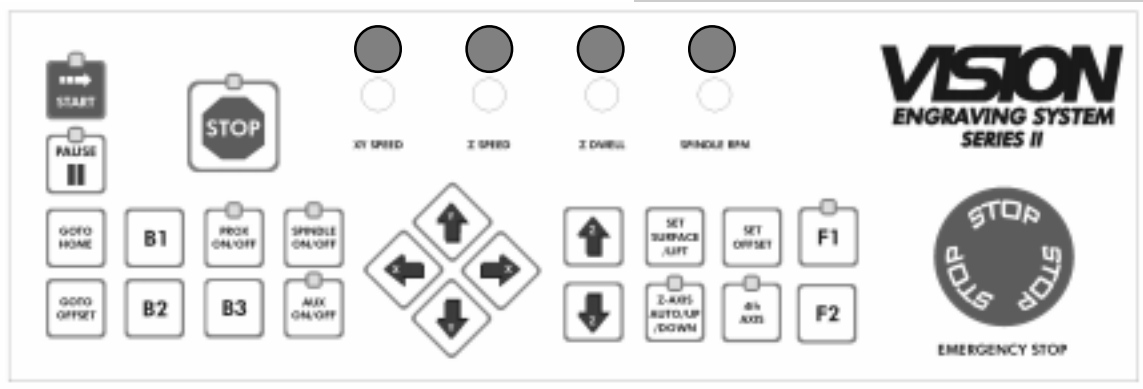


SERIAL CONTROLLER (SERIES II)

OPERATING MANUAL



VISION

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CAUTION:

To reduce the risk of electric shock, do not remove the top cover with the power cord plugged in. There are no user serviceable parts inside the controller. Please contact qualified service personnel for service issues.

*Note: The Vision Serial Controller has externally replaceable fuses. If you need to replace a fuse, refer to the maintenance section of this manual.

SAFETY TIPS:

1. To avoid electric shock or equipment damage, ensure that the control unit is connected to the appropriate electrical source as noted in the installation procedures.
2. Never operate the equipment with damaged or frayed power cords, loose connections, or exposed extension cords where someone will walk on the cord and create a tripping hazard.
3. Be sure to hold the plug, not the cord, when disconnecting the controller from an electrical socket or power source.
4. Openings are provided in the case for ventilation. Do not cover the openings or place the controller in an environment where the openings may become blocked.
5. Never insert anything into the ventilation openings. Doing so may create a danger of electric shock.
6. Place the controller in a location with low humidity and a minimum of dust. Follow the maintenance instructions for proper cleaning of the controller air filter.
7. Do not expose the control unit to rain or use it near water. You can clean the controller with a damp cloth but be sure to unplug the unit first.
8. If your control unit does not operate properly; in particular, if there are any unusual sounds or smells coming from it, immediately unplug it and contact a service technician or your local distributor.
9. Unplug the controller when it is going to be left unused for an extended period of time.
10. Before any servicing, disconnect the power cord.



