

SpinningCAD V2.1

CNC Programming Software For Spinning

INSTRUCTION MANUAL

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OKAY



General Description:

SPINNING CAD V2.0 is the updated programming software we specially designed for metal spinning. The software can transfer the cross lines in CAD to G code used in CNC machine; at the same time it could set the feeding speed, spindle speed, the speed for spinning wheel returning to 0; offset for the start point; the synchronization for two spinning wheels; and the M code for various spinning machine, etc. The software can simulate the CAD curves (and can simulate the G code created from other ways.) Besides, the first sentence of the G code is open in this software, this can be used for the drawing transfer for other system except the Siemens.

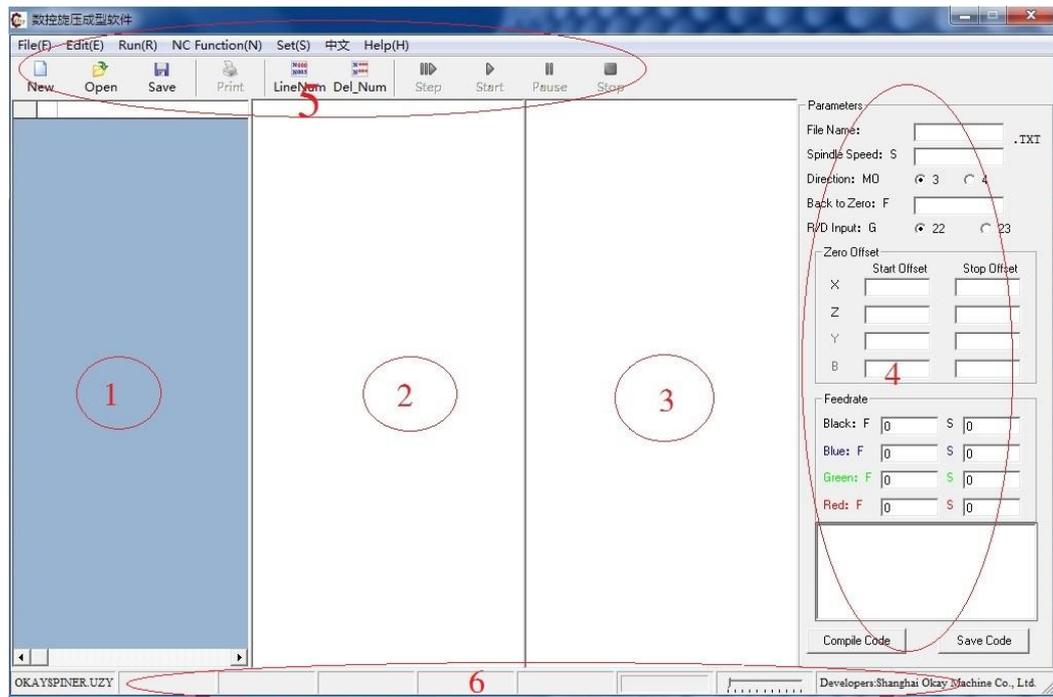
And the software can be used for the programming for CNC lathe machine and CNC milling Machine, etc.

This manual consists of four parts:

1. Software Function;
2. The CAD drawing of the spinning curves;
3. Transfer the CAD drawing to G code;
4. The Loading of program to CNC system.

1. Software Function:

1.1 If you setup the Spinning CAD correctly and got our authorized password, the screen should be as following :



In the screen: Column 1: Editing and simulating for created G codes (selected); Column 2: shown the opened CAD curved; Column 3: Shown the simulated processing curves; Column 4: Shown the spinning parameters; Column 5: the function buttons; Column 6: the status for the software.

The definition for the function buttons as following:

1.1.1 The explanation for toolbar [File]

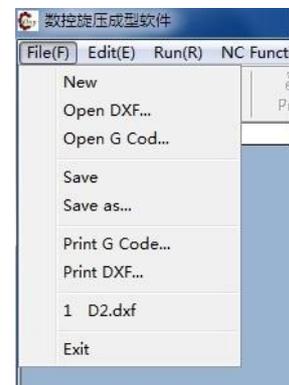
[New]: Create a new program file.

[Open DXF]: Open the spinning curve drawn in CAD

[Open G Code]: Open G Code program

[Save]: Save the G Code program according to the software set format

[Save as]: Save the G Code program to other format.



(Note: If the CNC system is 802C, the file suffix should be *.txt; If the

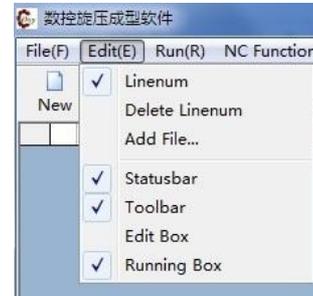
CNC is 808D、828D、840D, the file suffix should be *.MPF.)

[Print G Code]: Print the created G code program

[Print DXF]: Print the curve drawn in CAD

[Exit]: Exit the software.

1.1.2 The explanation for toolbar [Edit]



[Linenum]: Auto add the line number for every line of the G code statement. For example,

```
N005 G1 X0 Z-8.538 F1.5 S0  
N010 G2 X259.223 Z-43.261 CR=689.121 F3  
N015 G1 X8.348 Z16.905 F5  
.  
.  
N055 G1 X-7.857 Z19.173
```

The line number will help to find the each statement in CNC.

[Delete Linenum]: Delete the line number

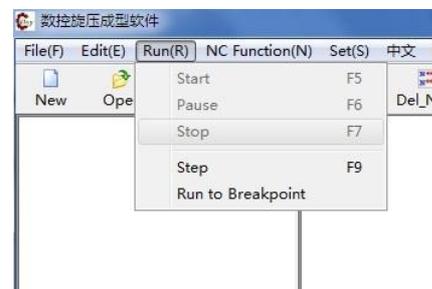
[Toolbar]: Show or Hide the toolbar

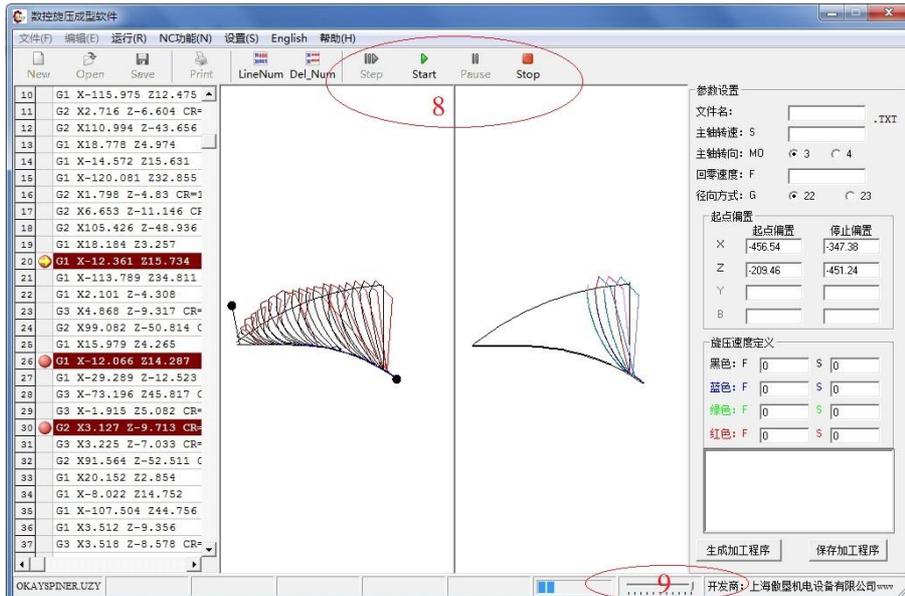
[Edit Box]: Select Column 1 as the editing frame for G code

[Running Box]: Select Column 1 as simulated running frame

1.1.3 The explanation for toolbar [Run]

(the function in this toolbar is same as the the buttons in the following screen circled in red.)





