

Rev 1.0



Automatic Chip Mounter

OPERATION

MANUAL

ZB3245T



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Introduction

Thank you for using this product. This operation manual provides the parameters, operation guidance and other related information of ZB3245T chip mounter.

Attention:

1. It is strictly prohibited to copying the part or this 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.



Danger:

When the machine is at work, the operator must be particularly careful. If an operator extends his hand or other parts of the body into the work area, it is likely that he will be injured due to his negligence.



Attention:

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 and pull out, and do not hold the wire.

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.

Catalog

For Safe Use of the Machine

Chapter 1 Equipment Summary

1-1 Introduction	1
1-2 Equipment Characteristic	1
1-3 Equipment Summary	2
1-4 File Type.....	7
1-5 Menu Constitute.....	8

Chapter 2 Equipment Testing

2-1 Equipment Installation	12
2-2 Functional Test.....	12

Chapter 3 System Settings

3-1 Function Switch.....	14
3-2 Speed Setting	14
3-3 Vacuum setting.....	14
3-4 Nozzle Calibration.....	15

Chapter 4 Program Edit

4-1 PCB Source File Edit.....	17
4-2 CSV File Online Creation and Edit	20
4-3 PCB Edit	24
4-4 Mark Edit.....	26
4-5 Feeder Edit	26
4-6 Program Export	29

Chapter 5 Production and Mounting

5-1 Production and Mounting Process.....	30
5-2 Start-up Inspection	31
5-3 PCB Loading	31
5-4 Start up the Machine	32
5-5 Import Program	32
5-6 Production and Mounting	33

Catalog

For Safe Use of the Machine

Chapter 6 Maintenance

6-1 Routine Maintenance	35
6-2 Nozzle Cleaning.....	35

Chapter 7 Trouble Shooting

7-1 Feeding Material	36
7-2 Reclaiming Material	36
7-3 Throwing Material.....	36
7-4 X/Y Axis	37
7-5 Mounting.....	37
7-6 Power Supply	38

Chapter 1 Equipment Summary

1-1 Introduction

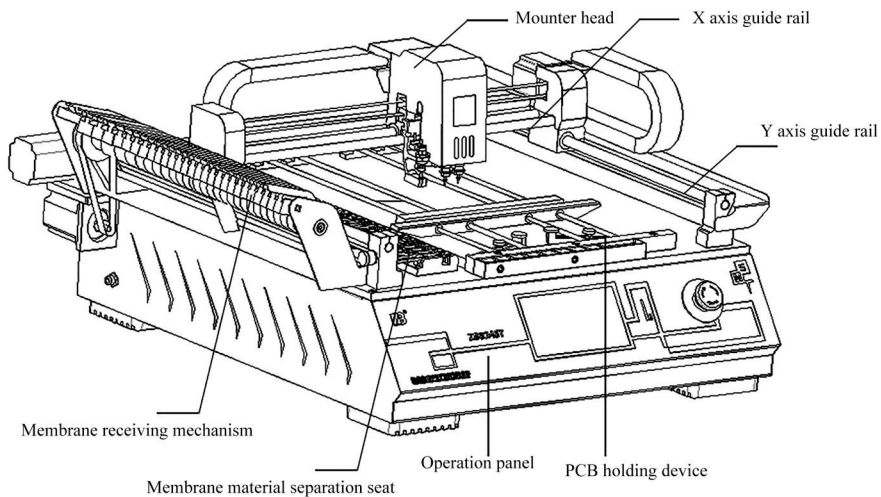
The ZB series chip mounter is suitable for small and medium-sized enterprise mass production, experimental development, sample trial production and school teaching and so on. The design concept of the machine is to meet the needs of the vast number of small and medium customers, with the rapid and accurate mounting, easy operation, stable running and affordable price. It has a very high performance-price ratio and is your best choice!

1-2 Equipment Characteristic

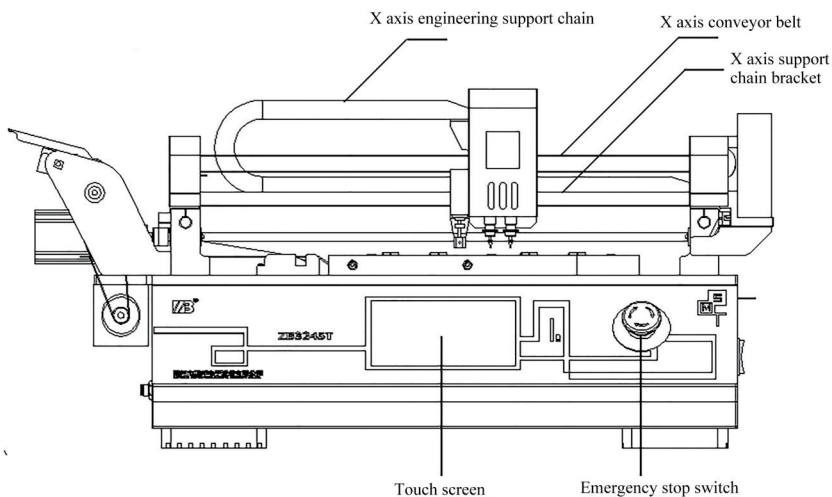
- ✳ Double - stick head design, which can mount micro components and integrated IC components quickly;
- ✳ Cross cursor positioning, visual component fine tuning;
- ✳ Dual axis configuration on X axis can achieve stable and high-speed mounting, which is more stable and more accurate;
- ✳ Dual Mark point recognition and positioning revise PCB informal, position offset and other issues;
- ✳ Fastest speed of 5000pcs/h can achieve high speed mounting requirements;
- ✳ It supports maximum 320*450mmPCB, which is suitable for most circuit board mounting;
- ✳ It supports importing the CSV coordinate file converted by PCB source files into the editor and shortcut editor;
- ✳ It has a humanized control system, which is easy to learn, understand, and operate. A person with experience for using computers only needs half an hour to start;
- ✳ The feeding system of patent can solve most of the problems such as nylon wheel feeding difficult, material back trouble, stripping material uncertainty, easy to break and so on;
- ✳ The 7 inch high-definition LCD touch screen is easy and convenient to operate;
- ✳ The exclusive pneumatic feeding system perfectly solves the problems of similar products on the market which are perishable, easy to break and have other issues;
- ✳ JUKI universal nozzle meets the requirement for mounting of different package;
- ✳ A variety of production models are suitable for production, teaching, experiments and other uses.

