OPERATOR'S MANUAL

Metal Working

PLASMA CUTTING TABLE

MODEL: PT-22

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Book 1 of 2

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Rev. 10/2016

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THANK YOU & WARRANTY

Thank you for your purchase of a machine from Baileigh Industrial. We hope that you find it productive and useful to you for a long time to come.

Inspection & Acceptance. Buyer shall inspect all Goods within ten (10) days after receipt thereof. Buyer's payment shall constitute final acceptance of the Goods and shall act as a waiver of the Buyer's rights to inspect or reject the goods unless otherwise agreed. If Buyer rejects any merchandise, Buyer must first obtain a Returned Goods Authorization ("RGA") number before returning any goods to Seller. Goods returned without a RGA will be refused. Seller will not be responsible for any freight costs, damages to goods, or any other costs or liabilities pertaining to goods returned without a RGA. Seller shall have the right to substitute a conforming tender. Buyer will be responsible for all freight costs to and from Buyer and repackaging costs, if any, if Buyer refuses to accept shipment. If Goods are returned in unsalable condition, Buyer shall be responsible for full value of the Goods. Buyer may not return any special order Goods. Any Goods returned hereunder shall be subject to a restocking fee equal to 30% of the invoice price.

Specifications. Seller may, at its option, make changes in the designs, specifications or components of the Goods to improve the safety of such Goods, or if in Seller's judgment, such changes will be beneficial to their operation or use. Buyer may not make any changes in the specifications for the Goods unless Seller approves of such changes in writing, in which event Seller may impose additional charges to implement such changes.

Limited Warranty. Seller warrants to the original end-user that the Goods manufactured or provided by Seller under this Agreement shall be free of defects in material or workmanship for a period of twelve (12) months from the date of purchase, provided that the Goods are installed, used, and maintained in accordance with any instruction manual or technical guidelines provided by the Seller or supplied with the Goods, if applicable. The original end-user must give written notice to Seller of any suspected defect in the Goods prior to the expiration of the warranty period. The original end-user must also obtain a RGA from Seller prior to returning any Goods to Seller for warranty service under this paragraph. Seller will not accept any responsibility for Goods returned without a RGA. The original end-user shall be responsible for all costs and expenses associated with returning the Goods to Seller for warranty service. In the event of a defect, Seller, at its sole option, shall repair or replace the defective Goods or refund to the original end-user the purchase price for such defective Goods. Goods are not eligible for replacement or return after a period of 30 days from date of receipt. The foregoing warranty is Seller's sole obligation, and the original end-user's exclusive remedy, with regard to any defective Goods. This limited warranty does not apply to: (a) die sets, tooling, and saw blades; (b) periodic or routine maintenance and setup, (c) repair or replacement of the Goods due to normal wear and tear, (d) defects or damage to the Goods resulting from misuse, abuse, neglect, or accidents, (f) defects or damage to the Goods resulting from improper or unauthorized alterations, modifications, or changes; and (f) any Goods that has not been installed and/or maintained in accordance with the instruction manual or technical guidelines provided by Seller.

EXCLUSION OF OTHER WARRANTIES. THE FOREGOING LIMITED WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED. ANY AND ALL OTHER EXPRESS, STATUTORY OR IMPLIED WARRANTIES, INCLUDING BUT NOT LIMITED TO, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE ARE EXPRESSLY DISCLAIMED. NO WARRANTY IS MADE WHICH EXTENDS BEYOND THAT WHICH IS EXPRESSLY CONTAINED HEREIN.

Limitation of Liability. IN NO EVENT SHALL SELLER BE LIABLE TO BUYER OR ANY OTHER PARTY FOR ANY INCIDENTIAL, CONSEQUENTIAL OR SPECIAL DAMAGES (INCLUDING, WITHOUT LIMITATION, LOST PROFITS OR DOWN TIME) ARISING FROM OR IN MANNER CONNECTED WITH THE GOODS, ANY BREACH BY SELLER OR ITS AGENTS OF THIS AGREEMENT, OR ANY OTHER CAUSE WHATSOEVER, WHETHER BASED ON CONTRACT, TORT OR ANY OTHER THEORY OF LIABILITY. BUYER'S REMEDY WITH RESPECT TO ANY CLAIM ARISING UNDER THIS AGREEMENT IS STRICTLY LIMITED TO NO MORE THAN THE AMOUNT PAID BY THE BUYER FOR THE GOODS.

Force Majuere. Seller shall not be responsible for any delay in the delivery of, or failure to deliver, Goods due to causes beyond Seller's reasonable control including, without limitation, acts of God, acts of war or terrorism, enemy actions, hostilities, strikes, labor difficulties, embargoes, non-delivery or late delivery of materials, parts and equipment or transportation delays not caused by the fault of Seller, delays caused by civil authorities, governmental regulations or orders, fire, lightening, natural disasters or any other cause beyond Seller's reasonable control. In the event of any such delay, performance will be postponed by such length of time as may be reasonably necessary to compensate for the delay.

Installation. If Buyer purchases any Goods that require installation, Buyer shall, at its expense, make all arrangements and connections necessary to install and operate the Goods. Buyer shall install the Goods in accordance with any Seller instructions and shall indemnify Seller against any and all damages, demands, suits, causes of action, claims and expenses (including actual attorneys' fees and costs) arising directly or indirectly out of Buyer's failure to properly install the Goods.

Work By Others; Safety Devices. Unless agreed to in writing by Seller, Seller has no responsibility for labor or work performed by Buyer or others, of any nature, relating to design, manufacture, fabrication, use, installation or provision of Goods. Buyer is solely responsible for furnishing, and requiring its employees and customers to use all safety devices, guards and safe operating procedures required by law and/or as set forth in manuals and instruction sheets furnished by Seller. Buyer is responsible for consulting all operator's manuals, ANSI or comparable safety standards, OSHA regulations and other sources of safety standards and regulations applicable to the use and operation of the Goods.

Remedies. Each of the rights and remedies of Seller under this Agreement is cumulative and in addition to any other or further remedies provided under this Agreement or at law or equity.

Attorney's Fees. In the event legal action is necessary to recover monies due from Buyer or to enforce any provision of this Agreement, Buyer shall be liable to Seller for all costs and expenses associated therewith, including Seller's actual attorneys' fees and costs.

Governing Law/Venue. This Agreement shall be construed and governed under the laws of the State of Wisconsin, without application of conflict of law principles. Each party agrees that all actions or proceedings arising out of or in connection with this Agreement shall be commenced, tried, and litigated only in the state courts sitting in Manitowoc County, Wisconsin or the U.S. Federal Court for the Eastern District of Wisconsin. Each party waives any right it may have to assert the doctrine of "forum non conveniens" or to object to venue to the extent that any proceeding is brought in accordance with this section. Each party consents to and waives any objection to the exercise of personal jurisdiction over it by courts described in this section. Each party waives to the fullest extent permitted by applicable law the right to a trial by jury.

Summary of Return Policy.

- 10 Day acceptance period from date of delivery. Damage claims and order discrepancies will not be accepted after this time.
- You must obtain a Baileigh issued RGA number PRIOR to returning any materials.
- Returned materials must be received at Baileigh in new condition and in original packaging.
- Altered items are not eligible for return.
- Buyer is responsible for all shipping charges.
- A 30% re-stocking fee applies to all returns.

Baileigh Industrial makes every effort to ensure that our posted specifications, images, pricing and product availability are as correct and timely as possible. We apologize for any discrepancies that may occur. Baileigh Industrial reserves the right to make any and all changes deemed necessary in the course of business including but not limited to pricing, product specifications, quantities, and product availability.

For Customer Service & Technical Support:
Please contact one of our knowledgeable Sales and Service team members at:
(920) 684-4990 or e-mail us at sales@baileigh.com

INTRODUCTION

The quality and reliability of the components assembled on a Baileigh Industrial machine guarantee near perfect functioning, free from problems, even under the most demanding working conditions. However if a situation arises, refer to the manual first. If a solution cannot be found, contact the distributor where you purchased our product. Make sure you have the serial number and production year of the machine (stamped on the nameplate). For replacement parts refer to the assembly numbers on the parts list drawings.

Our technical staff will do their best to help you get your machine back in working order.

In this manual you will find: (when applicable)

- Safety procedures
- Correct installation guidelines
- Description of the functional parts of the machine
- Capacity charts
- Set-up and start-up instructions
- Machine operation
- Scheduled maintenance
- Parts lists

GENERAL NOTES

After receiving your equipment remove the protective container. Do a complete visual inspection, and if damage is noted, **photograph it for insurance claims** and contact your carrier at once, requesting inspection. Also contact Baileigh Industrial and inform them of the unexpected occurrence. Temporarily suspend installation.

Take necessary precautions while loading / unloading or moving the machine to avoid any injuries.

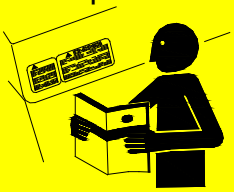
Your machine is designed and manufactured to work smoothly and efficiently. Following proper maintenance instructions will help ensure this. Try and use original spare parts, whenever possible, and most importantly; **DO NOT** overload the machine or make any modifications.

Note: *This symbol refers to useful information throughout the manual.*

IMPORTANT

PLEASE READ THIS OPERATORS MANUAL CAREFULLY

It contains important safety information, instructions, and necessary operating procedures. The continual observance of these procedures will help increase your production and extend the life of the equipment.



SAFETY INSTRUCTIONS

LEARN TO RECOGNIZE SAFETY INFORMATION

This is the safety alert symbol. When you see this symbol on your machine or in this manual, **BE ALERT TO THE POTENTIAL FOR PERSONAL INJURY!**

Follow recommended precautions and safe operating practices.

UNDERSTAND SIGNAL WORDS

A signal word – **DANGER**, **WARNING**, or **CAUTION** is used with the safety alert symbol. **DANGER** identifies a hazard or unsafe practice that will result in severe **Injury or Death**.

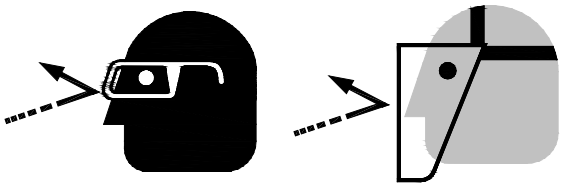
Safety signs with signal word **DANGER** or **WARNING** are typically near specific hazards.

General precautions are listed on **CAUTION** safety signs. **CAUTION** also calls attention to safety messages in this manual.

SAVE THESE INSTRUCTIONS.
Refer to them often and use them to instruct others.

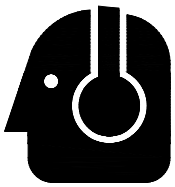
PROTECT EYES

Wear safety glasses or suitable eye protection when working on or around machinery.



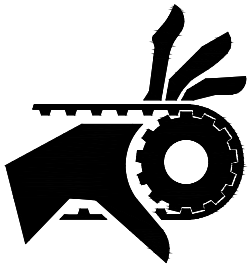
PROTECT AGAINST NOISE

Prolonged exposure to loud noise can cause impairment or loss of hearing. Wear suitable hearing protective devices such as ear muffs or earplugs to protect against objectionable or uncomfortable loud noises.



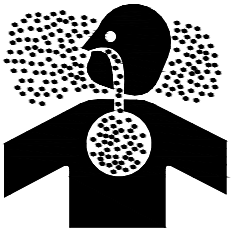
BEWARE OF PINCH POINTS

Keep hands and fingers away from the servo motors drive belt and pulleys when performing maintenance. Keep motor guards in place at all times while the machine is running.



FUMES AND GASES

The plasma cutting process produces fumes and gases that can be hazardous to your health. If the area is not properly ventilated to remove them, use an air supplied respirator.

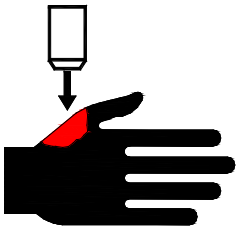


ELECTRICAL SHOCK CAN KILL

The plasma arc process uses and produces high voltages that can **severely injure or kill**. Disconnect power source before performing service or repairs. Insulate yourself from the piece part or other components in the weld circuit.

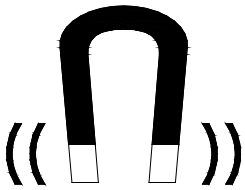
PROTECT SKIN

Keep hands and body protected from the plasma arc and hot sparks. The heat from the plasma arc is very intense and can pierce the skin resulting in serious burns. Always wear gloves and suitable clothing. **DO NOT** touch hot piece part without gloves.



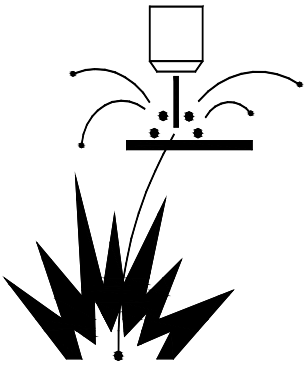
ELECTRICAL AND MAGNETIC FIELDS

Electric current used with plasma cutting creates electric and magnetic fields (EMF). These magnetic fields can have an effect on pacemakers and other sensitive electronic equipment. If you wear a pacemaker or similar device contact your doctor before operating this type of equipment. Prolonged exposure to EMF may have other health effects which are not yet known.



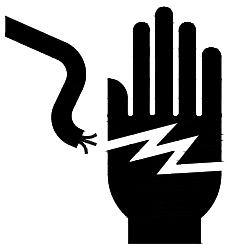
CUTTING SPARKS

A spark or piece of hot metal can fly out of the arc while cutting. Remove all flammable materials from the plasma cutting area. Wear approved eye protection, and proper hand and body protection. Make sure the cutting tip is not grounded when sitting idle, which could cause heat buildup, resulting in a possible fire.



HIGH VOLTAGE

USE CAUTION IN HIGH VOLTAGE AREAS. DO NOT assume the power to be off.
FOLLOW PROPER LOCKOUT PROCEDURES.



SAFETY PRECAUTIONS

Metal working can be dangerous if safe and proper operating procedures are not followed. As with all machinery, there are certain hazards involved with the operation of the product. Using the machine with respect and caution will considerably lessen the possibility of personal injury. However, if normal safety precautions are overlooked or ignored, personal injury to the operator may result.
Safety equipment such as guards, hold-downs, safety glasses, dust masks and hearing protection can reduce your potential for injury. But even the best guard won't make up for poor judgment, carelessness or inattention. **Always use common sense** and exercise **caution** in the workshop. If a procedure feels dangerous, don't try it.
REMEMBER: Your personal safety is your responsibility.

