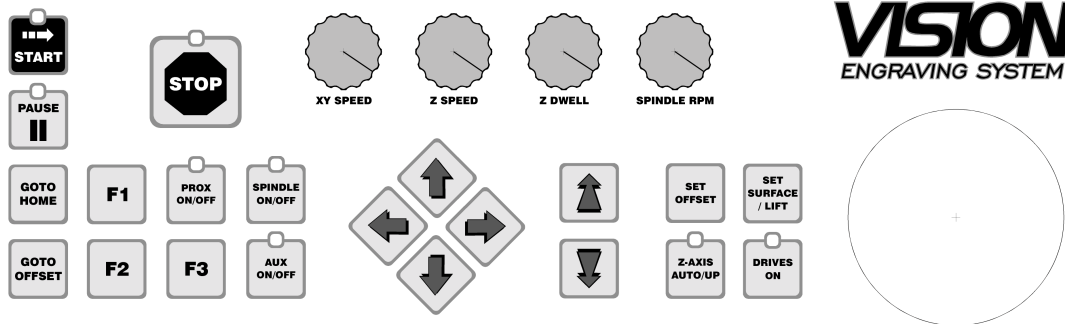


# SERIAL CONTROLLER OPERATING MANUAL



# **VISION**

Engraving & Routing Systems

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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.



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## About This Manual

This manual is designed to provide you with information about your Vision 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.

