

# MT-602

## User manual

Auto Chip Mounter



Taian Puhui Electric Technology Co., Ltd

[Http://www.tech168.cn](http://www.tech168.cn)



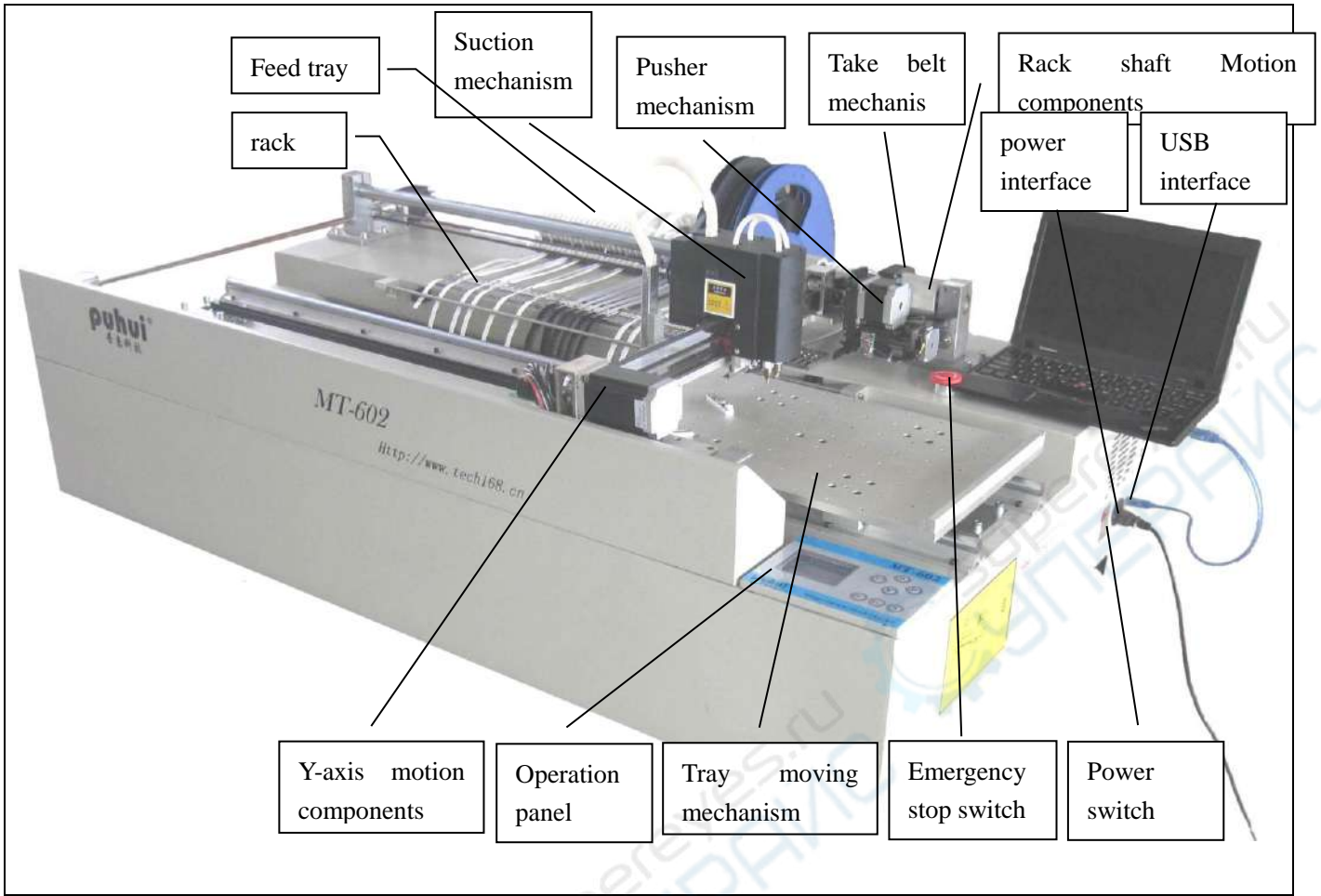
# Instruction of installation and commissioning

