

YLSK-3D-3100 Wire Bending Machine

Controller

Operation Manual

电脑使用说明书

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Abstract

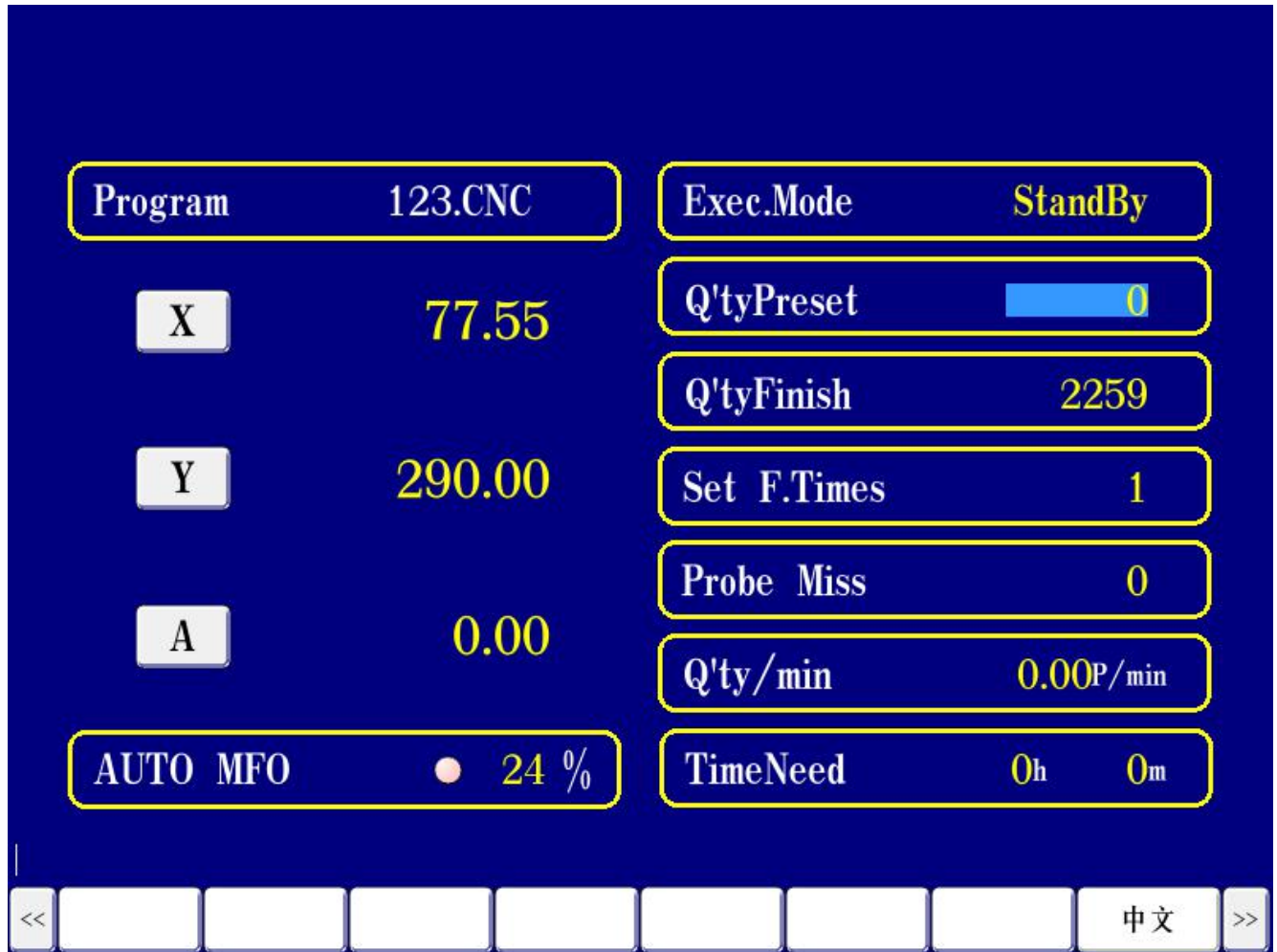
The tutorial would be wrote as clear as possible.However,our CNC is at the state of updating so that the tutorial can't catch up with it at the same time.So if you have any doubt in using it or find the difference between practice and what the tutorial told, we do appreciate that you contact with us.

Both in China mainland and Taiwan Province,this System has the most amount of user and is widely used as well.The System has the following features:

- 1、 It adopts closed loop control mode.The maximum response speed is 4000kpps.That means when the resolution is 1 μm , the speed could reach to 240 m/min.
- 2、 The hardware of the system is highly integrated so as to minimize failure rates and greatly improve stability.
- 3、 Users could upgrade the system software whenever necessary through the most intimate operation with the standard keyboard that could be easy to learn and handle.
- 4、 Users could modify the program or change the machine speed by MPG without stopping the machine.
- 5、 It can greatly improve production efficiency in the case of producing flat spring at which the probe is used again and again thanks to the simple repetitive programming operation and the settable probe speed.
- 6、 Comprehensive design for safety: 1, cut off servo-on signal of servo motor when emergency button are pressed;2, Motor overspeed alarm system would work before it happen; 3, when the coil run out or disconnect and also when wire frame is abnormal,the system would protect the machine from damage by stop it; 4, The machine would automatically stop when the fault alarm occur; 5, The wire frame follows when it is needed.
- 7、 Compare with the general PC architecture CNC,it has stronger ability of anti-interference when it's working;The highest voltage pulse between 0.01 s is 3000 v/ms.
- 8、 Compare with the general PC architecture CNC,it has better vibration resistance (maximum 0.075 mm ,5HZ) and wider ambient temperature adaptability(0°C--45°C during operation; -20°C--45°C storing or transporting).
- 9、 The system 100% original imported from Taiwan Province, and the quality is superior.

D)Main page & Key introduction

1)main page



2)Keyboard





Pressing this button in any case will set the machine to standby mode and to the main page.

Explanation: No matter what kind of status the machine currently is, just press the button "Reset" to stop the machine immediately.



a. Pulse Mode: This button is to set home. When you press this button in the stand by mode, the CNC will change to the HOME mode and then select the corresponding 6 axis buttons, the machine will search for the HOME Point according to the selected axis. (Axis A will automatically find the origin first. When axis A finds the origin beyond the specified coordinate range, it is necessary to find the origin by hand wheel on axis A.)

b. Bus Mode: Press and hold this button, when the button light is on, select the axis which you want to set home, and then press the "Home Set", you can set the current axial position to the home position and the coordinates are cleared.

Abstract:

1、 The X axis is bend axis and the A axis is rotate axis, Y is the wire feed axis. When in the pulse mode: it is necessary to perform the home mode except the Y-axis feed axis after power-on. (Home mode of Y-axis---Y-axis motor does not move, coordinate is cleared) The rest of axes are based on the direction and speed set by the parameter to find the Home Point, and then the Home mode is executed and the coordinates are cleared to zero. When the bus mode: the axis does not need to find the home point, and the principle of all axes return to zero is directly go to the zero position already set.

