Contents

Chapter 1: Use Notices

- Power supply with voltage of AC220±10% shall be used for DF series of cutting plotter. Otherwise, a power regulator have to be used.
- The carriage carries strong magnetic field, so tiny ferromagnetic objects are not allowed to be placed around it.
- Foreign matters such as pins and screws should be prevented from dropping into the machine.
- Provided that the computer cutting plotter is out of use for a long period, the power plug should be disconnected.
- The cables (except the USB cable) connecting to the computer are forbidden to be plugged and unplugged when the power is on.
- When out of use, the pinch roller should not press against the home roll for a long time.
- The shell of the cutting plotter should be connected to that of the computer with the wire and be grounded.
- When cutting, there should be enough space around the cutting plotter, so as to prevent the paper from crashing into the objects around, which will lead to the deformation of the scribed graphics.

The Statement on Class A Devices

This product is among Class A products. In the living environment, it may cause radio interference. Under such a circumstance, the user may be required to take practical protection measures to deal with it.

Chapter 2:Basic Information and Installation

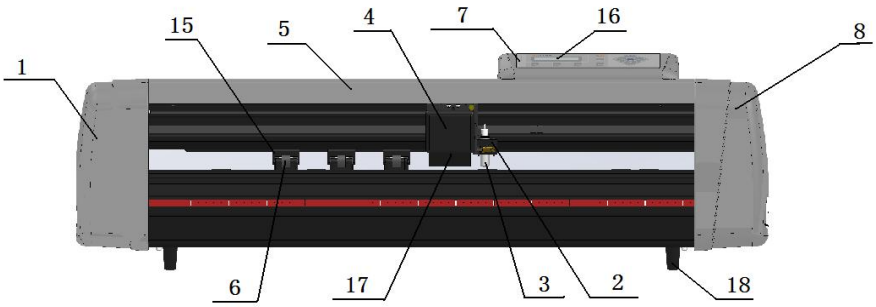
I. Packing List

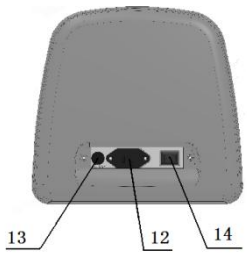
No.	Name	Quantity	Unit
1	Cutter	1	Piece
2	Blade holder	1	Piece
3	Pen holder	1	Piece
4	Pen	1	Piece
5	Blade	3	Handful
6	Serial cable	1	Piece
7	USB cable	1	Piece
8	Power cord	2	Piece
9	Warranty certificate	1	Piece
10	Compact disc	1	Piece

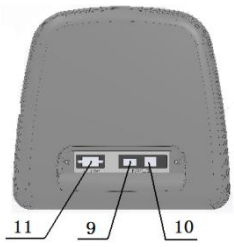
II. Brief Introduction to the Main body

The outline drawing of DF series of cutting plotter:

1. The left cover
2. Blade holder
3. Blade base
4. Carriage
5. Carriage trail cover
6. Pinch roller
7. Control panel
8. The right cover
9. U disk port/flash
10. USB port
11. Serial port
12. Power cable port
13. Fuse cartridge
14. Power switch
15. The assembly of the pinch roller base
16. LCD display
17. Laser sensor
18. Rubber machine leg







III. Brief Introduction to the Rack

1.List of rack assembly and parts

No.	Name	Quantity
1	Casters	4 pieces
2	Foot	2 pieces
3	Left Leg	1 piece
4	Right Leg	1 piece
5	Cross Brace	1 piece
6	Roller Bracket	2 pieces
7	Mount	2 pieces
8	Roller Bars	2 piece
9	Self tapping screw M4×20	12 pieces
10	Screw M4×8	8 pieces

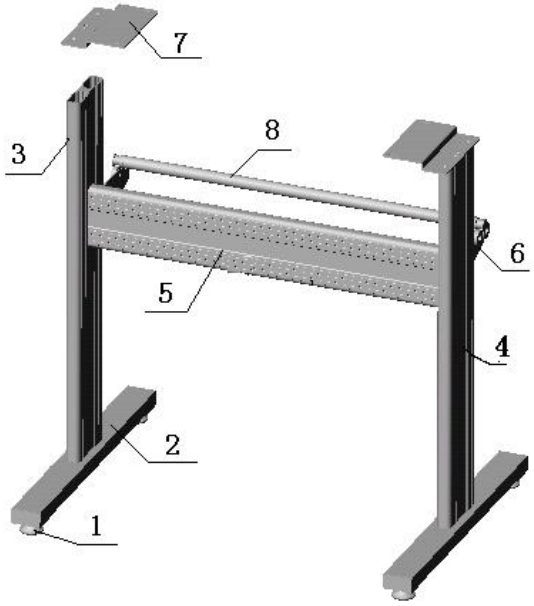
2. Installation of the Rack

Please refer to the outline drawing of the rack:

Step 1: the Casters ① is screwed into the threaded hole of the Foot ②, and then the Foot is connected to the left and right Legs③④ respectively with screws.

