



BETTER SOFTWARE FOR LASER CUTTERS



~THE FUTURE OF LASER ENGRAVING~

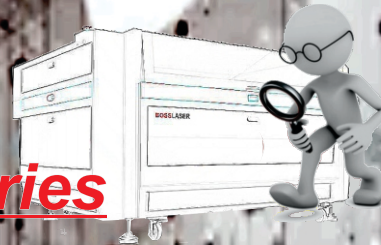
Engraver's
choice
"YOUR ENGRAVING & LASER EXPERTS"



LIGHTBURN LASER COURSE

BOSSLASER™

C02 Series





Introduction

Joseph L. Brága

Joe, will instruct this videos course. He is an expert with Laser products; BOSS Laser, Xenetech, Laguna Tools + LightBurn & EngraveLab. Joe's background is in Service Repair + R&D of Lasers (Fiber & CO2), Engravers & Routers, and he has a teaching credential in Vo-Tech Education. He is an Authorized EngraveLab & CorelDRAW Training Partner & Beta Tester & he has 30+ years experience working with Engraver's and Lasers. Joe has owned Signage & Engraving Operations, and written for many of the top Magazines in the Industry.

TRAINING

This class is designed to teach you how to use the software and apply it to running jobs on your Lasers, Sand-Carvers, CNC Engravers, as well as General Graphics. This class only gives you information that relates directly to Lasers, Routers Mills, Engravers and/or General Graphics.

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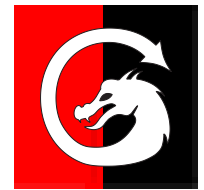
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Major CheckPoints

Unpack & Inspect

1. Welcome to Best Support in The Business

2. Meet Our Staff

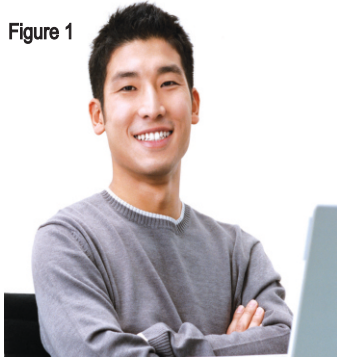
3. Checklist of Items you Will Need

4. Total Support



Pre-Installation Procedures

Figure 1



List items to get Before Beginning Process

We Mean Business, Welcome to My Course!

1. Welcome to BOSS & LightBurn:

A) Welcome to the BOSS Laser: the purpose of this Tutorial Manual and its Instructional PDF Fliers is not only get the unit up and running, but for you to make money with it.

B) There will be a series of One page subjects with Videos and add-on sheets of data or sample jobs to train you.

C) This, in concert with the Corel or EngraveLab Graphics courses and the On-site or PC to PC training, we should have you very proficient in no time. Installation is the most important job we do at BOSS, now let's move forward.

TRAINING DATA COVERED HERE:

1. INTRODUCED YOU TO THE COURSE.
2. PRESENTED THE BOSS TEAM.
3. LIST OF ITEMS.
4. WELCOMED YOU TO BOSS LASER.
5. REMEMBER, YOU CAN CALL US WE WILL WALK YOU THROUGH PRE-INSTALLATION...(949-355-4000)

"Tip"

The BOSS Laser can run from any Software through the LightBurn Interface or Macros We support it from Corel X6 or better and from EngraveLab. These Packages are the Backbone of the Industry and are in most shops throughout the world.



Figure 4

Figure 2



Figure 3

List items to get Before Beginning Process

2. Our Main Staff

A) The Main part of our Staff is our Post Assembly and Q.A. Teams.
B) The Core Operation is in Orlando, FL. staffed with Technicians and Applications Experts. See our 'Bio' on the Website and catch our on-line training sessions.
C) I am Joe Braga I have owned Engraving and Sign operations and run technical support for many of the manufacturers throughout the years. Catch my 'Bio' at www.engraverschoice.com. We are a balanced team and have Demo sites throughout North America and are here to help. Call us anytime to instruct you with whatever questions you may have from Software to Hardware to Pricing and Shop marketing of your individual product lines.

