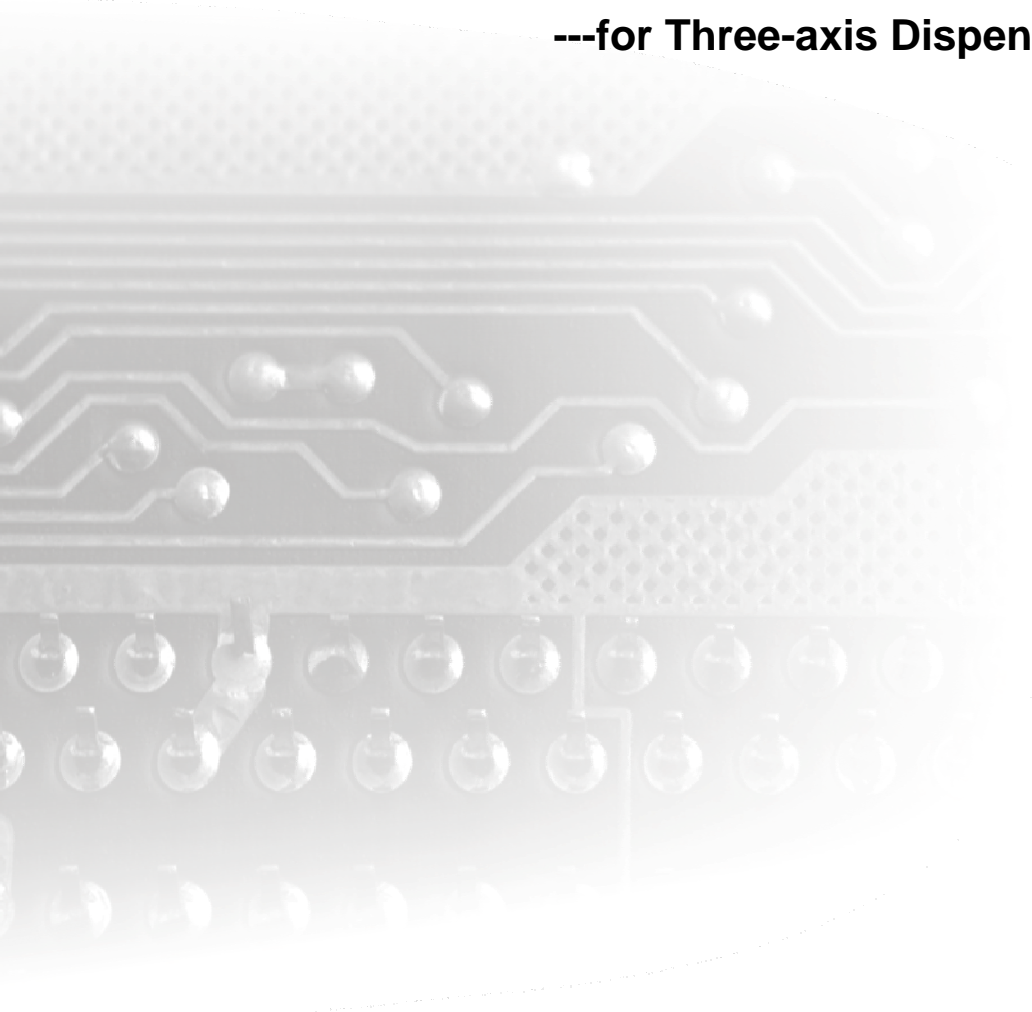


# ADT-TV5500DJ

# User Manual

---for Three-axis Dispenser Control System



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### Version Upgrading Instruction

Procedures	Version Number	Modification Date	Instruction
XT20090302	V13.0	2012-2-8	The Sixth Version

Remarks: the meanings of the three numbers in the version number are as follows:



Bank Main Version Number/ Bank Secondary Version Number/ Reservation

Remark:

This manual has been strictly carried out carefully and check the collation by Adtech (Shenzhen) Technology Co., Ltd , but we can not guarantee that this manual has no errors and frequent.

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# Chapter I System Overview

TV5500DJ 3-axis dispensing controlling system (TV5500DJ for short) is a separate, 3-dimension, and high precision motion control system consisting of TV5500 hand-held box and ADT-8848 Offline Motion Control Card, which are connected by the way of serial communicating. TV5500 performs the operation of human-machine interface, and ADT-8848 performs the motion control and I/O interface operations. This system supports 3 motion axes and 8 dispensing output controls, providing users with abundant instruction set, which includes motion instructions such as straight line, circular arc, single point, and oval. In addition, instructions like port output, wait for input, pause and delay, glue gun selecting, and motor reset are provided, as well as many other advanced editorial functions, including batch modification, array copy, graphics shift, graph zoom in and zoom out, auto round corner, and frequently-used graphics library. Besides setting coordinates manually in regulation way, the system also supports importing PC graphics. PC graphics can be converted to PLT file or G-code files, which will be further converted to processing files by the controller for processing. Each processing file can save 100 thousand processing points. ADT-8848 has a 16M memory, while TV5500 has 128M. This system also supports U disk reading and writing functions, which allow user to read and write the processing files on U disk.




## Hardware Features

- Motor axis No.: 3 axes (XYZ)
- Pulse frequency: 2MHz; if the pulse of motor per turn is 25600, the maximum speed can then reach 5000 turn/min
- Numbers of IO interface: 13-line special inputs (XYZ origin, positive & negative limit, start-up, stop, reset and pause key), 22-line general input, 16-line special output (8 glue gun switch controls; 8 glue gun switching controls, can be used as general output when glue gun is not used), and 2-line general output;
- IO input type: OC Isolation input
- IO output type: NPN open collector 5-24VDC, rated current 0.5A; Maximum current of single path can reach 1A.
- Screen pixel of handheld box: 320 X 240, full color
- Key No. of handheld box: 36
- USB Function: Handheld box can be used as USB master and slave equipment; offline card can be used as USB slave.
- Memory space: 128M handheld box, 16M offline card; a processing file can occupy a space of as large as 3M (100 thousand processing points)
- Operating voltage: 24V DC
- Operating temperature: 45°C
- Storage temperature: -40°C —55°C
- Operating humidity: 40%—80%
- Storage humidity: 0%—95%

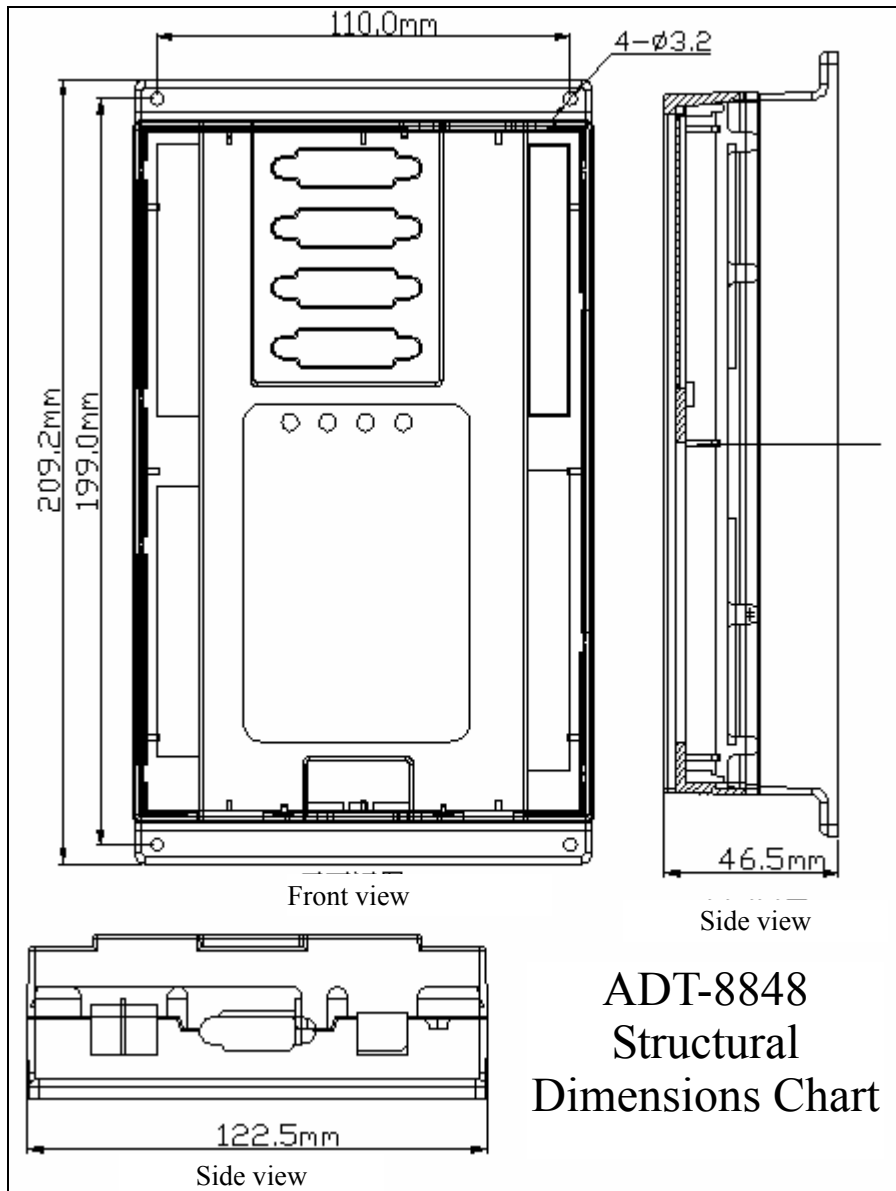
## Software Features

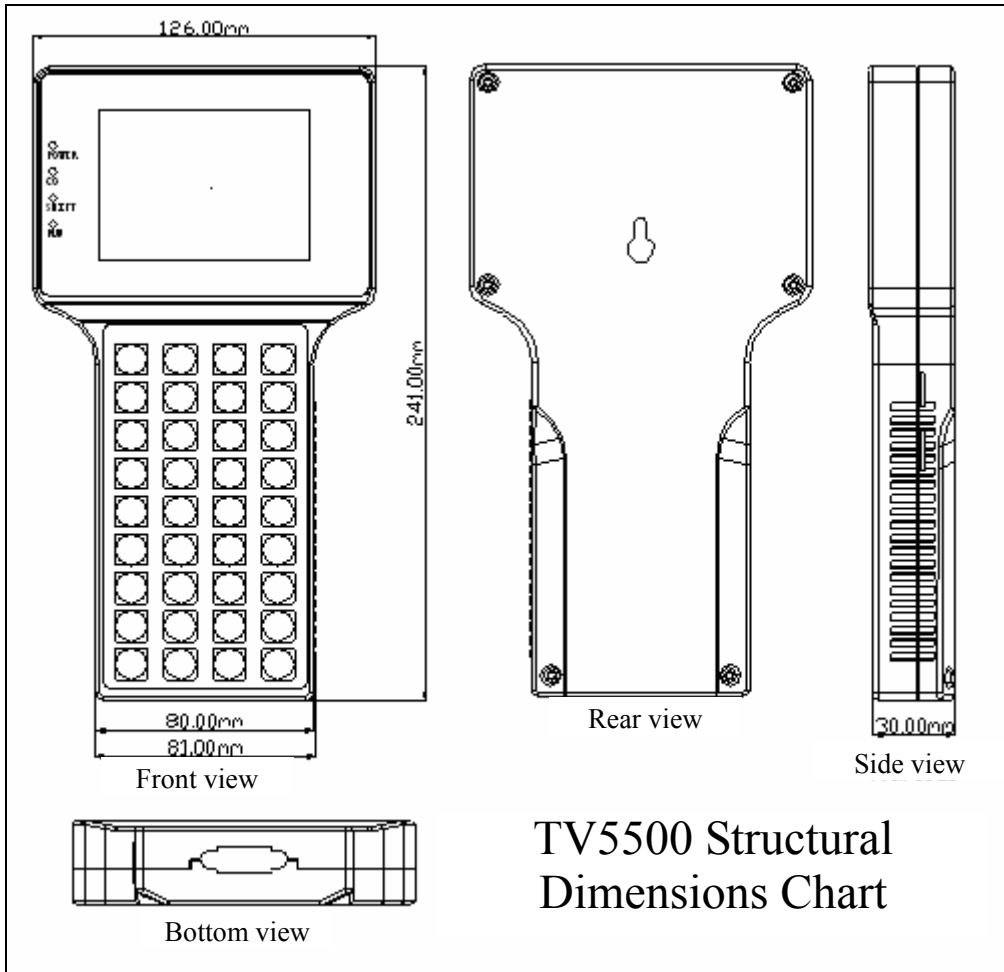
- Support the line interpolation, and arc interpolation and elliptical arc interpolation of any two axes in the 3-axis space.
- Speed look-ahead algorithm is adopted to smooth the turning speed automatically.
- PC picture import is supported. PLT files and G code files can be imported.
- Feature the delay opening glue-gun and advance closing glue-gun for track, resolving the glue piling at the starting point and the end-point.
- Contain abundant motion instructions and auxiliary instruction sets.
- With user-friendly file instruction and edition functions, offering many advanced editorial functions such as batch modification, array copy, picture translation, picture zoom, and auto fillet; common graph library is provided for users for their convenient use.
- Graphical display function enables to show the shape of graphics in the processing files clearly.
- Processing track is shown in real time dynamically.
- Convenient and swift help system is provided. Help files can be shown by pressing Shift+F1 in any interface.
- Cycle processing, single processing, auto processing, and single step processing are supported.

## Fittings List

Fitting Name	Model	Qty.	Profile	Appearance
Handheld box	TV5500	1	Human machine interface	
Offline card	ADT-8848	1	Motion and IO control	
Data transmission line	L01-202D9GG1	1	Used for the communication between handheld box and offline card	

## Structural Dimensions



















## Keyboard layout



Keyboard Layout

Name	Icon	Functions
Function key		Perform a special function in an interface
Shift key		Used with other keys to perform different functions, such as Shift+F1 to use help files
Editing key		Used to edit the parameters of processing point in file edition Height: Needle height of final point and single point Teach: Programming XYZ coordinates Insert: Insert a point ahead of the current point Delete: Delete the current point Position: Swiftly position the motor to the coordinates of current point
Direction key		Used to choose the data need to be edited in the editorial state  : Up and Down key  : Left and Right key
Number key		Used to enter numbers or letters, select menu, or used with Shift key to perform a special function
OK/Cancel		Confirm or cancel the current operation

<p>Manual key</p>		<p> : X-axis motor to move leftwards or rightwards</p> <p> : Y-axis motor to move forwards or backwards</p> <p> : Z-axis motor to move upwards or downwards</p> <p> : Not in use</p> <p> : Switch the motor speed manually</p>
-------------------	---	---

## Chapter II Operating Instructions

### Step 1: Main Interface

When the machine is connected to the power supply and powered on, it enters the main interface as below:

```

[1]Work Parameter Setting
[2]Select/Create Work File
[3]File Parameter Setting
[4]Edit File
[5]Monitor
Press SHIFT+F1 to get help in anywhere

Process file:\PRG\2.DJJ
    
```

**Boot screen and the main interface background images:**

You may use the "paint" program provided by Windows to produce a 320 \* 240 pixel black and white images, the boot screen named "logo.bmp", the main interface background image named "back.bmp", put them to the TV5500's "\ADT\" directory.

### Step 2: Viewing software version

In main interface, press Shift+F2 to view the software version:

```

Program Infomation
Project ID:20090302
Main ver of hand box:0.1.75
Comm ver of hand box:0.1.62
Create date of hand box:2012/02/06
Create time of hand box:17:29:42
Main ver of RemDev:0.1.75
Motion lib ver RemDev:0.1.75
Comm ver of RemDev:0.1.62
Create date of RemDev:2011/08/30
Create time of RemDev:11:29:24
Write by:Gongyi Tang
    
```

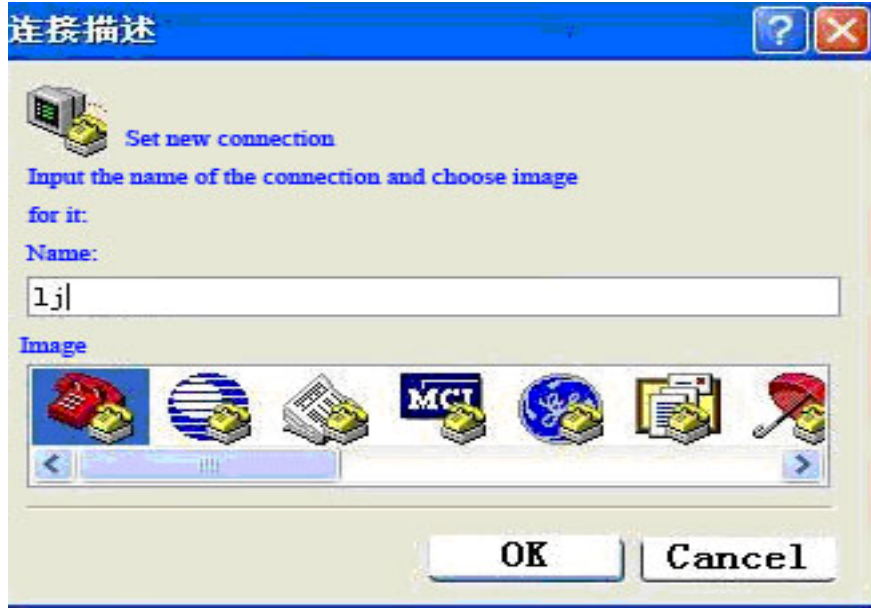
### Step 3: Updating the programs

Program updating includes the updating of ADT-8848 and TV5500. ADT-8848 programs should be updated prior to those of TV5500.