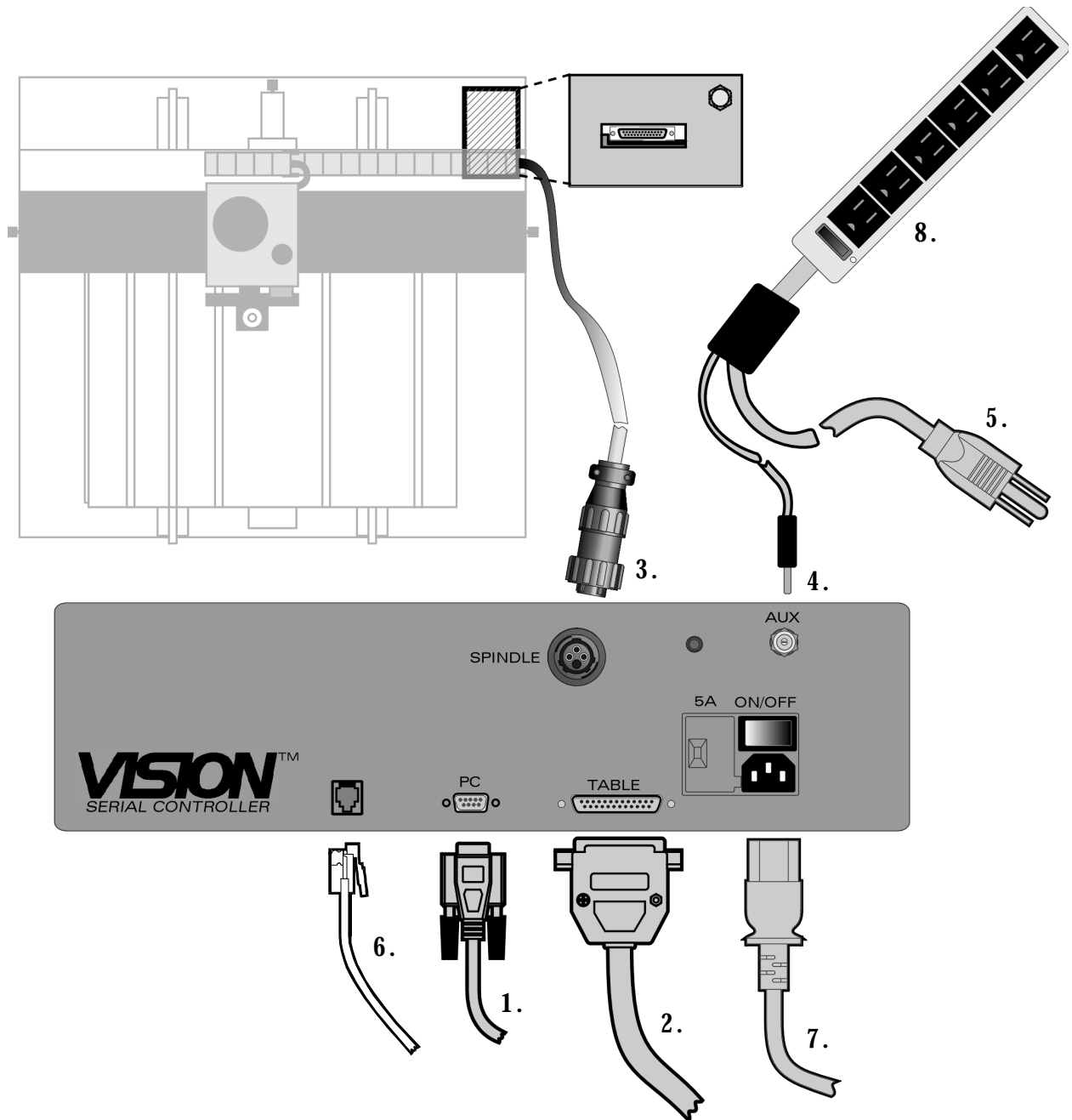




# Installation

1

## CABLING THE VISION SERIAL CONTROLLER



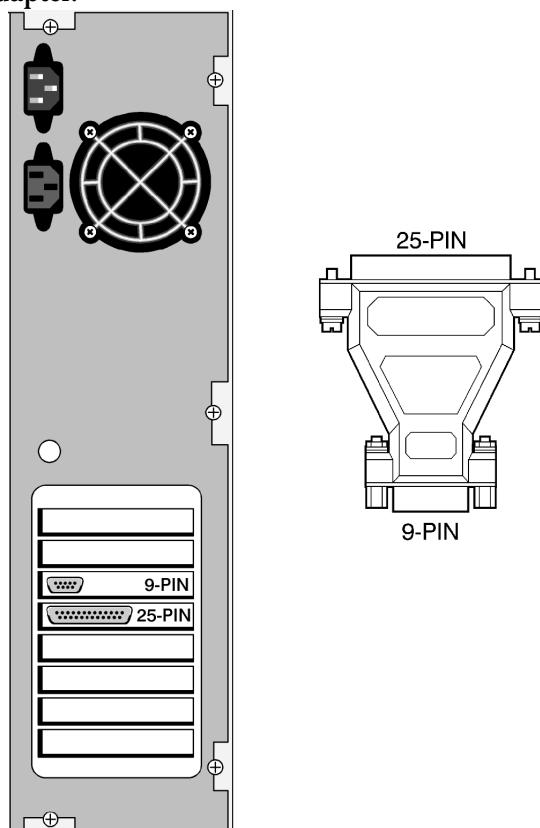
1. Connect the tan PC serial cable to the 9-pin plug marked "PC".
2. Connect the gray Engraving table 25-pin connector to the port marked "TABLE".

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.



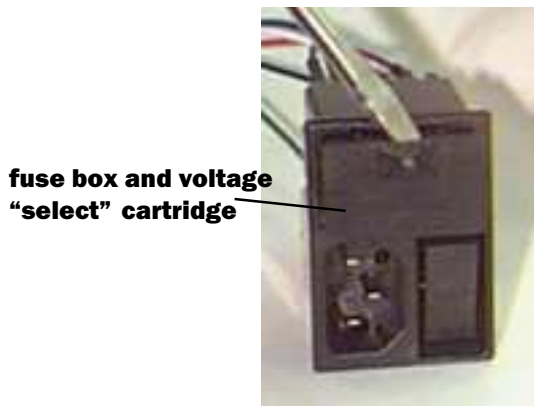
# CHANGING THE VOLTAGE OF YOUR VISION SERIAL CONTROLLER

1

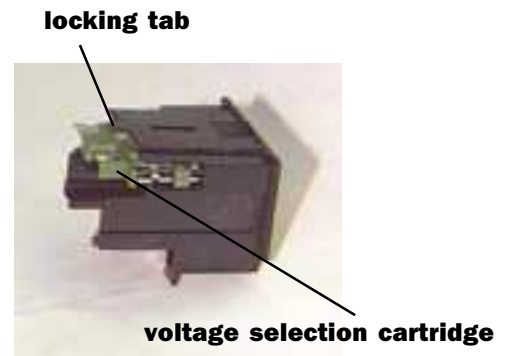
1. Locate fuse assembly on the controller's rear back panel.

*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.*

2. Use a small screwdriver to snap out fuse box and voltage "select" cartridge.
3. Lift locking tab on voltage "select" section of cartridge. (SEE FIG 2)
4. 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.)
5. Re-insert cartridge back into connector housing. (SEE FIG 3)



**FIG 1** (fuse assembly)



**FIG 2**



**FIG 3**

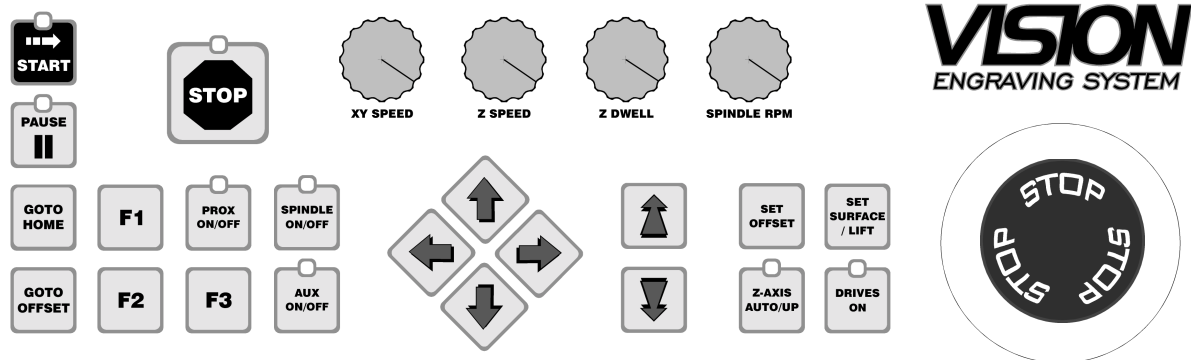
**Fuse Box CloseUp**



**voltage selector window**


## 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 Keys

There are 21 keys on the Vision Serial Controller:

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

 **Pause Key** — When a job is running you can press the *Pause Key* to temporarily stop the job. The red light over this key will light up to show the job is paused. Press the *Start Key* to resume engraving. *Note:* The machine will not pause until the next time the cutter comes up.

 **Goto Home Key** — When you press the *Goto Home* key the engraver will return to its mechanical home position and cancel the job in the controller memory.

 **Goto Offset Key** — When you press the *Goto Offset* key the engraver will return to the previously set offset and cancel the job from the controller.

F1

F2

F3

2

**F1 Key** -- The F1 key only works when using the Vision software. When you press this key, the controller will re-engrave the entire job that was previously engraved. Note: The F1 key does nothing when using the Vision PRO software.

**F2 Key** -- This is a function key. It is used in conjunction with other keys on the front panel.

**F2 then Set Offset key** -- By doing this sequence, the controller will save the front panel configuration. Ex. If you want to save the Spindle On/Off in a different position than the default, just change the Spindle On/Off key to the way you would like and then press F2 and then Set Offset. This also works if you want to change the default surface set.

**F2 then Jog Z down key** -- By doing this sequence, the controller will move the spindle to the surface that has been set. This is used if you would like to lower the depth a little more than where it is set at. Press F2 the Jog Z down and then use the Z down key to lower the surface more. Then press set surface two times. This can be done in the middle of a job.

**F2 then Goto Home key** -- By doing this sequence, the controller toggles between using limit switches and not using limit switches. This is used when you have a Phoenix/Vision Cylindrical Combo system because the Phoenix has limit switches, but the Vision Cylindrical does not.

