PANEL, SIDE
30	P0874030	LOWER ACCESS DOOR, LEFT
31	P0874031	ACRYLIC SAFETY WINDOW, FRONT
32	P0874032	TOP ACRYLIC SAFETY WINDOW
33	P0874033	LASER TUBE ACCESS COVER, LEFT
34	P0874034	CHILLER SIGNAL RECEPTACLE
35	P0874035	L-HANDLE SPRING PLUNGER
36	P0874036	RECEPTACLE NEMA 5-15 125V 15A
37	P0874037	CIRCUIT BREAKER DELIXI DZ47SLE 230V
38	P0874038	LONG KEYED CAM LOCK

REF	PART #	DESCRIPTION
40	P0874040	FAN FILTER
41	P0874041	FAN COVER
42	P0874042	STEEL CHAIN 1/8" X 1/4" X 18"
43	P0874043	ACORN NUT M5-.8
44	P0874044	LOCK WASHER 5MM
45	P0874045	FLAT WASHER 5MM
46	P0874046	CAP SCREW M5-.8 X 16
48	P0874048	HANDLE BRACKET
49	P0874049	FLANGE SCREW M4-.7 X 14
50	P0874050	GAS STRUT 550N
51	P0874051	BALL STUD M5-.8
52	P0874052	CAP SCREW M3-.5 X 10
54	P0874054	FLAT HD SCR M5-.8 X 14
55	P0874055	HEX NUT M5-.8
56	P0874056	LARGE HINGE
57	P0874057	HEX NUT M6-1
58	P0874058	CAP SCREW M6-1 X 20
59	P0874059	CAP SCREW M4-.7 X 12
60	P0874060	CAP SCREW M4-.7 X 14
61	P0874061	RUBBER GROMMET
62	P0874062	RUBBER BUMPER
63	P0874063	HEX NUT M4-.7
64	P0874064	EXHAUST PORT PANEL 6"
65	P0874065	BUTTON HD CAP SCR M4-.7 X 8
66	P0874066	CONTROL PANEL RUIDA RDC6442S-B
67	P0874067	E-STOP BUTTON YIJIA YJ139-LA38 22MM
68	P0874068	AMP METER UXCELL 85C17 50MA
69	P0874069	KEY SWITCH W/KEYS YIJIA YJ139-XB2 22MM
70	P0874070	ROCKER SWITCH DAIER KCD1-101
71	P0874071	PANEL-MOUNT USB 2.0 CORD 48"
72	P0874072	WATER FITTING 3/8 NPT STRAIGHT BR
73	P0874073	AIR FITTING 5/16 NPT STRAIGHT BR
74	P0874074	EARTH GROUND POST
76	P0874076	RECEPTACLE IEC C14 250V 10A
76-1	P0874076-1	FUSE 20A 250V 5MM FAST-ACTING, GL
77	P0874077	START BUTTON EK-LA38-20DNZS
79	P0874079	HONEYCOMB TABLE 35" X 51"
80	P0874080	FLAT WASHER 4MM