Step 2: the left and right Legs are connected to the Cross Brace ⑤ with screws.

Step 3: the Roller Bracket⑥ is fixed to the inside of the left and right Legs with screws. All the screws must be installed on the Roller Bracket; especially, a hole with screw thread on it must be fixed with the screw, which cannot be missing.



The outline drawing of the rack

Step 4: the Mount ⑦ is connected to the top of the left and right Legs with screws.

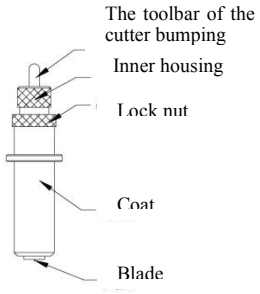
Step 5: the 4 original machine legs are disassembled from the main body, the main body is placed on the Mount, and then, the machine legs are connected to the main body by passing through the Mount.

Step 6: the Roller Bars⑧ is placed on the trolley of the Roller Bracket.

IV. Brief Introduction to the Cutting Tools

1. The structure of the blade holder and the names of its components

The standard blade is one which can rotate in the precision bearing of the blade holder, clamped by a spring housing or absorbed by a spring housing with magnetism so as to prevent it from falling off; the coat of the blade holder can rotate, so as to adjust the length of the blade outside the coat, ensure that the blade won't break the backing paper stuck on it instantly and that the knife can be pushed out by pressing the toolbar of the cutter bumping for the convenience of replacing the blade.



The structure chart of the blade holder

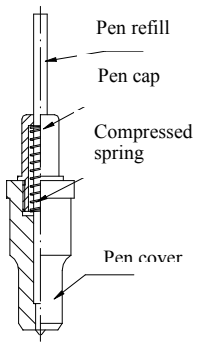
2. Installation and adjustment of the blade

1) Before the installation of the blade, the holder of the blade, the blade and your hands should be cleaned carefully. If brought into the precision bearing, the microscopic dust will endanger the sensitivity of its rotation. The blade is inserted into the blade holder carefully and then, pushed to the end with a soft piece of plastic or rubber, during which you should be careful not to touch the tip of the blade.
2) The shell of the blade holder is rotated so as to push out the knife tip. Generally, the extension length of the knife tip is around 0.25mm (which can be extended appropriately when cutting the imported reflective film). After a period of use, larger extension length (Timely replacement is preferred.) is also allowed for the blade is not sharp enough. Correct adjustment to the length of the knife tip can lead to not only more smooth characters but also longer service lives of the blade and the mound layer.

3. Drawing pen stand

By using the pen stand equipped with this machine along with the machine, drawing can be done with cheap drawing pen refills.

1. The pen cap is unscrewed with the hand.
2. The compressed spring is embedded on the above of the ear of the pen refill.
3. The end of the drawing pen refill passes through the pen cap, and the pen cap and the pen cover are screwed tightly.



The structure chart of the pen holder

4. Installation of the blade holder (or the pen holder) into the blade rack

1. Power is off.
2. The holding screw on the blade rack is loosened, and the blade holder or the pen holder is placed into the V-shape gap of the blade rack, where the knife tip of the blade or the pen tip can contact the plastic mound layer. The screw is screwed tightly clockwise.
3. After the power is on, the blade holder or the pen holder should be able to be

lifted, and the bottom end of the blade holder should be 2 to 3 mm distant from the plastic mound layer.

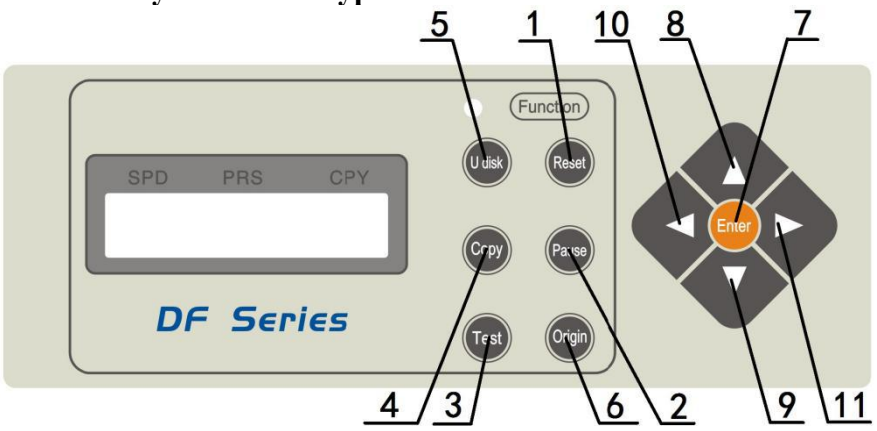
V. Technical Indicators

See Attachment one.

