General guideline how to cut your first text from scratch correctly for Creation Pcut / Refine / UScutter laserpoint models. (Windows XP operating system based, but can be used for other Windows OS systems in general too)

Index:

If you entered the world of cutting, things might be new and confusing, so use this guideline to get things started correctly or maybe to trouble shoot if you already started and run into problems.

If you think you know it all, it might be useful after all anyway! ☺

Follow the steps one by one.

Do not skip a step as new bie as this might cause problems if there are problems showing up.

1] Download plotter software

To design and cut vinyl you need one or more programs to do so.

Plotters only work with Vector based files. **See chapter 19.**
So you can't just plot graphic files and pictures you grabbed from the internet!

1] There are known vector design programs that only can be used to design, like Corel Draw, Adobe illustrator and Inkscape (free opensource program).
2] There are programs that only can be used to cut/plot like SignCut, Cocut, SignGo or Signtools (so called PLUG-INS)
3] There are programs that combine design and cut/plot function in one version, like Sign Blazer, Flexi, SignGo , Artcut, and more.

For those who are looking for a regular Windows printer driver icon in their Windows OS after installation in their printer driver folder you will not find it there. There are a few plotters that are delivered with a Windows printer driver which can be used direct from Windows applications that support HPGL language.
So far known this can only be performed with REFINE, HELO, Rabbit brand plotters.

So all PCUT based and USCUTTER LP based machines need a special vector design program (1) or plugin (2)

Brand name	Vector design	Bitmap design	Plot section
Sign Blazer Elements	yes	No	yes
Flexi Starter/Pro	yes	No	Yes
SignGo	yes	No	Yes
Signcut X2 / PRO	No	No	Yes
CoCut	No	No	Yes
Signmaster	No	No	Yes (Coreldraw only)
Signtools	No	No	Yes
Photoshop	No	Yes	No
Photopaint	No	Yes	No
Ilustrator	Yes	No	No
Coreldraw	Yes	No	No

As a start we advise you to download the **FREE** US Cutter version of **S**ign **B**lazer **E**lements unlimited trail version, regardless you might have any other cutting program, from
http://download.usplotter.com/SBEforUSPlotterSetup.exe.
Save it on a known spot on your PC and install the **SBE** software by double clicking the downloaded file and restart your PC after the installation, but do not start SBE yet!
This **SBE** version works with all Windows OS including 32 and 64 bits versions.
I tested it on Windows 7 64 bits and it worked fine.

! SBE will not conflict with any other design or cutting program already installed.

Right click on the created **SBE** icon on your desktop, then left click on Properties.
Change the Target from ending in **sb.exe** to **sbnt.exe**, then click Apply, then OK.
This is to keep the software from trying to connect to the removed SBE server to search for an update every time you start up the program.

With every start up of **SBE**, you have to choose for Cancel, YES, “Trial mode”, YES as this version can not be run with a license and activation is not possible anymore even if you have a valid license code.
The person who wrote this program has past away and his company and support are not alive any more since 2008.
But in this USPLOTTER forum a lot of knowledge is available and question answered if you lost track.
Sign Blazer Elements forum link at USCutter forum http://forum.usplotter.com/index.php/board,41.0.html

Start the **SBE** program from the desktop icon.

2] Sign Blazer Elements User Guide

Download the Sign Blazer Elements user guide from here for all options possible.
http://download.usplotter.com/LearnGde.pdf

3] Unpack, check and dry test the plotter with the plotter pen

Unpack the plotter but do not connect any power or interface cable yet!
Unlock the plotter head from any transport straps and move carefully the plotter head by hand to the middle of the machine.
Lift the cover over the plotter head and check if the head is running on the rail with the white guide wheels at each side of the rail. Close the cover.

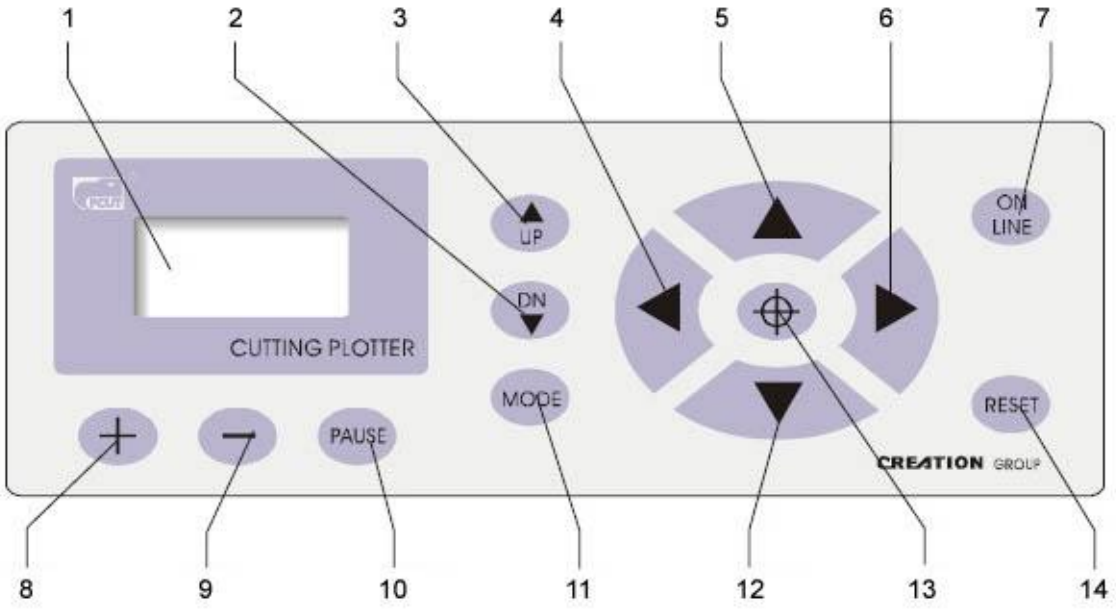
Run a ground wire from the plotter Stand to a screw on the bottom of the plotter to prevent static electricity build up
Use only a power outlet that has a ground pin to power the plotter.
Both will reduce the risk of static build up on large (lengthwise) plotter jobs.