3. List of items

A) We have a Short List of Items for the Pre-install.
B) They are listed below and cover the Electrical A/C power hook ups and surge protection. There are materials and cleaning items for the lasers.
C) The Lasers P/C should have 16 GIG and 900 GIG of free space. You need and WIFI wireless hook up to the internet; and cleanup your desktop. Also Speakers to listen to the Video Package for review. You will receive a email from me with a copy of just the pre-install and links to the Preinstall videos on YouTube. Watch them before starting the Pre-install process.

4. Support

Call us at Engraver's Choice

949-355-4000 or Text.

from 8 PM to 8 PM Monday thru Friday and 10-2 on Saturdays.

We provide Phone and PC-2-PC support as well as the Video Packages and Onsite service.

Sales@engraverschoice.com

Key Steps to our Goal

Main Task: List of Items

A: 2 = Grounded Extension cords

B: 2 = IsoBar Surge protectors (20-30 AMP)

C: Lens cleaner & White Lithium Grease.

D: Kim Wipes and Q-Tips

E: 3=12x12 Birch/Alder/Poplar wood pieces for testing

F: Personalized samples of your choosing

* BN-LINK Mini Wireless Remote Control Outlet Switch



WATCH FOR THIS:



Major CheckPoints

Unpack & Inspect

1. Pre-Installation Sheet

2. Uncrate & Tie-Straps & Remove Packing

3. Position Laser in Shop & Inspect Unit

4. Safety & Check the Tube for Cracks and Leaks



Figure 1



Unpack & Inspect

Learning the Safety Precautions is Critical to you and the operation of the Laser.

1. Pre-Installation Sheet:

A) There is a Pre-Installation Sheet that has a Checklist of the items that we will go over. **(Pg 74 of this Manual)**
B) You will get the Laser unpacked and put in place, Inspect it, load drivers and run tests.
C) Check the unit and prepare it for training and final installation. We will be training on the Laser Operations, Pendant, LightBurn and more than likely Corel or EngraveLab. We will complete the Applications Training and Dial the machine in for the major materials that you will produce. The Keys to start the laser are in the Utility Tool Box.

TRAINING DATA COVERED HERE:

BE CAREFUL. LASER MACHINES ARE POWERFUL TOOLS DESIGNED TO CUT OR ENGRAVE WITH HIGHLY FOCUSED HEAT ENERGY. NEVER LEAVE YOUR LASER UNATTENDED AND NEVER LET ANYONE UNFAMILIAR WITH YOUR MACHINE OPERATE IT. ALWAYS KEEP ACCESS COVERS ON AND TOP LID CLOSED. AVOID ANY DIRECT EXPOSURE AND NEVER STARE AT THE LASER LIGHT WHILE OPERATING. READ AND UNDERSTAND ALL OF THE WARNING LABELS ATTACHED TO YOUR MACHINE. ALL SAFETY MEASURES MUST BE STRICTLY ENFORCED AND ABIDED BY. BOSS LASER SHALL NOT BE HELD RESPONSIBLE FOR DAMAGES OR INJURY RESULTING FROM IMPROPER USE OR DISMANTLING OF THE LASER MACHINE.

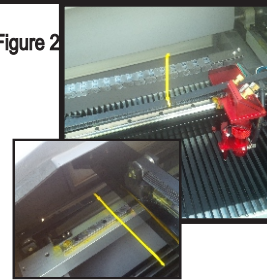
“Tip”

- In Case of Fire:**
1. Press the **EMERGENCY STOP** button located above the LED Panel
 2. Lift the lid
 3. Quickly blow out the flame (or use a CO2 fire extinguisher for serious flames, but do this **ONLY** as a very last resort)
 4. A Baby Blanket is useful here.



Figure 4

Figure 2



Level the Laser with the Bottom Pad Mounts



Figure 3

Pre-install Video I

2. Uncrate & Tie-Straps

A) You will be Plugging into **110** or **220 VAC Electrical Outputs LAST.** We have a 6" Portal for the Laser Exhaust. When un-crating the Laser remember to be aware there are many items inside.
B) Uncrate the Laser and roll it into place. Then go through the Shipping checklist to verify all components are there. You must remove the tie straps or tie downs from the Motion System.
C) Recheck the pre-installation checklist and verify that all items were received, intact and not ship damaged, especially, the Laser tube. If the Checklist is complete move forward to the next section.