Chapter 3:Operating Procedures

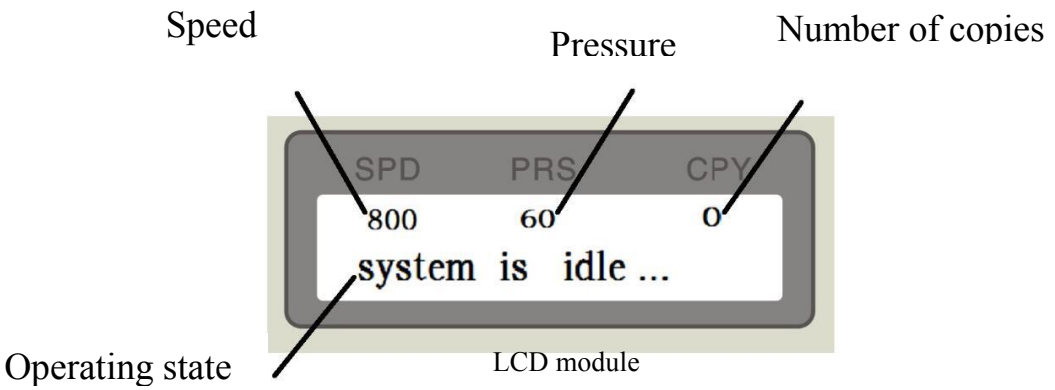
I. Introduction to the keypad

The layout of the keypad



1. Reset key
2. Pause key
3. Test key
4. Copy key
5. U disk/flash
6. Origin key
7. Enter key
8. Up key
9. Down key
10. Left key
11. Right key

Keys on the DC/DF series of cutting plotter



LCD module

Key names: Reset key, Pause key, Origin key, Enter key, Test key, Copy key, U disk key, Up key(↑), Down key/(↓), Left key(←), Right key(→)

II. Introduction to the operating state

The operating states of the cutting plotter include: the reset state, the idle state, the cutting state, the off-line / manual state and the data accepting state.

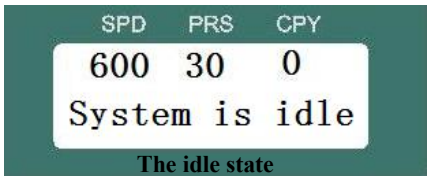
1. The resetting state:

The resetting state

After the power is on or the "Reset" key on the operating panel is pressed, the cutting plotter begins the resetting movement. The order of the movements is: the blade rack is lifted; the carriage moves rightward continually until the starting point is checked; the front and the back of the home roll rotate one circle respectively and then stop, which marks the end of the resetting movement. During the process, the LCD is shown as the right picture.

2. The idle state:

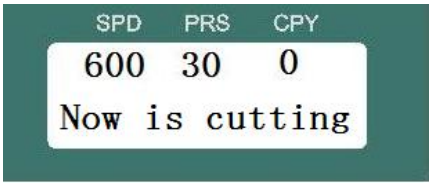
After the completion of resetting or cutting, the cutting plotter goes into the idle state, under which it waits for the input of the computer data and the customer's operation, during which the LCD is shown as the right picture. Among the figures on the LCD, 600 represents that the speed is at the sixth gear, 30 represents that the pressure on the blade is at the 30th gear, while 0 represents that there is no duplicate.



The idle state

3. The cutting state:

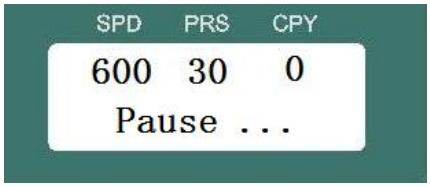
When the "Test" key is pressed or the cutting data is assigned by the computer, the cutting plotter goes into the cutting state, during which the LCD is shown as the right picture.



The scribing state

4. The off-line/ manual state:

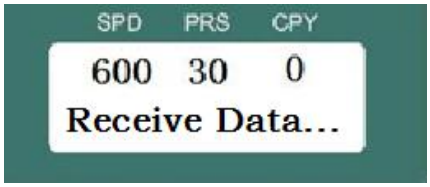
When the "Pause" key is pressed during the cutting process or under the idle state, the cutting plotter goes into the off-line/ manual state, under which the machine stops cutting, and the four direction keys will change the positions of the carriage and the home roll. The LCD is shown as the right picture.



The off-line/ manual state

5. The data receiving state:

When the data is sent to the cutting plotter by the computer, the cutting plotter goes into the data receiving state, under which it receives the data from the computer and all keys except the "Reset" key will not work. After the completion of receiving the data, the cutting plotter exits from the data receiving state and goes into the cutting state.



The data receiving state

III. Parameter Setting

1. Speed adjustment

Adopting the bilateral circulation manner, the speed is adjusted through the direction keys such as "↑" key or "↓" key. Every time "↑" key is pressed and then, loosened, the speed will be lifted by one gear. By pressing "↑" key after the top gear is reached, the speed returns to the lowest gear; on the contrary, every time "↓" key is pressed, the speed will lower by one gear, and by pressing it again after the lowest gear is reached, the speed will change to the top gear. During the cutting process, the speed of the cutting plotter can also be adjusted. The machine will stop cutting during the process and continue cutting a moment after the completion of the adjustment.