[Start] Start the simulation

。 In simulation, if input the pause statement (please find in the Red in above screen), then

the simulation will pause at the pause statement and click [Start] to keep on running.

[Pause]: Pause simulation.

[Stop]: Stop simulation

[Step]: Run the simulation step by step for every G code statement.

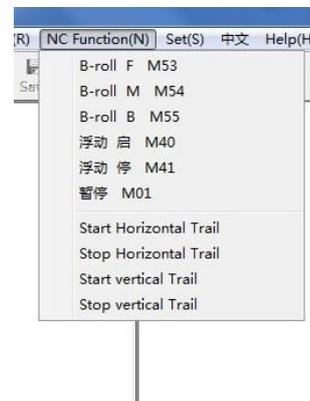
[Run to Breakpoint]: Run the simulation quickly to the breakpoint.

The toolbar in red circle 9 is to adjust the simulation speed. Pull the button to right or left to adjust the simulation speed.

1.1.4 The explanation for toolbar [NC Function]

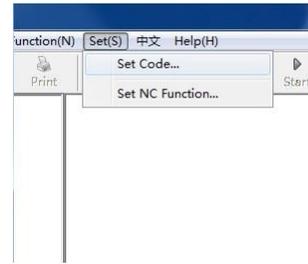
The commands in this toolbar includes two types: M command and following command. The M command can be set according to the spinning machine instruction manual (find the explanation in following [Set] explanation), then insert it to the proper position in G cods. The following command is developed by us for the two wheels spinning machine. For the detail setting, please find the instruction manual for the two wheels spinning machine.

The command can be inserted to G codes proper position using this button, or manually input by keypad.



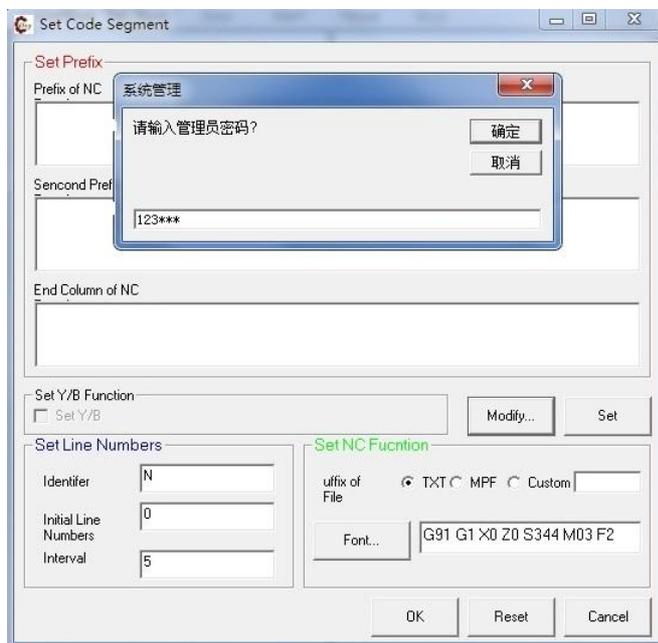
1.1.5 The explanation for toolbar [Set]; The [Set] can set the G code(Set Code) and CNC function(Set NC Function).

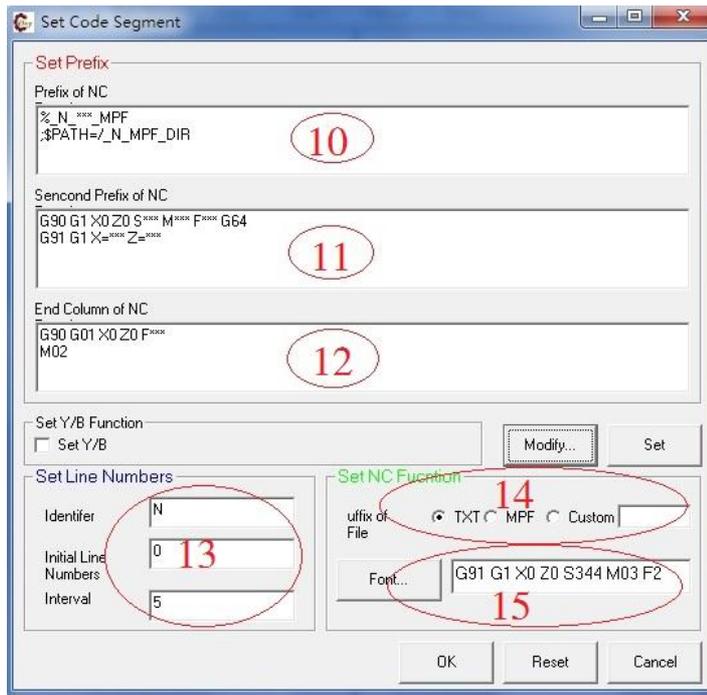
(After setting up this software, must set the G code firstly, then it can create the spinning program for the products)



1.1.5.1 Set Code

Open [Set Code]; Click [modify]; Input password:123***; Then confirm and set the G Code. After the set, click [Set] to confirm the modify.





- (1) Column 10 is the beginning statements of the G codes. It is not same for different CNC system. For CNC system of 808D、802D、828D, it is blank in column 10 (unnecessary to input any statement in it) . For other CNC system, please set according to the instruction. For system 802C, please input the following statement in Column 10:

```
%_N_***_MPF
; $PATH=/_N_MPF_DIR
```

- (2) The statement for Column 11 is:

```
G90 G1 X0 Z0 S*** M*** F*** G64
G91 G1 X*** Z***
```

- (3) The statement for Column 12 is:

```
G90 G01 X0 Z0 F***
M02
```

Note: When the DXF spinning curve creates G code, the software can automatically input the statement in Column 10 and 11 and the Column 12 in the end of G code.

- (4) The Column 13 is the setting of line number for G code.

- (5) The Column 14 is the setting of file format for G code.