INTRODUCTION

ABOUT THIS MANUAL

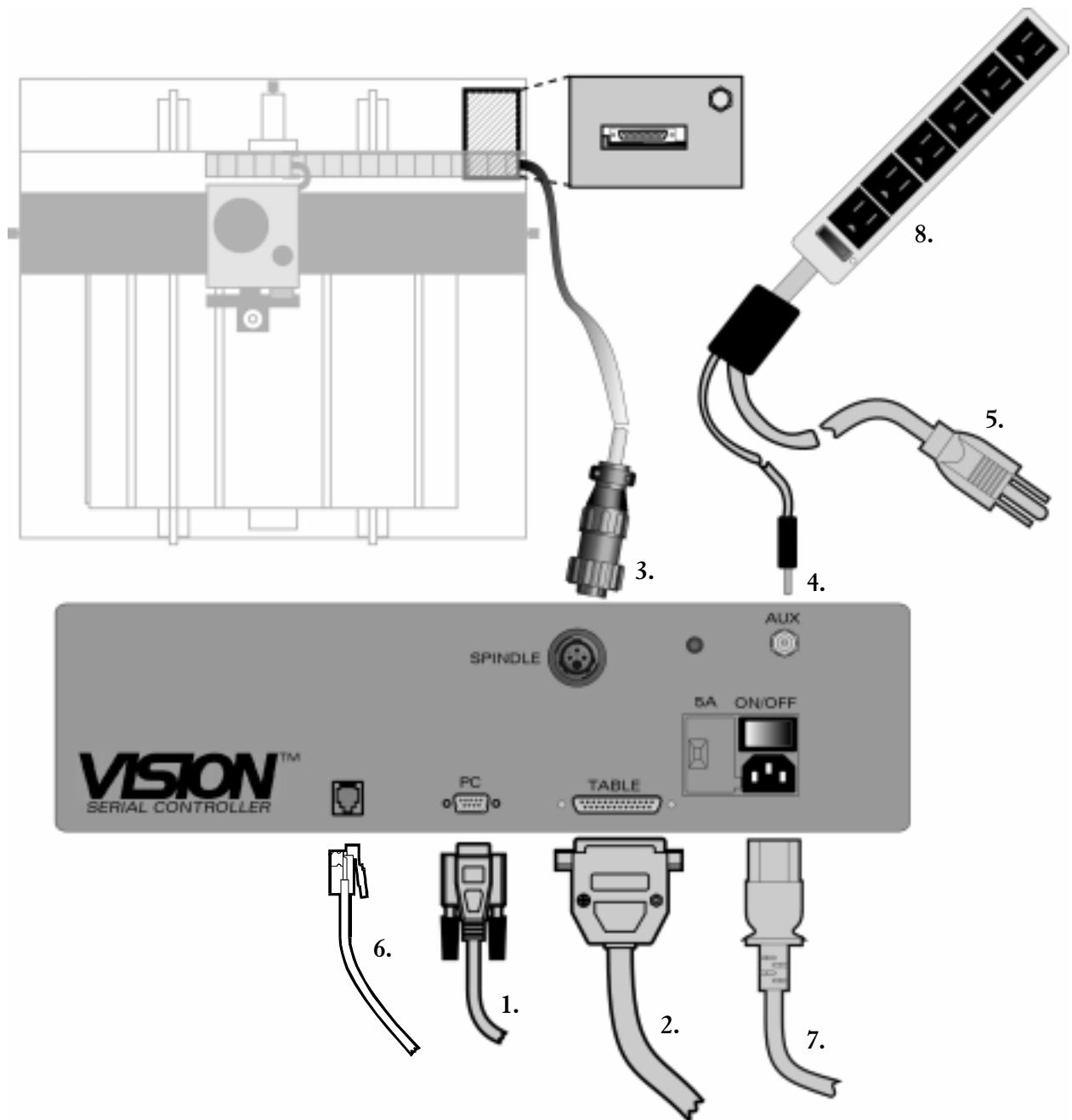
This manual is designed to provide you with information about your Vision Series II Serial Controller. This manual does not attempt to teach you how to rout or engrave, how to use a computer or how to use your engraving or signmaking software. While it *does* discuss Vision and VisionPRO software installation procedures, any information beyond that will be found in their respective manuals. Some previous knowledge of engraving terms and the sign making or engraving process is assumed. For information on your individual computer system see your computer's users manual or contact your computer distributor. For information regarding the specific software that drives your engraving/routing system, see the manual for the individual software package you are using.



