# **TVM802 PICK AND PLACE MACHINE**



# Convenience /Reliability /Safety /Reassurance

# Yueqing Qihe Electrical Technology Co.,Ltd

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# **1** Preface

Thank you for purchasing and using our automatic vision placement machine (hereinafter referred to briefly as "equipment"). The working principle of this equipment is picked component up from the feeding tray or the stack, through the visual system correction coordinate position, then mount on the circuit board.

#### 1.1 Safe Use

This equipment contains feed zone, work area and control area. If related equipment does not operate correctly, it may cause damage to personnel and equipment. The operator should have the basic skills include editing software, the basic system hardware and additional devices such as feeder maintenance.



Before use equipment

•You must read the instructions before using the machine, and fully understand the contents of this manual before operating.

·After reading this specification, please keep on your side, for any doubt.

·Unrelated persons prohibited to operate this equipment.

•To ensure the safe operation and maintenance of equipment, operators must be aware of potential risk area.

·If operator transformation equipment without Yueqing Qihe Electrical Technology Co., Ltd. the prior consent, or did not follow the instructions to maintenance equipment, will be possible serious damage to equipment safety.

•Must not use without Yueqing Qihe Electrical Technology Co., Ltd. admit method modification and maintenance of equipment.

## 1.2 Precautions

- When an exception occurs, the fault or power failure, please cut off the power supply, and the power plug from the outlet to prevent accidental start.
- 2 pull out the power plug, please hold the plug out, do not hold the wire pulled out...
- 3、 Please take the necessary security measures, to prevent the moving, fall when lift, inversion occurs accident.
- 4. Please keep the wooden box and the foam.
- 5. Please place the machine in a horizontal position.
- 6. Please keep the ground clean and dry, must be ground wire, to prevent electric shock and leakage.
- 7. To prevent personal accidents, do not put your hands into the machine work area.
- 8. About electrical repairs, please entrust the person with electrical expertise or the company's related technical staff. To prevent accidents caused by unskilled operators and electric shock.
- 9. Do not use the machine in an environment affected by a noise source such as a high frequency welder (electromagnetic wave).
- 10. Do not use the machine when supply voltage beyond the rated voltage  $\pm 10\%$ .
- 11、 When thunder, please stop using and unplug the power supply.

#### 1.3 Related Guarantee

#### When equipment have abnormal behavior, guarantee content as follows:

**Content security** The material or manufacturing problems constituting parts and equipment problems, provide free maintenance service.

**Guarantee period** After date of shipment, the whole machine warranty is 1 year, nozzle is for 1 month, belt for 3 months.

**Except security matters, The following situations, do not provide warranty:** When the storage device is damaged, it does not guarantee the loss of data stored, so usually should be prepared to back up.Since the operation and use of the equipment unrelated of the program caused by malfunction of the system due to virus infection or other reasons cause data damage.Natural ear and tear caused by anomalies over time, or equipment occurs (such as: depreciation paint, plating, consumables, etc.).The equipment does not affect the quality and performance of weak sensory

changes (such as: the sound operation of the controller, the motor rotation sound, pump sounds, etc.).

# 2 Knowing Equipment

#### 2.1 Equipment Introduction

While the first generation of type TVM802 and the second generation of type TVM802A, TVM802B equipment makes great achievements, our research team aims to develop faster and more precise products, now promotes the third generation of type TVM803 equipment, which is built-in industrial computer, 80Vhigh voltage drive and S acceleration curve control. The equipment is the first of its kind in the domestic market and takes the absolute leading position in the same industry.

#### 2.2 Hardware Features

The boundary dimension of TVM802A /TVM802AX is 875mm\*640mm\*310mm, TVM802B /TVM802BX size is 875mm\*940mm\*310mm. It mainly consists of a work head, top and bottom visual systems, work table, feeder etc. Power supply AC220 or AC110V, Power should be 150W.

#### 2.3 Software Features

The software is independently developed by our company, with independent intellectual property rights, have Chinese and English interface, and easy operation.

#### 2.4 Nozzle Specification

This equipment is designed into double-head design, every suction heads are equipped with different types of nozzles is universal JUKI nozzle. There are No. 1, No. 2, No.3, No. 4 nozzles available. Under normal condition, No. 1 suction nozzle is the smallest, while the No. 4 suction

nozzle is the biggest.

Components corresponding to every suction nozzle are shown below:

Suction Nozzle Model No.	Legend	Suitable Encapsulation
Suction Nozzle No. 1	ECAH	Recommended Encapsulation: 0603
Suction Nozzle No. 2	ETCLH	Recommended Encapsulation: 0805,1206, 1210, 2512
Suction Nozzle No. 3		Recommended Encapsulation: 3528, 5050, SOP-8
Suction Nozzle No. 4	CIOXH	Recommended Encapsulation: TQFP, SSOP etc requires precise placement of large chip.



#### 2.5 Description of Coordinate System

Picture 2.5.1 and Picture 2.5.2 show the coordinate system of this equipment. The moving range of X and Y axis is 395\*445mm (This data is not absolute), while the moving range of Z axis is 15mm. The equipment in the coordinate position refers to the position corresponding to the nozzle A, the other coordinates are relative to the nozzle A offset.

# 2.6 PCB Specification

802A/802AX applies to PCB of size 330\*330mm at most, 802B/802BX applies to PCB of size 330mm\*300.

#### 2.7 Accessories

The device is equipped with, 1\* NO1 nozzle, 1\*NO2 nozzle, 1\*NO3 nozzle, 1\*NO4 nozzle, 1\* power cable, 1\* network cable, 1\* USB cables (video line). Optional configuration: External monitor, Mouse, Keyboard.

# **3** Machine Structure Introduction







Picture 3.1

 Y-axis motor, 2, 802B Rear feeding rack,3, Mounting head, 4, Emergency stop button, 5, Left feeding rack, 6, Control panel, 7, Left feeding rack, 8, X-axis motor, 9, 802B top camera, 10, 802BRear feeding rack, 11, 802B
 PCB clamp, 12, Nozzle A, 13, Nozzle B, 14, Y positive limit sensor, 15, Y negative limit sensor, 16, bottom vision camera, 17, X positive limit sensor, 18, light brightness adjustment

button of Down Vision, 19, X negative limit sensor, 20, prick sensor, 21, electromagnet prick, 22, Blowing valve adjustment, 23, USB interface, 24, VGA interface, 25, power supply switch,

26、802A up visual camera, 27、802A Front-stack material , 28、Refuse chute, 29、Power switch,30、802A PCB clamp。

# **4** PC Software Introduction





31, equipment SN number 32, PC software version number 33, load the file, load the required patch file that can be guided by the PCB software CSV format file containing coordinate information, this software can also be used to manually edit the CSV format file containing coordinate information 34, save the file, the files you import coordinate information is subject to change, it needs to saved 35, Manual operation, see section 5.1 for details 36, Positioning operation, see section 5.3 for details 37, Origin positioning, see section 5.4 for details 38, PCB configuration, see section 5.5 for details 39, see section 5.6 for details 42, single-step, automatic, stop, three function keys correspond to the keys 51, 52 and 52 on Picture 4.1.2 43, overall speed of the machine, the fastest rate of 120%; general debugging, with the default rate of 50% debugging; running speed is 100% or 110% 44, progress bar, displays the total number of devices need to mount, the number of devices have been completed placement, how long it takes 36  $45_{\circ}$  the coordinate information of the equipment. If the number is red, indicating that coordinate information has not been produced, does not have the operating conditions, can only operate in manual mode.  $46_{\circ}$  Visual interface, see section 5.2 for details.

#### 4.1 Manual Operation

#### 4.1.1 Computer Operation



#### Picture 4.1.1

Click35 (the manual mode), he screen will switch to as shown in Piture4.1.1, block 47 where the function keys in manual mode. Press the function key, block 48 in the corresponding lights will light up, indicating that the output signal correctly.

Vacuum pump: open or close the vacuum pump.

In the vacuum pump is opened, click vacuum 1, then vacuum 1 signal lights up, nozzle A create suction, with a finger to block the nozzle, a pressure of 1 signal lights up, turn off the vacuum pump and vacuum 1, open blowing 1, blowing 1 signal lights up, put a finger on the nozzle A, will feel the gas blow, accomplish the above described, state nozzle A air passage is normal.

In the vacuum pump is opened, click the vacuum 2, then vacuum 2 signal lights up, nozzle B create suction, with a finger to block the nozzle, pressure of 2 signal lights up, turn off the vacuum pump and vacuum 2, open blowing 2, blowing 2 signal lights up, put a finger on the nozzle B, you will feel the gas blow, accomplish the above described, it means nozzle B have normal air passage.

Reel: click, reel out a signal from the rotation, in the process of movement, reel indicator

lights up.

Prick : click, the electromagnet 20 is energized to produce a magnetic force, which the prick drop, prick indicator lights up, and then click again, the electromagnet 20 off, prick back into place, prick off the lights.

**(**A1+**)** : Nozzle A positive direction to turn 360°(positive or negative direction and angle of the coordinate system same with positive and negative)

[A1-] : Nozzle A negative direction to turn the nozzle 360°

(A2+): Nozzle B positive direction to turn 360°(positive or negative direction and angle of the coordinate system same with positive and negative)

【A2-】: Nozzle B negative direction to turn the nozzle 360°

[Nozzle  $1\uparrow$ ] : Nozzle A upward movement, nozzle A at the origin, the function key is invalid.

[Nozzle  $1\downarrow$ ] : Nozzle A downward movement, the maximum stroke is 16mm.

[Nozzle  $2\uparrow$ ] : Nozzle B upward movement, nozzle B at the origin, the function key is invalid.

[Nozzle  $2\downarrow$ ] : Nozzle B downward movement, the maximum stroke is 16mm.

【←】: When heads 3 running the negative X direction, corresponding to 50 in the X- button.

 $(\rightarrow)$ : When heads 3 running the positive X direction, corresponding to 50 in the X+ button.

【↑】: When heads 3 running the positive Y direction, corresponding to 50 in the Y+ button.

() : When heads 3 running the negative Y direction, corresponding to 50 in the Y- button.

Dot Mode (Picture 4.1.2 49 button): click, between dot mode and continuous mode switching, in manual mode control head speed.

#### 4.1.2 Control Panel Operation





49(Dot / continuous button ) ,is in manual operation, for X-axis Y-axis direction speed

adjustment, divide into dot mode (press one time, feed 0.03mm) and fast mode. When fine-tuning need to use dot mode.