**NOTE:** If you are using the Phoenix and want to change to the Vision Cylindrical Engraver, just press F2 then Goto Home before you change the A/B switch to the Vision Cylindrical Engraver. If you are using the Vision Cylindrical Engraver and want to switch to the Phoenix, just press F2 then Goto Home before you change the A/B switch to the Phoenix.

**F2 then Set Surface/Lift** -- By doing this sequence, the controller toggles between normal HPGL engraving to the parameters needed to run from Meistergram™ D1.4 software. This toggles back and forth between modes.

Important Note  
for users of the  
Phoenix/Vision  
Cylindrical  
Combo. →



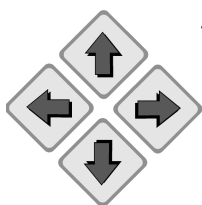
**Prox On/Off Key** — This key allows you to turn the *Proximity Sensor* on and off. The *Prox* allows the spindle to sense where the surface you are engraving is. This feature works when engraving with a nose cone or diamond drag only, it is not designed for non-nosecone engraving. When the light is 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 Key** — You can turn the spindle on and off by pressing this key. When the light is red, the spindle is off. When the light is green the spindle is on, and when the light is both red and green (orange in color), 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 Key** — This key 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 power is off, when the light is green the power is on, and when the light is both red and green (orange in color) the equipment will automatically turn on and off at the beginning and end of the engraving job. If you depress the pause or stop button the auxiliary power device will turn off for safety reasons.



**Jog Keys (4)** — This will move the table in the direction of the arrow you push. This is commonly used for setting an offset position. To do this, use the *Jog Keys* to move the table to the point you want to be the home, and press the *Set Offset Key*. Now all jobs will start from this point.



**Z-Jog Keys (2)** — This will move the spindle up and down. These keys 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 Key** — Use the *Jog Keys* to move the spindle to a point you want to be the offset position. Press the *Set Offset Key*. 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 Key** — This key controls whether or not the spindle is allowed to go up and down. If the light is green the spindle will move up and down when engraving. When the light is off the cutter will stay in the up position. This “up only” is commonly used to do a “dry run” of your job, without actually cutting any material. If the light is red, the cutter will run in the down position.



**Set Surface/Lift Key** — This key is used to set the surface of your material. The *Set Surface/Lift Key* is only used when the Prox is off. You can use the *XY Jog Keys* to bring the cutter out over

the material. Use the *Z Jog Keys* to bring the cutter to the surface of the material, then press the *Set Surface/Lift Key*. Then use the *Z-Jog Keys* again to adjust the lift between characters and press the *Set Surface/Lift Key* again.



**Drives On Key** — This key must be pressed when you first turn the controller on. The *Drives On Key* powers up the stepper motors.

Note: After you push the *Emergency Stop Button* you will need to press the *Drives On Key* again before you can use the machine again.



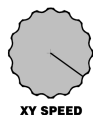
**Stop Key** — This key will stop the engraving immediately, raise the cutter to the up position, and shut off the engraving motor and the auxillary outlets. Pressing the *Start Key* will resume engraving.

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

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## The Knobs

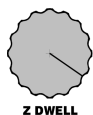
There are 4 knobs on the Vision Serial Controller:



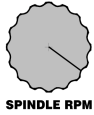
**XY Speed Knob** — This knob controls how fast the engraver will travel while the cutter is in the down position. Clockwise is faster, counter-clockwise is slower.



**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.

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## The Emergency Stop Button



**CAUTION:** THIS SHOULD BE USED IN AN EMERGENCY ONLY. IT WILL ERASE THE CURRENT JOB IN MEMORY.

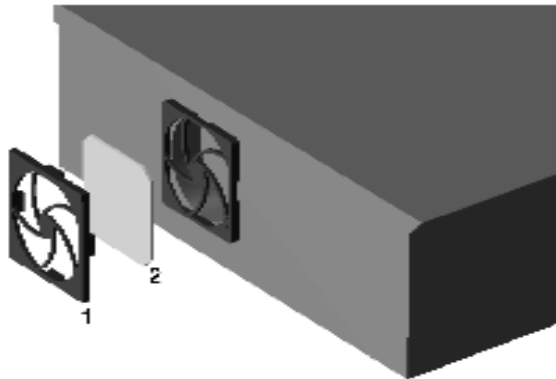
**Emergency Stop Button** — This button will stop engraving immediately and shut power off to all stepper motors, the engraving motor, and all auxiliary outputs. Once you have pushed the Emergency Stop Button, you must twist the knob clockwise to release it and press the Drives On Key. You will lose the job from the controller and will need to re-send it from the software if you wish to finish the job.



## 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

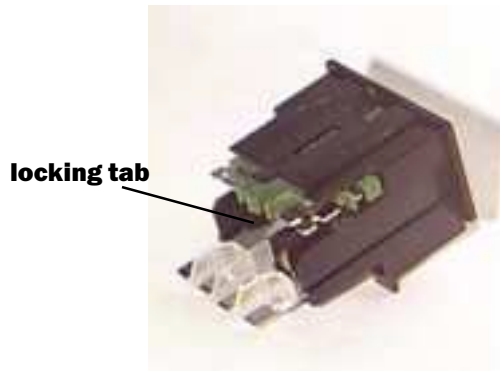
The Vision Serial Controller has an external fuse compartment.

**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 key* until the diamond/nosecone touches the material and press *set surface*. The cutter will now lift. Use the *Z jog keys* 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 key* 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 keys* 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 key* until the cutter touches the material and press *set surface*. The cutter will lift. Use the *Z jog keys* 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 key* 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 keys* 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 key*. 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 key* 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*.

## Vision Pro Installation Procedure for Windows 95

Go to “START,” then “RUN.”

In the “OPEN” dialog box, type “D:\SETUP” where the “D:” is your CD-ROM drive.

Click “OK.”