G0874 Gantry & Optics



G0874 Gantry & Optics Parts List

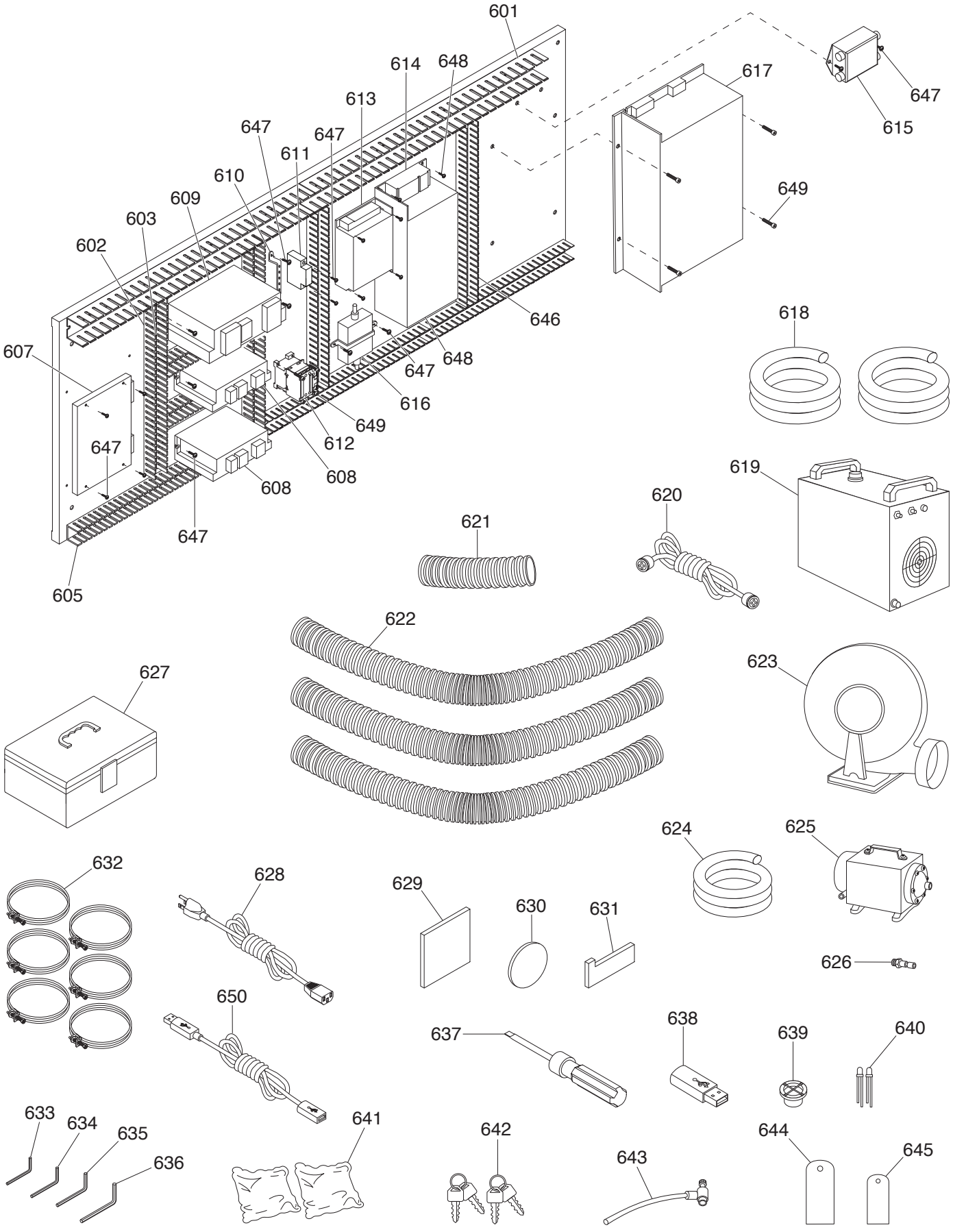
REF	PART #	DESCRIPTION
101	P0874101	MIRROR ASSEMBLY #2
101-1	P0874101-1	KNURLED THUMB SCREW M7-1 X 14, D10
101-2	P0874101-2	KNURLED PANEL NUT M7-1
101-3	P0874101-3	THREADED INSERT M7-1
101-4	P0874101-4	VERTICAL ADJUSTMENT PLATE
101-5	P0874101-5	PLANO MIRROR 25MM
101-6	P0874101-6	UPPER ADJUSTMENT PLATE
101-7	P0874101-7	LOWER ADJUSTMENT PLATE
101-8	P0874101-8	CAP SCREW M5-.8 X 10
101-9	P0874101-9	MIRROR HOUSING
101-10	P0874101-10	COMPRESSION RING 25MM
101-11	P0874101-11	COMPRESSION SPRING 1 X 7.5 X 24
101-12	P0874101-12	CAP SCREW M4-.7 X 25
101-13	P0874101-13	FLAT WASHER 5MM
113	P0874113	TENSIONER PULLEY
114	P0874114	TENSIONER PULLEY MOUNTING BLOCK
115	P0874115	X-AXIS SUPPORT BEAM
116	P0874116	LINEAR GUIDEWAY BLOCK EG15
117	P0874117	EXT RETAINING RING 12MM
118	P0874118	IDLER PULLEY MOUNT
119	P0874119	IDLER PULLEY 24T
120	P0874120	TIMING PULLEY 72T
121	P0874121	PULLEY SHAFT
122	P0874122	PROXIMITY SWITCH OMRON TL-Q5MCI-Z
123	P0874123	TIMING BELT 240-3M
124	P0874124	STEPPER MOTOR MOUNT
125	P0874125	CABLE CARRIER BRACKET
126	P0874126	STEPPER MOTOR LS 573S15-L NEMA23
127	P0874127	X-AXIS CABLE CARRIER
128	P0874128	LINEAR GUIDEWAY
129	P0874129	TIMING BELT 3M-15 15 X 2950MM
130	P0874130	LEADSCREW ASSEMBLY
130-1	P0874130-1	LEADSCREW MOUNT, UPPER
130-2	P0874130-2	BALL BEARING 6200-2RS
130-3	P0874130-3	LEADSCREW
130-4	P0874130-4	LEADSCREW PULLEY
130-5	P0874130-5	LEADSCREW MOUNT, LOWER
130-6	P0874130-6	LEADSCREW NUT
131	P0874131	EXT RETAINING RING 8MM
132	P0874132	CABLE CARRIER MOUNTING BRACKET
133	P0874133	Y-AXIS CABLE CARRIER
134	P0874134	FLANGE SCREW M3-.5 X 6
135	P0874135	ACORN NUT M3-.5
136	P0874136	CAP SCREW M5-.8 X 10
137	P0874137	LED WORKLIGHT STRIP
140	P0874140	Z-AXIS BELT TENSIONER
140-1	P0874140-1	BALL BEARING 686Z
140-2	P0874140-2	TENSIONER PULLEY
140-3	P0874140-3	TENSIONER BRACKET
140-4	P0874140-4	TENSIONER BRACKET MOUNT
140-5	P0874140-5	HEX BOLT M10-1.5 X 52
140-6	P0874140-6	HEX NUT M10-1.5
141	P0874141	Z-AXIS SYNCHRONOUS BELT 1800-3M
142	P0874142	CAP SCREW M5-.8 X 10
143	P0874143	CAP SCREW M3-.5 X 16
144	P0874144	LIMIT SWITCH TMAZTZ V-152-1C25
145	P0874145	LIMIT SWITCH MOUNTING BRACKET
146	P0874146	CAP SCREW M4-.7 X 10
150	P0874150	Z-AXIS LIFT ASSEMBLY
150-1	P0874150-1	STEPPER MOTOR LS 573S15-L NEMA23
150-2	P0874150-2	STEPPER MOTOR MOUNTING BRACKET
150-3	P0874150-3	CAP SCREW M5-.8 X 10
151	P0874151	FLAT WASHER 4MM
152	P0874152	CAP SCREW M4-.7 X 30