50(Direction control buttons), to control the positive and negative direction of movement of the working head along the X and Y axes.

51 (Single-step buttons), subdivide of each placement action, click, go for some procedures, user-friendly debugging.

52 (Start / stop button), is to start or stop the mounting.

When one mounting program is loaded newly, press the button once, it will automatically start running the program, during operation, press the button again, the following dialog box appears (Are you sure stop yes / no), selected according to the actual situation, if determined stopped, then click the button, if you select "No", you need to press the right "pause / Resume button", of course, can be selected via computer operation. (To stop running program, you can press twice)

Restarting one placement program, press the button will appear dialog box, select the actual situation, if you want to continue to the last action, then click on the button, if you want to mount all over again, you need to press the right "pause / continue buttons, "of course, you can also choose to operate on the computer.

53 (Pause / continue button), use the button, pause and resume placement program in the mounting process. In the state of a single step, press button to remove the state of single-step, continuous operation.

4 (Emergency stop / off button), which run in the event of emergency situations, press the button, you can disconnect the power. When you run the device, you need to open the button.

#### 4.2 Vision interface



Picture 4.2.1



Picture 4.2.2

In the video cable to ensure normal circumstances (see 5.2 content) Double-click visual 46

window, there will be two screen switching, respectively Picture 4.2.1, Picture 4.2.2.

Picture 4.2.1 is a up visual normal state, used to identify the chip, which is characterized by a large circle and criss-cross in the middle.

Picture 4.2.2 is a bottom visual images for positioning mark point, and manually write the coordinates (see 7.2 content).which is characterized by a large circle ,a small circle and criss-cross. The middle of criss-cross is the home point of coordinate.

### 4.3 Position and Running



Picture 4.3.1

Click 36, positioning operation, the screen changes to 4.3.1, the 54 in the box for positioning mode of functional areas.

In the "X": behind the box, enter the specified coordinates, the criss-cross middle of picture 4.2.2 moves to the corresponding position.

In "Y": behind the box, enter the specified coordinates, the criss-cross middle of picture 4.2.2 moves to the corresponding position.

In "Z1": behind the box, enter the specified coordinates, the nozzle A will drop to the corresponding height.

In "Z2": behind the box, enter the specified coordinates, nozzle B will drop to the corresponding height.

In "A1": behind the box, enter the specified coordinates, the nozzle A will be rotated to a corresponding angle.

In the "A2": behind the box, enter the specified coordinates, the nozzle B will be rotated to a corresponding angle.

### 4.4 Origin Location

	GoHome	45	
55	LIMIT+ LIMIT- Go Home State X Axis: O O Y Axis: O O		Ketter         Dot         Effects         Dot         Effects         Dot           X :         0.00         Y :         0.00         Z         0.00           Z1 :         0.00         A2 :         0.00         A1         0.01         A2 :         0.00           P1 :         0.00         A2 :         0.00         P1 :         0         P2 :         0         P1 :         0         P1 :         0         P2 :         0         P1 :         P1 :         P1 :         P1 : <td< th=""></td<>
	Z Axis: Run Stop Close		CurPebNum: (1, 1)
37		2	Bun         Manual Auto         PobArray           0/0         00.00           Speed 50%         +
Load Save Home	PCB Sys Config Us		Step ▷ Run III Pause



Click 37, the home position, screen will switch to as shown in Picture 4.4.1.

Block 33 area, digital display in red, indicating that coordinate information has not been produced, does not have the operating conditions, can only operate in manual mode, then click 52, Start function key, head 3 will automatically return to the origin, this time to ensure that the device table no foreign matter, in order to avoid a collision. Origin successful positioning, block 45 area font into black. Represents the origin of the positioning is successful, the device generates coordinate information, at this time to close the dialog window 55.

### 4.5 PCB Set

QIHE Vision Mounter	sN:51-45-46-C9-	9E-01 V3.1	5										- B - 3
					~								1
	PCB Edit									×			
ID Nozz	PCB Cor	fig Ar	ray								E STORE		
	PCB1			/	· · · ·								
	Enable	Mark1	0.00	0.00	Real1	0.00	0.00	MoveTo	Set XY	Page			
	Enable	Mark2	9	0.00	Real2	0.00	0.00	MoveTo	Set XY	Up	X		
	PCB2	56									1		
	Enable	JU Mark1	0.00	0.00	Real1	0.00	0.00	MoveTo	Set YY				
	Enable.	Model	0.00	0.00		0.00	0.00	MayaTa	46		Vi dth 0.00	Height: 0.00	Match: 0.00
	Endble	Markz	0.00	0.00	RealZ	0.00	0.00	Novero	Set AT		X :	0.00 Y	0.00
	PCB3										Z1 :	0.00 Z2	. 0.00
	🖾 Enable	Mark1	0.00	0.00	Real1	0.00	0.00	MoveTo	Set XY		A1 :	0.00 A2 0 P2	: 0.00
	🔳 Enable	Mark2	0.00	0.00	Real2	0.00	0.00	MoveTo	Set XY		Vacuum1	Vacuum2 Pric	k 🔘 Strip 🔘
	PCB4	38									C	urPebNum: <1,	1>
	Enable	Mark1	0.00	0.00	Real1	0.00	0.00	MoveTo	Set XY				
	Enable	Mark2	0.00	0.00	Real2	0.00	0.00	MoveTo	Set XY				
	PCB5		1								Run Manus	l Auto PobArr	ay
	Enable	Mark1	0.00	0.00	Real1	0.00	0.00	MoveTo	Set XY	Page	Strip	Prick	Light
	Enable	Mark2	0.00	0.00	Real2	0.00	0.00	MoveTo	Set XY	Down	Pump	Vacuum1	Vacuum2
											Alt	AI- AZ	Merale?
			N	OK							NOZZIET	LOWSP	- NOZZIEZ
				Vun	Re	set	Car	icei			Nozzie1		wozzle2
		10 0	) (2	<u> </u>	) ( etc						-		
Load	Save		Home	Cont	fig 🖉 Co	Sys onfig	About Us						

Picture 4.5.1

Click 38, PCB configuration, the screen will switch to as shown in Picture 4.5.1, 56 pop-up dialog window, automatically switch to manual operation mode, the video window 46 will switch to the bottom visuals picture.

PCB 1, PCB 2, PCB 3 ..... PCB 50, it represents the number of makeup, can be set up 50 makeup

If only mount one PCB board, no make-up, just write the contents inside the circuit board 1. Specific operation will be described in detail in 6.6 content.

#### 4.6 System setting

	16.0	dal.	L	×	Ľ	X	L			Delate		
NUM	VVIC	m	L	^		T		re	ea	PrickG	orrect	
-	16	۳	L	-53.00		-32.96	L	8	*	-0.01	-0.01	Page
2	12	•		-54.00		-13.92		8	*	-0.01	-0.01	Up
3	12	*	L	-54.00		3.14		8	*	0.01	-0.01	
4	12	-	l	-54.00	l	20.14		8	-	-0.01	-0.01	Page Down
5	8	-	L	-55.01		35.00		4	-	-0.01	-0.01	
6	8	-	F	-55.01		48.00		4		-0.01	-0.01	
7	8	•	ŀ	-55.01	l	61.00		4		-0.01	-0.01	Vision MoveTo
8	8	-	F	-55.01		74.00	1	4	*	-0.01	-0.01	
9	8	•	l	-55.01	l	87.00		4	-	-0.01	-0.01	Set XY
10	8	-	l	-55.01	I	100.00	L	4	-	-0.01	-0.01	
Move M	Mode	-	1		ų	Prick O	ffs	et				Prick
⊛ V	ision	0	6	Nozzle		2	4.	70		9,1	C	MoveTo
												Reset

Click 39(system settings), a dialog window will appear like Picture 4.6.1

Chose the Left feeding rack from menu

Stack material No. 1, No. 2 ... .. corresponding to 5, the position of the left side of the feed chute.

[Width], represents the width of the strip,

802Aleft feed chute have 25\*8mm, 3\*12mm , 1\*16mm 。 802Bthe left feed chute have 20\* 8mm, 3\*12mm , 1\*16mm.

[X], indicates when nozzle suction, the coordinate position in the X direction, if mount components relatively large, need to be adjusted. This coordinate user does not need to adjust, this does not require user adjustments, material sucked crooked has nothing to do with this coordinates. If mount components bigger or smaller, need to be adjusted to make sure only one material exposed every time.

**(**Y**)**, indicates when nozzle suction material, the direction of the coordinate Y,Suction time, Y direction suction crooked, need to be adjusted.

**(**Feed **)**, showing the coil, the distance between the two materials, usually 8mm wide tape feeding amount are 4, 0402 the amount of feed material is 2

[Prick correct] [Prick offset] : see 9.7 content.

eft :	Stack	Bac	k Sta	ack IC Stack	Nozzle	Camera	Va	cuum	Other	
	Num	Wio	dth	х	Y	Fee	d	Prick	Correct	
->	1	8	•	315.38	403.98	4	•	-0.01	-0.01	Page
	2	8	•	302.42	403.98	4	•	-0.01	-0.01	Up
	3	8	•	289.44	403.98	4	•	-0.01	-0.01	
	4	8	•	276.55	403.98	4	•	-0.01	-0.01	Page
	5	8	•	263.41	403.98	4	•	-0.01	-0.01	Dom
	6	8	•	250.52	403.98	4	•	-0.01	-0.01	
	7	8	•	237.53	403.98	4	•	-0.01	-0.01	Nozzle
	8	8	•	224.49	403.98	4	•	-0.01	-0.01	
	9	8	•	211.50	403.98	4	•	-0.01	-0.01	Set XY
	10	8	-	198.61	403.98	3 4	•	-0.01	-0.01	
M	love N	lode			Prick	Offset				Prick
Vision Interview Nozzle				Nozzle		0.00		0.0	00	MoveT
										Reset
				c	_	_				

#### Picture 4.6.2

Top menu bar, select "Back Stack" Stack material No. 1, No. 2 ... ..

corresponding to 10, the position of the back side of the feed chute.

**(**Width **)**, represents the width of the strip, 802A no back side of feeders. 802B the back side of the feed chute 8\*18mm, 3\*12mm, 1\*16mm.

【X】, indicates when nozzle suction, the coordinate position in the X direction, suction time, the X-direction suction crooked, need to fine tune this coordinate.

**(**Y**)**, indicates when nozzle suction,

the coordinate position in the Y direction, this does not require the user to adjust the coordinates, material sucked crooked and this has nothing to do with this coordinate. If mount components bigger or smaller, need to be adjusted to make sure only one material exposed every time.