WARNING: FAILURE TO FOLLOW THESE RULES MAY RESULT IN SERIOUS PERSONAL INJURY

Dear Valued Customer:

- All Baileigh machines should be used only for their intended use.
- Baileigh does not recommend or endorse making any modifications or alterations to a Baileigh machine. Modifications or alterations to a machine may pose a substantial risk of injury to the operator or others and may do substantial damage to the machine.
- Any modifications or alterations to a Baileigh machine will invalidate the machine's warranty.

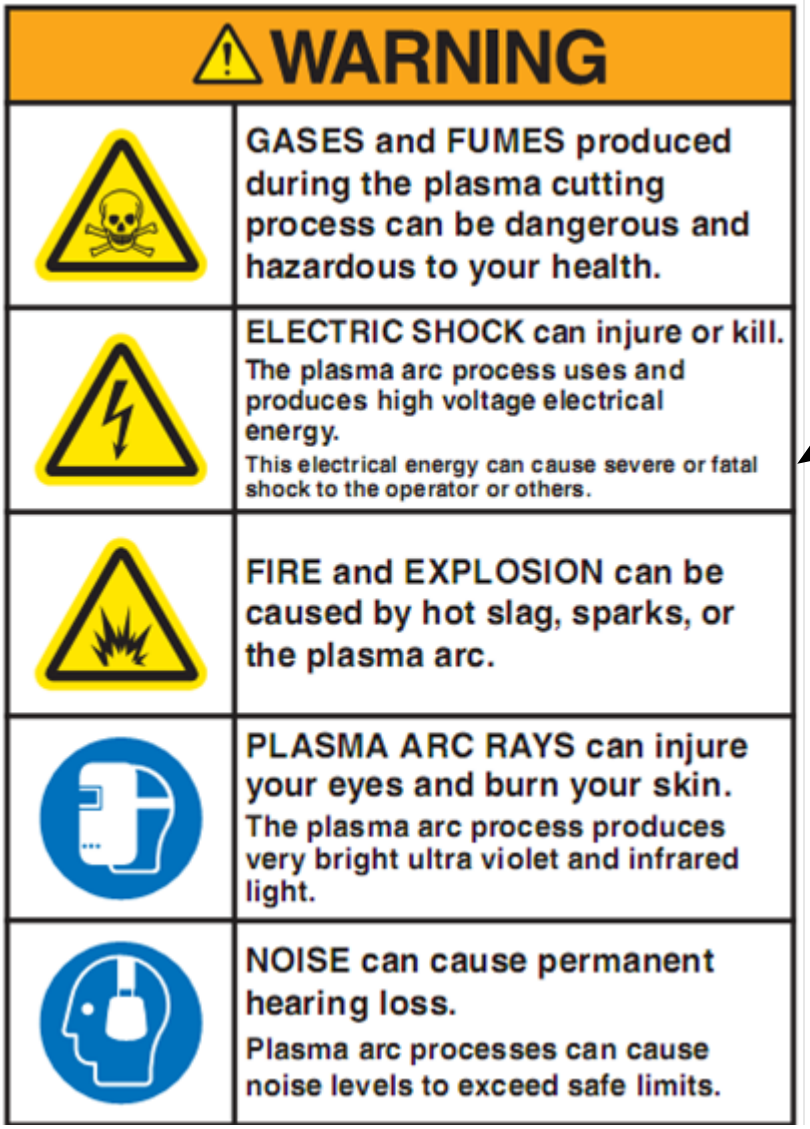
PLEASE ENJOY YOUR BAILEIGH MACHINE! ....PLEASE ENJOY IT SAFELY!

1. **FOR YOUR OWN SAFETY, READ INSTRUCTION MANUAL BEFORE OPERATING THE MACHINE.** Learn the machine's application and limitations as well as the specific hazards.
2. **Only trained and qualified personnel can operate this machine.**
3. **Make sure guards are in place and in proper working order before operating machinery.**
4. **Remove any adjusting tools.** Before operating the machine, make sure any adjusting tools have been removed.
5. **Keep work area clean.** Cluttered areas invite injuries.
6. **Overloading machine.** By overloading the machine you may cause injury from flying parts. **DO NOT** exceed the specified machine capacities.

7. **Dressing material edges.** Always chamfer and deburr all sharp edges.
8. **Do not force tool.** Your machine will do a better and safer job if used as intended. **DO NOT** use inappropriate attachments in an attempt to exceed the machines rated capacity.
9. **Use the right tool for the job. DO NOT** attempt to force a small tool or attachment to do the work of a large industrial tool. **DO NOT** use a tool for a purpose for which it was not intended.
10. **Dress appropriate. DO NOT** wear loose fitting clothing or jewelry as they can be caught in moving machine parts. Protective clothing and steel toe shoes are recommended when using machinery. Wear a restrictive hair covering to contain long hair.
11. **Use eye and ear protection**. Always wear ISO approved impact safety goggles. Wear a full-face shield if you are producing metal filings.
12. **Do not overreach**. Maintain proper footing and balance at all times. **DO NOT** reach over or across a running machine.
13. **Stay alert**. Watch what you are doing and use common sense. **DO NOT** operate any tool or machine when you are tired.
14. **Check for damaged parts**. Before using any tool or machine, carefully check any part that appears damaged. Check for alignment and binding of moving parts that may affect proper machine operation.
15. **Observe work area conditions**. **DO NOT** use machines or power tools in damp or wet locations. Do not expose to rain. Keep work area well lighted. **DO NOT** use electrically powered tools in the presence of flammable gases or liquids.
16. **Keep children away**. Children must never be allowed in the work area. **DO NOT** let them handle machines, tools, or extension cords.
17. **Store idle equipment**. When not in use, tools must be stored in a dry location to inhibit rust. Always lock up tools and keep them out of reach of children.
18. **DO NOT operate machine if under the influence of alcohol or drugs**. Read warning labels on prescriptions. If there is any doubt, **DO NOT** operate the machine.
19. **Sparks and hot material** from cutting can easily go through small cracks and openings into adjacent areas.
20. **Do not** cut where the atmosphere might contain flammable dust, gas, or liquid vapors such as from gasoline.
21. Wear oil-free protective garments such as leather gloves, heavy shirt, high shoes or boots, cuffless trousers, and a cap.
22. Watch for fire and keep a fire extinguisher close by.
23. **Turn off** power before checking, cleaning, or replacing any parts.
24. Be sure **all** equipment is properly installed and grounded according to national, state, and local codes.

25. Keep **all** cords dry, free from grease and oil, and protected from sparks and hot metal.
26. Inspect power and control cables periodically. Replace if damaged or bare wires are exposed. **Bare wiring can kill! DO NOT** touch live electrical components or parts.
27. **DO NOT** bypass or defeat any safety interlock systems.
28. Learn the function and controls of the controller, the torch power supply, and the provided software packages. Know the location of the **ON - OFF** switch.
29. Keep visitors a safe distance from the work area.

Safety Label Location



TECHNICAL SPECIFICATIONS

Table Dimensions	29" x 31" (737 x 788mm)
Cutting Area	24” x 24” (610 x 610mm)
Speed (Maximum)	295in./min. (7500mm/min.)
Table Load Capacity	3/4" Mild Steel
Capacity	Depends on Plasma System Chosen
Drive	Stepper Motor with Lead Screw
Power	110V, 60hz, 6A
Shipping Weight	550 lbs.
Shipping Dimensions	36" x 36" x 48" (915 x 915 x 1219mm)

- Fully welded main frame
- 4” casters (2) stationary – (2) swivel with brake
- “Z” Axis (manual gear rack for automated torch)
- “Z” Axis (dovetail slide for manual torch)
- Cable carrier on “X” Axis.
- A license to download BobCAD-CAM Express Vxx Software (current version)
- File transfers via USB Interface

TECHNICAL SUPPORT

Our technical support department can be reached at 920.684.4990, and asking for the support desk for purchased machines. Tech Support handles questions on machine setup, schematics, warranty issues, and individual parts needs: (other than die sets and blades).

For specific application needs or future machine purchases contact the Sales Department at: sales@baileigh.com, Phone: 920.684.4990, or Fax: 920.684.3944.

***Note**: The photos and illustrations used in this manual are representative only and may not depict the actual color, labeling or accessories and may be intended to illustrate technique only.*

***Note:** The specifications and dimensions presented here are subject to change without prior notice due to improvements of our products.*

UNPACKING AND CHECKING CONTENTS

Your Baileigh machine is shipped complete. Separate all parts from the packing material and check each item carefully. Make certain all items are accounted for before discarding any packing material.

WARNING: SUFFOCATION HAZARD! Immediately discard any plastic bags and packing materials to eliminate choking and suffocation hazards to children and animals.
If any parts are missing, DO NOT place the machine into service until the missing parts are obtained and installed correctly.

Cleaning

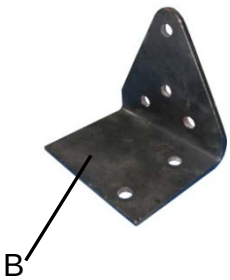
WARNING: DO NOT USE gasoline or other petroleum products to clean the machine. They have low flash points and can explode or cause fire.

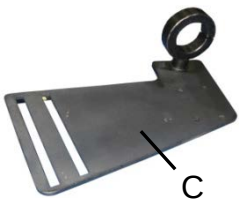
CAUTION: When using cleaning solvents work in a well-ventilated area. Many cleaning solvents are toxic if inhaled.

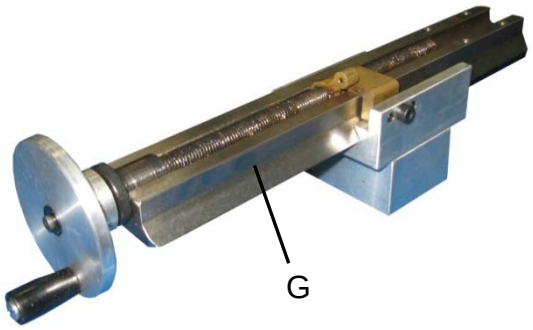
Your machine may be shipped with a rustproof waxy coating and/or grease on the exposed unpainted metal surfaces. Fully and completely remove this protective coating using a degreaser or solvent cleaner. Moving items will need to be moved along their travel path to allow for cleaning the entire surface. For a more thorough cleaning, some parts will occasionally have to be removed. **DO NOT USE** acetone or brake cleaner as they may damage painted surfaces.
Follow manufacturer's label instructions when using any type of cleaning product. After cleaning, wipe unpainted metal surfaces with a light coating of quality oil or grease for protection.

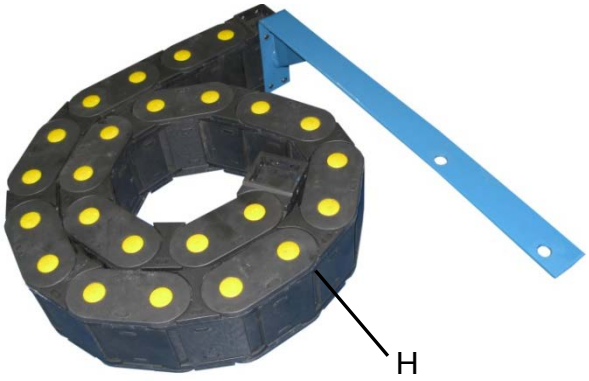
Important: *This waxy coating is **NOT** a lubricant and will cause the machine to stick and lose performance as the coating continues to dry.*

Your Baileigh Plasma Table cutting system should include the following items:









A – Welded and assembled plasma water table with stepper motor drive axis system.
B – Tool bracket plate
C – Hand torch holder plate
D – Bracket mounting hardware
E – Automation torch holder
F – Handheld controller
G – Adjustable slide for handheld torch
H – “X” axis cable carrier
I – Motor control electronics

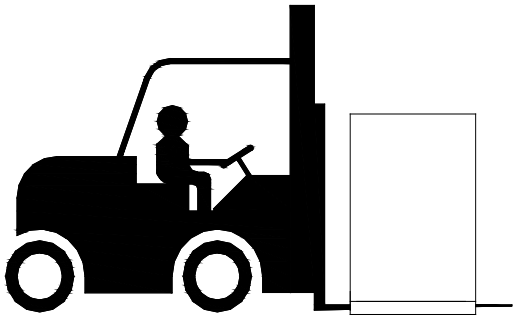
Also Included:
(1) – Baileigh Industrial operator’s manual with wire interconnect diagram.
(1) – DSP hand held controller User’s Guide.
(1) – 110V power cable for control enclosure
(1) – Plasma start/stop signal cable
(1) – Handheld controller interconnect cable.
(1) – Flash Drive with preloaded .nc (G code) files.

TRANSPORTING AND LIFTING

IMPORTANT: *Lifting and carrying operations should be carried out by skilled workers, such as a truck operator, crane operator, etc. If a crane is used to lift the machine, attach the lifting chain carefully, making sure the machine is well balanced.*

Follow these guidelines when lifting with truck or trolley:

- The lift truck must be able to lift at least 1.5 – 2 times the machines gross weight.
- Make sure the machine is balanced. While transporting, avoid rough or jerky motion, and maintain a safe clearance zone around the transport area.
- Use a fork lift with sufficient lifting capacity and forks that are long enough to reach the complete width of the machine.
- Remove the securing bolts that attach the machine to the pallet.



- Approaching the machine from the side, lift the machine on the frame taking care that there are no cables or pipes in the area of the forks.
- Move the machine to the required position and lower gently to the floor.
- Level the machine so that all the supporting feet are taking the weight of the machine and no rocking is taking place.

