CNC metal profile rolling and bending machine (4)

servos)

MGW-CNC-15T

operation instructions

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Preface

Thank you for using the equipment produced by our company. Before using this equipment, please make sure to take the time to read this manual in order to keep your equipment in optimal operating condition and achieve the best economic benefits.

We sincerely hope that during the use of this device, you can promptly provide us with any problems and good suggestions you have found, so that we can cooperate better in our future work.

Thank you!

Our company reserves the right to make technical improvements. Any changes are subject to no further notice. If any discrepancies are found between this manual and the actual product, please refer to the actual product.

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1. Main uses of application:

Mainly designed for the bending and arc processing of broken bridge aluminum profiles, aluminum-plastic profiles, various irregular aluminum profiles, rectangular steel pipes, etc. It can bend various shapes (C-shaped, U-shaped, O-shaped, 3R combination shape, etc.) and is an ideal processing equipment for decoration enterprises and aluminum door and window curtain wall enterprises in the bending and arc process.

2. Equipment working principle and mechanical structure

2.1. Equipment working principle

The equipment is suitable for bending metal profiles with different cross-sections and materials. It has 3 sets of servo driven wheels, 2 sets of servo driven lifting wheels, and 1 set of servo driven spindle feed mechanism; The equipment adopts photoelectric positioning. By using a wheel wheel that matches the cross-section of the profile and utilizing the principle of three-point rounding, the displacement of the middle wheel (pressure wheel) (Y-axis direction) is automatically controlled, allowing the profile to be bent or formed multiple times (X-axis direction) between three sets of wheels to the desired half diameter; The length of feed is collected by an encoder, and the rotation of the wheel is controlled by a CNC control system, which automatically matches the linear speed of the wheel; At the same time, the displacement of the wheel and the feed rate of the intermediate pressure wheel are controlled by a full closed-loop system to achieve high thrust and precision requirements.

2.2. Equipment mechanical structure

2.2.1. Axis seat slide:

2. 2. 2 Steel plate quenching and tempering treatment, dovetail groove structure connection, each surface is processed by grinding machine, after combination, both the upper and lower surfaces are processed by grinding machines, and the surface is electroplated with hard chromium.

2. 2. 3 This structure has high strength, good structural stability, a thickness of 180mm, and can withstand particularly large tensile forces.

2.2.4 Minimum bendable inner arc radius 60mm

2.3 X-axis rotating transmission mechanism:

2.3.1 Drive the planetary speed reducer through a CNC servo motor, which drives the mold spindle to rotate

2.3.2 This structure ensures consistent linear speed of the wheel mold by adjusting the speed ratio

2.3.3 It has a large driving torque and is suitable for bending large cross-section profiles.

2.4. Y-axis propulsion mechanism:

2.4.1 Structure: The linear speed reducer is driven by a servo motor, and the linear speed reducer drives the feed of the middle spindle to achieve precise positioning of the middle spindle.

2.4.2 Advantages: High positioning accuracy, ensuring high positioning accuracy when the spindle moves forward and backward, with a repeated positioning accuracy of ≤ 0.01 mm, suitable for difficult variable curvature arc machining.

2.5. The operation screen can slide and rotate left and right, making it convenient to observe the process of feeding and discharging while operating.

2.6. The machine has a beautiful appearance, and the surface of the frame and protective plate is pickled, phosphate, and electrostatically sprayed.

2.7, All three axes are active and equipped with anti-tilt devices

2.8. The electrical system is manufactured according to export European standards, with high safety.

Serial No.	Accessory name	Origin and brand	quantity	Note
1	Axis Sliding track	Self-produced	lset	heat treatment processing, grinding machine processing, surface electroplating of hard chromium
2	main shaft	Self-produced	3sets	Material 40Cr, quenched and tempered, surface high-frequency quenching, grinding machine precision machining
3	Spindle rotation bearing	Swedish SKF	6sets	
4	Motion Contwheel	China "googol"	lset	

3、	Main	component	configuration	of	the	equipment
•••	11100 111	oomponionio	00111 + 64 + 40 + 011	<u> </u>	0110	oquipmon

5	IPC	Industrial Computer	1set	17Сри
		Taiwan "Advantech"		
6	21.5" PC screen	China	1nos	Dual use touch/mouse, vertical screen
7	Servo motor driver/servo motor	China	High inertia and high torque 3 units * 1.8KW	Installation location: Used for spindle rotation
8	Servo motor driver/servo motor	China	High inertia and high torque 1 unit * 4.4KW	Installation location: Used for spindle feed
9	planetary reducer	China	3sets	Installation location: Used for spindle rotation
10	planetary reducer	China	1set	Installation location: Used for spindle feed
11	Linear reducer	China	lset	Installation location: Used for spindle feed
12	Photoelectric detection switch	China	1set	Used for locating the end of the workpiece
13	Displacement encoder	China "TEP"	1set	Used for measuring the length of workpieces
14	Grating ruler	China "sino"	1set	Used for Y-axis feed positioning
15	Positioning detection switch	Schneider, France	7sets	Used for Y-axis and Z-axis positioning
16	Air Switch	Schneider, France	9sets	Used for controlling motors
17	Power supply	Taiwan "MW"	1set	Power the detection switch

4. Technical Parameter

- 1. Power: 7.5KW
- 2、Voltage: 380V 50HZ
- 3, wheel speed: 0-15R/min

- 4. Max. Wheel diameter: 240mm
- 5、Wheel axis diameter: 50mm
- 6. Fixed axis center distance: 280~600mm
- 7, Y-axis rated thrust: 13Ton
- 8. Minimum machining radius: 100mm

9, Maximum cross-section of bending profiles: maximum width 120mm, maximum axial height 200mm

Note: The width and height cannot reach the maximum value at the same time.

10, Y-axis positioning accuracy: 0.01mm

11, Overall size: 1500mm*1200mm*1400mm

12、 Weight: 900kg

5, Installation

1. Conditions:

The machine should be installed on a dry, dust-free, non corrosive gas, and indoor hard cement floor with a temperature of 15-35 degrees Celsius. 2, levelling:

Adjust the guide rail to the horizontal position by adjusting the adjusting bolts on the lower base of the machine body. The specific requirement is that the horizontal error of the three wheel table height should be less than 0.5mm, and

the frame leveling nut should be locked after leveling.

3. Screen installation, as shown in the following figure:



3、Grounding:

The grounding wire must be grounded according to the requirements (as shown in the figure below), with a specification of soft copper wire with a cross-sectional area greater than 2.5mm2 and a grounding resistance not exceeding 4 ohms.



4. Power on:

Equipment input voltage: 380V 50HZ, externally connected to a soft copper wire

with a cross-sectional area greater than $2.\,5\text{mm}2$ (three-phase four wire).