INSTALLATION

1

CABLING THE VISION SERIAL CONTROLLER



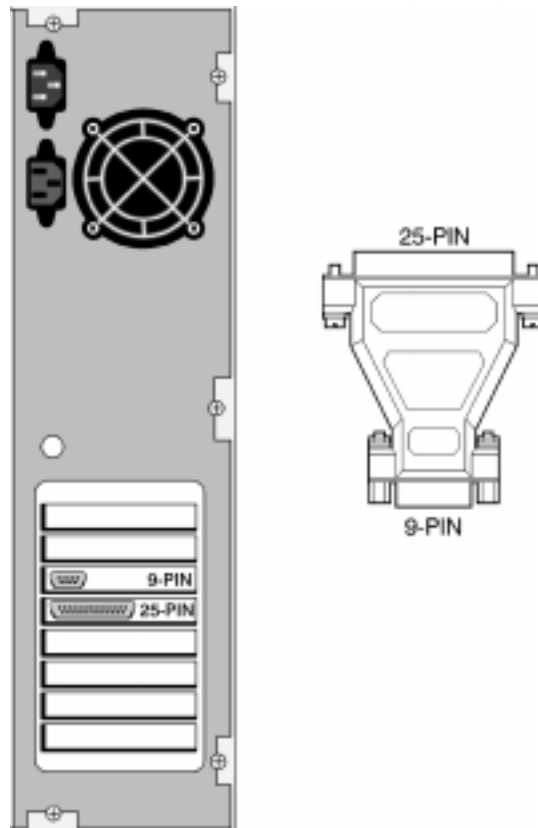
1. Connect the tan PC serial cable to the 9-pin plug marked "PC".
2. Connect the tan or gray Engraving table 25-pin connector to the port marked "TABLE".

3. Connect the round plug from the table to the port marked “SPINDLE” (this plug is not included with the Phoenix Engraver).
4. Connect the thin auxilliary plug (extending from the black box of the outlet strip) to the port marked “AUX”.
5. Connect the power cord (extending from the black box of the outlet strip) to your wall outlet.
6. If you purchased an optional pendant, connect the “phone-plug-like pendant” connector to the matching “phone-plug-like” port.
7. Connect the power cord from the 110v source to the 3-prong connection beneath the “ON/OFF” switch. **Note:** International systems may be 220V, 50Hz compatible. Check serial label for configuration before applying power.
8. Connect the power cord from your accessory item (such as a vacuum system) to one of the plugs on the outlet strip.
 - Make sure you turn the power switch to “ON” before you attempt to run your engraver.

CABLING TO YOUR PC

The 9-pin to 25-pin converter

The connector to the PC is a 9-pin connector which must be plugged into a serial port on the back of your computer. If your serial port is a 25-pin type, use the supplied 25-pin to 9-pin serial adapter.



CHANGING THE VOLTAGE OF YOUR VISION SERIAL CONTROLLER

1

1. Make sure that the power cable is unplugged.
2. Locate fuse assembly on the controller's rear back panel.

NOTE: Picture for STEP 1 shows fuse box removed from the controller; you will NOT have to remove it from your controller to complete this procedure.

3. Use a small screwdriver to snap out fuse box and voltage "select" cartridge.
4. Lift locking tab on voltage "select" section of cartridge. (SEE FIG 2)
5. Rotate voltage selector to desired voltage and re-insert into fuse cartridge until voltage shows through the window. (CloseUp picture shows the arrow pointing to the selected voltage.)
6. Re-insert cartridge back into connector housing. (SEE FIG 3)

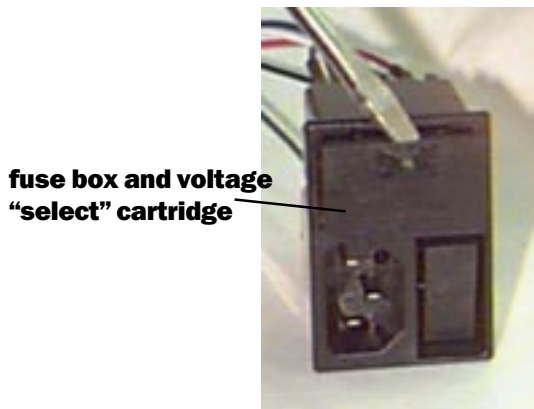


FIG 1 (fuse assembly)