- There are two ways of updating ADT-8848 programs:

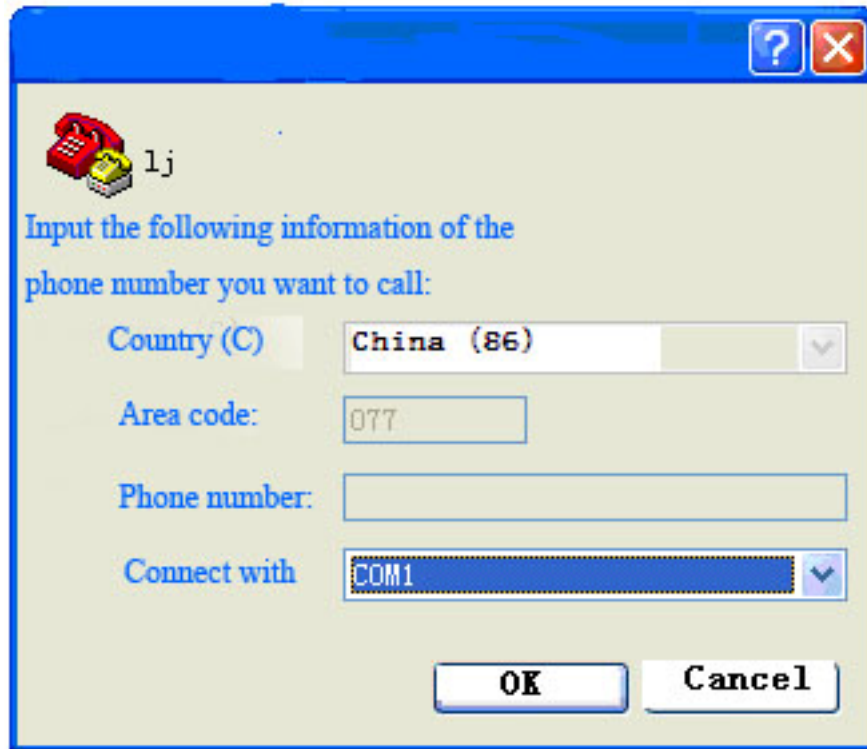
1) Updated via PC (The first time of updating must use this method.)

Connect the D-shape USB interface of ADT-8848 to the USB port of PC, and connect the second serial Series2 of ADT-8848 with the PC serial; then, select “All programs →Accessories →Communications→Hyper Terminal” in Start menu of Windows:

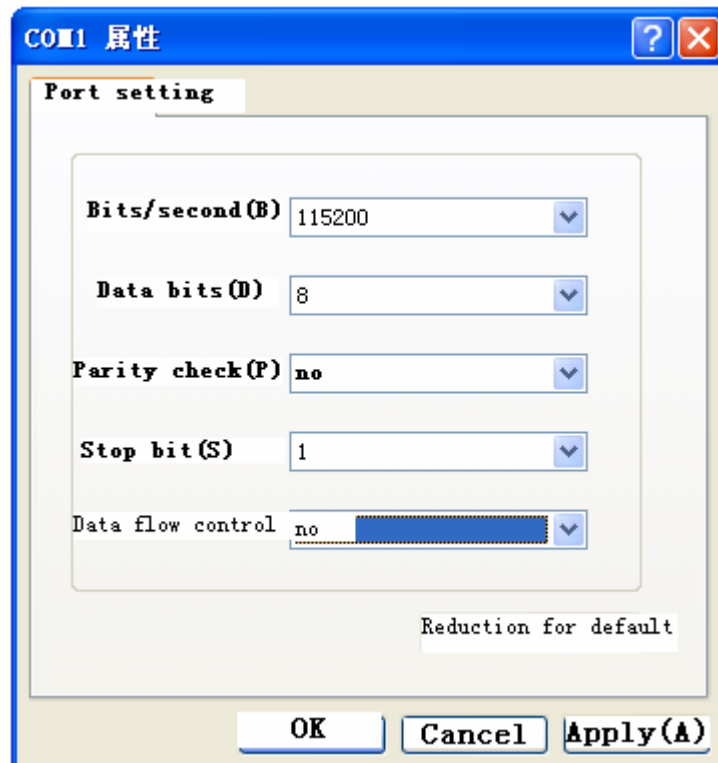


Create a new connection

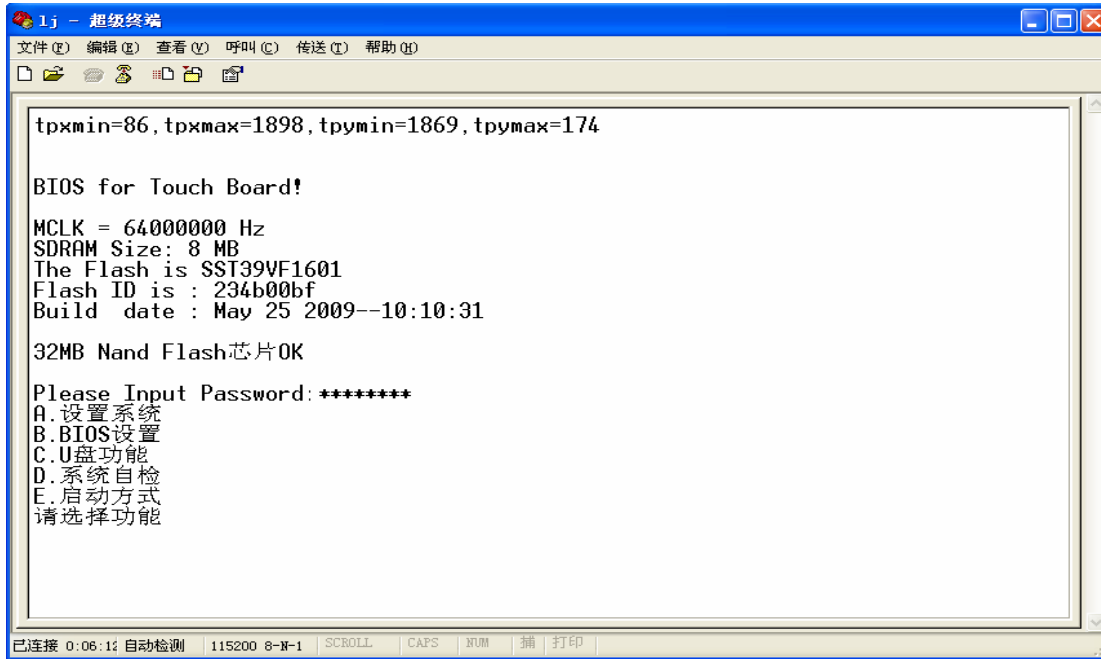
Select the serial



Set the serial attribute following the picture below



Select the new Hyper Terminal window, and then re-electrify the controller. Press “ESC” key on the PC keyboard within 1 second while re-starting, and enter the password to go to the BIOS interface:



Follow the prompt to select “C.U Disk Function”→“1.U Disk Connection”. At this point, the ADT-8848 is used as U disk connecting the PC. You can copy the client programs of ADT-8848 (File name: adtrom.bin) to “\ADT\” catalog of the controller via PC, and restart the controller. Press “ESC” key within 1 second while restarting, input password to enter into BIOS interface, and then follow the prompts to choose “B. BIOS Settings”→“2.Updating the programs” to finish. Restart the controller to finish the program update.

2) Updated via TV5500 (Used when ADT-8848 has installed version 1.11 or higher master program)

Connect the USB interface of ADT-8848 to the USB port of PC. The ADT-8848 will be used as a U disk connecting the PC. You can copy the client programs of ADT-8848 (File name: adtrom.bin) to “\ADT\” catalog of the controller via PC (or via the file management function of handheld box), and then use TV5500 to enter manufacturer parameter settings interface to select “Updating ADT-8848 Programs”. Then, restart the controller to finish the program update.

● There are two ways of updating TV5500 programs:

1) Updated via U disk

Insert the U disk contained with TV5500 client programs into the flat USB interface of TV5500; then, enter the main interface of controller and press Shift+2 to go to file management interface. You can then copy the TV5500 client programs (File name: adtrom.bin) in portable drive to “\ADT\” catalog of the local disk, and restart the controller. Press “Cancel” key for 1~2 seconds within 1 second while restarting, and input password to enter BIOS interface, then use the Up/Down key to select “B. BIOS Settings”→ “2. Updating the programs” to finish. Restart the controller to finish the program update.

2) Updated via PC

Connect the D-shape USB interface of TV5500 to the USB port of PC, and restart the controller. Then, press “Cancel” key for 1~2 seconds within 1 second while restarting, and input password to enter BIOS interface, then use the Up/Down key to select “C. U Disk Function”→ “1. Communication connecting” to complete; in this way, TV5500 is worked as a U disk. You can copy the TV5500 client programs (adtrom.bin) to “\ADT\” catalog of the controller via PC. Restart the controller. Press “Cancel” key for 1~2 seconds within 1 second while restarting, and input password to enter BIOS interface, then use the Up/Down key to select “B. BIOS Settings”→ “2. Updating the programs” to finish. After that, restart the controller to finish the program update.

● Preparing of start-up picture and the background picture of main interface

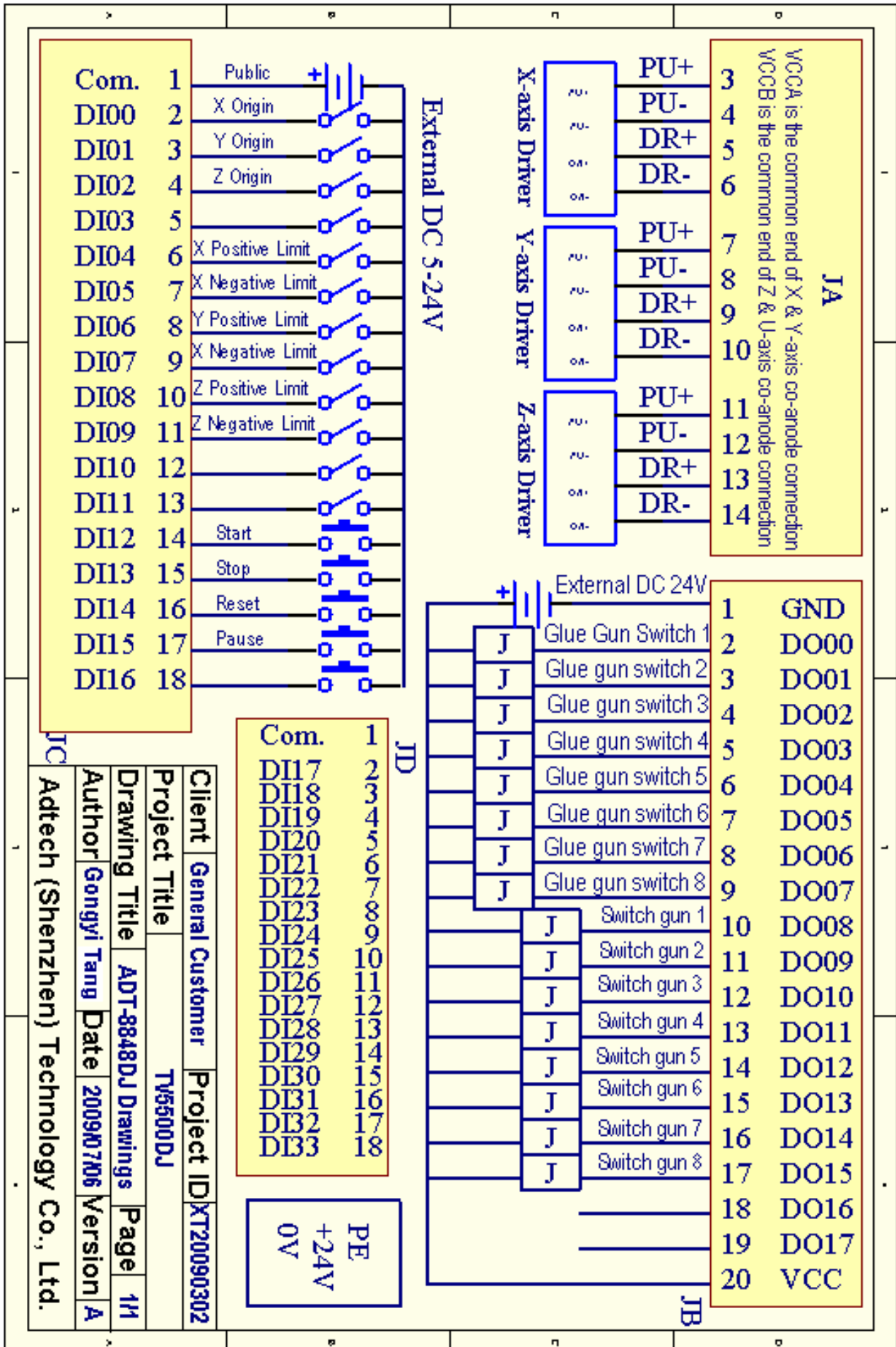
You can draw a 320\*240 black & white picture using the self-contained “Graph” program of the Windows. The start-up picture is named as “logo.bmp”, and the background picture of main interface is named as “back.bmp”, both of which are saved in “\ADT\” catalog of TV5500.

## Step 4: Hardware connecting and I/O test

In main interface, press Shift+5 to enter the interface of hardware testing:

Input status:(Black-ON)				
DI00	DI01	DI02	DI03	DI04
DI05	DI06	DI07	DI08	DI09
DI10	DI11	DI12	DI13	DI14
DI15	DI16	DI17	DI18	DI19
DI20	DI21	DI22	DI23	DI24
DI25	DI26	DI27	DI28	DI29
DI30	DI31	DI32	DI33	
Output control:(Black-ON)				
X:+00000000	D000	D001	D002	D003
Y:+00000000	D004	D005	D006	D007
Z:+00000000	D008	D009	D010	D011
U:+00000000	D012	D013	D014	D015
	D016			

DI is input signal, and DO is output signal. Please follow the wiring drawings below to test whether the positive inversion of motor is normal, and whether input signal and output signal are one-to-one corresponding.



Client	General Customer	Project ID	XT20090302
Project Title	TV5500DJ		
Drawing Title	ADT-8848DJ Drawings	Page	1/1
Author	Gongyi Tang	Date	20090706
		Version	A

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Com.	1	DI17
	2	DI18
	3	DI19
	4	DI20
	5	DI21
	6	DI22
	7	DI23
	8	DI24
	9	DI25
	10	DI26
	11	DI27
	12	DI28
	13	DI29
	14	DI30
	15	DI31
	16	DI32
	17	DI33
	18	

PE  
+24V  
0V

## Step 5: Factory parameter setting

In main interface, press Shift+0 to enter the interface of factory parameter setting:

```

Factory parameter setting
0.Password of factory parameters:
1.X Axis Setting ...
2.Y Axis Setting ...
3.Z Axis Setting ...
4.Track split precision(mm): 0.300000
5.Decelerate coefficient: 10.00000
6.Reset when STOP key up: No
7.Save position when move: No
8.Pause with start key: Yes
9.Output Config ...

Current page:1 Total page:2
    
```

```

Factory parameter setting
0.Input Config ...
1.Language select: English
2.Teach mode: Mode 1
3.Reset all parameters to default ...
4.Update program for terminal device ...

Current page:2 Total page:2
    
```

You can press Shift key and corresponding number to select swiftly the parameters needs to be edited.

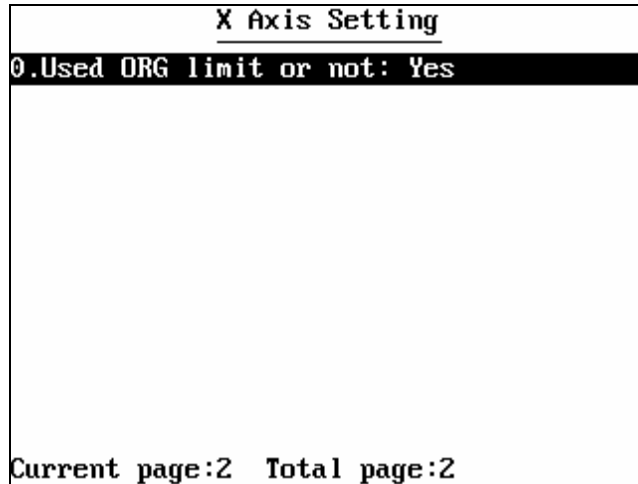
- Password for factory parameter settings: This password is required when entering into the factory parameter settings interface. You can enter the interface directly if it is empty.
- Motor characteristic settings: Including some parameters related to motor hardware

Select Motor characteristic, and then press Enter to enter the corresponding interface:

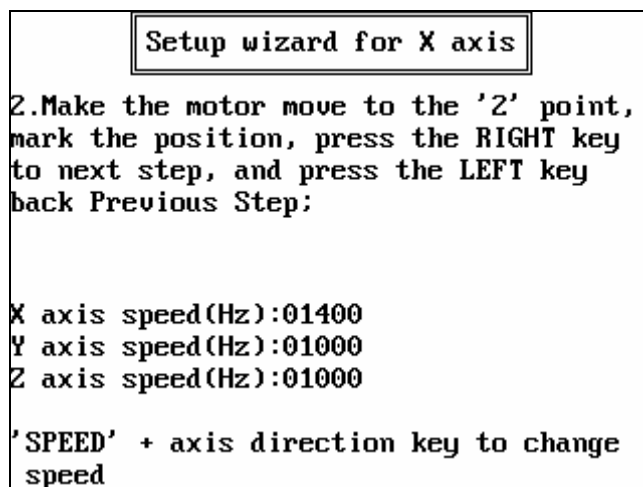
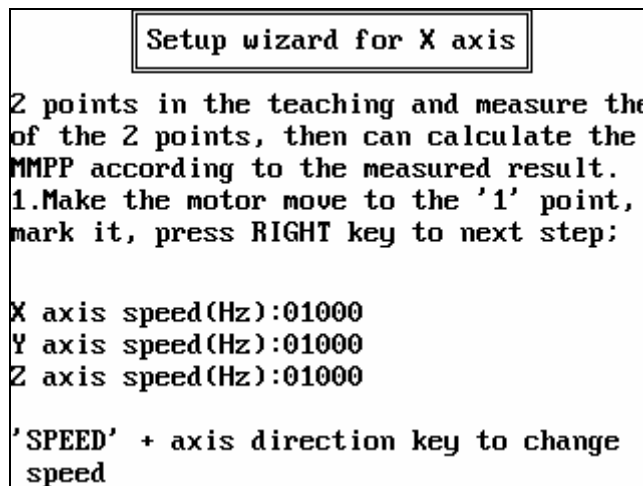
```

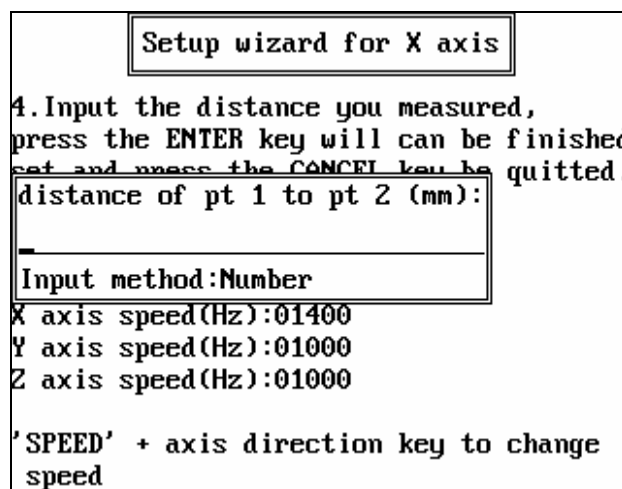
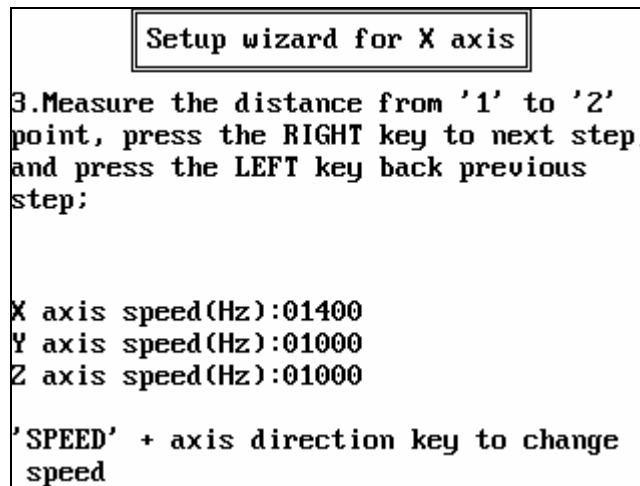
X Axis Setting
0.Pulse per round(PPR): 10000
1.Millimeter per pulse(MMPP): 0.001000
2.MMPP Setup Wizard ...
3.Reset mode: Don't Reset
4.Reset direction: Left
5.Origin senser electrical level: Low
6.Limit senser electrical level: Low
7.Effective stroke(mm): 290.0000
8.Maximum speed(mm/s): 500.0000
9.Used limit mode: Used none

Current page:1 Total page:2
    
```



- 0) Pulse per round(PPR): it means the number of pulses required for the motor to turn one round .
- 1) Mimimeter per pulse(MMPP): refers actual distance corresponding to a pulse of the motor.
- 2) MMPP Setup Wizard: Get two points on the platform, then measure the actual distance to calculate the PPR.

