Rev 1.0

华企正邦
HUAQI ZHENGBANG

SMD components counter

User Manual

ZB3245TSS



温州市正邦电子设备有限公司
WENZHOU ZHENGBANG ELECTRONIC EQUIPMENT CO., LTD

Introduction

Thank you for using this product. This operation manual provides the parameters, operation guidance and other related information of ZB3245TS chip mounter.

！Attention:

1. It is strictly prohibited to copy part of or the entire book (including software and programs) without authorization.

2. The contents of this book can be modified without prior notice.

3. We strive to be accurate in the preparation of the contents of this book. If you find a mistake, omission or suspicious part, please contact the dealer or the company.

4. The company is not responsible for the results of the error operation, whether it is related to the item (3) or not. Please understand.

！Attention：For safe use of the machine!

The operator of the chip mounter (hereinafter referred to as the machine), maintenance personnel and repair personnel shall carefully read the following safety precautions before using the machine, so as not to get hurt.

1. Basic precautions

(1) The operation of the machine is only limited to the operator who has mastered the operation of the machine.

(2) Please do not use this machine for other purposes. Otherwise, the company is not responsible for the resulting responsibility.

(3) Do not modify the machine. The company is not responsible for the accident caused after unauthorized modification.

(4) In order to prevent the accident caused by unexpected start-up, please cut off the power supply before carrying out the maintenance, repair and cleaning.

(5) When unplugging the power plug, please hold the plug instead of the wire and pull out.

2. Precautions for application

(1) Please take the necessary safety measures when carrying the machine, in order to prevent inversion or falling when lifting and moving the machine.

(2) Please take care of the equipment for shipment.

(3) Please put the machine in a stable place for installation.

(4) In order to prevent personal accident, before switching on the power supply, please confirm that the cable is not damaged, shedding, loose, etc.

(5) In order to prevent personal accident, before switching on the power supply, please confirm that the power supply is safely grounded.

(6) In order to prevent accidents caused by unskilled operation, the repair and commissioning work shall be carried out by skilled technicians. When changing the components, please use the company's genuine parts. The company is not responsible for the accident caused by the use of non genuine parts.

(7) In order to prevent the electric shock caused by unskilled operation, electrical repairing shall be entrusted to the professional staff.

(8) In order to prevent human injury, after repair, adjustment or spare parts replacement, please confirm that the screws and nuts are not loose.

3. Precautions for working environment

(1) Do not use the machine under the environment of high frequency welding machine and other noise sources (electromagnetic wave).

(2) Do not use the machine when the power voltage exceeds 10% of the rated voltage.

(3) When it thunders, stop using the machine and cut off the power.

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Chapter 1 Prepare work before use

1.Open the wooden box, take out the machine and accessories, check the equipment list and check whether all parts are in good condition. If you have any further question, please contact us. After-sale Service Hot Line: 400-692-6668

No.	Name	Specification	Unit	Qty
1	Pick and place machine	ZB3245TSS	set	1
2	Feeder location	Feeder no. 27 pcs	set	2
3	Display	Dell 19 "	set	1
4	Keyboard	Dell	pcs	1
5	Mouse	Dell	pcs	1
6	Power cord		pcs	1
7	nozzle	502-506 1 pcs each	pcs	5
8	Manual		pcs	1

2. The equipment must be placed on a fixed and flat work table.

3. Connect other parts of the equipment (feeder, monitor, keyboard and mouse) with the machine, and test whether the equipment is working well by power.

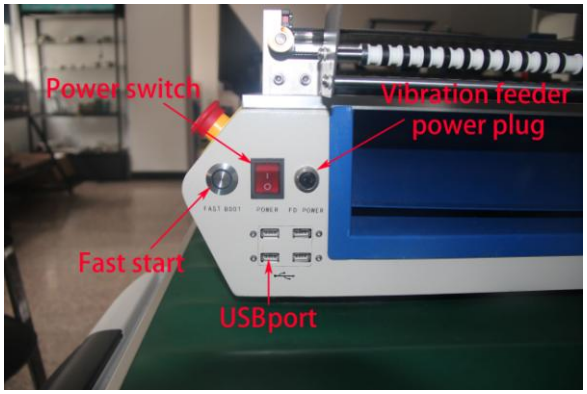


Fig.1-1 Power Switch

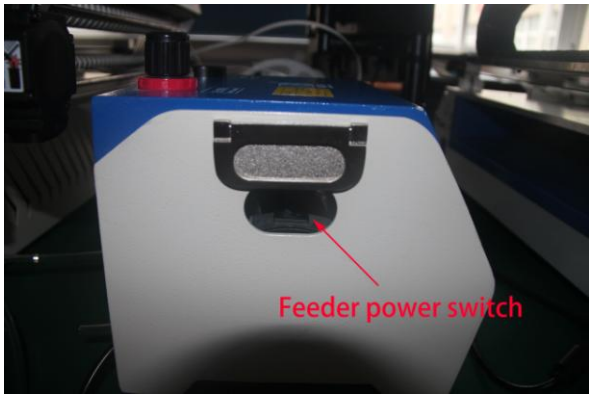


Fig.1-2 Air Pump Switch

4. Prepare production materials and other related equipment:

NO.	Equipment	Re-mark
1	PCB design Software	PROTEL、DXP、ETC（Download and install it through the internet）
2	PCB Original File	convert PCB design file to the pick and place coordinate file（if you don't have, you can edit a new one through our machine）
3	PCB	A PCB for production（please do not paste the solder paste on the PCB firstly）
4	Component	Component for production（IR、capacitance、IC 、etc.
5	Double Side Tape	For trial production
6	Solder Paste Mixer	To mix the solder paste（Increase activity and eliminate bubbles） Can contact our sales to buy if needed!
7	Solder Paste Printer	Paste the solder paste on PCB
8	Scraper, Mix Blade	Use with mixer and printing machine
9	Reflow Oven	Soldering after done the placement