- 6. Usage and operation
- 1. Power on and start up

After confirming the correct system connection, turn on the main power switch, as shown in the following figure:



Press the "System Start" button and wait for about 10 seconds before a desktop icon appears on the screen:



2、Open the CNC system



On the screen icon interface, select the icon "Ference ", On the screen icon interface, select the icon and double-click the left mouse button (or double-click the icon with your finger) to bring up the administrator entrance interface: (See

the following figure)



In the administrator entrance interface, enter the administrator password "123

to enter the recipe editing interface, as shown below:



3、MANUAL



clicl "Manual " button, The system will display a manual operation

interface, as shown in the following figure:

System normal	UNORG	2024-01-17 10:04:35	System normal	UNORG 20	24-01-17 10:04:35
Manual Operation			Manual Operation		
Fixed wheel (X)	Driving wheel(n	Fixed wheel (X)	Driving wheel (Y)	
Diam. X coord 0.000 mm	Y coord 0.00	0	Diath 6 × coord 15000 mm	Y coord 0.000	
Move to 0.0 mm Go	Move to 0.0	mm Go	Move to 0.0 14 mm Go	Move to 0.0 8 mm	Go
Move 1.00 Dec Go	Move 1.00	mm Go	Move 1.00 13 Dec Go	Move 1.00 7 mm	Go
Feed speed 8.00 rpm	Feed speed 300.00	mm/min	Feed speed 800 12 rpm	Feed speed 300.00 m	m/min
Left[X+) Right[X-)	Fore limit Back limit	Foreward(Y Backward(Y-)	Left(X+) 11 Right(X-)	Fore limit 5 Back limit	eward(Y skward(Y-
× Zero		Y Home	× ¹⁰ ×Zero	1	ome
Home All	Stop		1 Home All	2 Stop	
R 0 6 15		10 10 10		5 F6 20 17 +	F8 F9
Formula Auto Manual Diagnosis	Parameter Calculate Cor	npensate Quit	Formula Auto Manual Diagnosis	Parameter Calculate Compens	ate Quit
The following are f	functional	annotati	ons for the "Manual	Operation"	interfa
3.1、Press "	Home All " h	outton,	wait about 10 second	s, Can return	the mid
wheel to the zero	position;	At this	point, the yellow	text above	the scr
UNORG	. :11	+		Readv	
ottotto	W111	turn to	green ready	and and a	,
			11 / 52		

machine tool has returned to zero normally.

Attention: Before each startup and use, you must first enter the manual operation interface



3.5. The Y-axis front and rear limit indicator lights, if the displayed color changes from green to red, indicate that the Y-axis has reached its limit position.3.6. The speed of Y-axis forward and backward movement

3.7, Relative position of Y-axis movement (stacked relative to the current position)

Enter the Y position to move the number, press the "Confirm" button to move the middle wheel to a relative position.

3.8. Absolute position of Y-axis movement (relative to zero position) Enter the Y position to move to the number, press the "confirm" button to move the middle wheel to the absolute position

3.9. Display the current position of the Y-axis



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Attention to the calculation of fixed wheel diameter:

Before measuring and calculating the diameter of the fixed wheel, please perform

X Zero

a zeroing operation on the X-axis 🗳

If not reset to zero, the displacement of the auxiliary wheel does not match the angle of the fixed wheel, which will result in calculation errors.

4、Formula editing (non-standard arc)

There are three methods for editing the arc formula of the workpiece that needs to be processed, as follows:

4.1 Formula Editing Method 1: (Manually editing formulas)

4.2 Formula Editing Method 2: (DXF File import 2D drawing editing formulas)

4.3 Formula Editing Method 3: (STEP/IGS Import 3D models editing formulas)

Below, we will introduce the formulas editing methods one by one

4.1 Formula Editing Method 1: (Manually editing formulas)



Press "Formula " button, screen shows below:

		System no	ormal			UNO	RG	2024-01-1	7 10:51:42				Sustem	ormal			LING		2024-01-1	7 10-51-42
6		Formula B	Edit							ഭ			Formula	Edit			UNIC	/nd	2024-01-1	7 10.51.42
	0 7 0	× 10	0	@ 0	* M					S	* 0		Formula	. Eun		_				
New Import P	oraula unto Le	do pelete Crea	ce simpse	opiral lo arc	n (tert utery ∧to		Þ 🕸 🕸	۵ 🗳	Nev In	port Formul	la Undo Re	edo Belete Cr	eate Ellipse	Spiral To Aro	Connect Discon	neot Query A	nut_	• • •	A
					Fit Ro	tate Move Wind	dow Zoom ∣ T	op Font Right	Iso. Setting							Fit R	otate Move Wi	adow Zoom	Top Font Right	Iso. Setting
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0	urrent coord	Y unite	Bender	CNC start							Curre	nt coord		Bender	CNC start					
Ŷ	0.000	Y start write	Query: S	Select eleme	nt					X		0.000	× write	Query:	normal Select eleme	ent	X			
	0.000		C型配力	方		•			Add Arc	Y		0.000	Y start write	C型配	方		-			Add Arc
			C型-R4	400.0-L12	56.6	- Form	nula A	pply	Del Arc					C型-B	~ 400 0-I 12	56.6		nula	Apply	Del Arc
Madal	2D Model	Eood timos	1	Hoad I 1	200.00	Tail 12	200.00	Total Length	1656.64					OTI	HOO.O ETE	00.0				
Velocity	7.50	Delay	500	Decrease	0.00	Y start	0.00	Y and	27.67	Model		2D Model	Feed times	1	Head L1	200.00	Tail L2	200.0	Total Length	1656.64
Fired D1	120.00	Distance of	350.00	Photoclostri	200.00	Final trans	100.00	Retreat	10.00	Velocity		7.50	Delay	5.00	Decrease	0.00	Y start	0.0	Yend	27.67
rixed D1	100.00	Distance of		Photoelecul	200.00	rindi u'dits.		Receat		Fixed D1		120.00	Distance of	350.00	Photoelectri	280.00	Final trans.	100.0	Retreat	10.00
drive D3	100.00									drive D3		180.00								
No.	Radius	Arc length	Angle	Times	Transition	Adjustment	Comp ratio	Down dist	Y coord	No.	P	ladius	Arc length	Angle	Times	Transition	Adjustment	Comp ratio	Down dist	Y coord
A1	400.00	1256.64	180.00	1	128.01	0.00	0.9000	0.000	27.67	A1		400.00	1256.64	180.00	1	128.01	0.00	0.8000	0.000	27.67
	F2	F3	F4	F 5		F6 💽	F7	F8	F9	6	F2		F3 📂	F4	F5	TV)	F6	P	+ - F8	F
				-	91 8						9	U				QI	2		× 😑	
Formula	Auto	Manu	ial I	Diagnosis	Parameter	Calcula	te Com	pensate	Quit	For	nula	Auto	Mar	nual	Diagnosis	Parameter	Calcul	ate Co	mpensate	Quit