To reduce static build up in general make sure the environment the plotter is placed in has minimum humidity of 60%. In low humidity conditions a water vaporizer in the room could help to reduce static build up.

Connect the power cord and switch on the plotter.
The machine now performs an initial self test, clears the memory and will go to initial state and after a 4 seconds will state “ONLINE”.

If the display only shows black blocks, stays empty or unknown characters, contact the supplier of the machine as this indicates a mechanical error (loose connectors in general) which in general need to be corrected by a service person.

Put you finger on the left feed roller and feel if there is any slop (free play) by moving it slowly forwards and back wards without rotating the roller feed motor. Do the same for the right side feed roller.
If there is any slop/free play this can be caused by the hexagon settings screws connecting the feed rollers have come loose at each end of the feed rollers.
This can also happen after the plotter has been used over period of time (keep this in mind), if there are lose hexagon screws retighten them with a correct size hexagon tool.



1= LCD
2 = Knife Down
3 = Knife Up
4 = Left (head movement)
5 = Up (backward feed roller)
6 = Right (head movement)

7 = ON-LINE
8 = +
9 = -
10 = Pause (Pcut) / Testcut (USCutter LP)
11 = Mode
12 = Down (forward feed roller)
13 = Home position/ Origin
14 = Reset (to clear the print buffer)

Some control panels between Creation Pcut or USplotter Laserpoint version might slightly differ but the name or the functions of the buttons are in general the same or carry same name/function.

If your machine (LP24) does not have a RESET button you can activate one of the red kill switches at either side to peform a RESET.

Press the ON-LINE key to make the plotter display to go OFF-LINE status so the display mentions any X-Y value on the control panel of the machine.

Navigate with the arrow keys the plotter head from left to right with left and right pointing arrows and check if the rollers are turning too with up and down arrows.

!IMPORTANT!

If the plotter head hits one of the red KILL switches at either sides of the machine, turn off the plotter and move the head by hand to the middle of the machine. Switch on the plotter and press the "RESET" button.

!!!!!!!!!!!!!!!!!!!!In case the machine stops during plotting or keys are not functioning anymore check for the position of the head and if the kill switches are not pressed!!!!!!!!!!!!!!!!!!!!!!!!!!!!

After this check navigate the plotter head to +/- 5 cm from the right hand side of the machine with the arrow keys and press the "HOME POSITION" or "ORIGIN" button.
Every time you hit the "HOME POSITION" "ORIGIN" or "RESET" button the current position of the plotter head will be the starting point for the coming plot job.

The plotter will always cut from the right hand side to the left hand side from its homeposition.

After each finished cut job move the head with the arrow keys to a general right hand side home position if this is not the case and press the "HOME POSITION" or "ORIGIN" key.

Put the machine OFFLINE and press the "Mode" button a few times (scrolling) so you can see all settings in the plotter menu.

Check for following settings as a start bases and if not, set them accordingly.
SPEED 60
PRESSURE (PRESS) 120
BAUDRATE (BAUD) 9600

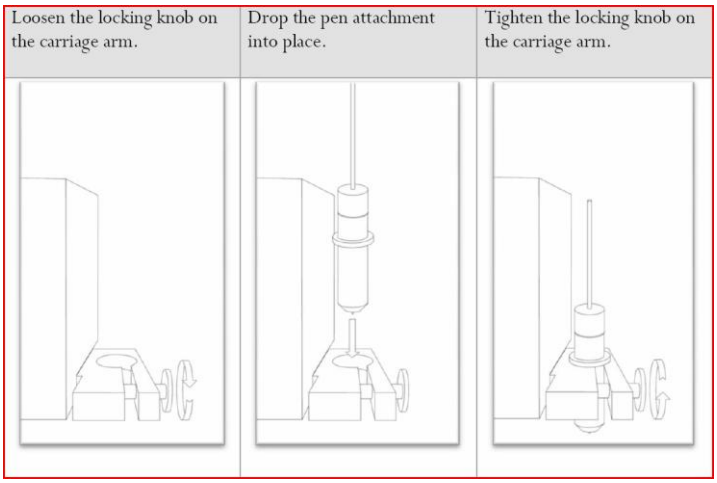
At the end finish with pressing the "RESET" button.
This will activate the current head position as home position and clears the memory buffer.
Speed, Pressure, Baud and other X-Y settings will not change.