2、 Each axis can be turned off or on. Step: press and hold the axial button in the standby mode until the color of it on the screen, changes from bright to gray, indicating that the axis has been closed, and the home mode is not required for the closed axis. The machine can also automatically execute the programming. Conversely, when in the standby mode, the axial button color changes from gray to bright, indicating that the axis is open.

3、 In general, the homing action must be performed only when the execution home prompt appears on the computer, and the home action is not required during the normal tuning.

4、 After adjusting the machine, if the current position of each axis is not at the zero position, regardless of whether the "TEST" mode or the "AUTO" mode, the X, A axes are automatically executed till the first lines of code positions, Y axis coordinates is cleared.

5、 In the pulse mode, if there is an abnormal change in the position of the home, check that if the home proximity switch is normal.

手動
JOG


In Stand By mode, press it to enter JOG mode, selecting an axis, and shaking the MPG can make the selected axis turn. (Only one axis can be rotated at a time, it is invalid in the Auto mode). And in the JOG mode, The rotation and direction of the


axis are controlled by the buttons in the lower left corner of the keyboard. "", "

Abstract:the speed of the MPG is different to the Key's,they can be modify by modifying parameters.


編輯
TEAC

Pressing it to change Stand By mode to EDIT mode,enter values in the programming bar to program. There are two ways to enter values:1、 Edit input:directly move the cursor to determine the input cell, then enter the desired value through the keyboard number keys (the value will be displayed at the current editing unit in the lower left corner of the screen), and

then press the key "" on the keyboard to enter the value into the selected cell.2、 Teach input:When the value of the current editing unit in the lower left corner of the screen is empty, the corresponding axis is selected in the editing mode, and the cursor will automatically move to the corresponding cell of the current axis (the selected axis will turn brown and the right side will correspond to the current coordinate position). Then use the MPG to rotate the axis



to the specified position, then press "" to input the current coordinate of the axis to the current cursor position.

Modify:When in the AUTO or TEST mode,press this function key to change to the Modify mode

that can modify the program executing.Then press "Exec"or"",the next spring will be automatically executed according to the currently modified program.It is worth mentioning that it is generally used for fine-tuning

Insert row:In the mode of EDIT,press "",then insert a new row below the row where the cursor is located.

Delete row:In the mode of EDIT,press"",delete the line program where the cursor is located.


Clear cell:In the mode of EDIT,press""first,then press"",it will clear the value of the cell.

Notice:The program only can be edited in EDIT mode or in Modify mode.

Accumulate:In the mode of EDIT,first enter the desired value in the input area at the lower left corner of the screen. Press the "Accumulate" button, the system will automatically fill in


the entered value into the corresponding cell, and the newly filled value will be subtracted from the previous value (if before The cell is empty, the system defaults to 0), and the resulting value is accumulated to the value in the following row with the value of the cell , and the value is added to the corresponding cell.




When in the no-alarm standby mode,press and hold the button "  ",the machine will automatically execute the current program once,that is only one product will be produced.This

feature is similar to that press "  " firstly,press "  " secondly,press "  " finally.




Pressing and holding the button "  ",the stop button light is on, indicating that it is in the stop status.It does not feed whenever in the mode of AUTO,TEST or SINGLE,but the

JOG mode.On the contrary,pressing and holding the button "  " again,the stop button light is off, indicating that it is feeding status.



In the mode of Stand By or EDIT,press this button change the mode to TEST,and must press

the button "  " again,and then the potentiometer can be used to adjust the speed of the

program,as well as press the button "  " to used the MPG for TEST.In the mode of AUTO,if press this button ,the machine will immediately stop and turn to the TEST mode.It can select the

potentiometer directly or press the button "  " to shake the hand wheel to check the test procedure.

Notice:When performing program detection, for safety reasons, please make sure that the potentiometer position value is 0.



After having edited the program, press this button to change to AUTO mode. The screen will jump to the main page.



Execute the command button, press this button in the AUTO mode to confirm the automatic execution of the program; In the TEST mode, press this button X,A axis will automatically execute to the first stroke position,the coordinates of the Y axis are cleared and enter the waiting test status.



Stop command button, in the mode of AUTO or TEST, press it, the machine stops after completing the current cycle and changes to Stand By mode.



When it is required that a single axis return to zero, press the button "READY" and select the corresponding axis can make the selected axis go to zero. When the Pulse mode, all axes must be executed home action before perform zero mode.

Notice: After determining the safe position, if all the axes need to be returned to the zero point, press and

hold the button "READY", and perform Exec Zero in the pop-up execution zero window to make all the axes return to zero.



Hand wheel and jog fast/slow speed switch button (only two speeds), valid in JOG mode and MPG TEST mode.



In the mode of AUTO or Stand By, pressing this button ("MFO" button light will light up), turn the hand wheel can change the running speed of the machine, the forward rotation speeds up, and the reverse rotation slows down. Press the button again after adjusting to the desired speed to turn off the function (the MFO button light is off).

D1-D6: Six cylinder button, press once in JOG or TEST mode to open the corresponding cylinder, and press again to close the cylinder.

X、Y、Z、A、B、C、U、V、W、P1、P2、P3: For the axial button, in the specific mode such as JOG, HOME, etc., press the button to select axis. (U, V and W are not used yet)



Press the "Net" button and the screen will jump to the IP screen to set and get the IP address of the CNC.



Press the "DIAG" button, and the screen will jump to the alarm display screen that show the historical alarm and the current alarm. Under the diagnosis page, press "OscGraph" to view the CNC pulse command and feedback signal through the waveform.



Keeping function.



Keeping function.



Press the "SERVO" button, and the screen will jump to the parameter setting screen of the bus servo motor. By selecting the axis number, it can monitor the real-time command and feedback display of the bus motor, and also read or write the corresponding parameters of the drive.(only valid for bus control mode)



Press the "UPDATE" button, and the screen will jump to the software update screen.It generally used to update the system software, to download the program written by the client.




Press the "Doc" button, and the screen will jump to the IO screen , and the input and output of the IO signal can be monitored on this screen.



Press the "SET" button,and the screen will jump to the Common User Parameters screen, and some parameters such as the main speed can be modified.