click"

amily					New	Copy	anama Dak	ata	1
C Foi Formula	mula				- New			OK	
C-R4	00.0-L1256.	6			• New	Copy R	ename Dele	ete	
Res	set Library				Add arc	Del Arc A	Add Z Del	z	
odel	2D Model	Feed times	1	Head L1	200.00	Tail L2	200. 00	Total L	1656. 64
locity	7.50	Delay	5.00	Decrease	0. 00	Y start	0.00	Y end	0.00
ixed D1	120.00	Distanc	350. 00	Photoel	280. 00	Final t	100.00	Retreat	10.00
rive D3	180. 00								
) .	Radius A	rc length	Angle	Times	Transition	Adjustment	Comp ratio	Down dist	Y coord
	400. 00	1256. 64	180.00	1	50.00	0.00	1.0000	0. 000	0.00

Formula L	ibrary							
-Famil	C Fomula	1	•	New	Сору	Rename	Delete	6
Form	uia C-R400.0-L1256.6	2	T	New	Сору	Rename	Delete	ОК
	Reset Library 5		3	Add arc	Del Arc	Add Z	Del Z	

Perform the following operations on this interface:

1—Enter new family name, it shows family name; Or choose the existing family name

2-Enter New formula name, Create New formula name or using existing formula name

3—Adding an arc, click " Add arc ", it shows below:

New arc segment	X New arc segment X
Segment TypeArcPositionTailParameterArc Length(L)942.48Radius(R)300Central angle(A)180Feed times1SpiralOKCancel	Segment Type Arc Position Head Parameter Arc Length(L) 942.48 Radius(R) 300 Central angle(A) 180.000 Feed times 1 Spiral OK Cancel
New arc segment × Segment Type Line Position Tail Parameter - Length (L) 942.48 Feed times 1 Spiral OK Cancel	Archimedes spiral Archimedes spiral Start radius (R1): 600 End radius (R2): 300 Turns 2.000 Rotate angle: 720 Spiral length: 5663.134 Ok Cancel

Select the type of segment required above (one of which) to add: arc segment, line segment, or spiral line;

Select position to add: Head, 2nd section, 3rd section,Tail;

Enter the length (or central angle) of the arc, the radius of the arc, the length of the line segment, the number of feedings, and after each arc is entered, click "OK" to automatically import the data into the profile formula.

4—Delete arc, select the arc in the formula that needs to be deleted, and click " Del Arc " then it will deleted。

5—reset formula library, click "**Reset Library**", It is possible to modify the mold parameters and machine tool parameters shared in the formula (usually set before leaving the factory). If the mold needs to be replaced or the axis spacing needs to be re-adjusted, this parameter needs to be modified. After modification, click "OK" to save, as shown in the following figure:

Reset Pa	arameter		×
Prope	erty	Value	
🗉 Re	eset device paramete	r	
Fi	xed D1	120.000	
dri	ive D3	180.000	(二) 兼谱数控
Di	istance of fixed wheel	350.000	
Ph	hotoelectric dist	280.000	
He	ead L1	200.000	
Ta	ail L2	200.000	
			ОК
			Cancel

The automatically generated arc formula is shown in the following figure (example)

Form	│U型配方 ula			-		Сору	Rename	Delet		
1 0111	SP-12345			-	New	Сору	Rename	Delet	te	
	Reset Library				Add arc	Del Arc	Add Z	Del 2	z	
Model	2D Model	Feed times	1	Head L1	200.00	Tail	L2	200.00	Total Length	1
Velocity	y 7.50	Delay	5.00	Decrease	0.00	Y st	art	0.00	Yend	
Fixed D	120.00	Distance of	350.00	Photoelectr	280.00	Final tra	ns.	100.00	Retreat	
drive D	3 180.00									
No.	Radius	Arc length	Angle	Times	Transition	Adjustme	nt Comp	ratio	Down dist	Υc
A1	400.00	628.32	90.00	1	128.01	0.0	0	0.8000	0.000	
L2	Line	200.00		1	155.68	0.0	0	1.0000	0.000	
	400.00	628.32	90.00	1	128.01	0.0	00	0.8000	0.000	



following parameters need to be modified:

Parameter 1: feed times, system default 1 time bending, it can set bending times as per your requirement; if feed times set 0, then Each arc in the formula can be set with different feed times.

Parameter 2: Head L1, system default formula lab. data, If the reserved straight line segment is relatively long, it can be modified as needed.

Parameter 3: Tail L2, system default formula lab. data, If the reserved straight line segment is relatively long, it can be modified as needed.

Parameter 4: working velocity, amend as per needs, Maximum less than 15Turns. Parameter 5: Arc Decrease, 1 time bending ok, default 0; multi-times bending, set as per needs, usually is not exceeding 40mm

Parameter 6: Y Start position, the start position of bending, put workpiece/profile into the machine, 3 wheels clamp the workpiece, while workpiece is not bended, now Y Axis showing data is Y axis start position, it can be manually inputted,

or click "Y start write " auto input.

Notes: set other paramteters as per your needs if required.

When setting parameters are done, click "Poply" button, it shows the simulated model of the newly edited formula as follows:



The function buttons in the upper right corner of the simulation model interface can enhance the three-dimensional display of the model.

4.2 Formula Editing Method 2: (DXF File import 2D drawing editing formulas) 1st, store the files that need to be imported into a USB drive, and insert the USB drive into the USB socket on the machine, In the formula editing interface,

click on the top right corner of the screen " " button, Clear other models from the model display box, then click " Import" button, Select the DXF file to be imported from the USB drive, press " Open " file, Wait a few seconds, the DXF drawing will be displayed in the model display box. Use the mouse to delete unnecessary straight and arc segments, while keeping the arc and line segments that need to be processed (note: do not connect with other unnecessary segments) Example :

Select the DXF file to be imported, click the "Open" button,

> KII	NGSTON (H:) > 需要导入的图纸与模型	~	S	▶ 搜索"需要导入的	的图纸与模型"
挟					• 🔳 🕜
^	名称 ^	修改日期		类型	大小
	🔚 Unique Screens - 2000mm w 90_dra	2022/5/12 14:59	í.	AutoCAD 图形交换	20 KB
	🔚 Unique Screens - 2000mm w 90_dra	2022/5/12 14:59	ŧ.	AutoCAD 图形交换	9 KB
24	📷 Unique Screens - 2000mm w 90_dra	2022/5/12 14:58		AutoCAD 图形交换	11 KB
✓	< (N): Unique Screens - 2000mm w 90_drawing	g_2000 wit 300r at	13 ~	DXF 文件(*.dxf)	~