INSTALLATION

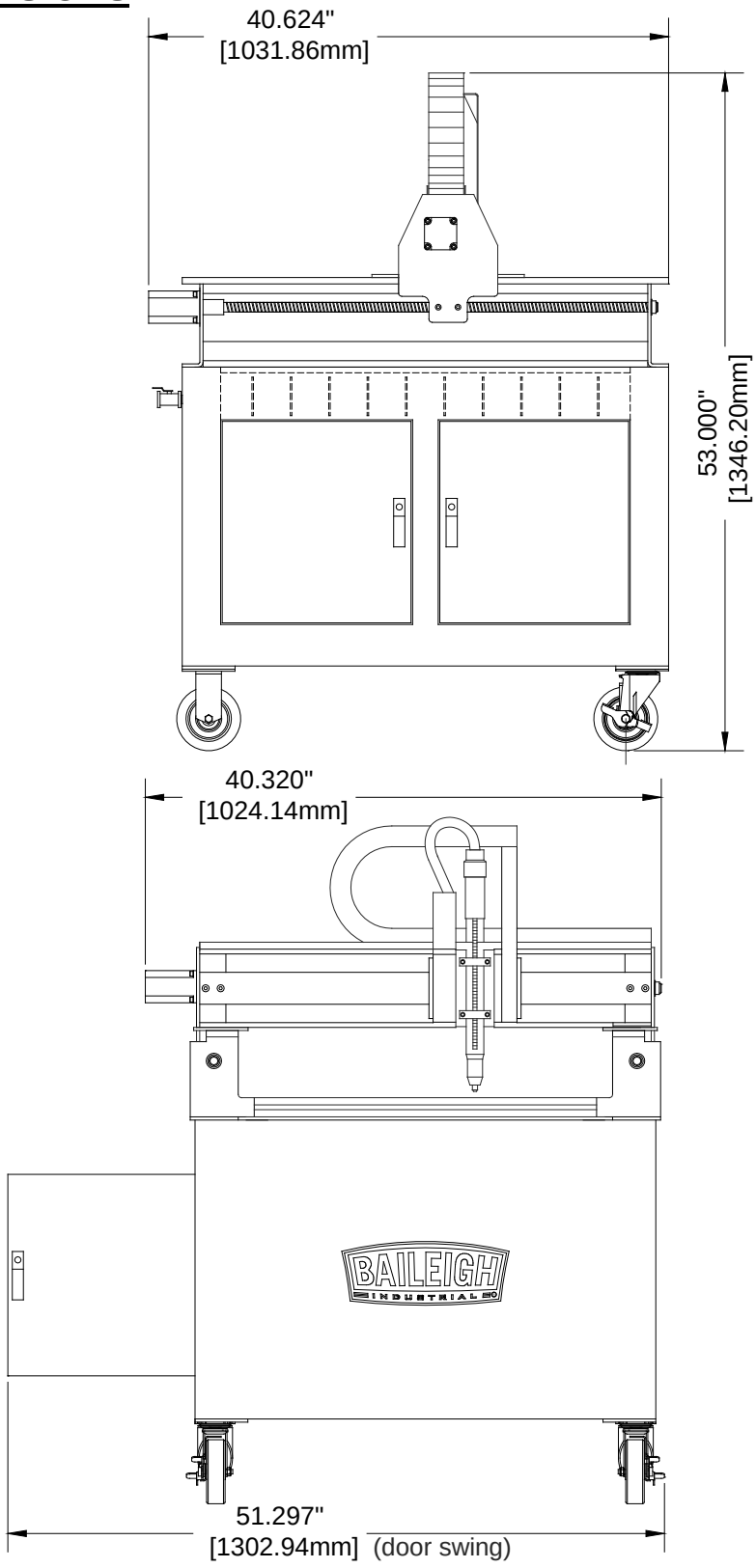
IMPORTANT:

Consider the following when looking for a suitable location to place the machine:

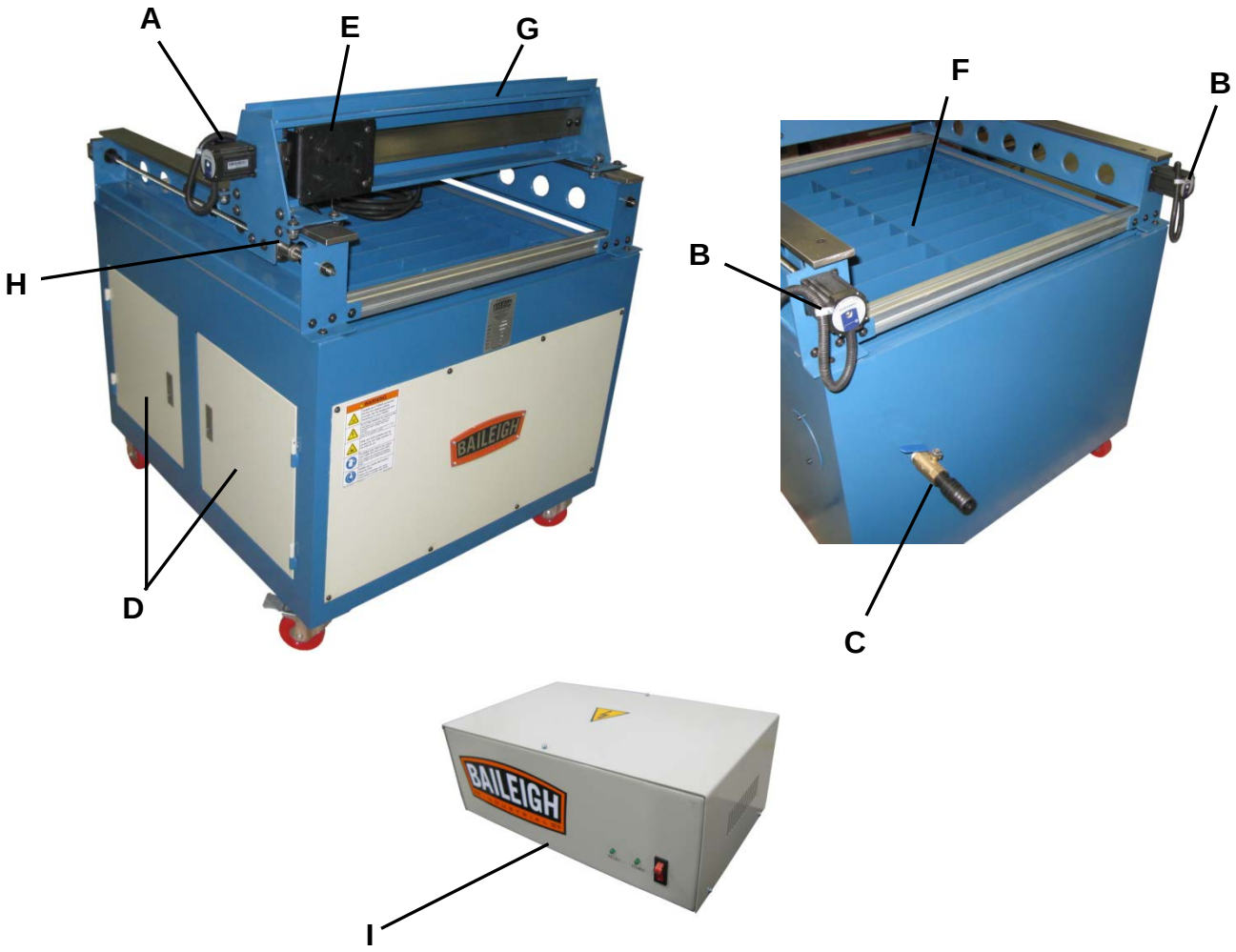
- Overall weight of the machine.
- Weight of material being processed.
- Sizes of material to be processed through the machine.
- Space needed for auxiliary stands, work tables, or other machinery.
- Clearance from walls and other obstacles.
- Maintain an adequate working area around the machine for safety.
- Have the work area well illuminated with proper lighting.
- Keep the floor free of oil and make sure it is not slippery.

- Remove scrap and waste materials regularly, and make sure the work area is free from obstructing objects.
- If long lengths of material are to be fed into the machine, make sure that they will not extend into any aisles.
- **LEVELING:** The machine should be sited on a level, concrete floor. Provisions for securing it should be in position prior to placing the machine. The accuracy of any machine depends on the precise placement of it to the mounting surface.
- **FLOOR:** This tool distributes a large amount of weight over a small area. Make certain that the floor is capable of supporting the weight of the machine, work stock, and the operator. The floor should also be a level surface. If the unit wobbles or rocks once in place, be sure to eliminate by using shims.
- **WORKING CLEARANCES:** Take into consideration the size of the material to be processed. Make sure that you allow enough space for you to operate the machine freely.
- **POWER SUPPLY PLACEMENT:** The power supply should be located close enough to the machine so that the power cord is not in an area where it would cause a tripping hazard. Be sure to observe all electrical codes if installing new circuits and/or outlets.

OVERALL DIMENSIONS



GETTING TO KNOW YOUR MACHINE



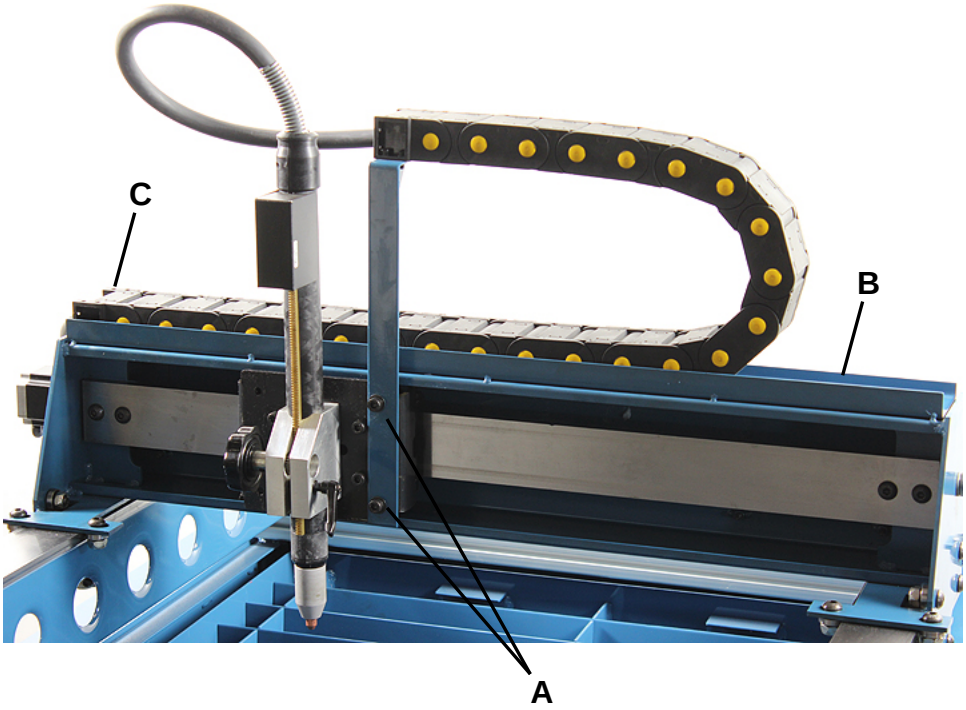
Item	Description	Function
A	“X” axis stepper motor	Provides power to move carriage in “X” direction
B	“Y” axis dual stepper motors	Provides power to move carriage in “Y” direction
C	Ball valve with adapter	Used to drain water table
D	Easy access panel doors	Provide access to store accessories
E	Torch mounting plate	Used for attaching various torch configurations
F	Material support grates	Used to support material above water table
G	Gantry	Provides X, Y movement of the torch
H	Lead screw drive	Provides precision movement of the gantry
I	Control Box	Houses motor controllers and handheld interface

ASSEMBLY AND SET UP

WARNING: For your own safety, DO NOT connect the machine to the power source until the machine is completely assembled and you read and understand the entire instruction manual.

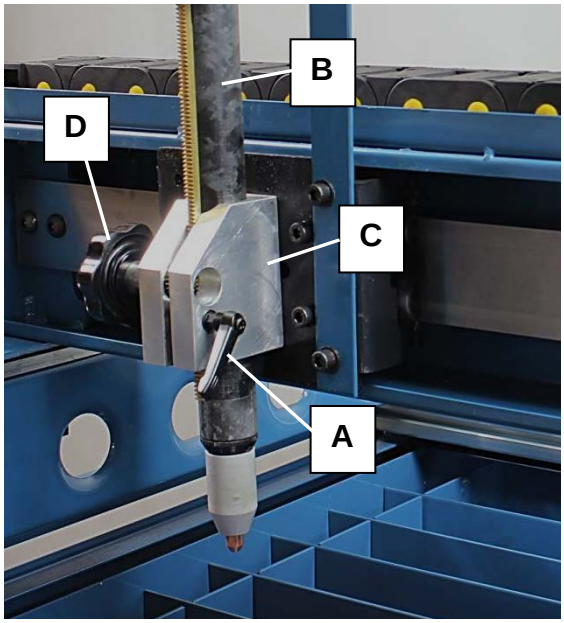
Cable Track Installation

1. Locate and unroll the cable track assembly.
2. Remove the two socket head capscrews (A) from the torch trolley face plate
3. Position the track bracket so that the cable track will lay flat in the track channel (B) and install and tighten the two socket head capscrews.
4. Remove the four screws at the end (C) of the track channel.
5. Position the cable track over the mounting holes and secure in place using the four screws.



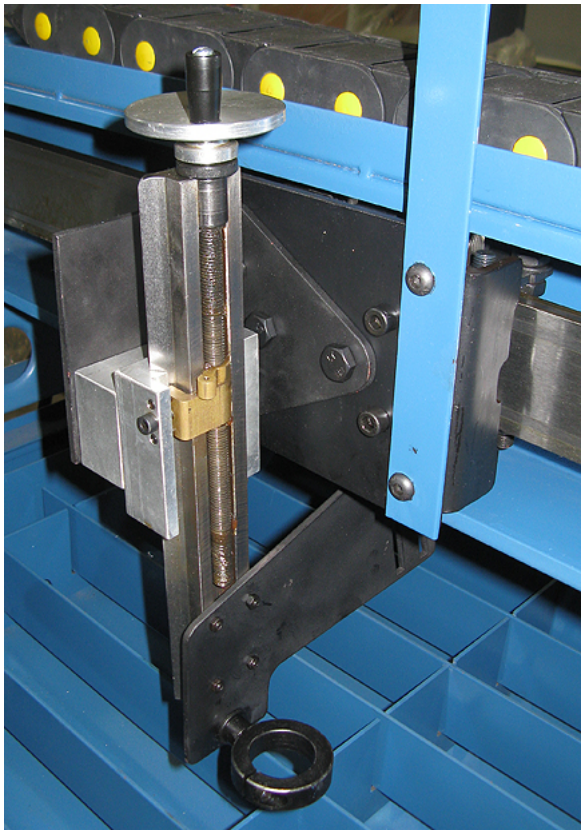
Attaching Torch to Bracket

If using an automation torch or machine torch, attach to the torch holder as follows:



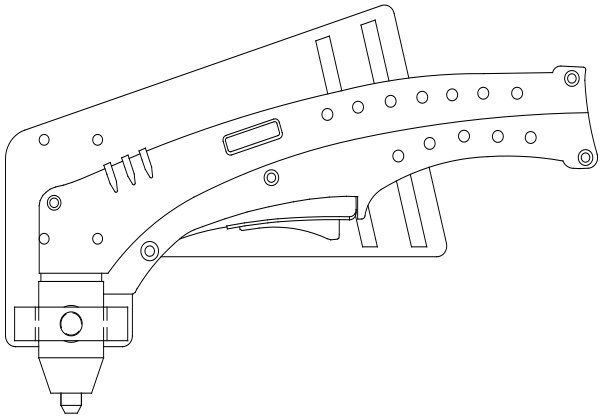
1. Loosen handle (A) by turning counter clockwise (ccw).
2. Slide the torch body (B) into the top of the torch holder (C) until it engages the threaded wheel.
3. Slowly turn knob (D) counter clockwise (ccw) to lower the torch.
4. When the desired height is reached, turn handle (A) clockwise (cw) to tighten the torch in the holder.
5. If the torch you will be using is of a different body style or diameter you will need to provide a holder that can be attached to the mounting plate.