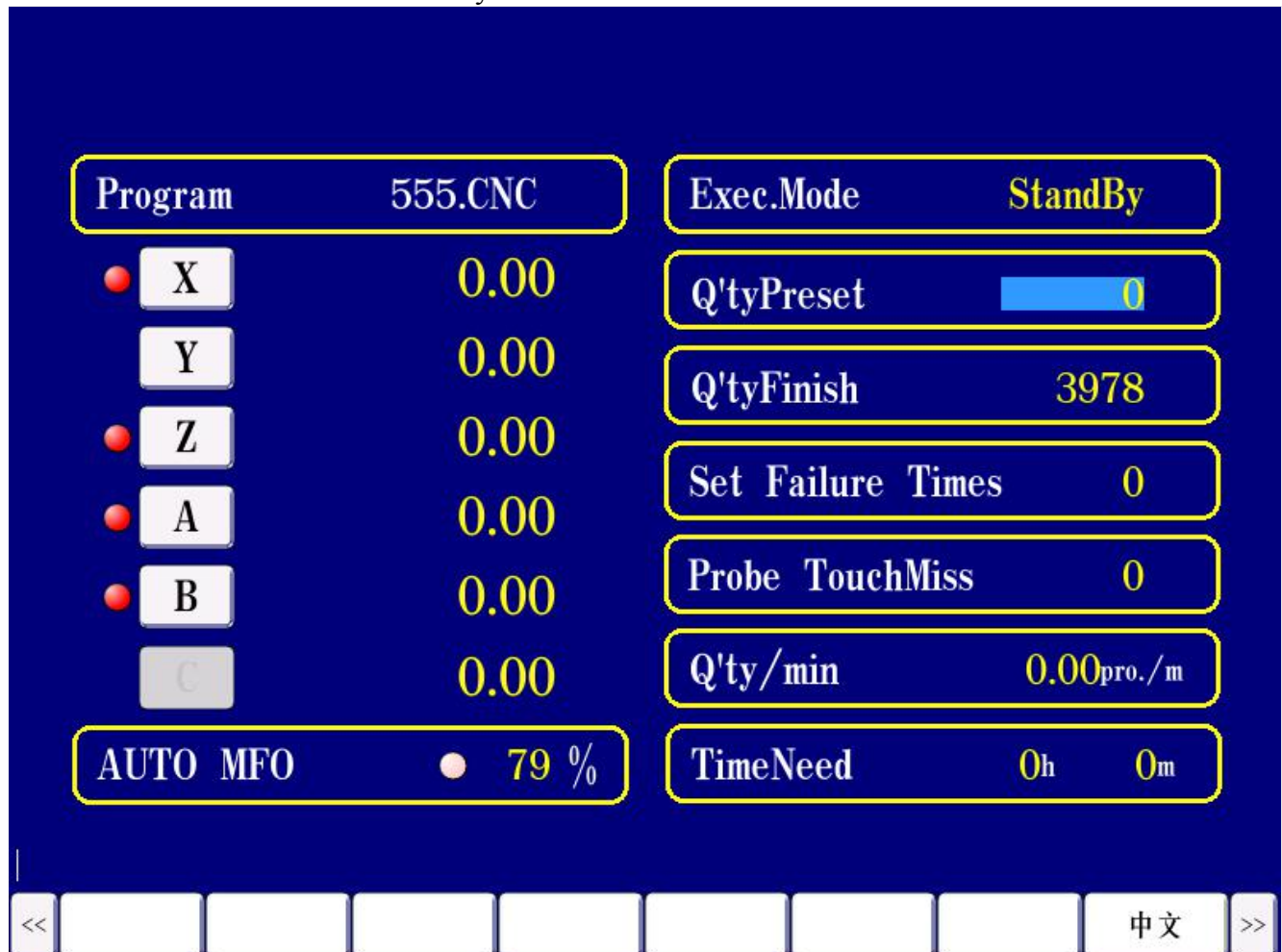


Press the " FILE " button,the screen will jump to the program content selection page,

and the program can be selected by the button  or the "Load" button.

II) Process of Adjusting Machine:

A: Boot to the main screen of standby



Description of content:

1. Exec.Mode: Display the current working mode of the machine.
2. Program: Display the name of the current program used.
3. Q' tyPreset: Set the target output , and can be modified.
4. Q' tyFinish: Dynamically display completed production , and can be modified.
5. Set F.Times: Set the number of times that the probe is allowed to fail. When set to 0, it means that the number of probe failures is not considered.
6. Probe Miss: Dynamically displays the actual number of probe miss. When the number of Probe Miss equal number of Set F.Times,the machine will display a "probe failure" or "probe advance" alarm.
7. Q' ty/min: Show the average production produced by the machine at the current speed.
8. Time Need: Show the time it takes for the machine to continuously produce the preset production at the current speed.

9. AUTO MFO: Display the speed multiplier during auto operation. Press the "MFO" button in the Stand By or AUTO mode, then adjust the automatic multiplier by turning the MPG. The recommended adjustment range is 1%-300% (Please check this value before starting the machine. If the MFO is too high, it is not advisable to directly turn on the automatic execution mode).
10. X-A Coordinates: Dynamically display the actual coordinate position of the 3 axis.



B: Press the button change to the Teach mode

X 77.55		Y 0.00		A 0.00		MFO: 24		EDIT			
TextLabel		N 1		Y STEP:		211.30		ProbeDis: 20.00			
	Code explanation	S	X	Y	A	YF	D	J	T	F	M
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											

<< Bend Set Accumu >>

Contents Explanation:

Status Bar

Columns 1 and 2 show the coordinate changes of the axis symbol and axis, the current execution magnification, the currently executed mode, the current program name, the number of currently executed lines, and the probe distance (When the auxiliary line is sent to the probe).

EDIT Bar

- 1、 **X:** Set the original angel of the bend axis
- 2、 **Y:** Set the length of the feeding
- 3、 **A:** Set the angel of the rotate axis
- 4、 **Yf:** Set the probe auxiliary feeding range (**Notice: Cannot be written in the same line as the Y column**)
- 5、 **D:** Solenoid valve command setting .Fill 1 to 6 to open the corresponding D1-D6 solenoid valve, fill -1 to -6 to close the corresponding D1-D6 solenoid valve.
- 6、 **J:** Loop start and end commands.Start command is "J=1" or number of "J>=1000", such as 1, 1000, 1001....End command is a natural integer of J=2~999, such as **19** (**The size of the end value is also**

the number of cycles, that is, the cycle is 19 times.) Multiple cycles can be supported, and the cycle usage is consistent. For details, reference the cylinders and cycles used below.


7、 **T**: Set the pause time after the completion of the single-step program, in seconds, the setting range is 0-9.99s


8、 **F**: Set the execution speed of current line . The recommended range is: 1%-300%

9、 **M**: When the column is 999, it is represented as a trailing mark, indicating that the program only executes to the line, and the following program is not executed.



Function Button

Modify: When in the AUTO or TEST mode,press this function key to change to the Modify mode that

can modify the program executing.Then press "Exec"or"  ",the next spring will be automatically executed according to the currently modified program.It is worth mentioning that it is generally used for fine-tuning

Insert row:in the mode of EDIT,press "  ",then insert a new row below the row where the cursor is located.

Delete row:in the mode of EDIT,press"  ",delete the line program where the cursor is located.

Clear cell:in the mode of EDIT,press"  "first,then press"  ",it will clear the value of the cell.



Notice:The program can only be edited in EDIT mode or in Modify mode.


Accumulate:in the mode of EDIT,first enter the desired value in the input area at the lower left corner of the screen. Press the "Accumulate" button, the system will automatically fill in the entered value into the corresponding cell, and the newly filled value will be subtracted from the previous value (if before The cell is empty, the system defaults to 0), and the resulting value is accumulated to the value in the following row with the value of the cell , and the value is added to the corresponding cell.

C: Press the button  to change to TEST mode

Contents Explanation:

If, in the mode of AUTO, press the button  ,it will be changed to the mode of TEST.Or in the

mode of Stand By,press the button  first,then press the button  to switch to the TEST mode,and then the potentiometer can be used to adjust the speed of the program execution.Or pressing

the button  in the TEST mode,it can shake the wheel for manual test execution.