3. Position Laser & Inspect

A) Once rolled into place, evaluate that all the internal tie-straps are removed, so the motion system can go to the home position for the first time. Now, look to see that you are prepared to start to do the hook up of the hoses and cables.
B) Recheck that all packing is removed. Pull the Bridge of the motion system to and away from you.
C) Now push the Lens Carriage to the left and Right, Mount the Lens if needed to the Carriage assembly.

4. Safety & Check the Tube

A) Read Safety requirements in the **BOSS** Manual. Now look at the Tube and see that there are two electrical connectors of different types on each end.
B) The Tubes beam points at the First mirror about 1/4 away from the mirror. The Connectors are aligned so that we can not get it in backwards.
C) Check the tube hoses for the water chiller you can secure them with tie straps. The Tube should have Duct tape wrapped around it in two places, This is where you clamp to it and level it.

Key Steps to our Goal

Main Task: Unpack

Make sure you are ready with necessary tools and plenty of room for laying out the parts and accessories of your new laser. Our crates are usually banded to a wooden pallet for safe shipping. If you see any damage such as pierced or broken plywood take a picture before removing bands. If it looks smashed or opened take more pictures. The machine is insured for its value and may be damaged if the crate is badly damaged.

Cut any bands. Then carefully remove the top lid. Be careful not to use any part of the plywood interior for a focal point on pry bar. Stay on the outside framing to ensure not piercing plywood and damaging machine. Once the top lid is off, look inside and find any loose boxes containing accessories. Remove any box that may fall when sides are removed. Remove front panel and then two side panels, then the back panel. Save the crate panels in the event you ever need to move the machine again.



WATCH FOR THIS: Safety Checklist

- NEVER operate laser machinery unless you have been properly trained.
- ALWAYS use protective eye-wear,
- ALWAYS turn the Exhaust Fan on while running the laser.
- NEVER sit anything on top of the laser.
- NEVER leave the laser unattended. Remain with the machine when it is running at all times
- ALWAYS keep the machine's environment free of heavy pollution such as strong magnetic-electrical interference.
- NEVER use unapproved or unsafe materials, such as Polyvinyl Chloride (PVC)
- NEVER operate the laser near flammable and explosive substances. The UV light beam that is emitted is not visible and poses a great fire hazard.
- NEVER open the upper cover of the laser machine while it is running & NEVER engrave a shiny metal or mirror. The laser beam can reflect and deviate
- NEVER push or pull the laser head and its gantry while the laser is running.
- NEVER dismantle the laser machine. There are laser and high voltage/pressure parts that could cause harm or injury.

Figure 1

Chiller Side: Water **OUT** ---to ---Laser Side Water **IN**
 Chiller Side: Water **IN** ---to ---Laser Side Water **OUT**



Use a Small Heat Gun or Hair Dryer to Soften Hose to get them to Fit onto the Barbed Outlets

1. Mount Tube to Laser

A) Normally, the Tube is already mounted in the Laser, but if you need to mount it is this simple.
B) Mount the Tube so the beam points at the first mirror about 1/4" away from the Combiner Lens. Now connect the Electrical connectors and the hoses for the water chiller either with tie straps or clamps.
C) The Tube should have tape wrapped around it in two places, so you can screw the clamps in around the wrapped taped areas (2) of the tube. Adjust the gap of the Tube to the mirror from 1/4" to 1/8" and tighten the clamps screws in. Make sure the Tube is Level and put the Cover down and you are done.