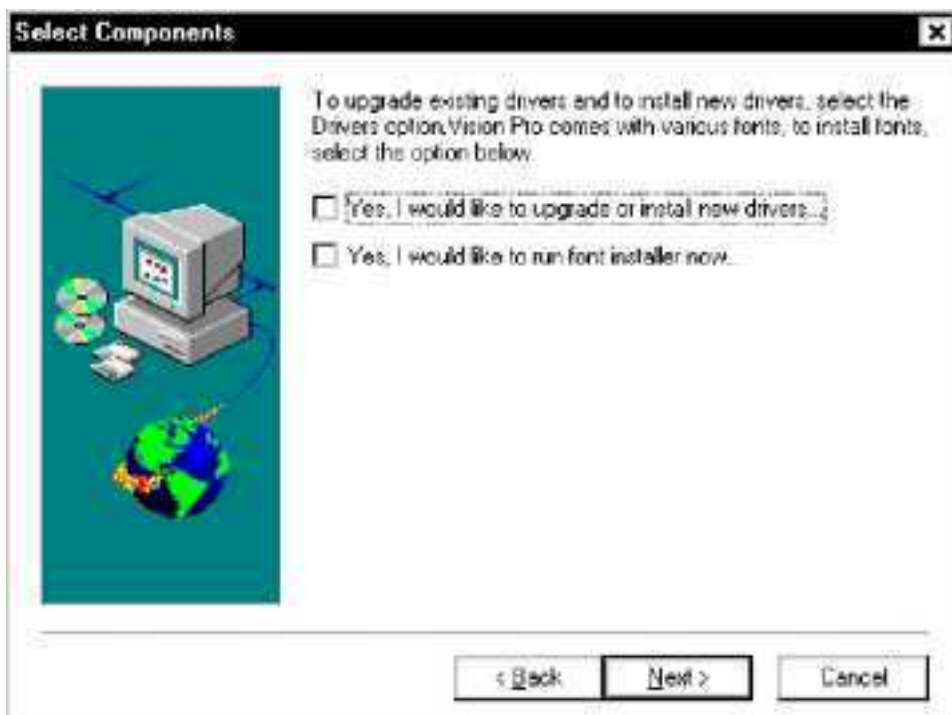
When you are asked for your “CHOOSE DESTINATION LOCATION,” click “NEXT” to accept the directory already listed.



You will then be asked for your password. Enter it with commas, without any spaces and where 0's are the number ZERO.

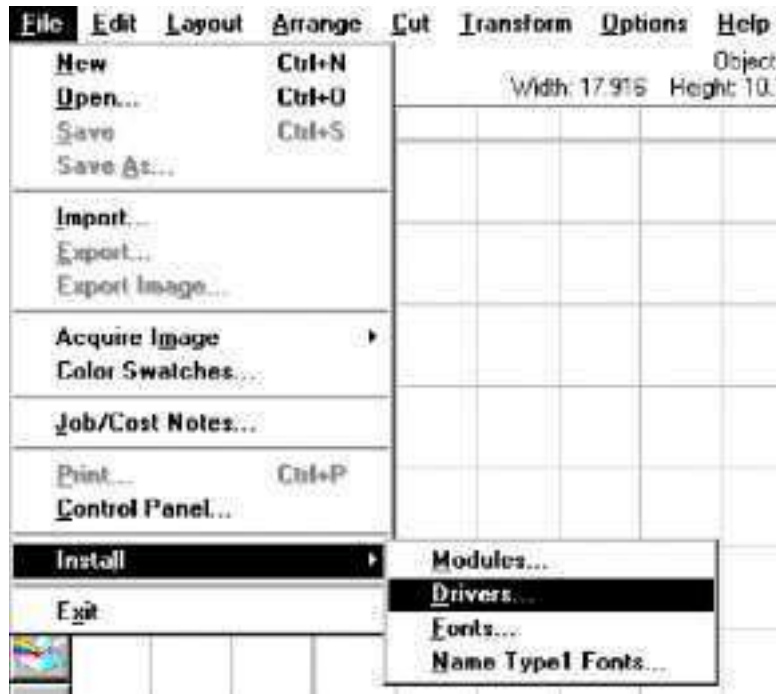


When asked to Insert “DISK 7,” just click “OK” to continue on.



During the installation process, when you get to the screen that gives you the option to Install “FONTS” and “DRIVERS,” do not select those options. Just continue on.

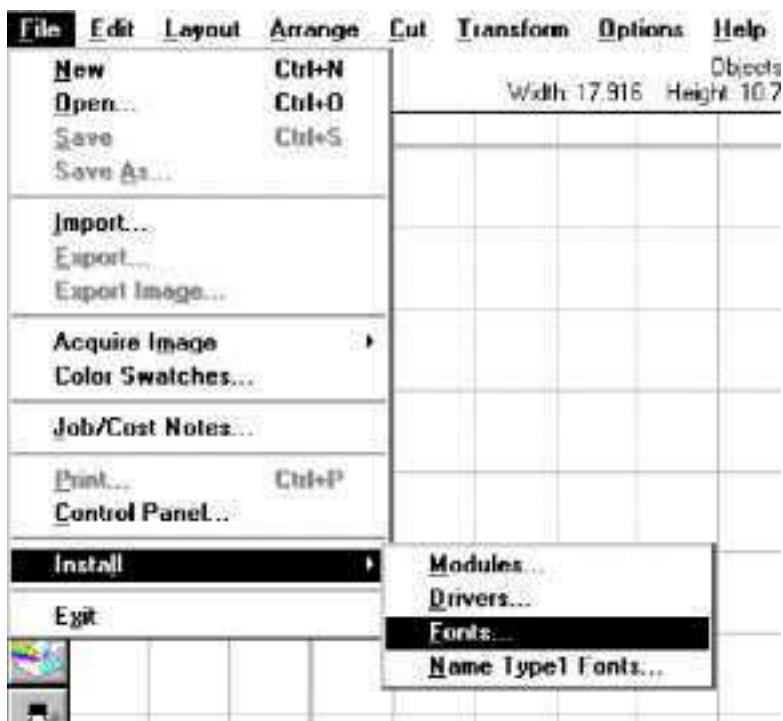
Under “START” > “PROGRAMS” > “VISION PRO,” click on “VISION PRO” to start Vision Pro.