1-3 Equipment Summary

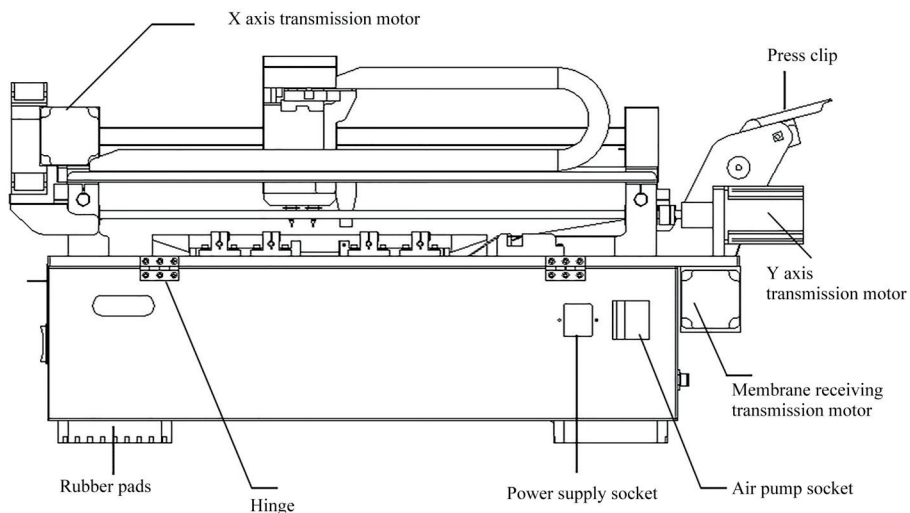
1-3-1 Equipment Constitute



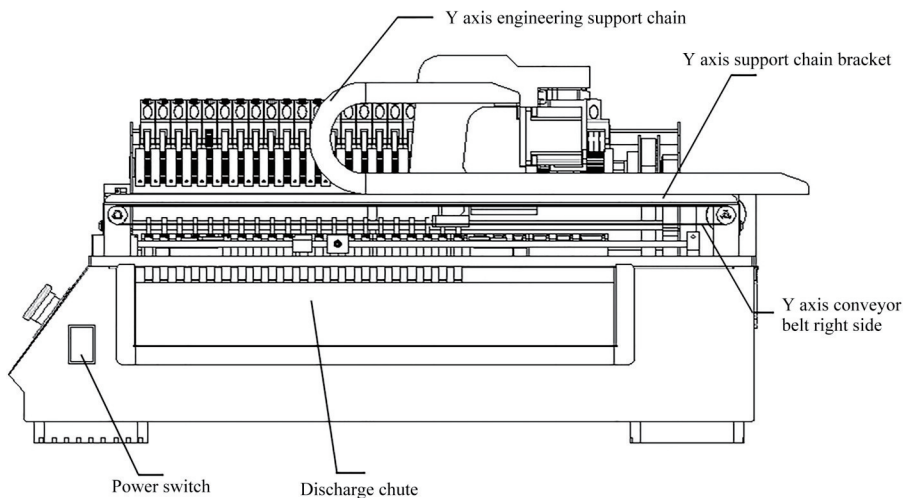
1-1 Host structure diagram



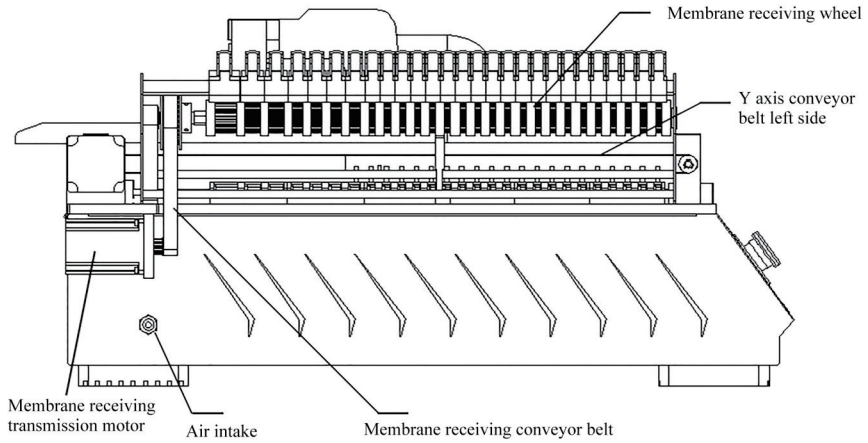
1-2 Host front view



1-3 Host rear view

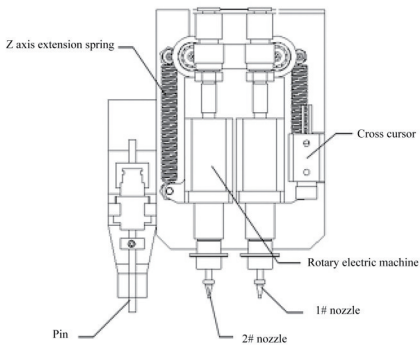


1-4 Host right view

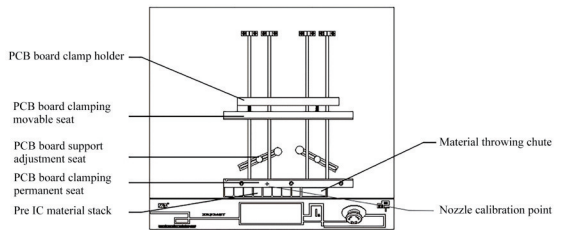


1-5 Host left view

1-3-2 Mounter head unit and working table constitute



1-6 Mounter head structure








1-7 Working table

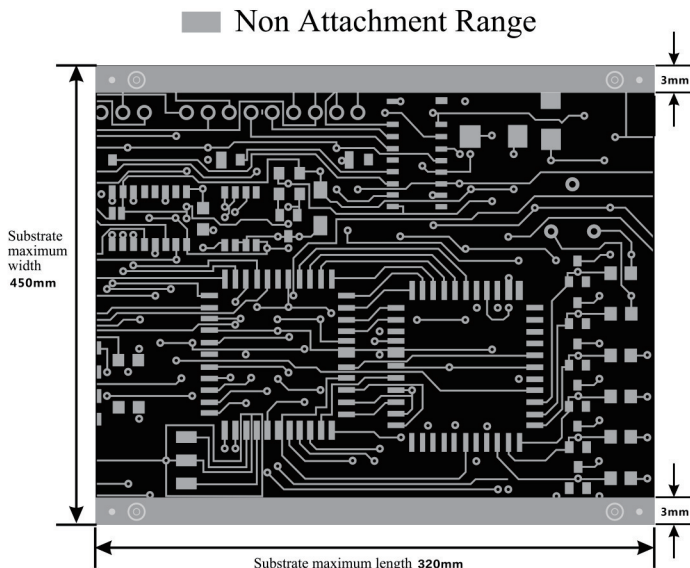
1-3-3 Equipment Parameters

System	Items	Content
Mounting system	Mounting head number	2 pieces
	Mounting accuracy	0.025mm
	Mounting angle	0~360°
	Theoretical velocity	6500pcs/h
	Normal mounting	5000pcs/h
	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	320×450 mm
	Substrate thickness	≤2mm
	Substrate warp allowed value	<1mm
Feeder	8mm	20 bit
	12mm	4 bit
	16mm	2 bit
	24mm	1 bit
	Pre IC material level	8 bit
	Tubular feeder	1 Zhengbang special 5 tube tubular feeder (optional)
X, Y, Z axis	X, Y axis moving range	410×490 mm
	Z axis moving range	10 mm
	Z axis rotation angle	0~360°
Control system	Operating software	Embedded HRM system
	Compatible file format	CSV, TXT. format file
	Programming mode	Support online and offline
Basic parameter	Pressure	0.4 Mpa (Internal pump)
	Vacuum value	-92kpa
	Storage	8G (Kingston SD card)
	Power	150 W
	Power supply	AC220V±10% 50Hz
	Host size	L 800 × W 780 × H 380 mm
	Feeder size	L 235 × W 700 × H 245 mm
Weight	56kg	

1-3-4 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

1-3-5 Substrate limiting condition



1-8 Substrate

1-3-6 X,Y,Z,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, shown as X=000.00mm, Y=000.00mm.
- (2) Z axis: Height, with 0.01mm as the unit, shown as Z=00.0mm.
- (3) R axis: Display the rotation angle of the mounting head, with 0.1 degrees as the unit, shown as R=00.0. Counter clockwise rotation is positive.

1-4 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. H3Prj format production file

- H3Prj production file is the program file officially produced after edited and set by the H3SMT mounting system.

- The file contains the CSV coordinate file information, PCB information, feeder information etc.
- The H3Prj files can only be modified and used through the H3SMT mounting system.

1-5 Menu Constitute

1-5-1 Main menu

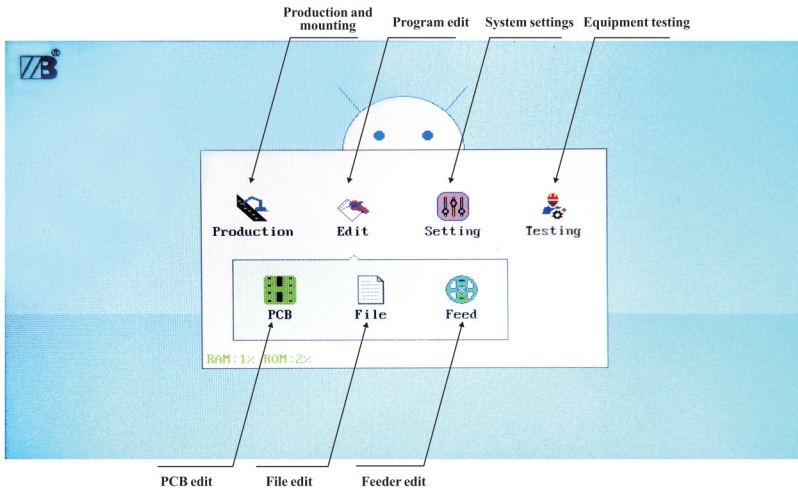


Fig. 1-9 Main menus

1-5-2 Production menu

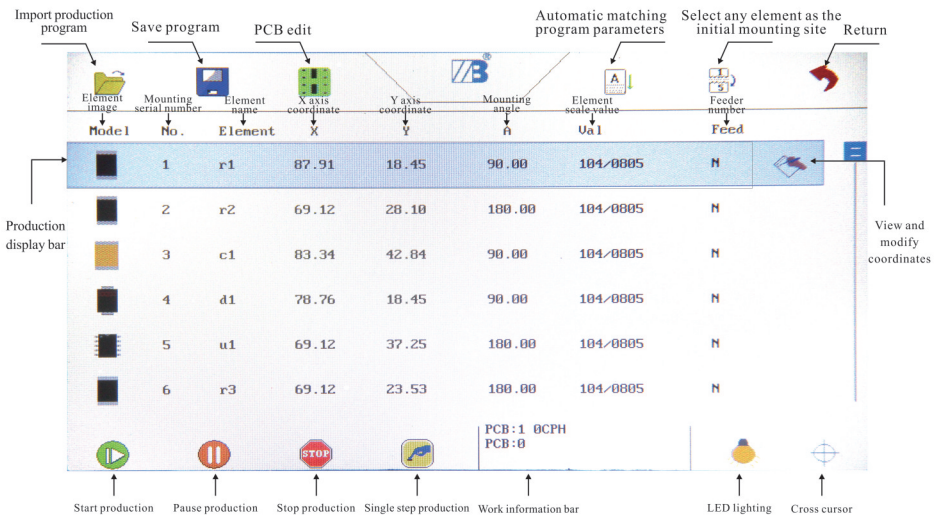


Fig. 1-10 Production menus

1-5-3 Program edit

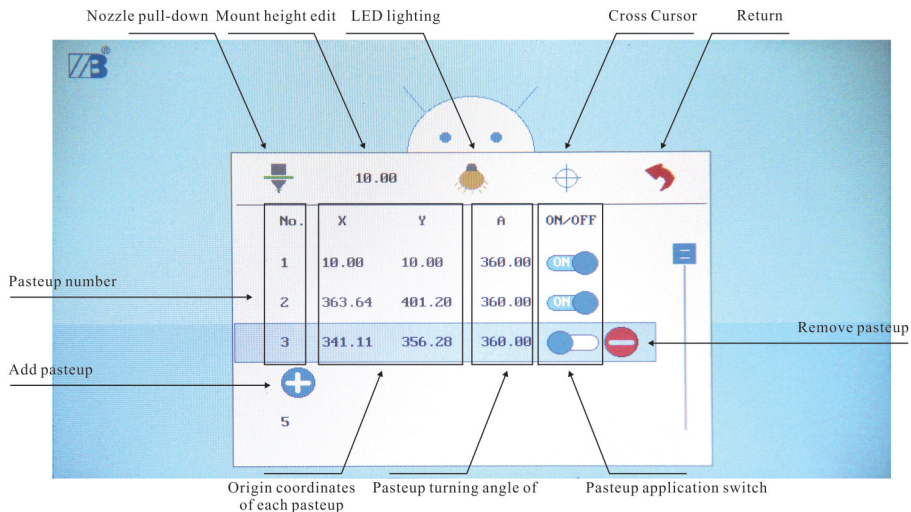


Fig. 1-11 PCB edit menu

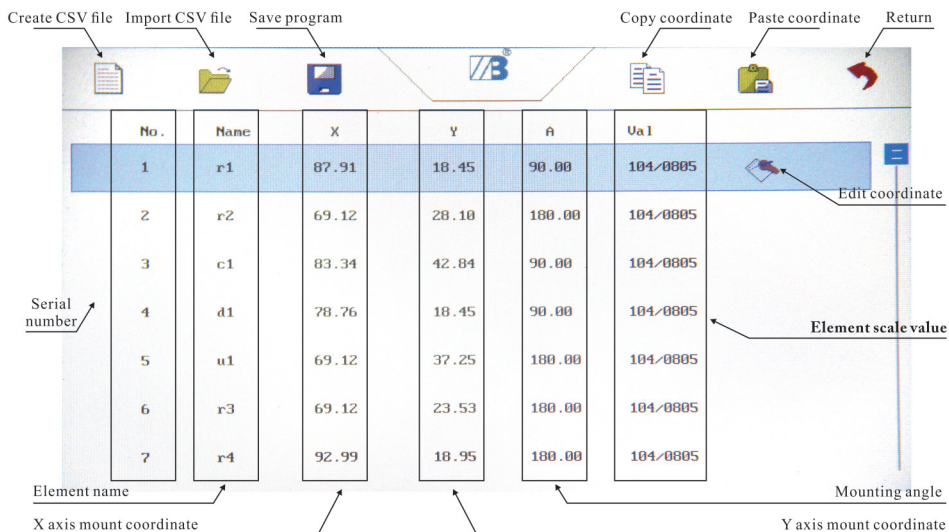


Fig. 1-12 File edit

No.	X	Y	Z	A	H	Value	Nozzle Speed	Return
1	20.00	50.00	10.00	360.00	0.40	NULL	1#2# 50	0-0
2								
3								
4								
5								
6								
7								
8								