201	P0874201	SUPPORT BEAM MOUNTING BRACKET, FRONT
202	P0874202	TENSIONER PULLEY MOUNTING BRACKET
203	P0874203	TENSIONER PULLEY
204	P0874204	Z-AXIS SYNCHRONOUS BELT 1800-3M
205	P0874205	BELT TENSIONER 15MM
206	P0874206	BELT BRACKET
207	P0874207	BELT CLASP
208	P0874208	CAP SCREW M6-1 X 48
209	P0874209	REAR GUIDEWAY STOP BLOCK
211	P0874211	LINEAR GUIDEWAY
212	P0874212	LINEAR GUIDEWAY CARRIAGE
214	P0874214	Y-AXIS SUPPORT BEAM
215	P0874215	CAP SCREW M6-1 X 20
216	P0874216	BUMPER STOP
217	P0874217	CAP SCREW M4-.7 X 8
218	P0874218	LASER HEAD ASSEMBLY
218-1	P0874218-1	COMPRESSION RING 25MM
218-2	P0874218-2	45 DEG ADJUSTMENT PLATE
218-3	P0874218-3	45 DEG MIRROR HOUSING
218-4	P0874218-4	FIXED FOCUS BARREL
218-5	P0874218-5	PLANO MIRROR 25MM
218-6	P0874218-6	LASER HEAD MOUNTING PLATE
218-7	P0874218-7	90 DEG AIR ELBOW ADAPTER 1/8 BSPP
218-8	P0874218-8	SILICONE WASHER 22MM
218-9	P0874218-9	FOCAL LENS 63.5 ENGRAVING
218-10	P0874218-10	COMPRESSION RING 22MM
218-11	P0874218-11	TELESCOPING FOCUS BARREL
218-12	P0874218-12	BARREL RING
218-13	P0874218-13	AIR NOZZLE
218-14	P0874218-14	AUTO-FOCUS BRACKET
218-15	P0874218-15	AUTO-FOCUS SENSOR
218-16	P0874218-16	BUTTON HD CAP SCR M3-.5 X 6, NYLON
218-17	P0874218-17	CAP SCREW M3-.5 X 14
218-18	P0874218-18	KNURLED THUMB SCREW M7-1 X 14, D10
218-19	P0874218-19	KNURLED PANEL NUT M7-1
218-20	P0874218-20	CAP SCREW M4-.7 X 25
218-21	P0874218-21	COMPRESSION SPRING 1 X 7.5 X 24
218-22	P0874218-22	KNURLED THUMB SCREW M4-.7 X 6, D10
218-23	P0874218-23	CAP SCREW M4-.7 X 12
218-24	P0874218-24	CAP SCREW M4-.7 X 14
218-25	P0874218-25	FLAT WASHER 4MM
219	P0874219	REAR SUPPORT BEAM MOUNTING BRACKET
220	P0874220	EXT RETAINING RING 8MM
221	P0874221	CAP SCREW M3-.5 X 8
301	P0874301	MIRROR ASSEMBLY #1
301-1	P0874301-1	MIRROR ASSEMBLY BASE
301-2	P0874301-2	CAP SCREW M5-.8 X 14
301-3	P0874301-3	BASE ROD
301-4	P0874301-4	MIRROR SUPPORT PLATE
301-5	P0874301-5	MIRROR MOUNTING PLATE
301-6	P0874301-6	MIRROR ADJUSTMENT PLATE
301-7	P0874301-7	REFERENCE LASER ADJUSTMENT PLATE
301-8	P0874301-8	COMPRESSION SPRING 1 X 5 X 12
301-9	P0874301-9	KNURLED THUMB SCREW M3-.5 X 18, D8
301-10	P0874301-10	ANTI-REFLECTIVE LENS
301-12	P0874301-12	ANTI-REFLECTIVE LENS HOUSING
301-13	P0874301-13	REFERENCE LASER MOUNTING PLATE
301-14	P0874301-14	BUTTON HD CAP SCR M3-.5 X 6, NYLON
301-15	P0874301-15	KNURLED THUMB SCREW M7-1 X 14, D10
301-16	P0874301-16	KNURLED PANEL NUT M7-1
301-17	P0874301-17	CAP SCREW M4-.7 X 25
301-18	P0874301-18	COMPRESSION SPRING 1 X 7.5 X 24