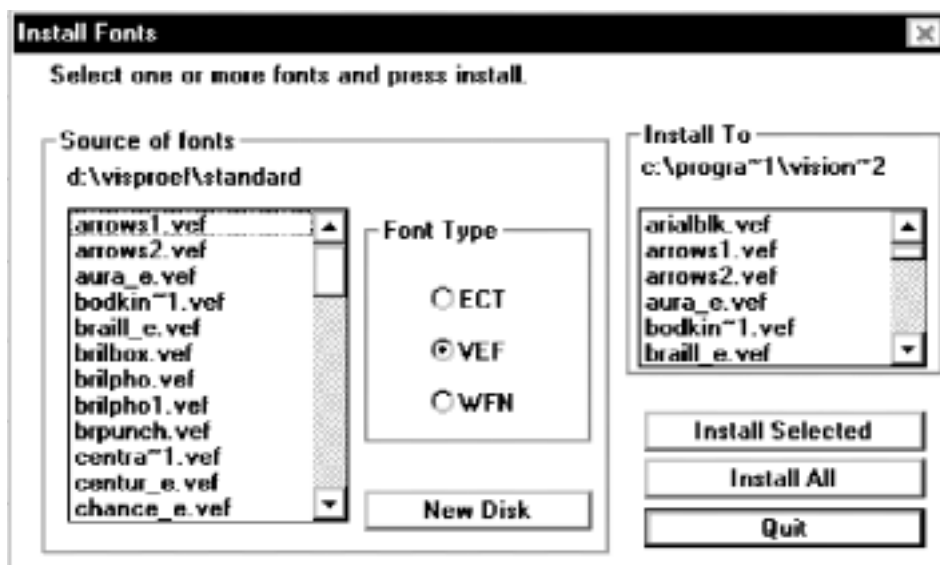
To install the DRIVERS, inside of Vision Pro, go to “FILE,” then “INSTALL,” then, “DRIVERS.”



Once again, select the CD drive (usually the “D” drive).  
 Double-click the “VISPRODR” directory.  
 Click “OK.”  
 The drivers installation program will start.  
 Select your specific machine.



To install the “FONTS,” inside of Vision Pro, go to “FILE,” then “INSTALL,” then “FONTS”.



On the left-hand side (SOURCE OF FONTS) double-click the CD-ROM, usually [D] - then double-click [VISPROEF] - double-click [STANDARD].

Under “FONT TYPE,” select “VEF”.

On the right-hand side, (INSTALL TO) - your Vision Pro directory should already be listed with fonts being seen.

Either select fonts on the left-hand side or click on “INSTALL ALL” on the bottom right-hand side of the screen. These fonts are very minimal in size and do not take a substantial amount of hard-drive space.

Installation complete.

---

## Vision Pro Installation Procedure for Windows 3.x

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Note: C:\DOS\SHARE.EXE should be listed in the C:\AUTOEXEC.BAT file.

In WINDOWS 3.x, go to “FILE MANAGER.”

With the Vision Pro CD in the drive, select the CD inside of “FILE MANAGER” (this is usually the “D” drive).

On the left-hand side of “FILE MANAGER,” find and select “VISPRO31” directory.

On the right hand side of “FILE MANAGER,” select “DISK 1” directory.

Now on the right hand side, find and select the “SETUP.EXE” file (this is the setup program for the 32 bit driver files necessary for Vision Pro).



After restarting Windows, go back into “FILE MANAGER.”



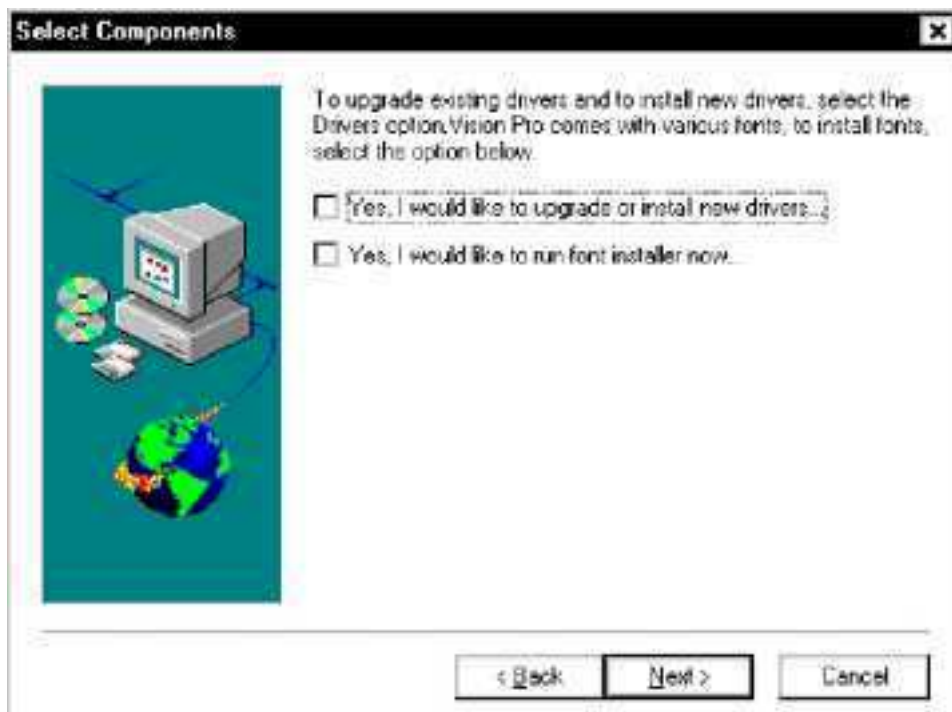
On the same CD, find and run D:\SETUPEXE (this is the Vision Pro install program). When you get to the “CHOOSE DESTINATION LOCATION” dialog box, accept the directory which is listed.