Fig. 1-13 Feeder edit

1-5-4 System settings

Setting	Control	Description
Vacuum testing	ON	Vacuum detection switch
1# Nozzle	OFF	1# nozzle opening switch
2# Nozzle	ON	2# nozzle opening switch
XY Speed (%)	50	X, Y axis running speed adjustment
rotation Speed (%)	50	Z axis running speed adjustment
1# Nozzle vacuum Val (Pa)	17020	1# nozzle vacuum value setting
2# Nozzle vacuum Val (pa)	13107	2# nozzle vacuum value setting
Nozzle calc	Start calc	Nozzle and cross cursor coordinate calibration
Language	EN	System language switching

Fig. 1-14 System settings

1-5-5 Equipment testing

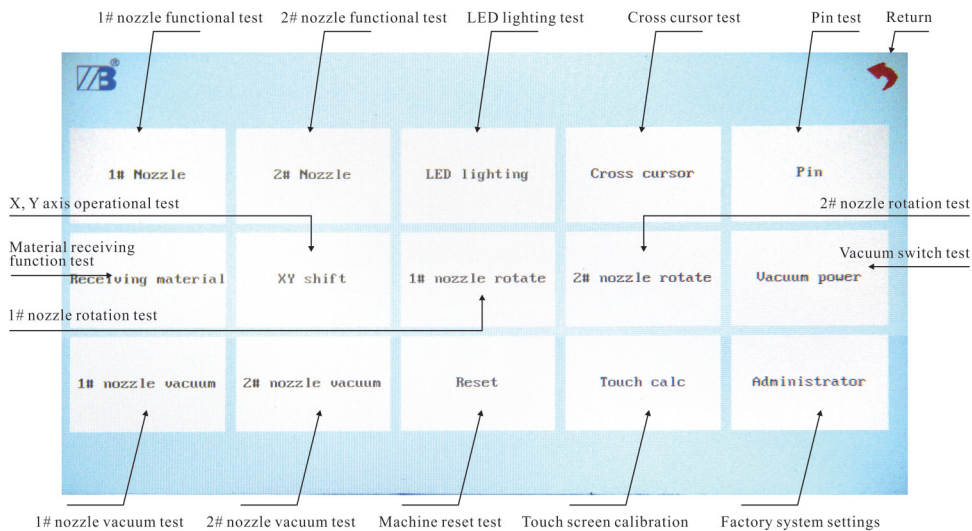


Fig. 1-15 Equipment testing

1-5-6 Coordinates

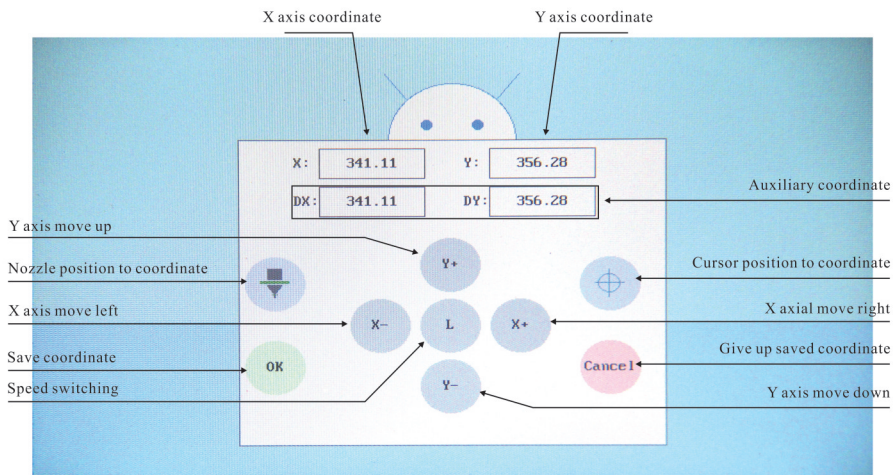


Fig. 1-16 Coordinate edit

Chapter 2 Equipment Testing

2-1 Equipment Installation

1. Open the packing case and take out the random accessories and the chip mounter;
2. Check the product list

Serial number	Name	Unit	Quantity
1	ZB3245T chip mounter host	piece	1
2	ZB3245T chip mounter feeder rack	piece	1
3	JUKU nozzle	piece	5
4	SD card	piece	1
5	SD card reader	piece	1
6	Tool	set	1
7	Grease	piece	1

3. Put the machine on a stable operating table. The machine must be steady and shall not swing or tilt;The feeder rack shall be placed in the bottom left position of the machine.
4. Be careful that the surrounding environment must meet the operating requirements of the machine, and there must not be any object that impede the operation of the machine.



Attention:

- When opening the packaging, it must be sure that it is facing up, so as to prevent machine damage caused by direction error during removal.
- Carefully check whether the machine is in good condition. If it is damaged, please contact the purchase units or manufacturers customer service.

2-2 Functional test

1. Plug in, and turn on the main power switch on the right side of the machine.
2. After starting up, the machine will automatically start reset operation. After reset, it will automatically return to the stop position.

**Danger:**

- Before switching on the power supply, please make sure that the power supply is safely grounded.
- After the reset operation, the machine immediately begins to run. To avoid injury, please do not put hand and head into the machine working area.

3. After starting up, the system automatically enters the production mode. Click "return" to switch to the main menu interface. Select the "debug mode" to check whether the machine functions are normal.



Fig. 2-1 Debug interface

Functional test	Normal reaction
Click 1# nozzle	1# nozzle moves up and down
Click 2# nozzle	2# nozzle moves up and down
Click LED lighting	LED working lamp turned on or off
Click Cross cursor	Cross cursor turned on or off
Click Pin	Feeding pin moves up and down
Click Receiving material	Material receiving wheel works
Click XY shift	Mounter head works
Click 1# nozzle rotate	1# nozzle rotates
Click 2# nozzle rotate	2# nozzle rotates
Click the vacuum switch	Open or close the vacuum air pump
Click 1# nozzle vacuum	1# nozzle produce vacuum negative pressure
Click 2# nozzle vacuum	2# nozzle produce vacuum negative pressure
Click Reset	Mounter head starts reset operation
Click touch calibration	Calibrate the touch screen

Chapter 3 System Settings

Click "Settings" on the main menu to enter the system settings mode

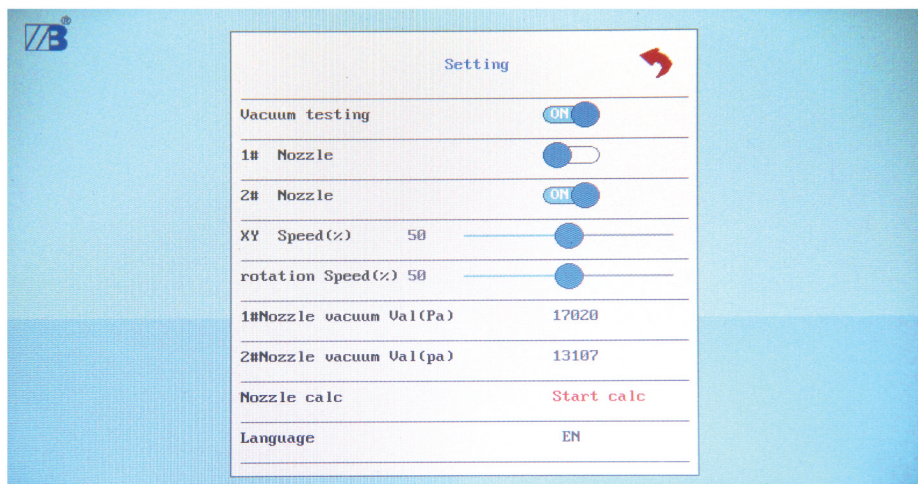


Fig. 3-1 System settings

3-1 Function switch

1. Vacuum testing: Click on the button to turn on/off the vacuum testing function. ON indicates the open state, and vice versa. If vacuum testing is not needed for production, the function can be turned off.
2. 1# nozzle, 2# nozzle: Click on the button to turn on/off the nozzle. ON indicates the open state, and vice versa.

3-2 Speed setting

1. Slide the XY speed adjustment knob to set the running speed of X, Y axis. The higher the value, the faster the speed;
2. Slide the rotation speed adjustment knob to set the rotation speed of Z axis. The higher the value, the faster the speed.

3-3 Vacuum setting

1. Turn on the vacuum detection switch;
2. Click on the value on the right side of the 1# nozzle vacuum value, and the system automatically detects and displays the current vacuum value of the 1# nozzle. Empty the data and enter the set value, and click "OK". Save the value. The proposed set value is lower than the current value of about 10.

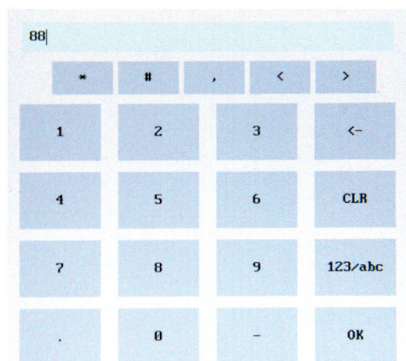


Fig. 3-2 Current vacuum value

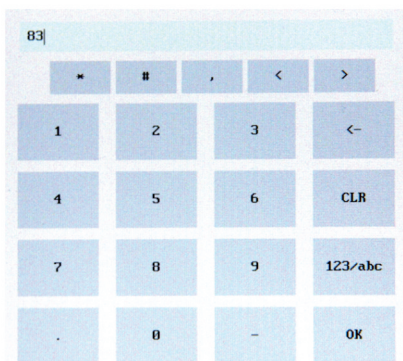


Fig. 3-3 Set vacuum value

- Click on the value on the right side of the 2# nozzle vacuum value, and the system automatically detects and displays the current vacuum value of the 2# nozzle. Empty the data and enter the set value, and click "OK". Save the value. The proposed set value is lower than the current value of about 10.

Vacuum value description:

Value	Standard	Action
Current value	Vacuum value of nozzle at no load	
Set value	Set the standard value for the system to determine successful reclaiming material	
Occurrence value	The vacuum occurrence value of the nozzle when reclaiming material in the process of production	
Occurrence value > Set value	The system identifies that is not successful or there is severe deviation of material reclaiming	Throw the material and reclaim again
Occurrence value < Set value	The system identifies that material reclaiming is normal	Normally mounting
Set value is too low	Throwing rate is increased	Throw material
Set value is too high	Empty mounting rate is increased	Empty mounting



Attention:

- Different types of nozzle have different vacuum values, so the vacuum value shall be test and set again after the nozzle model is changed.

3-4 Nozzle calibration

- Click "start calibration" and the cross cursor calibration tips popup. Click "OK" and the coordinates edit box popup. Click "location" and the cursor will automatically locate the calibration point coordinates. Adjust the cursor to the calibration points, and click "OK" to save the cursor coordinates.