TRAINING DATA COVERED HERE:

BE CAREFUL. LASER MACHINES ARE POWERFUL TOOLS DESIGNED TO CUT OR ENGRAVE WITH HIGHLY FOCUSED HEAT ENERGY. **NEVER LEAVE YOUR LASER UNATTENDED AND NEVER LET ANYONE UNFAMILIAR WITH YOUR MACHINE OPERATE IT.** ALWAYS KEEP ACCESS COVERS ON AND TOP LID CLOSED. AVOID ANY DIRECT EXPOSURE AND NEVER STARE AT THE LASER LIGHT WHILE OPERATING. READ AND UNDERSTAND ALL OF THE WARNING LABELS ATTACHED TO YOUR MACHINE. ALL SAFETY MEASURES MUST BE STRICTLY ENFORCED AND ABIDED BY. BOSS LASER SHALL NOT BE HELD RESPONSIBLE FOR DAMAGES OR INJURY RESULTING FROM IMPROPER USE OR DISMANTLING OF THE LASER MACHINE.

"Tip"

Chiller Hoses:

1. Chiller **OUT** to Laser **IN**
2. Chiller **IN** to Laser **OUT**
3. Chiller Signal outlet must attached on both ends or laser will not Fire.

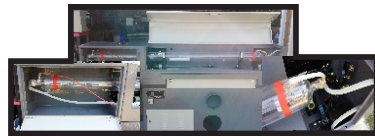


Figure 4

Figure 2



Figure 3

Pre-install Video II

2. Hook-up Hoses

A) The water pump or chiller requires two lines; one to the **water in** and one to the **water out** barbed fixture. Most Boss Lasers tubes are water cooled and the laser machine will not fire if water is not flowing. *Make sure to not get the lines reversed.*
B) One Hose goes from **OUT** of the Chiller side to the **IN** of the Laser side, the second hose **IN** on Chiller side and to the **OUT** on Laser side. Plug the Chiller Signal outlet in on both sides, without this the laser will not fire.
C) The Air pump hose needs to be attached to the Air inlet fixture. Now attach the two Exhaust Blower hoses from the Laser to the blower with clamps, then from Exhaust blower to the to the wall outlet. Attach the external ground designed to help eliminate static electricity. Just Attach the ground wire from the connection to any grounded outlet.

3. Fill Chiller & A/C Connect

A) Open the Tank Cap on the top of the Chiller and with a Funnel, Fill the Chiller tank with 2-5 gallons of **DISTILLED** water depending which chiller you have, and replace cap. Check the Drainage screw in the Back/Bottom that it is tight.
B) Plug in Chiller A/C power cord into the Laser Surge Protector, and the Air Pump and Exhaust Blower Power Cords into another Surge Protector.
C) Next after a final recheck, Plug the 'Isobar' Protectors for the Laser - Chiller along with the PC or Laptop Power Cord(s) into a **Dedicated** A/C outlet.

4. Utility Box & Power-up

A) Review all items, check that the Motion System is free moving on both X & Y Axis. Check that the tube has its Silicon White covers over its ends to keep arcing from happening.
B) In Utility box inventory the box and get the keys to power up laser. See the attach videos for the items in the box. Turn on the Chiller, & Surge protector. Turn on the Laser and PC with other Surge protector..
C) Make sure Circuit Breaker is on in the back. Turn key and release E-stop. Now press the 'RESET' button. The Pendant and the Laser will move to Machine Home.

Key Steps to our Goal

Main Task: Exhaust Hoses

The exhaust requires the most effort and its importance can't be overstated. The laser vaporizes material as it moves along its axis, generating large amounts of smoke. The exhaust is necessary to remove this byproduct. Duct exhaust to the outside, away from any area where co-workers may congregate. Correctly ducted, a laser can easily be placed in an office or spare room.

Larger machines with two exhaust ports; the top port with flange is designed to remove air from above the material during engraving/etching for example. This is the most common of exhaust outlets to use. The lower port is designed to draw air from below the material, during cutting for example. First, this port also removes air and all associated debris from the working area as soon as possible. Second, this lower unit will act as a vacuum to hold down light material such as cloth or paper. Notice there is no flange on the lower port.



Major CheckPoints

Attach Hoses & Cables

1. Mount or Check Tube to Laser
2. Hook-up Water Chiller Hoses (2)
3. Fill Chiller Distilled Water & Power Cable Connected
4. Check Utility Box & Attached Power Cable --Turn ON --



The purpose of the air pump is to blow air through the laser head nozzle - By blowing debris and smoke away from the beam, while allowing for cleaner cuts and protecting the lens. The air pump on/off switch should also be close by, and preferably on the same circuit as the water pump and exhaust fan to ensure its operation when running the laser machine.