Hand Torch Mounting



1. Remove the automation torch mounting block and back plate.
2. Install the tool holder angle bracket onto the mounting back plate.
3. Install the lifter assembly onto the angle bracket.
4. Install the torch mounting plate onto the lifter so that the torch plate is pointing toward either the front or back of the table. (The figure at right shows the torch plate under the gantry toward the front of the table.)

5. Place the hand torch tip into the one-piece collar.
6. Set the torch tip into the eye bolt and then level the torch holder so that the tip of the torch is parallel to the cut material.
7. Hold the torch in the level position and secure the torch handle to the holder slot(s) using a U-bolt which is large enough to fit around your torch handle. When the U-bolt is tightened it will pull the torch tip snug toward the inside of the eye bolt.



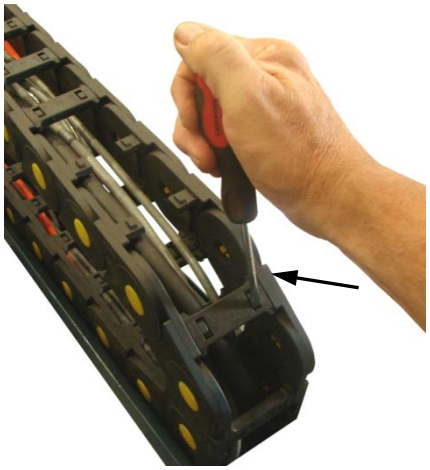
8. Tighten the nut on the back of the torch holder collar (eye bolt) to prevent it from rotating.

Note: *The eye bolt will not clamp tight onto the torch. This prevents damage to the torch tip as well as allows easier changing of consumables.*

9. Make sure the torch cable is secure and yet able to traverse the limits of the table.

Routing torch cable through the cable track

1. Insert the end of a small flat bladed screwdriver into the opening of the cross member as shown by the arrow.
2. Apply downward force to pop off the cross member. Remove only those necessary to allow you to route the torch cable.



Note: *Using 2 flat blade screw drivers with even pressure will prevent breakage of the cross members. Additionally, extending the X axis to the full + direction will allow the track to lay flat in the tray. This will support the track evenly to further assist removal and installation of the cross members.*

3. Allow for a loop from the torch to the entry point of the cable track. This will help to eliminate unnecessary stress on the cable.
4. When finished routing the cable, re-attach the cross members to the cable track. Use a firm pressure until you hear a snap, indicating they are locked back into place.

IMPORTANT*:* Be careful not to kink or flatten the torch cable during installation.

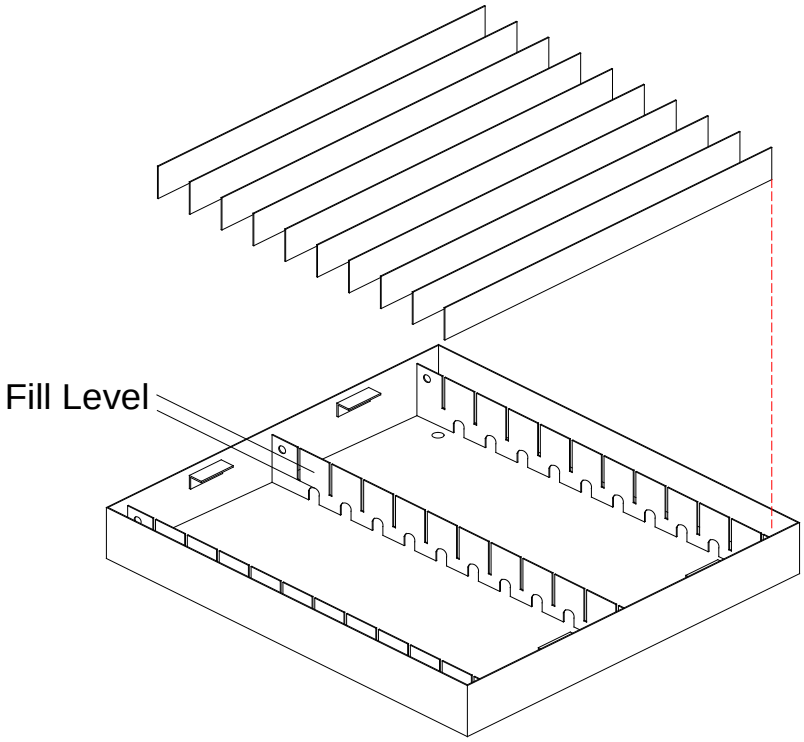
Water Fill

Add water to the table until the water level is between the top of the cross channels to about 1/2 way up the material supports.

Drain, clean and refill will be based upon usage. Heavy usage will fill the table with debris while light usage will allow bacteria to grow.

Add a general anti-bacterial as needed.

If the table will be unused for 2 or more weeks at a time, it is recommended to drain the tank until the next usage.



ELECTRICAL

CAUTION: HAVE ELECTRICAL UTILITIES CONNECTED TO MACHINE BY A CERTIFIED ELECTRICIAN!
Check if the available power supply is the same as listed on the machine nameplate.

WARNING: Make sure the grounding wire (green) is properly connected to avoid electric shock. DO NOT switch the position of the green grounding wire if any electrical plug wires are switched during hookup.

Power Specifications

Your tool is wired for 110 volts, 60Hz alternating current. Before connecting the tool to the power source, make sure the machine is cut off from power source.
Before switching on the power, you must check the voltage and frequency of the power to see if they meet with the requirement, the allowed range for the voltage is ±5%, and for the frequency is ±1%.

Considerations

- Observe local electrical codes when connecting the machine.
- The circuit should be protected with a time delay fuse or circuit breaker with a amperage rating slightly higher than the full load current of machine.
- A separate electrical circuit should be used for your tools. Before connecting the motor to the power line, make sure the switch is in the “OFF” position and be sure that the electric current is of the same characteristics as indicated on the tool.
- All line connections should make good contact. Running on low voltage will damage the motor.
- In the event of a malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. This tool is equipped with an electric cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into a matching outlet that is properly installed and grounded in accordance with all local codes and ordinances.

WARNING: In all cases, make certain the receptacle in question is properly grounded. If you are not sure, have a qualified electrician check the receptacle.

- Improper connection of the equipment-grounding conductor can result in risk of electric shock. The conductor with insulation having an outer surface that is green with or without yellow stripes is the equipment-grounding conductor. If repair or replacement of the electric cord or plug is necessary, do not connect the equipment-grounding conductor to a live terminal.
- Check with a qualified electrician or service personnel if the grounding instructions are not completely understood, or if in doubt as to whether the tool is properly grounded.
- Repair or replace damaged or worn cord immediately.

Extension Cord Safety

Extension cord should be in good condition and meet the minimum wire gauge requirements listed below:

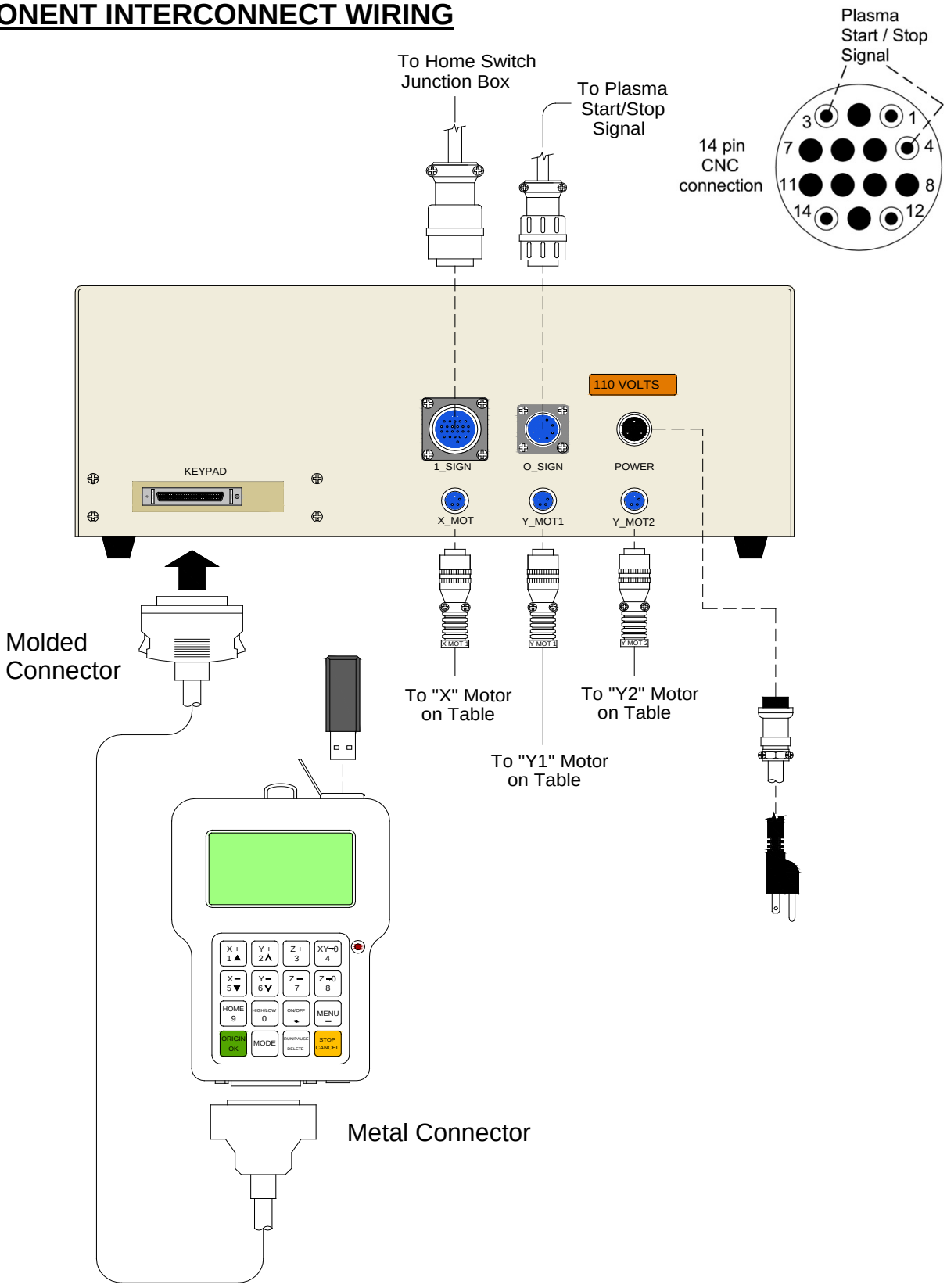
	LENGTH		
AMP RATING	25ft	50ft	100ft
1-12	16	16	14
13-16	14	12	12
17-20	12	12	10
21-30	10	10	No
	WIRE GAUGE		

An undersized cord decreases line voltage, causing loss of power and overheating. All cords should use a ground wire and plug pin. Replace any damaged cords immediately.

Power and Cord Connections

1. Locate and position the control console so that the cords will easily reach the console and the table. Be sure that the cord for the X axis will move freely with the gantry without becoming pinched or entangled.
2. Route the cable to the control console and complete the connections as shown in the following illustration.
3. Route the power cord to the power supply and plug into the receptacle.
    a. Route the power cord so that it will NOT become entangled in the machine in any way.
    b. Route the cord to the power supply in a way that does NOT create a trip hazard.
4. Proceed to and complete the “START PROCEDURE” after all the connections have been completed and verified.

COMPONENT INTERCONNECT WIRING

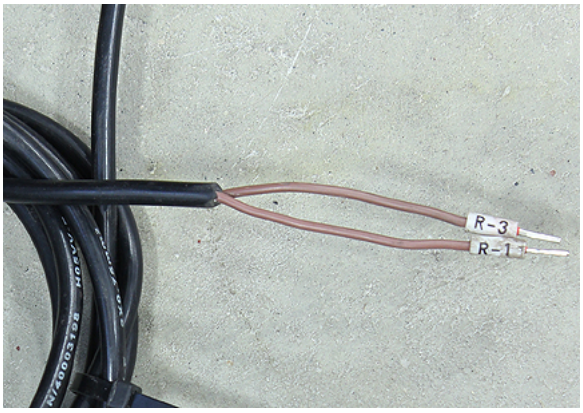


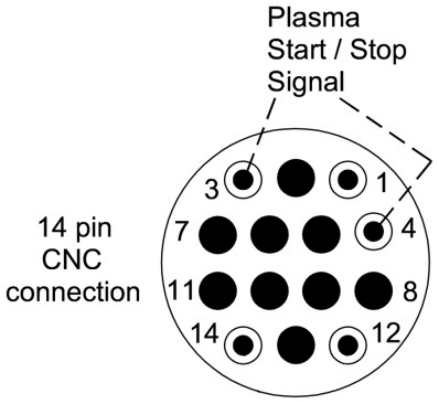
START STOP CONNECTION TO PLASMA CUTTER

The only interface between the table control and the plasma cutter is a 2 wire connection for the Start/Stop signal.
These connections will be made by the customer and must match exactly between the wires within the harness from the table to the plasma cutter.

Wire Label	Function	Connects to Cutter
R-1 And R-3	These two wires are used for the plasma arc Start / Stop signal. This is a normally open circuit. When a relay within the console is energized and closes, the plasma cutter/torch will fire and continue until the relay is de-energized. These are NOT polarity sensitive.	Start / Stop

1. Locate and unwrap the start stop cable on the left side of the table.
2. Route the cable to the plasma cutter. This is typically routed with or very near the torch cable.
    a. Route the cable so that it will NOT become entangled in the machine in any way.
    b. Route the cable to the plasma cutter in a way that does NOT create a trip hazard.
3. Connect the start stop cable to the plasma cutter cable which comes with the plasma cutter.
4. Connect one of the brown wires (typically R-1) to one of the plasma start stop wires (typically #3).
5. Connect the other brown wire (typically R-3) to the other plasma start stop wires (typically #4).