## ➤ Introduce of machine

### 一、 machine parameters

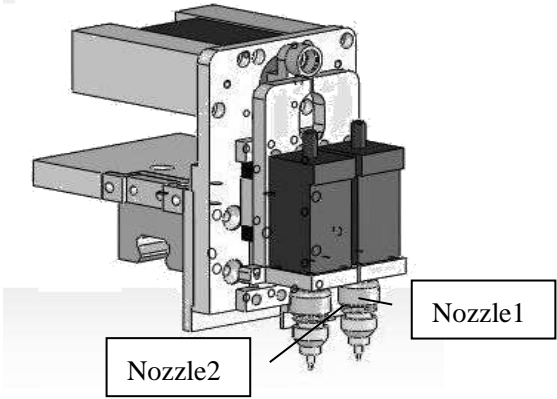
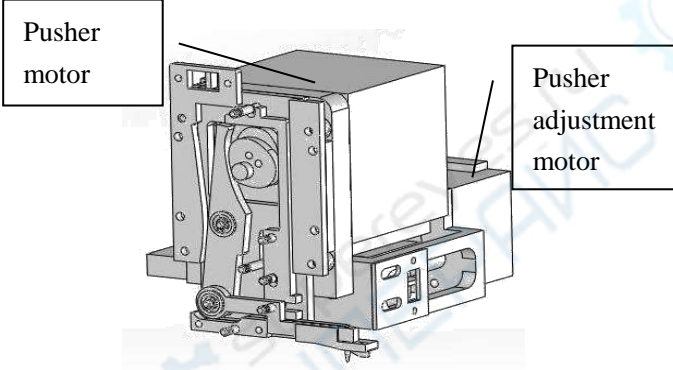
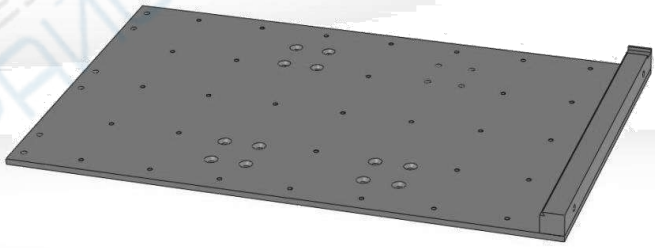
Item	specification
product name	auto-mounter machine
product type	MT-602
mounting head	double mounting head
average speed	5000CPH
positioning accuracy	0.025mm
net weight	151kg
applicable elements	0603-1206 SMD transistors, diodes, capacitors, resistors, chips, etc.
number of rack	56: 8mm=50, 12mm=4, 16mm=2
Number of offline storage files	20
max size of circuit board	300mm×400mm
power supply	220V, 50/60Hz, 280W
vacuum gas source	-50Kpa, 13L/min
operating system	Windows
installation dimension W×D×H	1396*761*480
Number of vacuum pump	2
Number of pump	1
malfunction detection	Suction leak detection, pressure detection

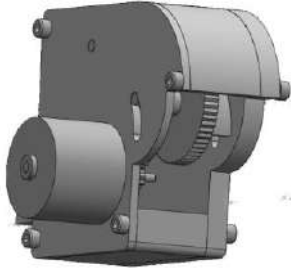

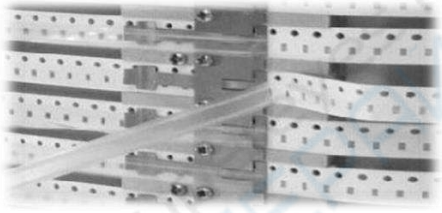
### 二、 appearance of the machine and basic structure