G0874 Gantry & Optics Parts List (Cont.)

REF	PART #	DESCRIPTION
301-19	P0874301-19	ADJUSTMENT ROD
301-20	P0874301-20	COMPRESSION RING 25MM
301-21	P0874301-21	PLANO MIRROR 25MM
301-22	P0874301-22	REFERENCE LASER 650NM
301-23	P0874301-23	CAP SCREW M3-.5 X 8
301-24	P0874301-24	CAP SCREW M4-.7 X 14
301-25	P0874301-25	FLAT WASHER 4MM
301-26	P0874301-26	CAP SCREW M4-.7 X 10
301-27	P0874301-27	FLAT WASHER 5MM
401	P0874401	LASER TUBE SADDLE ASSEMBLY
401-1	P0874401-1	LASER TUBE SADDLE
401-2	P0874401-2	LASER TUBE CRADLE
401-3	P0874401-3	LASER TUBE CRADLE MOUNT
401-4	P0874401-4	LASER TUBE CRADLE SPACER
401-5	P0874401-5	CAP SCREW M4-.7 X 14
401-6	P0874401-6	CAP SCREW M5-.8 X 25
402	P0874402	LASER TUBE (150W)
403	P0874403	HIGH VOLTAGE TERMINAL LUG
404	P0874404	CATHODE CABLE 16G 1W 120"
405	P0874405	HIGH VOLTAGE CABLE 7W, 4.2 X 1220MM