Select the size unit and click the "Confirm" button,

DXF Impo	ort				×
e 🔽 Au	to Center				1
- Unit-					ו
• MM	ОМ	C Inch	C Custom	5	
					ſ
	Г			1	
		ОК	Cancel		

Import drawings into the model display box:



Delete excess arc and line segments with the mouse:



click "Create" button (Create profile formula), system indicate: Formula: Pick trajectories 1, right-click to pick section Select the trajectory line, which will turn green after being selected, as shown in the following figure:



Notes :

- If the trajectory line is not a complete line, but is composed of multiple line segments combined together, you need to click one by one according to the system prompt until all clicks are completed;
- 2. To avoid multiple clicks on the trajectory line, before creating a formula,

first click "Connect" button, Connect multiple line segments into a single trajectory line。

After selecting the trajectory line, right-click to end picking the trajectory line,

System notify: Formula: Pick first section curve(or right-click to define shap) If there is a cross-sectional shape of the workpiece in the DXF file, simply box select the cross-section;

If there is no cross-sectional shape of the workpiece in the DXF file, right-click

again and the system provides three cross-sectional shapes for selection, as shown

in the following figure:

ection definition			>
Shape Type Corr	er-Rect 🔹	<u> </u>	W>
Width(W)	20.00		
Height(H)	20.00		Н
Corner radius(R)	5.00	e R	
E Guido curvo conto	cing	OK	Canaol
	Ing	UN	Cancer





Select one of the cross-sectional shapes, enter a size similar to the workpiece,



click the "OK" button, and the system will pop up the following interface:



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If the 2D drawing annotation lines within the model display box are not eliminated,

you can click on them first "New", clear the models, then click "	Apply ",
Generate a 3D simulation model again based on the formula content	0
The data in the automatically generated formula needs to be modified	or inputted,
and the specific steps are exactly the same as those in steps 4-1,	as shown in
the following figure:	

Auto generated data:

I Arc
i Arc Arc
l Arc Arc
Arc
1998.08
33.93
10.00
Y coord
33.93
0.00
33.93

wherein:

Y start 0.00 it must be inputted again, click Y start write auto input the data, Other data can be modified as needed or not modified, and the operation steps are the same as the 3-1 formula editing method 1. At this point, the profile formula editing is completed. 4.3 formula editing method 3: (STEP/IGS Importing and editing formulas from 3D models)

Store the files that need to be imported into a USB drive and insert the USB drive into the USB socket on the machine,

In the formula editing interface, click on the top right corner of the screen

"New"" button, Clear other models from the model display box, click "Import" button, Select the STEP/IGS 3D model file to be imported from the USB drive, click "Open" open files, wait few seconds, STEP/IGS The 3D model file is displayed in the model display box, Select an arc on the model, click "To Arc"

Fit to Arc	×						
🖻 Delete original graph	1						
☑ Arc fit after convex hull							
Arc fit tolerance:	0.80						
Move							
X-dir distance	100						
Y-dir distance	100						
Z-dir distance	100.00						
i							
ОК	Cancel						

Click the "OK" button, and the model display box will automatically generate a two-dimensional curved trajectory line. Use the mouse to delete all unnecessary

trajectory lines, leaving only one standard curved trajectory line, use "______"

button, Transform the trajectory line into a complete curve, and the remaining steps and methods are the same as the 4-2 formula editing method 2. example:

select file of STEP/IGS files, click "open" button,

} → KIN	IGSTON (H:) > 需要导入的图纸与模型	5 V			
文件夹				- 💷 😮	
^	~ 名称	修改日期	类型	大小	
	631.0.60.07.00.01.stp	2022/4/29 17:41	STP 文件	2,403 KB	
	631.0.60.07.00.06.stp	2022/4/29 17:40	STP 文件	371 KB	
	📄 Профиль 631.0.60.07.00.09.stp	2022/4/29 18:06	STP 文件	1,271 KB	
G:)	📄 Профиль 631.0.60.07.00.14.stp	2022/4/29 18:05	STP 文件	3,074 KB	
(H:					
:) F/					
(H:)					
~ <				>	
文件名((N): 631.0.60.07.00.01.stp	~	Step 文件(*.stp;*.ste	ep) 🗸	
			打开(0)	取消	

System display, click "OK" button,

Import STEP	\times
Filename: H:\需要导入的图纸与模型\631.0.60.07.0	ОК
Current Schema: AP214e3 Schema long name: automotive_design Schema short name: 214e3	Cancel
	Scale:
	1

Wait a few seconds, the system will import the 3D model, as shown in the following figure:



Select an arc on the model , as shown in the following figure: the green part



Fit to Arc		×
ş	⊽ Delete original graph	-
	▼ Arc fit after convex hull	5
	Arc fit tolerance: 0.80	
M	love	
	X-dir distance 100	
F	Y-dir distance 100	7.
	Z-dir distance 100.00	0
		0
	OK Cancel	

press "OK" button, The model display box automatically generates a two-dimensional curved trajectory line, as shown in the following figure:



Using the mouse, delete all unnecessary trajectory lines and leave a standard curved trajectory line, as shown in the following figure:



interface:



Select the recipe group and enter the recipe name ***********, click "OK", automatically generate a curved machining formula and synchronously generate a 3D simulation model, as shown in the following figure:



Due to the duplication of the automatically generated model with the original

model, click "New", clear displayed models, click "Apply", Generate a 3D simulation model again based on the formula, as shown in the following figure:



The data in the automatically generated formula may need to be modified or inputted, and the specific steps are exactly the same as those in steps 4-1. At this point, the profile formula editing is completed.

5,, Formual editing (Standard arc)

The standard arc mainly includes two types of arcs: elliptical and Archimedean spiral. The specific formula editing steps are as follows:



Modify the ellipse parameters, and the modified parameters are as follows:



click "OK" , The system prompts you to select a cross-sectional shape, with

a total of three cross-sectional shapes, as shown in the following figure:





Section definition	×
Shape Type Circle •	D
Diameter(D) 20.0	
🗵 Guide curve centering	OK Cancel

Select one of the cross-sectional shapes, input the approximate cross-sectional dimensions, click the "OK" button, and automatically generate the processing formula and 3D model, as shown in the following figure:

New formula		×
Formula family	3R-Fo	mula 🔹
Formula name	Ellipse	÷-123
	ОК	Cancel

\$		Formula	Edit						
	೧	× ×	7 O	() () () () () () () () () () () () () (* 1%				
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Y									
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	Current coord		Quents	Coloct clama	at				
×	0.000	X write	Ellipse:	Ellipse					
ŕ	0.000	Y start write	Query:	Select eleme	nt				
			3R-FO	mula		For	nula d	Apply	Add Arc
			Ellipse	9-123		<u> </u>			DerAic
Model	2D Model	Feed times	1	Head L1	200.00	Tail L2	200.00	Total Length	36
Velocity	7.50	Delay	5.00	Decrease	0.00	Y start	0.00	Y end	
Fixed D1	120.00	Distance of	350.00	Photoelectri	290.00	Final trans.	100.00	Retreat	
drive D3	180.00						_		
No.	Radius	Arc length	Angle	Times	Transition	Adjustment	Comp ratio	Down dist	Y co
A1	1168.59	385.13	18.88	1	85.16	0.00	1.0686	0.000	1
A2	814.04	201.78	14.20	1	EO 19	0.00		0.000	1
					00.15		0.8542		
A3	422.03	170.33	23.12	1	79.01	0.00	0.8542	0.000	2
A3	422.03	170.33	23.12 82.29	1	79.01	0.00	0.8542	0.000	2 1
A3 A4 A5	422.03 166.62 422.03	170.33 239.30 170.33	23:12 82:29 23:12	1	79.01 143.29 136.26	0.00	0.9542 0.9044 0.7166 0.9044	0.000	2 2 2
43 44 45 46	422.03 166.62 422.03 814.04	170.33 239.30 170.33 201.78	23.12 62.29 23.12 14.20	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	79.01 143.29 136.26 90.35	0.00 0.00 0.00 0.00	0.8542 0.9044 0.7166 0.9044 0.8542	0.000	2 1 1
A3 A4 A5 A7 A8	422.03 166.62 422.03 814.04 1160.59	170.33 239.30 170.33 201.78 470.25 201.78	23.12 82.29 23.12 14.20 23.06	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	7901 143,29 136,26 90,35 51,93 80,19	0.00 0.00 0.00 0.00 0.00 0.00	0.9542 0.8044 0.7166 0.8044 0.9542 1.0686 0.9542	0.000	2 5 1 1
A3 A4 A5 A5 A7 A8 A9	422.03 166.62 422.03 814.04 1168.59 814.04 422.03	170.33 239.30 170.33 201.78 470.26 201.78	22.12 82.29 22.12 14.20 23.06 14.20 23.12	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	73.01 143.29 136.26 90.35 51.93 50.19 73.01	0.00 0.00 0.00 0.00 0.00 0.00	0.9542 0.9044 0.7166 0.9044 0.9542 1.0886 0.9542 0.9542	0.000	2 2 1 1 1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2
A3 A5 A5 A7 A8 A9 A10	422.03 166.62 422.03 014.04 1160.59 814.04 422.03 166.62	170.33 239.30 170.33 201.78 470.26 201.78 170.33 239.30	2212 6229 2312 1420 2306 1420 2312 8229	1 1 1 1 1 1 1 1 1	2015 79.01 143.25 90.35 51.93 50.19 79.01 143.25	0.00 0.00 0.00 0.00 0.00 0.00 0.00	0.9542 0.9044 0.7166 0.8542 1.0686 0.9542 0.8542 0.8544 0.7166	0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	2 2 1 1 1 1 2 2 2
A3 A4 A5 A5 A5 A5 A5 A5 A5 A5 A10 A11	422.03 166.62 422.03 814.04 1168.59 814.04 422.03	170.33 239.30 170.33 201.78 470.26 201.78 201.78 201.78 201.78 201.78 201.78 201.03	22.12 82.29 22.12 14.20 23.06 14.20 23.12 82.29 23.12	1 1 1 1 1 1 1 1 1 1 1 1	2015 78.01 143.29 136.26 51.53 50.19 79.01 143.29 136.26		0.8542 0.2014 0.7766 0.0014 0.8542 1.0666 0.9542 0.8542 0.8044 0.7766 0.8044	0.000 0	2 5 2 1 1 1 2 5 5 2
N3 N3 N4	422.03 166.62 422.03 814.04 1160.55 814.04 422.03 166.62 422.03 814.04	170.33 239.30 170.33 201.79 470.25 201.79 170.33 239.30 170.33 201.79	23.12 82.29 23.12 14.20 23.06 23.12 82.29 23.12 82.29 23.12 14.20	1 1 1 1 1 1 1 1 1 1 1 1 1 1	7301 14329 13626 90.25 91.30 50.19 7301 14329 13626 90.25		0.8542 0.0044 0.7766 0.0044 0.0542 1.0666 0.0542 0.0044 0.7766 0.0044 0.0542	0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	2 5 2 1 1 1 1 2 5 5 2 2
N3 N3 N4	42283 186.62 814.64 814.64 422.03 1814.64 422.03 186.62 422.03 1814.64 1166.55	170.33 239.30 201.78 470.26 201.78 201.78 201.78 229.30 170.33 231.78 235.12	23.12 60.29 23.12 14.20 23.06 23.12 60.29 23.12 60.29 23.12 60.29 23.12 60.29 23.12 60.29 23.12 60.29 14.80		2013 7300 14329 13626 9036 9036 9036 9036 9039 7300 14329 13626 9035 9035		0.8542 0.0044 0.7766 0.0044 0.0542 1.0666 0.8542 0.8044 0.7666 0.8044 0.0542 1.0686	0000 0000 0000 0000 0000 0000 0000 0000 0000	2 5 2 1 1 1 2 5 2 2 1 1
A3 A4 A4 A5 A5 A5 A5 A5 A5 A5 A5 A10 A11 A11 A12 A13	42203 166.62 42203 814.64 42203 814.64 42203 166.62 42203 814.64 1166.55	170.22 293.00 20170 20170 20170 20170 20170 20170 20170 20170 20170 20170 20170	23.12 62.29 23.12 14.20 23.06 14.20 23.12 62.29 23.12 23.12 14.20 18.66		30.03 7300 143.29 136.26 90.25 90.35 90.19 136.26 90.35 90.35	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.6542 0.0044 0.7766 0.0044 0.0542 1.0886 0.0542 0.0542 0.0542 0.00542 0.00542 0.00542 0.00542 0.00542 0.00542	0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	2 5 2 1 1 1 1 2 5 2 2 1 1
A3 A4 A5 A5 A5 A5 A7 A8 A4	42283 166.62 166.63 166.63 166.63 166.63 166.63 166.63 166.63 166.63 166.63	170.22 279.30 170.32 201.70 201.70 201.70 201.70 201.70 30 201.70 30 201.70 30 51 30 55 10 55 10	2312 6229 2312 1420 2306 1420 2312 6229 2312 1420 1888	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1005 7307 14329 13625 9035 9035 9039 7307 14329 13835 9035 9130		0.0542 0.0044 0.7766 0.0044 0.0542 1.0666 0.0542 0.0044 0.7766 0.9044 0.7766 0.9044 0.7766 7.766	0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	2 5 2 1 1 1 2 5 2 2 1 1 1

Click "New", then click "Apply", The complete 3D model is displayed in the model display box, as shown in the following :figure:



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The data in the automatically generated formula needs to be modified or inputted, and the specific steps are exactly the same as those in steps 4-1, as shown in the following figure:

Automatically generated data:

Model	2D Model	Feed times	1	Head L1	200. 00	Tail L2	200. 00	Total L	7566. 99
Velocity	7. 50	Delay	5.00	Decrease	0.00	Y start	0.00	Y end	39.80
Fixed D1	120.00	Distanc	350.00	Photoel	280. 00	Final t	100.00	Retreat	10.00
drive D3	180. 00								

wherein:

Y start ^{0.00} it must inputted again, or click **Y** start write Import the data directly, and other data can be modified or not modified as needed. The operation steps are the same as the 4-1 formula editing method 1. At this point, the elliptical formula editing is completed.