Chapter 2 Equipment Summary

2-1 Equipment Constitute

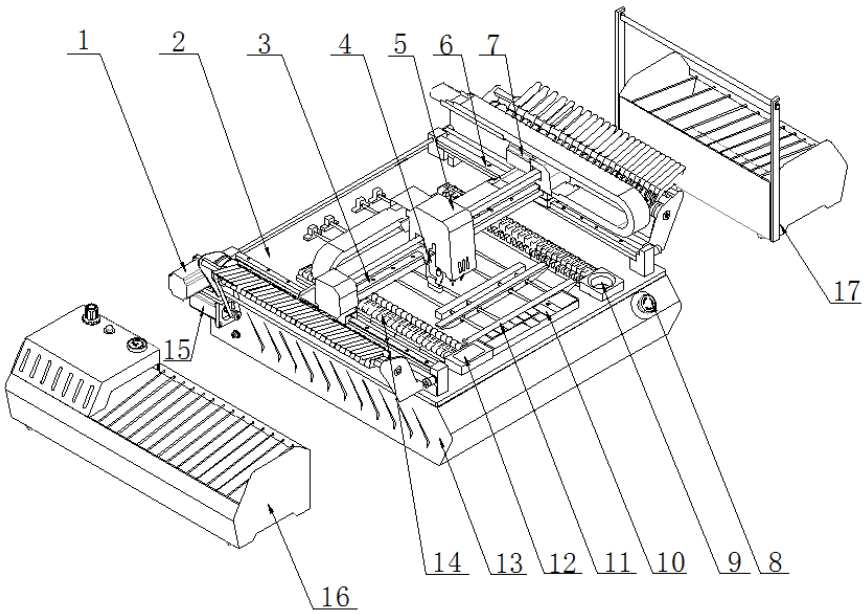


Fig.2-1 Host structure

1.Y-axis stepping servo motor 2. Operation platform 3.X-axis linear slide rail 4.Pin 5.Mounting head
6.Y-axis guide rail 7.X-axis stepping servo motor 8 .Button for emergency stop 9.HD Camera
10. Loose IC material stack, Material throwing chute 11.PCB holding device 12. RC Camera
13.Machine casing 14.Band shape groove 15. Thin-film recycling step motor 16/17.Feeder

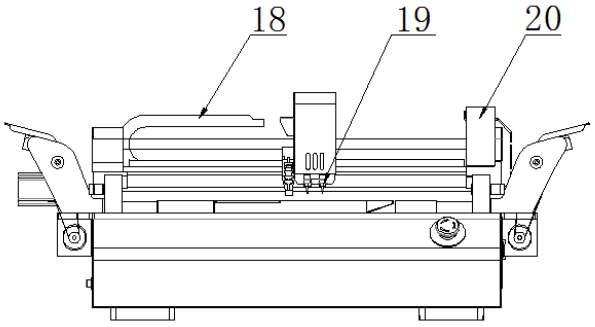


Fig.2-2 host front view

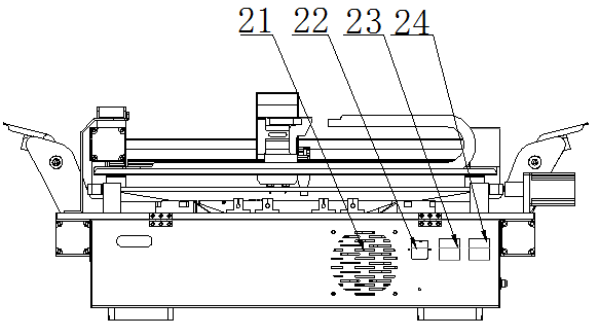


Fig.2-3 host back view

18.X-axis drag chain 19. Nozzle 20.X-axis drag chain 21.Cooling fan 22.Power plug 23/24.Socket

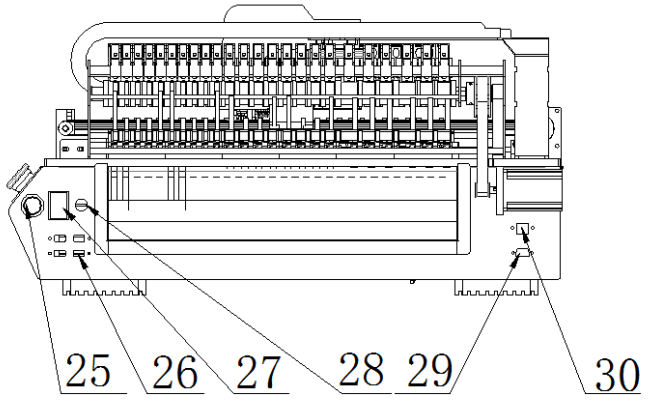


Fig.3-4 left of host

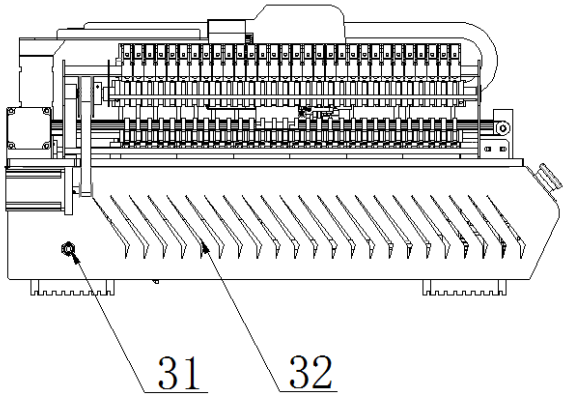


Fig.3-5 right of host

25. Fast start 26.USB port 27. Power switch 28.220V power plug of stick feeder 29.VGA port
30.Internet Socket 31.Gas entrance 32.3D cooling window