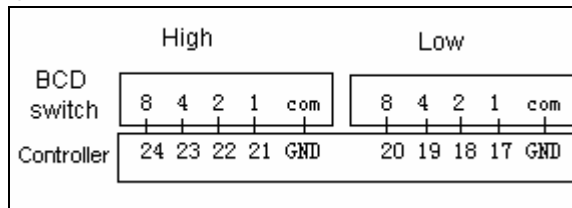




- 3) Reset Mode: There are three modes to select: Line, Circle, Don't Reset. Line is generally used for reciprocating screw, belt and other drive mode; Circle is generally used for dial cam transmission mode, choose Don't Reset, reset directly to the current position as the origin.
- 4) Reset direction: Please make sure the directions for movement of the motor and the manual button that on hand-held box are on the same direction before setting this parameter when you teach.
- 5) Origin sensor electrical level: Checking in the hardware test to find the effective level of the origin. When the motor is not at the origin, if the corresponding input signal level is low, then the effective switch level of origin is high, and versa level is low.
- 6) Limit sensor electrical level: checking in the hardware test to confirm the effective limit level. When the motor is not at the origin, if the corresponding input signal level is low, then the effective level is high, the contrary was low. The parameter modifications will not take effect until the controller is restart.
- 7) Effective stroke: This parameter will affect the scope of graphical display and the area where motor can move to when you teach, if can not pre-determine the effective stroke, you can enter the editing interface to move the motor manually, and then by checking the coordinate value, you can determine the motor's effective stroke.
- 8) Maximum speed: stepping motor's maximum speed is generally 15 r/s, the servo motor's maximum speed is generally 50 r/s, the actual value need to be tested before determination.
- 9) Use limit mode: There are four ways, 1) Used all; 2) Used limit+; 3) Used limit-; 4)Used none; the input that is not used for limit can be used as general input.

- 10) Use ORG limit or not: The default case is using origin limit function, the limit direction is determined by the movement direction of axis. If the effective stroke is positive to the origin, then it moves to negative will touch the limit of the origin. If the effective stroke is negative to the origin, then move forward to touch the origin limit.
- Track split precision: The controller splits all the graphics into tiny segments of equal length. The track split precision is the length of a tiny segment. Too small the value may affect the effect of controller motion. It is recommended to set the value to be larger than the moving distance of 1/50 round of motor turning.
  - Decelerate coefficient: The larger the value is, the less velocity decrement of the same turning will be.
  - Reset when STOP key up: Whether motor reset the same time as stop button is up.
  - Save position when move: The position will be saved if this function is active when the power is down, and begin with the saved position if restart(in the processing interface, press Shift+1 key to continue from the last power-down position),this function has a certain influence to the path display and external key response.
  - Pause when start key: While in processing state, if press the start button again, and the process will pause.
  - Output Config: you can set the corresponding output port number which is frequently used, set to -1 to turn off the feature
    - 0) Port number of working led: the output signal is low when program is stopped or dispensing, and run-time output is high.
    - 1) Port number of alarm led: indicates abnormal status in parameter set
    - 2) Jet up/down: when the gun is cylinder mode you need to congraph this parameter, otherwise set to -1.
    - 3) STOP signal output: if emergency stop button is pressed, the output signal is high, output is not low until reset again, the signal can be used for axes lock
    - 4) Output when Reset is over: output is high after completion of reset, and the output signal is low after pressing the emergency stop.
    - 5) Output when stay at stop position: the output signal is high when motor is at the stop position, output is low while moving.
    - 6) Jet 1-8 port: corresponding to open and close of glue gun 1-8.
    - 7) Switch jet 1-8 port: corresponding to switch signal of glue gun 1-8.
  - Input Config: You can set corresponding port number that is frequently used input function, set to -1 to turn off the feature.
    - 0) STEP key: This button execute a single step process
    - 1) Alarm signal input: When this signal is low, it will stop processing and generate an alarm output.
    - 2) OFFSET key: if this button is first pressed, XY will move to needle position, and pressed again within 3 seconds, Z-axis will move to position of the needle.
    - 3) Go to end position: This button is pressed, move to set the stop position (in the system parameter settings)
    - 4) Loop work button: When this button is pressed down, the state is circulation process, and up is single process state.
    - 5) Jet control input: You can use external input as the signal to control the jet's open and close.
    - 6) Jet down sensor: If use cylinder mode, corresponding to the gun arrive signal
    - 7) Jet up sensor: If use cylinder mode, corresponding to the gun back signal
    - 8) Up/down sensor electrical level: low or high
    - 9) Jet 1-8 open sensor: The signal will be detected before opening gun if use the signal, it will not move until the signal is valid
    - 10) Jet 1-8 close sensor: The signal will be detected before closing gun if use the signal, it will not move until the signal is valid
    - 11) Open/close electrical level: low or high

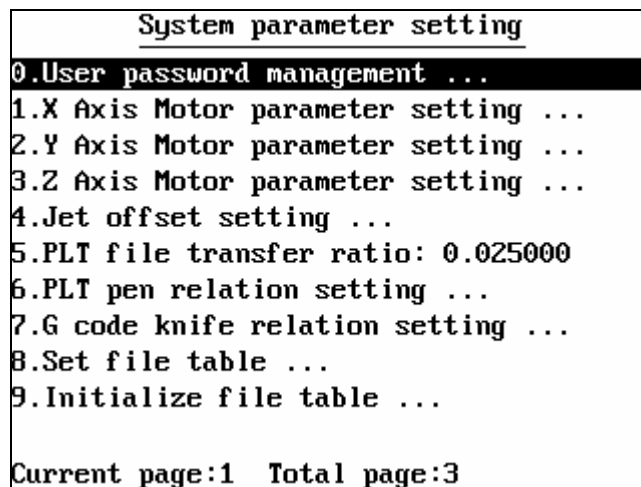
- 12) Switch jet 1-8 on sensor: if more than one epoxy glue gun are in use, the signal is detected before the gun advance, it won't move until the signal is valid.
- 13) Switch jet 1-8 off sensor: if more than one epoxy glue gun are in use, the signal is detected before the gun retreat, it won't move until the signal is valid.
- 14) Switch on/off electrical level: low or high
- 15) Start work for layer 1-8: when epoxy glue gun on multiple stratified operation, use the specified start processing signal to select a certain layer. glue gun hierarchical setting is in file parameter setting, select the "The layer of jet belong setting"
- 16) Quick select file key 1-8: Use specified signal as a quick start of specified file, file number correspondence can be set in system parameters, select "Set quick select file."
- 17) BCD switch begin port(used 8 port): You can use the BCD8421 two DIP switches to select file, the switches were occupied by two DIP switch 8 consecutive input points, such as input the starting point is set to 17, the wiring is as follows:



- Language select: English or Chinese  
Teach Mode: There are two modes:  
Mode 1: Press the speed key down is high-speed, and button up is low speed  
Mode 2: Press the button down is high speed, and press again to switch to low speed
- Reset all parameters to default: the vendor parameters, system parameters, user parameters to the factory settings.
- Update program for terminal device: first copy the 8848's client program named atdrom.bin to 8848 ADT directory, and then call the function to update 8848 program.

## Step 6: Setting system parameters

In main interface, press Shift+1 to enter the interface of system parameters setting:



```

System parameter setting
0.Debug switch: Close
1.Check reset before run: Check first
2.Auto reset time interval(s): 1.000000
3.Jet down delay(s): 0.000000
4.Jet up delay(s): 0.000000
5.Switch jet delay(s): 0.000000
6.Wait time of auto drip(s): 0.000000
7.Time of auto drip(s): 0.000000
8.Select auto drip jet number ...
9.Goto stop pos after reset: No

Current page:2 Total page:3
    
```

```

System parameter setting
0.Stop Position Setting ...
1.Set quick select file ...

Current page:3 Total page:3
    
```

- User Password Management: You can set the administrative password, and Grade 1/2/3 password, the priority level of which is descending accordingly. System parameter settings and the file management require the administrative password; processing parameter settings require Grade-1 password; file parameter settings, file edition, and PLT file conversion require Grade-2 password; and the processing file selection requires Grade-3 password.

```

User password management
0.Administrator password:
1.Level 1 password:
2.Level 2 password:
3.Level 3 password:

Current page:1 Total page:1
    
```

- Motor Parameter Settings: Set parameter related to motor speed.

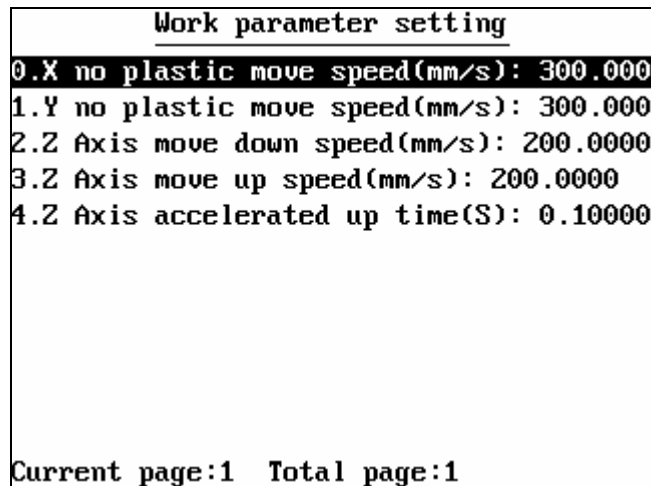
<b>X Axis Motor parameter setting</b>	
<b>0.Start speed(mm/s):</b>	<b>5.000000</b>
<b>1.Hand low speed(mm/s):</b>	<b>10.00000</b>
<b>2.Hand high speed(mm/s):</b>	<b>50.00000</b>
<b>3.Pass accelerated time(s):</b>	<b>0.050000</b>
<b>4.Reset low speed(mm/s):</b>	<b>10.00000</b>
<b>5.Reset high speed(mm/s):</b>	<b>100.0000</b>
<b>6.Reset accelerated time(s):</b>	<b>0.050000</b>
<b>7.Vernier regulation pulse:</b>	<b>2</b>
<b>Current page:1 Total page:1</b>	

- 0) Start speed: normal speed of the stepper motor should be less than the initial 3 r/s, the servo motor is less than 5 r/s.
- 1) Hand low speed: for precise location when teach manually
- 2) Hand high speed: for quick location when teach manually
- 3) Pass accelerated time: the time from start speed to shift speed, the smaller the value is, the faster the speed. If set to 0, it will move on average speed.
- 4) Reset low speed: for precise location when reset
- 5) Reset high speed: for quick location when reset
- 6) Reset accelerated time: the time from reset low speed to reset high speed, the smaller the value is, the faster the speed. If set to 0, it will move on average speed.
- 7) Vernier regulation pulse: when move the axis manually, press the movement button one time, the number of pulses will be emitted by the system correspondingly.
- Jet offset Settings: The relative position of the eight glue-guns has offset. You can use this function to set the position offset.
- PLT file transfer ratio: Because the coordinate unit of PLT file is different from that of the processing file, you need to multiply the conversion proportion to adjust it. The actual value is related to the settings of software generating PLT files.
- PLT pen relation setting: Pen of each color in PLT file corresponds to a pen number. There are eight glue guns, glue gun 1 to 8, in the processing files. This function is used to set the corresponding relationship of pen number and glue gun number.
- G code knife relation setting: Set the corresponding relationship of G-code knife number and glue gun.
- Set file table: There are 100 file numbers in total, each of which is corresponding to a processing file. When using expanded display panel, you can select the corresponding processing file by selecting the file number.
- Initialize file table: rearrange the file numbers
- Debug switch: In general processing, please set this parameter to off; otherwise, it will influence the processing effect.
- Check reset before run: If this parameter is set to be "Yes", it will check whether the motor is reset before running. It will reset automatically if it is not reset.
- Auto reset time: The controller is reset automatically after a while once electrified. Auto reset is not performed if this parameter is of negative value.
- Jet down delay/Jet up delay: If the "Factory parameter setting"/"Output Config"/ "Jet up/down" is set to a non-negative, then the gun up and down delay becomes effective. This signal will restrict the cylinder action together with the "Jet down sensor" and "Jet up sensor", waiting for the sensor arrive and the wait time should not less than the set delay time before the next gun action.
- Switch jet delay: Response time for switch gun action, and for the gun up/down sensor will restrict gun switch action, waiting for the gun up/down sensor and wait time should no less than the set delay action when the time for the next step.
- Wait time of auto drip: if the set time is up and there is no operation, it will dispensing automatically.
- Time of auto drip: the time for opening the gun when automatic dispensing
- Select auto drip jet number: select automatic dispensing of glue gun.

- Go to stop pos after reset: If set to "Yes", then it will move to the set position after reset.
- Stop Position Setting: you can set a stop position, use "Factory parameter setting"/"Go to the end postion" to move to the stop position
- Set quick select file: there are eight quickly select file number, each number corresponds to a process file, you can choose the file by setting the corresponding input signal in "Factory parameter setting"/"Input Config"/"Quick select file key 1~8"

## Step 7: Setting processing parameters

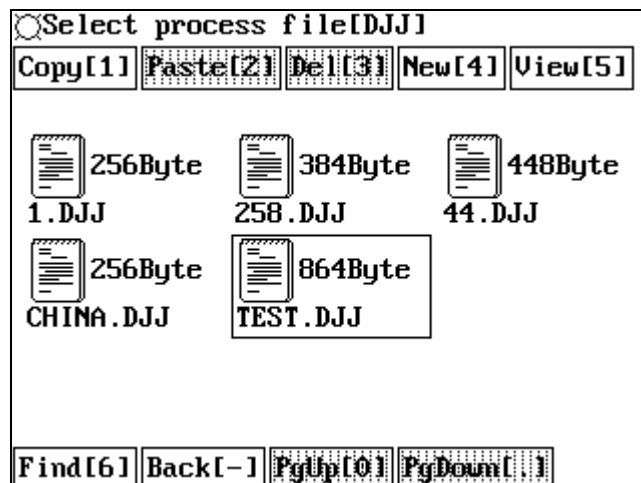
In main interface, press number key (1) to enter the interface of processing parameters setting:



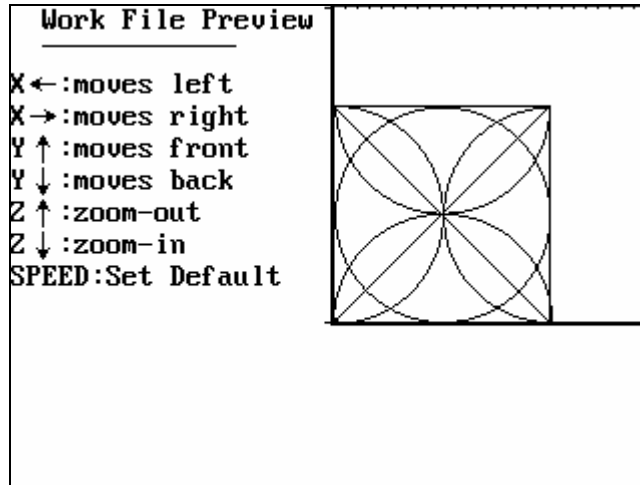
- X no plastic move speed: shift speed of X to locate swiftly
- Y no plastic move speed: shift speed of Y to locate swiftly
- Z Axis move down speed: Speed of Z-axis to locate swiftly downwards
- Z Axis move up speed: Speed of Z-axis to locate swiftly upwards
- Z Axis accelerated up time: It is the required time for changing from start speed to fast location speed. The smaller the value is, and the faster of speed change will be. If it is set to be 0, it means on average velocity.