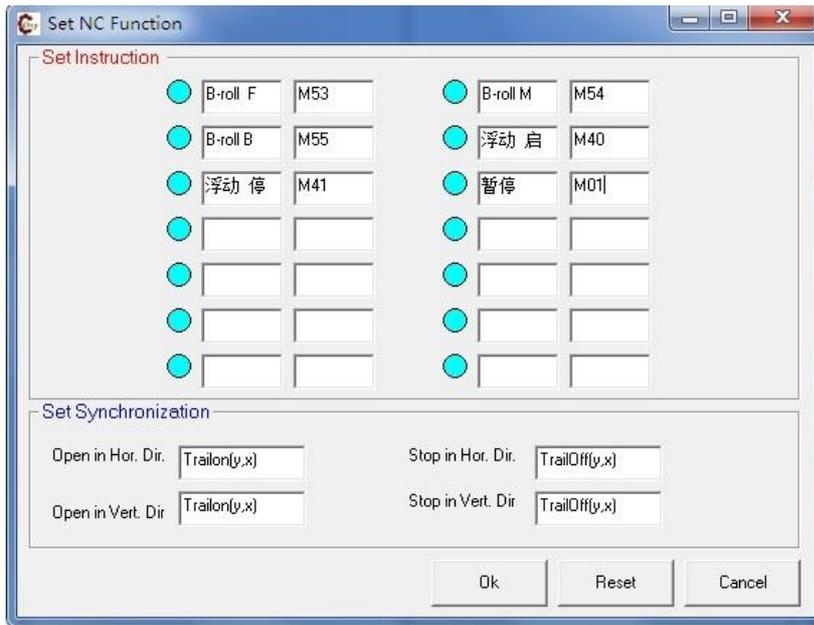
For CNC System 802C, select file suffix .txt.

For CNC System 808D, 828D, 840D, select file suffix .MPF.

For other system, please select file suffix according to the CNY system instruction.

- (6) Column 15 is the setting for the font style and size.

1.1.5.2 Set NC Function



The above column is the setting for M command. The front box is the meaning of the command, and the back box is the name of the command.

The lower 4 boxes is the synchronized running command for two spinning wheels. Please find the setting detail in the instruction manual of the two wheel spinning machine.

1.1.6 Please find the explanation for software parameters as following:

[File Name]: File Name

[Spindle Speed]:Spindle Speed

[Direction]:The spindle running direction, (M03,CW; M04, CCW)

[Back to Zero F]:The speed for the machine back to 0 position.

[R/D Input]: The preprogramming for G code use radius or diameter. (G22 for radius; G23 for diameter)

[Zero Offset]

The machine 0 position for the programming VS the starting point of the CAD curve. If copy the mold drawing from the existing drawing of the spinning curve, then open the DXF file, the software will create the coordinates automatically. If draw the mold curve in the software, the coordinates need to input by yourself in Start Offset manually.

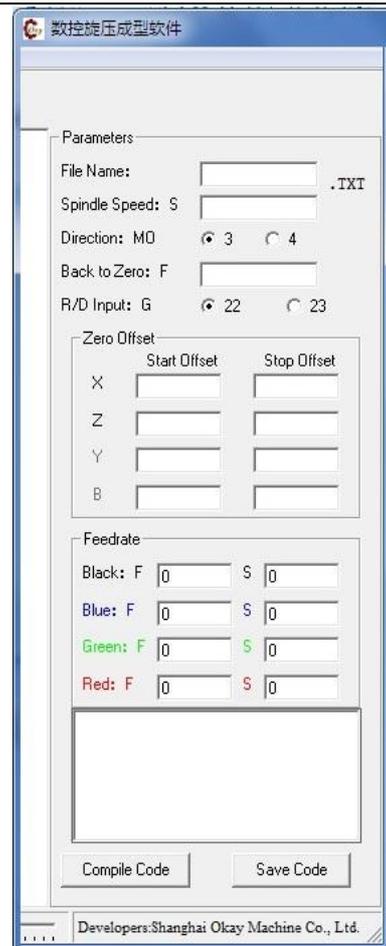
[Feedrate]:

Setting the feed speed and spindle speed according to the curve setting in CAD drawing for different spinning machine.

It has four speed: the Black, Blue, Green and Red represent them respectively. The F value is the travel per track of the spindle, unit: mm. S represent the speed of the spindle, unit: RPM.

[Compile Code]: Create the spinning program for the product.

[Save Code]: Save the spinning program for the product.



1.2 Software Setup

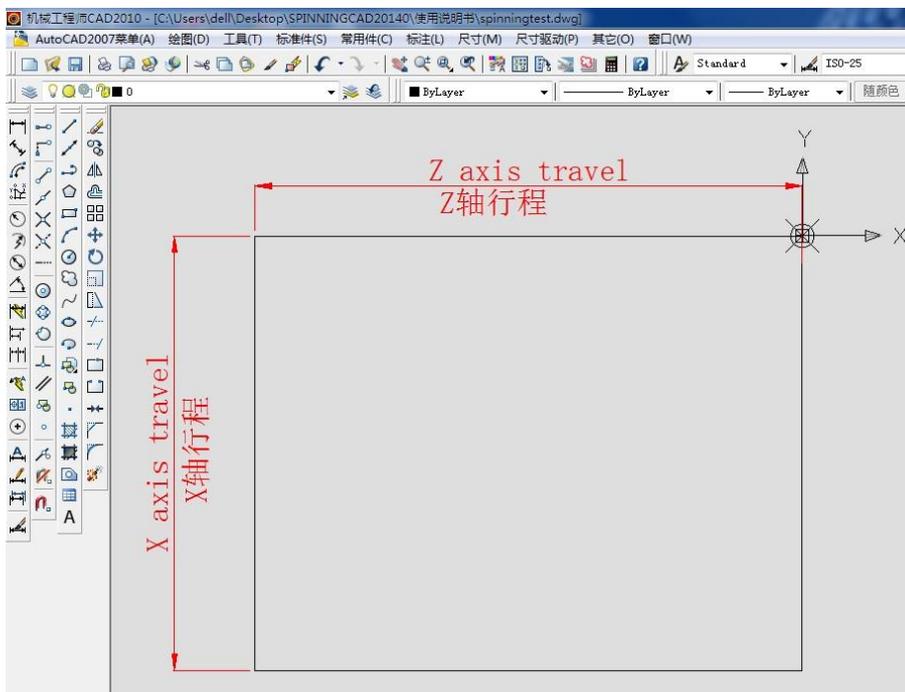
We have the encryption program for the software. When you setup the software first time, the software will request the registration for your computer. Please email your computer code to us. We will register your computer and email back to you the registered code. Then inputting the registered code will finish the software setup.

Email: okaymachine@vip.163.com

2.The CAD drawing of the spinning curves

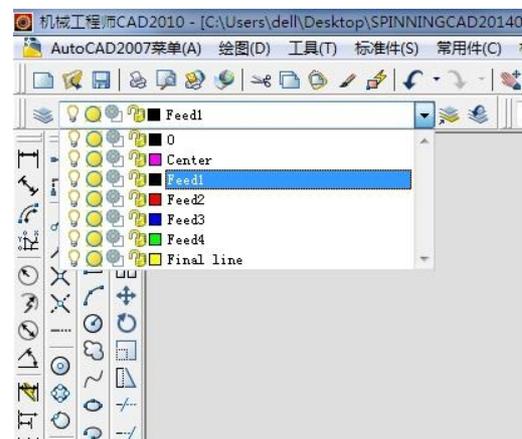
The drawing of the spinning curves should be made in a special CAD setting and should meet some requirements for SpinningCAD.

2.1 The CAD setting: open CAD, draw a square area from the origin of coordinates 0,0 toward lower left (make sure to draw the square use [Line], cannot use [Rectangle]). The distance from 0,0 to the left is the machine travel for Z Axis; the distance from 0,0 to lower is the machine travel for X Axis; And then draw a point at the 0,0. (for the convenience to find it, you can input “ddptype” in the CAD command to select the font style of the point, select in common (⊗).) The drawing of the spinning curve should be in this square area, otherwise, machine will run exceeding the travel and give alarms.