5.2 Archimedean spiral curve formula editing

himedes spiral		×	< Comparison of the second sec
	Archimedes spiral		
	<pre>Start radius(R1):</pre>	500	
	End radius(R2):	260	-
((ດ))	Turns	3	-
	Rotate angle:	1080.000	-
	Spiral length:	7166.993	
	Ok	Cancel	

Modify the parameters of the Archimedean spiral. After modifying the parameters, click the "OK" button and the system will prompt you to select a cross-sectional shape. There are three cross-sectional shapes to choose from (the same as those provided by other formula editors). Select one of the cross-sectional shapes and enter an approximate cross-sectional size,

Section definition			×
Shape Type Corn	er-Rect 🔹	< ₩	>
Width(W) Height(H) Corner radius(R)	20.00 20.00 5.00	R	Н
☞ Guide curve center	ing	ОК	Cance1

click "OK", Automatically generate processing formulas and 3D models, as shown in the following figure:

New formula		×
Formula family	3R-Fo	mula 🔹
Formula name	Spiral-	123
	ок	Cancel





The data in the automatically generated formula needs to be modified or inputted,

and the specific steps are exactly the same as those in steps 4-1, as shown in the following figure:

Automatically generated data:

Model	2D Model	Feed times	1	Head L1	200. 00	Tail L2	200. 00	Total L	7566. 99
Velocity	7. 50	Delay	5.00	Decrease	0.00	Y start	0.00	Y end	39.80
Fixed D1	120.00	Distanc	350.00	Photoel	280. 00	Final t	100. 00	Retreat	10.00
drive D3	180. 00								

wherein:

Y start **0.00** must be inputted again, or click **Y** start write Import the data directly, and other data can be modified or not modified as needed. The operation steps are the same as the 3-1 formula editing method 1.

At this point, the editing of the Archimedean spiral curve formula has been completed.

6、Automatically Bending

In the "Formula Editing" interface, select the formula corresponding to the

workpiece being processed by the demand side, and click on it " Apply ", system display:

Provide the second seco	C x (5) To ker Conset Direct Tra b	aset Query Abest	W Zoom Top F	Cort Rept Ito.	© Setting
Ellipse: Spiral If Query: Select e Query: Select e	II	C + Q otate Move Windo	Q (D) F	Con Rept III.	Setting
Ellipse: Spiral If Query: Select e Query: Select e			2	3	
Ellipse: Spiral If Query: Select e	ormula		C	כ	
Ellipse: Spiral If Ouery: Select Query: Select	ormula		C	3	
Ellipse: Spiral If Ouery: Select Query: Select	ormula		C		
Ellipse: Spiral If Ouery: Select e Query: Select e	ormula				
Ellipse: Spiral If Ouery: Select e Query: Select e	ormula				
Ellipse: Spiral If Ne Query: Select e Query: Select e	ormula				
Ellipse: Spiral If au Query: Select e Query: Select e	ormula				
Ellipse: Spiral If to Query: Select e Query: Select e	ormula				
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write	element element				
U Formula		-		Ad	id Arc
SP-12345		- Formu	ula Appl	y De	el Arc
nes 1 He	ad 11 200.00	Tail 12	200.00 Tot	el Length	1542.4
lav 5.00 Decr	rease 0.00	Y start	60.00	Yend	95.4
if 350.00 Photoele	ectri 280.00	Final trans.	100.00	Retreat	10.0
Angle Tim	es I ransition	Adjustment C	omp ratio Do	own dist	Y coord
30.00	1 150.00	0.00	1,0000	0.000	60.00
	1 151.22	0.00	0.7990	0.000	00.00
90.00	1 151.23	0.00	0.7800	0.000	95.41
	SP-12345 tes 1 tey 500 f	SP-12345 tes 1 Head L1 22000 tey 500 Decrease 000 4 250.00 Photoelectri 280.00 May Times Transition 151.23 - 1 150.23 160.00 3000 1 151.23 151.23	SP-12345 res 1 Head L1 2000 Trait L2 rey 500 Decrease 000 Y start res 2000 Photoelectri 2000 Final trans. Anglo Times Transition Adjustment C 3000 1 15123 0.00 - 1 1600 0.00 5000 1 15123 0.00	SP-12345 Tail L2 2000 Tot L2 tes 1 Head L1 2000 Y start 600 Tot L2 fey 500 Docrease 000 Y start 600 1 fey 500 Times Transition Adjustment Comp ratio Docrease Anglo Times Transition Adjustment Comp ratio Docrease 5000 1 15123 0.00 0.7600 Docrease 5000 1 15123 0.00 0.7600 Docrease	SP-12345 - D tes 1 Head L1 2000 Tail L2 2000 Total Length tey 500 Decrease 0.00 Y start 60.00 Y end 1 2000 Final trans. 100.00 Petreat 1 1151.23 0.00 0.7000 0.000 90.00 1 151.23 0.00 0.7000 0.000 90.00 1 151.23 0.00 0.7000 0.000

click " **Auto** ", Entering the automatic processing interface, if the model display is incomplete, as shown in the following figure:



Auto machining display:

		Syste	əm normal			UNOF	RG	2024-01-1	7 11:54:17
6		Auto M	achining						
					버 ① Fit Rotati	+ Co Move Winds	E C	op Font Right	iso. Setting
								_	
				Y					
					~				
	7								
	- X								
	Current	coord T	arget Coord						
×		0.000	0.000			SP-123	345		
Y		0.000	0.000			Number	0		Clear
							,		
			0.000						
Transite s	speed		0.000	ightarrow	Prog start			Prog sto	р
Transite s Feed spe	speed eed (RPM)		7.50	€	Prog start		•	Prog sto	p
Transite s Feed spe No.	speed eed (RPM) Radius	Arc length	7.50	Times	Prog start Transition Ac	ljustment	Comp ratio	Prog stop	P Y coord
Transite s Feed spe	speed eed (RPM) Redius 300.00	Arc length 471.24	7.50 Angle	Times 1	Prog start Transition Ac 151.23	ljustment 0	Comp ratio 0.7800	Prog stop	P Y coord 95.41
Transite s Feed spe No. A1 L2	speed eed (RPM) Redius 300.00 Line	Arc length 471.24 200.00	7.50 Angle 90.00	Times 1	Prog start Transition Ac 151.23 160.00	ljustment 0	Comp ratio 0.7800 1.0000	Prog stop	P Y coord 95.41 60.00
Feed spe No. A1 L2 A3	speed eed (RPM) Radius 300.00 Line 300.00	Arc length 471.24 200.00 471.24	7.50 Angle 90.00 	Times 1 1 1	Transition Au 151.23	ljustment 0 0.00 0.00	Comp ratio 0.7800 1.0000 0.7800	Down dist 0.000 0.000	P Y coord 95.41 60.00 95.41
Transite s Feed spe A1 L2 A3	speed (RPM) Radius 30000 Line 30000	Arc length 471.24 200.00 471.24	7.50 Angie 98.00	Times 1 1 1	Transition Arr 161.23 - 151.23 - 151.23 -	ijustment 0 0.00 0.00	Comp ratio 0.7800 1.0000 0.7800	Prog sto	P Y coord 95.41 60.00 95.41
Transite s Feed spe A1 L2 A3	speed (RPM) Radius 300.00 Line 300.00	Arc longth 471.24 200.00 471.24	7.50 Angte 90.00 	• Times 1 1 1	Transition Au 151.23 - 151.23 - 151.23 -	tjustment 0 0 0.00 0.00	Comp ratio 0.7800 1.0009 0.7800	Down dist 0.000 0.000 0.000	Y coord 95.41 60.00 95.41
Transite s Feed spe A1 L2 A3	speed (RPM) Radius 300.00 Line 300.00	Arc longth 471.24 200.00 471.24	7.50	Times 1 1	Transition Arr 151.23 - 160.00 - 151.23 -	Jjustment 0 0.00 0.00	Comp ratio 0.7800 0.7800	Down dist 0.000 0.000 0.000	P Y coord 95.41 60.00 95.41
Transite s Feed spe A1 L2 A3	speed ed (RPM) Redue 300.00 Line 300.00	Arc length 47124 20080 47124	7.50 Angle 98.00 	Times 1 1	Transition Arr 151.22 - 160.00 - 151.23 -	Ljustment 0 0.00 0.00	Comp ratio 0.7800 1.0000 0.7800	Down dist 0.000 0.000	P Y courd 9541 60.00 9541
Transite s Feed spe A1 L2 A3	speed Active CRPM Comparison Comp	Arc longth 471.24 20000 471.24	7.50 Angle 9200 	Times 1 1	Transition Au 151.23 1 160.00 1 151.23 1	ijustment 0	Comp ratio 0.7880 0.7890	Prog stop	P 9541 6000 9541
Transite s Feed spe A1 L2 A3	speed (RPM) Radue 3000 3000 3000	Arc longth 471.24 200.00 471.24	7.50 Angle 900 	• Times 1 1	Transition Au 151.23 - 150.00 - 151.23 -	1justment 0 0.00 0.00	Comp ratio 0.7000 0.7000	Prog stop	P Y courd 95.41 60.00 95.41
Transite s Feed spe A1 L2 A3	speed And (RPM) Andur Comparison Andur C	Arc length 471.24 20000 471.24	7.50 Angle 9000 	• Times 1 1	Transition Au 191.23 1 191.23 1	fjustment 0.00 0.00	Comp ratio 0.7800 0.7000	Prog stop	P Y courd 95.41 60.00 95.41
Transite s Feed spe A1 L2 A3	speed And (RPM) And (RPM) 30000 3000 3	Arc length 471.24 200.00 471.24	7.50 Angle 9000 9000	Times 1 1	Transition Au 1151.22 1 160.00 1 151.23 2	ijustment 0.00 0.00	Comp ratio 0.7000 0.7000	Prog stop	P V coord 95.41 000 95.41
Feed spe No. A1 L2 A3	speed A Rodu Control Contro Control Control Control Control Control Control	Arc length 47124 2000 47124	7.50 Angle 9000 9000	Times 1 1	Trensition Au 1151.23 1 1151.23 1 1151.23 1	ijustment 0.00 0.00	Comp ratio 0.7800 1.0000 0.7800	Prog stop	P
Transite s Feed spe A1 L2 A3	speed ed (RPM) Comparison Compari	Arc longth 471.24 200.00 471.24	7.50 Angle 9000	Times 1 1	Trensition Au 151.23 - 155.23 - 155.23 -	ijustment 0 0.00 0.00	Comp rate 0.7800 0.7800 0.7800	Prog stop	P
Transite s Feed spe A1 L2 A3	speed (RPM)	Arc longth 471.24 200.00 471.24	7.50 Angle 9000	Times 1 1	Trensition Au 151.22 - 151.23 - 151.23 -	ijustment 1000000000000000000000000000000000000	Comp rate 0.7800 0.7800 0.7800	Prog stop	P
Transite s Feed spe A1 L2 A3	speed speed (RPM) Cadea 30000 30000 30000	Arc longth 471.24 200.00 471.24	7.50 9000 9200	Times 1 1	Tronsition Au 151.23 - 160.00 - 151.23 -	fjustment 0.00 0.00	© 0.7800 0.7800 0.7800	Prog stop	P Y coord 95.41 6000 95.41
Transite s Feed spe A1 L2 A3	speed (RPM)	Arc longth 471.24 2000 471.24	7.50 Angle 9000 	Times 1 1	Prog start	fjustment 0.00 0.00	Comp ratio 0.7000 0.7000	Prog stop	P
Transite s Feed spe A1 L2 A3	speed were an	Arc length 471.24 20000 471.24	7.50 7.50 9.00 9.00 9.00 7.50	Times 1 1 1	Transition Au 151.22 1 150.00 1 151.23 1	fjustment 0.00 0.00	Comp ratio 0.7000 0.7000 0.7000	Prog stop	P Y coord 95.41 95.41 95.41 95.41

In "Auto machining" display, Put the workpiece/profile into the machine, with the left end of the workpiece located between the photoelectric detection switch

and the left wheel. Click "	Prog start	"once,YAxis moving to start point,
Clamping the workpiece, click"	Prog start	" second time, The machine starts
automatic processing and the pr	ocessing is con	npleted; Reinsert the workpiece and
repeat the above operation.		

Notify:

1. During automatic operation, the encoder wheel needs to be in close contact with the outer surface of the workpiece; When the workpiece moves, if the system detects that the encoder wheel is not working, the system will automatically give an alarm prompt.