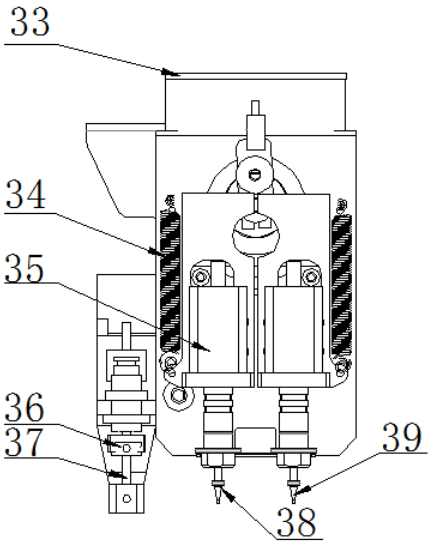


Fig.2-6 Mounting head structure

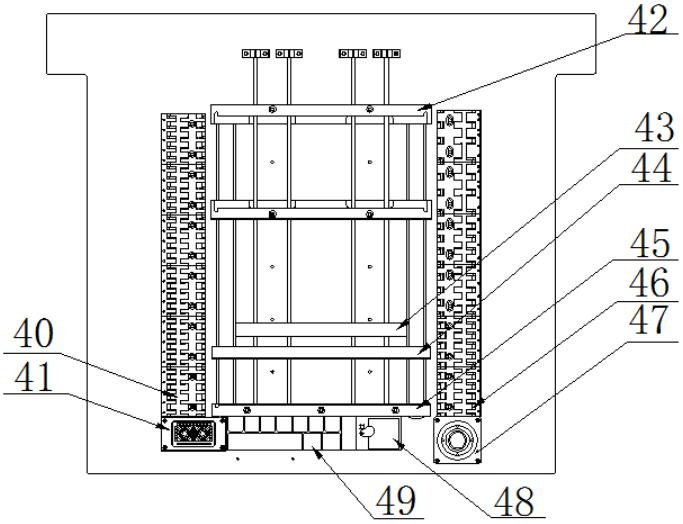


Fig.2-7 Operation platform structure

33.Vacuum checkerboard	34.Z-axis extension spring	35.Electric rotating machinery	36. Pull needle test part
37.Pin 38.2# nozzle	39.1# nozzle	40.Material groove	41.RC Camera
42.IC tray holder	43.PCB board adjustable support	44.PCB board movable mount	45.PCB board fixed mount
46. Material groove	47.HD Camera	48.Material throwing groove	49. Pre IC material position

2-2 X, Y, Z and R axis Description

The machine has the following 4 axis (X, Y, Z, R) for numerical control.

(1) X, Y axis: The left and right direction of the device is X, and the front and back direction is Y, with 0.01mm as the unit, Which is shown as X=000.00mm, Y=000.00mm.

(2) Z axis: Height, with 0.01mm as the unit, shown as Z=00.0mm.

(3) A axis: Display the rotation angle of the mounting head, with 0.1 degrees as the unit, shown as A=00.0. Counter clockwise rotation is positive.

2-3 File Type

1.CSV format coordinate file

CSV coordinate file is the file converted and output by the PCB source files through the DXP and other software which cannot produce directly.

CSV coordinate file is the file created and edited by the H3SMT patch system online which cannot produce directly.

The file contains the number, element name, packaging, mounting coordinate, mounting angle, element scale value and so on.

CSV file is directly compatible with EXCEL software to modify and save.

2.H8Prj format production file

H8Prj production file is the program file officially produced after edited and set by the H8SMT mounting system.

The file contains the CSV coordinate file information, PCB information, feeder information etc.

The H8Prj files can only be modified and used through the H3SMT mounting system.

2-4 Equipment Parameters

System	Items	Content
Mounting System	Mounting head number	2 pieces
	Mounting accuracy	0.05mm
	Mounting angle	0～360°
	Theoretical Velocity	7000pcs/hour
	Normal mounting	5000pcs/hour
	Visual Mounting	3500pcs/hour
	Nozzle type	Juki nozzle
	Element for mounting	RC (0402, 0603, 0805, 1206, etc)
		LED lamp (0603, 0805, 3014, 5050, etc)
		Chip (SOT, SOP, QFN, BGA, etc)
Substrate	Substrate minimum size	10×10 mm
	Substrate maximum size	320×220-450 mm
	Substrate thickness	≤2mm
	Substrate warp allowed value	<1mm
Feeder	8mm	40 bit
	12mm	8 bit
	16mm	4 bit
	24mm	2 bit
	Pre IC material level	10 bit
	IC pallet	1 bit
	Tubular feeder	1 Zhengbang special 5 tube tubular feeder (optional)
X, Y, Z axis	X, Y axis moving range	430×530 mm
	Z axis moving range	19 mm
	Z axis rotation angle	0～360°
Visual System	Visual system	independent research and development
	Visual camera	CCD HD Camera
	Visual quantity	4pieces
	Identification ability	MAX.20*20mm
Control system	PC system	Microsoft WIN7
	Operational software	independent research and development
	Compatible file format	CSV, TXT. format file
	Programming mode	Support online and offline
Basic parameter	Pressure	0.4 Mpa (Internal pump)
	Vacuum value	-92kpa
	Power	230 W
	Power supply	AC220V±10％ 50Hz
	Host size	L 990 ×W 730 ×H 385 mm
	Feeder size	L 235 ×W 700 ×H 245 mm
	weight	85kg

2-5 Nozzle

NO	External diameter	Inner diameter	Appearance	Applicable component
502	Φ0.7mm	Φ0.4mm		0402
503	Φ1.0mm	Φ0.6mm		0603
504	Φ1.5mm	Φ1.0mm		0805、1206、1210、SOT23
505	Φ3.5mm	Φ1.7mm		SOP8、SOP14、1812、2220
506	Φ5.0mm	Φ3.2mm		QFN、TQFP、BGA