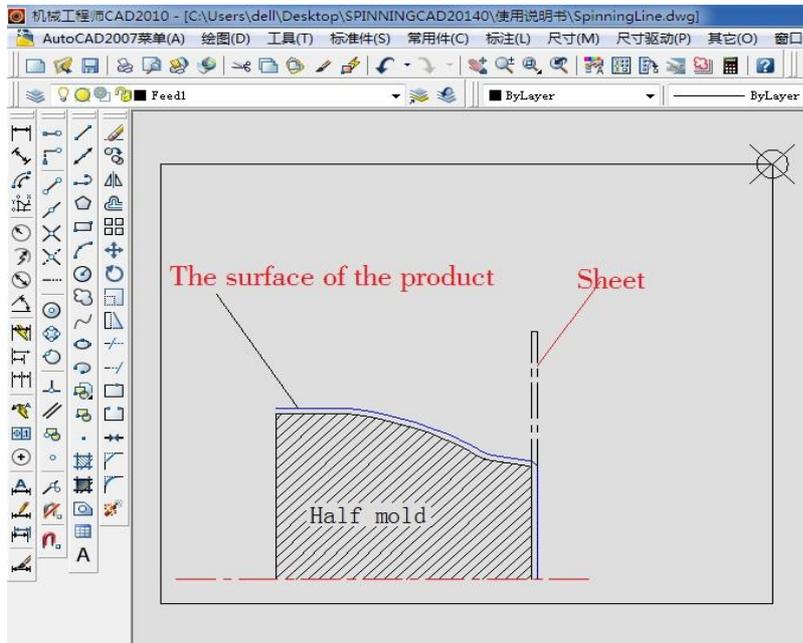
Set 4 new layers in CAD, the name and the color for each layer are:

- FEED1, COLOR——BLACK
- FEED2, COLOR——RED
- FEED3, COLOR——BLUE
- FEED4, COLOR——GREEN

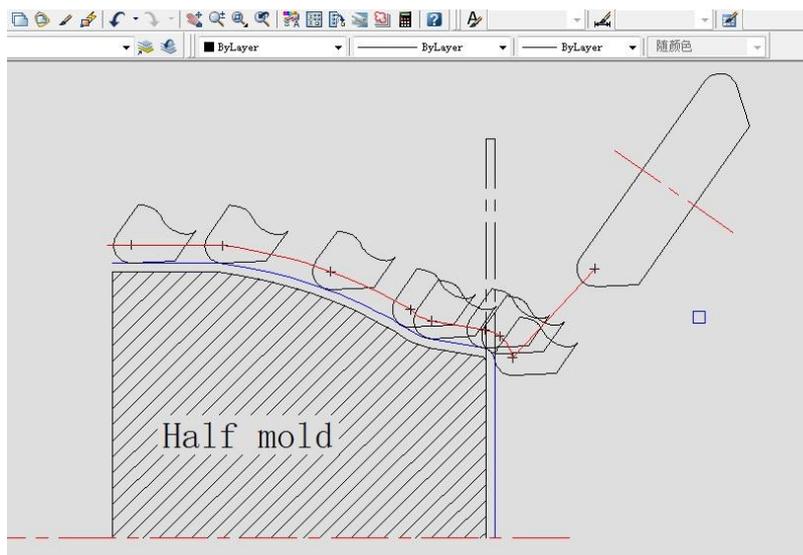


2.2 The CAD drawing of the spinning curves.

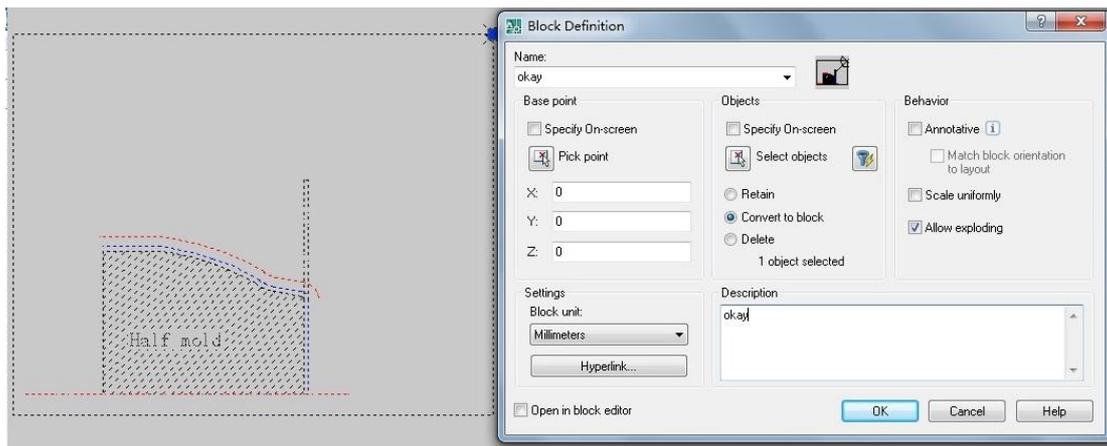
If you had the drawing of the mold and the drawing of the spinning wheel and its angle for installation, please copy them in the square area, and draw a fixed point to find the final curve following the surface of the product.



Have the spinning wheel move along the surface of the products to find the final track of the spinning wheel. Please find the red curve in following screen:



Then delete the drawings of the spinning wheels and keep the red curve only. And name the drawing as a block. The name of the block must be “okay”.



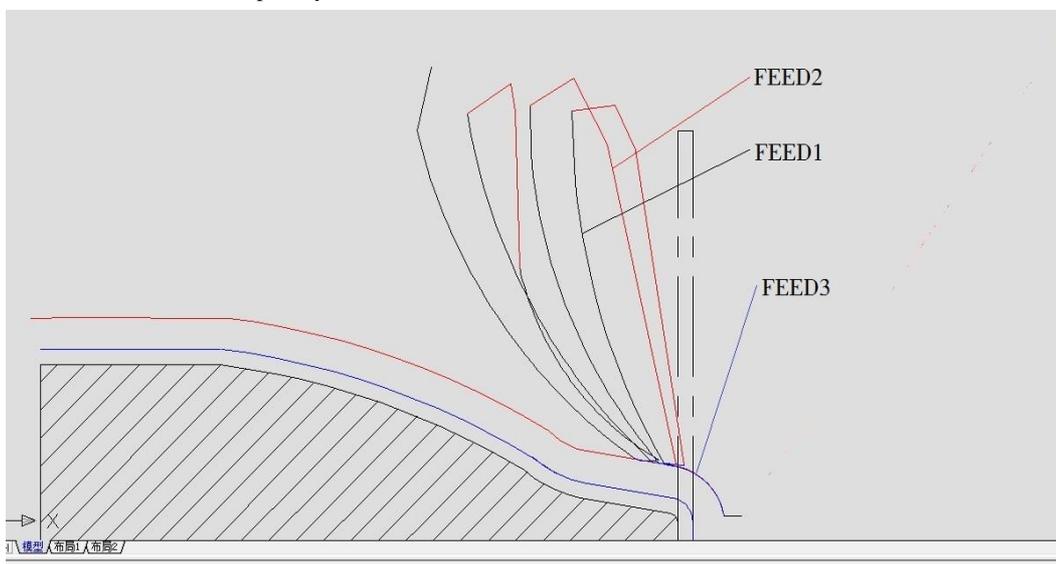
Next, begin to draw the spinning curve. The curve can select any layer of FEED1、FEED2、FEED3、FEED4. The color represents different spinning speed in SpinningCAD.