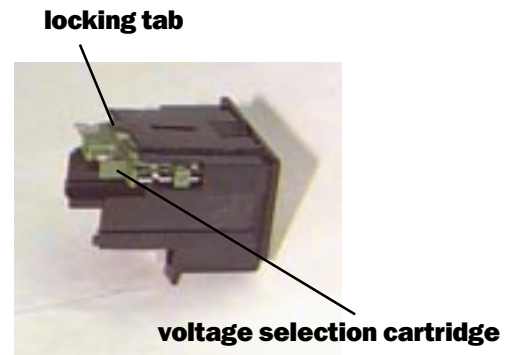


FIG 2



FIG 3

Fuse Box CloseUp



voltage selector window

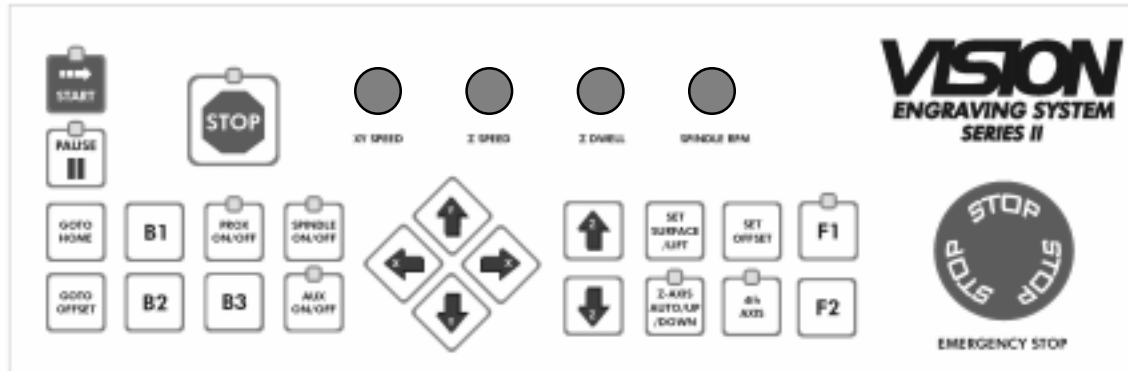


DESCRIPTION

2

ABOUT THE VISION SERIAL CONTROLLER

Vision's serial controller controls the communications between the computer and the engraver, as well as taking the computer's instructions and telling the engraver what it needs to do to complete those instructions. The controller is the brain of your engraving system; without it, the engraver would not be capable of following any paths.



THE BUTTONS

There are 23 buttons on the Vision Serial Controller:



START Button — The light above the *Start Button* will be off when the controller is ready to have a job sent to it. The light will flash when there is a job ready to be engraved in the controller. Pressing the *Start Button* will begin engraving the job.



PAUSE Button — When a job is running you can press the *Pause Button* to temporarily stop the job. The light over this key will come on to show the job is paused. Press the *Start Button* to resume engraving.

Note: The machine will not pause until the next time the cutter comes up.



GOTO HOME Button — When you press the *Goto Home* button the engraver will return to it's mechanical home position and cancel the job in the controller memory.



GOTO OFFSET Button — When you press the *Goto Offset* button the engraver will return to the previously set offset and cancel the job from the controller.



F1 Button -- The F1 button is used to turn the limit switches on and off. When the limit switches are active, the light above the button comes on.

NOTE: When holding down F1 while turning on the controller — This starts the controller with limit switches turned off.



F2 Button — This is a function key. It is used in conjunction with other keys on the front panel.

Hold down F2 and press Set Offset button -- This saves the prox state, spindle motor state, AUX State, offset position and Limit ON/OFF state

Hold down F2 and press Set Surface button -- This saves the surface and lift positions

Hold down F2 and press F1 button -- This allows you to toggle between normal mode and D1.4 mode

Hold down F2 while turning on the controller -- This allows for a safe controller start when upgrading firmware only



B1 Button — The B1 button only works when using the Vision Software Program. When you press this button, the controller will re-engrave the previously engraved job. If you press this button while a job is engraving, the table will return to the home position and wait for you to press the START button to re-engrave the job. NOTE: The B3 button does nothing when using the Vision-PRO Software.



B2 Button — The B2 button only works when using the Vision Software Program. When you press this button while a job is engraving, the table will backup one character. Each time you press the B2 button, the table will move back another character until it reaches the first character of the job. You will need to press the START button to resume engraving from that point. NOTE: The B2 button does nothing when using the Vision-PRO Software.



B3 Button — The B3 button only works when using the Vision Software Program. When you press this button while a job is engraving, the table will backup one line. Each time you press the B3 button, the table will move back another line until it reaches the first line of the job. You will need to press the START button to resume engraving from that point. NOTE: The B3 button does nothing when using the Vision-PRO Software.