Major CheckPoints

Pendant & Focus

1. Test Motion System & Understand Focus

2. Set Origin - Starting Position & Test Fire Laser Beam

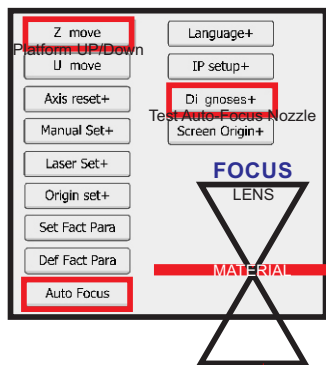
3. Check Amp Meter and Pendant

4. Learn to Jog Motion System



Video: P14

Figure 1



1. Test Motion System & Focus

A) With the Laser on & the Pendant lit up, use the Arrow keys to jog the laser carriage around, then hit 'Reset'

B) Now Jog the laser carriage over some Laser-able Material with the **Focus Nozzle** over the **Material**, with your hand gap the nozzle and push it up depressing it Spring until you have a **RED** light on the **Black** little box behind it light up. When you let go of the Nozzle it will pop into the original position the Light should be off. Then hit the **Z/U** button on the Pendant, press the **left or right** arrows; you will see the table move up and down.. If you are 2.5 inches from the material, you are in Focus. See that the Nozzle is a little below the Air-Nozzle, this is important.

C) When you hit the **Z/U** key the Pendant screen will change. The **Auto-Focus** icon is on the bottom of the Screen, arrow up to it and hit 'Enter'. The Table will rise to the Focus Plunger nozzle 2.5 inches from the Lens; **No Focus – No Burn.**

Mount Surge Protectors & Test

One Surge Protector for the Chiller & Laser

One Surge Protector for the Exhaust & Air Pump

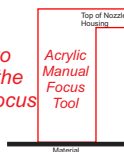
BN-LINK Mini Wireless Remote Control Outlet Switch

"Note"

LCD/Pendant:

- ← → Left/Right Jog X-Axis
- ↑ ↓ Top/Bottom Jog Y-Axis

You will have to check this with the Acrylic Manual Focus Tool



O.F.F.
O=Origin
F=Focus
F=File

"Tip"

The Amp Meter is also the Longevity Meter, that shows power output and also allows you to adjust aging tubes.

Figure 2



Big Air Pumps May need their Own Surge Protector

Figure 3

Pre-install Video III

2. Set Origin & Test Fire

A) Jog the Laser Positioning Light to the 75mm in and 25 mm down from the Top/Right Corner of your plate and hit the 'Origin' Button on the Pendant.

B) The Laser will begin the fire from this point. Either working top to bottom in Scan or Raster or Bottom to Top, as you will control. (**Chiller ON**)

C) With Cover down, Next move the Red Position Diode Light to the Center of the material. Now hit the 'Pulse' button and the Laser beam itself should fire. Once the beam fires it shows that the Laser tube is operational. Hook the USB cable to the Laser and to the PC or Laptop. Check the laser to see if the Chiller is working.

3. Check Amp Meter

A) Above the LCD/Pendant is the Amp Meter.
B) When you hit the 'Pulse' button on the Pendant the Laser will burn as long the Chiller is on and the door is closed.

C) The Amp Meter will move and dictate a burn and power level the beam is at; and show the level of power. It can be used to adjust the power level from the Power supply. The Max. Power must be on 95% ans Min. Power on 10% Normally.

4. Jog Motion System

A) X-Axis jog is the Right & Left Arrow keys in normal Mode.
B) Y-Axis jog is the Top & Bottom Arrow keys in normal Mode.
C) Z/U and Left/Right move the Platform as Long as you are on **Z-Move**. The Speed of the Jog can be controlled on the Pendant. I set it to 155 and so it easier to make changes.