In following screen. FEED1 is processing curve of the spinning wheel. Thus the spinning wheel will press the raw material sheet to deform. The spinning speed should not be too quickly. It is in common for 1~4mm/ track. In the software, the default black curve: $F=1\sim4$.

FEED2 is the dry running curve. The spinning wheel will not touch the raw material. To save time, the speed could be very quickly: 4~10mm/track. (the speed is various on different machine) , the default red curve: $F=4\sim10$.

FEED3 is the spinning curve along the surface of the product. To keep the surface smooth, the speed should be slower, about 0.5mm~2mm, the default blue curve: $F=0.5\sim2$.

If need more speed, you can use FEED4.



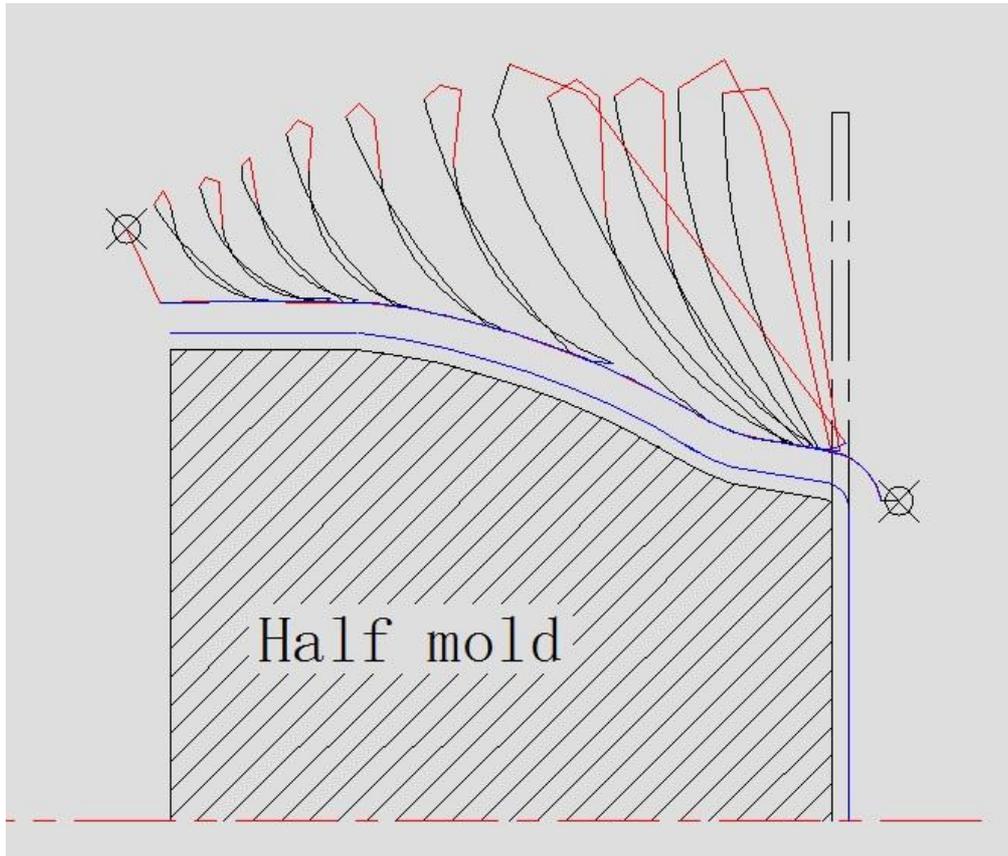
FEED1—FEED4, the setting of speed should be varying from different material, thickness and surface requests.

The black curve is the processing curve. The max interval of the black lines from right to left is varying from different material, diameter and thickness.

While drawing the curves, be sure the curves must be connecting. That is, the beginning of a line should be the ending of the previous line; and each line should be only one beginning and

one ending. There should be no three endings or beginnings of the lines meet together.

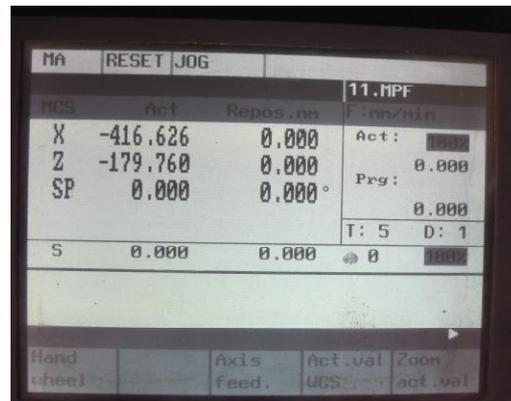
At the end of the drawing of the curves, please draw points at each beginning and ending, to show the beginning and ending of each line.



Lastly, please save the above finished CAD curves as DXF format.

2.2.2 If you have a mold already, but do not have the correct drawing of it. You can find the drawing by the spinning machine, then drawing the above spinning curve. Please find the details as following to find the drawing of the mold.

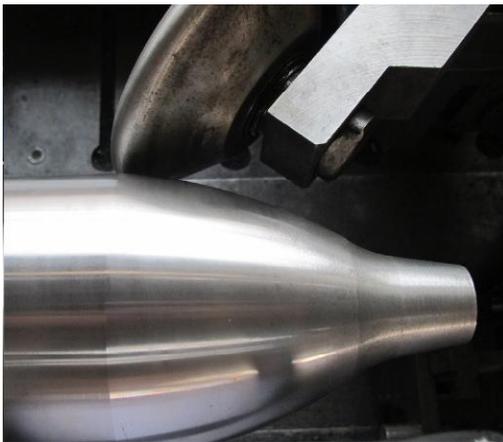
Firstly, install the mold and the spinning wheel you selected for your product in the spinning machine. Secondly, select several points from right to left on the mold. Lastly, adjust the spinning wheel to touch each points, then record the CNC coordinate value accordingly. Thus, you will got the coordinate value for a series of points.