### 三、 Main Institutions

<p>Y-axis motion components</p>		<ol style="list-style-type: none"> <li>1, Y-axis plate</li> <li>2, linear bearings supporting base</li> <li>3, linear bearings LM25UU</li> <li>4, Y synchronous wheel mounts</li> <li>5, Y synchronous wheel</li> <li>6, Y-axis motor mount</li> <li>7, large X-axis belt fixed tooth plate</li> <li>8, shaft belt adjustment block</li> <li>9, large X-axis belt adjustment block briquetting</li> </ol> <p>F608ZZ flange bearings</p>
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<p>Suction mechanism</p>		<ol style="list-style-type: none"> <li>1, the vacuum solenoid valve</li> <li>2, linear slide MGN9C</li> <li>3, Z-axis limit switch</li> <li>4, pick-and-place the drive motor Z</li> <li>5, the rotary drive motor Q1, Q2</li> <li>6, a nozzle, the nozzle assembly 2</li> <li>7, Z-axis suction mounting plate</li> <li>8, Y-axis slide mechanism connecting plate suction</li> <li>9, Y-axis belt tensioning block</li> <li>10, Y-axis belt tooth plate</li> <li>11, motor angle slider stopper</li> </ol>
<p>Pusher mechanism</p>		<ol style="list-style-type: none"> <li>1, the pusher motor</li> <li>2, the pusher cam mechanism component</li> <li>3, T limit switch</li> <li>4, the pusher pin</li> <li>5, the pusher adjustment motor</li> <li>6, pusher holder</li> <li>7, pusher slider</li> </ol>
<p>Tray moving mechanism</p>		<ol style="list-style-type: none"> <li>1, 470X300 tray</li> <li>2, the slider tray</li> <li>3, the tray belt fixing plate</li> <li>4, linear slide SBR16UU</li> <li>5, slider slider</li> <li>6, the right tray stopper</li> <li>7. Fixed slider block</li> </ol>

<p>Waste recovery mechanism</p>		<ol style="list-style-type: none"> <li>1, closing with gear box</li> <li>2, the take-up gear assembly</li> <li>3, take-up motor</li> <li>4, the take-up motor drive circuit board</li> </ol>
<p>Feed tray</p>		<ol style="list-style-type: none"> <li>1, tray holder</li> <li>2, pin for tray</li> <li>3, waste recycling gear</li> <li>4, the guide wheel</li> </ol>
<p>Rack</p>		<ol style="list-style-type: none"> <li>1、 patch wedge</li> <li>2、 pressing reed</li> <li>3、 discharge pressure bar</li> </ol>

## ➤ Preparation and installation

### 1. Preparation and Precaution of installing

#### (1) Preparation of installing

1. Choose a flat ground to ensure that the machine level
2. Choose firm placement platform to ensure that the machine can not move.
3. Enough space for production operations.
4. Avoid hot and humid environment.
5. Check the power cable if there is breakage.

#### (2) Precaution for use

##### 1. Electrical Considerations

Use a multimeter to check if the power supply voltage is correct and the connection is reliable.

Ensure that it is earth grounded safely.

Ensure that all hardware connections are secure.

##### 2. Safety Precautions

Before moving the machine, turn the power off, unplug the power cord.

Pay attention to personal safety when transport.

Ensure there is no foreign matter inside of machine before electrifying.

Before electrifying, manual confirmation of the agencies operating normally, without hindrance.

Press the red emergency stop switch, and the system power supply is disconnected when there is emergency.

## Installation of mounter

- (1) Select the appropriate operating space for placing Mounter
- (2) The SMT machine should be placed in a special support frame.
- (3) The machine power should be accessed on the labeled INPUT socket.

## ➤ Debugging Preparation

### 1. Safety tips of commissioning test

- (1) All of components that are working should not be obstructed when operated.
- (2) All of components that are working should not be pushed when stopped.
- (3) Ensure that the terminal connection is well.
- (4) Restart it after 20 seconds when cut off power.
- (5) Press the red emergency stop switch and the system power supply is disconnected if there is emergency.

### 2. Introduce of operation panel

#### (1) Above panel

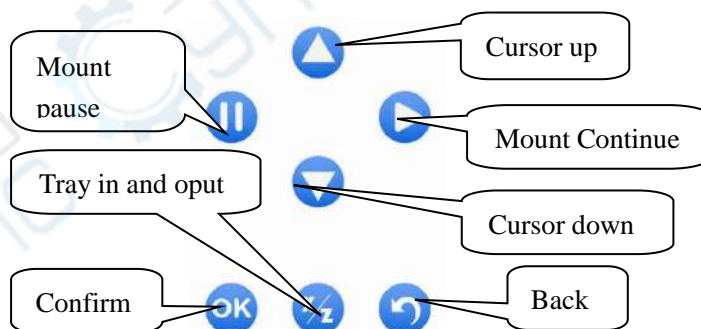
##### 1. Emergency stop switch

Press this switch, power is cut off and all actions of mounter machine are stopped. Clockwise rotation, button bounces and power is on, following that machine resets and each axis return to the original position.