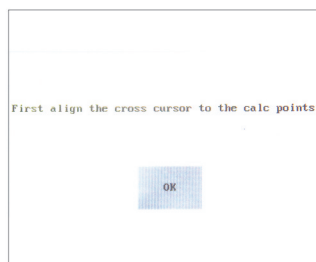


Fig. 3-4

Cursor calibration tips

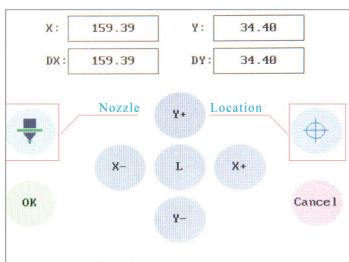


Fig. 3-5

Coordinates edit

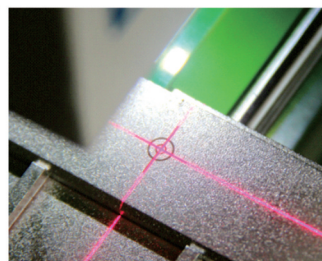


Fig. 3-6

Cursor calibration points

2. After cross cursor calibration, the machine automatically prompt to calibrate 1# nozzle coordinates.

Click "OK" and the coordinates edit box popup. Click "location" and the 1# nozzle will automatically locate the top of the calibration point.

Click "nozzle" to drop the 1# nozzle down to the calibration point, and check position offset of the nozzle and calibration point.

Adjust the 1# nozzle coordinate to the calibration points, and click "OK" to save the 1# nozzle coordinates.

After confirmation, the 1# nozzle automatically rotates 180 degrees. Correct the coordinates of the nozzle after rotation according to the above method.

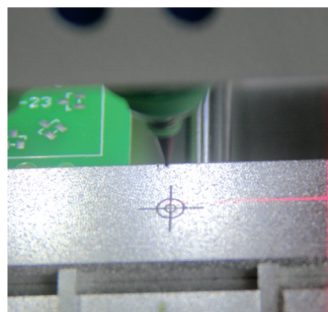


Fig. 3-7

Nozzle location

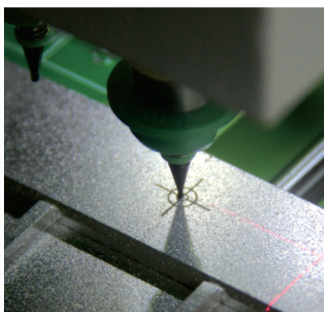


Fig. 3-8

Nozzle pull-down

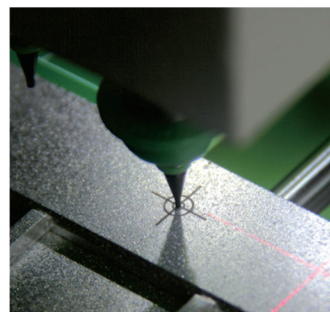


Fig. 3-9

Check nozzle coordinates

3. After the 1# nozzle is calibrated, the machine automatically prompts to calibrate the 2 # suction nozzle coordinates.

Click "OK" and the coordinates edit box popup. Click "location" and the 2# nozzle will automatically locate the top of the calibration point.

Click "nozzle" to drop the 2# nozzle down to the calibration point, and check position offset of the nozzle and calibration point.

Adjust the 2# nozzle coordinate to the calibration points, and click "OK" to save the 2 # nozzle coordinates.

After confirmation, the 2# nozzle automatically rotates 180 degrees. Correct the coordinates of the nozzle after rotation according to the above method.

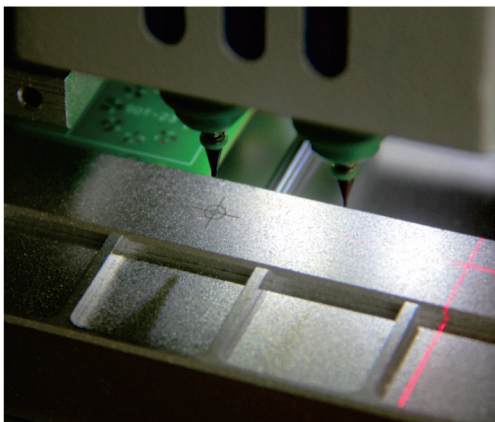


Fig. 3-10
Adjust nozzle coordinates

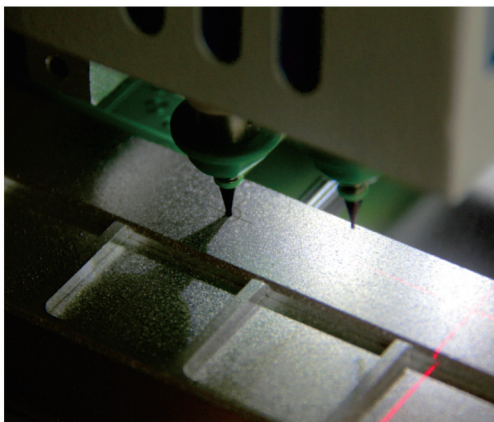


Fig. 3-11
Align the nozzle to the
calibration point center

Chapter 4 Program Edit

4-1 PCB source file edit

1. Run the PCB file that need processing for DXP (Altium Designer) import in the PC.

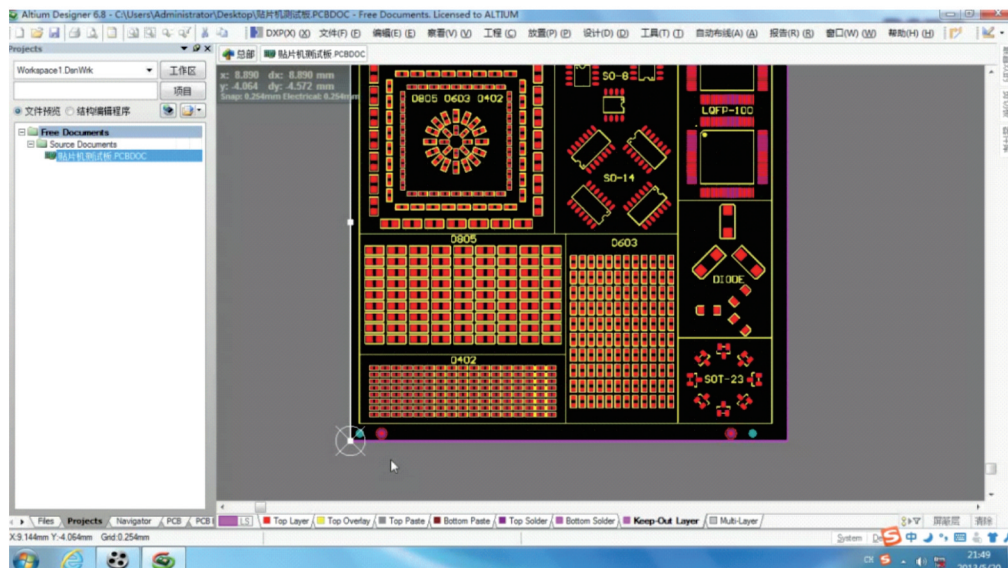


Fig. 4-1 Import the source file

2. Click “edit - original point – setting”, align the component solder joint at the lower left corner and set it as the original point.

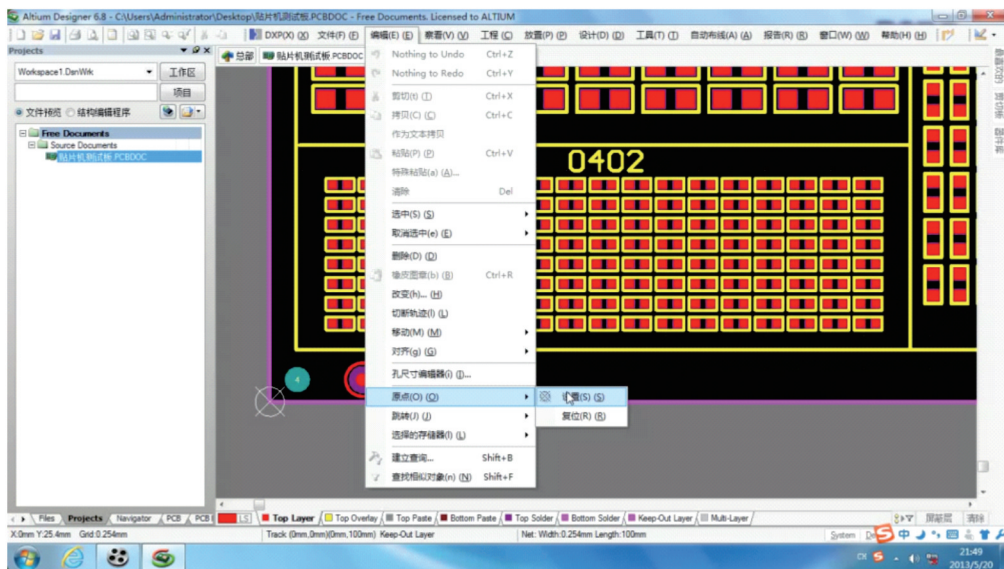


Fig. 4-2 Select the original point setting

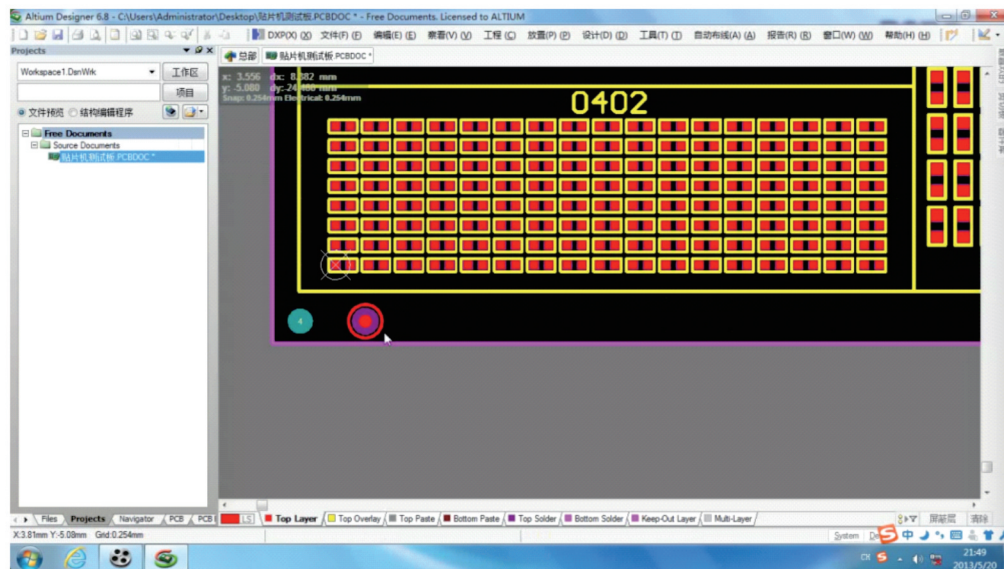


Fig. 4-3Set the original point

3. Click "file - assembly output - Generates pick and place files " to output coordinate file.

2. Click the "+" button on the left and "-" button on the right of the number to add the element coordinates to the actual number of coordinates.