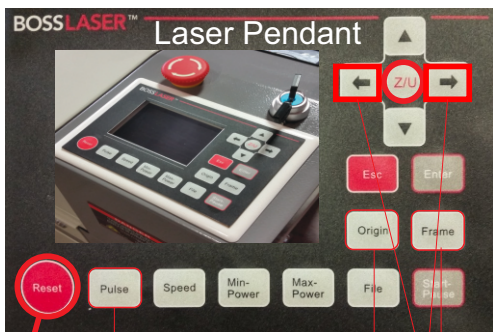
1. Air Pump can be a silent or a high Volume pump.

2. According to the different customer application needs & the habit of using. Are we cutting acrylic at 1/2 inch. or paper.

3. The Air Pump blows air at the point of contact in the Nozzle of the Lens carriage.

4. The Fumes created by burning the material, it is those fumes to caught burn.

5. The air pumped in to the nozzles and controlled by the its adjustment knob blows those fumes away, so there is no fire. You can also urn the air solenoid off and on by color in the control panel of LightBurn.



Inside cabinet door on right side of laser

Round Device Connection

In Z/U Left/Rgght Arrows for Up/Down

Figure 4

Key Steps to our Goal

Main Task: Laser Pendant

RESET: Datum or Reset whole Laser System.

Origin: Set Relative Starting Point to the Laser Layout

Pulse: Pulse or Fire the Laser Beam to the Material

Frame: Track around the outside of the Layout.

Z/U: Has Z-Move, Auto-Focus and Diagnosis (That can be used to Check the Focus Nozzle)

File: Pick up File Download to the Laser or Udisk

Star/Pause: Start or Pause a Job Downloaded to the Laser

Left / Right Arrow Keys: JOG the Lens around the Table via the Motion System.

Up/ Down Arrow Keys: To move the Table Platform up and Down to focus to the Material.

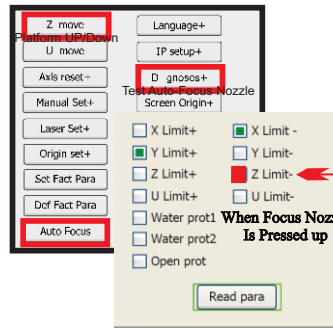


Major CheckPoints

Z-Platform & Cabinet

1. Test Z-Platform must be Level to the Nozzle
2. Test Pendant- All Buttons
3. Z-Level in all Four Corner & In the Middle
4. Check Cabinet Light work.

Figure 1



Learning Pendant and Leveling Platform

Use the Active Pendant and Correct Focus levels throughout the Z-Platform

1. Test Z-Platform

A) Again, with the Laser on & the Pendant lit up, Hit the **Z/U** button and Highlight the **Z-Move**, use the Right/Left Arrow keys to jog the laser Platform up and down.
B) The Z- move is automatically highlighted when you hit **Z/U**, allowing you to use the **RIGHT/LEFT** keys to move the Platform up and down.
C) With the Nozzle over the Material; Hit the Up/Down (**UP**) Arrow keys will move the cursor through the list of command, like **Auto-Focus** icon that is on the bottom of the Screen, arrow down to it and hit **'Enter'**. If Not sure of the Auto-Focus Up Arrow to **'Diagnosis'** Press up on the Focus Nozzle and see the **Z** light going off in the Dialog screen on the Pendant. It is Spring loaded so up for **ON** and release Nozzle for **OFF**.

"Note"

LCD/Pendant: Z/U

1. ← → Left/Right Jog Z-Axis Up/Down
2. ↑ ↓ Top/Bottom to over through Registry

Putting a Piece of Metal on the top of a Limit Switch will Light it up In Diagnosis as well.