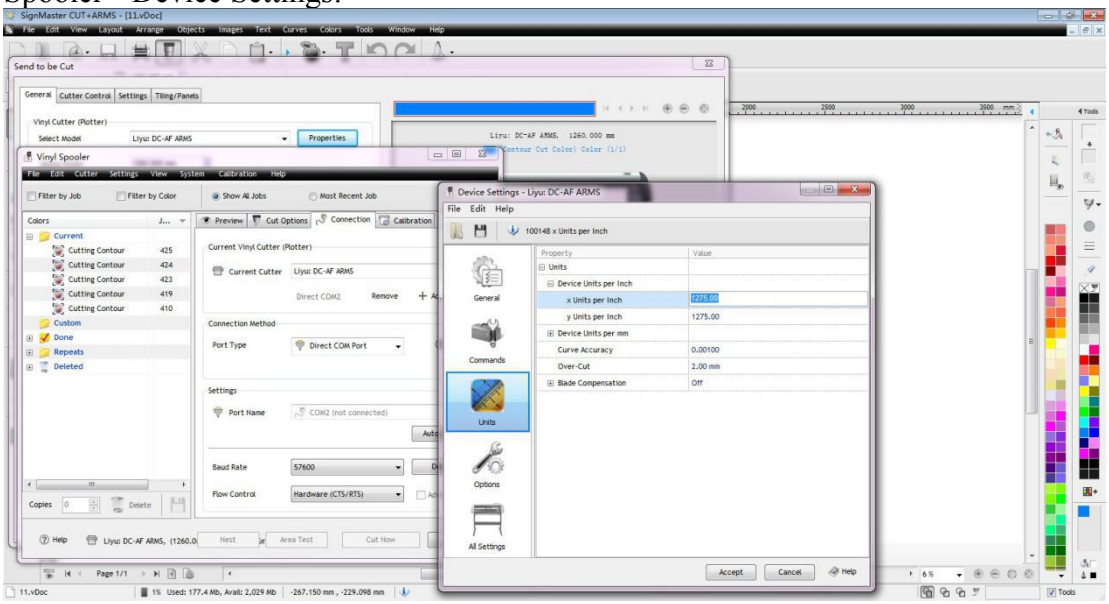
2. Blade pressure/Force adjustment

Adopting the bilateral circulation manner, the pressure is adjusted gear by gear through "←" key or "→" key. Every time "→" key is pressed, the pressure will be lifted by one gear, and by pressing "→" key for a long time, it will be lifted quickly. By pressing the key again after it reaches the top gear, the pressure will change to the lowest gear; on the contrary, every time "←" key is pressed, the pressure will lower

by one gear, and by pressing the key for a long time, it will lower quickly. By pressing the key again after it reaches the lowest gear, the pressure will change to the top gear.

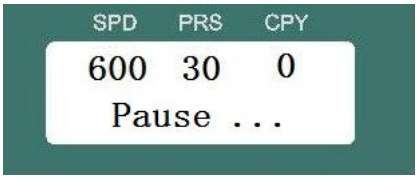
3. Resolution Setting/ Size Adjustment

The resolution setting for DF series is 1275. Open SignMaster Software--Vinyl Spooler-- Device Settings:



IV. Introduction to the Functions

1. Pause/ Manual/ Origin resetting



Under the idle state or during the cutting process, by pressing the "Pause" key, the cutting plotter will go into **the off-line/ manual state** (as shown in the right picture).

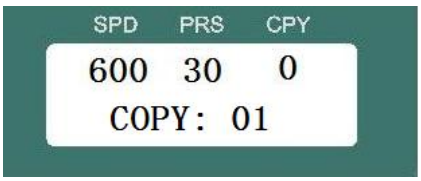
If no operation is made to the keys at this moment the carriage and the media will keep still (**the pause function**);

If the direction key is pressed at the moment, the relative positions of the carriage and the media will change (**the manual function**);

If the "Origin" key is pressed at the moment, the present position will be set as the new starting point (**the origin resetting function**), and meanwhile, the machine will exist from **the off-line/ manual state**;

If the "Pause" key or the "Enter" key is pressed at the moment, the carriage and the media will return to their original positions and meanwhile, the machine will exist from **the off-line/ manual state**.