[Feed], how the coil, the distance between the two materials, usually 8mm wide tape feeding amount are 4, 0402 the amount of feed material is  $2.\circ$ 

[Prick correct] [Prick offset] : see 9.7 content.

IC Stack1	×	×	10 Obsell Name	NozzleDown - mm			
	107.70	10.74	IC Stack Num	Down To PCB: -12	00 Down	To Stack -1	1.00
Start	127.70	-40.74	1				Dow
End	127.58	-46.45		Down To Front: -12	J0 Down To	Discard -	.00 U
Array	1	1	Page				
Current IC	1	1	Up	NozzleOffset(X,Y) - mm			
Comment				Nozzle1 Offs	t 24.82	46.08	Mageura
			Page	Nozzle2 Offs	t 3.88	45.80	measure
IC Stack2	х	Y	Domin	Nozzle1 Vision Offs	t: 0.00	0.00	
Start	22.28	-35.33		Nozzle2 Vision Offs	t: 0.00	0.00	
End	241.16	-47.58	MoveTo				
Array	1	1		NozzleDelay(1,2) - ms			
Current IC	1	1	Set YV	Pick De	ay: 0	0	
Comment			OCCAT	Place De	ay: O	0	

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#### Picture 4.6.4

Top menu bar, select "System Tray", as shown in Picture 4.6.3, it is used to set loose coordinates, see 6.3 content.

Top menu bar, select "nozzle parameters", as shown in Picture 4.6.4, observe the single-step operation, if the suction material, not put on the PC board, throw the material away.Down to the PCB distance is not enough, adjusted "down to the PCB" again. Observation of single-step operation, if the nozzle suction material, the height of decline is not enough, resulting fails, the stack down to feed distance is not enough, "down to the material stack" value adjusted again. Observation of single-step operation, if the bulk of the nozzle taken when high enough decline, resulting suction fails, the distance to the front of the drop is not enough, "down to the front," the transfer of small point value again. "Down to the reject material": When the nozzle suction, suction crooked or not sucked material, the sensor does not detect the suction, then to 28, abandoned chute position, down to the height of the set, perform a butt action, under normal circumstances, no need to adjust the data.

[Nozzle 1 offset] : see section 9.4 for details

[Nozzle 2 offset] : see section 9.4 for details

**(**Nozzle 1 vison offset **)** : when mounting with visual (the premise is when the suction nozzle in the center of the component), the nozzle A mounted the majority of the components placed to the left side of the pad, The number in front of the box to reduce. (If the suction is sucked, the suction nozzle sucks in the center of the component), the nozzle A is attached to the vast majority of the parts attached to the bottom of the pad, then the the number in front of the box need to be decrease. Otherwise increase. See section 9.8 for details

[Nozzle 2 vison offset] : when mounting with visual (the premise is when the suction

nozzle in the center of the component), the nozzle B mounted the majority of the components placed to the left side of the pad, The number in front of the box to reduce. (If the suction is sucked, the suction nozzle sucks in the center of the component), the nozzle B is attached to the vast majority of the parts attached to the bottom of the pad, then the the number in front of the box need to be decrease. Otherwise increase. See section 9.8 for details

**(**Pick delay **)** : indicates the nozzle drops to the feed stack, suction time, this is in milliseconds. When in the factory is set to 0, user can adjust the data according to the actual mounting situation. If the nozzle air passage is normal, down to a suitable height material stack, the correct position, but can not suck material, at this time, need to increase the numerical value, numerical value large, the more obvious sense of pause. In front of the box represent nozzle A, followed by the nozzle B.

[Place delay] represents nozzle is lowered onto the PCB, discharge the material time, this in milliseconds. When in the factory is set to 0, user can adjust the data according to the actual mounting situation. If the nozzle air passage is normal, down to PCB highly suitable, and the PCB is coated with solder paste, but also the occurrence of material was brought up, then need to increase this value, greater of the value, can also be adjusted 22, blowing control valve.

Camera i				Vacuum Test	Table			
Camera Position:	63.17	-54.00 0	.00	Vac	uum Value			
Distance / Pixel:	0.0469	0.0443		Nozzle1 Nozzle2	0			
Angle Offset:	-0.40	Delay:	150	Nozzle1				
Vision Threshold				Vacuum Threshold1:	20			
No	zle Threshold:	110.00		Vacuum Threshold2:	40			
Co	mp Threshold:	50.00		Scale of Pressure Sensor:	1.0			
X/Y Off	X/Y Offset Threshold: 0.20		X/Y Offset Threshold:			Nozzle2		
Angle Offs	et Threshold:	0.25		Vacuum Threshold1:	20			
				Vacuum Threshold2	40			
Camera2				Scale of Pressure Sensor:	1.0			
Distance /	Pixel: 0.02	68 0.025	8	🔲 Use Missing C	heck			



Picture 4.6.6

Top menu bar, select "Camera Parameters", as shown in Picture 4.6.5,

Up visual camera: 【camera Position】, said the location of the visual camera, this parameter under normal circumstances, the user does not need to modify.【Displacement / Pixel】indicates the distance between the actual movement of the machine and the distance recognized in the camera, and only re-adjusts the parameter after replacing the camera. This parameter normally does not need to be modified by the user. 【Angle Offset】, when finished mounted the chip, there is an

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angle deviation, need to adjust this parameter (see 9.8 content). **[**Delay **]**, in the case of with vision, the camera screen appears smear phenomenon, you need to increase this value, this parameter under normal circumstances, the user does not need to modify. **[**Nozzle threshold **]**, see Section 9.4 for details. **[**Component threshold **]** : See Section 9.2. **[**X / Y axis deviation threshold **]**, means when through vision, the visual calculation of the X direction and Y direction distance of the numerical difference, greater than this threshold, the visual system re-calibrated, until less than this value (only useful in the precise time, generally does not need to adjustment, the smaller of the value, the slower the accurate vision )  $\circ$  **[**Angle offset threshold **]**, said when through vision, the visual calculation and Y direction angle difference, greater than this threshold, the visual calculation of the X direction angle difference, greater than this threshold, the visual calculation of the X direction angle difference, greater than this threshold, the visual calculation of the X direction angle difference, greater than this threshold, the visual calculation of the X direction angle difference, greater than this threshold, the visual system re-calibrated, until less than this value (only useful in the precise time, under normal circumstances without adjustment , The smaller the value, the slower the accurate vision).

Bottom vision camera: **[**Distance / Pixel **]** indicates the distance between the actual movement of the machine and the distance recognized in the camera. This parameter normally does not need to be modified, and the parameter is only re-adjusted after replacing the camera.

Vacuum parameters: Picture 4.6.6, below the nozzle A, the vacuum threshold 1 equals 20 and the vacuum threshold 2 equals 50, meaning that when the nozzle A completes this step of suction, the value shown in P1 in box 33, Less than 20, meaning did not throw out the material, do not have to throw the action, just suck again, if the value of P1 between 20 and 50, meaning the suction is not good, need to be throw out the material, and then re-suction material. The value is larger than 50, then the suction is correct, the placement action. Suction nozzle 2 below the vacuum threshold of a reason is to detect whether the suction nozzle B is correct. This value can be used to adjust according to the actual situation. [Use Missing Check] if not tick, means that the pressure detection function is turned off. So whether or not there is no material, will be mounted action.

				P	rogram	5				3
) Nozzle	System Config								Comment	Switch
	Left Stack Bac	k Stack IC	Stack No	ozzle Car	nera Vacu	um Other				
	Stack Comp									
	Num Name		Width Height MaxError(%)		PickAngle CompThre					
	<b>→</b> 1		0.00	0.00	10	90.00	60	Page		
	2		0.00	0.00	10	90.00	60	Up		Width: 1.67 Meight: 1.31 - Match: 0.1
	3		0.00	0.00	10	90.00	60	Page		0ffretI: -0.34 0ffretI: -0.09 Angle: 12
	4		0.00	0.00	10	90.00	60	Down		Z1 : 0.00 Z2 : 0.
	5		0.00	0.00	10	90.00	60			A1 : 0.00 A2 : 0 P1 : 74 P2 :
	6	6 0.00	0.00	10	90.00	60			Vacuum1 Vacuum2 Prick Strip	
	7		0.00	0.00	10	90.00	60 60		CurPebNum: <1,1>	
	8		0.00	0.00	10	90.00	60			
	9		0.00	0.00	10	90.00	60			
	10		0.00	0.00	10	90.00	60	Reset		-
										Strip Prick Light
										Pump Vacuum1 Vacuum
				K	[	Canaal	1			A1+ A1- A2+ A2
				N.		Carlcel				ANOZZIE1 LOWSP
l										Wozzle1 🔶 Wozzl

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Vision check: In the manual interface, use the nozzle to pick the component up and then move it over the camera. Fill in the corresponding stack with the values of Width and Height in the camera interface. Change the error to 20

Top menu bar, select "Other parameters", as shown in Picture 4.6.7,

【IP Add】 and 【IP Port】, s the address of this equipment, user is prohibited modifications.
 【 Home X/Y 】, modify this parameter, it will modify the entire coordinate, in normal circumstances, user no need to modify. If you want to modify, must be guide by manufacturer.

off Stack	Back Stack IC St	tack Nozzle	Camera	Vacuum	Other		
		a on the second			_		
	IP A	Add	192	168	0 - 8		
	IP	Port	701				
		OIL	101				
	Home F	Pos:	359.12	43	0.31	-0.02	
	Discard	X/Y	260.00	-2	0.00		
	X/Y Axis So	ale:	0.9972	0.	9989		
	Comp Angle Of	fset	0				
			s Use Autos	Sort			
		EA	Auto Go Ho	me			
		V E	Enable Sind	le Comp	K/Y Speed		
		[	_				
		OK		Ca	ancel		

[Discard X/Y] : user can according to the

actual situation, select the appropriate discard material coordinates. X/Y Axis Scale J, means the distance that the system has displayed on the screen, and the proportion of the actual distance. For instance, if the system displays that the distance is 300mm, but actually gone 300.5 mm. You need to adjust this parameter. Belt used for a long time, the parameters need to test.

[Is Use AutoSort] : After the program is compiled, the system starts to run. The system automatically sorts the material stacks from 1 to 22, and the adjacent two coordinate components are sorted by the principle of the first paste to improve the production efficiency. The system is checked by default. Customers can choose according to their own operating habits, choose not to check.

[Auto Go Home] After 5 times placement, the system will automatically return to the origin, re-coordinate.