"Tip"

- O** = Origin
- F** = Focus
- F** = File

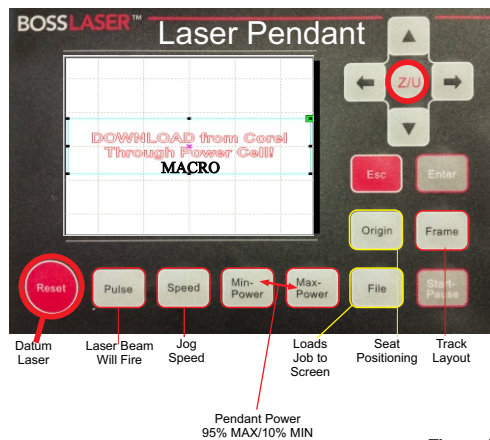


Figure 4

Figure 2

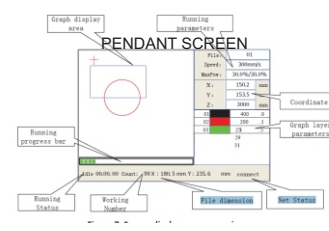
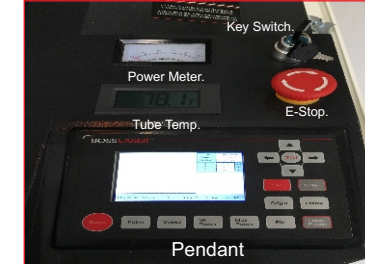


Figure 3



Pre-install Video IV

2. Test Pendant

A) We have Jogged the Laser Positioning Light to the Top/Right Corner and up and down using the Pendant.
B) We have used the Pulse button and Reset. Now check the Min/Max Power (95%/10%) and Speed (255).
C) Look at 'File' button dialog, set a **Origin** and just get a feel for the Pendant itself. This is where you control the laser positioning and what jobs it runs. Once we 'Download or Send' a job when you hit 'File' it will be the Job Highlighted. Remember:

- O** = Origin
- F** = Focus
- F** = File

3. Z-Level.

A) Check the Table platform this where you set your materials to be laser-ed onto.
B) Lower the Table even with frame of the laser cabinet and generally see if it is not lower on one side than the other.
C) You can turn off the laser and open the left side door and grab the belt and pull or push it to even out the table. This is Critical to maintain focus throughout the engraving platform.

4. Check Cabinet Light

A) On the right hand side of the laser is a switch for the cabinet light. Turn it off and on a few times to check it.
B) Recheck you A/C cords for the laser/chiller and the Air/Pump/Exhaust.
C) The circuit the laser is on should Isolated. Nothing on it but the **Laser/Chiller**.



With Lasers the 2.5/2.0 lens is normal and very clean Lettering. It does Scan or raster marking and Vector cutting to 1/4". A 1.5 lens is for very small marking and is not for Vector cutting. The 4.0 lens is for vector cutting up to one inch. Sometimes you need all three.

Key Steps to our Goal

Laser Pendant

Speed: Set the speed of the current running layer, or set the direction keys move speed (255)

Max. Power: Set the max laser power of the current running layer, or set the power of "Pulse" Key; (95%)

Min. Power: Set the min laser power of the current running layer, (10%)

Esc: To stop work, or to exit to some menu.

Z/U Button: The Z/U key can be pressed when the system is idle or the work is finished. On pressing this key, it will show some entries in the interface, each entry includes some functions, Z axes move, U axes move, each axes to go home etc.;

Start/Pause: Start or Pause a Job Downloaded to the Laser

Up/ Down Arrow Keys: To move the Table Platform up and Down to focus to the Material.



Major CheckPoints

Recheck & Prep for Install

1. Recheck A/C Power Hookup (Isolate Line)
2. RECHECK Laser Tube (No Leaks)
3. Check Auto-Focus
4. Check Cabinet & Motion



1. Recheck A/C Power Hookup

A) With the laser uncrated, in place and the packing off the unit.

B) Recheck the A/C power with the Laser & Chiller into one Surge Protector into a Isolated line and the Air/Exhaust into the another surge Protector.

C) I bring the Protectors up on the laser cabinet and turn the laser on and off from the surge protectors. Putting the wore and tore on the protector not the E-stop or Key Mechanism. This is readying yourself to burn your dot onto the Wood piece. You can also Buy the Remote Relays so that the On/off for your Accessories is easy. Just order it on Amazon and Plug into the Surge Protector and then the Powers into the Relay.