Release the pressure roller in the rear in horizontal position and place an A4 size paper in the plotter (at the right hand side corner) and activate the pressure rollers by placing them vertical.

Take the plotter pen holder (comes with almost all plotters) and install it in the plotter head. Pcut version shown.

The plotter pen for initial plotting test of the whole system shown in the picture above.

The plotter head has in the front a metal knob that need to be turned anti clock wise a few turns.



This releases the slit in the splinted clamp. Now slide the plotter pen unit in the hole of the splinted clamp (it should not be done with excessive force) until it is stopped at the ridge. Then turn the metal knob clockwise until you feel a little force. If you cant pull up the pen holder it is tight enough. Do not over tight it.
This normally is enough to clamp the plotter pen holder or the plotter knife in later stage.

Press the PAUSE (Pcut) or TEST (USCutter LP) button once or twice and a small square is plotted.
If no square is plotted but the head moved, check the plotter pen for correct installation and placing.

4] Cable connection between plotter and PC/laptop

Check which connection can be made between PC and plotter.

Parallel	**Serial**	**USB**
25 pins Computer side 25 contacts at Plotter side	9/25 pins Computer side 9 pins Plotter side	4 contacts Rectangle Computer side 4 contacts Square Plotter side

Some plotters have:
Parallel/Serial/USB or Parallel/Serial or Serial/USB or USB only

Some desktop pc have:
Parallel/Serial/USB

Some laptop pc have:
Parallel/Serial/USB or Parallel/Serial or Serial/USB or USB only.
We advise to use if possible the serial connection over the other connections options for least connection problems.

Check which cable you have use for connecting the plotter to the PC.

Parallel:
Check which PARALLEL port (LPT) number is printed at the printer port exit of your PC.
No need to install any drivers!

Connect the cable from your PC to your plotter and secure it, in case of the parallel and serial version with the clips and the screws.

Serial:
Check which COMPORT number is printed at the printer port exit of your PC.
Desktop PC's normally have COM1 and COM2 (on the newest desktop PC's a serial port might be omitted)
Always use the serial cable that comes with your plotter as there are different version for some plotters.
No need to install drivers!
Connect the cable from your PC to your plotter and secure it, in case of the parallel with the screws.

In case you use an external USB to SERIAL converter like "KEYSPAN" it will act as virtual USB port.
Serial connection at plotter side USB connection at PC side.
In this case you need to follow the manual that comes with the USB to SERIAL converter and use the provided CDrom that is supplied with this USB to SERIAL converter.

USB:
Do not use any device inbetween plotter and USB port on the PC or Laptop.
There is a need to install USB drivers!!!!!
In case of a Creation/UScutter PCUT plotter and using USB directly from PC to plotter we advise you to download the following file to your desktop.
http://www.ftdichip.com//Drivers/CDM/CDM 2.06.00 WHQL Certified.zip
Unzip the downloaded file first.
Connect the USB cable.
Windows hardware detection will be activated automatically when the USB cable is connected and ask you for the place where the driver is located.
In case you did not used the downloaded USB driver mentioned above, please point the hardware detection to the folder where the USB driver is located.

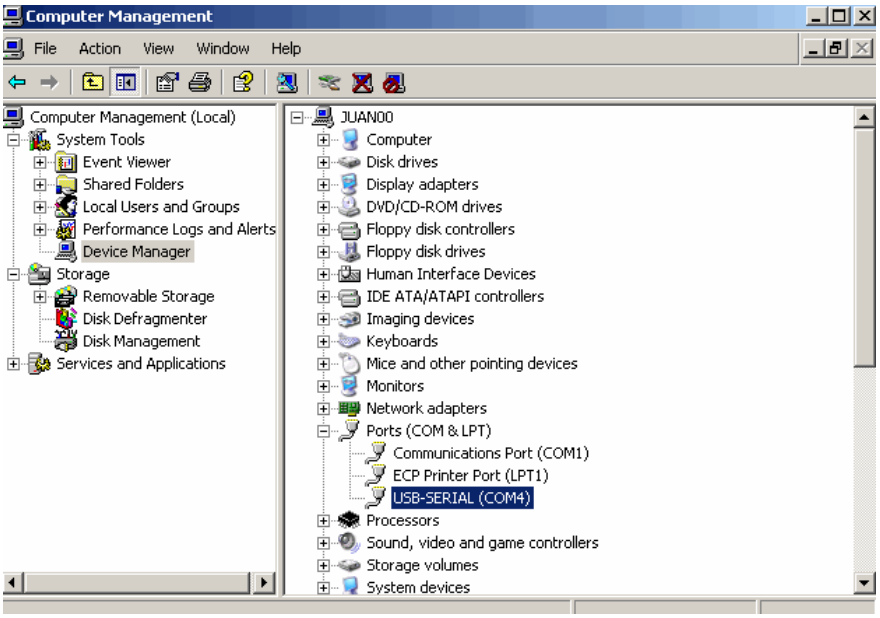
For other brands of plotters have the driver CD rom ready in a CD rom drive that came with your plotter.

Connect the USB cable straight from the PC to the plotter.