MA		RESET JOG		11.MPF	
ACS	Act	Repos.nm	F	mm/min	
X	-408.616	0.000	Act:	1000	
Z	-220.320	0.000	Prg:	0.000	
SP	0.000	0.000°		0.000	
S	0.000	0.000	T: 5	D: 1	
			0	1000	

Hand wheel Axis Act.val Zoom
wheel feed. UCS act.val



MA		RESET JOG		11.MPF	
ACS	Act	Repos.nm	F	mm/min	
X	-364.516	0.000	Act:	1000	
Z	-340.020	0.000	Prg:	0.000	
SP	0.000	0.000°		0.000	
S	0.000	0.000	T: 5	D: 1	
			0	1000	

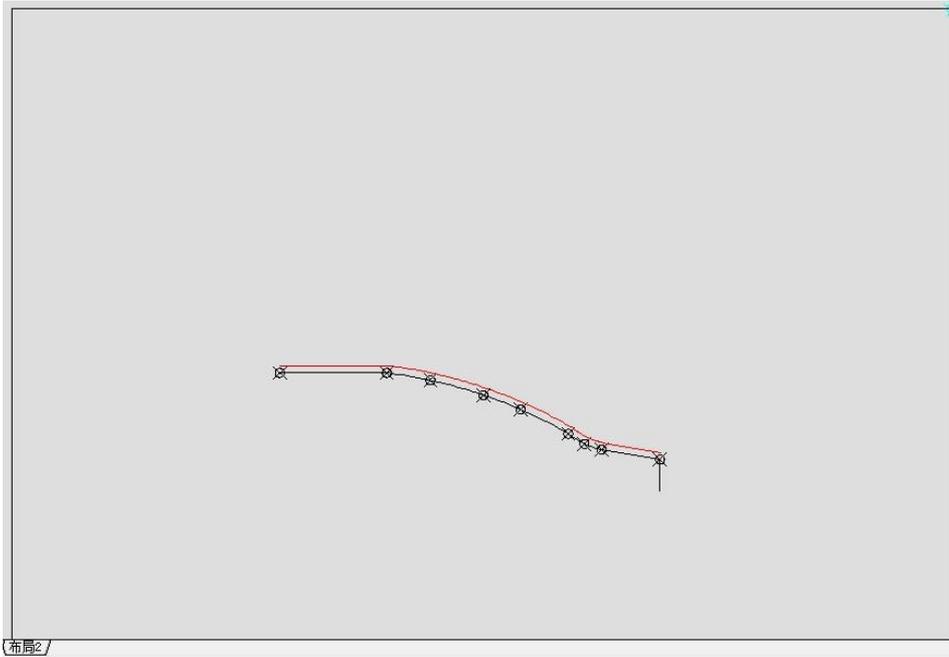
Hand wheel Axis Act.val Zoom
wheel feed. UCS act.val



MA		RESET JOG		11.MPF	
ACS	Act	Repos.nm	F	mm/min	
X	-364.516	0.000	Act:	1000	
Z	-397.420	0.000	Prg:	0.000	
SP	0.000	0.000°		0.000	
S	0.000	0.000	T: 5	D: 1	
			0	1000	

Hand wheel Axis Act.val Zoom
wheel feed. UCS act.val

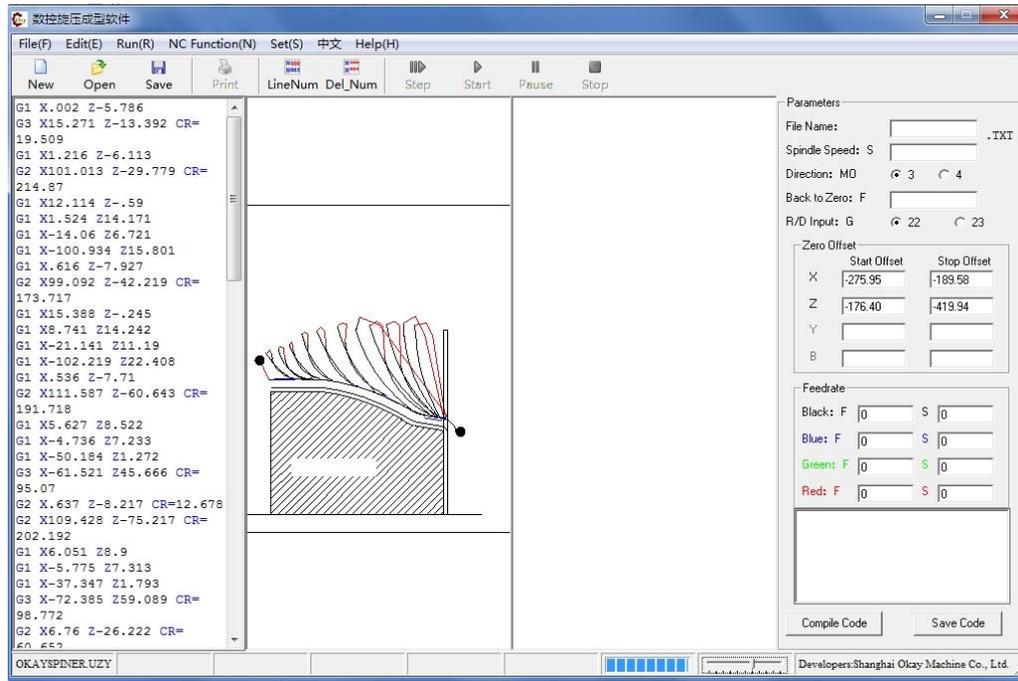
Input these coordinate values into CAD, and will get the curve of the spinning wheel VS the mold. Next, draw the curve outward according to the thickness of the product. This will be the final tracking of the spinning wheel-----please find the red curve in following screen. (Please note the points selected on the mold could be representative. For example, two points will be enough for a straight line; but at least 3 points for a arc)



Then, name the above drawing as a block; then begin to draw the spinning curves. Please find the detail for the drawing of the spinning curve as above steps.

3. Transfer the CAD drawing to G code;

Run the SpinningCAD; Open the above saved DXF file.



In Start Offset, the value of X and Y is the start spinning coordinate value in CAD. In Stop Offset, the value of X and Y is the ending spinning coordinate value in CAD.

If the mold curve is gotten from the points find in the mold(the method in above 2.2.2), the coordinate value in CAD is same as that in spinning machine. Thus the value of X and Y need not to be revised and the created program can be input to the CNC directly.

If you have the mold curve before, you should make the spinning wheel touch the starting point on the mold(the starting point on the spinning wheel and that on the mold is same as that on CAD).

Other setting as following:

File Name:

The file name should include letters and numbers;

Spindle Speed:

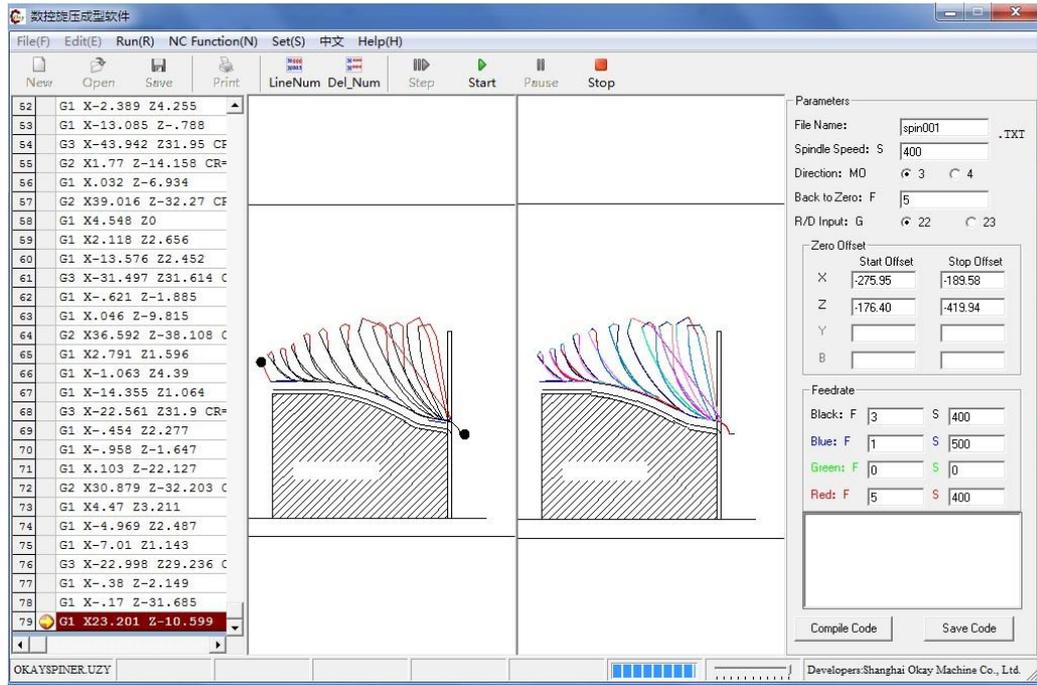
The spindle speed should not exceed the machine designed speed;