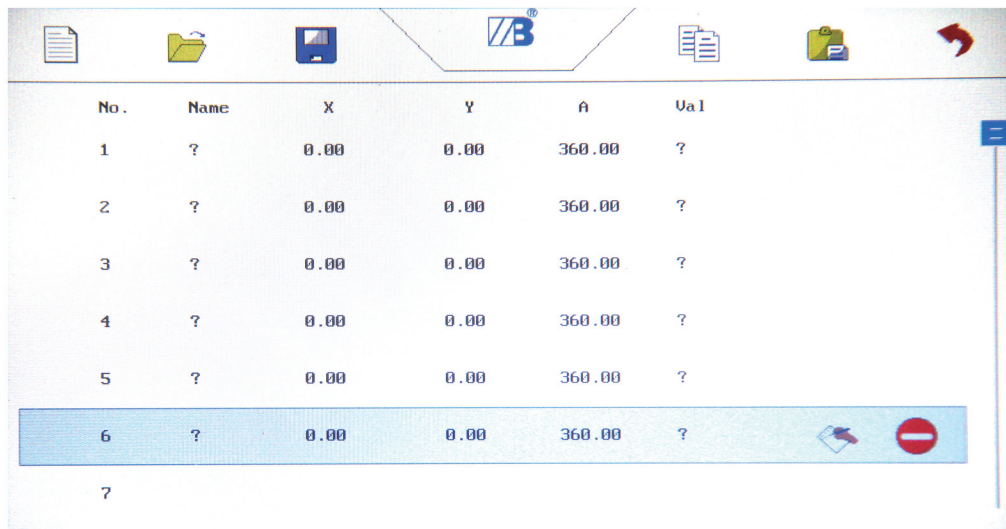


Fig. 4-9 Add element

3. Select the NO.1 element, click on the "edit" button on the right to enter the processing line edit.

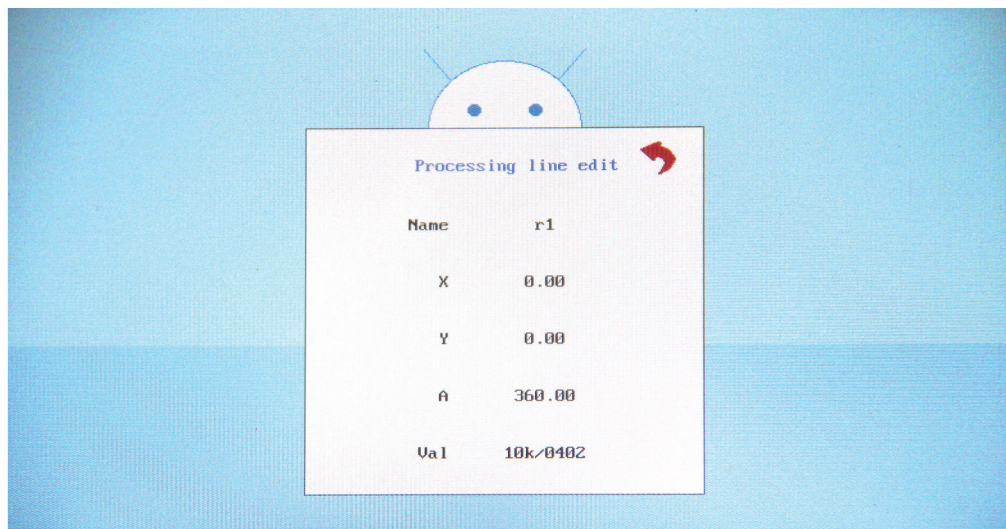


Fig. 4-10 Processing line edit

4. Click on the X or Y coordinates and the coordinates edit box popup.

Move the cross cursor to the PCB board mounting site. The mobile speed can be switched by H/L.

Slightly adjust the cursor to the center of the element bonding pad, click "OK" to save the coordinates.

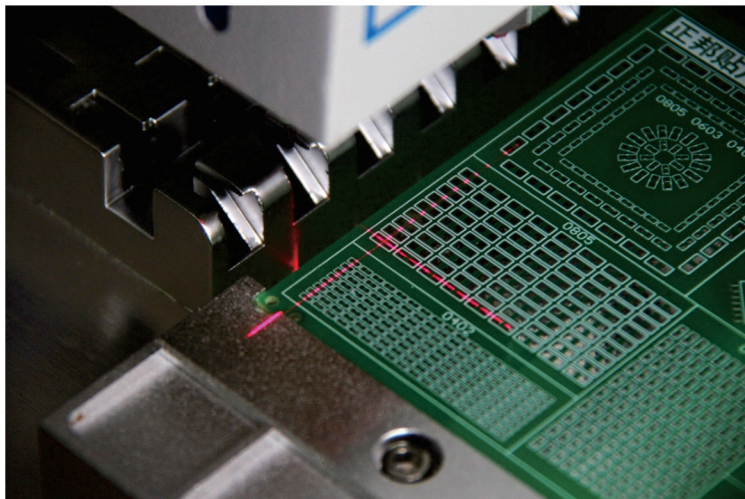


Fig. 4-11 Lign the cursor to the center of the element bonding pad

5. Input the mounting angle in the A coordinates to complete the edition of the first element coordinates.

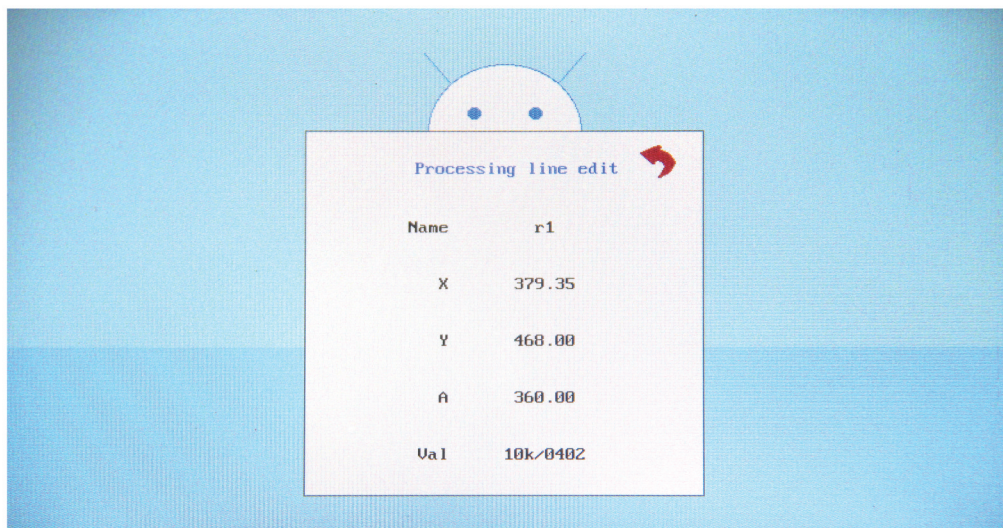


Fig. 4-12 Complete processing line edit

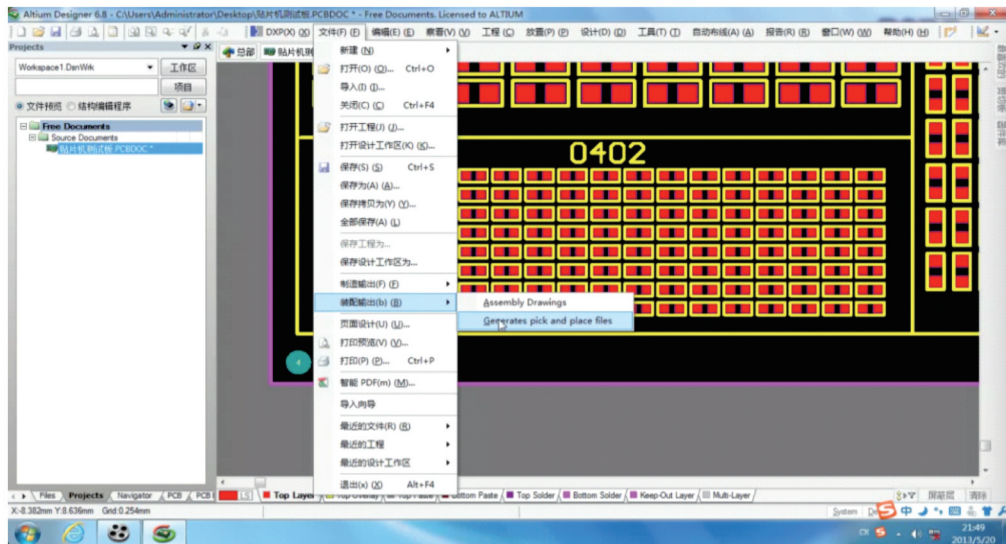


Fig. 4-4 Select output coordinate file

Select format: CSV Unit: Metric Click "OK" to produce CSV coordinate file.

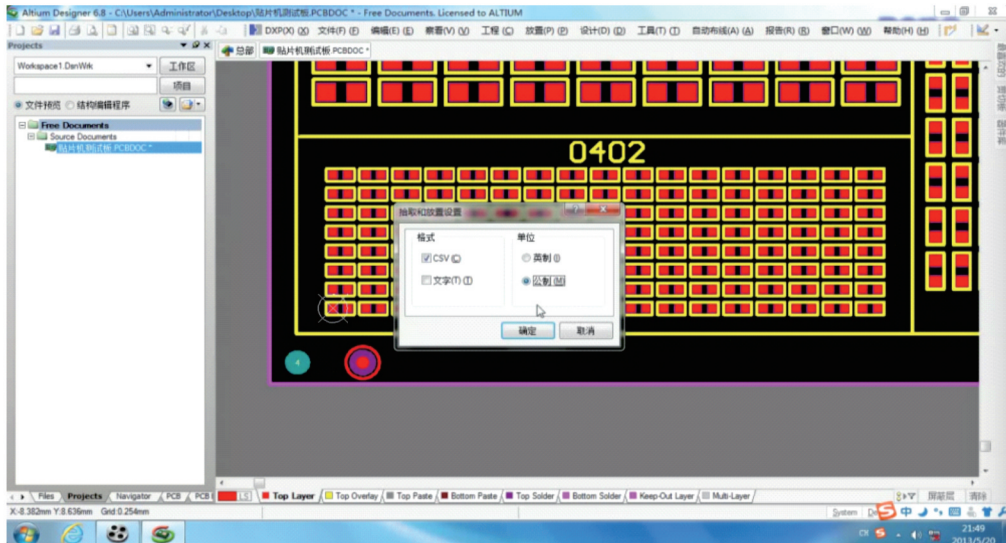


Fig. 4-5 Select format

The output file is saved in the same folder as the PCB source file. The CSV file is compatible with the EXCEL software to open or modify.

- Copy the CSV coordinates file to the random distributed SD card, and load the SD card to the chip mounter.
- Switch to the "file edit" mode, and click "import" to load the CSV file.