IMPORTANT: IT IS THE RESPONSIBILITY OF THE CUSTOMER TO VERIFY THAT THESE CONNECTIONS ARE CORRECT FOR THE PLASMA CUTTER BEING USED!

Listed below are connections to 3 common plasma cutter manufactures. Please verify with the manual supplied with the cutter to be certain that the wiring has not changed.

Thermal Dynamics

***IMPORTANT**: THIS IS FOR REFERENCE ONLY. This instruction is based upon generally available information. Contact the manufacturer of your plasma cutter for specific set up information.*

Signal	Sockets / Wire No.	Wire Colors
Start / Stop (plasma arc)	3, 4	Red, Black

HyperTherm

***IMPORTANT**: THIS IS FOR REFERENCE ONLY. This instruction is based upon generally available information. Contact the manufacturer of your plasma cutter for specific set up information.*

Signal	Sockets / Wire No.	Wire Colors
Start / Stop (plasma arc)	3, 4	Green, black

Miller

***IMPORTANT**: THIS IS FOR REFERENCE ONLY. This instruction is based upon generally available information. Contact the manufacturer of your plasma cutter for specific set up information.*

Signal	Wire Colors
Start (start plasma)	Blue, Blue/White

SOFTWARE

A license of BobCad/Cam Express is supplied with each table.
BobCad will provide the training and instructions for the operation of the software.

***IMPORTANT**: Download and use the **"Baileigh_Plasma_Richauto"** post set from the BobCad/Cam website for use with this controller.*

CONTROL PANEL FUNCTIONS

POWER – Green POWER indicator light (B) will be lit when power switch (C) is turned on.
RELAY – Green RELAY indicator light (A) will be lit while torch is cutting. When torch is not cutting light will remain off.

Enclosure Front

Enclosure Rear

START/DRY RUN PROCEDURE

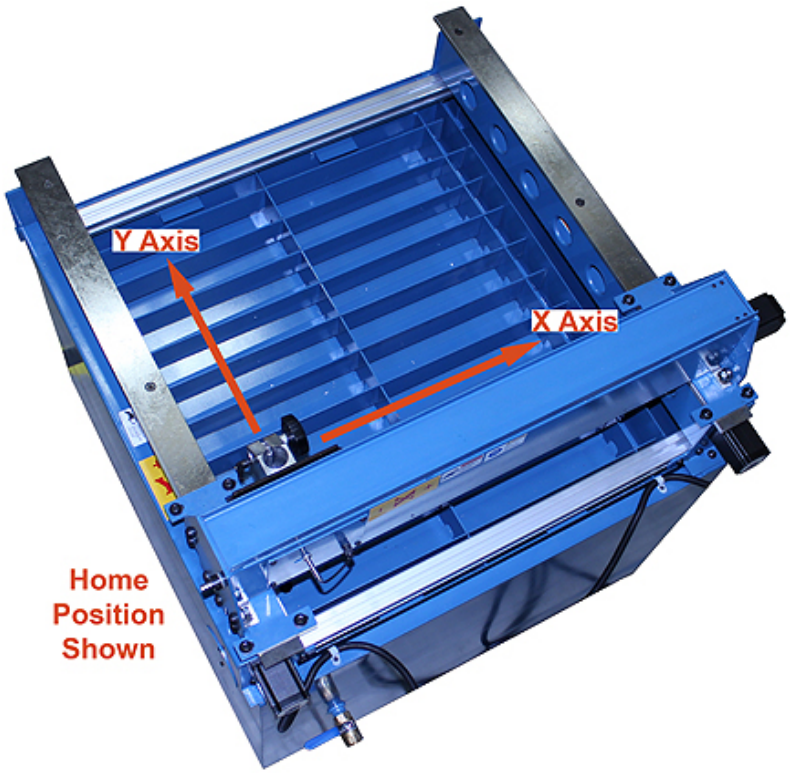
***NOTE**: Steps 1 thru 4 of this procedure should be followed each time the table is turned on. The plasma cutter will NOT be turned on during this procedure.*
This procedure is also a good way to test run a part without cutting to verify the process.

1. Do not power up the plasma cutter.
2. Turn the power switch on the control box to **ON**.
3. The screen on the handheld unit will show **"All axis home"** Press the ORIGIN OK **(ORIGIN OK)** button. The torch head will move to the home position (corner). This position on the table is controlled by proximity sensors to stop the gantry travel.
4. Using the X + 1 ▲ X – 5 ▼ **("X+, Y+")** keys, move the torch toward the center of the table at least 1mm on each axis. This distance will vary based upon several variables of the part and the associated operating code.
5. After stopping, press the **XY-0** key to establish the **0, 0** origin.
6. Insert the flash drive (U-Disk) into the USB port on the hand held controller.
7. Press the RUN/PAUSE DELETE (**RUN/PAUSE)** key to display the option of selecting internal programs or programs from the USB flash drive.
8. With the U Disk file list highlighted, press ORIGIN OK **(ORIGIN OK)**.
9. Scroll through the files using the X + 1 ▲ **(#1)** button to go up or the X – 5 ▼ **(#5)** button to go down, and press ORIGIN OK **(ORIGIN OK)** when the desired .nc file is highlighted.
10. Parameters for that program will now be displayed. This is the speed that the torch will travel at during the cutting process. They may be edited at the point to adjust for specific materials. This will be explained in more detail later. Press ORIGIN OK **(ORIGIN OK).** The controller should now run the program and return to the origin point when done.
11. You can dry run additional programs at this point if so desired by repeating steps 7 thru 10 above.

PLASMA TABLE CUT PROCEDURE

⚠ CAUTION: Always wear proper eye protection with side shields, safety footwear, and leather gloves to protect from burrs and sharp edges.

1. Check that the interconnect cables have been properly installed and that electrical service has been provided to the control box. (110V, 60hz.)
2. Place the material to be cut on the table, secure it, and attach the ground clamp that comes from the power unit directly to the material.
3. Make sure the consumables in the torch are correctly installed and properly sized for the intended application. (consult the plasma cutter manual)
4. Make sure dry air is connected to the power unit and the correct pressure is set.
5. Power up the control box and the power unit.
6. With the **"All axis home"** highlighted, press the ORIGIN OK **(ORIGIN OK)** button. The torch head will move to the home position (corner shown). This position on the table is controlled by proximity sensors to stop the gantry travel. The opposite ends of travel are set as soft stops which have been programmed into the controller. The soft stops keep the carriage from reaching its mechanical end of travel, and possible damaging the motors.



7. Using the X + 1 ▲ X – 5 ▼ **(“X+, Y+”)** keys, move the torch toward the center of the table at least 1mm on each axis. (You may press both “X&Y” keys simultaneously for an angular motion.) This distance will vary based upon several variables of the part and the associated operating code.
8. After stopping, press the **XY-0** key to establish the **0, 0** origin. The origin is now different from the Home position.
9. Consult the plasma cutter manual (mm) chart with the amperage you are running at, and the type of material you are cutting. Locate your material thickness and find the value in (mm) for the Torch Working Height. If you are using the automatic or machine torch, loosen the torch mounting bracket handle. Position the torch tip above the material at the working height value from the chart. The torch will now use this value to pierce and to cut. If the chart value for the torch working height is lower than the value for the initial piercing height you can set the height closer to the cutting height if it helps to improve the quality of the cut. DO NOT go less than the torch working height value that shows in the chart.
10. Convert the Pierce Delay value from the chart to milliseconds and enter that value into the handheld controller as Arc Delay, (Example: 0.40 seconds = 400ms.) This value is found in the controller by pressing MENU – AUTO PRO SETUP and scrolling down to Arc Delay. Enter the value and press OK.
11. When you change to a different thickness material, establish the new Initial Pierce Height between the shield cap and the material.
12. Insert the flash drive (U-Disk) into the USB port on the hand held controller.
13. Press the RUN/PAUSE DELETE (**RUN/PAUSE)** key to display the option of selecting internal programs or programs from the Usb flash drive.
14. With the U Disk file list highlighted, press ORIGIN OK **(ORIGIN OK)**.
15. Scroll through the files using the X + 1 ▲ **(#1)** button to go up or the X – 5 ▼ **(#5)** button to go down, and press ORIGIN OK **(ORIGIN OK)** when the desired .nc file is highlighted.
16. Parameters for that program will now be displayed. This is the speed that the torch will travel at during the cutting process. They may be edited at the point to adjust for specific materials. This will be explained in more detail later. The process speed should be set for the thickness of material you are running. (Generally the thicker the material, the slower you will want to cut.)
    a. If no changes are required press the OK key.

b. If changes are needed, use the X + 1 ▲ X − 5 ▼ **(“X+, Y+”)** keys, to scroll up or down to the line to be changed and then press the RUN/PAUSE DELETE (**RUN/PAUSE)** key. The current value will be highlighted. Enter the new value and press OK. Repeat this for any other line that needs to be changed.

17. Protect your eyes with a welding helmet or welding goggles.
18. Press ORIGIN OK **(ORIGIN OK).** The controller should now run the program and return to the origin point when done.
19. The torch should proceed to the pierce location and start the cut.
20. When finished cutting, the torch will return to the last origin and stop.

⚠ CAUTION: HOT PARTS. Be careful when picking out the part. It will be VERY HOT.

Remember: cut speed, torch height, air pressure, and other factors can be the difference between a good cut and a GREAT cut.

***NOTE**: The process speed should be set for the thickness of material you are running. (Generally the thicker the material, the slower you will want to cut.) If no changes are required press OK. The controller should now run the program and return to the origin point when done.*

GENERAL PLASMA TABLE INFORMATION

Whether cutting an artful design to be hung on a wall as a decoration or a simple plate to be welded to an I-beam to hold up the wall, plasma cutting like most metal working has an artistic component to completing a successful cut. This is a consideration often overlooked when incorporating automated equipment into the creation of metal parts and pieces.
Cutting with a plasma system takes time and experience to develop the skill and knowledge to become an accomplished cutter. Experienced operators often seem to take for granted the knowledge they have gained from operating a plasma system and learning and taking notes. New operators often seem to overlook the knowledge needed to cut properly. This is especially evident when automation is added to the system. There can be an expectation that the parts will be cut perfectly with machined quality edges. The automation simply controls the movement of the torch, it cannot and does not improve upon the quality at which a plasma system can cut. It does provide consistency, repeatability, and accuracy.

The best recommendation is to practice, take notes, experiment, and seek out advice through technical colleges, individual mentoring with an experienced operator, and through online forums and trade magazines.

The Plasma Systems

The plasma system can be broken down into 4 broad areas which are at the same time separate and interacting.

Software / Program Code Creation

The software provide with the system is a relatively simple to use CAD based drawing and coding program. Using software you can create a new drawing or import files such as *.DXF, *.BMP, *.JPG, *.JPEG, *.GIF, *.TIF, *.PNG, *.AI, *.EPS, *.PLT, & *.TXT files. Once created, the file can be processed to create the code needed to run the shape on the table.
It is recommended that the software operator consider taking drawing classes at a local Technical College to gain additional knowledge and experience. They will not likely have the exact software as is supplied with the table, however, most of the techniques and functions will be very similar or the same.
Along with the training, several other tips include:

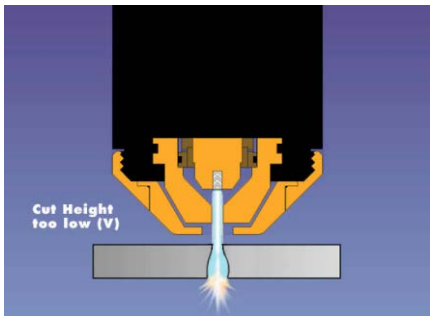
- Find and use the F1 key to open the help menu. This will provide specific instructions and descriptions of all of the software capabilities.
- Start simple. Draw a few simple shapes. Plan the sizes so that they will fit on extra material that may be available to practice cutting on. Once comfortable with drawing and getting a basic cut, move on to some simpler production pieces.
- Practice using both the menu and right clicking as you work with the object being drawn. As with most software, there are many ways to complete a specific task or action. This will help to find those different options.

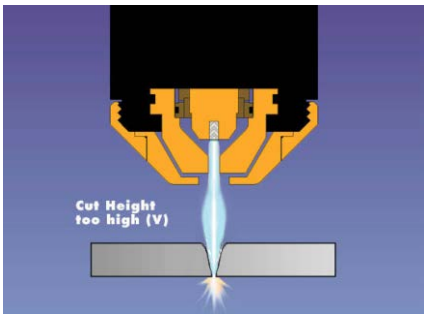
Table Operation

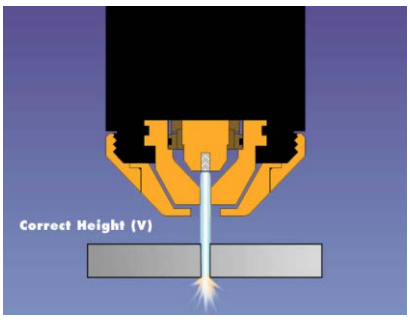
Once an object has been drawn and coded into G code format, it may be taken to the table to have the table run the pattern.
This is what the table does. It is all the table does. Run a pattern of the specific object that has been loaded to run.
The table does provide other control setting which will complete the operation; however, this is all based upon the information which has been included in the G code.
The basic function which are adjustable on the table are:

- Pierce Delay. This is the time it takes for the plasma arc to punch a hole through the material to be cut. The torch does not move during this operation. Ideally, the torch will start to move and run the pattern at the exact moment it has pierced the material.
- Pierce and Cut Height. This is the distance between the material surface and the bottom (closest surface) of the torch. While it is necessary to have the proper height. First time cutters commonly error toward having too large a cut height. This will generally improve as the operator learns how the table and the material react during cutting.

Below are some examples of how the torch height can affect the cut.







- Cutting Speed. This is how fast the table moves the torch around during the cutting process. This can vary widely. Consult your plasma cutter manual for suggested cutting speeds for the material and amperage you are cutting at. The tables included with the cutter manual provide good starting points for all the settings needed to cut a given material. As the operator becomes more familiar with the cutting process for a given material, these setting may be adjusted to provide for the best cut possible.
- Other setting and adjustments available at the table are explained in greater detail in the controller manual.