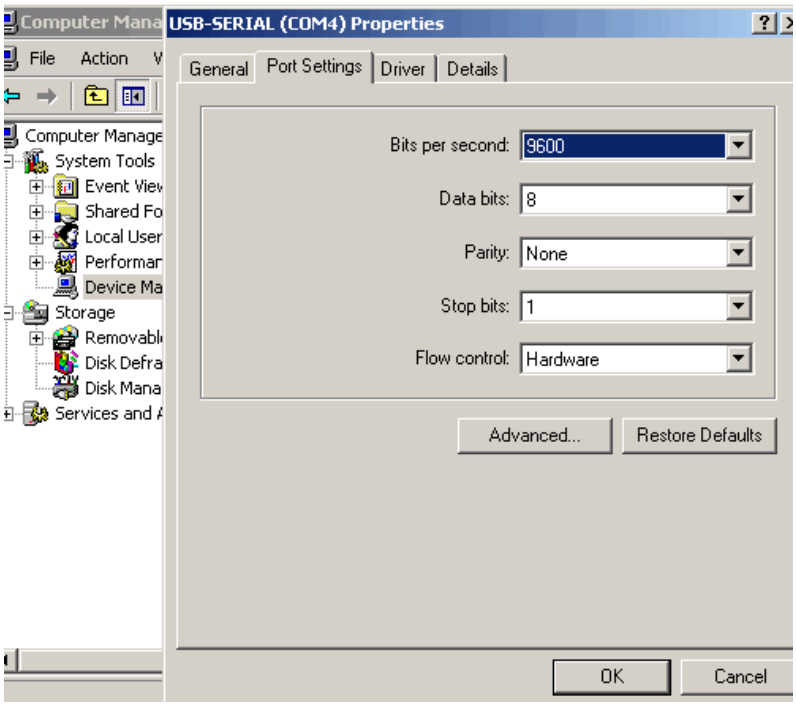
5] Windows communication port setting set up

Windows XP

Check in case of an USB or Serial connection in your PC the following.
Go to My Computer on your desktop and right Click.
Go to Manage and left click
Go to Device Manager and left click
Go to Ports and left click.
Depending the connection cable used at Coms & LPT, right click on the virtual (USB) USB-SERIAL (COMX) where X is a variable number or (Serial) Communication Port (COMX) where X is a variable number.
Click left on Port Settings



Make sure the properties for the used USB or Serial port are set to 9600,8,none,1 hardware only.

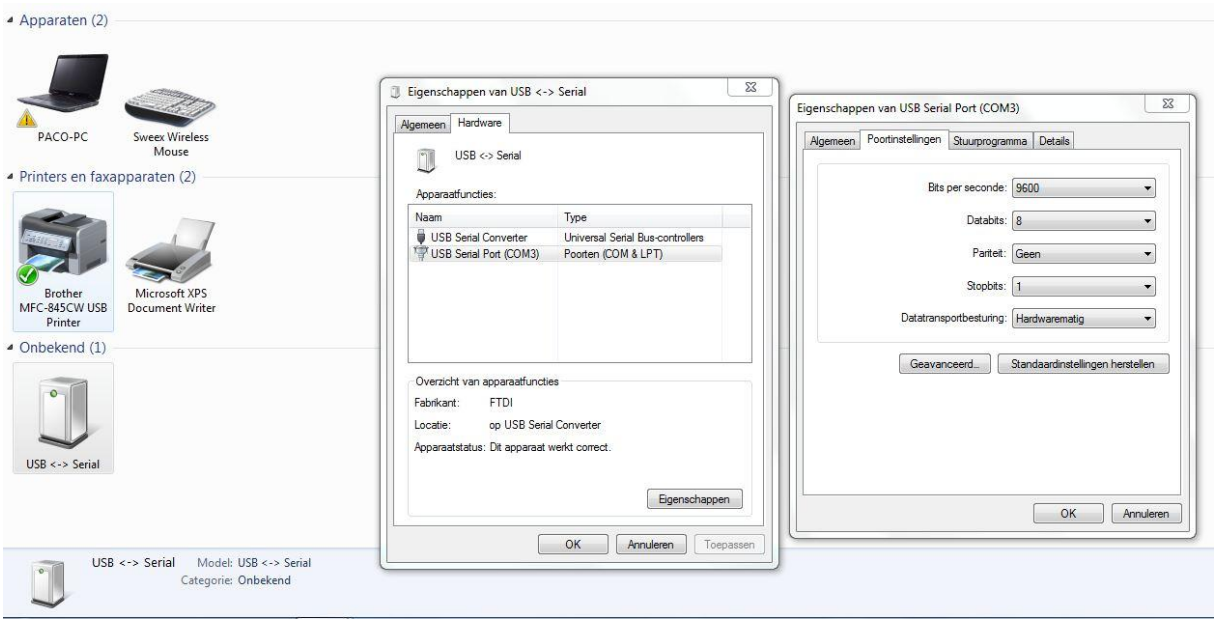


Windows 7

Check in case of an USB connection in your PC the following.
Go to Start, Control Panel.
Go to Printers and Devices.
Right click the USB <-> Serial icon and choose Properties.
Choose Hardware tab
Go to Ports and left click.

Depending the connection cable used at Coms & LPT, right click on the virtual (USB) USB-SERIAL Port (COMX) where X is a variable number or (Serial) Communication Port (COMX) where X is a variable number.
Click left on Port Settings

Make sure the properties for the used USB or Serial port are set to 9600,8,none,1 hardware only.