2-6 Substrate Limiting Condition

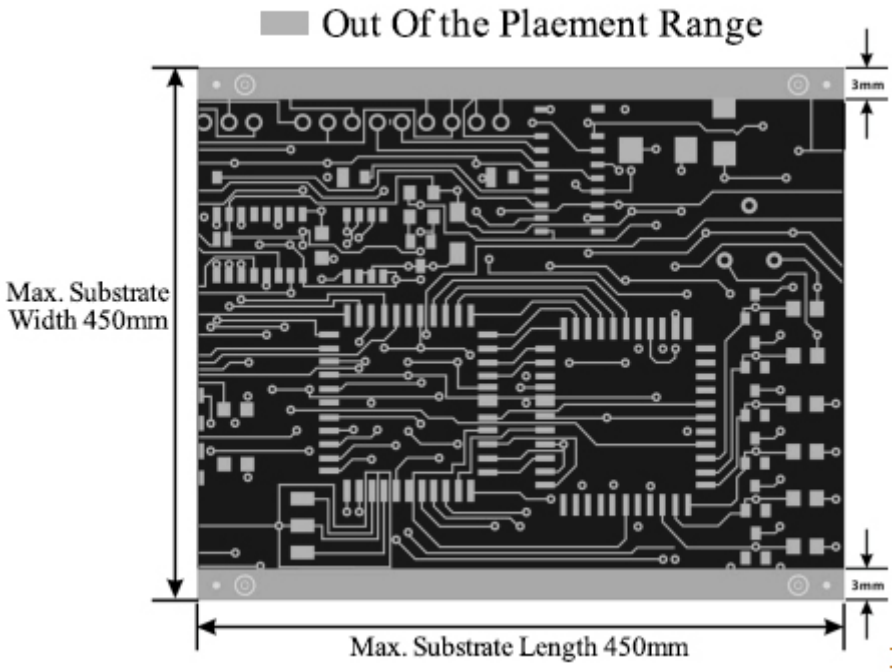


Fig.2-8 Substrate Limitation

2-7 Menu Constitute



Fig.2-9 Main Menu

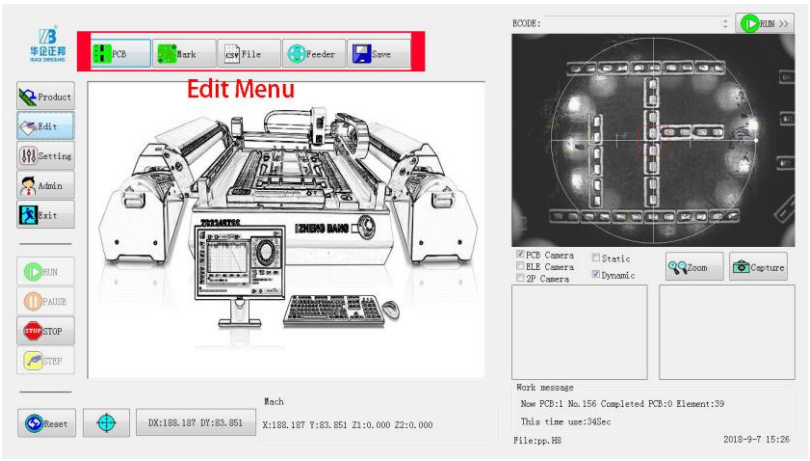


Fig.2-10 Edit Menu

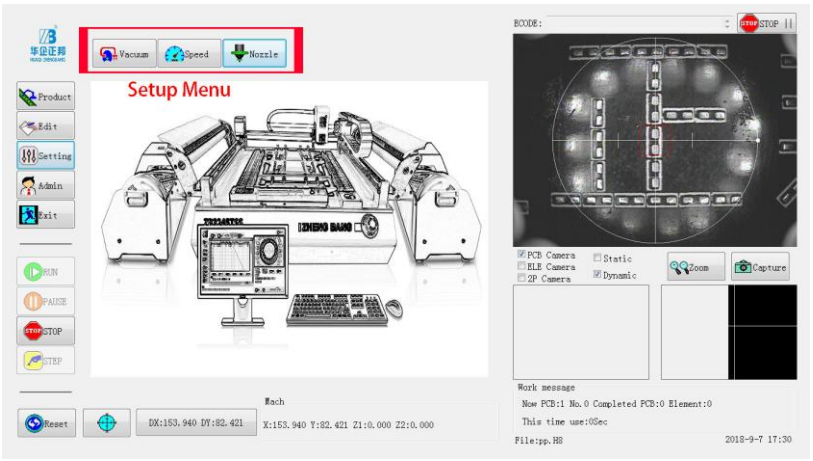


Fig.2-11 Setup Menu

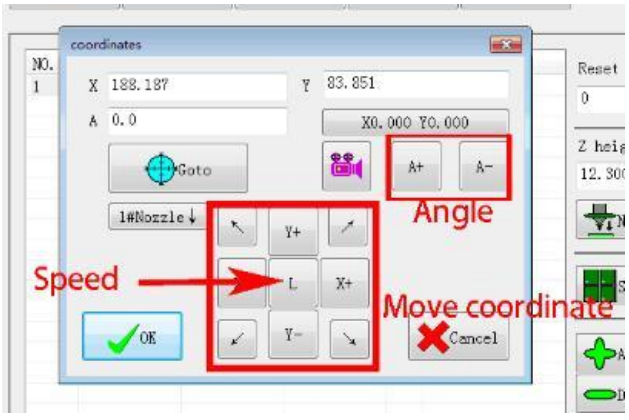


Fig.2-12 Coordinate Edit

Chapter3 System Settings

3-1 Vacuum setting

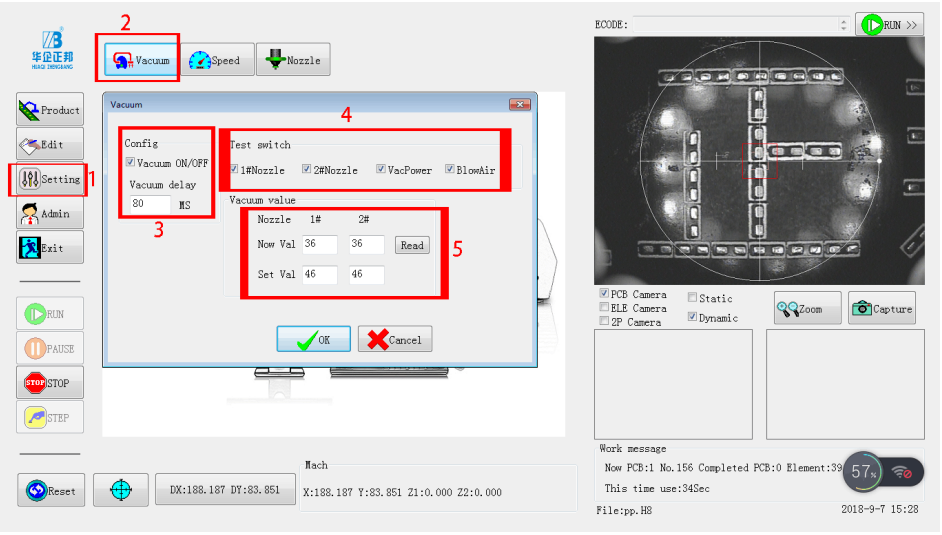


Fig.3-1Vacuum setting

1.Open vacuum detection switch

Tick “working detection” with “√”to start vacuum detection,System judges “sucking up” successful or not automatically,

Decide next action according to result.Erase “√” to close vacuum detection switch.

2.Vacuum level setting

Turn on debug switch for all nozzles,Click “read” to read current vacuum value,The system sets the vacuum value automatically.

！ Attention:

If visual adjustment is opened for all feeders, vacuum detection can be closed.

Vacuum stabilization time is factory default value and it is not suggested to change it.