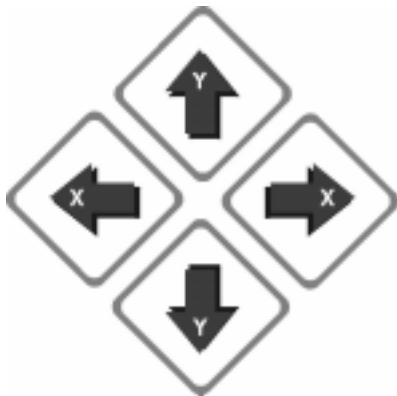
PROX ON/OFF Button — This button allows you to turn the *Proximity Sensor* on and off. The *Prox* allows the spindle to sense where the surface you are engraving is. This feature works when engraving with a nose cone or diamond drag only, it is not designed for non-nosecone engraving. When the light is green, the *Prox* is on, when it is red, the *Prox* is off. *Note:* Some tables do not support a *Proximity Sensor*.



SPINDLE ON/OFF Button — You can turn the spindle on and off by pressing this button. When the light is red, the spindle is off. When the light is flashing green and red, the spindle is on. When the light is green, the spindle will automatically turn on and off at the beginning and end of the engraving job. If you depress the PAUSE or STOP button, the spindle will turn off for safety reasons. Always make sure you have the spindle turned on when appropriate, otherwise you may run the risk of breaking your cutter.



AUX ON/OFF Button — This button will turn on and off the auxiliary output on the rear of the controller. (This will most likely be used for your vacuum system.) When the light is red, the auxiliary power is off. When the light flashes green and red, the auxiliary power is on. When the light is green the auxiliary power will automatically turn on and off at the beginning and end of the engraving job. If you depress the STOP button, the auxiliary power device will turn off for safety reasons.



X-Y Jog Buttons (4) — These will move the table in the direction of the arrow you push. These buttons are commonly used for setting an offset position. To do this, use the X-Y Jog Buttons to move the table to the point you want to be the home, and press the *Set Offset Button*. Now all jobs will start from this point.



Z-Jog Buttons (2) — These will move the spindle up and down. These buttons are commonly used for setting the surface of your material when you are not using the prox, or the lift above the material regardless of whether the prox is on or off.



SET OFFSET Button — Use the *Jog Buttons* to move the spindle to a point you want to be the offset position. Press the *Set Offset Button*. This is now set as your new offset position.

Note: *A offset position is sometimes also referred to as an alternate home position.*

To return the home position to the normal position press *Goto Home* and then *Set Offset*.



Z-AXIS AUTO/UP/DOWN Button — This button moves the cutter to the previously set surface point. When the light is red, the spindle is in the UP position. When the light is green, the spindle is at the surface position.



SET SURFACE/LIFT Button — This button is used to set the surface of your material. The *Set Surface/Lift Button* is only used when the Prox is off. You can use the *XY Jog Buttons* to bring the cutter out over the material. Use the *Z Jog Buttons* to bring the cutter to the surface of the material, then press the *Set Surface/Lift Button* (once you do, the *Z-Axis Auto/Up/Down Button* will flash red). Then use the *Z-Jog Buttons* again to adjust the lift between characters and press the *Set Surface/Lift Button* again.



4th AXIS Button — This button allows for a rotary axis to be used easily.



Stop Button — This button will stop the engraving immediately, raise the cutter to the up position, and shut off the engraving motor and the auxillary outlets. Pressing the *Start Button* will resume engraving. The light above the *Stop Button* will be green unless the *Stop Button* or the *Emergency Stop Button* is pushed; otherwise the light will be red.

While stopped, the *Goto Home Button* and *Goto Offset Button* will return the cutter back to home or to the offset.

THE KNOBS

There are 4 knobs on the Vision Serial Controller:



XY Speed Knob — This knob controls how fast the engraver will travel while the cutter is in the down position. Clockwise is faster, counter-clockwise is slower.



Z Speed Knob — This knob controls how fast the spindle will move down into the material. Clockwise is faster, counter-clockwise is slower.



Z Dwell Knob — This knob controls how long the spindle will dwell, or wait, after initially dropping into the material before moving in an X/Y direction. This is used mainly when engraving into harder materials, allowing the cutter to plunge to the correct depth at the beginning of the cut. Clockwise increases the dwell time, counter-clockwise reduces the dwell time.