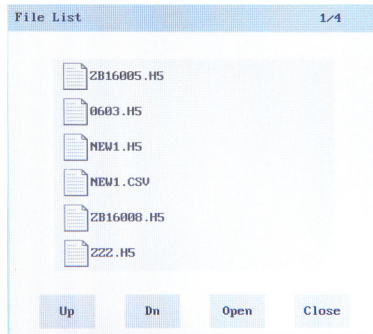


Fig. 4-6 Load the file

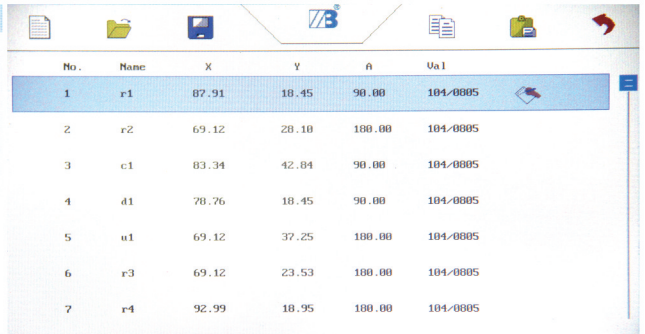


Fig. 4-7File interface

4-2 CSV File Online Creation and Edit

- Select "file edit" mode, click on the "new file" button in the top left corner and click "yes" to create a new blank file.

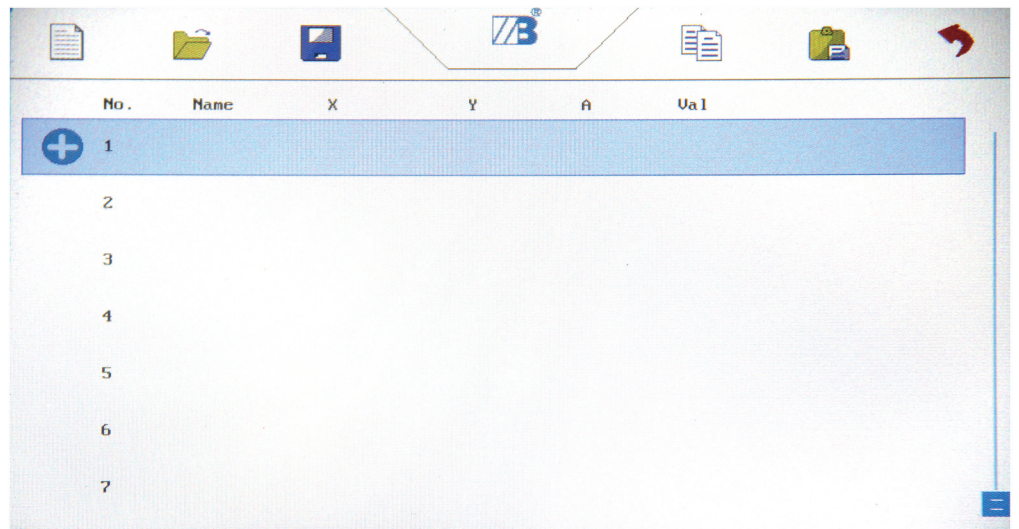


Fig. 4-8 blank file

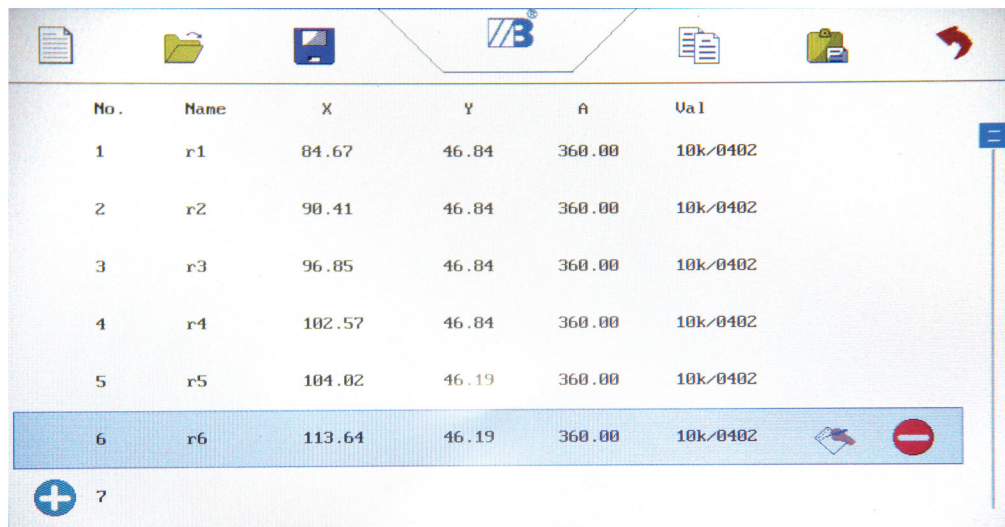
6. Return to the file editing interface.

Copy element information and stick to the coordinates of the same value elements, according to the actual same value element number.

7. Select the NO.2 element, click on the "edit" button on the right to enter the processing line edit.

Modify the element name. If there is no requirement to the name, it can be ignored. Click on the X or Y coordinates, move the cursor to the mounting center of the PCB board of the current element and confirm and save the coordinates.

After editing NO.2 element, return to the file editing interface to edit the same value element coordinates in the same way .



No.	Name	X	Y	A	Ua1
1	r1	84.67	46.84	360.00	10k/0402
2	r2	90.41	46.84	360.00	10k/0402
3	r3	96.85	46.84	360.00	10k/0402
4	r4	102.57	46.84	360.00	10k/0402
5	r5	104.02	46.19	360.00	10k/0402
6	r6	113.64	46.19	360.00	10k/0402
7					

Fig. 4-13 Complete the same value element coordinates edit

8. Edit other element coordinate referring to the editing mode of NO.1 and NO.2 element.



Attention:

- The location of the cursor on the PCB board is the position of the element mounting, so it shall be adjusted to the best position in the center of the element bonding pad as soon as possible.
- The element scale values must correspond with the feeder element scale values, including the case of letters; otherwise, it cannot match in the production system.

4-3 PCB edit

4-3-1 Original point edit

1. Select “program edit - PCB edit” to enter the PCB edit interface, Click on the X or Y coordinates and the coordinates edit box popup. Move the cursor to the PCB origin point, and click "OK" to save the origin point coordinates.

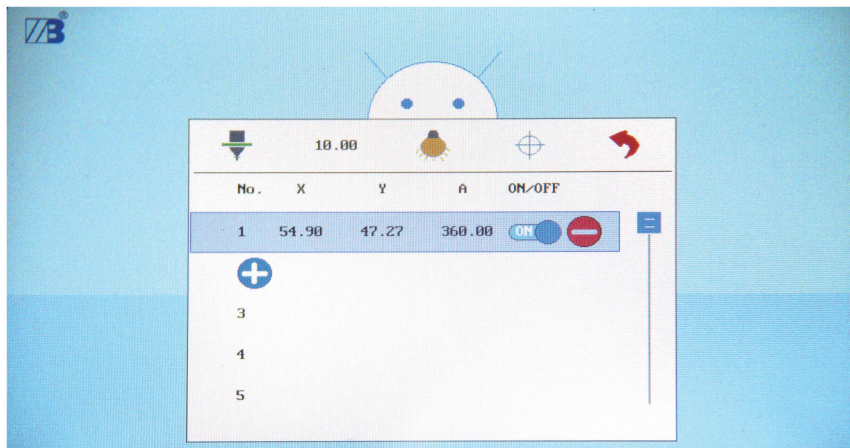


Fig. 4-14 PCB edit interface

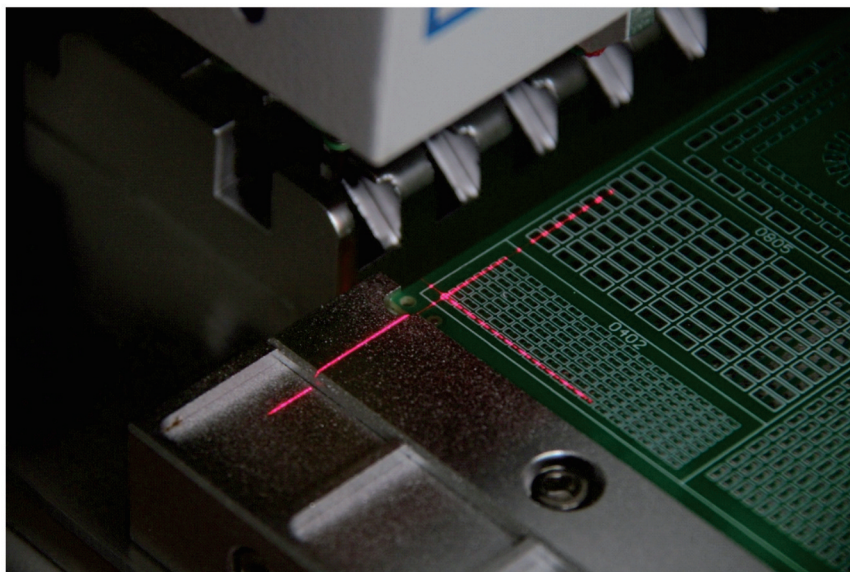


Fig. 4-15 Original point edit

**Attention:**

- For the CSV source files converted by importing PCB file, the original point position shall be accord with the source file.
- It is common to set the lower left corner edge of the PCB as the original point. But considering that the PCB cutting edge precision is not up to the requirements, it is recommended to choose the solder joints of the element at the lower left corner as the original point.

4-3-2 PCB panel

1. Click "+" or "-" to add or remove the number of PCB panel;
2. Select the PCB panel which needs editing, click the X/Y coordinates to move the cursor to the original point of the panel, and click "OK" save it;
3. Edit the origin coordinates of other panels successively. For panels that need production, turn on the "ON/OFF" item.

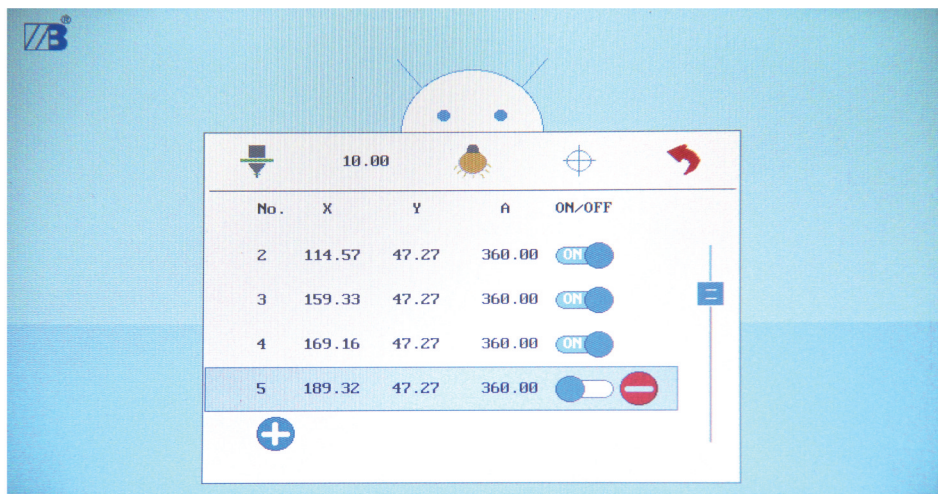


Fig. 4-16 PCB panel interface

**Attention:**

- If part of the panel is turned over 90 degrees or other angles, the angle value is entered in the "A" item in the coordinate system.