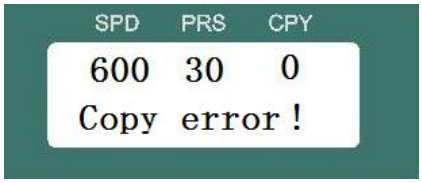
2. Copy



Under **the idle state**, by pressing the "Copy" key, the cutting plotter will go into the copy interface and achieve the copy function. The number of copies (99 copies at most) can be set through "↑" key or "↓" key. Every time "↑" key is pressed and then loosened, one copy will be increased, and by pressing and loosening the key again after the number has reached 99, the number will return to 0; in the same principle, every time "↓" is pressed and then loosened, one copy will be reduced, and

by pressing and loosening the key again after the number has reached 0, the number will change to 99. If data exists in the internal memory of the cutting plotter, by pressing the “Enter” key after the number of copies is set, the cutting plotter will repeat cutting the graphics left in the internal memory. If the number shown is "unlimit", the cutting plotter can makes an unlimited number of copies.

If no data exists in the buffer memory, the machine will refuse to cut again. At this moment, the screen is shown as the right picture and by pressing any key, the machine will return to the idle state.



Note: To achieve the copy function, the U disk/Flush can’t be disconnected from the port of the cutting plotter if the cutting data comes from it. Otherwise, the copy function can’t be achieved.

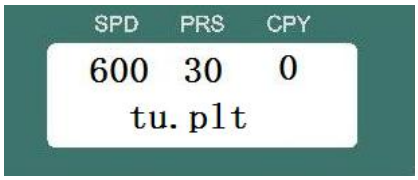
3. Test cutting (Self-check)

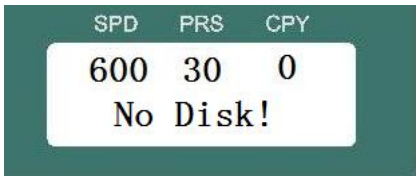
Under **the idle state**, by pressing the “Test” key, the cutting plotter will cutthe self-check graphic. Through the test cutting function, the user can check whether the blade pressure and the cutting speed suit the working requirement.

4. U disk/flash

When it is under **the idle state** and U disk has been connected correctly, the cutting plotter will achieve the function of U disk cutting through the following steps:

1) After pressing and loosening the “**Udisk**” key, the LCD will show the file name under the root directory of the U disk;
2) Search and select the file （***.PLT**）to be scribed through “↑” key or “↓” key;
3) By pressing and loosening the “Enter” key, the cutting plotter will perform the cutting function.





If the customer presses the “Udisk” key and the LCD is shown as the right picture, it means the cutting plotter fails to find the U disk or the U disk is damaged. By pressing any key, it can return to the idle state.

Note: This function is only applicable to the identification of the file format of *.PLT; besides, the file to be scribed needs to be placed under the root directory of the U disk;
The machine can read the output of contour cutting directly from the data of the usb flash drive(U-disc). Please See "U-disc contour cutting instruction" for more details!

5. Automatic contour cutting

This function can be achieved through the following steps:

1) The calibration of the off-set value of the laser sensor. If any changes in the components of the carriage or the parts such as the laser sensor and the blade holder, the calibration is required;
2) Fine adjustment to the off-set value of the laser sensor.If found that there is a large gap between the actual contour pattern and the theoretical contour pattern, the off-set value of the laser sensor must be recalibrated and adjusted.
3) To achieve the import, typesetting and outline development of pictures and texts as well as the generation of MARK point, application software such as SignMaster can be used;

4) To achieve the printing of pictures or texts, either the printer or the photo machine can be used;
5) The contour cutting function can be achieved by the special series of Liyu machine.for example:Liyu DF-AF ARMS.

For detailed operation methods, Please refer to the instructions and videos in the SignMaster software("help menu"- "Contour cutting")

Note: The function of contour cutting has a high requirement on both the user's operating skills and the cutting plotter. For the reason that we can't guarantee that every cutting plotter has the same accuracy and regarding the fact that every user masters different proficiency levels, it is recommended that the customer set the distance between the outline and the image as 2mm when doing the contour cutting work.

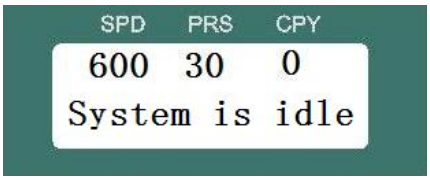
V. Cable Connection

1. Connection of the communication cables

The cutting plotter can be connected to the computer (PC) by ways of serial port (COM) and USB port. First, ensure that the cutting plotter is power-off. Then, one way of connection is chosen, and the cutting plotter and the computer are connected together with the cables provided by the manufacturer. During the connection process, ensure that the cables are connected reliably and no bad conditions such as looseness and poor contact will appear.

2. Connection of the power line

The power line provided by the manufacturer is made use of to connect the cutting plotter to the external power supply. **Please ensure that the public ground wire of the external power receptacle is reliably grounded.**



After correct connection of all the cables, the cutting plotter is turned on, and the correct reset actions made by it are as follows: first, the carriage of the cutting plotter will move rightward (excluding special functions where both the carriage and the spindle motor won't move) and eventually, stop at the right side of the cutting plotter; then, the spindle or the media will move forward and backward and return to the original position. After the completion of resetting, the cutting plotter will be under the idle state, and the LCD will be shown as the picture.