# 5 Read Before Using

### 5.1 Mechanical Structure is Normal



Picture 5.1.1



Picture 5.1.2

#### DESKTOP PICK AND PLACE MACHINE







Picture 5.1.3

Picture 5.1.4

Picture 5.1.5

As shown in Picture 5.1.1 and Picture 5.1.2, slowly moving around, to see the X-axis, Y-axis is smooth.

Picture 5.1.3, Picture 5.1.4 move the nozzle A, nozzle B up and down, to see whether smoothly.

The machine is placed according to Picture 5.1.5, see the two circles, inside the gap, check the photos in USB give to you are the same. If not, see 9.9 content.

# 5.2 Connected To The Computer ( no built-in industrial computer)

First, using the supplied cable, let the device connected to the computer.

The second step, to modify the computer's IP address, specific operation as follows, find the network icon on the desktop, then right-click Properties to open a window, find the directory tree on the left to find the "Change adapter settings set" OK after entering " local connection ", then right-click properties, and then enter, select" Internet protocol version 4 (TCP / Ipv4) ", and then click properties, enter a new dialog window. Select "Use the following IP address", IP address (I): 192.168.0.9; subnet mask (U): 255.255.255.0; the default gateway (D): 192.168.0.1. Then select the "Use the following DNS server addresses" and finally click OK. And close all windows.

The third step, open 24, power supply switch..

The fourth step, open 4, emergency stop switch.

The fifth step, double-click the company provide software, you can control the device.

#### 5.3 Video Cable is Properly Connected



As shown on the left, connect one end of the video cable to the device and the other end to the USB port. Then on the basis of 5.2, to install the video driver.

The first step: in the USB disk to find the folder as "USB DVR Capture", and then follow the path "USB DVR Capture> Drivers> Setup", double-click Setup to complete the

Voice, video and game controllers
 NVIDIA Virtual Audio Device (Wave Extensible)
 Realtek High Definition Audio
 STK1160 Grabber
 USB Audio Interface

installation. The details of install driver in section 9.11.

The second step, test whether the driver is installed,

open"My Computer", "Device Manager" . See if it's shown [STK1160 Grabber] in the red box on the right.

#### 5.4 Check Each Function is Normal

To open the equipment to manual operation mode.

To detect function: the nozzle A gas road, nozzle B gas road, the steering nozzle A, steering nozzle B, the nozzle A running up and down, the nozzle B running up and down, run around the mounting head around, up and down the prick movement, prick signal, reel movement (see 4.1 content).

X + X- limit signal, Y + Y- limit signal: iron plates one by one on the limit sensor (14, Y + limit; 15, Y- limit; 17, X + limit; 18, X- limit bit) in the middle position, the PC software will hit the limit alarm occurs, you can turn off the alarm.

Visual screen switches, double 46, visual window, three screen can be switched, it means camera normal.

#### 5.5 Home Position Return

Finally homing (see 4.4 content)

This equipment check is complete, all functions intact, normal operation can run.

# 6 Necessary Skills Before Mounting

### 6.1 Tray Installation



Shown in Picture 6.1, put the reel 60 between the three positioning axes 63, strip pull over from the below to shaft 65, the material passes through the stack 60, screws 61, through the shaft 62, nylon belt material pull the opposite direction through the shaft 59, and then fixed to the reel V groove 57, by adjusting the U-shaped groove 58 of the pressure inside the top wire wheel to adjust the damping volume, above the feeding process.

# 6.2 PCB Installation



Picture 6.2.1 is installation for 803A PCB board.



Picture 6.2.2 is installation for 803B PCB board.

### 6.3 Front-Stack Material Coordinate Set

eft Stack	Back Stack	IC Stack	Nozzle	Camera	Vacuum	Other			
IC	Stack1								
		х		Y		IC Sta	ack Num		
	Start	126.17		-42.0	8		1		
	End	164.9		-61.0	0				
	Array	3		2		1	Page		
C	urrent IC	1		1			Up		
c	omment								
10	01-110						Page		
IC	Stack2	X		Y					
	Start	22.28		-35.3	3	i i			
	End	241.16		-47.5	8		MoveTo		
	Array	1		1					
C	urrent IC	1		1			Set XY		
c	omment					L			

Picture 6.3.1

In the actual placement process, some material is in bulk, need to use the front-stack this function this time. Picture 6.3.1 is front-stack material coordinates set interface. From tray 1, tray 2 ... tray 30, as long as the space is large enough, you can set 30 different bulk materials.

Use nozzle A to aim all coordinate, as the figure shows below.







#### We set the coordinate inside picture 6.3.2 six chips :

First, manual operation, nozzle moved to top of the first IC (see Picture 6.3.2 below), on the computer, move the cursor to Picture 6.3.1 inside, tray 1, the start position, then click the set XY, automatically generate the starting point coordinates.

Second, the nozzle move to directly above of IC (Picture 6.3.3 below), on the computer, move the cursor to Picture 6.3.1 inside, tray 1, the end position, then click to set XY, automatically generating end coordinates. This line array, enter "3", "2", X direction indicates three chips, Y direction two chips (according to the actual situation, how may X-direction there have, to write the same number, how many Y direction there have, to write the same number). Finally, click OK to complete the coordinates of the chip set.

The actual placement, when the material stack selection, select "tray 1", the system will go to

the appropriate location to suction the chip.

"Current position" represents next suction position, under normal circumstances, the chip is placed on the bulk tray, digital array line are a dozen or two dozen, after an interruption patch users often do not know next time, the chips starting position at which to suction, this time, just observe the "set XY" in the value, and then find the tray actual location.

#### 6.4 Nozzle Replacement









As shown in the above three pictures, just remove or insert, complete replacement of the nozzle.

Note: The nozzle is by friction inside the magnet and fixed, long-term use, may result in loosening of the nozzle, just use the black rubber ring on the nozzle (Picture left).

#### 6.5 Adjust the blowing volume



As shown on the left, 22is the blow control valve, located behind the mounting head. The air blowing regulating valve is composed of three parts: an adjusting knob, a locking cap and a cavity. When adjusting, first loosen the lock tight cap, and then adjust the knob, you can control the size of the nozzle blowing, clockwise rotation to reduce the amount of blowing, counterclockwise rotation to increase the amount of blowing, the user adjust according to the actual situation Blowing volume.

### 6.6 Export Coordinates

Currently, we only support coordinate files exported by protel, Altium Designer (DXP), Pands, Candes and proteus, and the format is ".CSV". Because of the widespread use protel and Altium Designer (DXP), only two kinds of software export modes are explained here.

#### 6.6.1 Origin Location

PCB patch need to coordinate consistent with this equipment, so the origin location to the circuit board. Protel 99 SE and Altium Designer (DXP) targeting methods are the same, so this talk about the home position under DXP and Protel 99 SE refer to this method. As shown in Picture 6.6.1, "Edit" menu select the "Origin" and then "set"; then select the lower left corner of the board as an origin (as shown in Figure 6.6.2), then you can export the coordinates step up.



### 6. 6. 2 Altium Designer (DXP) Export Coordinates

First: home position.

Second: As shown in Picture 6.6.3, first left-click on "File", select "Assembly Outputs" then select "Generates pick and place files", out of the screen in Picture 6.6.4, select the format ".CSV", choose the unit "Metric." Finally, left-click to confirm, complete exporting complete file coordinates. The file extension name is ".csv", the PCB files in the same directory.



#### 6. 6. 3 Protel99 Export Coordinates File

First: Double click to open Protel99 software, load the board needs to patch file, and proceed the home position.

Second: As shown in Picture 6.6.5, left-click on "File", select "CAM Manager", the next step according to Picture 6.6.8 to complete the export coordinates, then as shown in Picture 6.6.6, Picture 6.6.7 of the shows file is found, the file suffix is ".csv".



Picture 6.6.8

### 6.7 Load the file

See 9.12 for details

#### 6.8 Mark Point Set

#### 6.8.1 No Makeup



Picture 6.7.1

Picture 6.7.2

Picture 6.7.1 is test PCB board of our company . Picture 6.7.2 is the board PCB file.

Picture 6.7.1 two red circles, this is circuit board's mark point 1, mark point 2.

First, find the mark and recorded two points corresponding to the coordinates in the PCB file, as shown in the box 6.7.3 mark point 1 coordinates (7.306,6.051). As shown in Picture 6.7.4 mark point 2 coordinates (37.316, 29.426).







The second step, open the software, and loads this PCB board coordinate information (guided by the csv file format), and open the PCB configuration. As shown in Picture 6.7.5, enter the coordinates mark points 1 and 2.

PCB Edit							- and the second		
Pcb A	rray Conf	ig							
PCB1									
🗹 Enab	le Mark1	7.306	6.051	Re	al1	0.00	0.00	MoveTo	Set XY
💌 Enab	le Mark2	37.316	29.426	Re	al2	0.00	0.00	MoveTo	Set XY

Picture 6.7.5

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The third step is to manually move the mounting head, bottom visual camera aim at the mark 1,as shown in Picture 6.7.6, if it's standard mark point, no other devices interfere with the pads, within the field of view camera, probably that is aligned, then click on the "actual ordinates 1" near the "XY set" will automatically enter the actual coordinates of the mark point 1. Similarly, input mark point 2 (see Picture 6.7.6). Note: After setting, click OK to

Picture 6.7.6

save the content, and then click32, save the file, save it to CSV file, make sure that next time you open you can use it.

Pcb	Arra	ay Conf	ig						
PCB1									
Enable		Mark1	7.31	6.05	Real1	8.34	4.55	MoveTo	Set X
V E	nable	Mark2	37.32	29.43	Real2	38.51	27.77	MoveTo	Set X



Analyzing mark point input is correct or not: two mark points drawing coordinates X coordinate subtract approximately equal to the actual coordinates X subtraction.

Y coordinates of the two mark points drawing coordinates subtract approximately equal to the actual coordinates Y subtraction.

#### 6.8.2 Makeup



CP1	ty Cont	ig							
Enable	Mark1	7.31	6.05		Real1	8.34	4.55	MoveTo	Set XY
Enable	Mark2	37.32	29.43	1	Real2	38.51	27.77	MoveTo	Set XY
CB2									
Enable	Mark1	7.31	6.05	-	Real1	8.53	37.47	MoveTo	Set XY
Enable	Mark2	37.32	29.43	-	Real2	38.67	60.85	MoveTo	Set XY
CB3									
Enable	Mark1	7.31	6.05		Real1	8.71	70.58	MoveTo	Set XY
Enable	Mark2	37.32	29.43	-	Real2	38.79	93.87	MoveTo	Set XY



Picture 6.7.8 is an example, set three PCBS.