Back to Zero F:

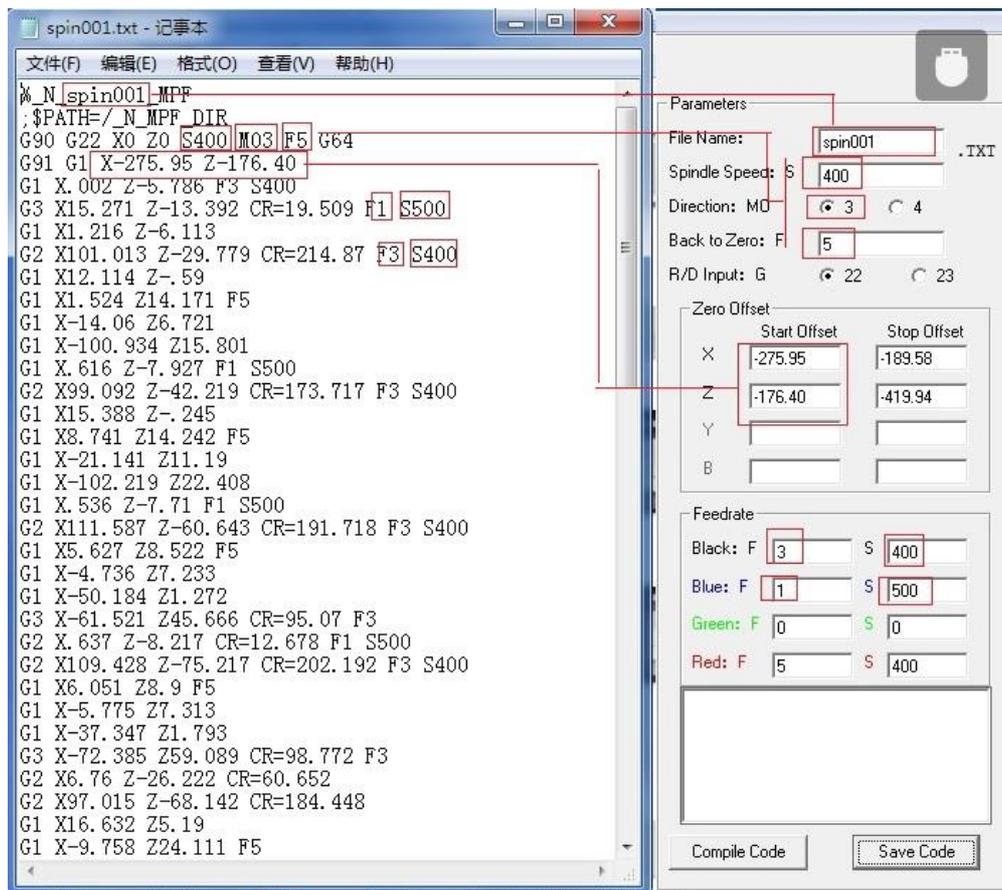
The speed of the spinning wheel returning to 0 point and that from 0 point to starting spinning point. The F value is the travel per each round of spinning. Therefore, the value of $F \cdot \text{Spindle Speed}$ must not exceed the max running speed of the spinning machine.

Feedrate,;

The value of F and S is set according to the color. And at the same time, the value of $F \cdot \text{Spindle Speed}$ must not exceed the max running speed of the spinning machine. For simulation, if you find the simulation meet the curve, please create the G code and save it.



For your reference, please find the created G code file and the relative setting of the software.



4. Load the Spinning Program into CNC

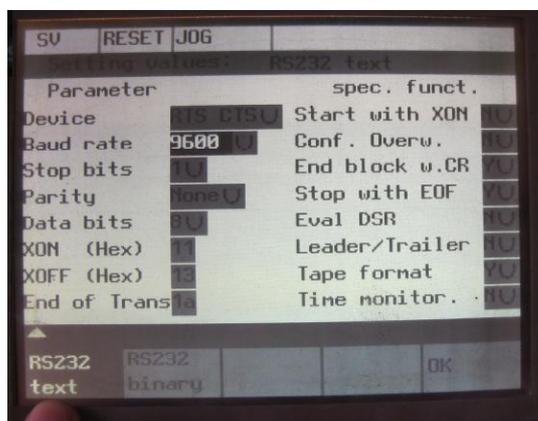
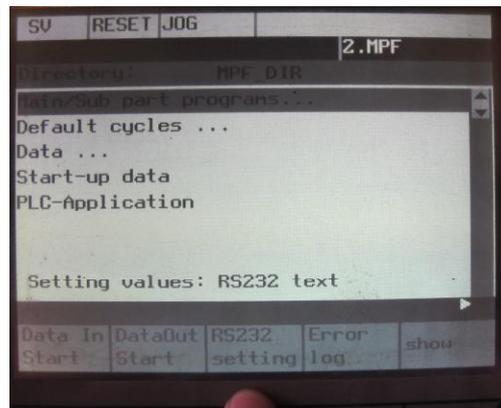
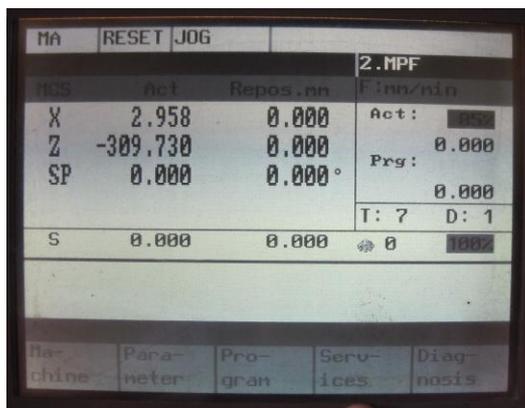
4.1 If your CNC is 802D、808D、828D、840D, please copy the G code to CNC with floppy disk.

4.2 If your CNC is 802C, please load the program to CNC by PC as following:

The spinning program can be load to CNC system by the loading software, WINPCIN. Connect computer to the CNC system, and then open WINPCIN software.