4-3-3 Nozzle height

1. Click on the value behind the nozzle image to input the nozzle mounting height. The maximum shall not exceed 11mm.
 Mounting height=8mm – element thickness + 0.3mm

4-4 Mark edit

1. Mark1

PCB origin coordinates automatically defaults to Mark1 coordinates, and the Mark1 coordinates cannot be changed.

2. Mark2

The last 1 element of the production file automatically defaults to Mark2 coordinates, which can be manually modified.

Method of modifying Mark2 coordinates:

Switch to the production interface and select the element you want to set to Mark2 coordinates. Click "element name" and it can be modified to Mark2 coordinates.



Attention:

- In order to better correct PCB board excursion and other problems, the element selected for Mark2 coordinates shall be as far as possible with the opposite angle of Mark1.

4-5 Feeder edit

4-5-1 Loading material

1. Put the material plate which need mounting onto the corresponding position of the feeder rack; (8mmx20 bit, 12mmx4 bit, 16mmx2 bit, 24mmx1 bit)
2. Thread the material belt through the middle of the 2 polished rods below the membrane receiving mechanism, and then through the feed chute of the membrane material separation base;



Fig. 4-17 Loading material

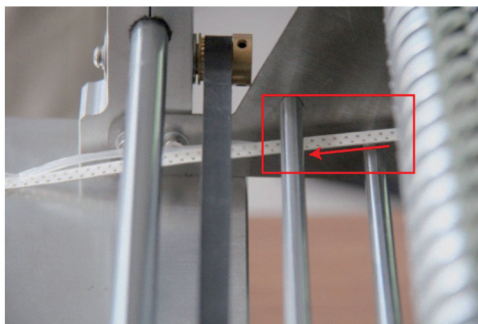


Fig. 4-18 Through the middle of Cursor

3. Strip 200mm long material membrane to the separation base bayonet, and then thread the material membrane back to the bottom of the principal axis and the synchronous belt to the 2 polished rods under the membrane receiving mechanism and pull up;

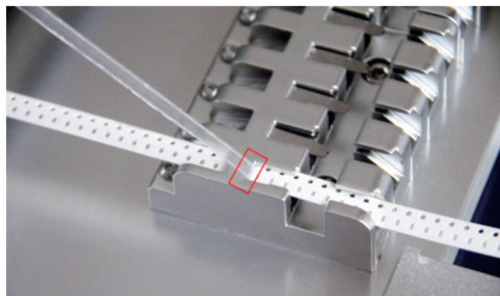


Fig. 4-19
Seizing up the material membrane

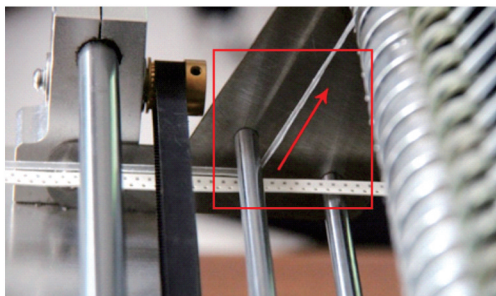


Fig. 4-20
Thread back to the middle of the polished rod and pull up

4. Press the press clip and loosen the press wheel, the material membrane passes through the press wheel. Then loosen the press clip, so that the material membrane is pressed on the press wheel, and then frap the material membrane.

5. Insert the excess material belt head into the discharge chute.



Fig. 4-21
The press wheel press on the material membrane

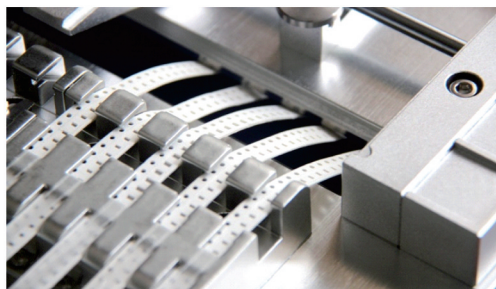


Fig. 4-22
The material belt pass through the discharge chute

6. With reference to the above methods to install other materials.

4-5-2 Parameter edit

1. Switch on the feeder:

Click to select feeder number to edit, and click again to switch on the feeder switch, click again to close.

cursor position		Nozzle location		Nozzle counterpoint		Single feed	Pin counterpoint	Return
No.	X	Y	Z	a	H	Value	Nozzle Speed	-> 0-0
1								
2								UP
3								
4								
5								
6								
7								DN
8								

Fig. 4-23 Select the feeder

cursor position		Nozzle location		Nozzle counterpoint		Single feed	Pin counterpoint	Return
No.	X	Y	Z	a	H	Value	Nozzle Speed	-> 0-0
1	29.00	50.00	10.00	360.00	0.50	NULL	1828 50	X,Y 4.00
2								UP
3								
4								
5								
6								
7								DN
8								

Fig. 4-23 Switch on the feeder

Feeder number: No.1-No.32 is exclusive for the 32 bit tape feeder;

Feeder number: No.TP33-No.TP64 is exclusive for 8 bit pallet and vibration feeder.

2. Edit the coordinates:

Select the feeder, click "single feed" button, and the machine feeds once; then click the "cursor positioning" button, the cursor moves to the system preset position, check whether the cursor is aligned to the center position of the first element after material membrane separation.

cursor position		Nozzle location		Nozzle counterpoint		Single feed	Pin counterpoint		Return
No.	X	Y	Z	α	H	U value	Nozzle Speed	→0	0-0
1	20.00	50.00	10.00	360.00	0.40	NULL	1m2# 50	X,Y	4.00
2									
3									UP
4									
5									
6									DN
7									
8									

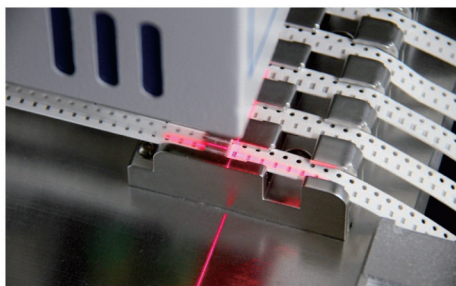


Fig. 4-25

"Single feed" and "cursor positioning" button

Fig. 4-26

Cursor positioning

If there is a position offset, select the X/Y coordinates and click on the coordinates edit box popup, move the cursor to the center of the element, click "OK" to save the coordinates.

3. Edit the number:

Click to select the number need to edit, click again to enter the edit interface, enter the value, click "NET" to save the value.

Z: Enter the height of the nozzle when receiving material. The default value is 9mm;

Z: Enter the angle of the nozzle when receiving material. The default value is 0°;

Thickness: Enter the actual thickness of the element;

Scale value: Enter the corresponding element scale value.



Attention:

- The scale value can be set according to the actual value of element, or be edit by the user. But there must not be repeated values.
- Be sure to keep the scale value set consistent with CSV file corresponding element values. Otherwise, the system cannot match normally.
- When the system imports the production process, match automatically based on the same scale value of the CSV file and the feeder.

- Nozzle: select one or more mounting nozzle for the feeder;
- Speed: input the Z axis pull-down speed of this feeder;
- Material hole: select material hole Y, X coordinates, click on the popup coordinates edit box, click the "positioning" and the pin move to the top of the hole. Click on the "counterpoint" to pull down pin to the material hole, check if the hole position is correct. If there is offset, please adjust the hole coordinates, click OK to save.
- Material distance: input the center distance value of the feeder element.

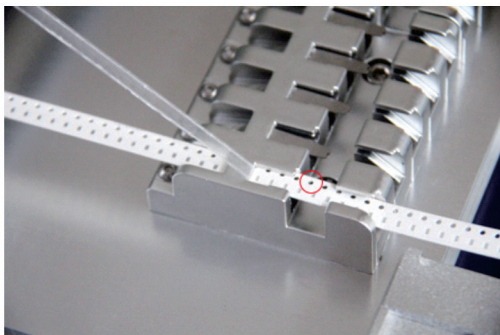


Fig. 4-27
Material hole

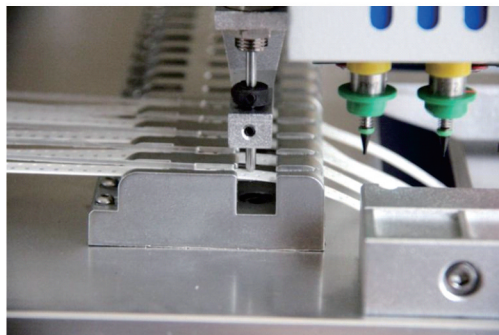


Fig. 4-28
Align the pin to the material hole

4.Edit all the feeder:

Use the above 1, 2, 3 editing method to edit the coordinates and values of other feeders. After completing all parameter edit of the feeder, click "return" and the save prompt popups, click "yes" to save the parameter.

4-6 Program export

After completing all program edit (PCB edit, file edit, feeder edit), switch to the file editing interface, click "save" button, enter the "program name" and click "NET" to save the program to SD card.

Chapter 5 Production and Mounting

5-1 Production and mounting process

NO	Process	Content
1	Start-up inspection	Routine examination before start up
	↓	
2	PCB loading	Adjust the tightness of the board and install the PCB for mounting
	↓	
3	Start up the machine	Switch on the power supply and enter the machine's operating system
	↓	
4	Import program	Import the edited mounting program
	↓	
5	Pilot production	Sample test and check if the program needs to be adjusted
	↓	
6	Modify the program	Modify the parts that need to be adjusted, if there is no problem, skip this step
	↓	
7	Production and mounting	Formal mounting production
	↓	
8	Change the plate for mounting	Replace 1 board to continue production
	↓	
9	Finish and shutdown	Exit the system and cut off power supply
	↓	
10	Routine maintenance	Perform routine maintenance as required

5-2 Start-up inspection

Start-up inspection is an effective procedure to eliminate all kinds of impact on normal production:

1. Check whether the machine is placed balanced, and whether the surrounding environment affects the production.
2. Check whether the tension of the pin is in accordance with the standard. Normal production pressure is 0.4Mpa.
3. Check whether there is a foreign body besides the machine bin and the track of the chip.
4. Check all the nozzle of the machine, to see if there is deformation, rupture, blockage and other phenomena. Check whether the height is uniform and smooth.
5. Check whether the emergency stop switch has been reset.

5-3 PCB loading

1. Take 1 bare board for production on the fixed bar of the splint, and then adjust the splint movable strip to less than 3-5mm to PCB. The sliding tightness of the movable strip can be adjusted by the adjusting screw on the right side.