Tip:
Try to use one USB port only. If you swap the USB cable connector on the PC every time an other virtual serial port will be created and will not be linked automatically to the port setting in the plotter program and the other way around.

I case of any doubt about the port used remove all USB cables and only connect the USB cable to the plotter and check in the Windows hardware property screen which port is used..

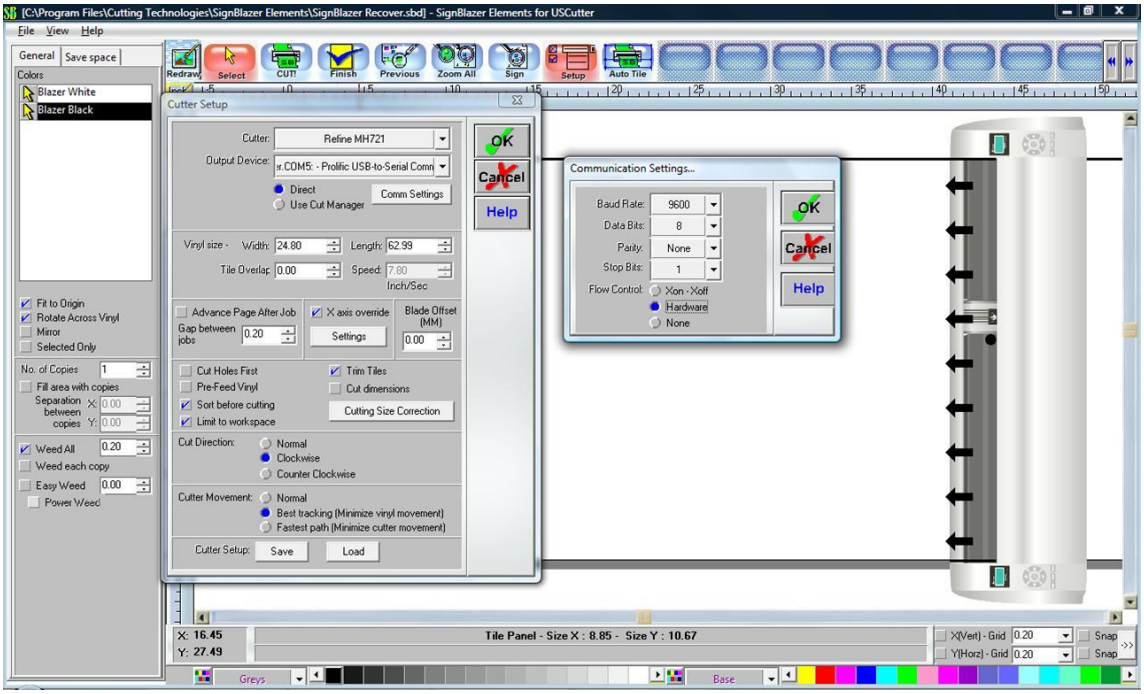
Removing this USB port can be done like this:
By right click and choose for properties and click on program and click on un-install. Remove the USB cable.
After hooking up the USB cable again the virtual USB port will be installed automatically again at the port that it is put into.

Tip:
When you use an USB connection and have problems where the plotter or your sign program freezes or aborts go into the “Advanced” properties of the USB Serial Port and mark the option “Serial Emulation”.

6] Sign Blazer Elements communication and port settings

In SBE go to “Cutter”, then “Setup”
Uncheck the option “Use Cut Manager” and check the option “Direct”.
At the line “Output device” select the Serial USB port from the dropdown menu which the windows device hardware manager as the port uses by the plotter.

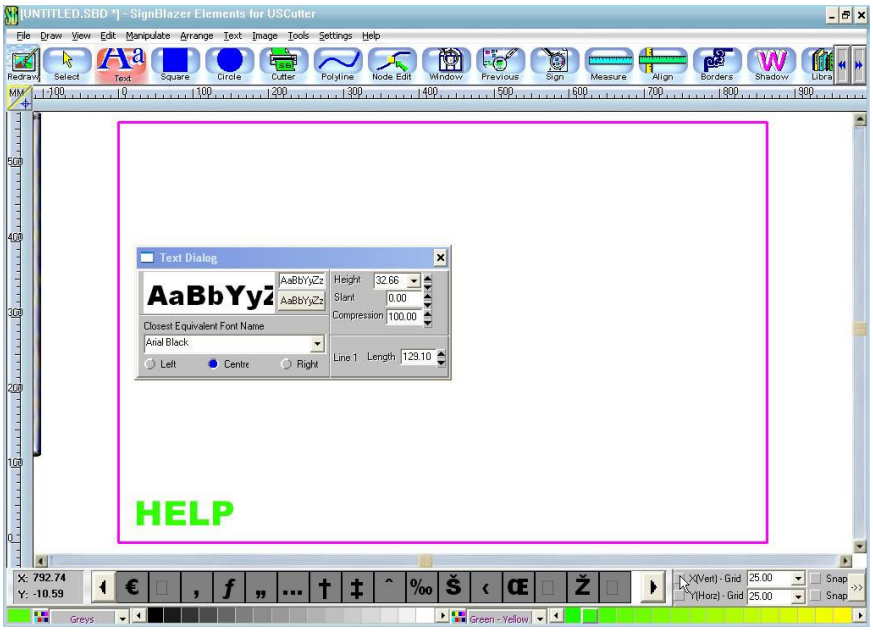
Then click with the left mouse on “Comm Settings”.
Make sure the properties are set to ”9600”, ”8”, “none”, “1”, “hardware only” and click OK.