Notice:When performing program detection, for safety reasons, please make sure that the potentiometer

position value is 0.




D: Press the button

Contents Explanation:



Press the button


button  to execute the machining program.

E: Press the button Modify to change to the mode of Modify(Modify the program without stopping)

Content explanation:

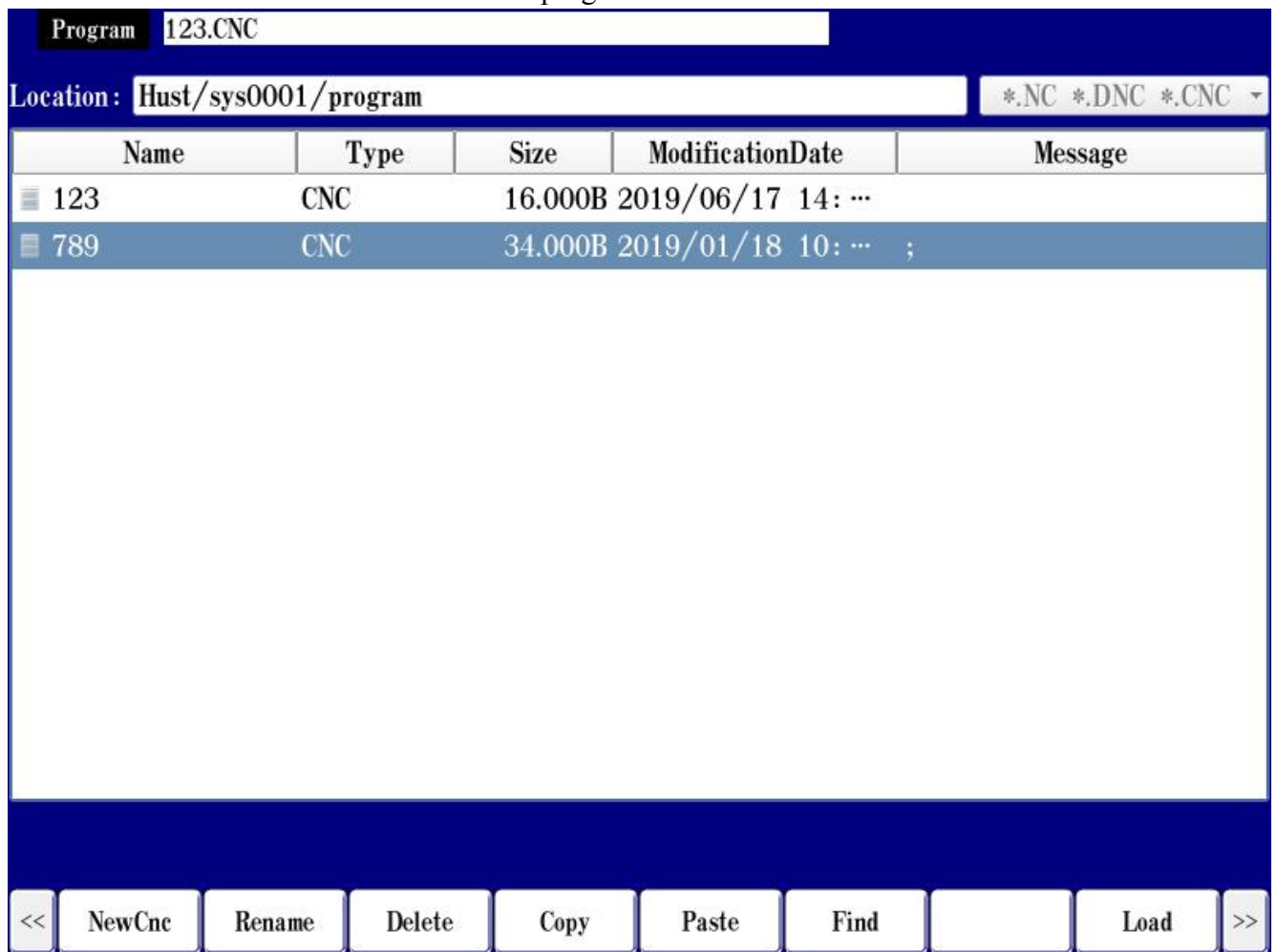
If you need to fine-tune the spring during the spring production process, such the line is slightly longer or shorter, you can adjust it without following the steps below.

In the automatic running state of the machine, press the button Modify to move the cursor to modify the program being executed. After the modification is completed, then press Exec or press the

button , the next spring will be automatically executed according to the modified program.



F: Press the button to switch the program



In the standby mode, press " " to pop up the program selection window, which provides functions such as creating a new program, deleting a program, changing the program name, and loading the program.

Program: Show the current program that the machine is loading and running.

NewCnc: A new program can be created, and the program name must not be the same as the current program.

Rename : The selected program can be renamed, except for programs currently loading on the machine.

Delete: The selected program can be deleted, except for programs currently loading on the machine.

Copy: The selected program can be copied.


Paste: The copied program can be pasted, but the name needs to be renamed.

Find: Find programs.

Notice: When you want to load the program, move the cursor to the name of the file you want to load, and

press "Load" or press the "  " button directly.

G: Press the function button  to check the input/output

At any time, you can press the button , and the I/O diagnostic screen will pop up, and check the input and output, as shown below:

I00 PROBE	I01 Wire Jog	I02 EM-STOP	I03	I04 Pressure Test	I05
I06 PlateU.Detect	I07 PlateD.Detect	I08 Z HOME	I09 A HOME	I10 CutU.Detect	I11 CutD.Detect
I12 FEEDER	I13 Coil Out	I14 WirEnwi	I15 SAFETY	I16 Rod U&D	I17 Cen.Mold U&D
I18	I19 Ext.Zero	I20 Cen.Mold.U.	I21 Cen.Mold.D.	I22 Run	I23 Suspend
I24	I25	I26	I27	I28	I29

ServoError	ServoEnable
X Y A	X Y A

000	001 CYLIN.D1	002 CYLIN.D2	003 CYLIN.D3	004 CYLIN.D4	005 CYLIN.D5
006 CYLIN.D6	007 WireDrec	008 KEY	009 ALARM	010 FEEDER	011
012 Plate Start	013 Central Mold	014 CUT	015 Pro Output	016 Red	017 Yellow
018 Green	019	020	021	022	023
024	025	026	027	028	029

X	77.55	Y	0.00	A	0.00
	0		0		0

Probe 384

<<					WireSet				>>
----	--	--	--	--	---------	--	--	--	----

Press the button "WireSet" to set the parameters of the wire, such as Auto Speed, JOG Speed, Wire JOG, No Coil Error, Wire direction and Wire Axis, as shown below:

Press the button Check Set to set the check parameter, as shown in the following parameter screen:

Wire Set

Auto Speed: 0 (1—10000)
JOG Speed: 0 (1—10000)
Wire JOG: 1 (0 on, 1 off)
No Coil Error: 1 (0 off, 1 on)
Wire Direction: 0 (0 forward , 1 reverse)
Wire Aixs: 0 (0-MPG, 1-P1)

I01	I12
007	010



Auto Speed: The speed at which the wire frame automatically follows (associated with the AUTO MFO)

JOG Speed: When manually test, the Wire jog signal acts on the speed of the wire frame.