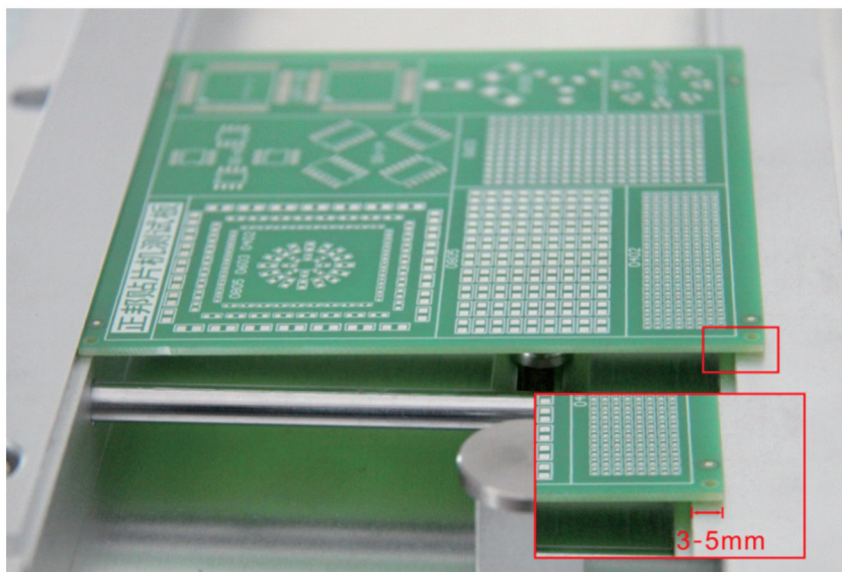


Fig.5-1 Adjust the movable strip

2. Use the PCB to resist the movable strip of the splint and gently pull back, so that the other end of the PCB is stuck in the fixed bar. Then push the PCB to the left end against the neck of the fixing strip. Adjust the position of the PCB and the splint mechanism to keep the PCB clamp flat and stable.

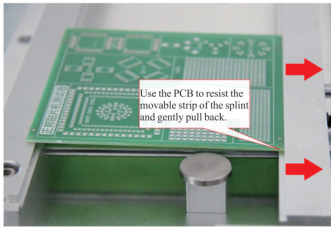


Fig.5-2

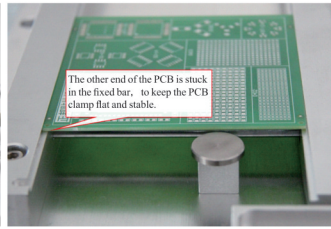


Fig.5-3

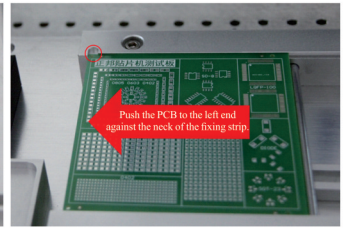


Fig.5-4

Pull back the movable strip PCB is stuck in the fixed bar

Push to the left end

3.For more panels, just rely on the front PCB to keep smooth.

5-4 Start up the machine

1. Plug in

Turn on the power, and please confirm that the power supply is safely grounded before plug on.

2. Original point reset

After the power is switched on, the system automatically begins reset operation. Click "yes" to reset according to the prompts. After reset, the mounter head move back to the stop coordinates position, and the system enters the production menu interface.



Danger:

- After reset operation, the machine immediately begins to run. To avoid injury, please do not put hand and head into the machine working area.

5-5 Import program

1. Click the "import" button, select the program for production in the SD card, click "o-pen" to import the program;
2. Click "matching" and the system automatically matches the feeder according to the element values.

Model	No.	Element	X	Y	n	Val	Feeder
1	r1	87.91	18.45	90.00	104-0805	N	
2	r2	69.12	28.10	180.00	104-0805	N	
3	r3	83.34	42.04	90.00	104-0805	N	
4	r4	78.76	18.45	90.00	104-0805	N	
5	r5	69.12	37.25	180.00	104-0805	N	
6	r6	69.12	23.53	180.00	104-0805	N	

Fig.5-5 Unmatched state

Model	No.	Element	X	Y	n	Val	Feeder
1	r1	87.91	18.45	90.00	104-0805	1	
2	r2	69.12	28.10	180.00	104-0805	1	
3	r3	83.34	42.04	90.00	104-0805	1	
4	r4	78.76	18.45	90.00	104-0805	1	
5	r5	69.12	37.25	180.00	104-0805	1	
6	r6	69.12	23.53	180.00	104-0805	1	

Fig.5-6 Matched state

5-6 Production and mounting

NO	Production mode	Content
1	Production	Normal auto-production mode
2	Single-step	Single step executing production mounting mode
3	Skip	Skip to production mounting mode of arbitrary element as the starting point

5-6-1 Normal production

1. Click "start" to locate Mark1 by laser, check if the position of the Mark1 is correct.
If there is deviation, please align the laser coordinate to the anchor point;
2. Click "start" to locate Mark2 by laser, check if the position of the Mark2 is correct.
If there is deviation, please align the laser coordinate to the anchor point;
3. Click "OK" and the moulder head starts working, and complete pulling material, receiving material and mounting, until the program finished production.
Pause: If you need to stop and adjust parameters before continuing production, please click "pause", and the moulder head will stop; Then, click "start" and the machine continues the production.
Stop: If you want to give up and interrupt production, please click "stop", the moulder head will move back to the stop coordinate and the production will stop; Then, click "start" to restart mounting, but it will not start from the unfinished part.



Attention:

- The default location of the Mark1 system to the origin of the PCB, the location can not be modified;
- The default location of the Mark2 system to the last 1 components of the file coordinates, can modify the location coordinates, modify the method of camera Mark editor.

5-6-2 Single step executing production

Single step executing mainly aims at machine debugging, program correction, troubleshooting and other uses, which can clearly observe every step.

1. Click "single step" to locate Mark1 by laser, check if the position of the Mark1 is correct.
If there is deviation, please align the laser coordinate to the anchor point;
2. Click "start" to locate Mark2 by laser, check if the position of the Mark2 is correct.
If there is deviation, please align the laser coordinate to the anchor point;

3. Click "OK" and the mounter head begins single-step material pulling, click "single step" to receive material, click "single step" again to mount;
4. Step by step, click "single step" to gradually finish material pulling, material receiving and mounting;
5. Click "pause" and then click "start" to switch to the normal production automatic mounting until the production is completed;
6. Click "stop" and terminate the production process.

5-6-3 Skip production

If you have given up production but want to continue production, or skip mounting of some elements, you can choose this skip function.

1. Click "skip" to enter the PCB number and element number, click "OK" to confirm the skip mode;
2. The later operation can refer to normal production or single step production mode. The system will automatically jump to the designated position of the specified PCB as the starting position of the mounting.



Attention:

- After clicking “start” or “single step”, the machine starts working immediately.
 - In order to avoid personal injury, do not put your hand into the machine during the operation, nor put your face and head close to the machine.
 - Before starting the machine, please make sure that there is no one in the machine.
 - Before starting the machine, please make sure that there is no object (adjustmenttools, etc.) installed or left in the machine that may hinder the operation of the machine.
-

Chapter 6 Maintenance

6-1 Routine maintenance

1. Clean up the table dust, residues and other debris, keep equipment clean and tidy;
2. Clean up the dust and debris on the surface of the main shaft polished rods, apply grease, and keep the polished rods lubricated and smooth;
3. Check whether there is loosening, aging and other phenomena of the compression spring, and carry out the maintenance such as adjust, replace, etc. when necessary;
4. Check whether the stainless steel shrapnel of the material membrane separation base is slack or less elastic, replace it if necessary;
5. Check whether the nozzle tip is worn or damaged, and whether the nozzle is blocked or pasted by solder paste, replace it or clean when necessary.



Danger:

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

Attention:

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

6-2 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 return smoothly.
-

Chapter 7 Trouble shooting

7-1 Feeding material

Phenomenon	Reason	Measures
The material cannot be taken away	Feeding pressure is not enough	Examine the feeding pressure. The pressure must be maintained 0.4 Mpa
	Material hole coordinate does not match	Examine the material hole coordinate and adjust the coordinate
	The pin height is not enough	Re-adjust the installation height of the pin
	Solenoid valve is damage	Examine and replace the solenoid valve

7-2 Reclaiming material

Phenomenon	Reason	Measures
Material reclaiming is not right	Height is not enough	Reset the feeder Z axial nozzle height
Or cannot reclaim the material	Nozzle clogging	Check if the nozzle is blocked, clean or replace the nozzle
	Type does not match	Replace the appropriate nozzle model according to the device
	Pressure is not enough	Check and replace the solenoid valve and vacuum pump
	Material level offset	Check feeder and re-adjust coordinates
	Spacing does not match	Check the feeder distance and reset
	Air leakage	Check and replace the silicone tube

7-3 Throwing material

Phenomenon	Reason	Measures
Serious material throwing	Vacuum value setting not correct	Check the vacuum value setting and reset
	Material level offset	Check feeder and re-adjust coordinates
	Nozzle damage	Check the nozzle concentricity and whether there is deformation, damage and other phenomena

7-4 X/Y axis

Phenomenon	Reason	Measures
X/Y axis does not work	Touch the limit switch	Device reset operation
	Z axis is not in situ	Equipment reset operation and check if Z axis is stuck
	Motor protection after sudden impact	Re-open after power failure
	Motor damaged or broken	Replace motor or lead
	Exceed the maximum mechanical stroke	Device reset operation
	Motor drive board damage	Check and replace motor drive board

7-5 Mounting

Phenomenon	Reason	Measures
Nozzle does not work	Nozzle is switched off	Switch on the nozzle
Panel does not mount	Panel is switched off	Switch on the panel
Mounting angle is not right	Z axis rotary motor damaged	Replace Z axis rotary motor
	Nozzle does not match	Replace the appropriate type suction nozzle
Several element mounting not accurate	Nozzles are not concentric	Check and replace the nozzle
	Feeder coordinates not accurate	Check feeder and re-adjust coordinates
	Element coordinate not accurate	Check the element coordinates and re-adjust
	Speed too fast	Adjust the running speed
Overall offset	Original point not accurate	Check whether the origin point coordinate set is consistent with the conversion of the source file
	PCB board is not right	Re calibrate and load PCB board
	Nozzle offset	Replace and calibrate the nozzle
Mount a monument	Mounting height not enough	Re-set the mounting height of the nozzle.
	The paste is too dry and not sticky	Add thinner and stir, or replace solder paste, re-print PCB board
	Z axis speed	Adjust Z axis mounting speed
	Solder paste offset	Re-adjust and locate the printing machine

7-6 Power supply

Phenomenon	Reason	Measures
No electricity	Fuse damage	Check and replace the fuse
	Poor contact	Check and fasten the plug

◆ Revision history

Rev	Date	Revised pages	Revised contents
1.0	2016.7		First edition

Specifications, appearance, etc. can be modified without prior notice.