Close the printer properties by clicking OK.

7] Design a simple text

Select in the **SBE** main screen in the top bar the “TEXT” button with the left mouse button.



Put the cursor on left hand bottom corner and place the cursor by pointing it once.

Now type the word HELP and make it around 5 x 5 cm in size by dragging with the left mouse on the right hand side top of the marker.

8] Print the simple text with a plotter pen

Hit the “Plotter!” button in the top.
Then click “CUT”
Click “Cut Tile”.

The word “help” should be plotted with the plotter pen.

9] Control of plotter X-Y axis difference

Take an A4 paper sheet and load it landscape in the plotter 5 cm from the right hand side of the machine. Switch the plotter to OFFLINE and use the left/right arrow key to move the plotter head 8 cm from the right hand side from the machine and press the home position key and then the ONLINE key.

10] Print and check the X-Y axis difference with a plotter pen

To be sure all cuts are closing at start and endpoints this is an important thing to do first.
There are options in plotter design programs to change it by software but if you areusing more then one plot software you have to do it all again.

In **SBE** take the square tool and draw a 100 x150 mm rectangle where X-axis is 100 and Y axis is 150 mm.
Watch out that the cutting direction is showed on your PC monitor is from left to right. So X-axis on the screen is the vertical line, the Y-axis the horizontal.

Hit the plotter button in the top and click to cut the current tile.

Measure with a caliper (if possible) if the plotted size also is 100 x 150 mm where X-axis is 100 and Y axis is 150 mm.
If this is the case you are done and your plotter is properly set up for real vinyl cutting.

If not, set the plotter OFFLINE and use the MODE button till only X-axis +XXXXXX option appears.
Change the X-axis value.
If needed also change the Y-axis option.
Set the plotter ONLINE again.
Perform the 100 x 150 mm rectangle print again until the measurement is 100%

11] Correct depth and pressure Setting

Install the plotter blade in the plotter blade holder.

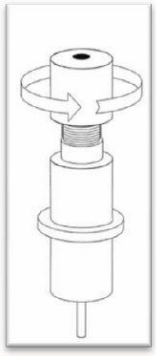
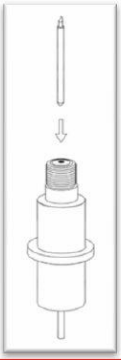
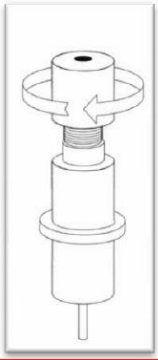
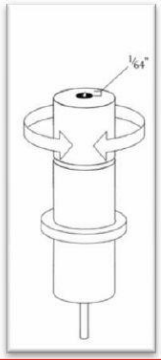
There are two versions of blade holders.

Roland version

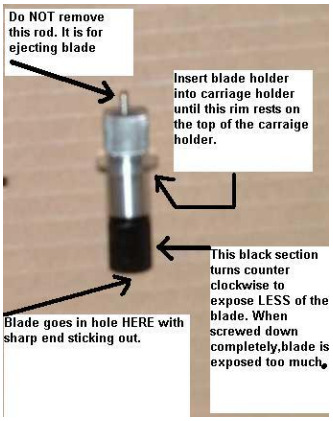
Pcut version

One is called the Roland version and uses 2 mm diameter blades-knifes
Other is called the Pcut version and uses 1.5 mm diameter blades-knifes
Both blade-kinfe holders have an outside diamter of +/- 11.4 mm

Shown below is the dis/assembling of the Roland version

Unscrew the cap from the Blade carriage.	Remove the protective cover from a new blade.	Insert the blade into the top of the Blade carriage.	Screw the cap back onto the blade carriage.	Adjust the carriage cap until the blade is protruding approximately 1/64th of an inch.
				

Most important for correct cutting is setting the blade depth with the blade holder. Make sure the blade is barely sticking out of the blade holder, and I mean you should hardly be able to see it sticking out. To adjust the blade depth, put the blade in the end with the hole, opposite the end that the little silver push rod is on. The push rod (if in) is simply there to help extract the blade when it becomes dull. Make sure the angle end of the blade is sticking out of the blade holder. The blade should magnetically snap in to place and also should spin freely on a 360 degree axis, so it turns the correct way when it enters the material. Now, turn the end cap on the end that you put the blade in to, until the blade is barely sticking out. The blade has an angle to it, and if you can see more than half of the angle of the blade sticking out, it is out too far. Turn the end cap until about ¼ of the angle of the blade is exposed (credit card thickness). When the blade depth is set just right, you should barely be able to see the tip of the blade exposed from the blade holder. Some PCUT versions might have a slightly different design and look plotter blade knife holder.