Wire jog: =0, The Wire jog signal is normally close.=1The Wire jog signal is normally open.

No Coil Error: 0 off, 1 on.

Wire Dir.: 0 forward, 1 reverse.

I01:Input of the Wire jog

I12:Input of the FEEDER signal.

O07:Output of the Wire Dir.


O10:Output of the FEEDER.

Wire JOG: Press and hold to output the JOG Speed

I/O page: Click to return to the I/O screen.

Acc/Dec: Acceleration and deceleration when the cursor moves to Auto Speed or JOG Speed.

H: Press the button  to Common User Parameters setting

When the machine is in the Stand By state, press the button  on the keyboard, the system pops

up the common user parameters screen, as shown below:

Common User Parameters			
1	Main Speed	20000	
2	Screensaver(min)	30	
3	MPG Low	10	
4	MPG High	30	
5	Probe Speed	1000	
6	Probe Reso.		
7	Back Speed	3000	
8	Touch Abnormity Set	1	
9	Probe Abnormity	0	
10	Probe Abnormity Dis.%	10	
11	Touch Miss Dis.%	100	
12	Touch Pattern	10000	=0,i0 ;=10000,High Probe
13	Probe Out Time	10	ms,Can't More Than Y axis Acc/dec Time
14	High Probe Filter Time	2	
15	Emergency Alarm switch	0	0 Off;1 On
16	Wire Alarm switch	1	0 Off;1 On
17	WirEnwi Alarm switch	1	0 Off;1 On
18	Safety Alarm switch	0	0 Off;1 On
19	M3 BUS	0	0 Off;1 On
20	Acc/Dec Time Each	31	Bit0=X,Bit1=Y...

Main Speed——It refers to the speed of the machine when the "MFO" is 100%, which can be modified. The unit is: degrees / minute (rotation axis) or mm / minute (linear axis)

Screen saver——It refers to the time when the monitor is protected by a black screen. It can be modified. Note: it takes effect after reset and power on.

MPG Low——It refers to the slow speed with turning the hand wheel. The default value is 10, and the modification range is 1-100.

MPG High——It refers to the high speed with turning the hand wheel. The default value is 30, and the modification range is 1-100.

Probe Speed——It refers to the speed at which the machine runs when the probe is executing (same as the unit and concept of the main speed value), and the range cannot exceed the main speed value. When the auxiliary feed line (YF) is set in the program,the Probe Speed is the speed which the program executes to the auxiliary feed.The unit is: degrees/minute (rotation axis) or mm/min (linear axis).

Probe Resolution——Reserved.

Back Speed ——Refers to the speed which the retraction is performed (while returning to zero)

Probe Advanced Set——The number of probe advances setting. When the number of probe advances exceeds this value, the number of alarm probe failures is reached.

Probe Advanced——Current probe advances

Probe Advanced Distance%——The smaller the value, the smaller the range of the probe advance signal.

Notice: If the probe advance distance percentage value were 10, YF were 100,the auxiliary line distance were 0 to 10 ,it is the probe advance.

Percentage of distance before probe failure —— The larger the value, the smaller the range of the probe signal failure signal.

Notice: If the distance percentage before the probe fails were 90, YF were 100,the auxiliary line distance were 90 to 100,it is the probe failure.

Probe Pattern—— =0,probe signal is I/O input signal;=10000,the probe is a high speed probe.

Probe Out Time——The time that the CNC sends the signal to the driver to clear the current command, in ms, must not be greater than the Y-axis acceleration/deceleration time.

High Probe Filter Time——The filter time when the probe is a high speed probe.

Check switch-----Set the switch of the check length. When it is 0, the length of the check is turned off. When it is 1, the inspector is the built-in inspector. When it is 2, the inspector is the external inspector. (Now the built-in inspector retains; this parameter effect after restarting)

Emergency Alarm switch——Emergency stop function switch. When it is 0, the emergency stop button is invalid.

Wire Alarm switch——The switch for the wire alarm. When it is 0, the wire alarm function is invalid.

WirEnwi Alarm switch——The switch for the feeding alarm. When it is 0, the feeding alarm function is invalid.

Safety alarm switch —— Switch for safety door alarm function. When it is 0, the safety gate alarm function is invalid.

Oil alarm switch——The switch of the oil pump alarm function. When it is 0, the oil pump alarm function is invalid.

Notice: The red part is generally not allowed to be modified.

I: Press the function button Mpara to turn to related parameter setting

Press the button "MPara" on the common user parameters screen. After entering the password, the screen will jump to the mechanical parameter page, and all six axial mechanical parameters will be displayed on two pages, as shown below:

		X (1)	Y (2)	Z (3)	A (4)	B (5)	C (6)	
1	Reso.Numerator	36000	21991	36000	100	36000	100	
2	Reso.Denominator	80000	20000	24000	100	40000	100	
3	Motor Dir.*R	0	1	1	0	0	0	
4	G01 Travel Speed	51300	90000	228000	10000	136800	10000	
5	G00 Travel Speed	999999	999999	999999	999999	999999	999999	
6	Home Speed	2000	2000	2000	2000	2000	2000	
7	Home Grid Speed	200	200	200	200	200	200	
8	Home Dir.	0	0	0	0	0	0	
9	Home On-Off	8	0	10	9	11	12	
10	Is Find Grid	1	1	1	1	1	1	=0 find point, =
11	Home Grid Dir.	3	3	3	3	3	3	
12	Home Shift	0.00	0.00	0.00	0.00	0.00	0.00	
13	Soft Limit+	99999.99	99999.99	99999.99	99999.99	99999.99	99999.99	
14	Soft Limit-	99999.99	99999.99	99999.99	99999.99	99999.99	99999.99	
15	Soft Limit On-Off	1	0	1	1	0	1	

*R Effect On Power Off

<< Var-moni

Y Compen.Set
Save >>

1)Resolution Numerator

a .Rotary axis (the camshaft and the rotary shaft are both rotary axes):

Resolution Numerator = The angle which the rotary shaft rotates one revolution = 360×100
 (Unit: 0.01 degree)

eg: X1-Axis Resolution Numerator = $360 \times 100 = 36000$

b .Linear shaft(spindle) in the form of a reel :

Resolution Numerator = The circumference of the feeding wheel = $\pi \times \text{Diameter}$ (Unit: 0.01mm)

Notice: The setting value is an integer format with no decimal point.

eg: Y-Axis Resolution Numerator = $3.14159 \times 120 \times 100 = 37699$

(37699 is only a theoretical calculation value. Due to the certain tolerance of the circumference of the wire reel in actual production, the adjustment can be slightly adjusted according to the actual situation.)

c .Linear shaft in the form of a lead screw:

Resolution Numerator = Lead screw pitch (Unit: 0.01mm)

eg: Assuming the lead screw pitch is 5mm, the resolution numerator is: $5 \times 100 = 500$.