You will then be asked for your password. Enter it with commas, without any spaces and where 0's are the number ZERO.

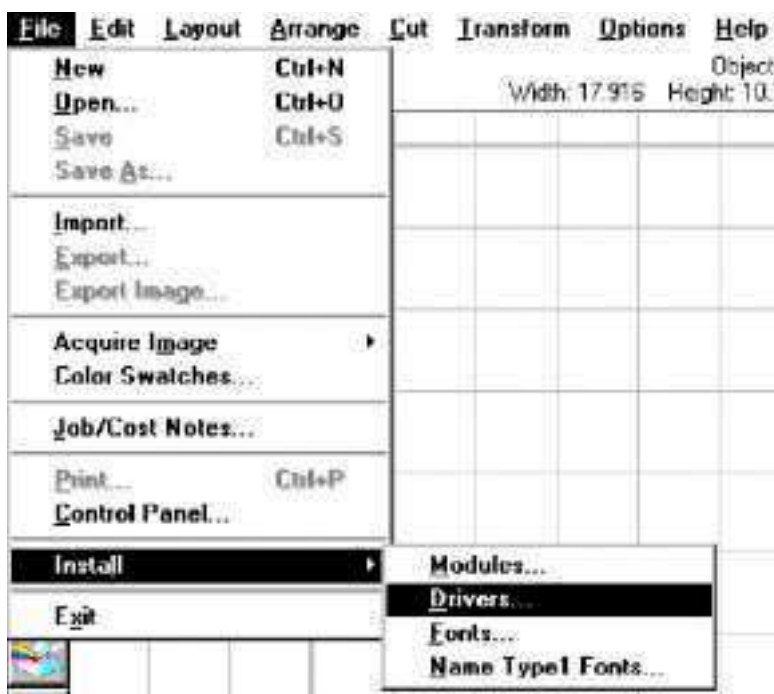


When asked to Insert “DISK 7,” just click “OK” to continue on.



During the installation process, when you get to the screen that gives you the option to Install “FONTS” and “DRIVERS,” do not select those options. Just continue on.

In the Vision Pro Program group, you will find your icons to start the program.



To install the DRIVERS, inside of Vision Pro, go to “FILE,” then “INSTALL,” then, “DRIVERS.”



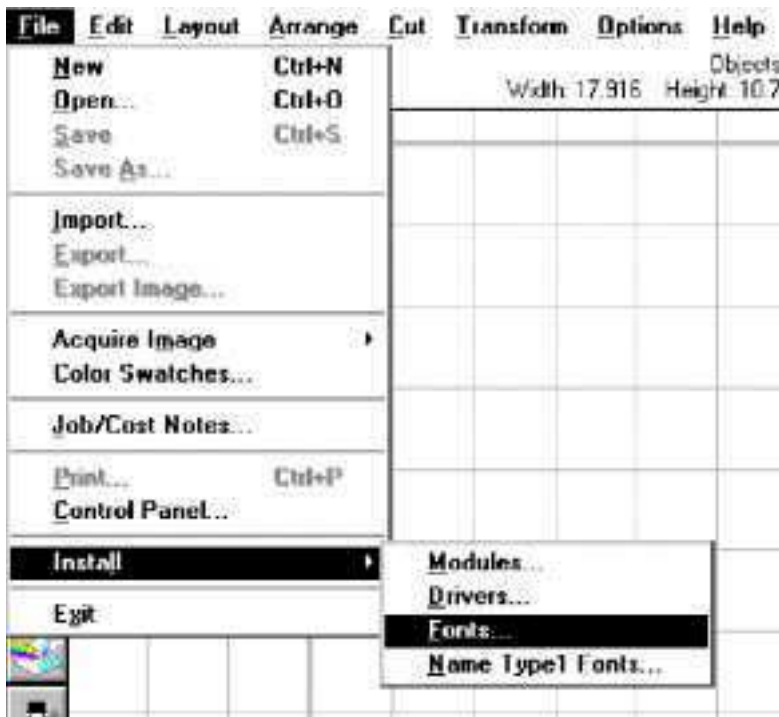
Once again, select the CD drive (usually the “D” drive).

Double-click the “VISPRODR” directory.

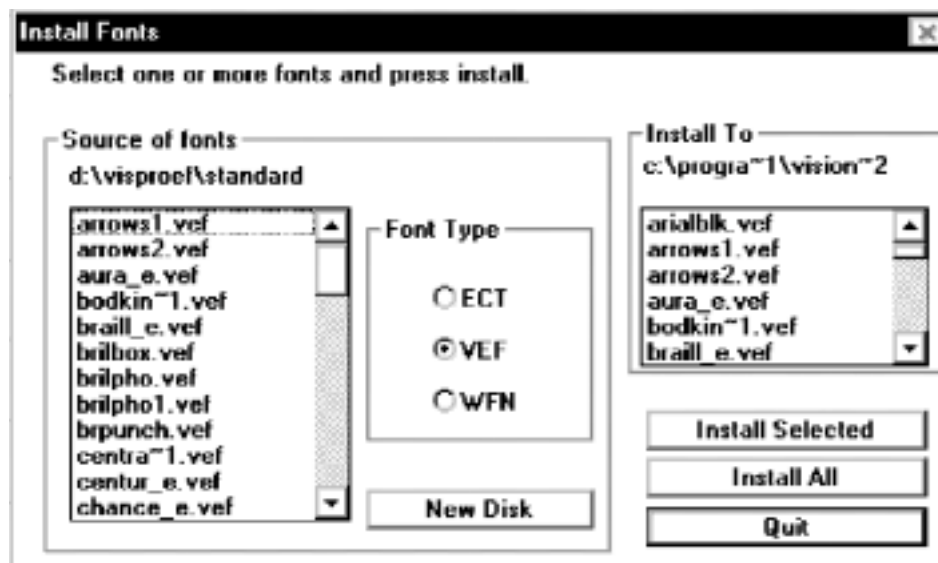
Click “OK.”