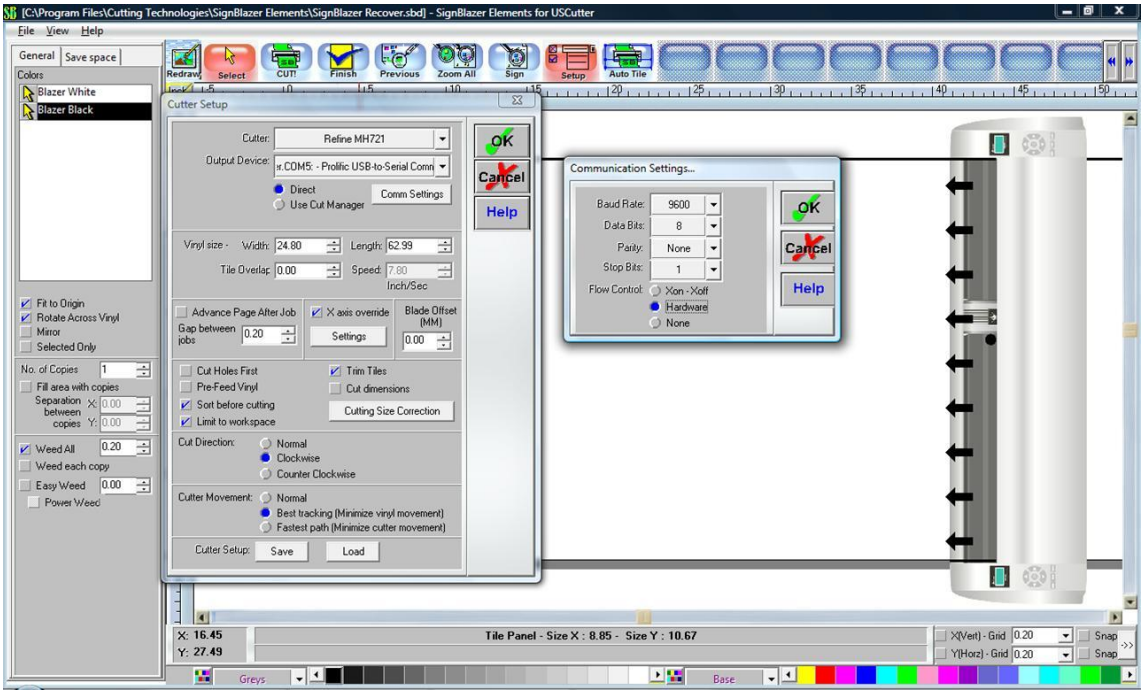
Next is setting the pressure on the plotter itself. For most vinyl applications, a pressure setting of 100-150 is recommended. To set the pressure on the plotter, press the ONLINE button, then use the Mode button to navigate the menu options until you get to the Press (short for pressure) setting. Adjust it with the + or – buttons, then use the Mode button to return to the X -Y screen, then you can press ONLINE to get the unit back online. Always start with a low setting and increase it until the knife makes a slight mark in the backing paper.

12] Test knife scoring

Take a piece of cutting vinyl and move the knife by hand in a straight line vertical for about 50 mm over the vinyl and check if the cutting has scored the top vinyl layer enough but not through the back layer.
Adjust the knife to the proper initial depth setting until it is OK.

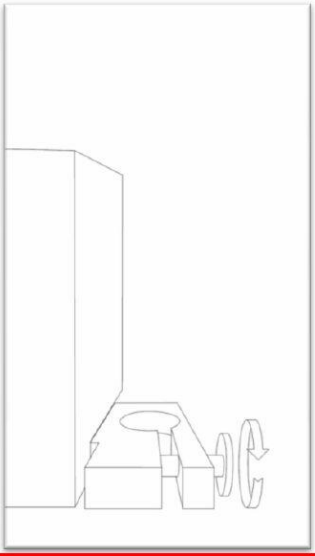
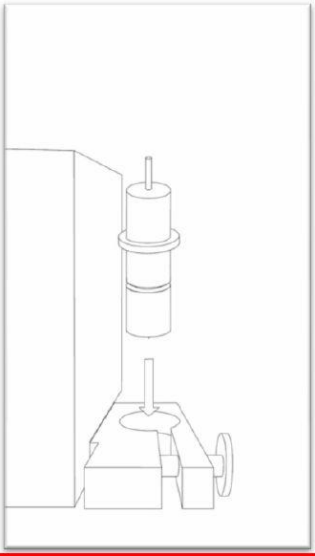
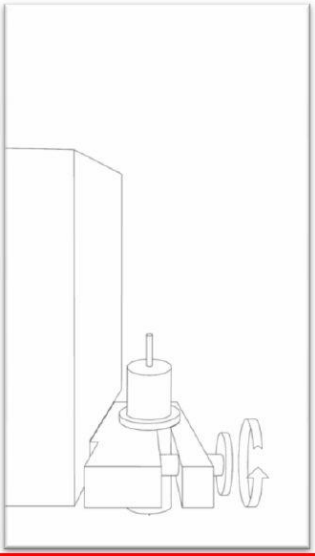
13] In SBE or in your own used plotting program set the plotter knife offset
Offset is the distance from the tip of the knife to the center of it.

The offset can be set in the Cutter Setup screen of SBE.
Start with a plotter blade OFFSET of 0.00 mm.



14] Switching plotter pen to plotter knife

Remove the plotter pen and place the plotter knife in the blade holder of the plotter head.