2)Resolution Denominator

Resolution Denominator = Servo motor encoder resolution×Signal magnification×Gear ratio

(Refers to the ratio of the number of teeth of the target shaft to the number of teeth of the servo motor)

eg: X1-Axis Resolution Denominator=2000×4×10=80000

Explanation: The resolution numerator and denominator are set according to the mechanical axial transmission , servo motor encoder resolution and signal magnification.After setting, please don't adjust.

3)Motor Direction

Set as 0,the direction of rotation is positive;

Set as 1,the direction of rotation is reversed.

When the servo motor is installed, if the machine is running in the opposite direction, you can use this parameter setting to correct the machine direction.

4)G00、G01Maximum feed rate

Set the axial maximum feedrate. The value set is an integer format without a decimal point.

Maximum feed rate = Servo motor rated speed÷Gear ratio×360×0.95 (Unit: Degree/minute)

eg: X1-Axis Maximum feed rate = 1500÷10×360×0.95 = 51300 (For safety considerations, the recommended maximum value, set it to 50000 when actually setting)

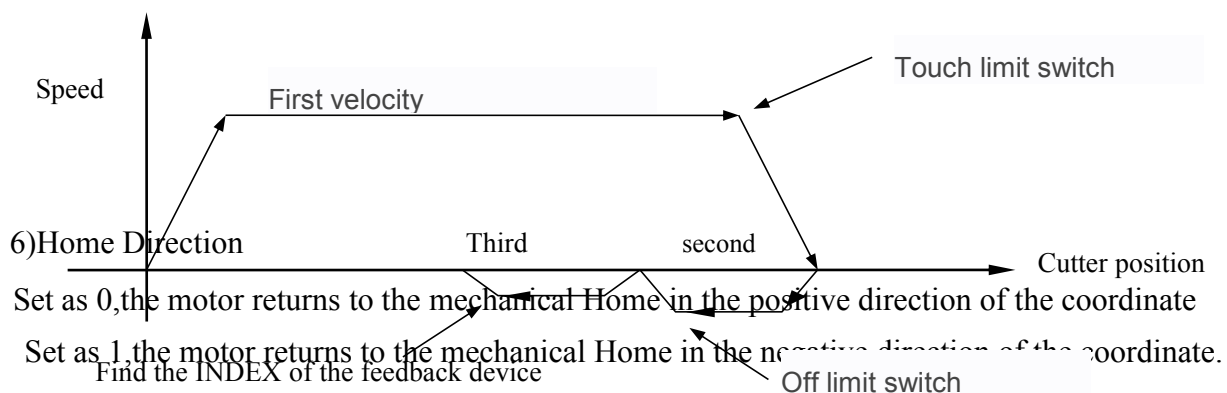
5)Home first speed & Home speed

Mechanical homing rate is divided into three sections (as shown).

No.1 section,the rate is set by the parameter <Home speed> according to the selected axis .

NO.2 section,when the speed has a deceleration of 0 in the first segment, it is automatically set to 1/4 of the first segment rate.

The rate at which the third segment finds the ZERO of the feedback is set by the parameter <Home Grid Speed>.



Set as 0,the motor returns to the mechanical Home in the positive direction of the coordinate

Set as 1, the motor returns to the mechanical Home in the negative direction of the coordinate.

7)Home On-Off

Set as 8,then the axis Home switch signal input point is I08.

8)Is Find Grid

Set as 0,find GRID points.

Set as 1,do not find GRID points

9)Find GRID Direction

Set as 0,indicating when the motor returns to the machine origin (HOME), the second and third segments leave the limit switch (GRID) direction is the same as the first segment.

Set as 3 , indicating when the motor returns to the machine origin (HOME), the second and third segments leave the limit switch (GRID) direction is opposite to the first segment.

10)Home Shift

Set the target axis mechanical home offset value and reset,and then return to the home to take effect.The unit : degree (rotation axis) or millimeter (linear axis).When the machine home return is executed, after returning to the home , the motor is offset by the set offset value and stops at the new machine home. The new machine home coordinate is displayed as 0.The offset value can be set to positive or negative values:positive values indicates offset in the positive direction of the coordinates, and negative values indicates offset in the negative direction of the coordinates.

11)Soft Limit

Set the limit of the range of motion in each axis. When the axial motion exceeds, the system will give an alarm.

12)Soft Limit On-Off

Whether to open the software limit switch, 0 represents off, 1 represents on


13)MPG Shift


Hand wheel displacement magnification of each axis

14)Acc/Dec Time

Acceleration and deceleration time of each axis.

15)Speed-type Positioning Speed

In the adjustable JOG mode, the speed of the axis is controlled by the buttons  and the

button  in the lower left corner of the keyboard.

16)Pulse Mode

Refers to the pulse format of the motor. (Note: This parameter needs to be restarted to take effect)

17)Hardware Axis

Refers to the hardware axis corresponding to the software axis. (Note: This parameter needs to be restarted to take effect)

18)Hardware-axis Bus switch

(Note: This parameter needs to be restarted to take effect)

Refers to the switch corresponding to the axial bus control mode.

19)Hardware-axis Stack Number Set

(Note: This parameter needs to be restarted to take effect)

Refers to the drive stack number setting for each axis.

20)Hardware-axis Enable

(Note: This parameter needs to be restarted to take effect)

Refers to the corresponding hardware-axis enabled.

21)Feedback Hardware-axis

(Note: This parameter needs to be restarted to take effect)

Refers to the motor encoder feedback corresponding to the corresponding axis.

22)Position Error

Refers to the setting of G01 position error for the corresponding axis.

23)Compensation Setting of turn A fill Y

It means that the value of the feeder Y-axis is compensated when the rotary A-axis is in operation.Y coordinate does not change.

Notice: The red part cannot be modified at will.

III)Program Example

Notice: Due to differences in shape as well as the mounting position of the tool, the following examples are used to explain the programming, not the actual operation, so as not to lead to the occurrence of collision cutter.

Instructions	Name	Graphical solution	Explanation
S12	Plate Up		Plate goes up
S-12	Plate Down		Plate goes down
S13	Center mold Up		Center mold goes up
S-13	Center mold Down		Center mold goes down
S65	Cut		Y means length of the wire feeds. Y feeds first, then the plate and center mold will be shut. Finally, the cylinder of the cutter will be turned on to do cut action and after that, the cylinder will be turn off.
S81	Bend left 1 with die change		Shut the plate and the center mold first. Y means the length of the wire that feeds. A means the angle of the rotate line. X don't have to program and it will locate to the bend origin acquiescently and then start the plate and center mold.
S82	Bend right 1 with die change		Ditto
S83	Bend left 2 with die change		Ditto
S84	Bend right 2 with die change		Ditto
S91	Bend left 1 without die change		Shut the plate first. The center mold stays put. Y means the length of the wire that feeds. A means the angle of the rotate line. X don't have to program and it will locate to the bend origin acquiescently and then start the plate. (bend manner refers to Bend Coefficient Set)
S92	Bend right 1 without die change		Ditto
S93	Bend left 2 without die change		Shut the plate first (The cylinder of the plate will not react if the last bend manner is Bend right 2). The center mold stays put. Y means the length of the wire that feeds. A means the angle of the rotate line. X don't have to program and it will locate to the bend origin acquiescently and then start the plate. (bend manner refers to Bend Coefficient Set)
S94	Bend right 2 without die change		Shut the plate first (The cylinder of the plate will not react if the last bend manner is Bend left 2). The center mold stays put. Y means the length of the wire that feeds. A means the angle of the rotate line. X don't have to program and it will locate to the bend origin acquiescently and then start the plate. (bend manner refers to Bend Coefficient Set)
S61	Bend & not return		X means bend angle (product angle). X locates to the actual angle of the motor which refers to the bend angle.