Chapter 4: Instructions on Operation from the PC

On the PC, LiYu cutting plotter can be compatible with SignMaster software.

Configuration requirements of the computer (PC):

Main body: The chipsets above the Intel815 grade and CPU above the PIII1G grade are used in the motherboard; Intel series of CPU and chipsets are recommended to be used; concrete choice should be made in accordance with the requirement of the application software;

Operation system:XP, Win7,Win8 or Win10 system, concrete choice is made in accordance with the requirement of the application software;

I. Typesetting and Output with the Use of the Cutting Software

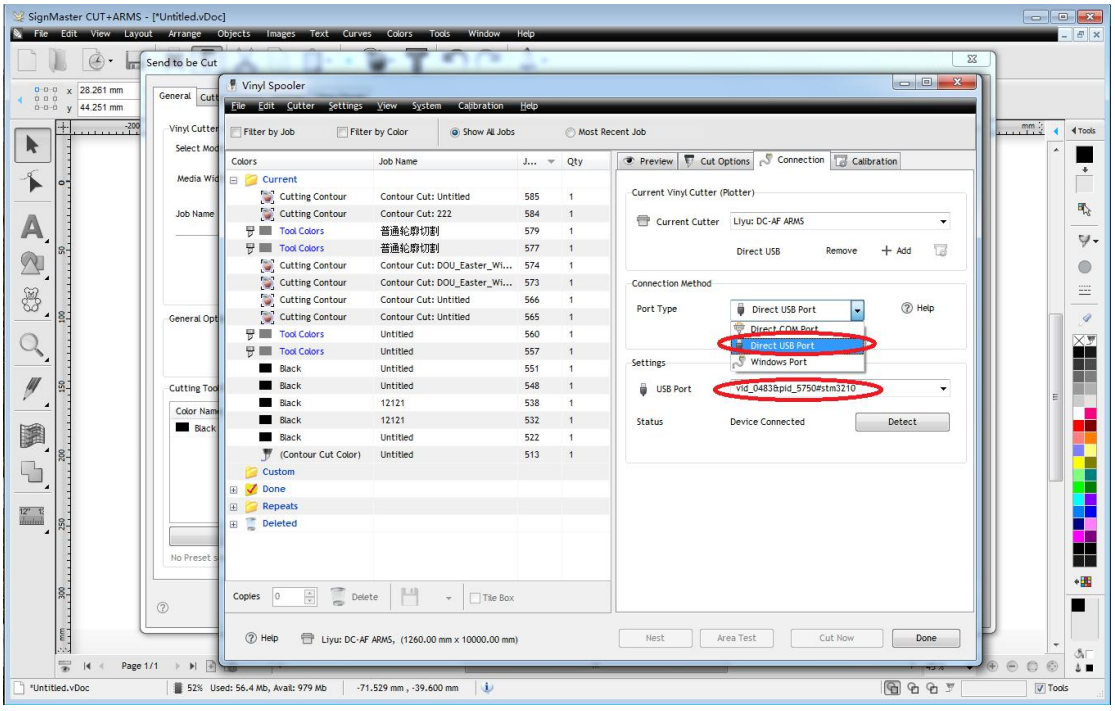
1. Installation of the cutting software

LiYu Cutting Plotter can be compatible with a majority of the cutting software in the market, such as SignMaster. The application software of this sort can be installed in accordance with the installation instructions on relevant software. Here we suggest SignMaster software,how to install it, please refer to SignMaster "help menu"!

2. Installation of the drive of the output port

1) For the serial port:the installation of the drive is not required. What is needed is only the correct connection between the cutting plotter and PC with the serial cable.
2) For the USB port:After the USB cable is connected, the computer system will automatically install the driver. Then open the "SignMaster" software as following:

File → Cut/Plot →Vinyl Spooler → Connection → Port Type → Select"Direct USB Port"→ Select the contents of "USB Port"



Note：Please ensure that the COM port number displayed by the computer device manager is consistent with that in the output field of the port of the cutting software. Otherwise, the cutting plotter will have no response during the output of PC.

II.Matters needing attention during typesetting and output

Attention should be paid to the setting of the following cutting parameters in use:

a) **Baud Rate:** the baud rate of COM (including transformation from USB to COM) is **57600** or **56K**; such two items as DTR/DSR and RTS/CTS are to be ticked; the data bits reach up to eight; the check bit is none; the stop bit reaches one.

b) Resolution: due to the difference between every cutting plotter in machining accuracy, minor deviation will happen to the actual cutting length, which can be improved by correcting the parameter of **resolution** in the cutting software. Formula: the resolution after correction = the length actually measured×1275÷the length in theory. (It is applicable to the cutting plotter with a pulse equivalent of 0.02, whose horizontal and longitudinal resolutions are both calculated in accordance with this formula.)
&&&The resolution setting for DF series is 1275. Users must modify it when using it, otherwise it will result in a smaller image than the original one!