If three PCBS, we need to check the "PCB 1, PCB 2, PCB 3" (how much PCB, you write the same number).

First: Put one PCB, set mark point (see 6.7.1 content).

Second: Check mark points respectively circuit board 1 and board 2.

Third: Manually enter the coordinates of the drawing, as shown in Picture 6.7.8, drawings coordinate three boards is absolutely the same.

Fourth : (according to 6.7.1 the contents of the third step), manual move mounting head, make the visual camera respectively on the "circuit board 2 mark points 1, circuit board 2 mark

point 2" "circuit board 3 mark points 1, circuit board 3 mark 2" (as shown in Picture 6.7.8). Finally click OK to complete three mark set point imposition, do not forget to save the file.

Normal makeup, applicable to fewer makeup, mark point is standard mark point.

The disadvantage is, every makeup's mark point need to set. High precision, but more time-consuming.

#### 6.8.3 Array Makeup



Picture 6.7.10

For example: like Picture 6.7.10, set six PCBS.

First: set one board's mark point (See 6.7.1 for details) Like Picture 6.7.7.

PCB Edit	NET NET -NET -NET -NET -NET -NET -NET -N
Pcb Array Config	
	Sub Pcb Reference Point Pos           PcbNum Skip X         Y         Angle               0         0         0            2           0         0         0         0            2           0         0         0         0            2           0         0         0         0            2           0         0         0         0            3         1           0         0         0            3         2           0         0         0
Array Rules	
RowNum: 3	Greate 3 Skip
ColumNum 2	SetXY AimXY Auto
	OK Reset Cancel

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Second, See 6.7.11 for details, click ①Array to edit array interface. ②According to the actual situation, enter the number of rows and columns, Follow the example shown in 6.7.10, we set RowNum to 3 and ColumNum to 2.③Click the Generate Array button, The screen shown in the red box will appear, like Picture 6.7.11④Click the distance measurement, enter the screen settings like Picture 6.7.12

#### DESKTOP PICK AND PLACE MACHINE

	<u>(The</u> thr	Explain: Use th to captur <u>same ref</u> ee Sub PC	he Down Visior re these three <u>ference points</u> <u>(B.)</u>	a Camera points. in these
The Top Left Conner Pcb(Point1):	9.51	14.37	Set Aim	
The Top Right Conner Pcb(Point2):	109.67	14.31	Set Aim	Next
The Bottom Left Conner Pcb(Point3):	9. 51	80.35	Set Aim	Cancle

Picture 6.7.12







Second, the need to collect the same sub-board the same point. We use Picture 6.7.13, the lower left corner of this pad in the red box as a reference point (Note: the pad must be referenced). (1)Manually move the placement head so that the lower vision camera is aligned with the reference point on the 1st sub-board as shown in Picture 6.7.14. Click 【1 sub-board reference point coordinates】 behind the settings, the coordinates automatically generated. (2)Manually move the placement head so that the lower vision camera is aligned with the reference point of sub-board No. 2 and click the setting after [Coordinate of reference point of sub-No. 2 in X direction]. This coordinate is automatically generated. (Note: Sub 2 and Sub 1 are on the same line.)(3)Manually move the placement head so that the lower vision camera is aligned with the reference point of the sub-board No. 3 and click the setting next to the coordinates of the reference point in the 3rd

direction of the Y-direction. This coordinate is automatically generated (Note: 3 sub-board and 1 sub-board in the same column). Set the result, as shown in Figure 6.7.12, then click OK to return. It can be found that the parameters in the box on the right of Figure 6.7.11 have changed (Figure 6.7.15).

PcbNum	Skip	Х	Y	Angle
$\langle 1, 1 \rangle$	1	20.75	25	0
$\langle 1, 2 \rangle$	1	12	25	0
(2, 1)	1	20.81	21	0
(2, 2)	1	12	21	0
(3, 1)	1	20.87	18	0
<3, 2>	<b>v</b>	12	18	0

Picture 6.7.15

Third, check the coordinates generated by the correct location or not. Click on the imposition <1,1>, <1,2> .... Click ⑤ camera alignment, camera center, is not aligned reference point, aligned the description, the parameters are correct. If misaligned, manually move the placement

head until it is aligned, and then click (6) to set the current one. Click Confirm and save the file

Array makeup, for a larger number of imposition, and no mark point or mark point is not standard.

The disadvantage is that due to processing errors of the circuit board, resulting in precision deviation, the advantage is that as long as the pair mark mark.

#### 6.8.4 Mark point recognition mode

PCB Edit PCB Config Array			
Mark Config			
Pattern:	Machine Vision	Manual None	
Shape:	③ Circular	CircularTemplate	ImageTemplate
	Pause After Mach	ine Vision	
Range:	150		
TemplateParam			
Size	1.50 mm	ImageMark1	ImageMark2
3126.	1.50	Test	Test
Strength: 1		Get	Get
Other			
	PCB Thicknes	ss: 0.00	
	ОК	Reset Cancel	]

#### Picture 6.7.16

Mark identification divide into [Machine Vision] 、 [Manual] 、 [None] 。 As shown in Picture 6.7.16

[Machine Vision] : the bottom camera will automatically go to the top of mark point, automatically correct the error, align the center of the camera with the center of the marker.

[Circle] Mark point must be circular pad.

[CircleTemplate] Mode, the system will automatically generate a green circle to match the points. The customer needs to adjust the value of [Size] so that the diameter of the green circle generated by the system coincides with the diameter of the marker point.

【ImageTemplate】 The user needs to move the camera to the center of the two mark points and click on the capture. You can get an image of two mark points. When this mode is selected, the mark point is recognized based on the captured image. [Size] Affects the size of the captured image. [Strength] is 1-10. The smaller the value, the lower the image matching is required.

**(**Suspend confirmation after automatic recognition **)** : If ticked, in automatic recognition mode, it will pauses when recognition completes a marker point, waiting you to identify if the mark point is correct, Then identify the next step by manual. If no tick, in automatic recognition mode, when recognition completes a marker point, The next mark point will be identified no matter if the mark point is correct. This function is recommended if there is other device pad interference in the bottom camera too make sure mark point recognition is correct.

[Manual]: Move the bottom camera to the top of mark point and correct the error by manual, align the center of the camera with the center of the marker. This mode applies to non-standard mark points, mark points have other device interference and so on, all can not automatically identify the mark point.

[None] : If accuracy is not required, in order to improve production efficiency, you can choose not to recognize.

						080	5Pick	P1ac	e for	top1_	Top.csv		
编号	吸嘴	*	耳枕	х	Y	角度	高度	速度	[ 祝觉	压力	已贴	说明	
R27_1	2	•	左2	11.35	16.54	90.0	0.00	100	・不用	- 🗸	V	0805R 3k	
R26_1	2	•	左2	12.13	12.37	112.5	0.00	100	<ul> <li>不用</li> </ul>	- 🗸		0805R 3k	
R28_1	2	•	左2	12.14	20.63	67.5	0.00	100	<ul> <li>不用</li> </ul>	- 🔽		0805R 3k	
R29_1	2	•	左2	14.56	24.19	45.0	0.00	100	<ul> <li>不用</li> </ul>	- 🔍	0	0805R 3k	
R25_1	2	•	左2	14.61	8.88	135.0	0.00	100	<ul> <li>不用</li> </ul>	-	1	0805R 3k	
R30_1	2	•	左2	18.10	26.55	22.5	0.00	100	<ul> <li>不用</li> </ul>	-		0805R 3k	
R40 1	2	•	左2	18.24	6.45	160.5	0.00	100	<ul> <li>不用</li> </ul>	- 🔽	1	0805R 3k	
R39_1	2	•	左2	22.22	5.64	180.0	0.00	100	・不用	-		0805R 3k	Width: 0.00 Height: -0.00
R31 1	2	•	左2	22.24	27.38	0.0	0.00	100	<ul> <li>不用</li> </ul>	- 🗸	17	0805R 3k	orisette fotos offsetat -r. sv
D00 4	0		+- 0	00.04	00.57	220 5	0.00	100	<b>T m</b>	1993	201	00050 01	X: 48.68 Y:

#### 6.8.5 Mark Point recognition operation

Picture 6.7.17

Automatic Identification:

Press 51(the single-step) control buttons on the front panel, mounting heads will identify the mark point 1, as shown in Picture 6.7.17, if the box is green, it means still recognize them, users do not need to operate. If box office turned yellow, bottom visual images of the "center of the cross" and the pad center dots aligned, this represents the completion of the identification mark point (Picture 6.7.18), then press a single step, conducted mark point 2 identification, recognition is completed, you can press the "single-step" or "continue" in Mount.

1	201101	DINCORY	43-40-6	5-AF-16 V33		080	5Pick	Plac	e :	for	top1	_Top.	csv		
编号	吸嘴	*	斗枝	х	Y	角度	高度	速度	R,	祝覚	圧力	) E	站	说明	
007.4	2	- 1	+a 1	44.95	40.54	00.0	0.00	400		7 10		100	2	09050 31	
R26_1	2	•	左2	12.13	12.37	112.5	0.00	100	• :	不用	• 🔽	V		0805R 3k	
R28_1	2	•	左2	12.14	20.63	67.5	0.00	100	• 3	不用	• 🔽		1	0805R 3k	
R29_1	2	•	左2	14.56	24.19	45.0	0.00	100	• 3	不用	• 🔽	E		0805R 3k	
R25_1	2	• 🔚	左2	14.61	8.88	135.0	0.00	100	• )	不用	- 🗸	E		0805R 3k	
R30_1	2	•	左2	18.10	26.55	22.5	0.00	100	• 0	不用	•	E		0805R 3k	
R40_1	2	•	左2	18.24	6.45	160.5	0.00	100	• )	不用	•	E		0805R 3k	
R39_1	2	•	左2	22.22	5.64	180.0	0.00	100	•	不用	•	E		0805R 3k	Width: 95.28 Height: 169.01 Natch: 33.08 OffsetW: 0.02 OffsetH: 0.01 Angle: 0.00
D31 1	2		±2 ]	22.24	27.38	0.0	0.00	100		хĦ		87	1	16 03060	

Picture 6.7.18





Identifying mark point in the process, the alarm sounds, display mark point recognition failure, as shown in Picture 6.7.19, state automatic identification of the mark point of failure, require manual operation, we just press OK in Picture 6.7.19, turn off the alarm, then press the button "50 direction control", the control mounting head movement (note the speed selector dot mode), the bottom visual images of the "center of the cross" and the pad center dots aligned (Note: It is the center of the pad, not the reaming center), and then press a single step, you can identify the next mark point.