3-2 Speed Setting

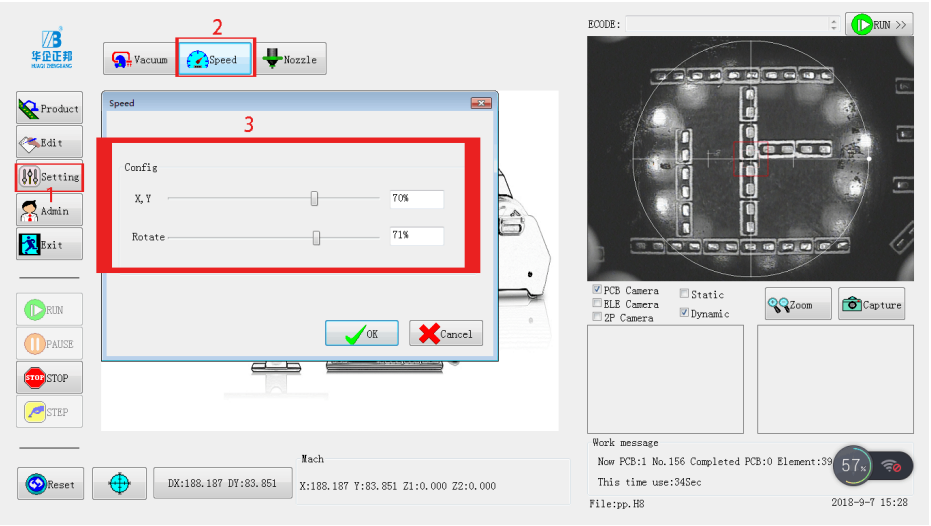


Fig.3-2 Speed Setting

The speed setting is realized by moving the speed sliding block to adjust X/Y axis operation speed and the rotation speed of the nozzle, which is quite simple. The higher the value is the speed is higher, and vice versa.

！ Attention:

Note: Z axis movement speed is set in feeder edit!

3-3 Nozzle adjustment

The adjustment function mainly works on coordinate offset of top camera, bottom camera and nozzle and keep nozzles in same center to ensure pasting precision. Adjustment is finished during exiting factory test and no need to adjust in common replacing. Offset resulted from abrasion of machine and nozzle problem can all be corrected by nozzle adjustment.

1.Open ceramic substrate

Open ceramic substrate cover on right side of IC tray with spanner which is provided together with machine, then put ceramic substrate in the middle.

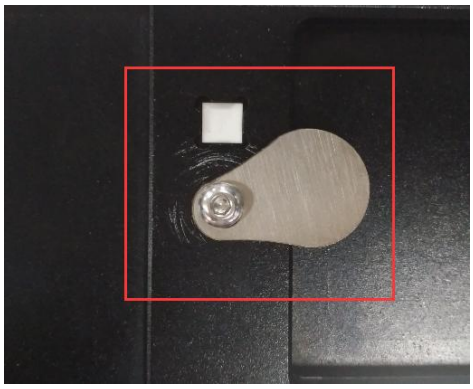


Fig.3-3 Ceramic substrate

2.Open nozzle switch to adjust nozzle

System shift to nozzle setting interface, tick all nozzle switches, Click relevant “adjust” button,

System starts to adjust coordinate of top camera automatically and pick up ceramic substrate,

Adjust nozzle coordinate by bottom camera,

Put ceramic substrate back automatically after adjustment finished,

Click 2# nozzle to adjust it the same way.

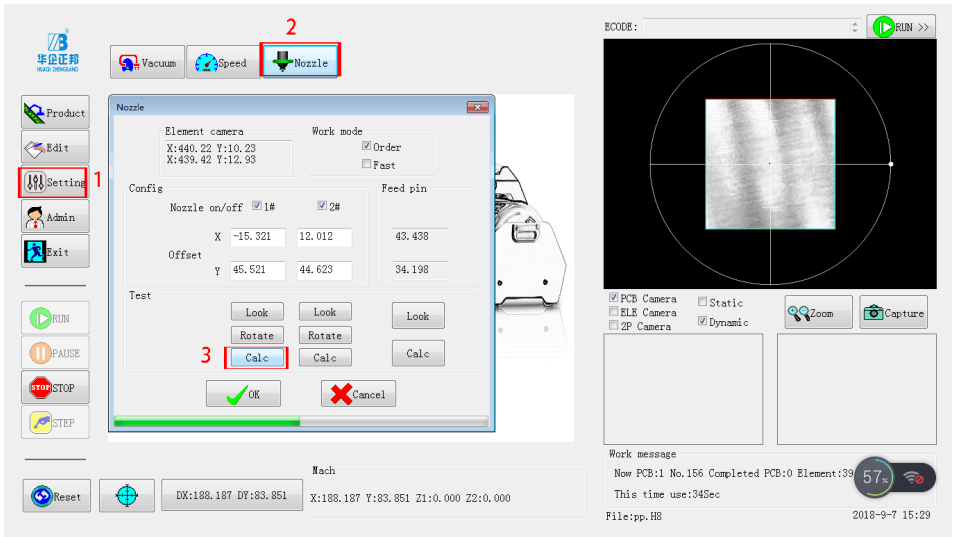


Fig.3-4 Adjust nozzle coordinate

！ Attention:

Since the ceramic substrate for calibration of nozzle has small size and is difficult to keep, it is recommended to put it back to the original place and fasten the ceramic substrate cover after useto prevent from being lost.

3-4 Pin calibrate

Click "set --nozzle -- calibration" to move the coordinates to the position of the center of the pull needle, confirm and save.

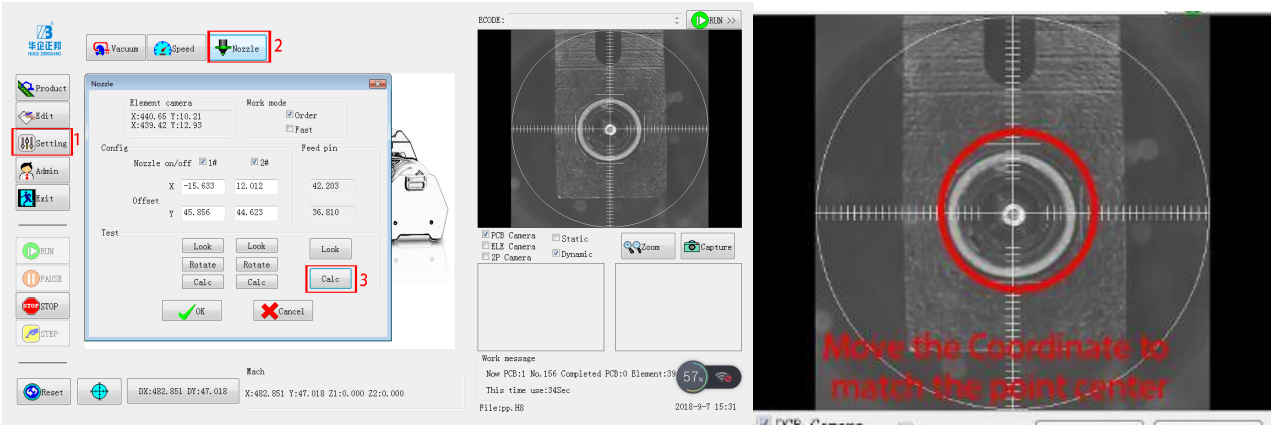


Fig.3-5 Pull needle calibration

Chapter4 Quick operating instructions

Operation process:

Step 1：	Load materials	Step 2：	Edit the program	Step 3：	Production
NO.1-1	Load PCB	NO.2-1	Output CSV Coordinate File	NO.3-1	Input Procedure
NO.1-2	Load Feeders	NO.2-2	Edit PCB Original Point	NO.3-2	Match Feeder Parameters
NO.1-3	Load Nozzle	NO.2-3	Edit Mark Point	NO.3-3	Production
		NO.2-4	Edit Coordinate File		
		NO.2-5	Edit Feeders		

Step 1：Load materials:

NO.1-1 How to load PCB

Adjust the bar to let the width less than the PCB's, then let the PCB against the fixed bar and pull back the active to fix the PCB and make sure that the PCB is at the left and end of the holder.