c) Sharp Corner Compensation: when cutting the media, the sharp corner compensation value of the graphic is related to the offset error of the blade: 0.25 (offset) →0.28 (compensation value) mm, 0.5→0.56mm, the software compensation value being consistent with or a little larger than the offset value, and the like.

d) Closing Compensation: when cutting the media, the closing compensation value of the graphic is related to its size: in respect of the graphic of the size below 1cm, compensation will be made to a value of 0.1mm; in respect of the graphic of the size below 10cm, compensation will be made to a value of 0.3mm; the larger the characters are, the larger the closing compensation value is.

e) The USB drives of the above two major kinds of application software cannot be installed into the same computer, and only one of them can be kept. But the serial port has no such limitation.

Note: for concrete settings, please **refer to the U-disk equipped along with the machine**. In detail, refer to the document "Parameter Setting.pdf".

Chapter 5: Cutting Skills

1. Loading the paper

①The handle of the pinch roller shall be lifted to make the pinch roller separate from the home roll.
②Pass the paper through the pinch roller and the home roll of the cutting plotter from back to front.
③The front of the paper is made to be roughly aligned with the slab joint in the front of the cutting plotter, and then, the pinch roller is put down.

Description: The cutting plotters of different specifications are equipped with pinch roller seats in different numbers, and every pinch roller seat can move on the rail. During the movement, the handle of the pinch roller must be lifted. The back of the pinch roller seat is grasped and it is pushed leftward and rightward. The lever of the pinch roller can't be pulled by hand from the front, or the accuracy of the machine will be damaged.

Note: Ensure that every pinch roller presses against the home roll. In respect of the positions of the pinch roller seats at the left and the right, ensure that the pinch roller

is located outside the size of the scribed picture and have a distance of (10- 50) mm from the left and the right edges of the media. Their usage amount should be determined according to the size of the scribed picture.

2. Adjustment to the blade pressure

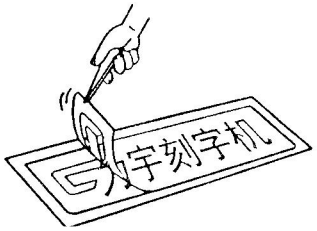
The blade pressure being too small, the knife tip can't cut into the plastic film, leading to the phenomenon of disability in penetration. On the contrary, the pattern scribed will deform and even the backing paper will be cut through.

Through test cutting of the self-check pattern, suitable blade pressure and appropriate length of the knife tip will be adjusted, not only making the self-check pattern easy to lift and have no adhesion but also ensuring the backing paper won't be scratched and broken.

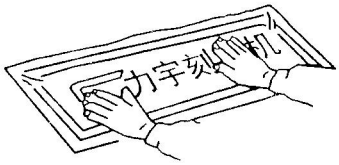
3. Uncovering words/ sticking words

After the pattern is scribed…

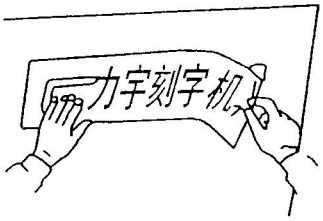
A. The part already scribed shall be cut with the scissors or the box cutter.
B. Then, it shall be laid flat on the table, and the unnecessary part shall be removed with the tweezers (for the convenience of removing the unnecessary part, a toss rack should be added to the outside of the text graphic when cutting).



C. The text graphic shall be covered with professional "sticking film", which shall be smoothed out with great strength (the scraper is preferred).



D. The "sticking film" is uncovered from the backing paper and pasted up anywhere you want to. Then, it is to be torn off.



4. After the completion of the work…

A. The handle of the pinch roller shall be lifted.
B. The paper shall be unloaded.
C. The blade holder or the pen holder shall be disassembled, cleaned with soft cloth and kept properly.
D. The power supply shall be cut. In case that it would not be used for a long time, the power cable should be unplugged.

E. The machine shall be covered with the hood.

Chapter 6: Answers to Frequently Asked Questions

I. What if the machine fails to enter the cutting mode?

1. The system files are destroyed, so the cutting system should be reinstalled with the system disk.
2. Check whether the cutting software is running by pressing Alt+Tab keys to switch the interface.

II. What if the item “cutting output” fails to work after entering the cutting system?

1. Check whether the encryption card or the dongle is installed correctly (refer to the software instructions).
2. If the installation is confirmed to be correct but the item “cutting output” in the cutting system still fails to work, please contact with your retailer or your software provider directly.