#### DESKTOP PICK AND PLACE MACHINE

启和全自动的	规范贴片	机 SN	1:6A-45-46-	C9-AF-18 V3	.05						-		
						080	5Pick	Place	for t	op1_1	lop.c	sv	
编号		及喇	料栈	х	Y	角度	高度	速度	视觉	压力	已贴	说明	
R27	1 2	•	左2	11.35	16.54	90.0	0.00	100	不用・	7		0805R 3k	
R26	1 2		左2	12.13	12.37	112.5	0.00	100	不用 •	V		0805R 3k	
R28	1 2	•	左2	12.14	20.63	67.5	0.00	100	不用・	1		0805R 3k	
R29	1 2		左2	14.56	24.19	45.0	0.00	100	不用 •	1		0805R 3k	
R25	1 2	•	左2	14.61	8.88	135.0	0.00	100	不用 •	V		0805R 3k	
R30	1 2	•	左2	18.10	26.55	22.5	0.00	100	不用・	1		0805R 3k	
R40	1 2		左2	18.24	6.45	160.5	0.00	100	不用 •	V		0805R 3k	
R39	1 2	•	左2	22.22	5.64	180.0	0.00	100	不用・	V		0805R 3k	Vidth: 0.00 Height: 0.00 Natch: 33.65



Manually identify:

Press the 51 (single-step) buttons, heads would to identify the mark point 1, as shown in Picture 6.7.20, the yellow box, mark point not aim good, which requires ourselves to manually adjust. Press the direction key on the 50 (direction control) to control mounting head movement (note the speed selector jog mode), the bottom visual images of the "center of the cross" and the pad center dots aligned (Note: It is the center of the pad, not the reaming center), and then press a single step, you can manually identify the next mark point.

Does not recognize:

If accuracy is not required, in order to improve production efficiency, you can choose not to recognize.

# 7 Program

# 7.1 Import Coordinate



Picture 7.1.1

First

As picture 7.1.1, it's the coordinate file the user import,

Users need to operate:

Remove Direct plug-in coordinates and the coordinates do not need to mount.

Select the corresponding nozzle, under normal circumstances it is the 1/2 nozzle, showing two nozzle simultaneously work.

Select the corresponding material stack number when the user install tray, you need to manually record what material level corresponds to what the chip.

Change the angle, due to the different packages, it may lead angle of 180 degrees, the chips requiring orientation, requires careful examination;

Speed selection, speed represents the speed of a single component, "43 the overall speed of the machine," to distinguish them, from ordinary resistance and capacitance speed can be selected 100%, for heavier chips, corresponding to slow down the speed, the user to adjust the speed

according to the actual situation.

Height, depending on the height of the chip to fill, resistance and capacitance of these highly default 0, you don't have to write. For more than 1mm height chips need to correctly fill in, if not written, resulting in too much distance to the nozzle A drop circuit board, it may cause damage to the nozzle or Z-axis motor lost step.

Vision, for less precision chip, you can choose not use this, to improve production efficiency; for high precision, chip and pin is relatively sparse, such as SOP-16, you can use the fast mode. If in fast mode, can not meet mounting requirements, you need to select exact.

Pressure, in the "System Settings" "Other parameters" "pressure sensor" situation checked, this feature to work. For pressure check device, to conduct stress tests, if the pressure is not checked here, not to measure the pressure.

Mounted: If a component has been attached tick, indicating that the component has been mounted. This check can be added or deleted manually.

Description: This coordinate is expressed what component will be described, when the painting PCB diagram, drawing specification, can save a lot of time for programming.

Note: In the editing process, please the editing as well as preservation, to avoid accidents.

Pick Place for top1.csv Select 1 Lines												Select 1 Lines	1		1	
ID	Noz	zle	Stack	х	Y	Angle	Height	Speed	d Vision	Pressure	Done	Comm	ent 🔺	1	1	
R46_1	1		L1	76.01	13.47	180.0	0.00	1	None -			0402	5.16	1		
R47_1	1	•	L1	73.92	14.35	135.0	0.00	1	None -	1	10	0402	Add Add Current			
R45_1	1	•	L1	78.11	14.29	225.0	0.00	1	None -	1	10	0402	Add Current Vision			
Q7_1	1	•	L1	76.00	9.29	270.0	0.00	1	None -	1	E1	SOT-23/	Add Current Vision(PCB1 Correction)		<b>*</b>	
R53_1	1	•	L1	85.04	25.48	135.0	0.00	1	None -	1	10	1206	Set To Current Set To Current Vision			
R51_1	1	•	L1	66.89	25.36	225.0	0.00	1	None -	1	10	1206	Set To Current Vision(PCB1 Correction)			
R55_1	1	•	L1	85.16	7.21	45.0	0.00	1	None -	<b>V</b>	13	1206	Ained With Nozzle	2	-16	
R49_1	1	•	L1	67.01	7.33	315.0	0.00	1	None -		10	1206	Ained With Camera	0.00 Beis	cht: 0.00	Match: 0.0
R54_1	1	•	L1	88.85	16.41	90.0	0.00	1	None -		10	1206	Select The Same Clear Selected	00.70	V. V.	0.0 (
R50_1	1	•	L1	62.94	16.28	270.0	0.00	1	None -		10	1206	Delete	38.79	72.	93.0
R52_1	1	•	L1	75.96	29.17	180.0	0.00	1	None -		1	1206	Sort	. 0.00	A2.	0.0
R56_1	1	٠	L1	75.96	3.77	0.0	0.00	1	None -		13	1206	Generation Array		P2:	0.1
Q8 1	1		L1	70.68	11.05	225.0	0.00	1	None ·		E	SOT-23/	Place Selected Components		-	-

Picture 7.1.2

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								Ріск	Place	e to	or top1.	csv	Select 8 Li	ies 👘	1		1.1	1
ID	Noz	zle	Stack	х	Y	Angle	Height	Speed	Visio	n	Pressure	Done	Comment	· 200		1	-	
R46_1		•	L1	76.01	13.47	180.0	0.00	1 •	None	٠	2		0402 5.1k		-/			
		•	L1					1 •	None	٠								
R45_1			L1					1 •	None	٠						_		
Q7_1	1	•	L1	76.00	9.29	270.0	0.00	1 •	None		1		SOT-23A S8050					
R53_1	1	•	L1	85.04	25.48	135.0	0.00	1 •	None	•	1		1206 6.8k					
R51_1	1	•	L1 ]	66.89	25.36	225.0	0.00	1 •	None	•	1		1206 6.8k					
R55_1	1	•	L1	85.16	7.21	45.0	0.00	1 •	None	•	<b>V</b>		1206 6.8k		<b>?</b>		-16	
R49_1	1	•	L1	67.01	7.33	315.0	0.00	1 •	None	•	<b>V</b>		1206 6.8k	Width: Offset	0.00	Heigh Offse	t = 0.00 tH: 7.91	Anz
R54_1	1	•	L1	88.85	16.41	90.0	0.00	1 *	None	٠	<b>V</b>		1206 6.8k	×.	2	0 70	٧.	
R50_1	1	•	L1	62.94	16.28	270.0	0.00	1 *	None	٠	<b>V</b>		1206 6.8k	71.	3	0.00	72.	
R52_1	1	•	L1	75.96	29.17	180.0	0.00	1 •	None	•	<b>V</b>		1206 6.8k	A1 -		0 00	A2 ·	
R56_1	1	•	L1	75.96	3.77	0.0	0.00	1 •	None	•	1		1206 6.8k	P1:		0	P2:	
Q8_1	1	•	L1	70.68	11.05	225.0	0.00	1 •	None	•	<b>V</b>		SOT-23A S8050	Vacuum	0.	acuum?	Prick	0
Q2_1	1	•	L1	70.67	21.79	135.0	0.00	1 •	None	•	<b>V</b>		SOT-23A S8050			acadina.	- Inch	
Q4_1	1	•	L1	81.26	21.75	45.0	0.00	1 •	None	٠	V		SOT-23A S8050					
Q6_1	1	- [	L1	81.32	11.06	315.0	0.00	1 •	None	•	<b>V</b>		SOT-23A S8050					
Q1_1	1	- [	L1	68.93	16.42	180.0	0.00	1 •	None	•	1		SOT-23A S8050					
Q3_1	1	•	L1	76.00	23.46	90.0	0.00	1 •	None	•	1		SOT-23A S8050					
Q5_1	1	•	L1	83.03	16.42	0.0	0.00	1 •	None	•	V		SOT-23A S8050		trin	P	Prick	
		•	L1					1 •	None	•								نصر
		•	L1					1 •	None	٠				P	ump	Vac	:uum1	Va
		•	L1					1 •	None	•				A1	+	A1-	A2+	
		•	L1					1 •	None	•						Π.		
R41_1		·	L1	73.95	18.52	45.0	0.00	1 •	None	•	2		0402 5.1k		vozzle1	Lo	wSp	2

#### Picture 7.1.3

Bulk Edit, if you need to bulk edit "0402 5.1k" coordinate information, just press Picture 7.1.2, select the "0402 5.1k", right-click, then choice "select the same line." Will appear as shown in Picture 7.1.3, automatically selected contains "0402 5.1k" coordinate all information, at this time, as long as we have one of the coordinate information of a "nozzle", "material stack", "angle", "height "," speed "," vision "," pressure ","mounted " to modify, the rest will be automatically modified.

The above is just an example of the "description" contains bulk modify "0402 5.1k" coordinate information. Users can also "number", "nozzle", "material stack", "angle", "height", "Speed", "vision", "Pressure", "mounted" make bulk modify. Same as above.