S62	Bend & return	X means bend angle(product angle). X locates to the actual angle of the motor which refers to the bend angle and then return to the bend origin.
S63	Push-bending	X means bend angle(product angle). X locates to the actual angle of the motor which refers to the bend angle and then Y feeds, finally it returns to the origin.
S64	Arc	X means bend angle(product angle). Y means the length of the wire that feeds. J means the circle times. Firstly, X locates to the bend origin that last time mentioned. Secondly, Y feeds. Thirdly, X locates to the actual angle of the motor which refers to the bend angle. These three steps are a circle. And it will circle J times in total.

Bend manner & the Set of origin:

S81: Bend left 1 with die change(bend manner refers to Bend Coefficient Set)

Explanation: Shut the plate and the center mold first. Y means the length of the wire that feeds、 A means the angle of the rotate line、 X don't have to program and it will locate to the bend origin acquiescently and then start the plate and center mold.

S82: Bend right 1 with die change

S83: Bend left 2 with die change

S84: Bend right 2 with die change

NOTE: S code don't have to program repeatedly if the bend manner don't have to change.

S91: Bend left 1 without die change

Explanation: Shut the plate first. Y means the length of the wire that feeds、 A means the angle of the rotate line、 X don't have to program and it will locate to the bend origin acquiescently and then start the plate.

S92: Bend right 1 without die change

S93: Bend left 2 without die change

S94: Bend right 2 without die change

NOTE: S code don't have to program repeatedly if the bend manner don't have to change.

Bend Action Set

S61: Bend & not return

Explanation: X means bend angle(product angle). X locates to the actual angle of the motor which refers to the bend angle.

S62: Bend & return

Explanation: X means bend angle(product angle). X locates to the actual angle of the motor which refers to the bend angle and then return to the bend origin.

S63: Push-bending

Explanation: X means bend angle(product angle). X locates to the actual angle of the motor which refers to the bend angle and then Y feeds, finally it returns to the origin.

S64: Arc

Explanation: X means bend angle(product angle). Y means the length of the wire that feeds.J means the circle times. Firstly, X locates to the bend origin that last time mentioned.Secondly, Y feeds. Thirdly, X locates to the actual angle of the motor which refers to the bend angle. These three steps are a circle. And it will circle J times in total.

S65: Cut

Explanation: Y means the length of the wire that feeds.Firstly, the Y feeds.Secondly,the plate and center mold will be shut.Thirdly,turn on the cylinder of the cutter.Finally,turn off the cylinder of the cutter after the cut action end.

Bend example:

X 93.44		Y 0.00		A 74.80		MFO: 98		EDIT			
987.CNC		N 0				ProbeDis: 20.00					
	Code explanation	S	X	Y	A	YF	D	J	T	F	M
1			30.00		30.00						
2	BL1 with die change	81		30.00	40.00						
3	Bend & return	62	90.00								
4				50.00							
5	Bend & return	62	60.00								
6	Cut	65		-30.00							
7											
8											
9											
10											
11											
12											
13											
14											

Explanation:

1. The original position of the program. X locates to coordinate 30.00 first and then A locates to coordinate 30.00.
2. Appoint band manner. X go to the origin to which *Bend left 1 with die change* refers . At the same time,Y feeds 30.00 and A locates to coordinate 40.00.
3. Bend angle. After X go to 90°to which the product refers, it will return to the origin to which *Bend left 1 with die change* refers.
4. Y feeds 50.00.
5. Bend angle. After X go to 60°to which the product refers, it will return to the origin to which *Bend left 1 with die change* refers.
6. Cut. Y feeds backward 30.00 and then do cut action.

Push-bending example:

X 95.26		Y 0.00		A 74.80		MFO: 98		EDIT			
987.CNC		N 0				ProbeDis: 20.00					
	Code explanation	S	X	Y	A	YF	D	J	T	F	M
1			30.00		30.00						
2	BL1 with die change	81		30.00	50.00						
3	Push-bending	63	90.00	200.00							
4	Cut	65		-30.00							
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											

Explanation:

- 1.The original position of the program. X locates to coordinate 30.00 first and then A locates to coordinate 30.00.
- 2.Appoint band manner. X go to the origin to which *Bend left 1 with die change* refers . At the same time,Y feeds 30.00 and A locates to coordinate 50.00.
- 3.Push-bending angle. X go to 90°to which the product refers.Then,Y feeds 200.Then X will return to the origin to which *Bend left 1 with die change* refers.
- 4.Cut. Y feeds backward 30.00 and then do cut action.

Arc example:

X 95.26		Y 0.00		A 74.80		MFO: 98		EDIT			
987.CNC		N 0				ProbeDis: 20.00					
	Code explanation	S	X	Y	A	YF	D	J	T	F	M
1			30.00		30.00						
2	B.L1 with die change	81		30.00	50.00						
3	Arc	64	160.00	10.00				9			
4	Cut	65		-30.00							
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											

Explanation:

1. The original position of the program. X locates to coordinate 30.00 first and then A locates to coordinate 30.00.
2. Appoint band manner. X go to the origin to which Bend left 1 with die change refers . At the same time,Y feeds 30.00 and A locates to coordinate 100.00.
3. Arc attribute. X go to the origin to which *Bend left 1 with die change* refers first.And the circle starts. Y feeds 10.00,then X go to 160°to which the product refers , finally X backwards 10°.These three steps are a circle and it circle 9 times in total.when the circle is finished,X will go to the origin to which *Bend left 1 with die change* refers.
- 4.Cut. Y feeds backward 30.00 and then do cut action.

Special instructions:

This type of machine include common programme. When the code “S” is not used, the way of programming is the same as standard spring machine does.

Speed, cylinder, pause or cycle function:

X 30.01		Y 0.00		A 30.00		MFO: 62		EDIT			
147H.CNC		N 0		Y STEP:		10.00		ProbeDis: 3.00			
	Code explanation	S	X	Y	A	YF	D	J	T	F	M
1			30.00		30.00		6				
2	B.L1 with die change	81		30.00	100.00					150	
3	Arc	64	160.00	10.00				9		80	
4				50.00				1			
5	Bend & return	62	60.00					3			
6				40.00				1000			
7	Bend & return	62	70.00					4			
8	Cut	65		-30.00			-6		0.30		
9											
10											
11											
12											
13											

<< Bend Set Accumu >>

Explanation: the purpose of this example is to explain the cylinder, cycle and delay command;

1、“NO.1 cycle” starts from row 4---start row(J=1 and it represents the cycle number) and ends at row 5---end row(J=3 and it represents the cycle times).So the cycle will execute row 4 and 5,and it will execute 3 times in total.Only the “NO.1 cycle” is finished will the rest of the program execute continue.Cylinder 6 will be turned on while row 1 is finished(D=6),and cylinder 6 will be turned off while row 8 is finished(D=-6).In row 2,the code F is equal to 150,so the feed speed is 150% of current speed.In row 3,the code F is equal to 80,so the speed is 80% of current speed

2、“NO.1000 cycle”starts from row 6---start row(J=1000 and it represents the cycle number) and ends at row 7---end row(J=4 and it represents the cycle times).So the cycle will execute row 6 and 7,and it will execute 4 times in total.Only the “NO.1000 cycle” is finished will the rest of the program execute continue..Delay T = 0.30,so when the program execute to row 8,it will pause for 0.30 seconds.