III. What if the cutting plotter has no response during cutting and output?

1. Check whether the cutting plotter is connected to the computer well.
2. Check whether the port setting of the cutting output is correct; requirement: the port setting in the output menu of the cutting software is consistent with the port where the computer is connected to the cutting plotter.
3. Check whether the model of the cutting plotter is correct during cutting and output.
4. Check whether the cutting plotter is under the connect state.
5. The problem may lie in the cutting software, so please reinstall the software.
6. The output port of the computer is damaged.
7. In respect of the serial output with V6.2.0 version of CutterMaster, if such phenomenon appears, the problem can be solved by pressing Ctr+Alt+Del keys and closing the item with “no responding”. For details, please refer to the instructions of CutterMaster.

IV. What should be paid attention to when cutting small characters?

1. When cutting small characters under 2cm, the speed of the cutting plotter should be adjusted to the lowest, because the gap between every stroke of the small character is comparatively small and the blade will raise the strokes and thus, cause substandard products if its speed is too high.
2. When cutting small characters with the cutting plotter, our recommendation is: the compensation function of cutting and output is used, and the sharp corner compensation value should be set in accordance with the actual situation, which is generally set between 0.3mm and 0.5mm. Like this, the effect of cutting and output will be better.
3. The extension length of the blade tip should be a little shorter than the normal position, which will make the small characterscutting muchsmoother.

V. What should be paid attention to when cutting largecharacters?

1. When cutting a word larger than the width of the cutting plotter, the system software will tear the word apart automatically. Splitting the pages by hand is also allowed, so that you can stitch every page together and form a large word. But the matter needing attention is that the setting of the output width should be consistent with the width of the sticky note in use.
2. When cutting large characters, the speed of the cutting plotter can be a little higher. Besides, during cutting and output, sharp corner compensation should be removed and meanwhile, seamless connection should be chosen.

VI. What if the sticky note can't be uncovered after cutting words?

1. The extension length of the blade tip is to be adjusted.
2. Before the output, appropriate adjustment is made to the length of the blade tip and the intensity of the blade pressure first, test carving is carried out until it is satisfying, and then, official carving is conducted.
3. If the dotted line appears when cutting words, the blade has been worn out for a long time of use. The blade is pushed out by pressing the bar of the cutter bumping and replaced with a new knife for a try. Being an emergency method, a small piece of leather can be used to polish the knife tip just like polishing the razor.
4. If such a phenomenon that one side can be uncovered while the other side can't after cutting, maybe the extension length of the knife tip is not suitable, or the mound layer is uneven or damaged.

VII.What should be paid attention to when cutting words of a super-length printing size?

When cutting words of a super-length printing size, the paper should go through pre running first under the "off-line" state. Our recommendation is that cutting by segmentation is preferred when segmentation is allowed by the printing size.

1. The two edges of the paper is aligned with the same positions of the rulers pasted up on the front and back of the cutting plotter, and the pinch roller seat is pressed down.
2. Under the "off-line" state, by pressing "↓" key, the cutting plotter will push the paper to walk the same distance as the length of the printing size.
3. By pressing the "off-line" key, the paper will return to the original position. At this moment, actual cutting can be implemented.

VIII. Why driftinghappens?

1. The pinch roller is used incorrectly.
2. The pinch roller is worn severely.
3. The paper fails to be placed straightly.
4. The paper didn't go through pre running when cutting words of a super-length printing size.

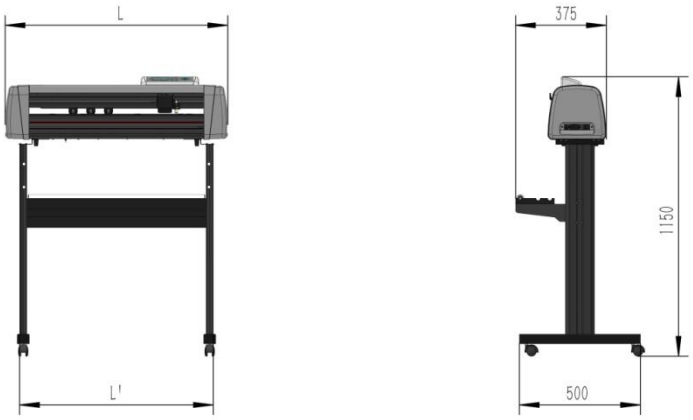
Attachment

Attachment One: The Performance Parameter Table of the Cutting Plotter

Variety	Model	DF series		
	Specification	631	801	1261
The maximum width of carving		615mm	785mm	1245mm
The widest paper for entering		710mm	880mm	1340mm
Max. Speed:		800mm/s		
Blade Pressure		500g		
Mechanical resolution		0.01mm/step		
Buffer memory		1Gb		
Repeated accuracy		0.1mm		
Motor		Stepper Servo		
Interface type		1. USB 2. U-disk/Flash		
Language format		DM/PL, HP/GL		
Power Supply		AC90-260,50/60Hz		
Working environment temperature		0 ～35℃		
Working environment humidity		5% ～ 95%（free of condensed water）		

Note: The above technical specifications may change without further notice.

Attachment Two: The Machine Size Chart of the Cutting Plotter



Model	DF631	DF801	DF1261
L	919	1089	1549
L’	800	970	1430