2、If the bending radius of the processed workpiece is not accurate, in the "Formula Editing" interface, the compensation ratio of the workpiece can be corrected by modifying the " Down Dist" data. The specific operation steps are as follows: Original formula R=300mm, as below:

No.	Radius	Arc length	Angle	Times	Transition	Adjustment	Comp ratio	Down dist	Y coord
A1	300. 00	471.24	90.00	1	151.23	0.00	0. 7800	0.000	35. 41
L2	Line	200. 00		1	160.00	0. 00	1.0000	0.000	0.00
A3	300. 00	471. 24	90.00	1	151.23	0.00	0. 7800	0.000	35. 41
If t	he prof	ile ac	tual ar Mea Corr	rc, R= ensation factor calc sured radi rected dow	350mm, ^{ulation} us 29 n 0.	click 9.999 000 0K	Down " Original c New coeff	dist 0.000 ", oeffi (KO) (K1) Cancel	system

Put measured radius R=350mm inputted, automatically calculate "corrected down":

Compensation factor calculation		>	<
Measured radius	350	Original coeffi (KO) 0.7800	-
Corrected down	3. 3951	New coeff (K1) 0.8548	-
	ОК	Cancel	

click "OK", New date will be inputted as below:

No.	Radius	Arc length	Angle	Times	Transition	Adjustment	Comp ratio	Down dist	Y coord
A1	300.00	471.24	90.00	1	161. 41	0.00	0. 8548	3, 395	38. 80
L2	Line	200. 00		1	160.00	0.00	1.0000	0. 000	0.00
A3	300.00	471.24	90.00	1	161. 41	0.00	0. 8548	3. 395	38.80

Apply ", generate 3D models again, then "Down Dist" data corrected, click " enter "Auto machining" display, start bending again.

7、Parameters



Click

touch button, The screen enters the "Parameter Settings" interface, as shown below:

Parameter setting		×
Parameter setting Feeding direction	Aux. wheel diameter Fixed wheel diameter Driving wheel Diameter Fixed wheel spacing Photoelectric distance	× 90.30 120.00 180.00 280.00
Parameters Advanced	ОК	Cancel

When processing different workpieces, different workpieces correspond to

different molds and equipment parameters are also different, so careful setting is necessary. The commonly used equipment parameters involved in processing include:

Aux wheel diameter: 90.3mm it is no need of adjustment usually; Fixed wheel diameter: The minimum outer diameter of the wheel molds on both sides,

This data can be accessed by clicking on the "Manual Operation" interface "Diam. "check; or You can click on it in the "Formula Editing" interface "X write " automatically add to the formula. Driving wheel diameter: Minimum outer diameter of middle wheel Fixed wheel spacing: Distance between the main axes wheels on both sides Photoelectric distance: The distance between the photoelectric switch and the left mold main wheel

The schematic diagram is shown in the following figure:



Please ensure that the above device parameters are set correctly before clicking

"OK" then enter "formula editing" interface to edit formulas.

8、Aux. Arc Calculation



touch button, The screen enters the "Arc Calculation" interface, as shown

below:

Click

Arc calculation		×
H	Chord Length(S) CHord Height(H)	600 300
A A	Arc length(L) Radius(R)	942. 48 300
	Central angle(A)	180
	ОК	Cancel

Auxiliary arc calculation is to facilitate the detection of whether the actual machining radius of the workpiece meets the requirements of the drawing in practical use. If it does not meet the requirements of the drawing, the actual radius size can provide a calculation basis for the rebound data of the material.

Auxiliary arc calculation provide two types,

- (1) One type is the calculation of arcs smaller than semicircles,
- (2) One type is the calculation of arcs larger than semicircles,

calculate: A arc Known as S Data and H data, Find arc R data and L data.

9、Compensation factor calculation



Click

Compensate , system display:



The "Compensation factor Calculation" function corrects the arc that produces errors by calculating and modifying the bending compensation coefficient of the profile. Due to different profiles and hardness, the rebound coefficient of various profiles also varies. In the actual production process, the rebound coefficient of profiles increases with the increase of bending radius, which is an irregular linear relationship. The compensation coefficient when the production equipment processes the first arc is a data input randomly based on production experience, The produced arc may not necessarily reach the required size, so a new compensation coefficient needs to be calculated through the "compensation correction" function to make the bent arc closer to the demand;

Using as follows:

"Compensation factor Calculation" interface, input following data:

A, fixed wheel radius: When the profile is putted against the molds, the outer circle size of the wheel is calculated based on the contact point between the outermost edge of the profile and the wheel;

B. Fixed wheel spacing: using formula data

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C. Target Radius: arc radius needed;

D. Measured radius: The radius of the arc formed by the first actual machining bending;

E, original Coeffi KO: Compensation coefficient inputted on the first bending. After inputting, press "Ok" and the system will automatically calculate the new coefficient K1 and the downward pressure correction value. After inputting the downward pressure correction value into the arc formula, press the "Apply" button to enter the processing interface again and restart production and processing.

10, Diagnostic maintenance



Click

, System display:



10.1、Clear alarms

When an alarm occurs in the system, switch to the "Diagnosis" interface and view the detailed information of the "Alarm Processing Area".

Alarm processing area prompt: Description of alarm problem, reason for alarm, and handling method.

Users follow the prompts to process the alarm, and then click the "Clear Alarm" button to clear the system alarm.

For example, when the system prompts the negative limit of Y-axis pressure, the user first moves the Y-axis forward to move away from the negative limit, and then clicks the "Clear Alarm" button, and the system alarm will be cleared. The axis control signal and input signal are important criteria for judging whether the system has abnormalities. When a system alarm occurs, the first step is to check whether there are abnormalities in the processed axis control signal and input signal.

10.2, output signals

In the "Diagnosis " interface, the output signal is executed in real-time, Professional training and guidance from the manufacturer are required before conducting professional operations. The equipment is set to a shielded state before leaving the factory (content is not displayed)

七、Maintenance

To maintain the continuous normal operation of the bending machine, reliably reduce component damage, and extend its service life, it is necessary to implement the maintenance system of the CNC bending machine.

1. Daily maintenance: maintain once per shift.

1.1 Check the fastening bolts and nuts at all locations and tighten them.

1.2 Check the connection status of each institution, and if there are any abnormalities, they should be cleared. Lubricate the horizontal slide rail and retractable universal joint.

1.3 Check the electrical system: After connecting the power, check the rotation direction and operation of the motor.

1.4 Keep the arc bending machine clean and regularly clean the dirt inside the machine.

Lubricating the spindle feed screw every 2 days.

2. Technical maintenance: Check the mold to ensure that it is intact and undamaged.