3、When S = 64, there is no loop start mark ("J = 1" or "J > = 1000"), only the number of loops (J = 9),The third line will loop nine times.

Notice:

①With the steam probe (that is, the probe is mounted on the cylinder), when the steel wire hits the probe, the solenoid valve automatically closes and the cylinder automatically retracts;When the steel wire does not touch the probe, the solenoid valve is automatically closed after the line of the Yf value had sent, and the cylinder is automatically retracted; it is not necessary to fill in the solenoid valve number to be closed in the "D" column.

②If you are using an electric probe, you do not need to fill in the "D" column to fill in the solenoid valve number to be opened or closed.

③If only cylinders are used, the number of solenoid valves to be opened or to be closed must be filled in the "D" column.

④"-1",the cylinder is returned only for using in the cylinder; the solenoid valve number to be closed must be filled in the "D" column.

Explanation:


①The actual wire length is subject to the probe.

②When the wire is sent to 40.5mm, the probe is valid and starts to decelerate (the speed is the "probe speed" value in the parameter setting screen). The auxiliary wire feeds the probe and stops the wire feed when it is touched.

③The "Set F.Times" must be set on the main screen to be effective.(When the number of probes is set to 1 time, the probe will stop immediately if it does not touch the machine, and the "probe failure" prompt will appear without an alarm;When the "probe times" is set to 2 times or more, the last one does not touch, the machine stops after this is done, and an alarm occurs.

IV)Cue and Solution of the System

A status prompt appears at the bottom right of the CNC with a flashing line of words. Prompt the action that the operator needs to do first or the fault that needs to be prioritized. There are several tips:

- 1、 Please perform the homing action first: the system needs to perform the homing action when the system is first turned on, ensuring that the coordinate position can match the actual position.
- 2、 Please handle the wire frame alarm: This prompt will appear when the wire frame alarm occurs. Please check the wire frame to ensure that the wire frame is normal. Press CYCST to continue.
- 3、 Dispose of the wire material. When the wire material runs out, the alarm message will appear. Please check the wire material.
- 4、 Probe failure: Please stop when the probe fails once, press "" to continue.
- 5、 Please handle the probe in advance: Please handle the probe in advance, please check the feeder or the distance of the advance of the probe.
- 6、 X-V-Axis Servo alarm: Servo alarm, please check the servo drive.

- 7、 Security door alarm please handle: the safety door is open, please check.
- 8、 Please contact the supplier when the system expires: The system usage time is locked, please contact the supplier.
- 9、 Parameter setting error: System mechanical parameter setting error, please check.
- 10、 Production reached: the completed output has exceeded the set output.
- 11、 CNC internal error: The CNC board program is abnormal, please contact the supplier.。
- 12、 Emergency stop: System emergency stop, please check the emergency stop switch .
- 13、 Axial hard/soft body limit arrival: axial limit arrival, check if each axial direction has reached the limit position .

M3 BUS Control Mode:

- 1、 The bus axis is not enabled: the CNC parameter setting is incorrect. Set the number of hardware axis enable to 1 on the mechanical parameter page .
- 2、 No. N servo axis communication failure: The bus connection is unstable, check the bus and restart the machine. Drive reported A/B75.
- 3、 The drive reports A/B27, because the code line was unplugged and plugged in. It will be adjusted to FA/FB009 by the "F" key and the up and down keys on the drive, press the " S " key, then press the "F" key, and finally press "S" Key, restart the machine to clear the alarm, or the screen switches to the servo parameter screen, press the button "A.27 Clear" and restart the machine.
- 4、 The drive reports A/B10: the motor power line and the code line had reversed. After re-plugging the line, please restart the machine.
- 5、 The drive reports A/B40: the motor code line is not inserted, and the A/B27 can be cleared after plugging in.

Special Notice

After the CNC has a system alarm, the operator should take corresponding measures according to the alarm description or contact the professional maintenance personnel . After the CNC has a system alarm, the CNC will automatically prompt that it needs to do the zeroing action!

V)Common Faults

i Do not find the Home

- a, The original sensor switch does not light up, replace the sensor switch, or check the sensor switch for oil stains.
- b, The origin signal of the IO board cannot enter, and the input point signal on the screen indicates that it is not reversed, and this IO board is replaced for another.
- c, The origin signal is normal, the motor origin (Grid point) cannot be found, the setting parameter is changed to the external origin mode, and the motor GRID point is not found.

ii Abnormal Home position

- a, In looking for the motor Home mode, the home position is abnormal, indicating that the motor home signal is unstable and interfered.
- b, In finding the external origin mode,it indicating that the sensor switch position is loose or the sensor switch signal is unstable.

iii The motor will run automatically,when turn on the CNC

- a, Controller-to-driver control line or motor-to-driver encoder wire solders by mistake.

iv Probe is not sensitive

- a, The probe wiring is poorly connected, and the probe accuracy and speed settings do not match.
- b, The wire is not conductive or the material surface is too dusty.

v Cylinder can't play

- a, This system uses 24V cylinders.Please check whether the output board wiring is normal.

vi Reverse or outgoing line head

- a, The motor driver parameter settings do not match.

vii It is too different form TEST to AUTO

- a, When the detection is performed without the high speed of the potentiometer,it is too difference form the speed of the hand wheel control to the automatic execution's.

viii Motor noise is too loud

- a, Noise in continuous operation requires adjustment of motor rigidity or mechanical assembly rigidity.

b, Noise during start-stop or motor steering needs to adjust the system acceleration and deceleration time to mitigate the impact.

ix Insufficient delivery

a, When the length of the feed line and the short's are too difference, especially 1mm or more ,consider whether the wire wheel is slippery or the wire feed motor is out of alignment.

b, When feeding accuracy is within 1mm,it can be considered the problem of mechanical precision.

x The machine has a "paused" status during normal operation

There are two general situations:①When the steel has run out or I13 is disconnected or broken line, the "Coil Out" prompt will appear in the lower right corner of the computer and will stop in the "Pause" state.②When the wire frame alarm or external noise signal interferes with I12, the "Wire jog" prompt will appear, but the machine will stop in the "paused" state.

Feedback

Thank you very much for using this controller. In order to serve you better and improve our controller 's function,please send your suggestions to us.And if you have any questions, please tell us!

Tear down this page and fax to us after filling in the information. Thank you for your support!

Company name:_____

Date:_____

User's name: _____

Department:_____

Telephone : _____

Fax:_____

Machine model:_____

Suggestions:

Quality first Origin import