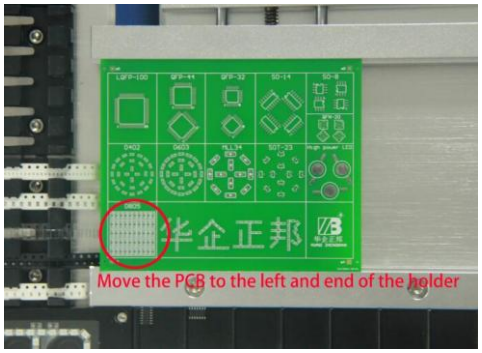


Fig.4-1 Load PCB

NO.1-2 How to Load feeders

Put the prepared feeder plate on the feeder location, pass the material belt through the polished rod and gets stuck in the material tank, and then peel off about 200mm of feeder tape and press it under the press wheel.

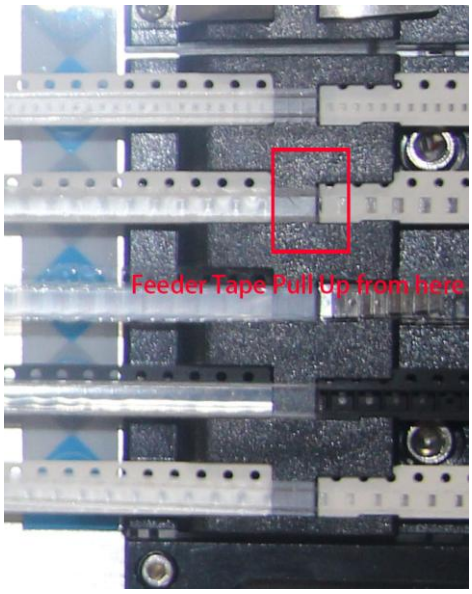


Fig.4-2 Feeder Tape Pull Up Position

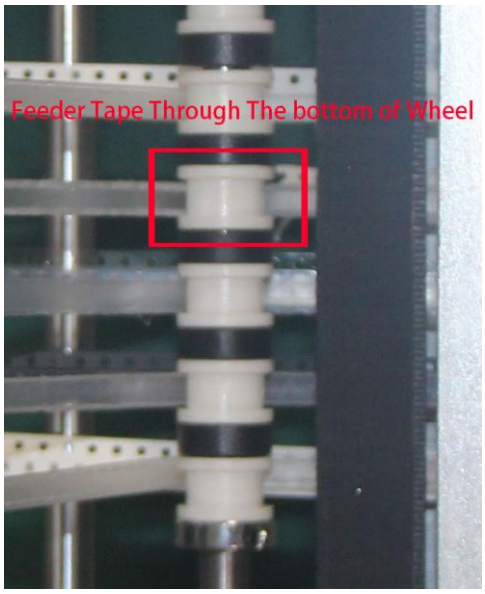


Fig.4-3 Feeder Tape Through The Wheel

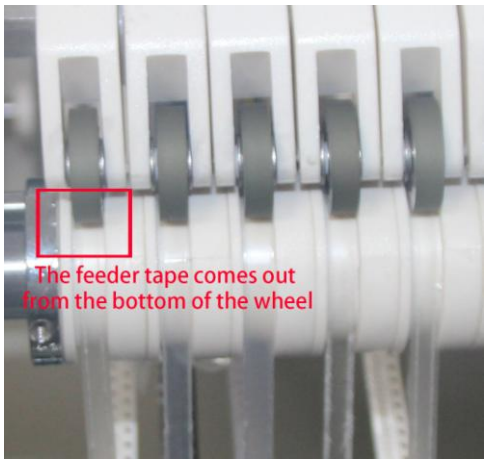


Fig.4-4 Feeder Tape Pressed Under The Pressure Wheel

NO.1-3 Load Nozzle

Pick the nozzle and install it to the nozzle base

Step 2：Edit the program:

NO.2-1 Output CSV Coordinate File

Open the DXP or other PCB design software, open the PCB original file, click “Edit-original Point”, then click “File-assembly Output-Generates Pick And Place Files” (format: CSV Unit: metric system),output CSV coordinate file.

NO.2-2 PCB Original Point Edit

Open the pick and place machine software, click “Edit-PCB”, double click “X/Y” Coordinate bar to find the coordinate edit frame.

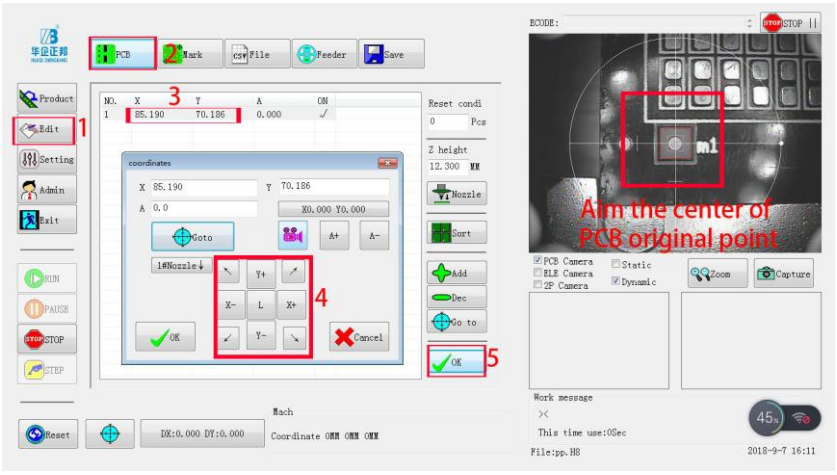


Fig.4-5 PCB Original Point

!Attention:

The original point coordinate must be the same as the step NO.2-1 in CSV file.