The drivers installation program will start.

Select your specific machine.



To install the “FONTS,” inside of Vision Pro, go to “FILE,” then “INSTALL,” then “FONTS”.



On the left-hand side (SOURCE OF FONTS) double-click the CD-ROM, usually [D] - then double-click [VISPROEF] - double-click [STANDARD].

Under “FONT TYPE,” select “VEF”.

On the right-hand side, (INSTALL TO) - your Vision Pro directory should already be listed with fonts being seen.

Either select fonts on the left-hand side or click on “INSTALL ALL” on the bottom right-hand side of the screen. These fonts are very minimal in size and do not take a substantial amount of hard-drive space.

Installation complete.

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## Vision Installation Procedure for DOS

Put the Floppy Disk labeled “Program Disk” in the 3.5" Floppy Drive.

In DOS, type “A:INSTALL” (or B:INSTALL depending on your computer configuration) - Press ENTER.

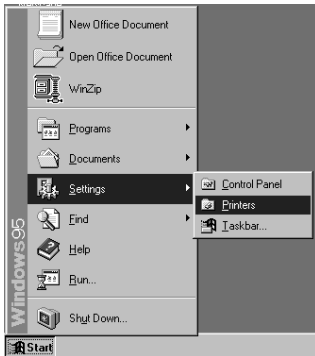
Follow the onscreen instructions.

To start the program, reboot your computer - In Dos, type “cd\vision”, press ENTER. Type VISION, press ENTER.

# windows vision serial controller driver

## Installing the Windows Vision Serial Controller Driver for 3rd Party Software

To set up your third party software so it outputs directly to your engraver/router, you need to add a new driver that will translate the file so the Vision controller can understand it.



Click **Start, Settings, Printers**.

The printers window appears.



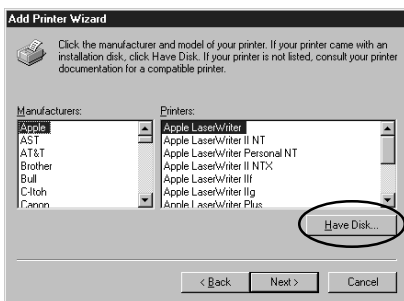
Double-click the **Add Printer** icon (the controller accepts files as a printer would).

The Add Print Wizard starts. Click **Next** to continue with the installation.



In the Add Print Wizard window, make sure **Local Printer** is checked. Click **Next** to continue.

(You may see a message that the system is “building an information database”...)



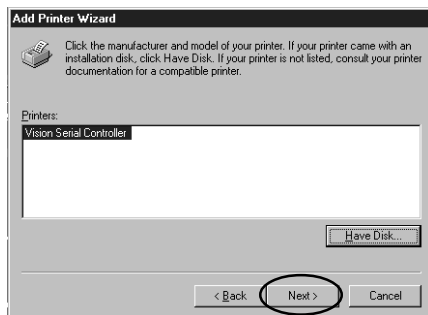
Back at the Add Printer Wizard window, click **Have Disk**.

This will take you to the **Install From Disk** window.



In the “Copy manufacturer files from:” box, type A:\oemsetup.inf (if your driver is on floppy disk and your floppy drive is configured as your ‘A’ drive) OR hit the **Browse** button to find the location of the driver. In most cases, if you received your driver on CD-Rom, the file will be located in the “drivers-printer” folder.

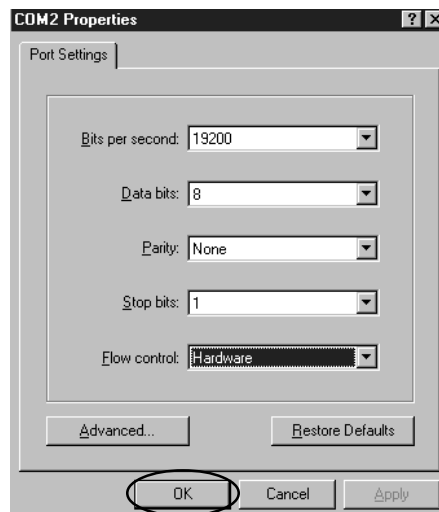
When done, click **OK**.



Back in the Add Printer Wizard window, “Vision Serial Controller” should be highlighted. Click **Next**.

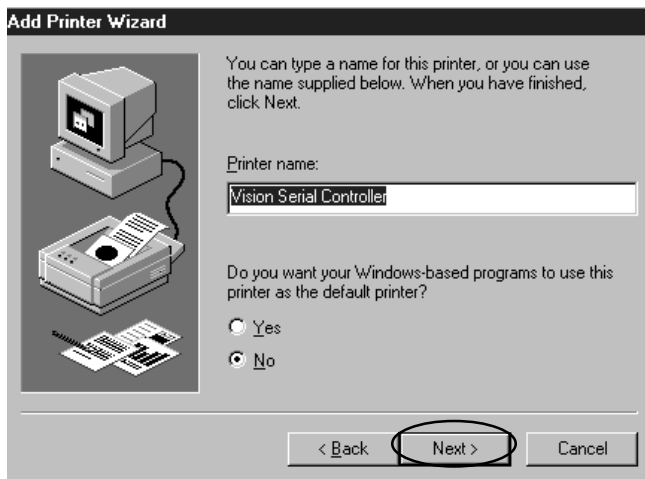


Select the port that your controller is plugged into (normally COM2:). Click **Configure Port**.



In the COM2 Properties window, configure the settings as shown in the picture above. Hit **OK**.

Back at Add Printer Wizard window, click **Next**.