REF	PART #	DESCRIPTION
406	P0874406	HIGH VOLTAGE CONNECTOR 22.6MM
407	P0874407	CAP SCREW M5-.8 X 25
408	P0874408	FLAT WASHER 5MM
501	P0874501	Y-AXIS DRIVE ASSEMBLY
501-1	P0874501-1	BALL BEARING 627-2RS
501-2	P0874501-2	BEARING HOUSING
501-3	P0874501-3	IDLER PULLEY 24T
501-4	P0874501-4	FLEXIBLE SHAFT
501-5	P0874501-5	MOUNTING PAD
501-6	P0874501-6	STEPPER MOTOR LS 573S15-L NEMA23
501-7	P0874501-7	TIMING BELT 228-3M-15
501-8	P0874501-8	STEPPER MOTOR MOUNT
501-9	P0874501-9	FLEXIBLE SHAFT COUPLING 12MM
501-10	P0874501-10	PULLEY MOUNTING BRACKET
501-11	P0874501-11	PULLEY U-MOUNT BRACKET
501-12	P0874501-12	EXT RETAINING RING 12MM
501-13	P0874501-13	BALL BEARING 627-2RS
501-14	P0874501-14	IDLER PULLEY 24T
501-15	P0874501-15	COUPLING SHAFT