Second step

Mark set point (see 6.6 content)

Third step

								1 IOK	1 lauc	tor top i.	0.54		Select 1 Lines		F		
ID	Noz	zle	Stack	х	Y	Angle	Height	Speed	Vision	Pressure	Done	Comment	*				
R46_1	1	•	L1	76.	01 13.47	180.0	0.00	1 •	None	•		0402 5.1k		1			
R47_1	1	•	L1	73	Add			- · ·	None	· 🔽		0402 5.1k					1
R45_1	1	•	L1	78	Add Current				None	•		0402 5.1k			20		m
Q7_1	1	•	L1	76	Add Current Vis Add Current Vis	ion ion(PCB1 Co	rrection)		None	· 🗸	10	SOT-23A S8050					5
R53_1	1		L1	85	Set To Current				None	•		1206 6.8k				25	1
R51_1	1	•	L1	66	Set To Current	Vision			None	· 🗸	11	1206 6.8k	-		/		
R55_1	1		L1	85	Set To Current	Vision(PCB1	Correction	· ·	None	•		1206 6.8k					$\mathcal{O}$
R49_1	1	•	L1	67	Aimed With Bozz Aimed With Came	te ra			None	· 🗸	11	1206 6.8k	, i i i i i i i i i i i i i i i i i i i	idth: 0.00 ffset¥: 9.65	Height	H: -T. 91	Match: Angle:
R54_1	1	•	L1	38	Select The Same				None	•		1206 6.8k		٧.	12.04	٧.	0.1
R50_1	1	•	L1	62	Clear Selected				None	• 🔽	10	1206 6.8k		71 -	0.00	72.	0
R52_1	1	-	L1	75	Delete				None	•		1206 6.8k		A1:	0.00	A2 :	ć



Inspection mark point settings are correct, as shown in Picture 7.1.4, select one component "X coordinate" or "Y coordinate", right click, "the camera aim" bottom vision camera will automatically go to align the coordinate information corresponding to the pads. Bottom visual

window as shown in Figure 7.1.4. Users can aim coordinate several more, if all accurate, representation mark point settings are correct.

Note: Save the file, you can test mount, when user test mounted, press the "single step" button and try placed more several coordinates, if the results are satisfactory, then press the "Continue" button for continuous mounting. Finished one PCB, observation the mount position, mount the angle is correct, if no problem, you can increase the speed of production placement.

### 7.2 Manual Editing Coordinates



#### 7.2.1 No Coordinate Information

If a PCB board, no coordinate file, you need to manually write coordinate information.

In Picture 7.2.1 this board, for example, two circle pads represent two mark points, the lower left corner of the mark point 1, the upper right corner to mark point 2. Visual window switch to the bottom visual, as shown in Picture 7.2.2. Click the manual mode, press the direction keys to move to the mark point 1 above, as shown in Picture 7.2.3. Then open the PCB configuration. Check mark point 1, and click the actual coordinates of the back of "Set XY", will produce the actual coordinate 1. Then copy the actual coordinates of the coordinate information 1 to drawing coordinate 1 inside. As shown in Picture 7.2.4.

Pcb	Array	Conf	ig						
PCB1									
🗷 Er	nable N	lark1	12.46	274.36	Real1	12.46	274.6	MoveTo	Set
🔳 Er	nable N	lark2	0.00	0.00	Real2	0.00	0.00	MoveTo	Set

Picture 7.2.4

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After set the first point mark, then press the direction keys to move to the mark point 2 above, check mark points 2, and click the actual coordinates of the back of "Set XY", will produce the actual coordinates 2. Then copy the actual coordinates of the coordinate information 2 to drawing coordinate 2 inside. As shown in Picture 7.2.5.

Pcb	Arra	ay Conf	ig						
PCB1	1								
V E	Enable	Mark1	12.46	274.36	Real1	12.46	274.36	MoveTo	Se
VE	Enable	Mark2	42.27	297.74	Real2	42.27	297.74	MoveTo	Se

Picture 7.2.5

Then press to confirm. Mark set up completed, then, to set the coordinates of the component.



Picture 7.2.6

First step: click on the manual mode, then press the direction keys to move to a position above the placed, visual window shown in Picture 7.2.6. Note: The pad shall prevail.

Second step: Right-click in an empty program window, select "Add current camera position (circuit board 1 correct)" as shown in Picture 7.2.6. The system will automatically generate coordinate file, as shown in Picture 7.2.7. So, add all the coordinate information, as shown in Picture 7.2.8, then modify the generated coordinate file editing (see 7.1 content)



Picture 7.2.7

#### DESKTOP PICK AND PLACE MACHINE

							prop	rams	.csv			Select 1 Lines	100	-		VA	Y
ID	No	zzle	Stack	Х	Y	Angle	Height	Speed	Vision	Pressure	Done	Comment			0		3
R27_1	2	•	L2	11.35	16.54	90.0	0.00	1 •	No •	<b>V</b>		0805R 3k				83	ю
R26_1	2	•	L2	12.13	12.37	112.5	0.00	1 •	No •		11	0805R 3k		_			TT.
R28_1	2	*	L2	12.14	20.63	67.5	0.00	1 •	No *	V		0805R 3k		E			D C
R29_1	2	•	L2	14.56	24.19	45.0	0.00	1 •	No *	V		0805R 3k		1			
R25_1	2	•	L2	14.61	8.88	135.0	0.00	1 •	No •	<b>V</b>		0805R 3k			-		
R30_1	2		L2	18.10	26.55	22.5	0.00	1 •	No •	V		0805R 3k					$\sim$
R40_1	2	•	L2	18.24	6.45	160.5	0.00	1 •	No •			0805R 3k					4
R39_1	2	•	L2	22.22	5.64	180.0	0.00	1 •	No •	V		0805R 3k	Width: 0.0 OffsetW: 9.6	0 He 5 Of	ght: 0,00	Match: 0	00
R31_1	2	•	L2	22.24	27.38	0.0	0.00	1 •	No •	<b>V</b>		0805R 3k	V.	12.0	1 V.	00	00
R32_1	2	•	L2	26.24	26.57	339.5	0.00	1 •	No	<b>V</b>		0805R 3k	71	12.0	1 72.	00	00
R38_1	2	•	L2	26.56	6.63	202.5	0.00	1 •	No •			0805R 3k	A1 ·	0.0	A2.	0	00
R33_1	2	•	L2	29.92	24.19	315.0	0.00	1 •	No •		1	0805R 3k	P1:	0.0	0 P2:		0
R37_1	2	•	L2	29.95	8.80	45.0	0.00	1 •	No •	<b>V</b>		0805R 3k	Vacuum1	Magune	Dick	China String	0
R34_1	2		L2	32.31	20.71	292.5	0.00	1 •	No •			0805R 3k	vacualiti	y vacuum	Prick	U Suip	U
R36_1	2	•	L2	32.33	12.44	247.5	0.00	1 •	No *	V		0805R 3k					
R35_1	2	٠	L2	33.16	16.54	270.0	0.00	1 •	No *			0805R 3k	Strip		Prick	Light	

Picture	7	.2.	.8

# 7. 2. 2 There Have Coordinate Information, No Mark Point Information

First step, bottom vision alignment with the first central location of the component, observe and record (45, coordinate information).

For example, Picture 7.2.9, manually capture the coordinates of the component (-10.91, -33.83).

						top-08	805.cs	v				选中	1行	
ID	Nozzle	Stack	х	Y	Angle	Height	Speed	Vis	ion	Pressure	Done	Comment		
R27_1	1/2 •	左20	11.35	16.54	90.0	0.00	100	• 不J	ŧ١.	• 💟		0805R 3k		
R26_1	1/2 •	左20	12.13	12.37	112.5	0.00	100	· 不)	ŧ,	• 🔍	8	0805R 3k		
R28_1	1/2 •	左20	12.13	20.60	67.5	0.00	100	· 不)	Ð	• 🔍	8	0805R 3k		-
R29_1	1/2 •	左20	14.56	24.19	45.0	0.00	100	· 不)	ŧ.	• 🔍		0805R 3k		
R25_1	1/2 •	左20	14.61	8.88	135.0	0.00	100	· 不)	Ð,	• 🔍	8	0805R 3k		1
R30_1	1/2 -	左20	18.10	26.55	22.5	0.00	100	• 不J	Ð	• 💟	E	0805R 3k	Vidth: 0.00 Height: 0.00 Hatch: 0	
R40_1	1/2 •	左20	18.24	6.45	160.5	0.00	100	· 不)	ŧ,	• 🔍	8	0805R 3k	Offset#: 10.08 Offset#: -7.94 Angle:	0.0
R39_1	1/2 -	左20	22.22	5.64	180.0	0.00	100	· 不)	Ð	• 🔽	8	0805R 3k		00
R31_1	1/2 -	左20	22.24	27.38	0.0	0.00	100	• 不J	ŧ.	• 🔽	E	0805R 3k		00
R32 1	1/2 .	左20	26.24	26 57	339.5	0.00	100	· 不)	₽.	• 🔽	E	0805R 3k	AT. 0.00 AZ. 0.	00

Picture 7.2.9

Second step: Right-click the first coordinate component, select aim the camera, record data (-11.70, -31.85). As shown in Picture 7.2.10.

Third step: Take the difference between the two data, then record in PCB set inside, click OK. As shown in Picture 7.2.11.

Fourth step: validation whether or not correct, you can right-click the coordinates of the first component, select the aim camera, See if it in the camera center, whether on the center of the pad.



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# 8 Test PCB Board

Our company provides customers with a test PCB board, PCB board has two sides. In disc folder, there has a positive PCB board document, there also has the reverse side of the PCB board files, and can be mounted directly CSV file.

Users can mount test directly use csv file. (See USB)

According to the above description of the contents, here come under mounting process simple and elaborate.

The first step, PCB board placed, tray installed. The second step, open the PCB board file, note, in document, the direction of the drawing to the PCB placed in the same direction. The third step is to set the origin. The fourth step, coordinates of the export file. The fifth step, loading the coordinates file. The sixth step, mark point settings, and save. Seventh step, the program editor. The eighth step, single-step test run. The ninth step, official placement.

# 9 Common Trouble

# 9.1 The Camera Can Not Recognize



As shown on the right, the video video window is dark, there is no circle and cross, indicating that the video cable is not connected, or drive didn't install.

In the USB disk to find the folder as "USB DVR Capture", and then follow the path "USB DVR Capture> Drivers> Setup", double-click Setup, uninstall the software, re-install once.

# 9.2 Chip Identification is incorrect









In the mounting process, sometimes we found through visual effects but even worse, the more crooked, which is due to recognition errors caused by the chip, as shown in Picture 9.2.1, it's correct recognition, Picture 9.2.2 is identification error.

Note, there is no light source above the device.

We need to adjust the "System Settings", "camera parameters", "element value", this value maximum is 99.

#### 9.3 No Mark Point Mount

See 7.2 content.

#### 9.4 Manually Add Mark Point

See 7.2.2 content.

#### 9.5 Stack Coordinate Correcting

Left Stack material correction:

If all the X-direction is not accuracy to feed stack, adjust the "System Settings", "Other parameters", "left setting Offset" in front of a box in the "X" value.

If the X-direction stack of individual materials are not accuracy, to adjust the "System Settings", " left Stack material", select the appropriate material stack number, "prick correction" in front of a box in the "X" value.