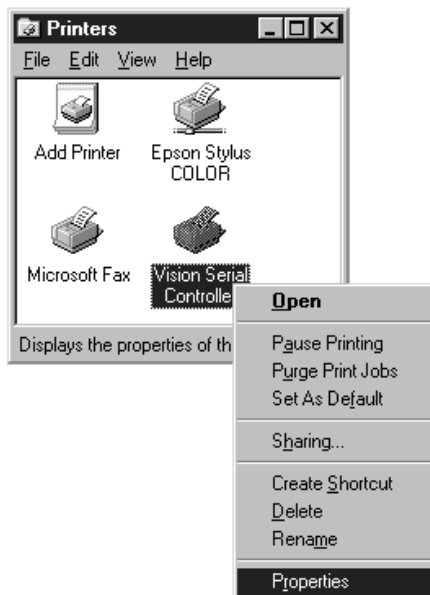


You may rename the controller if you wish.  
Click **No** in the “...set as default printer” option.  
Click **Next**.

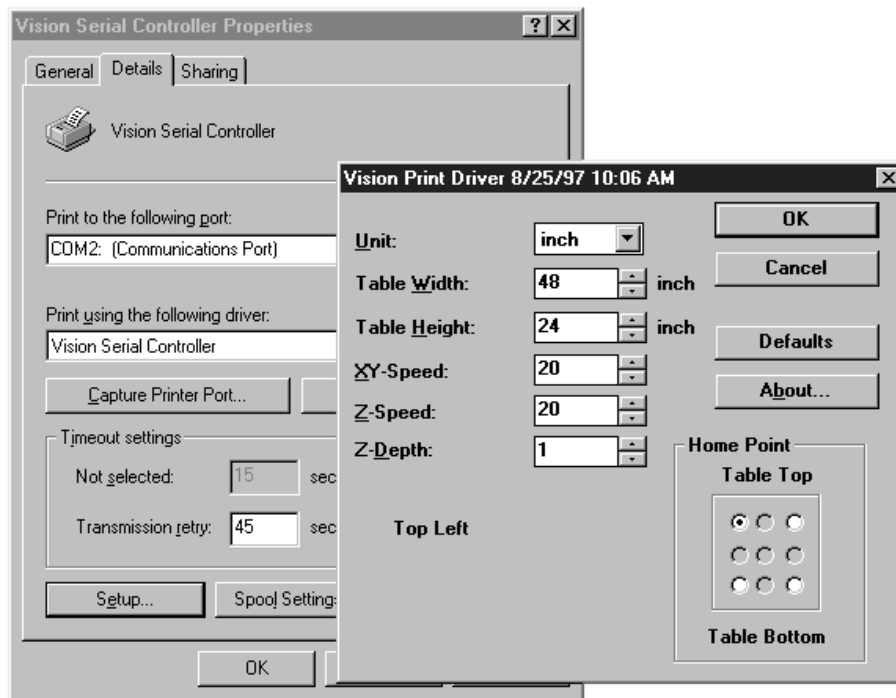
Back in Add Printer Wizard window, click **No** in the “...test page” option.  
Click **Finish**.  
Wait while it creates a new icon in your printers directory.

## Configuring The Driver For Your Engraving/Router Table.

After the Vision Serial Controller driver is installed, you need to be sure that it is configured to your table size.



In the Printers Window, **right click** on the new Vision Serial Controller icon and drag down to select **Properties**. (Note: If you renamed it, that name will appear under the icon instead.)



In the Properties window, click the **Details** tab. Click **Setup**.

**Enter the appropriate information in the Vision Print Driver window.**

The default unit is inches, but you may convert to millimeters if you prefer it. Enter the appropriate dimensions of your engraving/routing table.

**For example:** If you have a Vision 2448 table, enter 48 inches for the table width and 24 for the table height.

The other fields (XY-Speed, Z-Speed, and Z-Depth) should be left at their defaults--as they will change with each job.

In the **Home Point** box, click the circle in the upper left corner (unless you know your table's home position is elsewhere). Click **OK**.

Back in the Vision Serial Controller Properties window, click **OK** again.

In the Printers window, click **Close**.



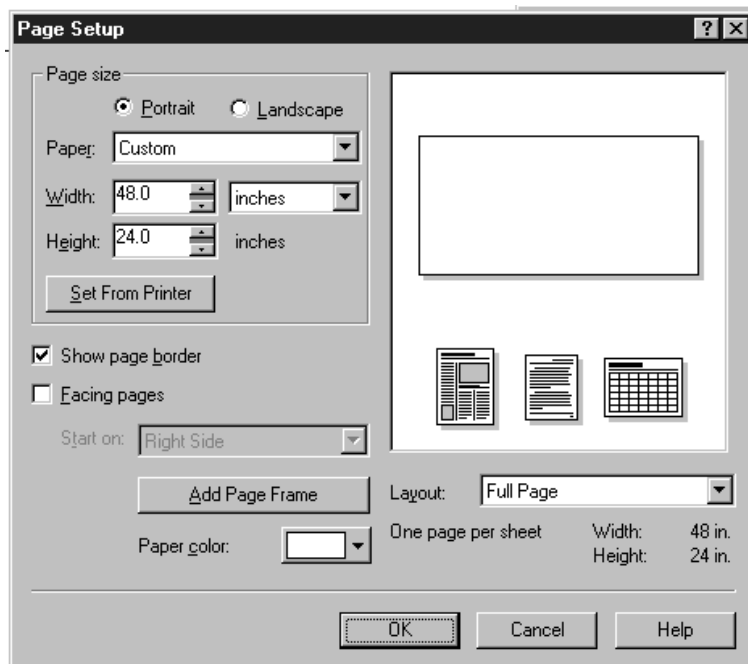
## Using the Vision Serial Controller driver with CorelDraw.

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When laying out a job in CorelDRAW, set your page size to equal your table size in the Page Setup window. *NOTE: Depending on the version of CorelDRAW you're running, your Page Setup window may look different than the one pictured below.*



Click **Layout**, then click **Page Setup**. This brings up the Page Setup window.



Enter the dimensions of your engraving/routing table.

**For Example:** If you have a Vision 2448 table, enter 48 (inches) as the width and 24 (inches) as the height, as shown above.

Click **OK**. Continue with your engraving/routing job.

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