Cutter Set-up and Operation

The cutter set-up is ultimately the key to the best cut possible. While items like Kerf are set in the software, and speeds or height are set at the table, the cutter must also be set to match material and amperage to be used during the cut.
For example: Let's compare 3mm (11ga is closest) Mild Steel to be cut at either 40 or 60 amps. Each amperage setting has different cutting requirements.

First are the consumables. Each amperage setting uses different consumables. These must be taken from and match the requirements as listed in the manual for your plasma cutter based upon the specific material and amperage you will be cutting at. If you mix consumables, you will either get poor cut results and/or the cutter will perform erratically. Not starting an arc or holding and arc.

Material Thickness	Gas Pressure (Air)	Arc Voltage	Torch Working Height	Travel Speed	Initial Piercing Height	Pierce Delay	Kerf Width @ Rec. Speed
Mild Steel @ 40A							
(mm)	Bar	Volts	(mm)	(mm/min)	(mm)	(sec)	(mm)
3	5.5 (15.2)	112	4.1	1794	4.1	0.1	1.7
Mild Steel @ 60A							
(mm)	Bar	Volts	(mm)	(mm/min)	(mm)	(sec)	(mm)
3	6.2 (15.2)	126	4.8	5080	5.1	0.1	2.2

As is visible, the Pierce Delay is the same between the two-amp settings. All other settings are different. The largest variation is the cutting speed. A setting like Kerf is best planned for and set in the software. Air pressure is set at the cutter. Speeds, Heights, and Delays are set on the table controller. Volts are only used on table with Auto-Height Control.

Adjusting to the Variable

Some other variable which affect the cutting performance include but are not limited to:

- Material Quality. New, clean material from a consistent supplier will normally provide the best results. Changing suppliers or using reclaimed materials will often require some adjustments to the settings normally used for a similar material. This is normal and typically not a problem when it has been acknowledged, planned for, and adjusted to. Other material factors are the cleanliness of the material. Oils, rust inhibitors, and rust or scale will also affect the cut results. Cleaning the surface will produce better more consistent results.
- Air / Gas Quality. Dry. The dryer the better. It is recommended to use a regular maintenance schedule to remove moisture from your air supply. It is also recommended to use a high quality air drying system as well. While an air filter is needed, it is not for removing moisture from the air. Using a drying system along with good maintenance will provide a more consistent and predictable cut. This will also provide much longer life for the consumables.
- Environmental conditions. Seasonal changes, altitude above sea level, proximity to large bodies of water (oceans or great lakes) will also play a factor in the final cut results. While relatively minor, it is a worth noting when experiencing some adjustments between January to August, or if consulting a forum between Florida and Nebraska.

Expectations

Plasma cutting is not Lazar cutting. It is not Flame cutting. It is not a sheared or machined edge. While specific definitions will be more accurate and include more of the science and technology behind plasma, Plasma cutting for this purpose is the controlled melting of metal.

The table does not do the cutting. The table moves in a controlled manner to be predictable, repeatable and accurate.

The software is high-end engineering or modeling software. It can open up a great deal of practical and creative project for the operator willing to learn to use it.

CUTTING PARAMETER TUNING PROCEDURE

This is the procedure use to determine the setting for the best possible cut.

1. Verify that the material is clean and free of oil, paint, and rust.
2. Verify that the ground clamp is clamped directly to the material to be cut.
3. Staring with the settings in the chart (from the plasma cutter) do a test cut at a fixed cut height.
4. Make sure your test piece is **flat** in the area you are cutting. A 3 inch square works for starters.
5. If it doesn't pierce all the way thru at the beginning – increase the pierce time.
6. If it pierces but then "rooster tails" during the cut – reduce the cut speed.
7. If the cut edges have dross on them that can be easily chipped off – increase the cut speed until it "rooster tails" then back off the speed until the rooster tail just goes away – you now have the best speed.
8. Now using those pierce time and cut speed **adjust the cut height** until the edge bevel is the best you can get.
9. If the edges are **narrow at the top** like a pyramid then the torch is too low so raise the cut height.
10. If the edge is **narrow at the bottom** lower the cut height.
11. Finally measure the width of the cut and that is your new kerf setting.

Call Thermal Dynamics Service at the 888-832-3477 if you have any questions.

MATERIAL SELECTION

⚠ CAUTION: It must be determined by the customer that materials being processed through the machine are NOT potentially hazardous to operator or personnel working nearby.

When selecting materials keep these instructions in mind:

- Material must be clean and dry. (without oil)
- Material should have a smooth surface so it processes easily.
- Dimensional properties of material must be consistent and not exceed the machine capacity.
- Chemical structure of material must be consistent. Buy certificated steel from the same vendor when possible.

LUBRICATION AND MAINTENANCE

WARNING: Make sure the electrical disconnect is OFF before working on the machine.
Maintenance should be performed on a regular basis by qualified personnel.
Always follow proper safety precautions when working on or around any machinery.

***Note**: Proper maintenance can increase the life expectancy of your machine.*

Daily Maintenance

- Check daily for any unsafe conditions and fix immediately.
- Check that all nuts and bolts are properly tightened.
- On a weekly basis clean the machine and the area around it.
- Lubricate threaded components and sliding devices.
- Apply rust inhibitive lubricant to all non-painted surfaces.
- Do a general cleaning by removing dust, metal powder, and metal scrap from the table.
- Inspect the torch consumables for wear, and clean or replace as necessary.

Weekly Maintenance

- Thoroughly clean the machine.
- Check any exposed electrical wiring for wear or damage.
- Inspect the power unit ground clamp for wear or damage.

Monthly Maintenance

- Tighten any loose bolts, nuts, or screws on the machine.
- Keep roller bearings and sliding surfaces well lubricated.
- Wipe down lead screws

Water Table Maintenance

Using a table with just plain water will result in rusted slats and rust on the material being cut if left on the table for any length of time. It is therefore recommended to add a chemical such as Plasma Green® or an equivalent product, to the water. Chemicals such as this are designed to keep rust and odors in check and inhibit bacteria growth. Follow manufacturers recommendations as to how often to change the water.

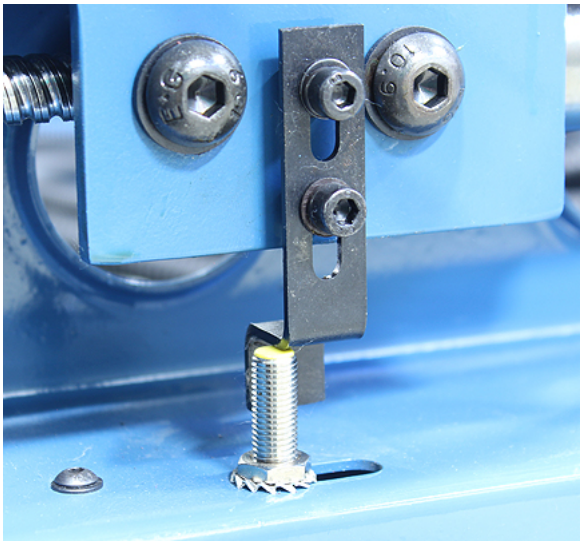
PROXIMITY SWITCH ADJUSTMENT

The PT-22 uses proximity switches (proxy's), one each, on the X and Y axis to set the Home position also known as the Machine Origin. With the Machine Origin set, the controller is then able to calculate the work space of the table and if the project file will fit within this space.

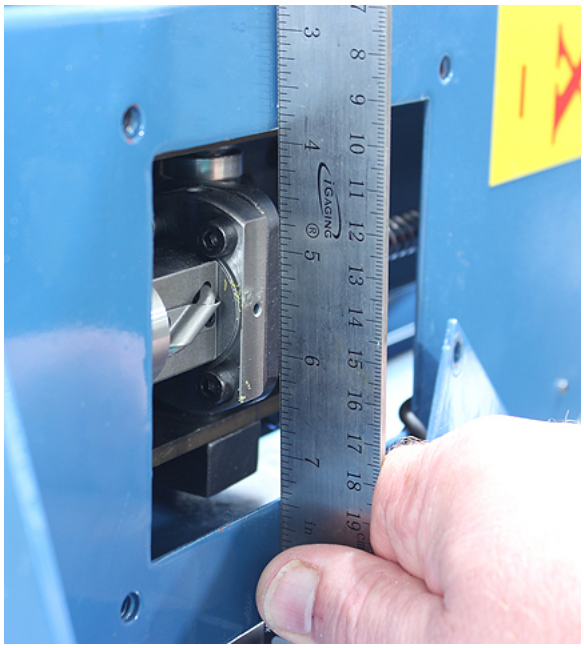
Proximity switches activate using a mating surface as an activator. It does not touch the mating surface but passes near the surface, usually 3/64" – 5/64" (1 – 2mm). If this air gap is too small, the mating surface could contact the proxy switch and damage it. If the air gap is too large, the force of the proxy will not be strong enough to activate the switch and the mating surface will pass by the proxy completely and crash into the end stop of the table.

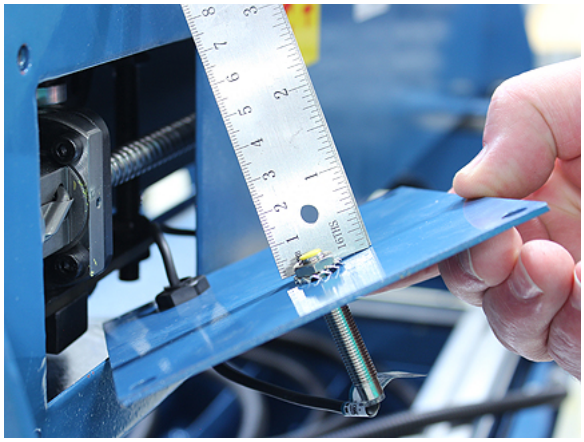
***IMPORTANT**: DO NOT squeeze or clamp on the proximity switch body too hard or overtighten the mounting nut. This will crush the internal circuitry of the proxy which will require a replacement switch.*

1. Move the Y axis in the negative direction until the sensor bracket is over top of the proxy.
2. Measure the air gap between the bracket and the proxy. The air gap should be between 3/64" and 5/64" (1 2mm).
3. Loosen and adjust the clamping nuts to allow the proxy to extend or retract as needed to create the correct air gap.
4. Hold the proxy in position and just to the point that the switch will not move.
5. Test the switch function by pressing the Home button and allowing the system to read the proximity switch.

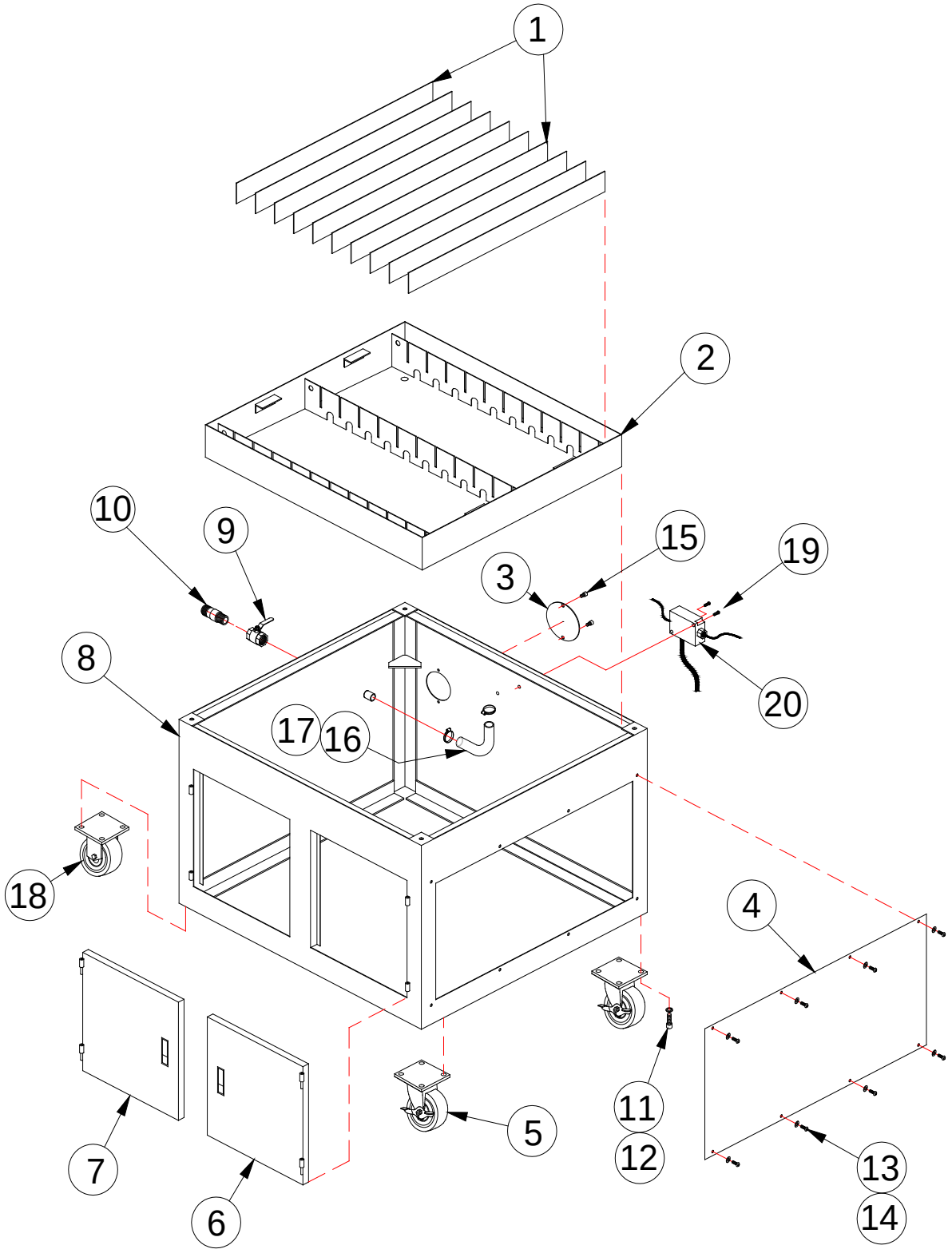


6. For the X axis, remove the proxy mounting plate and using a straight edge across the opening, measure gap to the flat surface of the ball screw nut.
7. Now measure how far the proxy switch extends through the mounting plate. This measurement should be 3/64” to 5/64” less than the full gap measurement.
8. Loosen and adjust the clamping nuts to allow the proxy to extend or retract as needed to create the correct air gap.
9. Hold the proxy in position and just to the point that the switch will not move.
10. Test the X axis after installing the mounting plate and switch assembly.