## Step 8: Choosing/Creating processing file

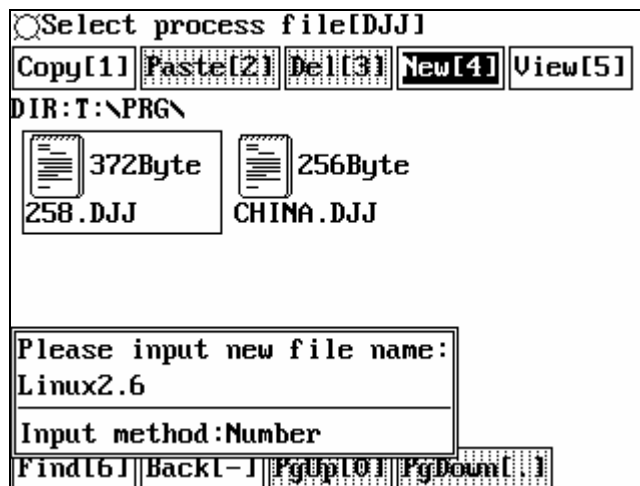
In main interface, press number key (2) to enter the processing file selection interface:



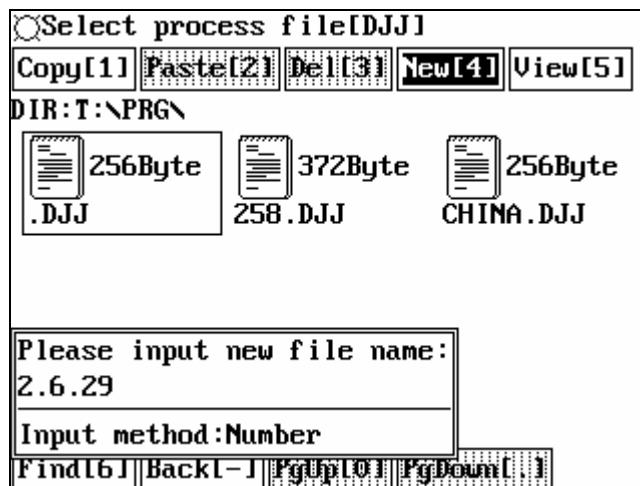
Use Up/Down/Left/Right button to select your desired file, press OK to select, and press number key to preview the selected file:



In the interface of selecting processing file, press number key (4) to create a new file:



You can press Shift key to change the input method. When the input method is in Chinese or letter input mode, you can press decimal point (.) key to input the punctuation:



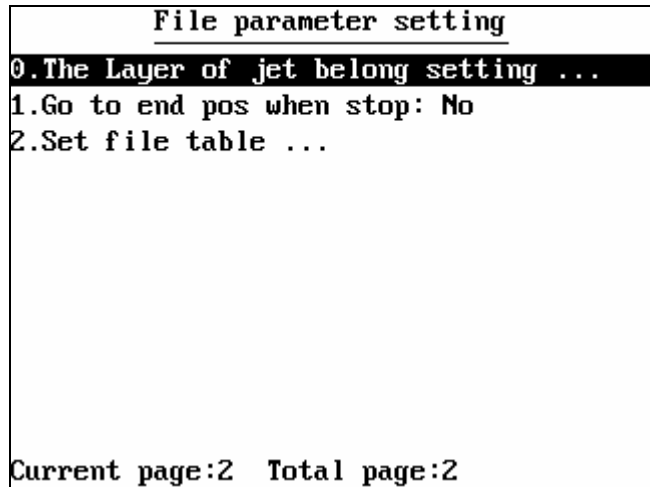
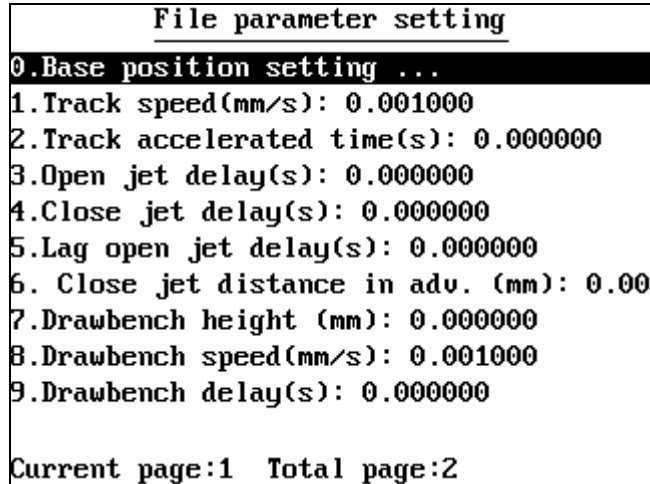
When you have finished the input, you can press OK to generate a processing file with a ".DJJ" suffix

name.

Note: The operation of processing file selection only applies to the files in remote equipment (ADT-8848). To process files in local disk (TV5500) or removable disk (U disk), please copy the files to remote equipment using file manager (can be called by pressing Shift+2 in main interface).

## Step 9: Setting file parameters

In main interface, press number key (3) to enter the interface of file parameter setting:



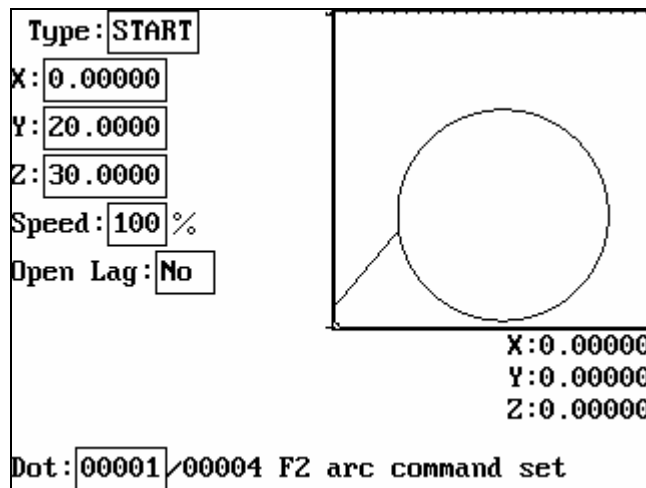
Each file has independent file parameter.

- Base position setting: set the base position of the process file, the default starting point of the file is the first point.
- Track speed: The track speed of process
- Track acceleration time: It is the time needed to change from starting speed to track speed. The smaller the value is, the faster the speed change will be. If it is set to be 0, it is processed on average of track speed.
- Open jet delay: responding time before opening glue gun
- Close jet delay: responding time before closing glue gun
- Lag open jet delay: It is the delay time before opening glue gun if lag open jet is used.
- Close jet distance in adv.: It is the distance before closing glue gun in advance if close jet in advance feature is used.

- Drawbench height: When the jet is up, it will move back at a low speed for a tiny distance, and then continue to move back. If set to 0, this function is invalid
- Drawbench speed: The speed is generally set relatively small, so that it can draw slowly.
- Drawbench delay: reach the drawbench height, pause for some time and then continue to back the gun.
- The layer of jet belong setting: Epoxy drip always use this parameter to select the layer in which is to drip (1 to 8 layers), the parameter can be input by factory configuration settings to select the corresponding input signal to process a single layer.
- Go to end pos when stop: If set to "Yes", after finish processing the file, it will move back to the stop position which is set before.
- Set file table: View and set the corresponding file number to the file. This function is convenient to choose files in numerical way.

## Step 10: Editing files

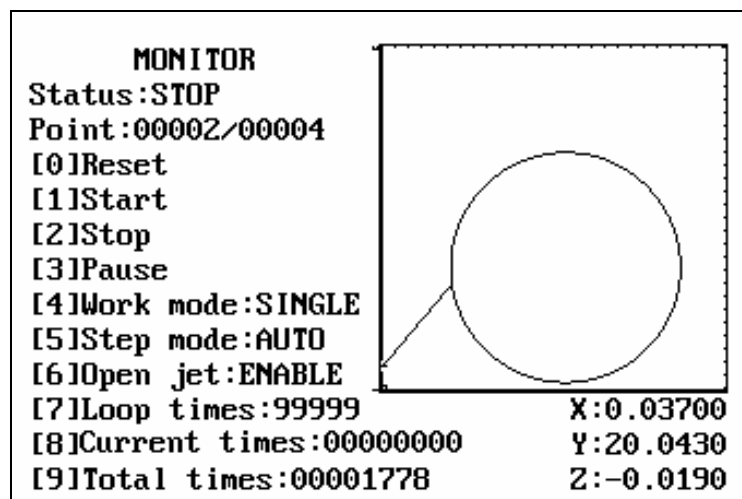
In main interface, press number key (4) to enter the file editorial interface:



For detailed functions of file edition, please see Chapter III “*Details of File Edition*”.

## Step 11: Processing operation

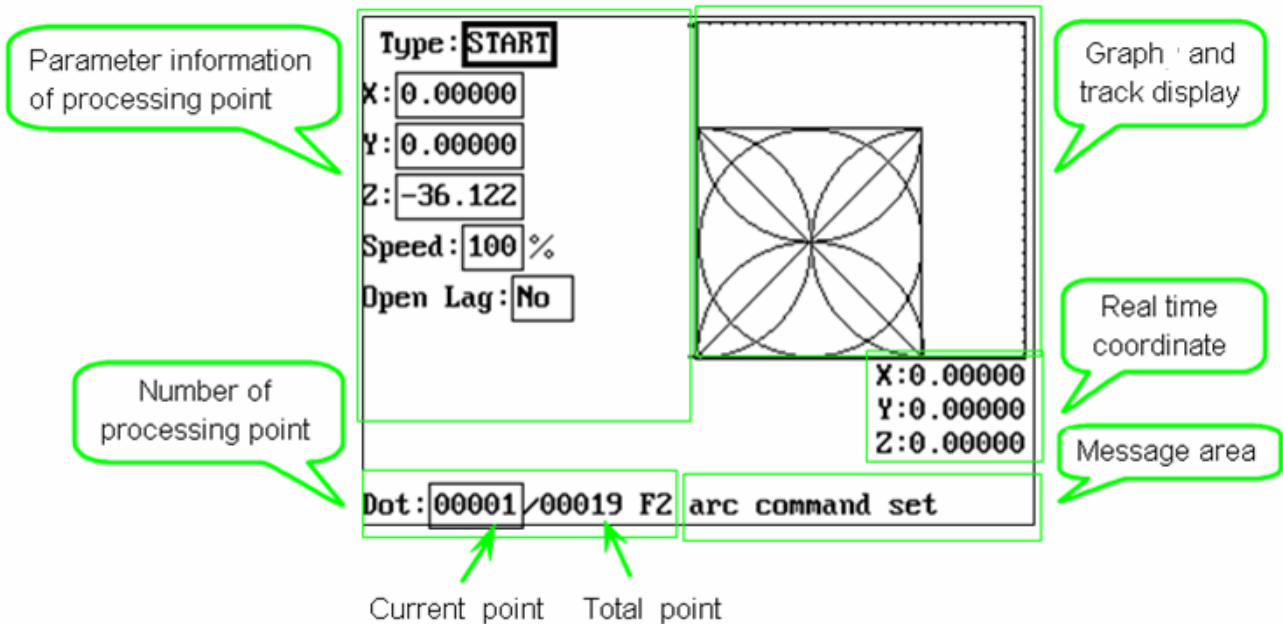
In main interface, press number key (5) to enter processing interface:



- Status: the current operating status, there are such status like "RUN", "STOP", "PAUSE", "RESET" etc.
- Point: the current processing point
- Reset: Press "0" to reset
- Start: Press "1" to start
- Stop: Press "2" to stop
- Pause: Press "3" to pause
- Work mode: Press "4" to switch between cycle processing and single processing. Cycle processing means to process following the set cycle time. Single processing means to process once after start, without cycle processing.
- Step mode: processing: Press "5" to switch between auto process and single step process. Single step processing means to run a processing point for each operation. Auto processing means to run the processing points in sequence automatically.
- Open jet: You can press "6" key to enable or disable dispensing.
- Loop times: Show the set cycle times of processing; you can press "7" to enter user parameter setting to set the cycle processing times.
- Current times: Show the cycle times of current process, you can press "8" to clear the number.
- Total of current processing: Show the total times of current process; you can press "9" to clear the number.
- You can press Shift +Z to preview the processing files.
- You can press Shift +2 to start from any point.

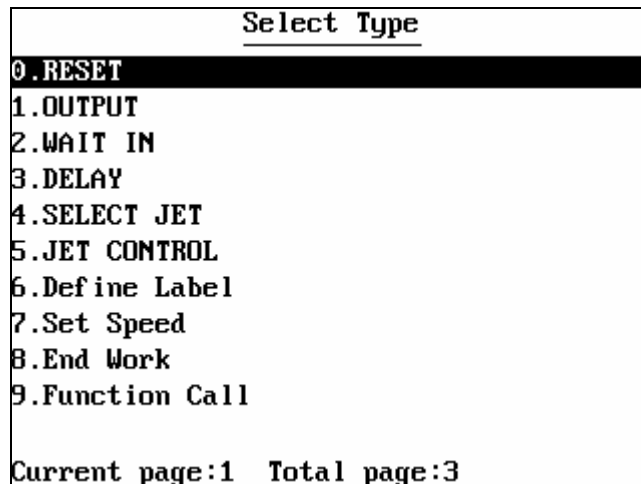
# Chapter III Details of File Edition

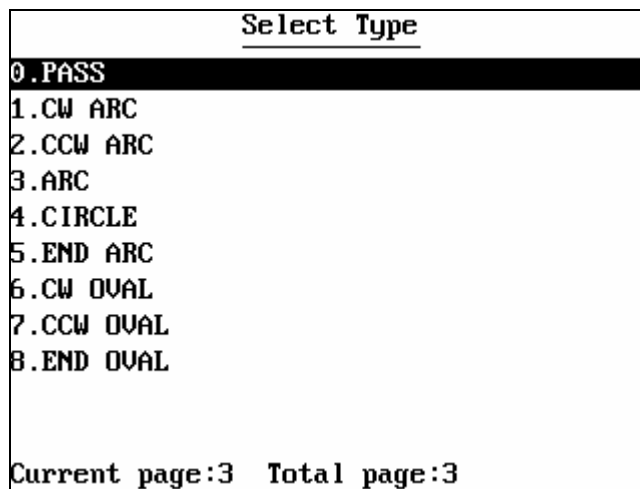
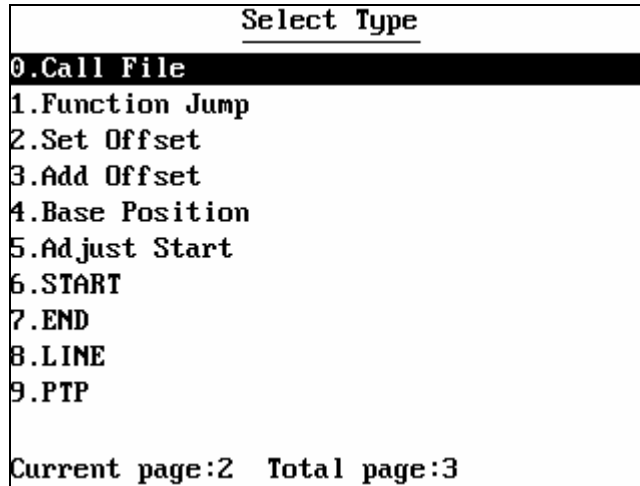
## 1. File editorial interface



## 2. Selecting instruction type of processing

In file editorial interface, use Up/Down key to move the cursor to “Type” column, and press OK, an interface for selecting type of processing point appears:





- Reset: Specify one or some motors to reset; the appointed motor go on performing the next instruction after the reset
- Output: Specify some port outputs to switch on or off signal, and keep performing the next instruction after the set delay time
- Wait in: Wait for some input ports to open/close to perform the next action; delay time can be set, if it is set to be 0, it will not continue to process until the signal arrive. If delay time is not zero. If time is out to delay time, it will jump to the appointed label to start to process.
- Delay: Go on performing the next step after the set delay time; if the delay time is 0, the program is paused until Start or Pause key is pressed again.
- Select JET: Select the operating glue gun. It is default to use the first one.
- JET CONTROL: It is capable of controlling a glue gun to open and close independently. This instruction is usually used in graph importing function. Generally, “START” and “END” or “PTP” instructions are used to control the open/close of glue gun.
- Define Label: The label can be named by numbers, letters, symbols or Chinese, the program will jump to the position where the program called or enter the corresponding label when jump.
- Set Speed: in unit of mm / sec, can only set the track speed and can not set shift speed, set to 0 means to restore to the initial track speed.
- End Work: This is the end of processing which the program will no longer execute.
- Function Call: You can set these labels, such as "File Number", "Start Label" , "End Label", "Call Times".
  - File Number: the file to be called by the program, set to null (directly press the OK button) to call the contents of this document. The correspondence of file number and file can be set in "System parameter setting"/"Set file table" or "File parameter setting"/"Set file table".
  - Start Label, End label: labels must have been defined, before or after the line, or specify file to be

called, if set to empty (input directly press the OK button) , it means to call from the beginning of the file line to the end of the line.

- Call Times: If set to 0, it can be called unlimited.
- Call File: You can set such parameters: "File number", "Call times", "Used start pos", "X/Y/Z Start"
  - File number: the file to be called by the program, the File number can not be set to be empty. The correspondence between File number and the file can be set in "System parameter setting"/"Set file table" or "File parameter setting"/"Set file table"
  - Call times: Can be called unlimited if set to 0
  - Use start pos: The called file will adjust start position to this new position if using start position.
- Function Jump: jump to the specified label, if the label is set to be empty (directly press OK), it will jump to the end of the program.
- Set Offset: The actual position=coordinates which is set + Offset
- Add Offset: Offset increase or decrease
- Base Position: Play a role of adjusting the graphical, not add any action, it is generally defined in the start of a file for calibration.
- Adjust Start: adjust the start point of the graph which is called by the program, generally used with instruction of Function Call.
- START: It is start point of track. When process, Z-axis will move down the glue gun to the start point and open the gun. You can set whether use delay open gun at the start point. If so, it does not open the glue gun when moved to the starting point, but opening it after the set delay time. This feature is mainly to prevent piling glue at the start point.
- END: It is the end-point of track. When process, close the glue gun at the end-point, and make Z-axis return to the needle height position. A piece of graphic can have several starting points and end-points. You can set whether to close the glue gun in advance at the endpoint. If so, it will close the glue gun in advance at the set distance before the endpoint. This function is used to avoid the piling glue at the endpoint.
- LINE: Run to this coordinate with straight-line mode.
- PTP: Locate the XY quickly first, and then advance the glue gun at Z-axis. After that, open the glue gun for a while, and then close it; then, Z-axis returns to the needle height position.
- PASS: XYZ is located to this point quickly.
- CW ARC & CCW ARC: The previous point and next point must be bonded, forming a circular arc by specifying circular arc starting point, semi-diameter, and circular arc end-point.
- ARC: The previous point and next point must be bonded, forming a circular arc by specifying the starting point of circular arc, a point on the arc, and the circular arc end-point.
- CIRCLE: The previous point and next point must be bonded, forming a circular arc by specifying the starting point of circular arc, a point on the arc, and the other point on circular arc.
- END ARC: This point should follow the instruction of ARC, CW ARC, CCW ARC, and CIRCLE to bind with the previous two points to form a circular arc. If the end-point of ARC is the end-point of track, the end-point of circular arc can be replaced by "END" instruction.
- CW OVAL & CCW OVAL: The previous point and next point must be bonded, forming an oval by specifying the starting point of oval, oval center, semi-diameter of long/short axis, and the oval end-point.
- END OVAL: This point should follow the instruction of clockwise oval and anti-clockwise oval to bind with the previous two points to form an oval. If the end-point of oval is the end-point of track, the end-point of oval can be replaced by "END" instruction.