#### (2) Main panel

##### 1. LCD

##### 2. Buttons



Description of function keys:



When the reference point to identify the state, it is used as the arrow key of mounting head to

control the moving of mounting head.



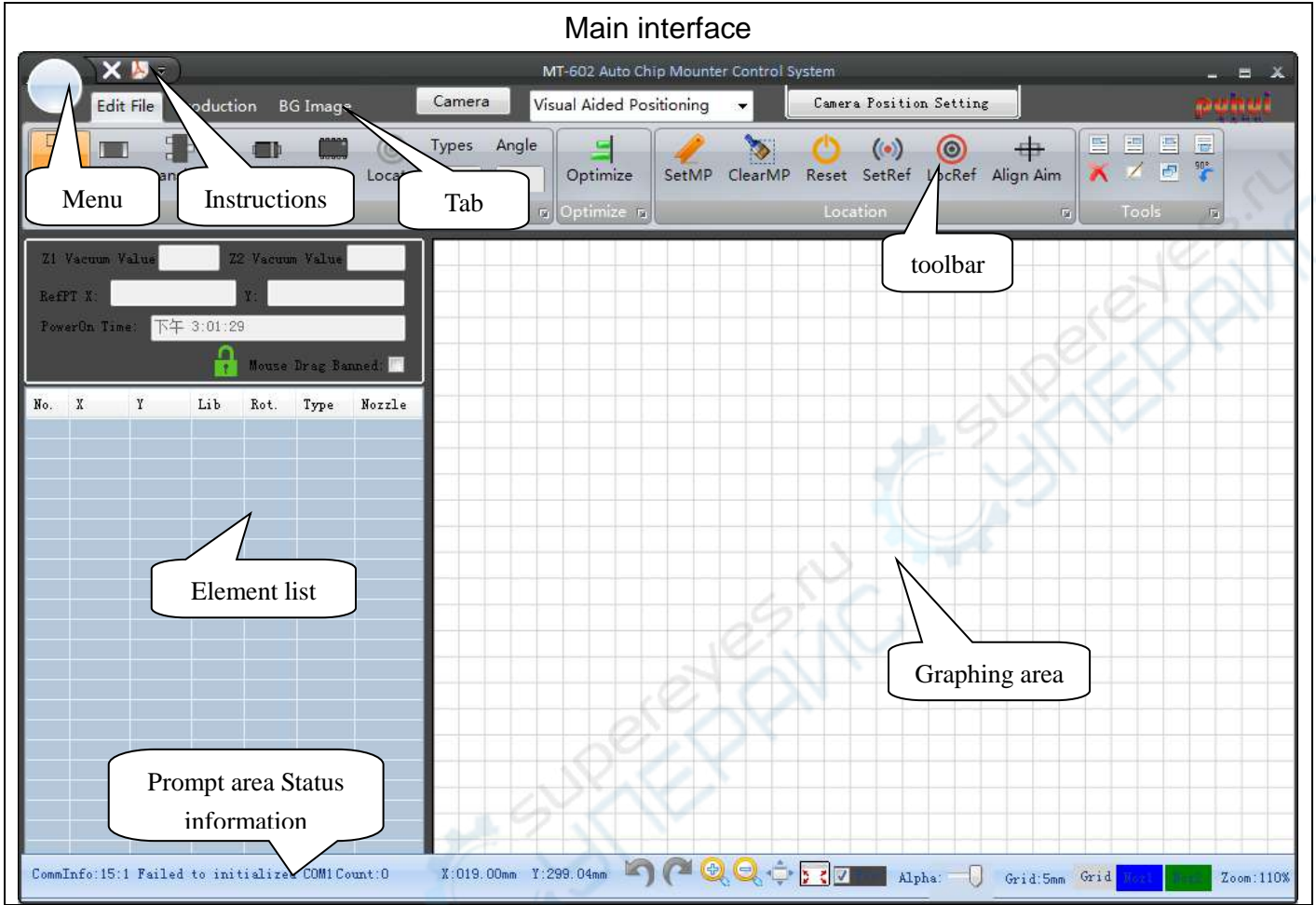
When the reference point to identify the state, it is used for controlling the nozzle's up and down movement, while other states, functions as shown above picture.