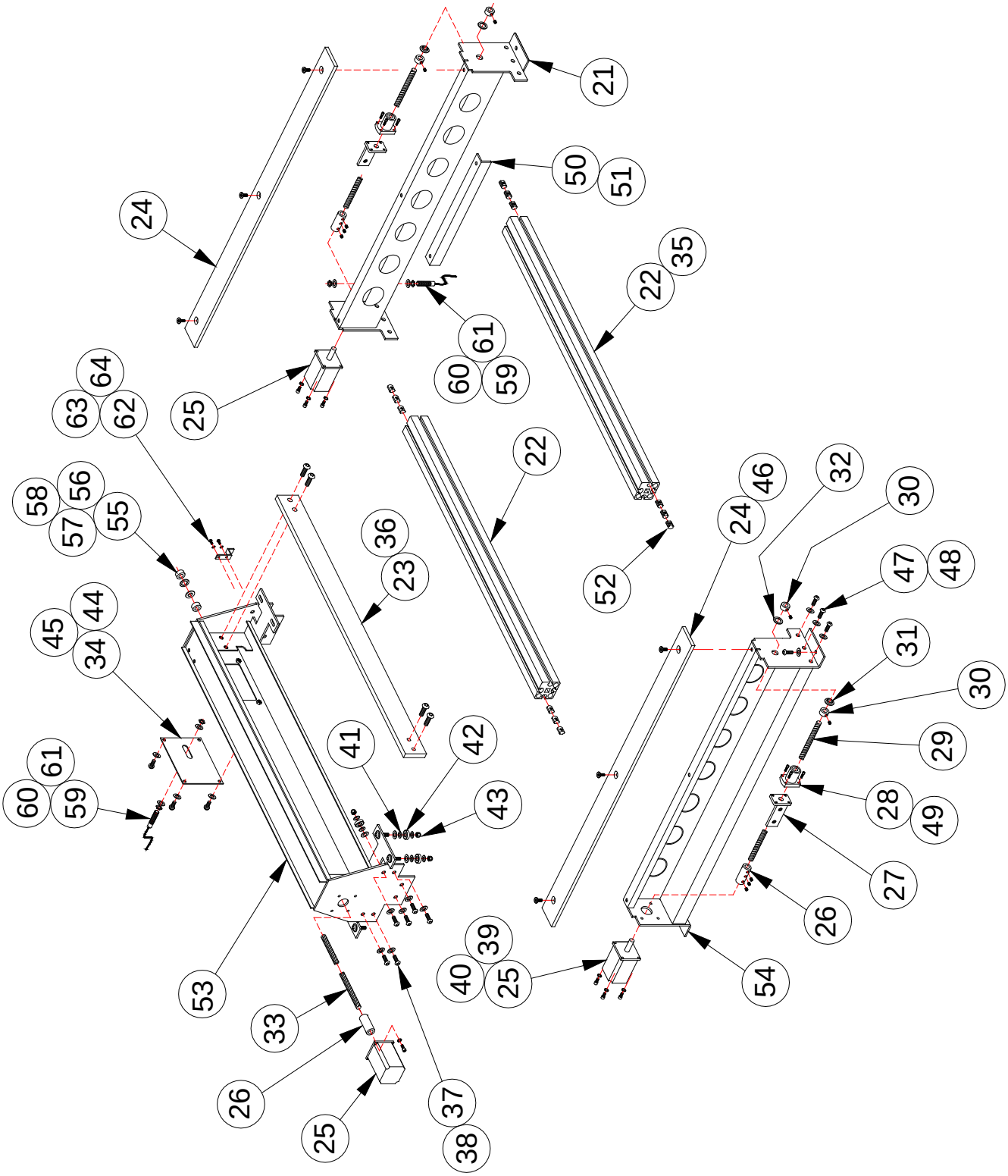




PARTS IDENTIFICATION A



PARTS IDENTIFICATION B



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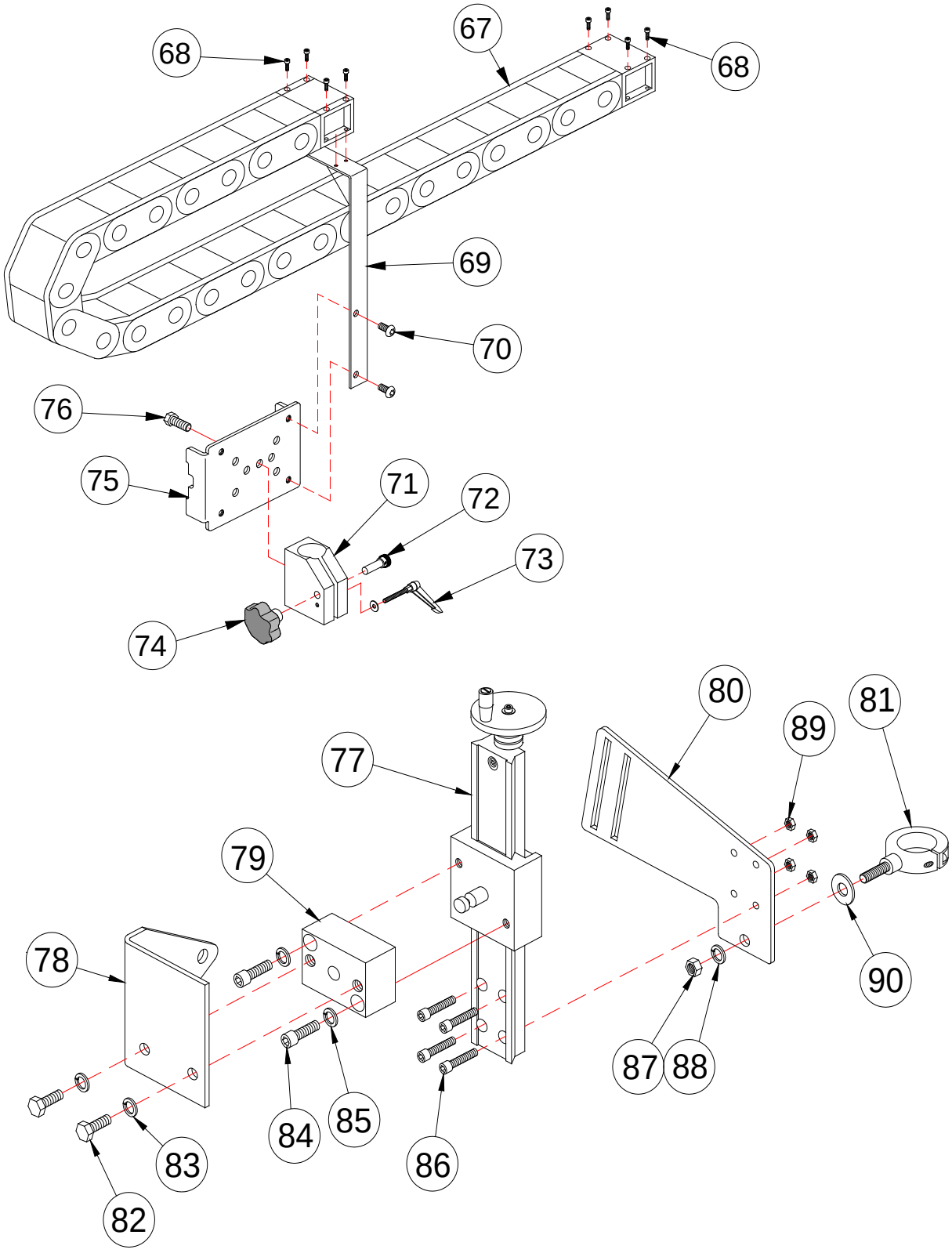
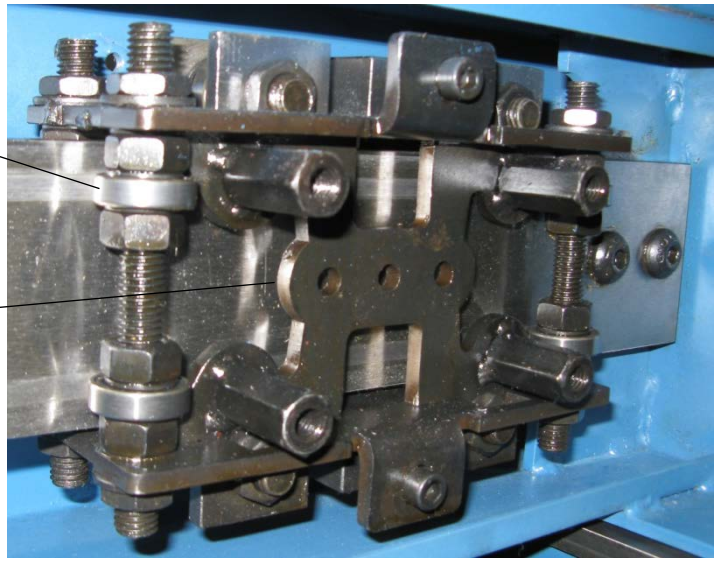
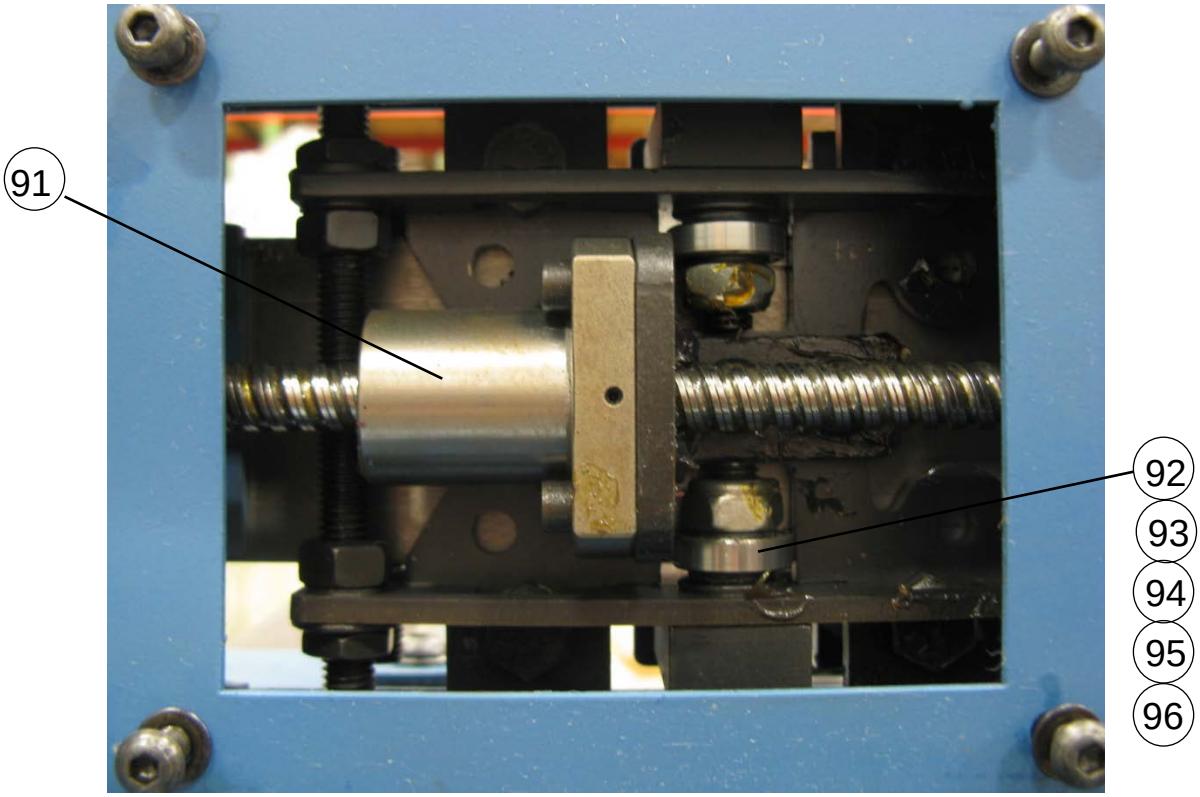