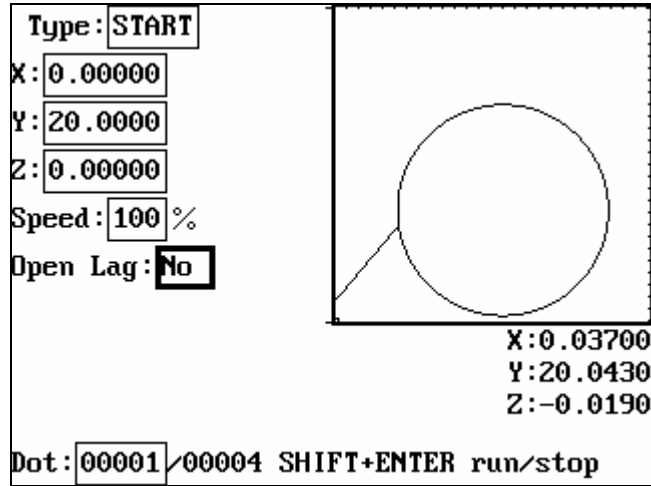
### 3. Modifying data of processing point

There are two ways of modifying data of processing point, manual input and teach.

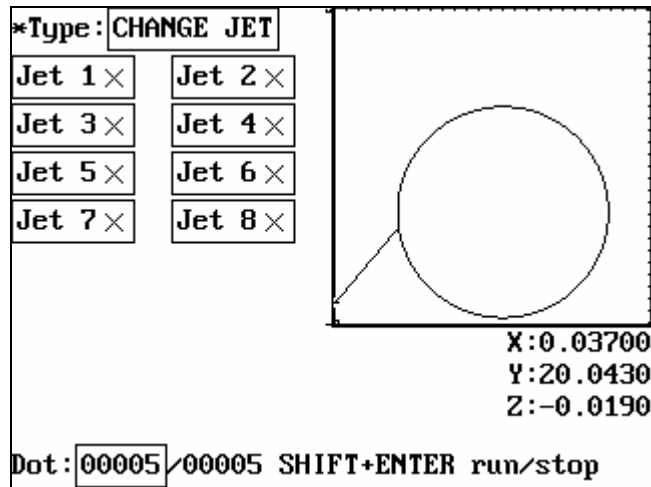
### 1) Manual input

Use Up/Down key to move the cursor to the data column needs to be modified:

If the format of this data column is numerical value, you can input the number directly:



If it has multi options, you can press OK to select content:



You can use Left/Right to select the previous/next processing point, Shift +Left to select the first processing point, Shift +Right to select the last processing point. You can also use Up/Down key to move the cursor to “Dot”, and input the number of point to select the point directly.

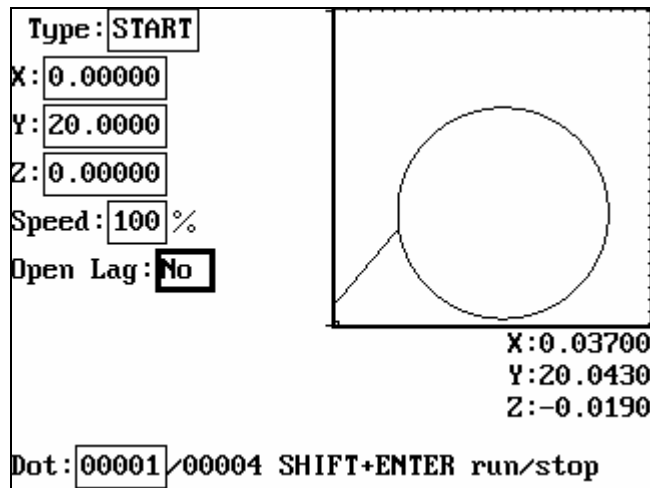
Note: If the file is not saved after the modification, there will be a “\*” prompt message next to the type column. You can press Shift+F2 to save the file. To run or test the file, you have to save the file first; otherwise, it will run the data before saving.

### 2) Teach

Except inputting directly, the coordinates of processing point can also be input in the teach way: First, select the processing type. Only such types as “START”, “LINE”, “END”, “PTP”, “PASS”, “CW ARC”, “CIRCLE”, “END ARC”, “CW OVAL”, “CCW ARC”, and “END ARC” can be taught. And only the needle height of “PTP” and “END” can be taught.

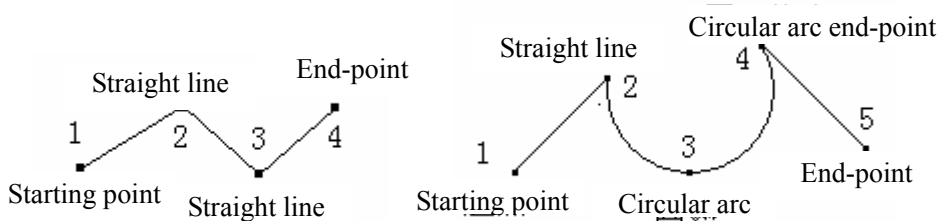
Once the process point is selected, use manual key to move the motor to the target position, and press “Teach” key, the current coordinates will be saved in the processing point. For the convenience of continuous teach, the current point number will become the next one when teach key is pressed. Therefore, in order to view the teach result, you have to use Left key to return to the previous point.

When teach the needle height, select the processing type (must be “END” or “PTP”), move Z-axis to the proper needle height, and press “Height” key to save the current Z-axis coordinate in “Needle height” parameters of processing point.

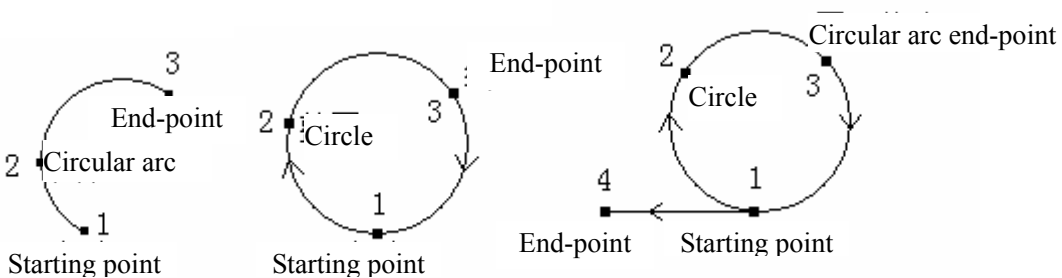


#### 4. Constraint condition for the type of processing point

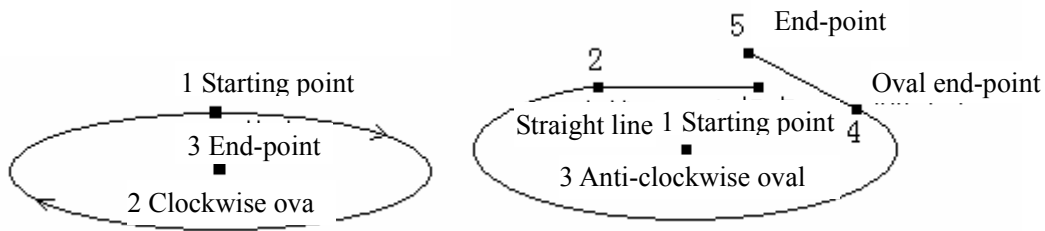
- A continuous track should be started with a “Starting point”, and ended with an “End point”, which may contain processing point types such as straight line, circular arc, and oval midway.



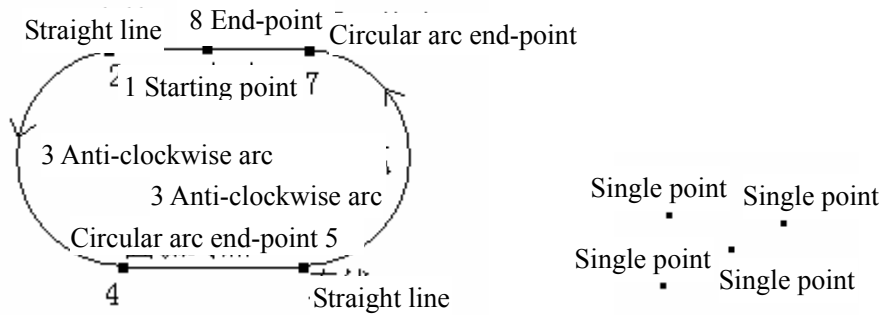
- “Clockwise circular arc”, “Anti-clockwise circular arc”, “Circular arc”, “Circle”, “Clockwise oval”, and “Anti-clockwise oval” instructions should not be used independently, and should be combined with the previous point and the next point to form a graph.



- The End Point of “Circle” is superposed with the starting point. The “End Point” is for auxiliary effect only.



- The oval center and semi-diameter of long and short axes are given out by “Clockwise oval”, and “Anti-clockwise oval”. The coordinates of oval Starting and End Points are given out by the previous point and the next point (Because the oval starting point, end-point, and center are not convenient to regulate, you can use the “Common graph” in advanced edition to regulate a rectangle to help complete the regulation of an oval).



- “Anti-clockwise circular arc” and “Clockwise circular arc” instructions only specify the arc semi-diameter, and the coordinates of arc starting point and end-point. They are given out by the previous and next points.
- The semi-diameter of the “Anti-clockwise circular arc” and “Clockwise circular arc” should not be set to be less than half of distance between these two points; otherwise, it cannot form a circular arc.
- The regulation of “Single point” is much easier; however, “Single point” cannot be used combining with circular arc or oval instruction.
- “Travel” instruction means to locate the XYZ axes to the appointed coordinates swiftly at the same time without opening or closing the glue gun. “Starting point” instruction is to locate XY axes swiftly to the appointed position, and then locate the Z-axis, together with opening the glue gun.
- Only “End-point” and “Single point” can regulate the “Needle height”.

## 5. Skills for continuous teach

To easy and convenient to finish the regulation of a graph, three switching shortcuts are set:

F1 key: Switch the type of current processing point to Origin, Straight line, and End-point.

F2 key: Switch the type of current processing point to Circular arc, Circle, and Circular arc end-point.

F3 key: Switch the type of current processing point to Single point and Travel.

In addition, the software contains intelligent judgment function; it can generate the type of next point according to the type of previous point. For example, if the previous point is “Starting point”, the next point will be the “Straight line” automatically. If the previous point is “End point”, the next point will be the “Starting point”; if the previous point is “Circular arc”, the next point will be the “Circular arc end-point”; and if the previous point is “Single point”, the next point will be the “Single point”. In addition, the set parameters, such as “Single point time”, “Needle height”, and “Speed”, will be recorded

automatically and applied to the next point. When inserting a new processing point, it will generate the processing point of proper type according to the types of processing point before and after.

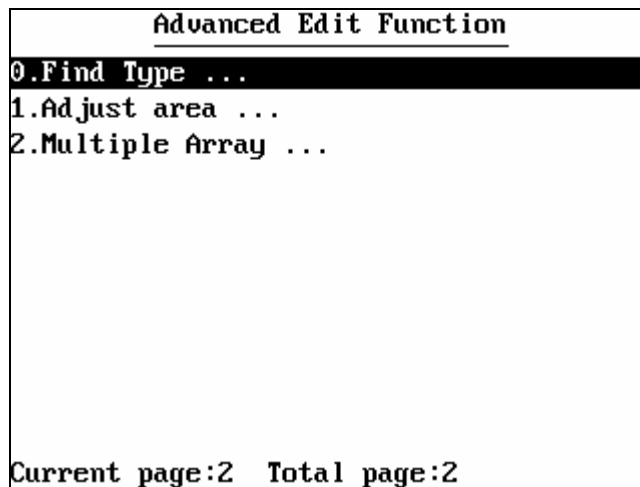
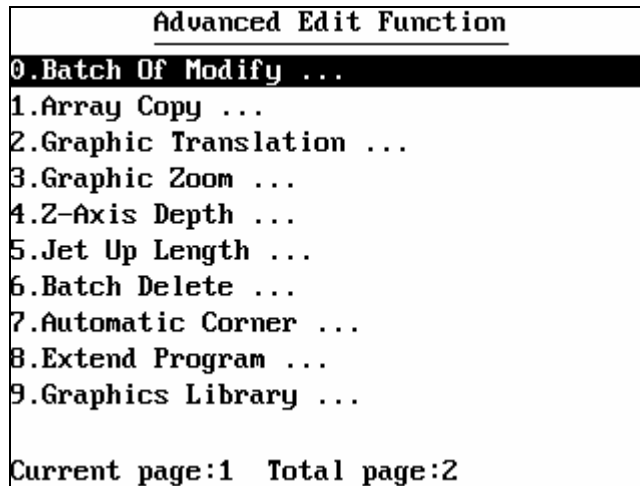
## 6. List of editorial interface key function

- Shift+ OK: Run/Pause
- Shift+ Cancel: Stop/Reset
- XYZ manual key: Move the motor manually
- Speed: Switch the high and low speed manually
- Tech-in key: Save the current coordinate in the current point and jump to the next point
- Needle height: Save the current Z-axis in the needle height parameters of the current point
- Insert: Insert a point ahead of the current point
- Delete: Delete the current point
- Positioning key: Set the motor to the current point
- Up/Down: Select data need to be modified
- OK: Make the modification
- Left/Right: View the previous/next point
- F1: Type switching (Starting point/straight line/end point)
- F2: Type switching (Circular arc/Circle/Circular arc end point)
- F3: Type switching (Single point/Travel)
- Shift+F1: Call the help files
- Shift+F2: Save files
- Shift+F3: Advanced editorial functions
- Shift+ Delete: Delete all
- Shift+ Left key: Jump to the first point
- Shift+ Right key: Jump to the last point
- Shift+ Positioning: Jump to the latest point from the current position
- Shift+ decimal point (.): Move the picture horizontally
- Shift+ Negative Sign (-): Adjust the depth of Z-axis uniformly
- Shift+0: Browse the appointed processing point
- Cancel key: Exit the editorial interface

# Advanced Applications

## 1. Advanced editorial functions

In file editorial interface, you can press Shift+F3 to call the advanced edit functions:



You can press Shift + corresponding number key to select your desired edition function swiftly.

### 1) Batch Of Modify

Batch modification is used to modify large amount of data.

```

    Batch Of Modify
    Modified range:
    From point: 00001
    To point: 00004
    Modified field: X Pos
    Modified Condition: Always
    Modified mode: Set value
    Set value: -50
    Press SHIFT+ENTER for batch of modify
  
```

- Modified range: Number of the start process point and end process point that need to be modified
- Modified field: Following contents are available to modify:

```

    Select modified contents
    0.X Pos
    1.Y Pos
    2.Z Pos
    3.R Pos
    4.Jet Up Pos
    5.Speed
    6.Open Delay
    7.Lag Open
    8.Adv. Close
    9.Type
    Current page:1 Total page:2
  
```

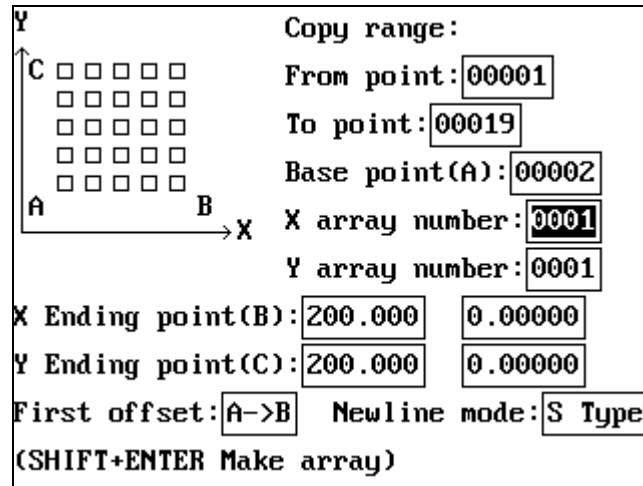
```

    Select modified contents
    0.Arc Radius
    Current page:2 Total page:2
  
```

- Modified condition: You can specify a certain data , and the data need to be modified to be equal to, not equal to, more than, or less than an appoint value.
- Modified mode: It includes Appointing Value, Appointing Increment, and Appointing Rate. Appointed Value means to set the modified contents as the appointed value. Appointing Increment means to add a value to the original value (if the appointed value is a negative number, it decreases the value). Appointing Rate means to multiply the original value with a value.

## 2) Array Copy

Array copy function is used to replicate a single graph to multiple copies in the array way, it can generate a parallelogram array as well.



- Copy range: the number of start process point and end process point of graph needs to be copied
- Base point (A): It is a certain reference point on the graph needs to be copied. Teach the distance between X and Y direction needs to take this point as reference. It is default to select the first point of the graph.
- X array number: Group numbers of the array in X direction
- Y array number: Group numbers of the array in Y direction; if you just copy once, set the group numbers in XY direction to 1.
- X Ending point (B): This coordinate should be the coordinate of last group in X direction that is corresponding to the reference point A.
- Y Ending point (B): This coordinate should be the coordinate of last group in Y direction that is corresponding to the reference point A.
- First offset: From A to B, or from A to C
- New line mode: It includes S-shape and Z-shape of changing new line. Z-shape: when the process of a line is finished, it will return to the starting point to start processing the next line. S-shape: It does not return to the starting point, but processing the next line in a turn-back way.
- Press "Position" button can locate to the reference point

## 3) Graphic Translation

This function is mainly used to adjust the XY coordinates of graphic uniformly. First, confirm the starting point of the graph, and then move XY-axis to XY coordinate that the start point needs to move. After having applied this function, the whole graphic is moved horizontally to the current position automatically. This function can be called by pressing Shift +decimal key in the file editorial interface.

## 4) Graphic Zoom

This function is used to zoom in and zoom out the value of XY coordinates. Indifferent from the batch modification way, this function can zoom in and out the semi-diameter of the circular arc and oval.

## 5) Z-axis Depth

This function is used to adjust the Z-axis coordinate and needle height uniformly. First, confirm the starting point of the graph, and then move Z-axis to Z coordinate that the point needs to adjust. After having applied this function, the Z-axis coordinates and the needle height of the whole graph will be adjusted according to the value of Z-axis. This function can be called out by pressing Shift +Negative (-) key in the file editorial interface.

## 6) Jet Up Length(Needle Height)

This function changes the value of needle height by way of relative to Z-axis coordinate.

For example, the processing point type of a point is “PTP”, Z-axis coordinate is -70, if you set the needle lifting height to be 30, the needle height of this point is then changed to  $(-70+30) = -40$ .

**7) Batch Delete**

Select the range of processing points that need to be deleted, and press Shift +OK to delete. To delete all, you can press Shift +Delete in the file editorial interface.

**8) Automatic Corner**

This function is used to change the break angle to circular arc. The arc length of circular arc can be set. If the side length of these two break angles is not enough for changing to the set arc length, the fillet arc length will be reduced automatically to fit for the side length of break angle.