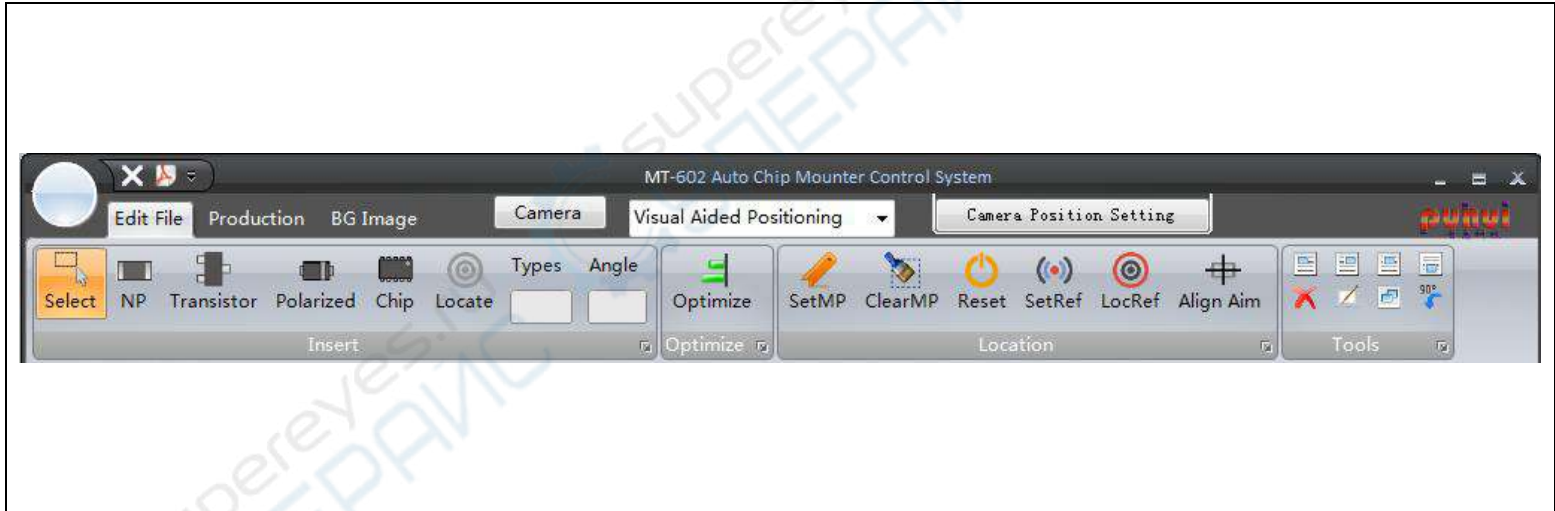
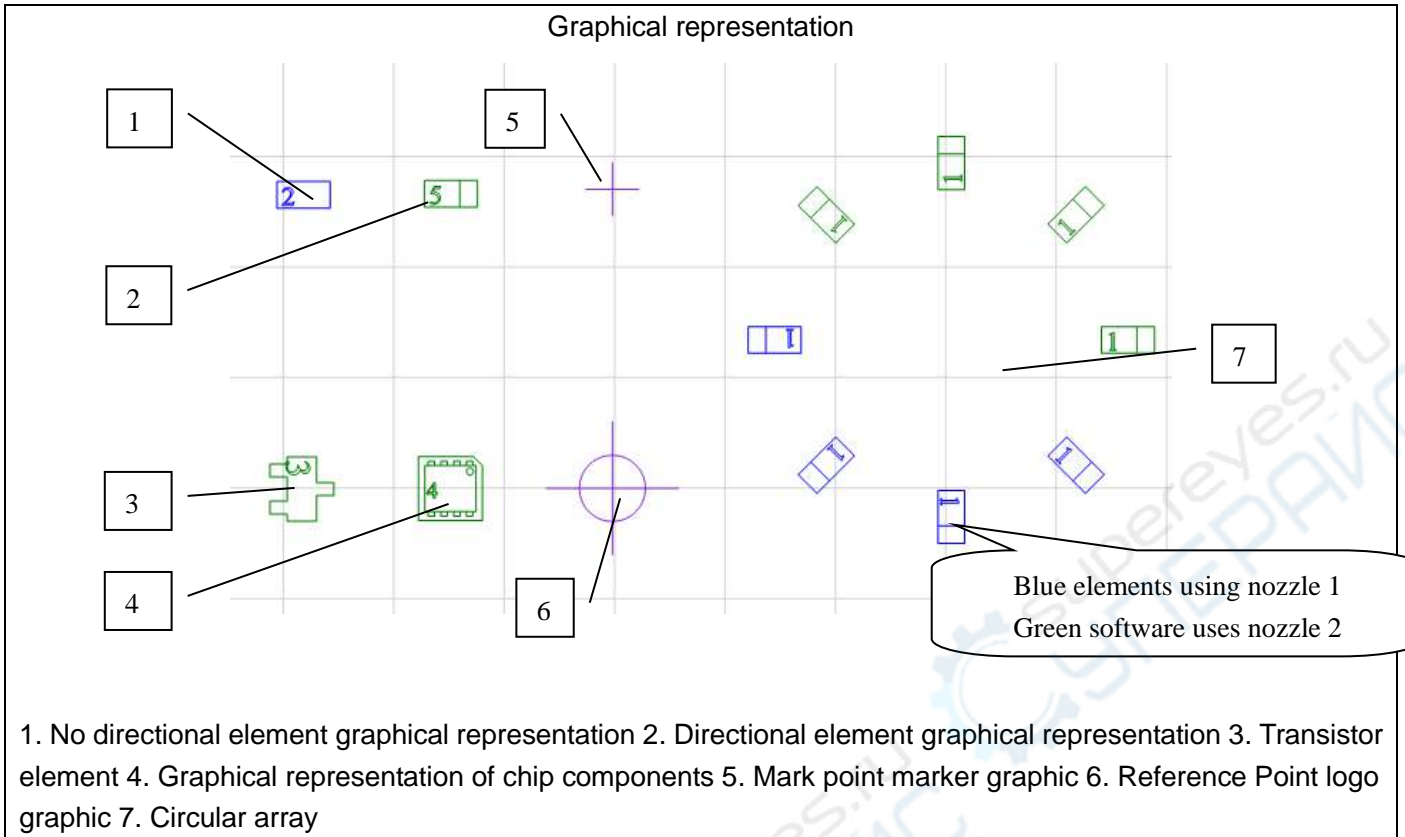
#### (3) Side panels