Loosen the locking knob on the carriage arm.	Place Blade carriage (blade side down) into the carriage arm.	Tighten the locking knob on the carriage arm.
		

Place a piece of vinyl just tested in the plotter around 5 cm from the right hand side of the machine (seen from the front).
Switch plotter “OFFLINE” and use the left/right arrow key to move the plotter head 10 cm from the right hand side from the machine and press the “HOME POSITION” key and then the “ONLINE“ key.

15] In SBE design a rectangle of 50 x 50 mm and send it to the plotter

16] Check the cutting

Check if the cut of the 50x50 mm square can be weeded easily (weeding depends also on vinyl (material) used). Also check if the corners are square and do not have piggy tails due to over un of the corners.

17] Check the corners for square-ness

If there are piggy tails at the 4 corners, change the knife offset in **SBE** (see step 13).
Start at 0 and change to a maximum 0.7 mm in 0.05 mm increments and try accordingly until the cut out is OK.
Some blades are delivered with an offset indication in mm on the package, but always test for optimal result.

18] Recommended speed & knife angle

Recommended speed settings & knife angle depends on size and type of cutting and material used.

Letter size	Speed	
< 10 mm	1-20	60 degree angle knife advised
10-30 mm	20	45 or 60 degree angle knife advised
30-50 mm	40-50	45 or 60 degree angle knife advised
50-500 mm	60 (standard)	45 or 60 degree angle knife advised
>500 mm	70-80	45 or 60 degree angle knife advised

19] Difference between a Bitmap and a Vector based file

This section explains the differences between ***Bitmap-based*** image files and ***Vector-based*** image files.

All image files can be categorized into two kinds, ***Bitmap-based*** and ***Vector-based*** files. The two differ in the way computers analyze their content.

Vector-based images generally contain well-defined elements such as curves and shapes of various colors. These elements can either be pure graphics, western alphabets or Asian characters. Each element is defined mathematically by the computer. For example, if a vector-based image contains a red dot, then information such as the location of the circle's center point, the length of its radius, and the color, red, would be the essential information for this image file.

File names for vector-based images usually consist of extensions such as ***.EPS**, ***.AI**, ***CDR**, or ***.DWG**.

***.EPS files can be either vector or bitmap based. So if your plotter can not import or plot an .EPS file it might be a bitmap file!**

Vector-based files are more suitable for illustrations that require precise measurements. They are also easily scalable due to their mathematical nature. However, the vector-based file format has its drawbacks as well. It is not good for displaying photo-realistic images such as a photograph because images of this type generally do not contain well-defined shapes and curves.

Bitmap-based images, on the other hand, do not rely on mathematical formulas to define their various elements. Each bitmap-based image is mapped into a grid. The size of the grid is based on the image's resolution. For example, a bitmap-based image of 1 inch x 1 inch with a 600 dpi resolution would be defined by a grid of 600 x 600 pixels. Hence, a bitmap-based image is like a mosaic of pixels with each pixel holding a specific color value.

Bitmap-based files are more suitable for photo-realistic images that require complex color variations. They are, however, not easily scalable because each bitmap-based image is mapped to a non-flexible grid. If a bitmap-based image were to be enlarged, it would lose its sharpness. All edges within the image would appear to be jagged.

File names for bitmap-based images usually consist of extensions such as ***.EPS**, ***.PSD**, ***.JPG**, ***GIF**, ***.TIF**, or ***.BMP**.

In general, bitmap-based files require more computer memory for file storage than vector-based files. The former contains all information for every single pixel of the image while the latter contains only the defining mathematical formulas for each element within the image.

If you are not known to vectorizing and you find it a step to much in the beginning, we advise you to use the services from this website.

http://vectormagic.com/support/faq#what_are_vector_images.

21] Simple trouble shooting

Problem: Machine and PC have worked fine and suddenly no communication between PC and plotter.
Solutions:
Check cable is hooked at both sides correctly.
Check baud rate speed is set at 9600 bps on machine and in cutter software.
Check if the RED kill switches are not activated by the plotterhead.
Check serial comport settings at PC and plotter are corresponding at same port number.

Problem: bad vinyl cut.
Solutions:
Check cut speed and pressure.
Check blade sticking out in correct size (half credit card thickness with general vinyl for a starting point)
Check nylon cutting strip if machine is used for a while and has cut through the vinyl regularly.

Problem: Plotter screen says "WAITING" and nothing happens.
Solutions:
Finish the plotter job in your plotter software for Signcut X2 and Pro versions.
Reset the plotter with reset button or touch one of the kill switches in case there is no RESET button.

Problem: Machine can not be put in ONLINE mode.
Solution:
Check if the RED kill switches are not activated by the plotter head.

Problem: Machines starts random cutting or acting eratic
Solutions:
Run a ground wire from the plotter Stand to a screw on the bottom of the plotter to prevent static electricity build up.
Use only a KEYSPAN serial USB to SERIAL adapter (if the machine has a serial port).

Special links to video's
How to vectorize in Inkscape and cut in Sign Blazer
http://forum.uscutter.com/index.php/topic,24587.0.html

Easy or not? ☺

If you have any suggestion or translations, please amend the WORD document and attach the reworked document to the thread.