**Automatic Corner**

Modified range:

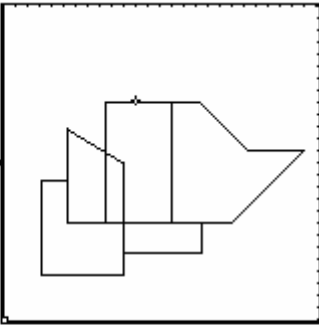
From point:

To point:

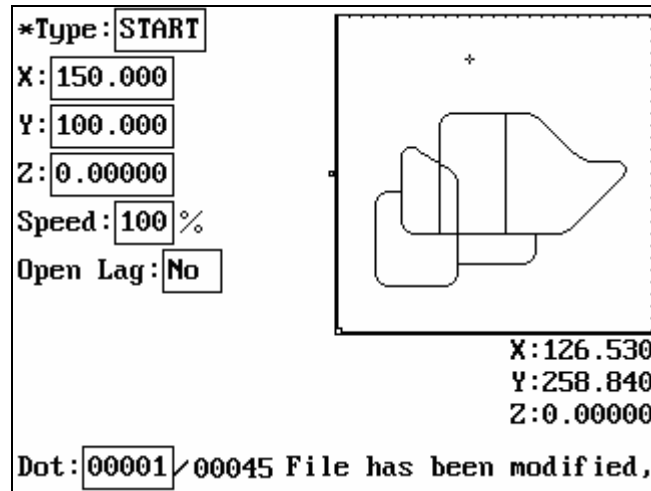
Arc length: 5

SHIFT+ENTER begin auto corner.

Tips: backup file before modified.

<p>*Type: <input type="text" value="START"/></p> <p>X: <input type="text" value="150.000"/></p> <p>Y: <input type="text" value="100.000"/></p> <p>Z: <input type="text" value="0.00000"/></p> <p>Speed: <input type="text" value="100"/>%</p> <p>Open Lag: <input type="text" value="No"/></p>	
<p>X:126.530</p> <p>Y:208.750</p> <p>Z:0.00000</p>	
<p>Dot: <input type="text" value="00001"/> / 00045 File has been modified,</p>	

Before performing automatic corner



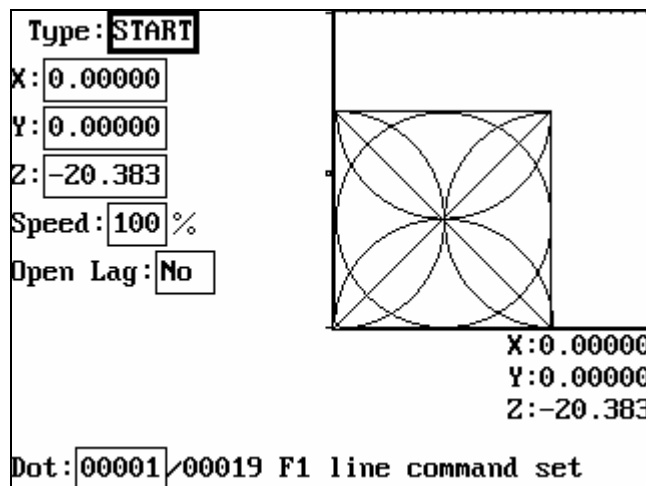
After performing automatic corner

**9) Extend Program**

This function will extend the instruction of "Function Call" and "Call File" which is available for selection, and directly insert into the location of the instruction. Note that instruction whose calls times is 0 can not be carried out. Editing interface is also available at press Shift +2 to expand the current instruction of a "Function Call" or "Call File", other types can not be carried out.

**10) Graphics Library**

- Test Pattern
  - Step 1: Select a plane for the test pattern
  - Step 2: Input the length of the side
  - Step 3: Teach coordinates of the third axis
  - Step 4: Generate the following graph:



You can move the graph to a proper position by functions of Graphic Translation or Batch Of Modify.

- Oval

```

Generate oval

SHIFT+X←:Teach left vetx:Not Teach
SHIFT+X→:Teach right vetx:Not Teach
SHIFT+Y↓:Teach down Vetx:Not Teach
SHIFT+Y↑:Teach up vertex:Not Teach
SHIFT+Z↓:Teach start:Not Teach
SHIFT+Z↑:Teach end:Not Teach
[1]Oval direction: CW

SHIFT+ENTER: Insert oval to current point
    
```

Press Shift+ XY key in the interface of oval to teach all vertexes of the oval (To generate an oval, you need to regulate at least one vertex at both X and Y directions). Press the combination key once to teach the coordinate, and press for the second time to cancel the taught coordinates. Once starting point and end point have been taught, press number key (1) to select the oval direction, and then press Shift +OK to generate the oval. The data of all vertexes in this interface are saved at all times, even you exit the interface. Therefore, you can exit midway while teaching the oval and the data will still be there when you re-enter.

\*Type: **START**

X:

Y:

Z:

Speed:  %

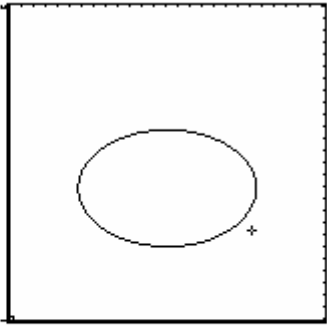
Open Lag:

X: 172.725

Y: 80.5780

Z: 0.00000

Dot:  / 00003 F1 line command set



- Runway

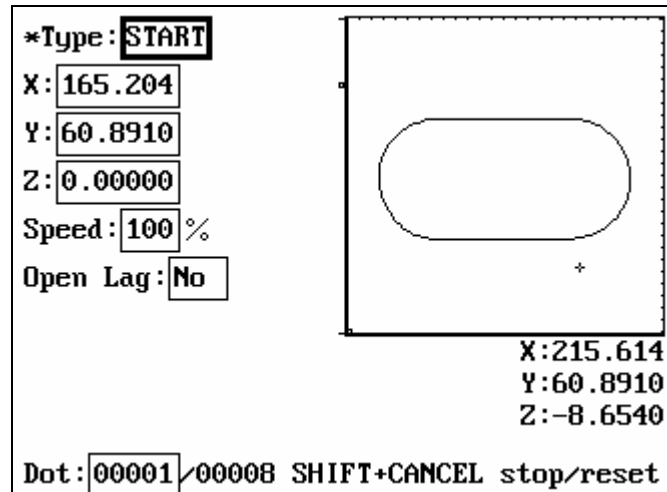
```

Generate runway

SHIFT+X←:Teach left vetx:Not Teach
SHIFT+X→:Teach right vetx:Not Teach
SHIFT+Y↓:Teach down Vetx:Not Teach
SHIFT+Y↑:Teach up vertex:Not Teach
[0]Start point: Middle of left or down
[1]Runway direction: CW

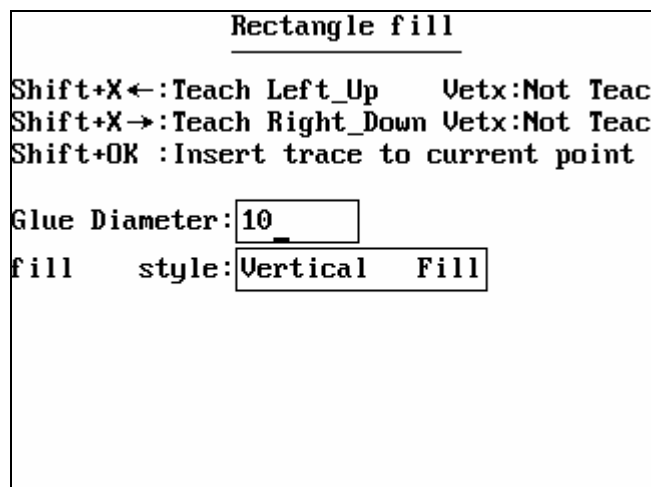
SHIFT+ENTER: Insert track to
current point
    
```

Press Shift+ XY key in the interface of generated track to teach all vertexes of the track. Press the combination key once to teach the coordinate, and press for the second time to cancel the taught coordinates. You can press number key (0) to select the starting point (the starting point can only occur in the middle of the long side), press 1 to select the track direction, and press Shift +OK to generate the track. The data of all vertexes in this interface are saved at all times, even you exit the interface. Therefore, you can exit midway while teaching the oval and the data will still be there when you re-enter.

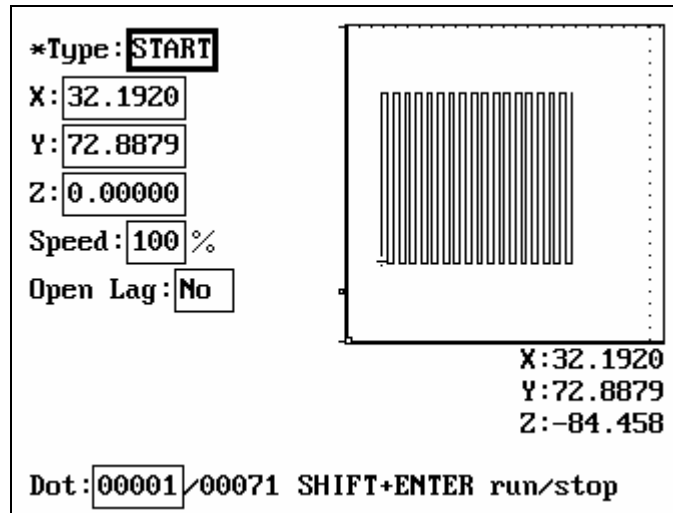


The generated track graph

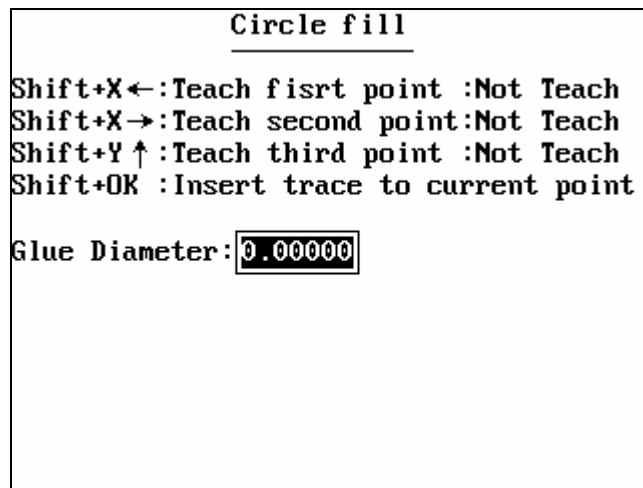
- Rectangle fill



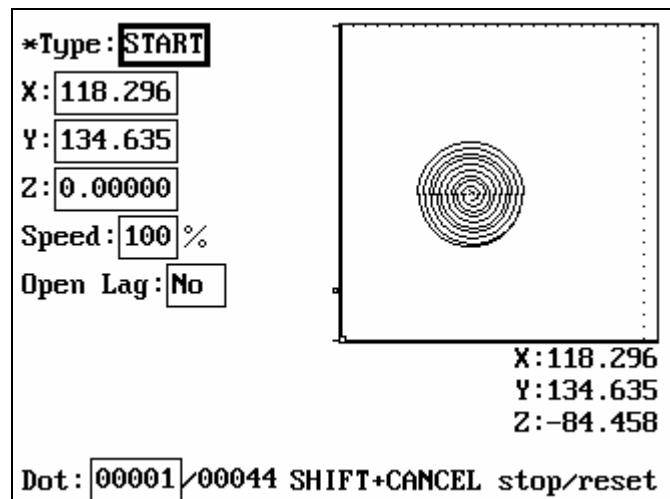
Teach the diagonal points of the rectangle, and the rectangle fill graphic will be generated automatically. If the diameter of the glue gun can not be divisible by the length of the side, there will be indicative messages which show that whether to enlarge or reduce the diameter of the glue gun so that it will be divisible by the length of side.



- Circle fill

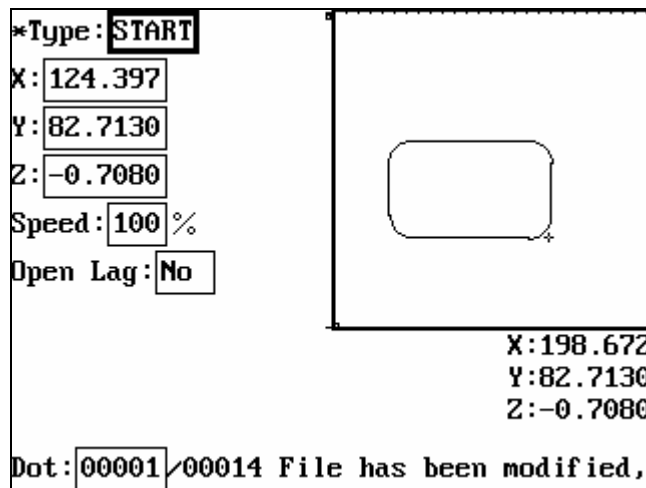
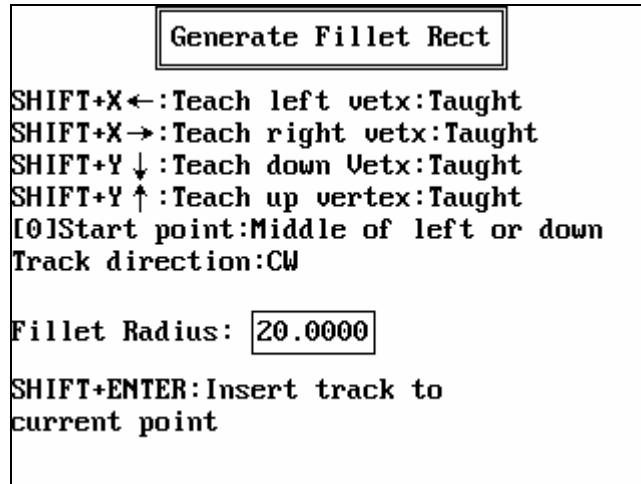


Teach three points of the circle which needs to be filled, and it will automatically generate a spiral-like filled shape. When the diameter of the glue gun can not be divisible by the radius of the circle, there will be indicative messages that whether to enlarge or reduce the diameter of the glue gun to make it can be divisible by the radius of the circle.



- Fillet Rect

Follow the steps as is showing, you will get a rectangle with automatic cornered.



### 11) Find Type

Find the Nth same process point with the specified type, press the Shift +9 quick access to the file editing interface, and then press Shift + the up arrow or Shift + down arrow to find previous or next point of this type.

### 12) Adjust area

Adjust the coordinates of the graphics between the current point and the next reference point. The first point of the graph in the area will be adjusted to the current coordinates, the other parts of the graphics will be adjusted as well. This feature is mainly used in the partial adjustment of area in the graphics array, the array of graphics need a reference point, the reference point is used to adjust the height of needle, and does not produce the actual movement. When you adjust, first use the feature of "Find Type" to find the reference point which needs to be adjusted, and then do partial adjustment.

### 13) Multiple Array

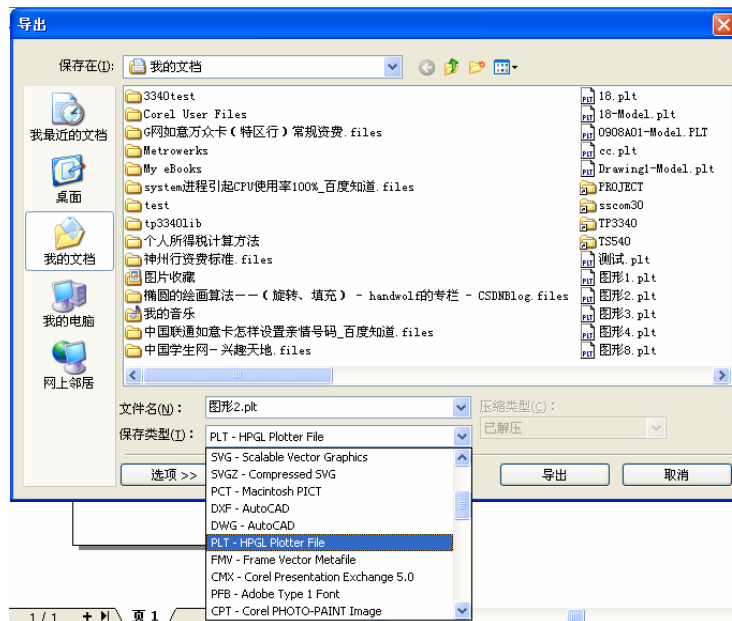
## 2. PLT Graph Importing Function

Set the PLT file conversion proportion in system parameters, and then press Shift +6 in the main interface to select PLT files to convert them into processing files of the same name ended with .DJJ suffix. After that, press Shift +2 to call file manager to copy the processing files to ADT-8848 for testing and processing. PLT format is a format of printing file containing XY coordinate, starting point, end-point, and color of graph without info about Z-axis coordinate. Therefore, graph after conversion does not have Z-axis coordinate and needle height value. You can use the batch modification function to modify the Z-axis coordinate and needle height. There are many kinds of software generating PLT files. Here, we just introduce the ways of generating PLT files using two kinds of widely used software: CorelDRAW 12 and AutoCAD 2004. The interface may be a little bit different in case of different version.

### 1) Use CorelDRAW 12 to generate PLT files

<1>. Draw the graph

<2>. Click menu “File” → “Export”, and a dialog box appears as follows:

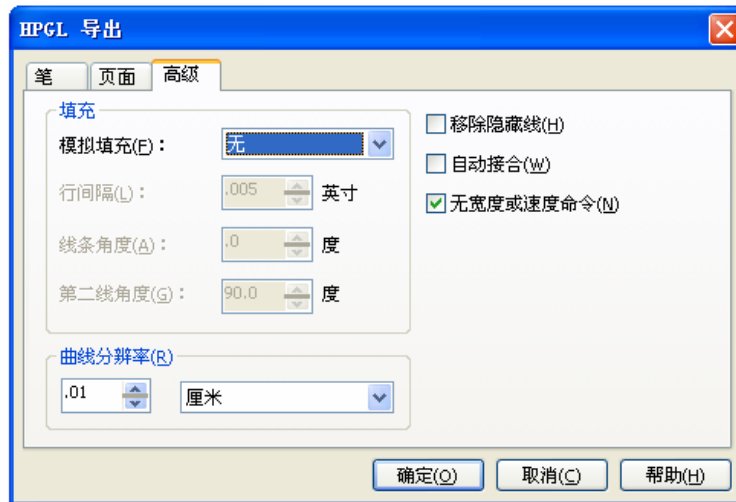


<3>. Select PLT—HPGL Plotter File in “Type”, and click “Export”, a dialog appears as follows:





<4>. In “Page” tab, select “Bottom left” in “Graphic plotter origin”, and leave other settings as default.