NO. 2-3 MARK Point Edit

Click “Edit-Mark” then click “Mark1/edit” move the coordinate to the PCB mark1 position. Do the same step to edit the mark2 coordinate.

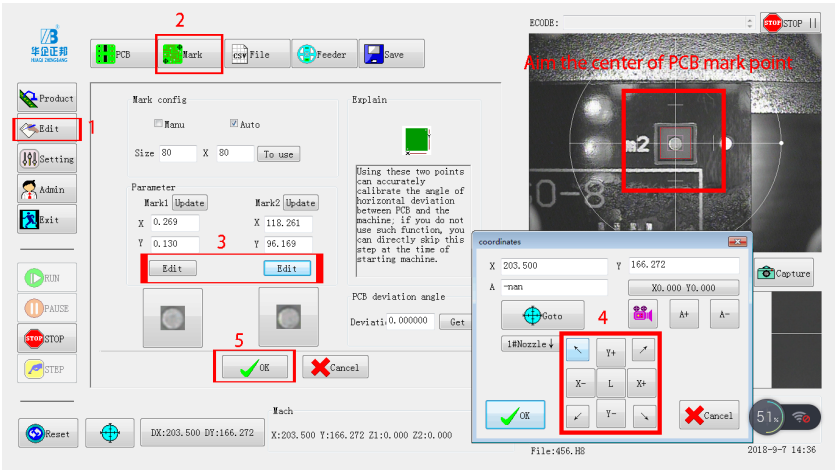


Fig.4-6 Mark

NO.2-4 Coordinate File Edit

Click “Edit-CSV file”, then click “open” to input the NO.2-1 CSV file

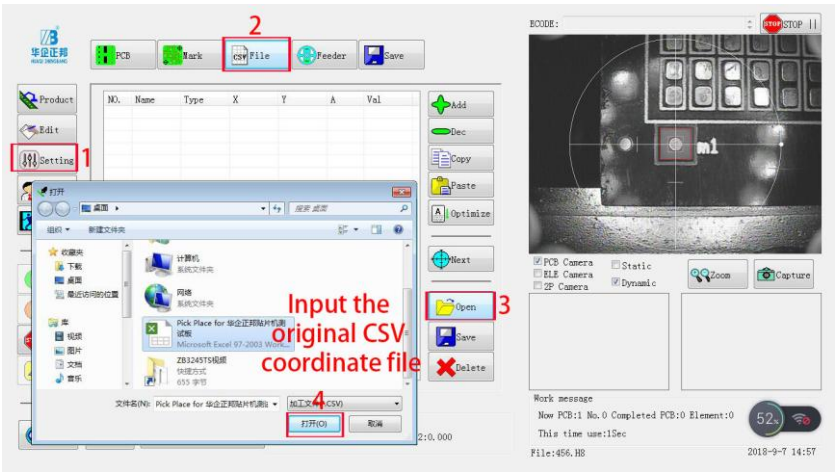


Fig.4-7 CSV File

NO.2-5 Feeder Edit

Click “edit-feeder” to log in the feeder edit mode.

Input the feeder no., open the switch； Input the **component value and type**

!Attention:

The component value and type must be the same as the CSV file(included the capital and small letter)

1.Edit the feeder angel, height, components thickness, Z axis speed， choose the nozzle.

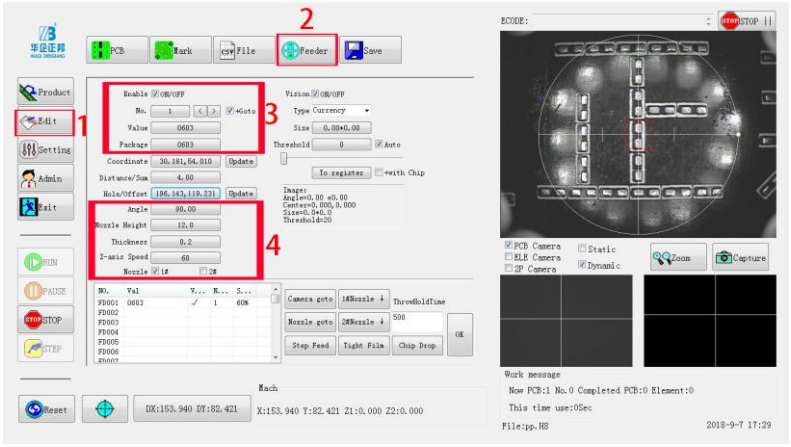
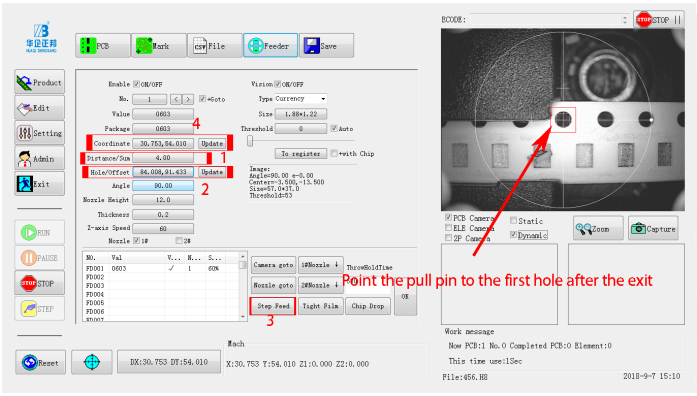


Fig.4-8 Edit the Feeder Basic Parameters

2.Input the feeder range, click “Step Feeder”

3.Then click “XY Coordinate” to move the coordinate to match the hole of the fist component center as shown in the picture. Calibrate the component pick up coordinate.



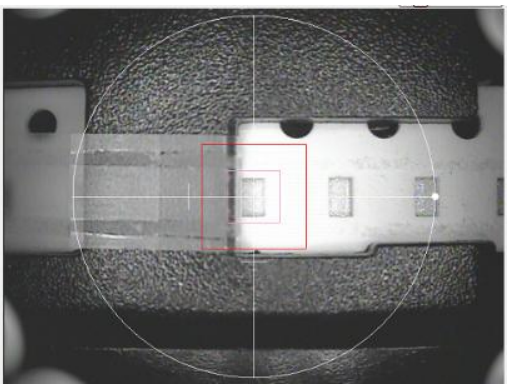


Fig.4-9 Hole Edit

Fig.4-10 XY Coordinate Edit

4.Open the visual calibrate switch, choose the component identification Type, √ the right side box of visual threshold to create the threshold automatically, √ the right side box of “register” then click “register” to register the component size, after that please click “throw” to throw the component.