G0874 Electrical & Accessories

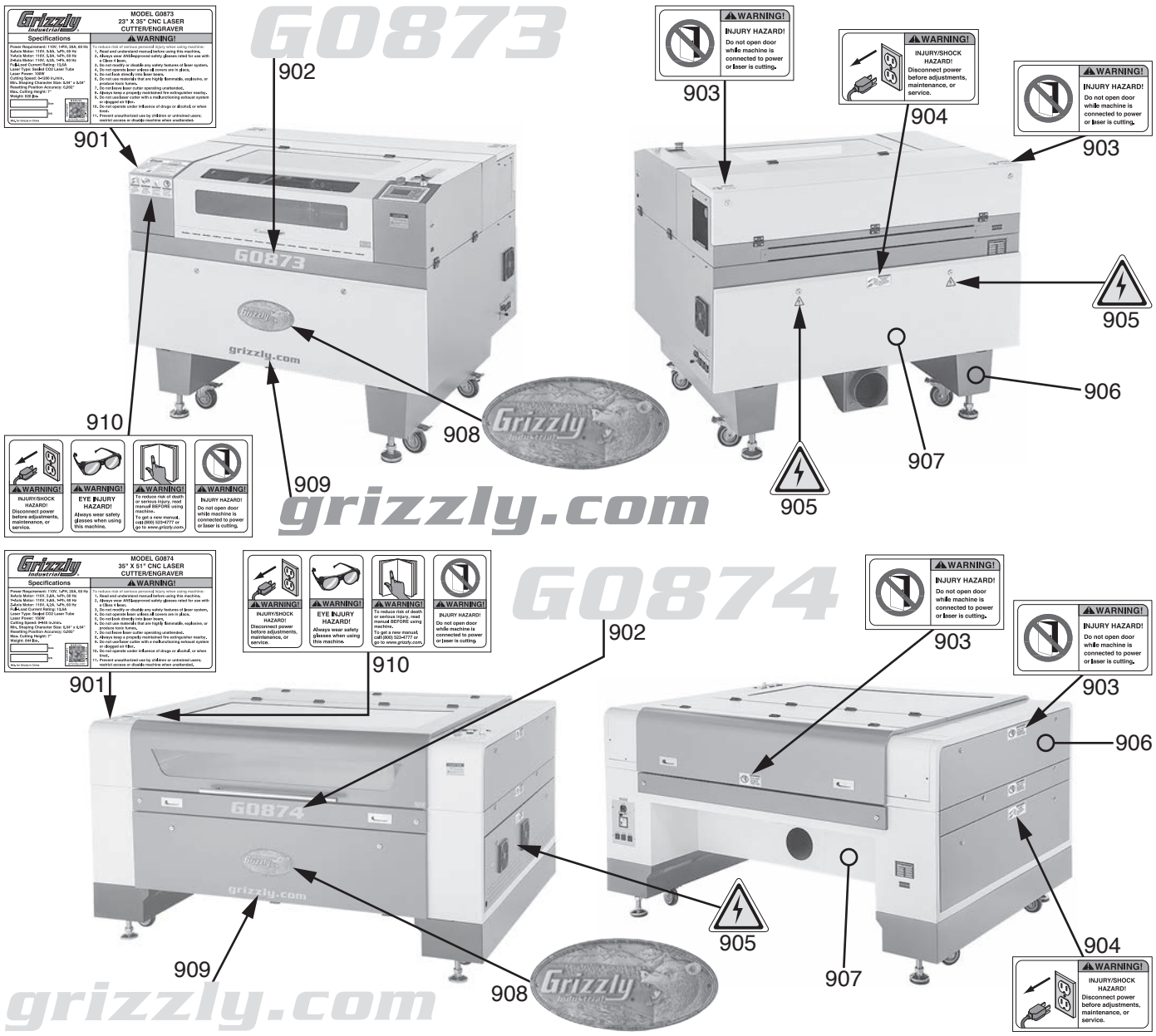


G0874 Electrical & Accessories Parts List

REF	PART #	DESCRIPTION
601	P0874601	WIRE LOOM 50 X 815MM
602	P0874602	WIRE LOOM 50 X 230MM
603	P0874603	WIRE LOOM 25 X 165MM
605	P0874605	WIRE LOOM 50 X 915MM
607	P0874607	CONTROLLER RUIDA RDC6442S-B (EC)
608	P0874608	STEPPER DRIVER LEADSHINE 3DM580
609	P0874609	STEPPER DRIVER LEADSHINE DMA860H
610	P0874610	CHASSIS GROUND BAR
611	P0874611	RELAY EZL2N 250VAC 20VDC 10A
612	P0874612	CONTACTOR MEC GMC-32 240V 32A
613	P0874613	POWER SUPPLY TL-POWER TL-400S-48
614	P0874614	POWER SUPPLY TL-POWER TL-25D-C
615	P0874615	EMI FILTER FILTEMC FT127-10
616	P0874616	REFERENCE LASER POWER SUPPLY
617	P0874617	POWER SUPPLY MYJG150W-Y-1
618	P0874618	SILICONE TUBING 8ID X 11OD X 1725L
619	P0874619	WATER CHILLER CW-5200
620	P0874620	SIGNAL CORD 20G 4W 78"
621	P0874621	COLLAPSIBLE DUCTING 6" X 24"
622	P0874622	FLEXIBLE DUCTING 6" X 60"
623	P0874623	EXTRACTION FAN YONGCHENG CZ-TD550
624	P0874624	SILICONE TUBING 8ID X 11OD X 1420L
625	P0874625	AIR PUMP HAILEA AC0-009E
626	P0874626	STRAIGHT BARBED FITTING 1/2" NPT

REF	PART #	DESCRIPTION
627	P0874627	TOOLBOX (EMPTY)
628	P0874628	POWER CORD 16G 3W 72" 5-15P
629	P0874629	MIRROR ALIGNMENT GAUGE
630	P0874630	LASER CUTTING DEPTH GAUGE
631	P0874631	FOCUS GAUGE
632	P0874632	WIRE HOSE CLAMP 6"
633	P0874633	HEX WRENCH 2.5MM
634	P0874634	HEX WRENCH 3MM
635	P0874635	HEX WRENCH 4MM
636	P0874636	HEX WRENCH 5MM
637	P0874637	FLAT HD SCREWDRIVER 1/8"
638	P0874638	USB FLASH DRIVE 512MB
639	P0874639	LASER BEAM ALIGNMENT GAUGE
640	P0874640	LED, RED
641	P0874641	OPTICS COTTON ROLLS
642	P0874642	LOCKING DOOR KEYS (2-PC SET)
643	P0874643	ADJUSTABLE AIRFLOW ADAPTER
644	P0874644	OPTICS DISASSEMBLY TOOL, LARGE
645	P0874645	OPTICS DISASSEMBLY TOOL, SMALL
646	P0874646	MOUNTING BRACKET
647	P0874647	FLANGE SCREW M4-.7 X 8
648	P0874648	FLANGE SCREW M3-.5 X 8
649	P0874649	CAP SCREW M4-.7 X 8
650	P0874650	USB EXTENSION CABLE 25'

Labels & Cosmetics



REF	PART #	DESCRIPTION
901	P0873901	MACHINE ID LABEL (G0873)
902	P0874901	MACHINE ID LABEL (G0874)
902	P0873902	MODEL NUMBER LABEL (G0873)
902	P0874902	MODEL NUMBER LABEL (G0874)
903	P0873903	DO NOT OPEN DOOR LABEL
904	P0873904	DISCONNECT 110V LABEL
905	P0873905	ELECTRICITY LABEL