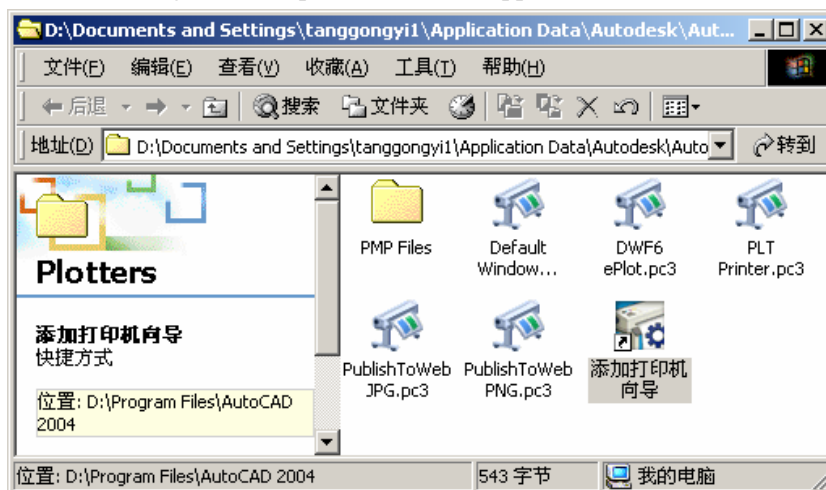


<5>. In “Advance” tab, tick off “No wide or speed order”, and leave others as default. Then, press OK to generate PLT file.

## 2) Use AutoCAD2004 to generate PLT files

Please check whether there is a printer named “Universal SHPGL” in printer type. If no, follow the following steps to install:

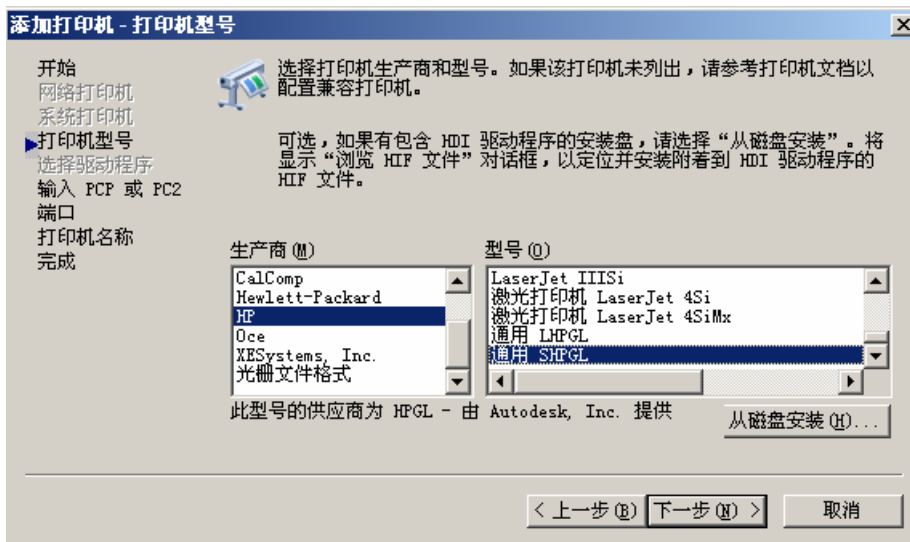
Click menu “File” → “Printer Manager”, and a picture as below appears



Double click the icon of “Add Printer Wizard”, and click “Next” to enter the following interface:



Continue to click “Next”

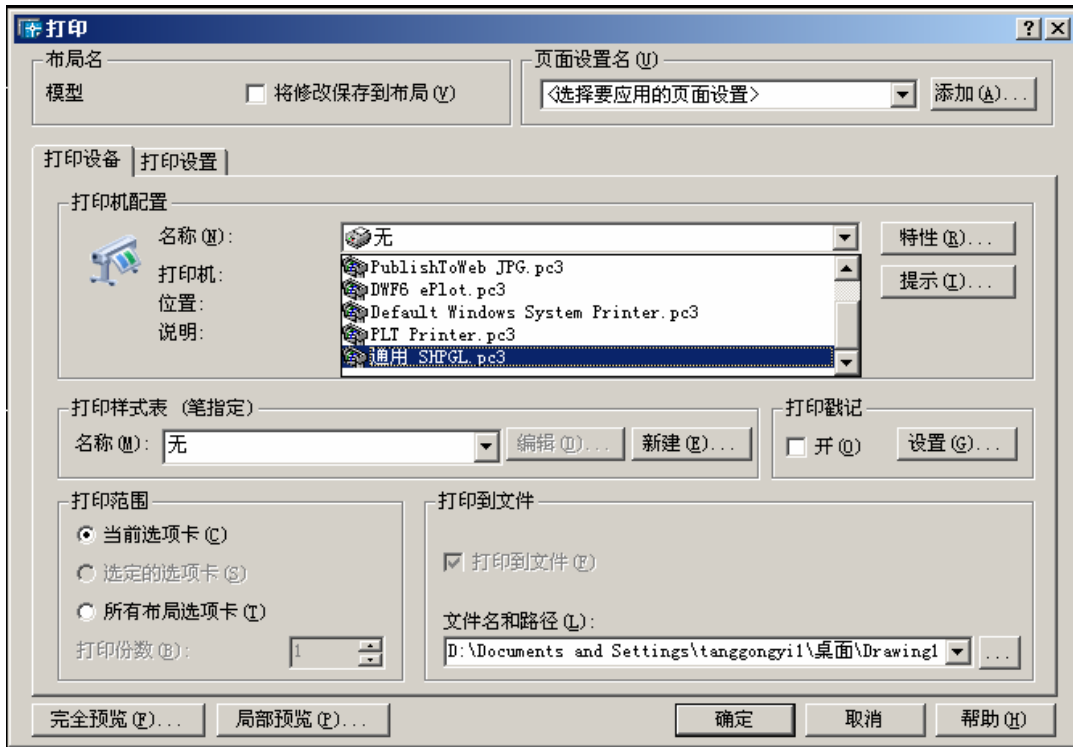


Select “Universal SHPGL” printer of HP, and keep clicking “Next” until the finish of printer installation.

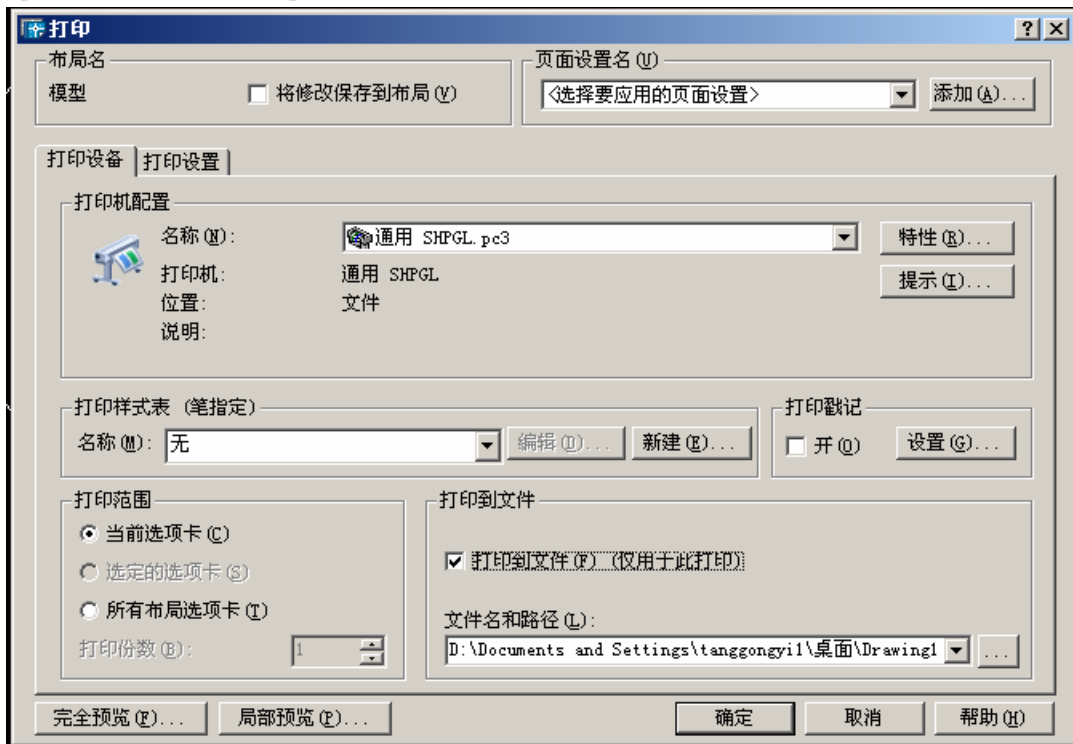
After the finish of installation, you can then export the PLT file following the steps as:

<1>. Draw a piece of graph

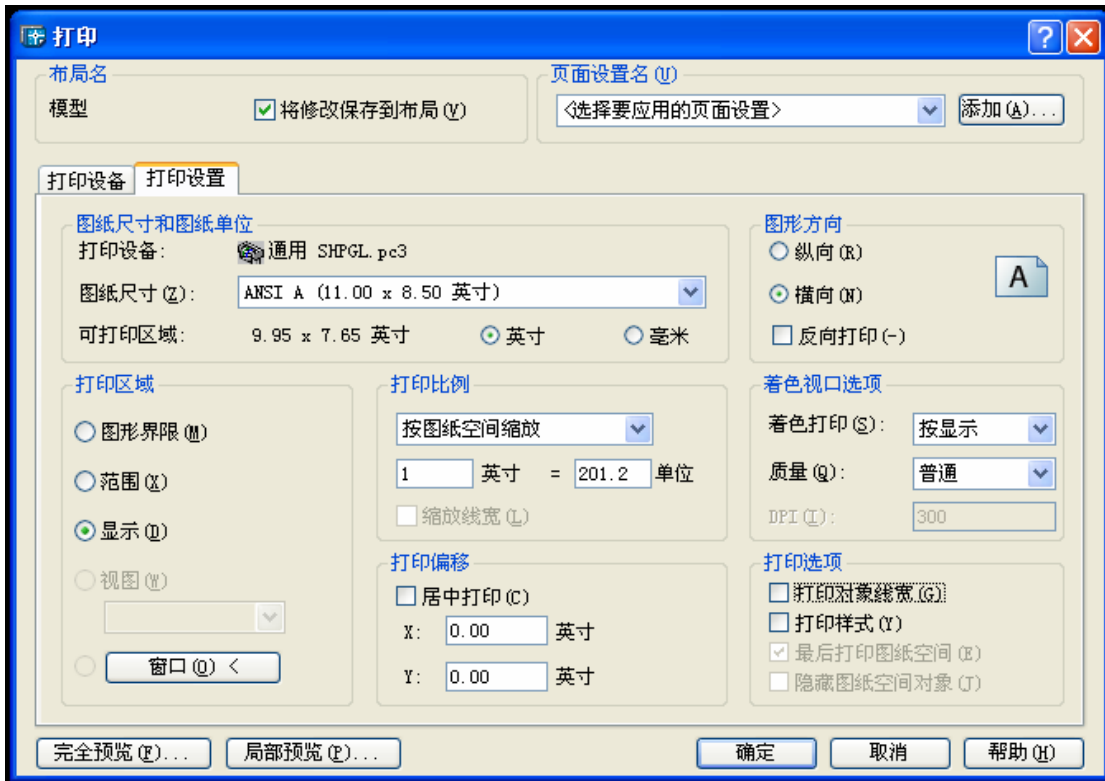
<2>. Click “File” → “Print”, and the following dialog box appears



<3>. Select “Universal SHPGL.PC3” printer in “Printer device”, check the “Print to file” check box, and set the path and name of the exported file



<4>. In “Print setup”, uncheck “Print style” and “Line width of printing object” in the printing options. Pay attention to the selection of “Graph direction”. A wrong selection may lead to wrong direction of the exported graph(Take letter “A” normal display as standards).



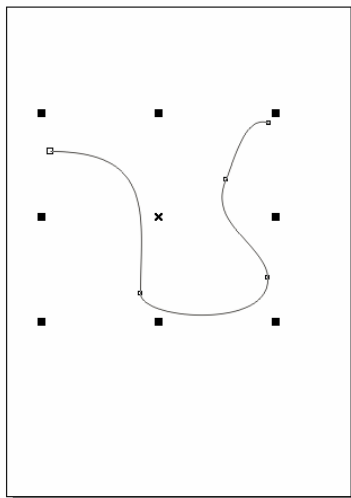
<5>. Click “OK” to export PLT file

PLT file can be opened by text editor. The following is a sample of PLT file:

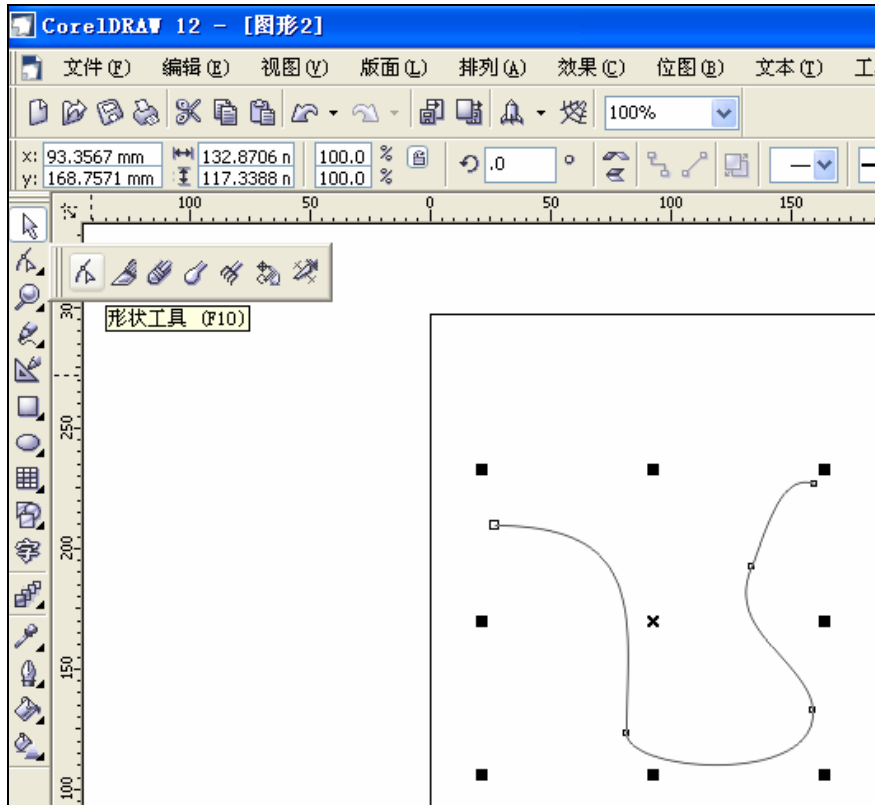
```
_(;_.I81;;17:_.N;19:IN;SC;PU;IP;IW;VS20,1;VS20,2;VS20,3;VS20,4;VS20,5;VS20,6;VS20,7;VS20,8;SP
1;PU;PA0,0;SP1;LT;PA3985,3940;PD;PA5344,3940;PA5344,2497;PA3985,2497;PA3985,3940;PU;PA0,0;
SP;PG1;
```

### 3) Ways of Changing Sequence of PLT File Track with CoreIDRAW12

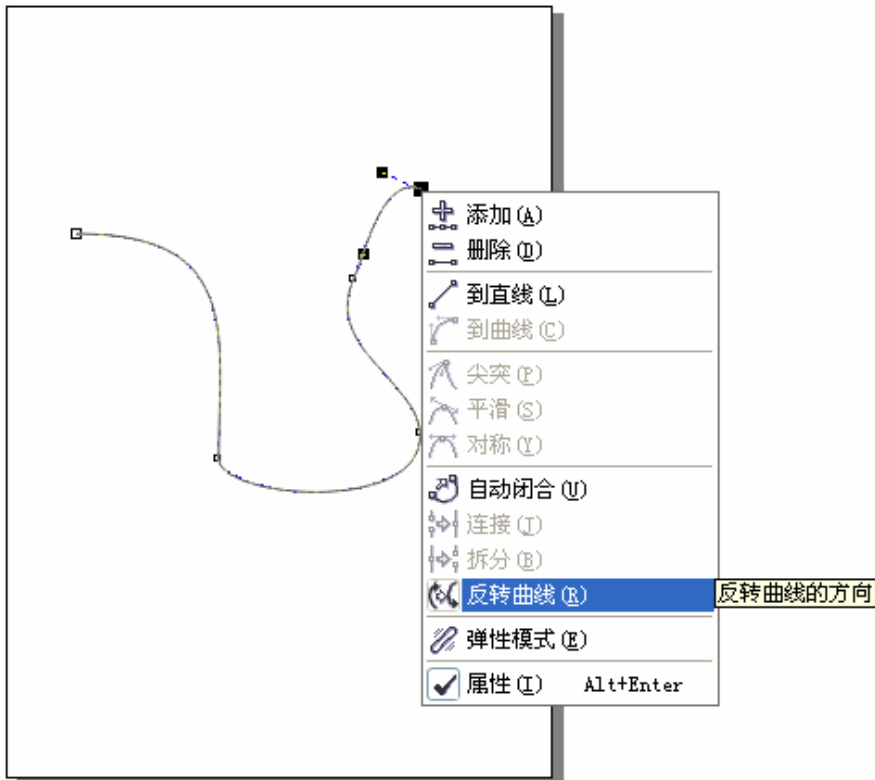
<1>. The adjustment of point sequence inside the curve



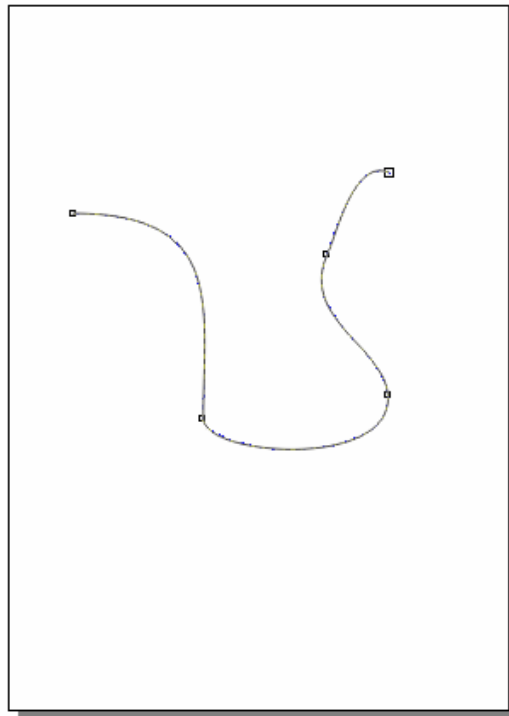
As shown in picture above, we can see that one endpoint of the curve is big and the other one is small. Big endpoint means the starting point, and the small endpoint means the end-point. To change their sequence, use the method below:



Left click on the icon on the second row of the left toolbar, select shape tool (as above picture), right click an endpoint of the curve, and select “Reverse curve”; then, the point sequence within the curve will be changed. (As the following picture)

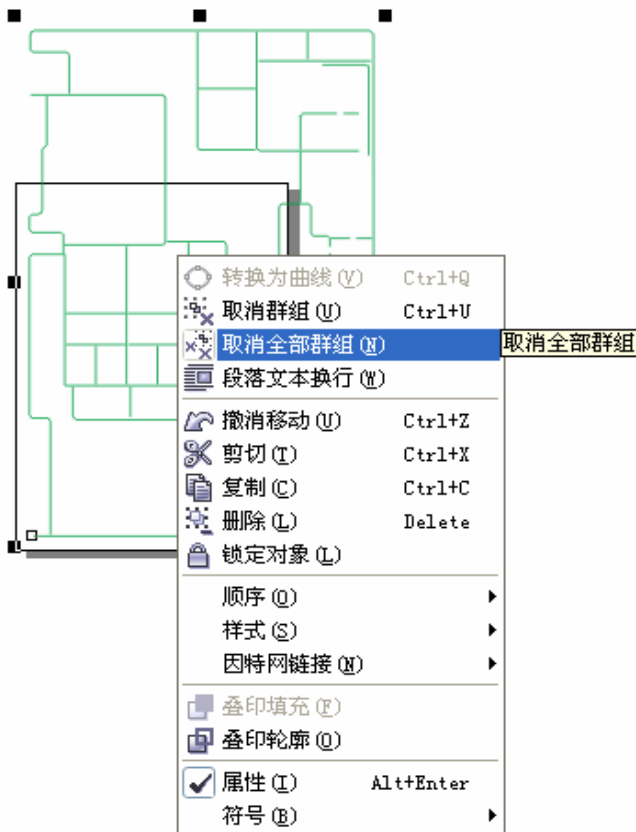


The graph after reversing is as follows:



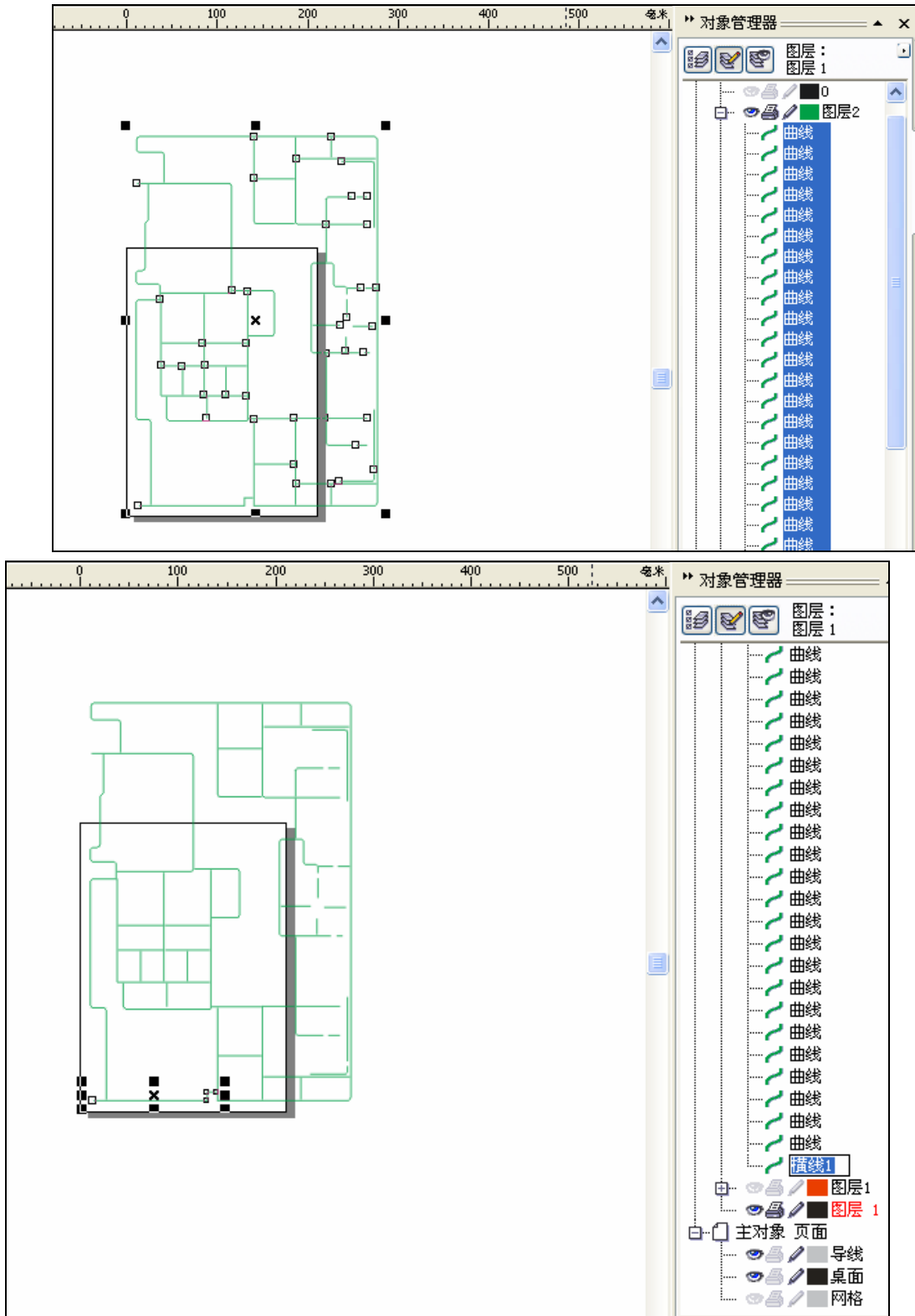
<2>. Graph sorting

If a graph is a group, you need to cancel the grouping of the graph. To do this, right click on the graph, and select “Cancel all grouping” (As the picture below):

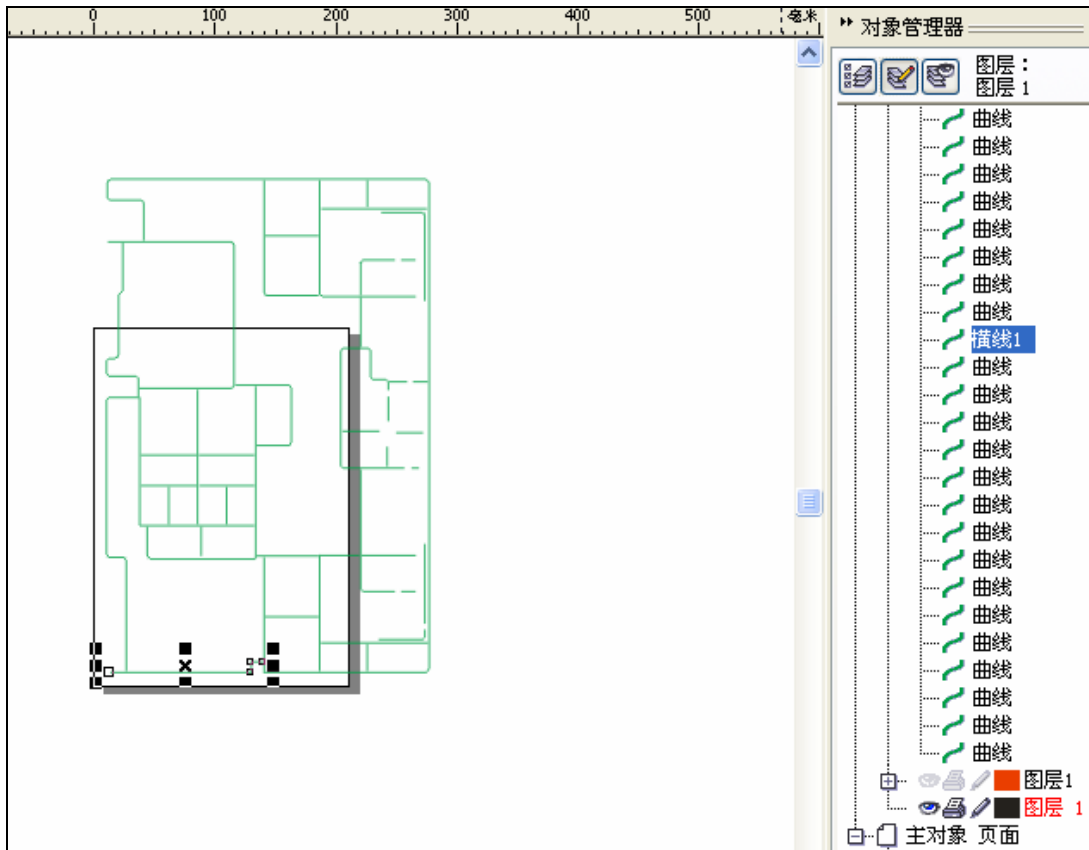


Generate several curves (As picture below):

(To open the object manager on the right side, click “Tool”→“Object manager”)



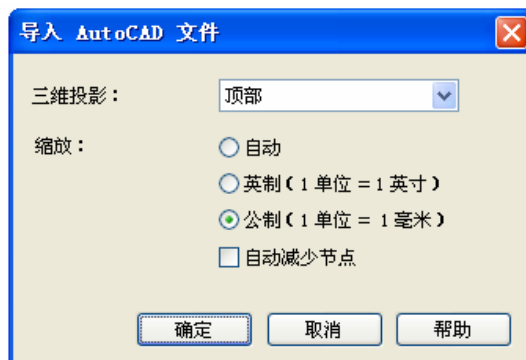
Select any one of the curves (As picture above), you can name it, and move it to the desired position (as picture below):



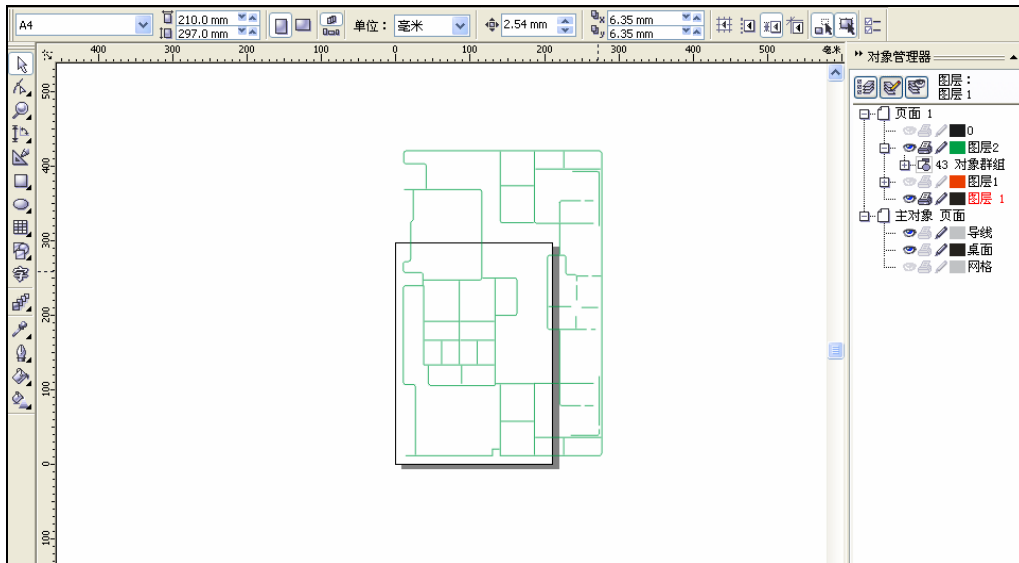
Export PLT file when the sequence is arranged. Remember the position of starting point, which is the position when setting the starting point position during the processing.

#### 4) Ways of Importing dxf files with CorelDRAW12

After generating dxf file with AutoCAD, you have to close AutoCAD before importing dxf file into CorelDRAW; otherwise, the import will fail. Pay attention to the unit when using AutoCAD. If you use millimeter, the zoom unit should use “Metric system”; if you use inch, select the “Imperial system”.



You'd better put the imported graph on the bottom left corner of the page (as picture below)



### 3. G Code Importing Function

In main interface, you can press Shift +7 to switch the G code files to processing files with a suffix name of .DJJ.

The supported G codes nowadays include G00, G01, G02, G03, G17, G18, G19, G90, G91, G20, G21, and too change instruction begun with T.

#### Appendix I: Instructions for additional functions of TV5500 LCD panel operation

The first row shows the current processing file.

The first letter of the second row shows the operation status:

L: low for manual speed H: high for manual speed S: select file

X+, X-, Y+, Y-, Z+, Z- is standing for the rotate direction which is clockwise and reversely

"Speed" button is for switching manual speed

"File" button is for switching the status of selected files

"R+"," R-" button is for choosing a previous file or the next file

Error code definitions:

018: No end point

019: No start point

020: no arc end point

021: No oval end

022: Arc command error

023: Ellipse command error

024: Non-normal stop

032: X positive limit

031: Y positive limit

032: Z positive limit

040: X negative limit

041: Y negative limit

042: Z negative limit

- 128: RTC failure
- 129: Stop button pressed
- 130: Trial period expired
- 131: parameter set is error
- 132: external alarm signal
- 133: update error

## **Appendix II: Explanations for additional functions of TV5500DJ F2 LED panel operations**

Additional F2 panel is consist of four LED display and four buttons input (they are up, down, left and right respectively from left to right)

1. Enter into the file selection function interface automatically while power on, LED display is as follows:

F = 00

The last two graphs represent the number of files currently in use, ranging from 00-99

Press the direction keys to select the file number, file number is corresponding to the of the file, and the relationship needs to be set well in the parameter setting;

Press the left button to enter the manual function;

and press the right is for the LED self-test function.

(2) In the manual function interface, LED display as follows:

A = 0L

The last letter is L or H, for the L stands for low manual speed, for the H stands for high manual speed, this can be switched by the right button;

Penultimate number is selected axis, from 0 to 2 represent the X, Y, Z axis, can be changed by the left button; the selected motor will be changed by pressing the button up and down, rotate clockwise and reversely by pressing the selected speed manually;

Press the left button for 2 seconds to set the current position of the starting point for the processing (the needle), note in the file edit mode this function is invalid;

Press the right button for 2 seconds to exit, back to the file selection function interface.

## **Appendix III: TV5500 list of interface shortcuts and Handling Precautions**

### **The main interface:**

1. Shift + F1: Help for the current interface
2. Shift + F2: Check the software version
3. Shift +0: Vendor parameters set
4. Shift +1: Set system parameters
5. Shift +2: Document management
6. Shift +3: User parameters set
7. Shift +4: USB communication connection
8. Shift +5: Hardware test
9. Shift +6: PLT file conversion
10. Shift +7:G code conversion
11. XYZ motor manual button: manually move the motor
- 12 speed button + axis direction button: manual high/low speed switching

### **Document editing interface:**

1. Shift + OK: Run / Pause
2. Shift + Cancel: Stop / Reset
3. XYZ motor manual button: Manually move the motor

- 4 Speed button+ Direction button: the high/low switch for manual speed
- 5 Teach button: save the current coordinates to the current point and jump to the next point
- 6 Pin height button: save the current Z coordinate to the current parameters of the height of the needle
- 7 Insert button: Insert a point before the current point
- 8 Delete button: delete the current point
- 9 Locate button: move the motor to the current point
- 10 Up and down button: Select the data to be modified
- 11 Confirm button: Confirm to modify
- 12 Left and right button: navigate to previous and next point
13. F1 button: type switching (start point / line / end point)
14. F2 button: type switching (arc / full circle / end of arc point)
15. F3 button: type switching (single-point / space shift)
16. Shift + F1: Help file called
17. Shift + F2: Save the file
18. Shift + F3: Advanced editing features
19. Shift + Delete: Delete all
20. Shift + Left: To the first point
21. Shift + Right: To the last point
22. Shift + Location: to the nearest point from the current location
23. Shift + Point: move graphics
24. Shift + Negative sign: adjust the Z-axis depth wholly
25. Shift +0: Preview specified point
26. Cancel button: Exit editing interface
27. Shift + Z ↓: the selected glue gun will move down
28. Shift + Z ↑: the selected glue gun will move back(move up)

**Processing operation interface:**

- 1 corresponds to the number button: perform the corresponding action
2. Shift + Z ↓: Preview processing files
3. Shift +1: If you open the power-down memory function, the motor will begin to process from the point of the last power-down location.
4. Shift +2: you can choose any point as the start position in the processing file

**Interface of the needle calibration:**

1. Shift + Z ↓: the selected glue gun will move down
2. Shift + Z ↑: the selected glue gun will move back (move up)

**Note:**

- 1 If not saved after the file has been modified, there is a "\*" number prompt next to the type of data in the column, press Shift + F2 button to save the file. To run or debug file must first save the file, otherwise the running data is previous data which is not saved.
- (2) In the parameter setting interface or advanced editing features interface: Shift + Number button corresponding to quickly choose to edit the parameters or functions
- 3 After PLT files is generated, in the transferred files with the suffix of DJJ, there are empty command in both the beginning and end, it is recommended to manually remove them, so as not to affect the process.
- 4 Be sure to back up before Smoothing Graphics, just one opportunity to chamfer for each file.
- 5 Select file and Processing the external fast switch functions failure while the file is being edited.
- 6 Quick layer selection or Quick file selection function set as follows: 1. The main interface into the "vendor parameter set" interface (Shift +0), select the "input configuration", select the number of layers or the input

point of the corresponding shortcuts for file; 2 main interface into the "File Preferences", select the layer for the glue gun or the number corresponding to the file.

7 In the main interface, it is effective to control the axis manually.

8 After transferring TCF file, you should not start to process until you perform the needle calibration or graphics move in parallel.

9 Gun-related parameters such as delay, advance, arrive and retreat, it is not valid unless the gun signal of the cylinder is effective.

10 Manual tuning method as follows: press axis movement button once. Each time you press the movement button and the corresponding axis will move the distance which is set for one fine-tuning pulse.

11 In the Edit or Needle Calibration interface which glue gun is controlled by cylinder, you can retreat and change the gun.

12 Reference for cycle processing steps: 1. The main interface Shift +3, open circulation; (2) Set the number of files and number of cycle times, cycle files correspond to the selected file which are under the "quick select the file number" of "File Preferences" interface; 3 select a file for cycle processing, then you may start cycle after setting, if there is outer loop select switch, the function of open and close the loop system for hand-held box is invalid.

13 Quickly select file, the number corresponding to the file, the layer corresponding to the file, are three completely different conceptions, do not be confused.