BN-LINK Mini Wireless Remote Control Outlet Switch

Double Check all, to become Friendly with your Laser

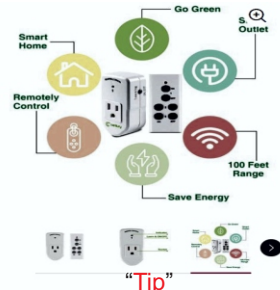
Pre-install Procedure completed correctly will insure great Installation & Training

“Note”

Tube Connections:

1. **Red** connection = Power to tube

2. **Black** connection = Ground



“Tip”

Prep Install sheet is all about the beam firing on the ‘Pulse’ button. This proves tube got there is one piece. We need to know before we travel.



Figure 4

Figure 2



Figure 3



Pre-install Video V

2. ReCheck Laser & Tube

A) With the tube not showing Cracks, check that Hose are attached well, and the tube level and attached to Brackets.

B) Check the **RED** Power wire connector with laser off, and the **Black** wire ground..

C) On Tubes with screws attachments there will a **RED** cap then the De-Electric to stop Arcing. With Laser on the Water flow should be even. We ready to Focus and hit the ‘Pulse’; Button the Pendant to have your first fire of the tube. This will be quick and ensure that will not need parts sent. If you get Arcing, turn off and unplug Laser and Check the Connection from the Tube **Red** Connector to the Tube Power supply.

3. Check Auto-Focus

A) Jog over the Wood piece and hit the **Z/U** button the Pendant.

B) Arrow Up to **Auto-Focus** and hit ‘Enter’.

C) Once the Laser is Focused hit the ‘Pulse’ button with the **door closed and the Chiller on**. The laser will burn a small dot onto the wood piece. You are ready Installation and training. You will also see the Amp Meter move indicating a Pulse

4. Sign & Email Pre-stall Sheet

A) Sign the Pre-sheet and email to [Sales @engraverschoic.com](mailto:Sales@engraverschoic.com).

B) Notice you are agreeing to be available on the dates and time indicated.

C) We will Dropbox you the LightBurn course once we get the Pre-install sheet.... THX

Key Steps to our Goal

Utility Box

1. Exhaust Hose Clamps (3 count)
2. 6mm Nylon High Pressure Hosing
3. Resistor w/ Voltage & GND Wiring Clamps
4. Air Nozzle Regulator
5. High Precision Proximity Switch
6. Water Chiller Bypass Signal
7. 250V/20A Fuses (2 count)
8. Universal Machine Door Keys (3 sets of 2's)
9. Processing Test File Sample
10. Phillips Head Screwdriver
11. 500 MB Flashdrive
12. Ignition Keys (1 set of 2's)
13. A Set of Allen Keys
14. Focal Guide
15. 6-Pin Terminal w/ Wire Loop
16. Mirror Removal Tool
17. Lens Removal Tool
18. Power Cord
19. Nozzle Removal Tool

WATCH FOR THIS: SAFETY

ALWAYS use protective eye-wear, preferably wraparound goggles.

• ALWAYS turn the Exhaust Fan on while running the laser.

• NEVER set anything on top of the laser and/or on the worktable when not in use.

• NEVER leave the laser unattended. Remain with the machine when it is running at all times

so that you can hear and observe abnormalities and potential hazards.

• ALWAYS maintain the machine's environment free of heavy pollution such as strong magnetic electrical interference.

• NEVER use unapproved or unsafe materials, such as Polyvinyl Chloride (PVC) or materials that emit noxious gases that can cause harm to your central nervous system. (See pages 6 & 7- Safe materials for you and your laser)

• NEVER operate the laser near flammable and explosive substances. The UV light beam that is emitted is not visible and poses a great fire hazard.

• NEVER open the upper cover of the laser machine while it is running & NEVER engrave a shiny metal or mirror. The laser beam can reflect and deviate (bounce around) which can cause Blindness or Serious Injury requiring medical attention.

• NEVER push or pull the laser head and its gantry while the laser is running.

• NEVER dismantle the laser machine. There are laser and high voltage/pressure parts that could cause harm or injury.

• ALWAYS clean out the collection tray(s) to prevent accidental hazards



Video: P16

BOSSLASER

LS Series P1

PG-6