REF	PART #	DESCRIPTION
906	P0873906	TOUCH-UP PAINT, GRIZZLY GREEN
907	P0873907	TOUCH-UP PAINT, GRIZZLY BEIGE
908	P0873908	GRIZZLY NAMEPLATE - LARGE
909	P0873909	GRIZZLY.COM LABEL (G0873)
909	P0874909	GRIZZLY.COM LABEL (G0874)
910	P0873910	COMBO WARNING LABEL

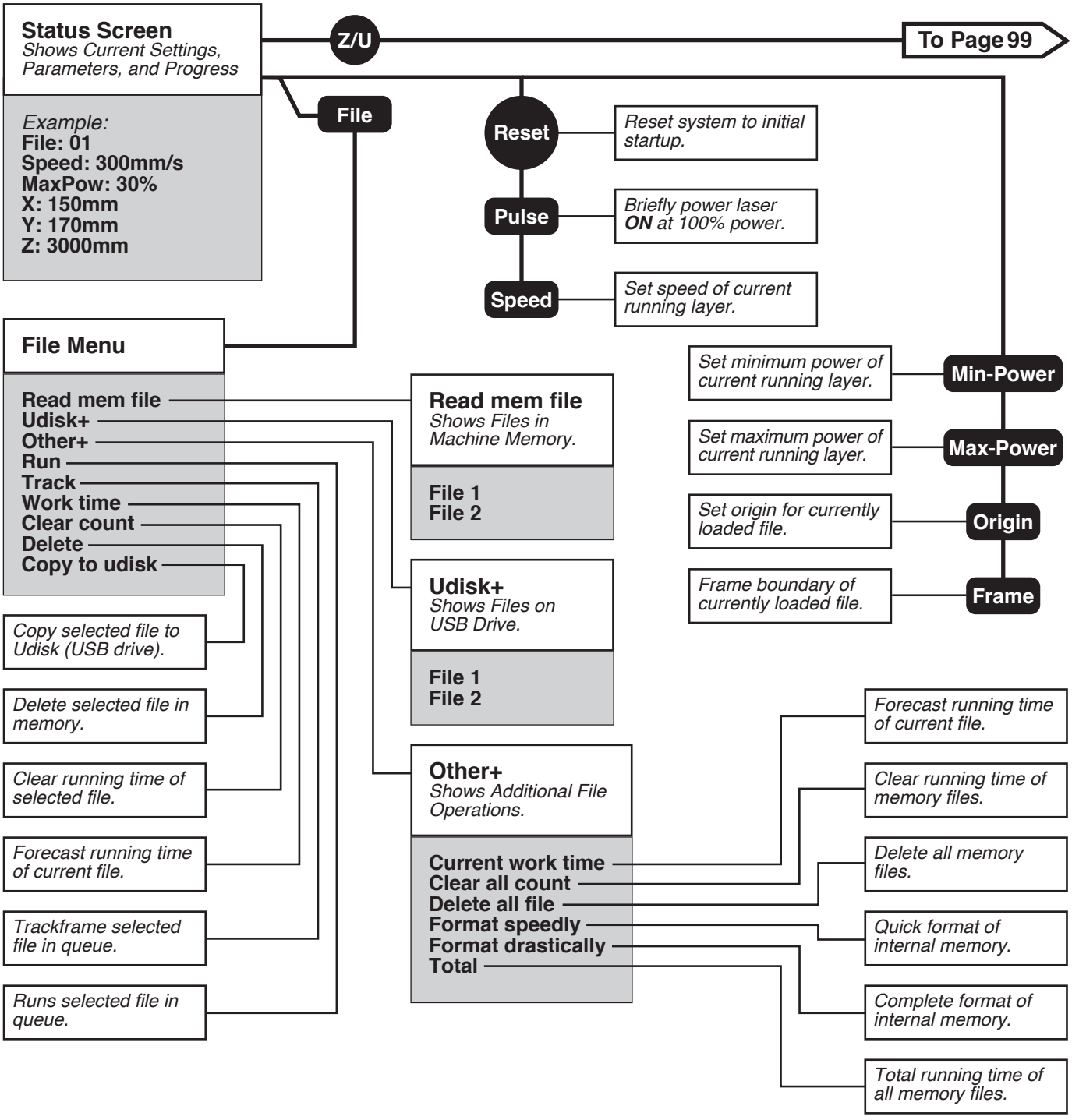
⚠WARNING

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.