If the material is not accuracy to stack of the Y direction, adjusting the "System Settings",

"left Stack material ", select the appropriate material stack number, modify the Y coordinate value.

Back stack material correction:

If the X-direction is not accuracy to feed stack, adjust the "System Settings", "back feed Stack", select the appropriate material stack, modification X coordinate value.

If all Y direction are not accuracy to stack feed, adjusting the "System Settings", "Other parameters", "back the prick offset ", followed by a block in the "Y" value

If an individual is not accuracy to feed stack in the Y direction, adjusting the "System Settings", "back feed Stack", select the appropriate material stack number, "prick correction" in front of a box in the "Y" value.

#### 9.6 **Prick Stuck**





Left stack:

In the suction position correct premise, single-step, run to the position shown in Picture 9.7.1, observe the prick position,

As shown in Picture 9.7.2, prick inserted into a hole in the material is the correct position.

As shown in Picture 9.7.3, prick upper position by a perforated material, if all the material stack is the same position, "System Settings" "Other parameters", the left prick offset, behind the box "Y" value, this value should be reduced, the rate of decrease of 0.05 each time. If only individual material stack, "System Settings", "left stack materials," "prick correction" behind the box "Y" value, this value should be reduced, the rate of decrease of 0.05 each time.

As shown in Picture 9.7.4, the prick position below the perforated material, if all the material stack is the same position, "System Settings", "Other parameters", the left prick offset, behind the box "Y" value, this value should be increased, the amplitude is incremented by 0.05. If only individual material stack, "System Settings", "left stack materials," "prick correction" behind the box "Y" value, this value should increase, increasing the amplitude of 0.05 each.

Back stack:

In the suction position correct premise, single-stepping, run to the dial needle come down,

observe prick position.

Prick position on the left side of the perforated material, if all the material stack is the same position, "System Settings", "Other parameters", behind the prick offset, in front of the box "X" value, this value should be increased, each increased amplitude of 0.05. If only individual material stack, "System Settings", "post-material stack", "prick correction", in front of the box "X" value, this value should be increased, each time increasing the magnitude of 0.05.

Prick to the right position by a perforated material, if all the material stack is the same position, "System Settings", "Other parameters", behind the prick offset, in front of the box "X" value, this value should be reduced, each reduced amplitude of 0.05. If only individual material stack, "System Settings", "behind the material stack," "prick correction", in front of the box "X" value, this value should be reduced, reducing the amplitude of 0.05 each.

There is another situation, less material, the more obvious the stuck, or paper reel (eg M7 package), you need to look at the operation, as shown in Picture 9.6.5.



Picture 9.6.5

#### 9.7 Chip Through Visual Is Not Accurate

Chip through vision, but still not accuracy to placed.

Observed visual effect, if the identification is incorrect, see 9.2 content.

In identifying the correct premise, to observe, chip down to the PCB board height, is it appropriate? When drops to PCB height, PCB board has significant deformation, instructions down to the height of the PCB, too big, to see inside the program the height of the chip are set correctly or not; in other chip resistors and capacitors can be placed, you can also modify the "down to PCB" value.

In front of the premise is correct, user can fine-tune.

Camera1				NozzleDor	wn - mm					
Camera Position:	63.17	-54.00 0	0.00	Dow	vn To PCB:	-12.00	Down Te	o Stack:	-11.00	Nozzle
Distance / Pixel:	0.0469	0.0443		Dow	m To Front:	-12.00	Down To [	Discard	-5.00	Down
Angle Offset:	-0.40	Delay:	150	NozzleOffs	set(X Y) - mm					
Vision Threshold				1102200	Nozzie	1 Offset	24.82	46	.08	
Nozz	le Threshold:	110.00			Nozzie	2 Offset:	3.88	45	.80	Measure
Com	p Threshold:	50.00			Nozzle1 Visio	n Offset	0.00	0.	00	
X/Y Offse	t Threshold:	0.20			Nozzle2 Visio	n Offset	0.00	0.0	00	
Angle Offsel	Threshold:	0.25								
				NozzleDel	lay(1,2) - ms					
Camera2					P	ick Delay:	0		0	
Distance / P	vixel: 0.026	0.025	58		Pla	ce Delay:	0		0	





Open the "camera parameters" screen, as shown, when chip mounting, if the angle have deviation, to adjust the "angle offset" If the chip to counterclockwise rotation, then increase the number, otherwise reduce the value.

If the chip is mounted, the nozzle A mounts the X direction in the direction of deviation, as shown in Picture 9.7.2, adjust the "nozzle 1 on the camera offset", the value in front of the box, the chip needs to move to the left, Then subtract this number, otherwise increase the value.

If the chip is mounted, the nozzle A mount Y direction deviation, as shown in Picture 9.7. 2 to adjust the "nozzle 1 on the camera off", behind the box in the value of the chip need to move up, Then subtract this number, otherwise increase the value.

Nozzle B patch is, there is error, then adjust the "suction nozzle 2 on the camera off", the same as above.

### 9.8 Jumping Gear



The machine is placed in accordance with the position of the left, see the two circles, inside the gap, and see if the USB give to your image are the same. If not, it means that the occurrence of jump gear.

Jump gear, causing the gap is

greater than the other half of the gap.

Put the smaller joint clearance, clamping, adjust the larger gap to keep the machine set right. User needs to do is take a screwdriver tool, put relatively small gap down this crack in the clamp, use the back side of the gap is pretty large breaking, you will hear a "click", indicating adjust the gap back, and then comparing to the pictures again.

#### 9.9 Nylon Belt Can Not Be Separated





When the Nylon tape can not separated in time (see left-hand picture), it means the reels don't have enough friction, we need to increase friction.

Note: 1. This happens because there is a nylon strip without the correct volume on the reel, but caught between the reel and reel, this time, as long as the dial back to the nylon tape reels. Nylon belt need a smooth surface towards the rod, to reduce friction.After prolonged use, the trays will cause tension pull pin card stock, need to hand loose trays.

Slightly thicker plastic parts require hand tabling slightly flattened.

As shown on the left, use the supplied 1.5mm hex screwdriver, in the material stack corresponding volume wheel clockwise to tighten the screw, when screwed, hand next to the rotary reel, feel the friction .Note: Reel friction should not be too large, too much will effect on the life of the reel or pull off the nylon belt.

# 9.10 Nozzle correct



First



Fourth



Fifth



Seventh

NozzleOffset(X,Y) - mm			
Nozzle1 Offset:	24.82	46.08	Magauma
Nozzle2 Offset:	3.88	45.80	measure
			$\smile$
	0		
	Second	l	
Camera alignment refere	nce point		
			$\frown$
Reference:		MoveT	SetXY

Third



Sixth

Nozzle1:	MoveTo SetX
Nozzle2:	MoveTo SetX



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1.Align the center position of any component coordinates with the bottom camera 2.Click Measure.3. Move the nozzle to the top of the device just pointing by the camera. 4. Go to manual to let nozzle down.5. The nozzle descends to the circuit board, maybe deviations from the center of the camera alignment components. 6.Turn the speed to Dot mode, Press the arrow keys to move the nozzle to the center of the component. 7. Click SetXY of Nozzle1. Eighth. [Nozzle 1 Offset] The parameters are automatically corrected. Repeat the process again to make sure the changes are correct. After complete adjusting, click Save. [Nozzle 2 offset] The method is the same as above.

#### 9.11 Camera Driver Installation



Picture 9.11.1

As shown in Picture 9.11.1. The video window is dark, As shown in the red circle USB 2.0 Video Capture Controller is an exclamation point in device manager. The camera driver is not installed.

The installation method is as follows:

First find the	e installation path,	"USB	DVR	Capture	USB DVR Capture	>	Drivers>
Setup	Setup ", do	uble-clic	k Setup	to begin the	installation.		

Note: The installation path above is unique. If it is successfully installed from other paths, it may cause the camera to recognize the problem. The machine must be powered on and the video must be wired before it can be installed.

#### DESKTOP PICK AND PLACE MACHINE



#### First Click installation



Third Click OK to complete the installation The above steps to complete the driver installation.









Contrast with Picture9.11.2, more drives are shown as red circles

卸载完成之后,重新开始安装步骤。

# 9.12 Export the back coordinates of circuit board





As shown in Picture 9.12.1, The PCB file containing the coordinates of the top layer and the coordinates of the bottom layer. The origin is set in the lower left corner Mark1 (7.3, 6), Mark2 (37.3, 29.4) . First, export coordinates. See 6.5 detail



Picture 9.12.4

Second, Load the file, as shown in Picture 9.12.2, click 33 (Load File), select the exported coordinate file, and click Open. If you mounting the front, as shown in Picture 9.12.3, select and click OK. If the reverse side, as shown in Figure 9.12.4, select and click OK. Note: The X-axis direction is reversed, be sure to select.

Third, set mark point, see 6.8 detail.

Note: When affixed to the back of the mark point of the X-axis coordinates to be inverted. As shown in Figure 9.12.1, Mark1 (7.3,6), Mark2 (37.3,29.4), but Mark1 (-7.3,6), Mark2 (-37.3,29.4) when backing the back.

On the back of the paste coordinates generation method, the understanding of the operator to be stronger, the main application of the coordinate system, relative coordinates and absolute coordinates of this knowledge. If you can not understand, you can follow the steps below.

# **10 Preventive Maintenance**

#### 10.1 Nozzle Maintenance

Please check the nozzle whether it is deformation or wear after impact, and make sure whether there are blockage inside the suction nozzles.

Press the suction nozzles to feel the tightness, if too tight, you should use the abluent to clean the inside of nozzle.

#### 10.2 Surface cleaning of machine

This equipment is a precision instrument, do not use in harsh environments, please keep the machine clean. Look at the machine surface whether there are foreign matter, if so, using the air gun or brush to sweep away.

### 10.3 Check The Stack

Check whether the reel is loose, the positioning axis is loose.

### 10.4 Cleaning The Camera

Using swab with alcohol to clean dust on the camera surface. If there are any components falling on camera surface, please clear in time.

### 10.5 Lubricate the XY-axis guide rail

XY-axis rail refueling, First with a rag to remove the old grease, then add the new grease

#### **10.6 Computer Antivirus**

The computer antivirus need on a regular basis so that the software can run steadily.  $\ensuremath{\circ}$ 

# **10.7 Grounding Protection**

Industrial equipment, because of the working environment requirements, please use the ground protection socket. In order to avoid the computer USB leakage or other electrostatic influence on the machine.