Spindle RPM Knob — This knob controls how fast the spindle rotates. You will want to change the speed of your spindle depending on what kind of material you are using. Clockwise is faster, counter-clockwise is slower.

THE EMERGENCY STOP BUTTON



2

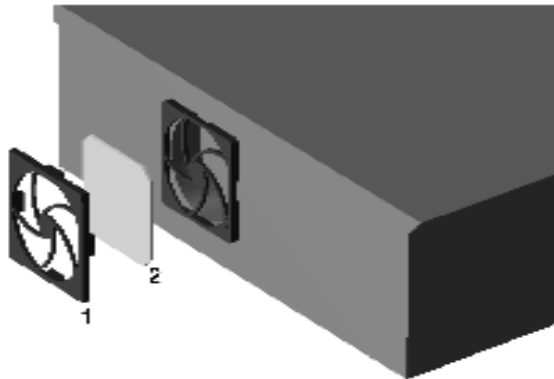
Emergency Stop Button — This button will stop engraving immediately leaving the cutter in the down position and will shut off the spindle and auxiliary. Once you have pushed the *Emergency Stop Button*, you must twist the knob clockwise to release it. If you wish to continue the job, press the *Start Button*. If you wish to cancel the job, press the *Goto Home Button*.



HOW TO REMOVE AND CLEAN THE AIR FILTER

Weekly preventive maintenance should be performed to ensure reliable operation of your serial controller. It is recommended that the input fan filter be removed weekly and cleaned to ensure proper cooling of the control electronics.

1. Remove the filter guard, this is easiest if you pull from a corner of the guard.
2. Remove the filter and blow out the filter with low pressure compressed air or rinse the filter with water and dry before replacing.
3. Replace the filter and replace the filter guard.



CHANGING THE EXTERNAL VISION FUSES

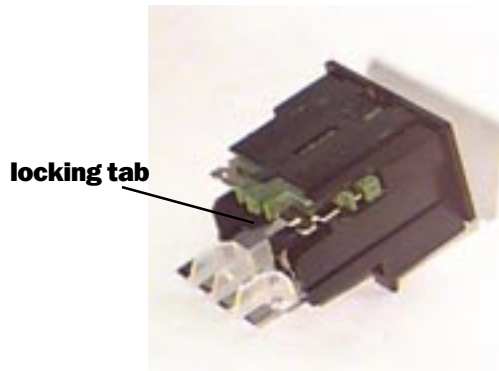
The Vision Serial Controller has an external fuse compartment.

**cartridge containing fuse
box and voltage selector**

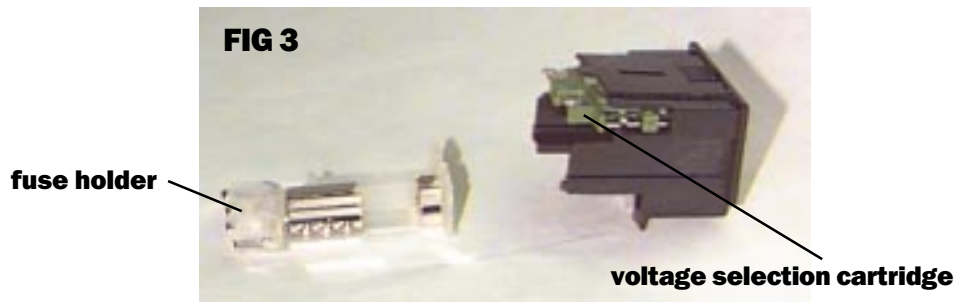


Use a small flat-head screwdriver to pry the box out by the tab. (1) Pull the fuse box all the way out of the holder.

Flip the fuse box around so you can see the tab (1) and the fuse board (2).



Lift the tab, hold the tab up, and slide the fuse board out of the fuse holder.



Remove the two fuses using a flat-head screwdriver and replace them with two new fuses. Slide the fuse board back into the fuse box, then slide the fuse box back into the fuse holder.

SETTING THE SURFACE & LIFT OF THE SPINDLE

NOTE: There are different procedures for different types of engraving.