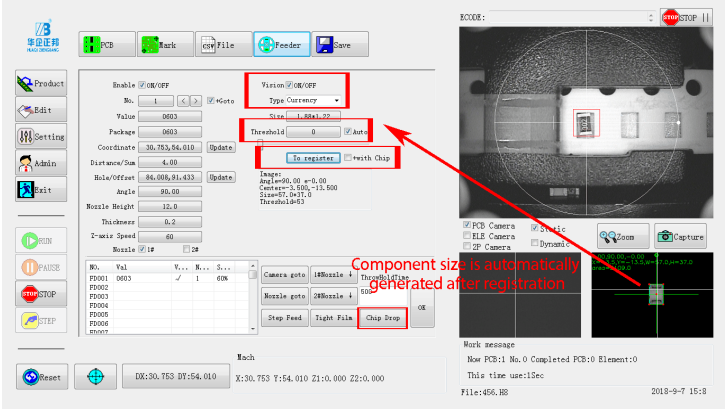


Fig.4-11 Visual Parameters Edit

5. Refer to the above steps to edit all feeders, and click "Confirm" to save the data.

Step 3：Production

Click “Product-Open” to input the PCB file, then click “Matching” to find the feeders, then click “Start” to start the production.

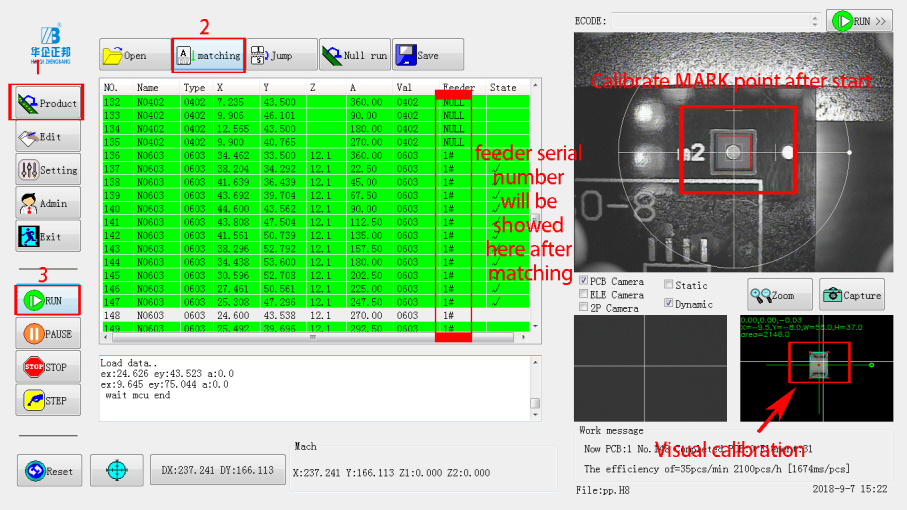


Fig.4-12 Production

Chapter 5 Maintaining

5-1 Routine Maintenance

1.Check whether the nozzle tip is worn or damaged, and whether the nozzle is blocked or pasted by solder paste, replace or clean it when necessary.

2.Check if there’s any dust or debris on lens of PCB camera and clean with soft cloth if necessary.

3.Check if there’s any left components or other things on feeder and clean if necessary.

4.Check if there’s any dirt on lens of component camera and clean with soft cloth if necessary.

5.Check if there’s any extra components or other things on table surface and clean with hairbrush if necessary.

5-2 Weekly Scheduled Maintenance

1.Check if there’s any PM or other things on synchronous belt of X-axis and clean if necessary.

2.Check if lubricating grease on slide rail of X-axis is hardened and if there’s any debris on it.

3.Check if there’s any PM or other things on synchronous belt of Y-axis and clean if necessary.

4.Check if lubricating grease on slide rail of Y-axis is hardened and if there’s any debris on it.

5.Check if there’s any debris or leftovers on Z-axis and clean if necessary.

6.Check if there’s any air leakage on pneumatic connector and replace is necessary.

7.Check if there’s any aging or twist on air pipe and replace is necessary.

5-3 Monthly Scheduled Maintenance

1.Check whether the brightness of each LED lamp is enough; if not, the entire LED part should be changed.

2.Check O-ring of each nozzle shaft and replace it immediately after the nozzle shaft aging is found.

3.Check if there’s any looseness on synchronous belt of X-axis and tension it if necessary.

4.Clean dust and leftovers on slide rail of X-axis and coat with new lubricating oil.

5.Check if there’s any looseness on synchronous belt of Y-axis and tension it if necessary.

6.Clean dust and leftovers on pole of X-axis and coat with new lubricating oil.

7.Clean dust and leftovers on slide rail of Z-axis and coat with new lubricating oil.

8.Clean dust and leftovers on PCB clamping guide axis and coat with anti-rust oil.

9.Clean dust and leftovers on air cylinder of pulling needle and coat with new lubricating oil.

10.Check if there's any looseness on outer silicone ring of nozzle base and replace if necessary.

！Danger:

In order to prevent accident caused by accidental start, please cut off the power supply for maintenance.

！Warning:

Do not use the blower gun to blow dust and debris because dust and debris may be blew inside the machine and adhered to the guide rail, lead screw, lens and affect normal operation of the machine.

！Attention:

Do not use organic solvents to clean the surface of the machine; otherwise it will damage the machine surface paint.

5-4 Nozzle Cleaning

1.Please use the ultrasonic cleaner with alcohol. After cleaning, use an air gun to blow away the alcohol in the nozzle.

2.The standard time of ultrasonic cleaning is about 5 minutes.

3.For the dirt that cannot be cleaned by ultrasonic cleaner, please use soft cloth soaked with alcohol to wipe it off.

4.After cleaning, to prevent the internal rust, please apply lubricant on the nozzle.

！Attention:

Please do not use other solvent (propyl alcohol, etc.) except for alcohol. If high viscosity grease such as lubricating grease is used, it may result in that the nozzle cannot be returned smoothly.

Chapter 6 After-sales service

This machine warranty period is 12 months from the date of purchase; we will repair for free if it doesn't belong to man-made fault during the warranty period. In the case of man-made fault or beyond warranty period, we will take maintenance fee according to the circumstances and guarantee lifelong maintenance.

◆Revision history

Rev	Date	Revised Pages	Revised Contents
1.0	2018.09		First edition

Specifications, appearance, etc. can be modified without prior notice.
If you need detail operation instruction, please find electronic document inside of the computer!

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