##### 1. Cooling fan outlet

##### 2. Access outlet for main power

- 3. Power switch
- 4. USB communication interface
- 3. Introduce of software interface







Parameter interface of equipment

The screenshot shows the 'Unit Manager' software interface. It is divided into several functional areas:

- Backup and recovery zone:** Located at the top left, containing 'Backup' and 'Recover' buttons.
- Other parameters zone:** A central area with various adjustable parameters like 'TStart', 'TEnd', 'Feeder 8mm', 'Pick-Z1Depth', 'Pick-Z2Depth', 'Z1 threshold', 'PickRetry Limit', and 'Leak Limit'. It includes an 'OK' button.
- Pusher step zone:** A section for configuring steps, with fields for 'LibNo.' and 'Steps' for multiple items (e.g., No. 5, No. 6, No. 8, No. 52, No. 53, No. 54).
- Rack management zone:** Includes 'Ini Management' and 'Set Nozzle' sections.
- Current nozzle settings area:** A section for selecting and configuring the current nozzle.
- Rack parameter field:** A table listing rack parameters for 10 different racks.
- Each axis positioning zone:** A large section on the right for configuring 'X Location', 'Y Location', and 'Z Location' with various sub-controls like 'Z1-Pick', 'Z1-Place', 'Z2-Pick', 'Z2-Place', 'Rotation', and 'Reclaimer'.
- Pneumatic control zone:** A section for 'Air Control' with 'Vac. 1 On' and 'Vac' buttons.
- Rack coordinate adjustment zone:** A section for 'Shelves Locating' with 'Coordinates', 'Adjusting Steps', and 'Locate' buttons.