Diamond drag nosecone engraving with a proximity sensor – Make sure that the *proximity sensor* is turned on. When you run the job, the spindle will go down until it touches the material and finds the surface automatically. If you want to change the lift amount of the cutter between characters, you will need to do the following steps: Jog the cutter out over the material. Press the *Z down jog button* until the diamond/nosecone touches the material and press *set surface*. The cutter will now lift. Use the *Z jog buttons* to adjust the lift amount and press *set surface* again. The cutter will now raise to the Z home position. The new lift position is now set.

Diamond Drag and nose cone engraving without a proximity sensor – Make sure that the proximity sensor is turned off. Jog the cutter out over the material. Press the *Z down jog button* until the diamond/nosecone touches the material (or go slightly further down) and press *set surface*. The cutter will now lift. Use the *Z jog buttons* to adjust the lift amount and press *set surface* again. The cutter will now raise to the Z home position. The new surface/lift position is now set.

Non-nose cone engraving (depth control) – make sure that the *proximity sensor* is turned off and take the nose cone off of the spindle. Jog the cutter out over the material. Press the *Z down jog button* until the cutter touches the material and press *set surface*. The cutter will lift. Use the *Z jog buttons* to adjust the lift amount and press *set surface* again. The cutter will now raise to the Z home position. The new surface/lift position is now set. You will now need to enter a depth to cut in the software you are using to get any depth.

Burnishing – Make sure that the proximity sensor is turned off and take the nose cone off the spindle. Jog the cutter out over the material. Press the *Z down jog button* until the burnisher touches the material and press *set surface*. (If you are using the EZ Rider burnishing adapter, you can lower the spindle until you get the required pressure.) The cutter will now lift. Use the *Z jog buttons* to adjust the lift amount and press *set surface* again. The cutter will now raise to the Z home position. The new surface/lift position is now set.

SETTING AN OFFSET

Setting an offset is used if you want to engrave a job in a place which is different from the standard home position. Jog the cutter out to the corner where you want the material to be placed. Press the *offset button*. Your offset is now set. When the job is done engraving, the machine will go back to the mechanical home position, but will engrave from the offset position when you run it again. To get rid of the new offset position, you will need to push the *goto home button* and then press *set offset* on machines that have limit switches. On machines without limit switches, you will need to jog the cutter back to home or push it to the home position and press *set offset*.



TROUBLESHOOTING

5

TROUBLESHOOTING CHART

Before calling an authorized service center, please check this trouble shooting chart. Many of the problems that can occur are easily corrected without the need of a technician.

Trouble Condition	Possible Cause	Corrective Measure
Main switch light or front panel LED indicators will not illuminate	<ul style="list-style-type: none"> • Is the power cord connected? • Is the power strip/source on? 	<ul style="list-style-type: none"> • Connect the power cord. • Turn on the main power strip. • Check the main power fuses.
No XYZ motion	<ul style="list-style-type: none"> • Emergency Stop Button in • Table not hooked up 	<ul style="list-style-type: none"> • Ensure the Emergency Stop Button is in the out position. • Make sure the table cable is plugged into the controller and table.
Spindle not working	<ul style="list-style-type: none"> • Is the Controller turned off? • The spindle cable is not plugged in • The spindle fuse is blown 	<ul style="list-style-type: none"> • If it is off, turn it on. • Make sure the spindle cable is plugged in to the controller. • Change the fuse marked spindle in the controller.
Auxiliary (AUX) not working	<ul style="list-style-type: none"> • Is the Controller turned off? • If it is on, there may be a blown fuse. • Is the accessory strip plugged into the controller? 	<ul style="list-style-type: none"> • If it is off, turn it on. • Change the fuse marked AUX fuse. • Check accessory strip connectors.
Slow drop at the bottom of the Z path.	<ul style="list-style-type: none"> • Dwell speed is turned all the way up. 	<ul style="list-style-type: none"> • If it is, turn the dwell speed knob counterclockwise.
Engraving head does not lower to the surface.	<ul style="list-style-type: none"> • Proximity setting or surface setting is not set. 	<ul style="list-style-type: none"> • If table has proximity switch, turn it on. • If table does not have proximity switch, set the surface via the "Set surface/Lift" button.