PARTS IDENTIFICATION D



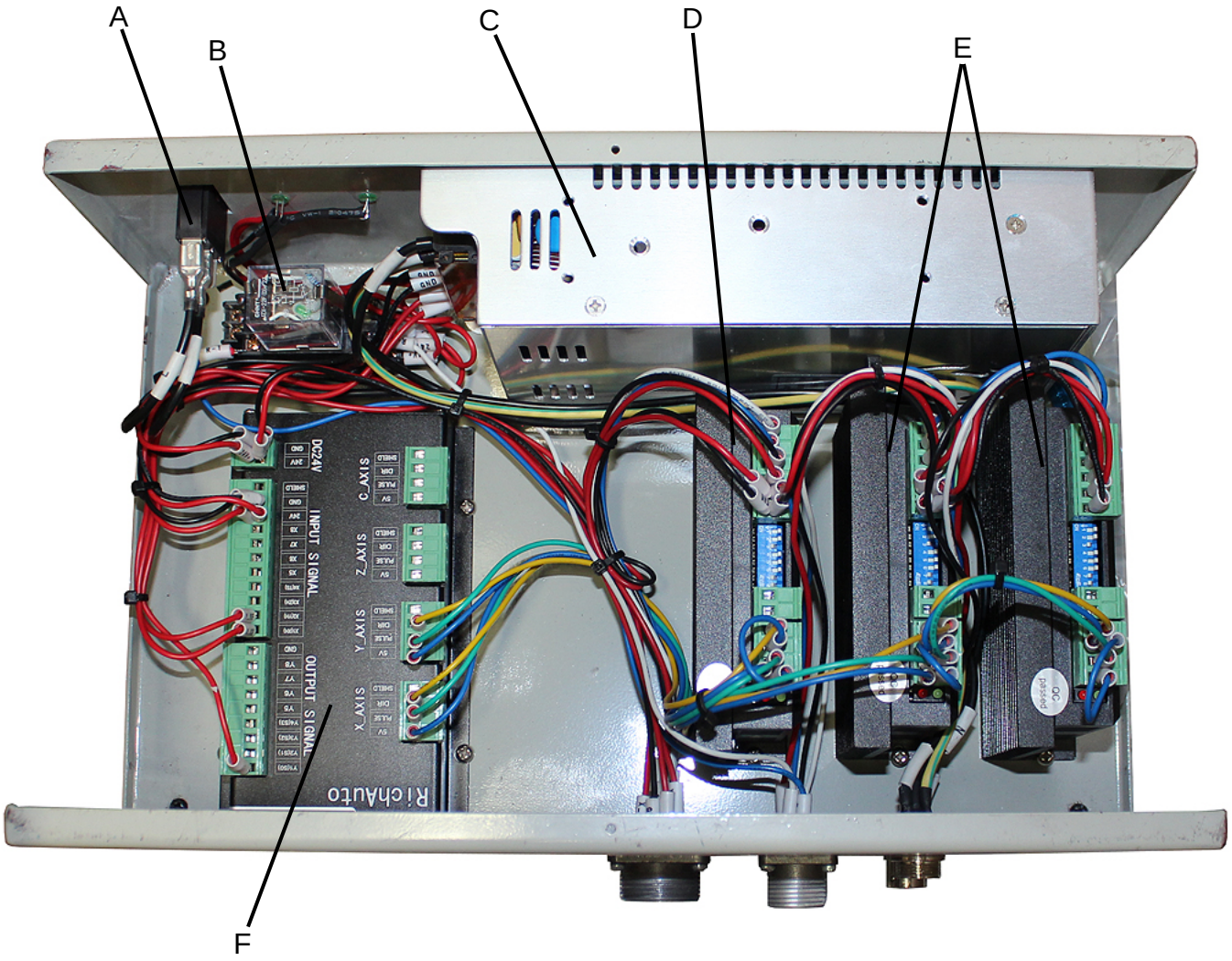


PARTS LIST

Item	Description	Qty.	Item	Description	Qty.
1	Material grates	10	49	S.H.C.S. M5x16	8
2	Water trough	1	50	Switch cable shield	1
3	Access cover	1	51	Pan hd. scr. M4x12	2
4	Access panel	1	52	T-nuts M8	12
5	Swivel caster w/brake 4”	2	53	“X” carriage	1
6	Hinged panel – right	1	54	Side beam – R.H.	1
7	Hinged panel – left	1	55	Flat washer 4mm	2
8	Main frame weldment	1	56	Locking collar 12mm	2
9	Brass ball valve DN-20	1	57	Nylon washer	1
10	Drain adapter	1	58	Shaft spacer	1
11	S.H.C.S. M8x15	16	59	Proximity switch 8mm	2
12	Lock washer 8mm	16	60	Hex Jam Nut M8	4
13	B.H.C.S. M6x15	8	61	Flat washer 8mm	4
14	Flat washer 6mm	8	62	Actuator bracket	1
15	S.H.C.S. M5x8	2	63	Pan hd. scr. M4x8	2
16	Drain hose	1	64	Flat washer 4mm	2
17	Hose clamp	2	65	Roller bearing	8
18	Swivel caster 4”	2	66	“X” carriage holder	1
19	Pan hd. scr. M4x28	2	67	Cable track	1
20	Junction box	1	68	S.H.C.S. M5x8	8
21	Side beam – L.H.	1	69	Cable track support	1
22	Cross member extrusion	2	70	B.H.C.S. M8x12	2
23	“X” axis slide bar	1	71	Torch holder	1
24	Slide bar	2	72	Pinion shaft	1
25	Stepper motor	3	73	Adjustable handle	1
26	Coupling	3	74	Knob	1
27	Bearing mounting bracket	2	75	Mounting bracket	1
28	Holder/w bearing	2	76	Hex hd. bolt M8x16	1
29	Lead screw – “Y” axis	2	77	Dovetail slide	1
30	Locking collar 12mm	4	78	Angle bracket	1
31	Shaft spacer	2	79	Mounting block	1
32	Nylon washer	2	80	Hand torch bracket	1
33	Lead screw – “X” axis	1	81	Torch mount	1

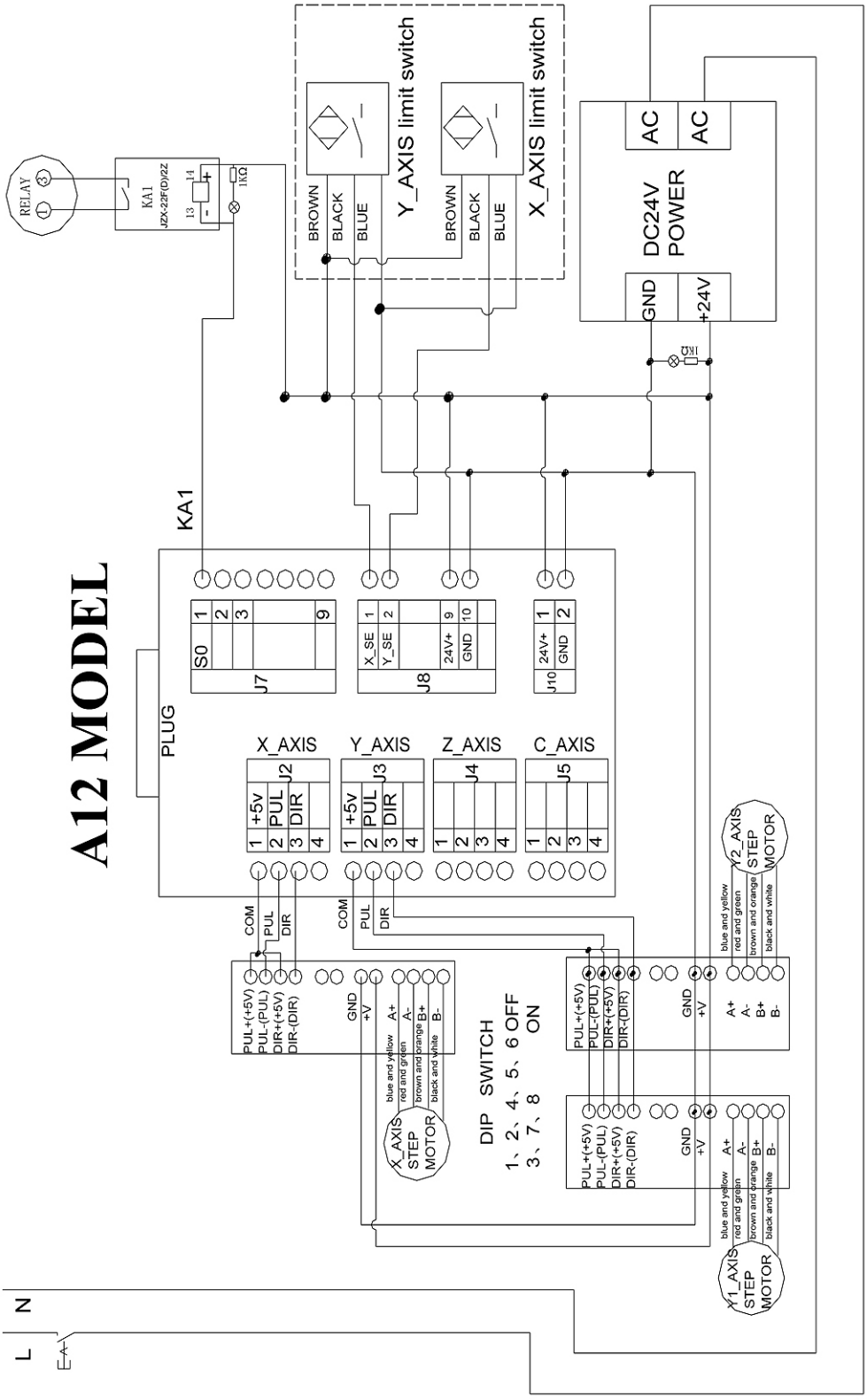
Item	Description	Qty.	Item	Description	Qty.
34	Carriage access plate	1	82	Hex bolt M10x20	2
35	T-nut M8	12	83	Flat washer 10mm	2
36	B.H.C.S. M10x20	4	84	S.H.C.S. M8x25	2
37	B.H.C.S. M10x24	16	85	Lock washer 8mm	2
38	Flat washer 10mm	32	86	S.H.C.S. M4x20	4
39	B.H.C.S. M4x12	12	87	Hex nut M10	1
40	Flat washer 4mm	12	88	Lock washer	1
41	Machine washer 10mm	32	89	Hex nut M4	4
42	Roller bearing	16	90	Flat washer M10	1
43	Nylock nut M10	16	91	Holder w/bearing	1
44	B.H.C.S. M6x16	4	92	Machine washer 10mm	16
45	Flat washer 6mm	4	93	Nylock nut M10	8
46	F.H.C.S. M8x20	6	94	B.H.C.S. M10x24	8
47	B.H.C.S. M8x16	12	95	Flat washer M10	16
48	Flat washer 8mm	12	96	Roller bearing	8

ELECTRICAL COMPONENTS



Item	Name	Description	Qty.
A	Power Switch	On/Off Rocker Switch	1
B	Ice Cube Relay	JZX-22FD/2Z (DPDT 24VDC)	1
C	Power Supply	Model AT020-05004 (input 24V AC, output 5VDC)	1
D	“X” axis motor controller	Microstep Driver #M-542-05 (Dips 3, 7, 8 ON)	1
E	“Y” axis motor controller	Microstep Driver #M-542-05 (Dips 3, 7, 8 ON)	2
F	Interface Board	RichAuto VCC5V	1

ELECTRICAL SCHEMATIC



TROUBLESHOOTING

⚠ WARNING: Make sure the electrical disconnect is OFF before working on the machine.

SYMPTOM	POSSIBLE CAUSE (S)	CORRECTIVE ACTION
"X" or "Y" Axis Not Homing	One or both proximity sensors out of adjustment. Cable for proximity sensor not connected, or damaged.	Check proximity sensor air gap and adjust to as needed Check that all connectors are plugged in. Check for broken wire at connector.
"X" or "Y" Axis Not working	No power at controller Motor control cable not plugged into back of console. Control cables plugged in and no motion. Motor burned out	Check power source Check that all connectors are plugged in. Check for broken wire at connector. Have motor repaired or replaced.
Torch Will Not Fire	Ground clamp from power unit not clamped to material. Torch tip is plugged or needs to be replaced. Torch height not properly set for thickness of material being cut. Torch is missing consumables or they are Installed incorrectly. Check power unit for faults.	Make sure ground clamp is securely clamped to material. Dismantle torch tip and clean or replace consumables. Refer to documentation for approximate set-up values. Adjust as necessary to achieve quality cut. Check torch for missing or incorrect consumables. Consult power unit manual. Correct problem to clear fault message.
Poor Cuts	Air pressure set too low. Incorrect travel speed. Torch height setting too high or too low. Air has moisture.	Set torch power unit to pressure recommended for material thickness Set speed using torch operator manual. Vary up or down until you get a good cut. Use value from torch operator manual as starting point. Make sure shop air or compressor air is dry. Use adequate sized drier.

SOFTWARE INFORMATION

Each new cutting table comes with one license of the latest version of BobCAD CAM Express software and Services provided by BobCAD-CAM.
Contact a representative from BobCAD-CAM to get started with BobCAD-CAM. The service representative will help to get you directed to the download links and the license activated. Whether drawing squares or squirrels, flanges or flowers, BobCAD-CAM will help to bring out your drafting artistry skills. Practice and Have Fun!

BobCAD-CAM Vxx (latest version) Express (Covers: Mill, Laser, Plasma, and Waterjet) This software is best for 2D/3D CAD and 2 axis shape cutting.

- DXF DWG IGES & More
- Shape Library, Stretch, Splines, Snap Grid
- Hole Patterns Gears CAMS Sprockets
- Profiling, Kerf Comp, Lead in/out, Backplotting
- Post Processor

BobART
This software is best for image conversions and embossing.

- EPS AI PDF
- JPEG, BMP, Tiff, GIF, PNG, PSD, and more….
- Vectorize (convert images)
- Embossing, Texture, Smoothing
- V carving

1 Hr of Online Line Training
This training is best to learn BobCAD-CAM Fast.

- One on One web training
- Your Parts
- Your Questions
- Your Office
- Video Recording of Training Session

1 Year Technical Support Package
This support package will get you started.

- Expert Technical Support
- Starts from Day of Purchase
- Phone & Email
- Remote Access (connecting computers)

BobCAD-CAM Contacts:

Licensing, Support
727-489-0003
support@bobcad.com

Sales, General Inquiry
844-529-0660
partners@bobcad.com

Use the information below to ensure you are working with a BobCAD-CAM supported and optimized system.
Use the following link to view the most up to date system requirements.
http://bobcad.com/support/system-requirements/?source=webinars_footer

BobCAD-CAM is supported to run on the following Operating Systems:

- Windows 7
- Windows 8
- Windows 10

A 64 Bit System is needed.

BobCAD-CAM System Requirements

- Windows (Minimum)
- 64-bit Operating System
- 3GB RAM
- 256 MB Graphics Card* that supports OpenGL 1.1
- Intel® or AMD® Processors**
- 2GHz Processor
- Windows 10, Windows 8 or Windows 7
- Windows Indexing Service Must Be Enabled
- IE9 or above

Windows (Recommended)

- 6GB RAM or More on Windows 8 x64 Operating System
- 1GB Graphics Card*
- Intel® or AMD® Processors**
- 2GHz Processor (Multi-core) or higher
- Windows 10

Note:
**BobCAD-CAM's stability is dependent on the graphics card ability to process information; integrated memory graphics cards may work but are not recommended.*
ATI® or NVIDIA® graphics cards with dedicated memory are recommended. The graphics card's software driver must be updated to the current software drivers released by the graphics card manufacturer.
**4K displays are not currently supported and may require reducing your screen resolution.*
***BobCAD-CAM is not supported on Apple Macintosh® -based machines. Some customers have shown success in running BobCAD-CAM in a Virtual Windows environment on Mac computers using Boot Camp. While the end user may choose to run Windows on a MAC®, this is not supported by BobCAD-CAM Inc.*

NOTES:

NOTES:

PT-22 QUICK REFERENCE GUIDE

START

- Turn on console, → [ORIGIN OK] home is now set.
- Load material.
- Turn on plasma cutter.

SET X, Y ORIGIN

- → [X + 1 ▲] [X − 5 ▼] [Y + 2 ∧] [Y − 6 ∨] to move to desired location for origin
- → [XY→0 4] location is now saved

SET Z HEIGHT

- Manually raise or lower the torch to the height indicated in the table provided by the plasma cutter manufacturer.

LOAD AND RUN PROGRAM

- Insert USB → [RUN/PAUSE DELETE] → Udisk file [ORIGIN OK]
- → [X + 1 ▲] [X − 5 ▼] highlight desired program
- → [ORIGIN OK] → work speed [RUN/PAUSE DELETE] →
- → Enter work speed with keypad → [ORIGIN OK]
- Program will execute and start cutting.

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