NO.	Coor	Type	D...	PR	Noz	PicY	Z1DP	Z2DP	
1	1130				A	8632	2070	1220	
2	168				AB	8632	2070	1223	
3	200				B	8632	2070	1220	
4	2000				A	8632	2070	1220	
5	2016	5	0	180	✓	A	8632	2070	1220
6	2430	6	0	180	✓	A	8632	2070	1256
7	2863	7	0	180	✓	A	8632	2070	1220
8	3296	8	0	180	✓	A	8632	2070	1220
9	3729	9	0	180	✓	A	8632	2070	1220
10	4162	10	0	180	✓	A	8632	2070	1220

Interface of the device parameters

Lib Parameters

Select All  Clear TypeInfo

All All All All All All All

Reclaimer Tension Suit Nozzle Place Z1DP

NO.	Coord	Type	D...	Ten	PR	Noz	PicY	Z1DP	Z2DP
3	1	5	6	7	8	9	10	11	12
34	15438	34	0	180	✓		8632	2070	1150
35	16445		0	180	✓		8632	2070	1220
36	17250		0	180	✓		8632	2070	1220
37	17364		0	180	✓	A	8632	2070	1220
38	17364		0	180	✓	A	8632	2070	1220
39	17364		0	180	✓	A	8632	2070	1220
40	19010	40	0	180	✓		8632	2070	1220
41	17982		0	180	✓	A	8632	2070	1220
42	18418		0	180	✓	A	8632	2070	1220