Firstly, set RS232. Click RS232Config, and set the communication format to TEXT Format (i.e. text file format), and then set the right outputting port in computer, and then set the right baud rate according to the CNC system. Save and activate the above setting by the command, Save & Activate. Then click BACK to exit the setting, and click on Send Date and select the file and open the former saved file, then press "Enter Start" button in CNC system, thus the spinning program will be loaded to the CNC system. Please see the detailed operation of the CNC system in SIEMENS Manual.

First ,Set CNC SYSTEM

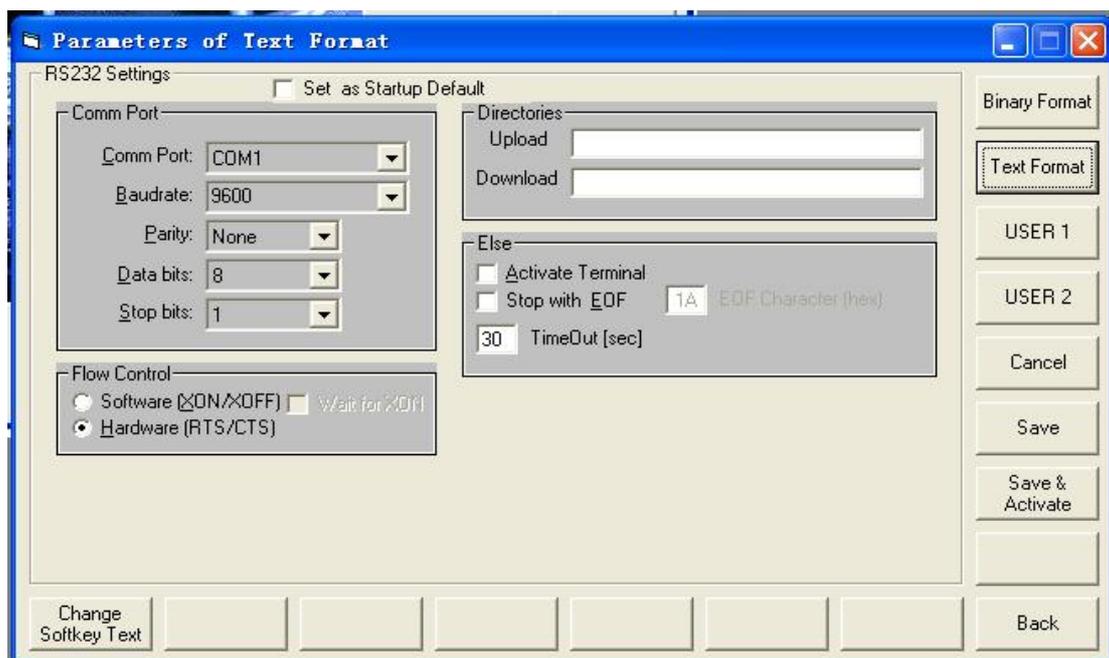


THEN, "ok" , EXIT

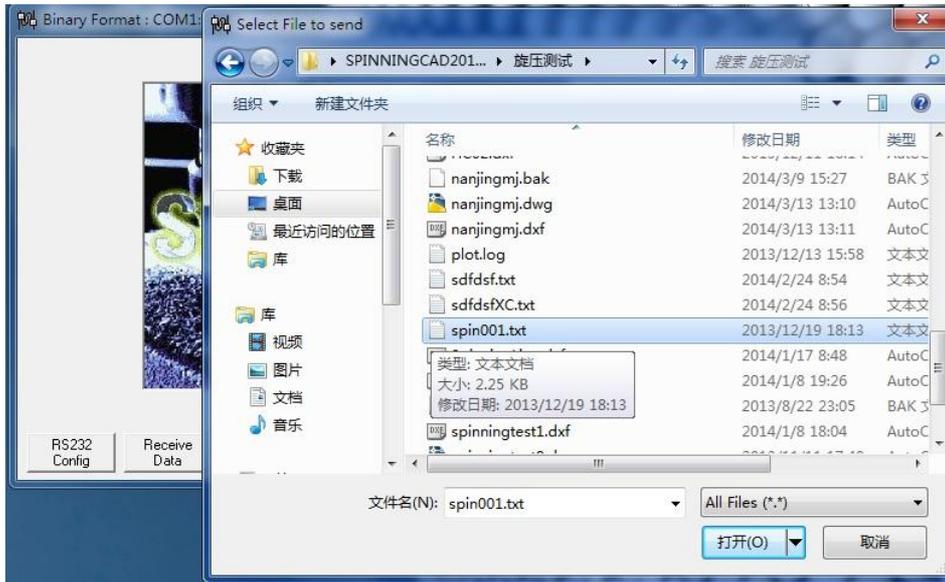
Then, Open WNPCIN.



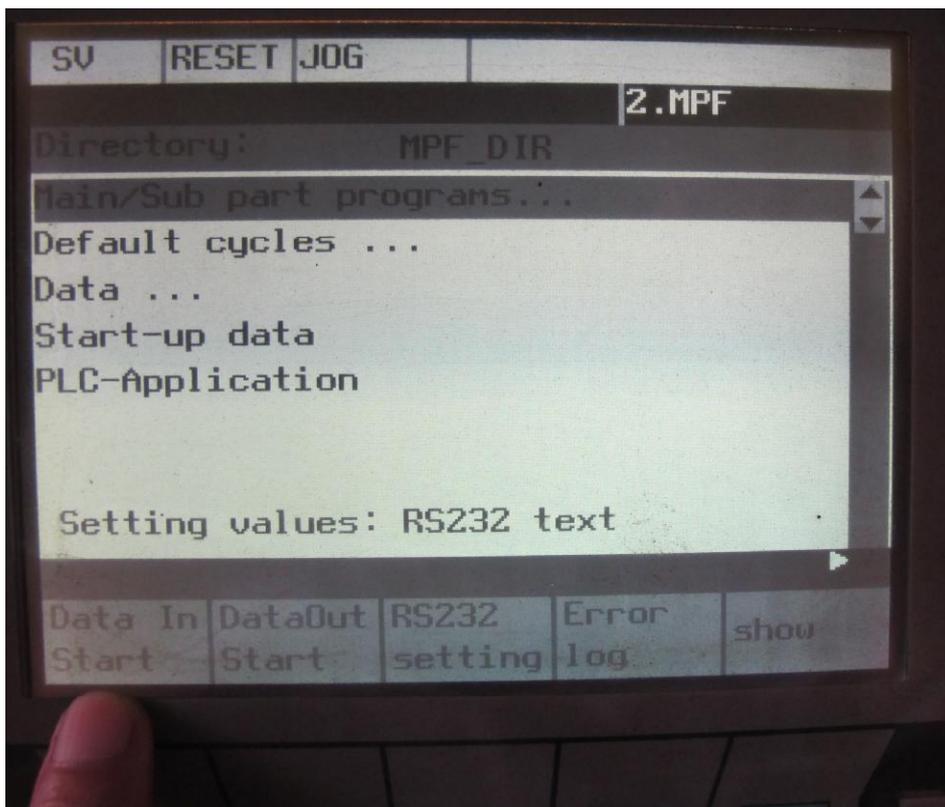
Set RS232.



Select and Open the file needing to be loaded to CNC, then run the Command: Load.



CNC system



Finish the loading, you will find the loaded program file name in the CNC program column.



The notes page

上海傲垦机电设备有限公司

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