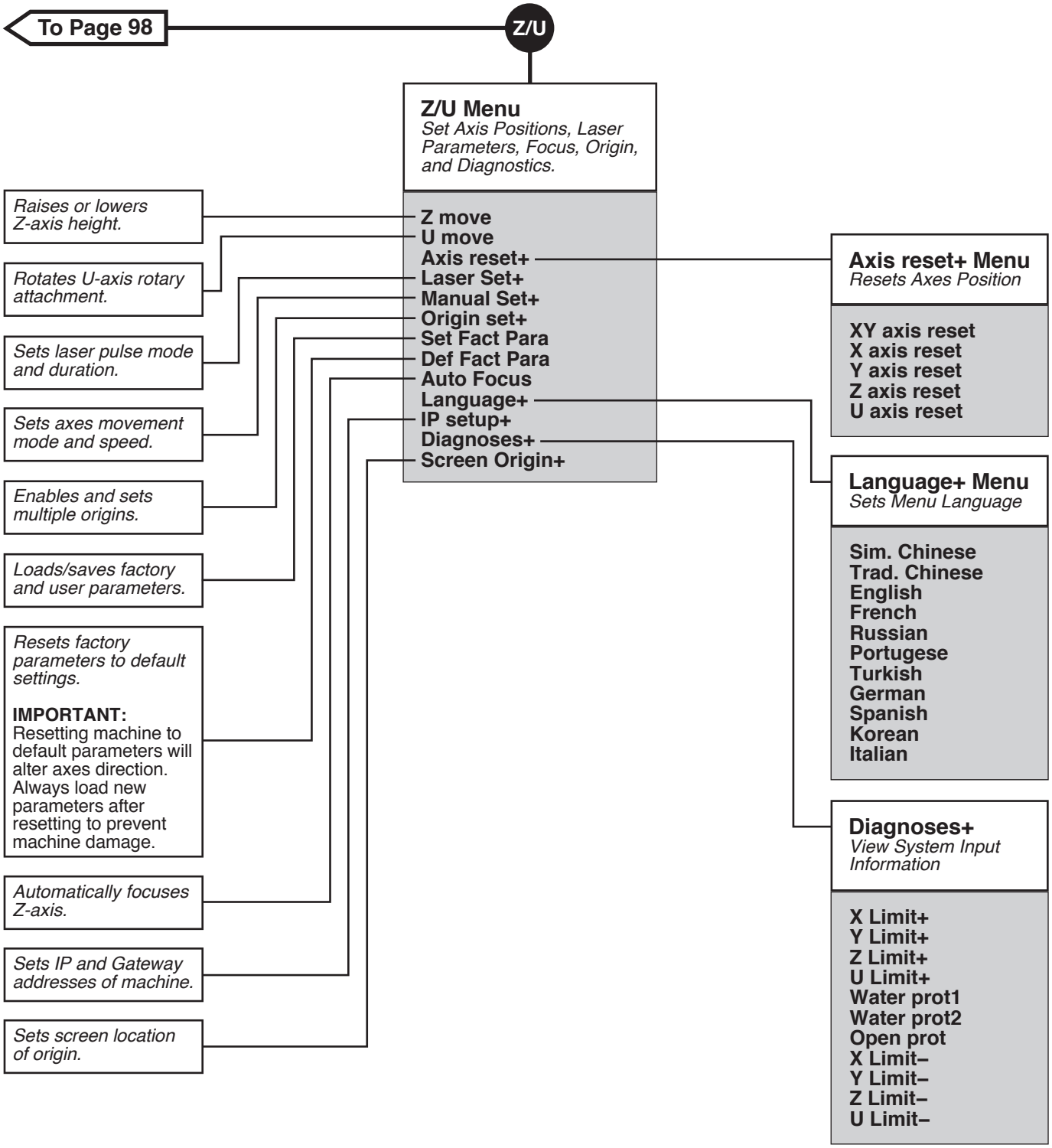
SECTION 10: APPENDIX

Command Tree

This section is an overview of the menus and features used to control this machine. For instructions on navigating the interface and the basics of operation, refer to **Controls & Components** on **Page 5**. Since software changes can affect the user interface, check **www.grizzly.com** for an up-to-date command tree if this one seems out of date.



Command Tree (Cont.)



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.

For further information about the warranty, visit **https://www.grizzly.com/forms/warranty** or scan the QR code below to be automatically directed to our warranty page.

WARRANTY

grizzly.com