Batch edit of feeder parameters

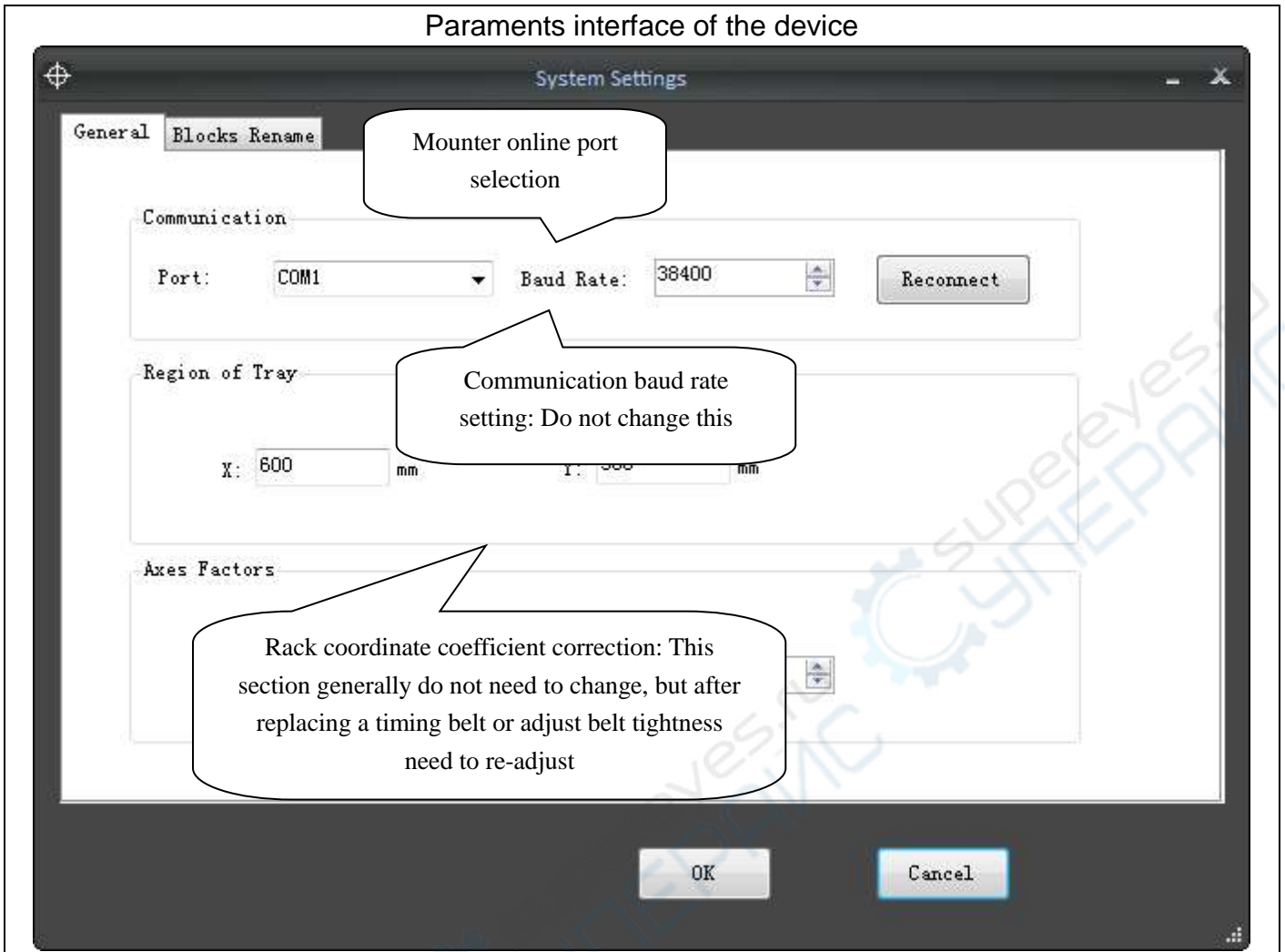
yellow area is current editing area

Blue area is editable area

Gray areas is non-editable regions alone

- select all of rack
- Empty rack model column
- rack Number
- device coordinates of rack
- element models of rack
- stay time on elements when picking element.
- take-up tension of take-up belt
- Whether to check leak of rack element
- The nozzle type that can be used on rack element.
- device location coordinates the feeder element Picking Y
- Discharge depth of the rack-mount device application when the nozzle 1,
- Discharge depth of the rack-mount device application when use nozzle 2,
- Single rack selection box

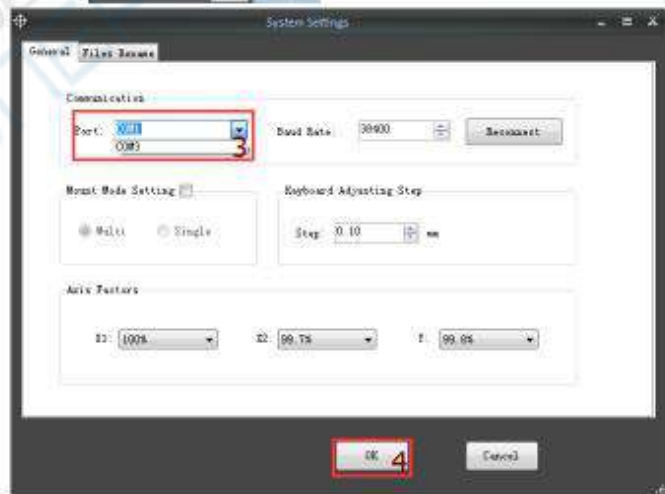
Params interface of the device



# Operation instructions

## Operation 1 — Connect with computer

- 一、Connect MT-602 with computer by using USB wire, open the control software, turn on the power of MT-60.
- 二、Click “main menu” - “system parameter, you will see “system parameter setting dialog box”, click serial port, you will see the current name of the serial port.
- 三、Select the serial port which match with USB wire.
- 四、Click OK, you will see the notice information in the bottom left corner of page.
- 五、At this time, Press “OK” at MT-602 operation panel, start to connect with computer, it connect successfully when MT-60 operation page show “already connected with computer”



14:16 Initialized COM3 successfully



## Operation 2 — Parameter Adjustment

### 1. Install Feeders

Feeders NO 1-10 suit for **diode, triode with plastic feeders**. 31-34 suit for 12mm components, 35-36 suit for 16mm components. The others suit for 8mm components.



### 2. Entry formation of feeders

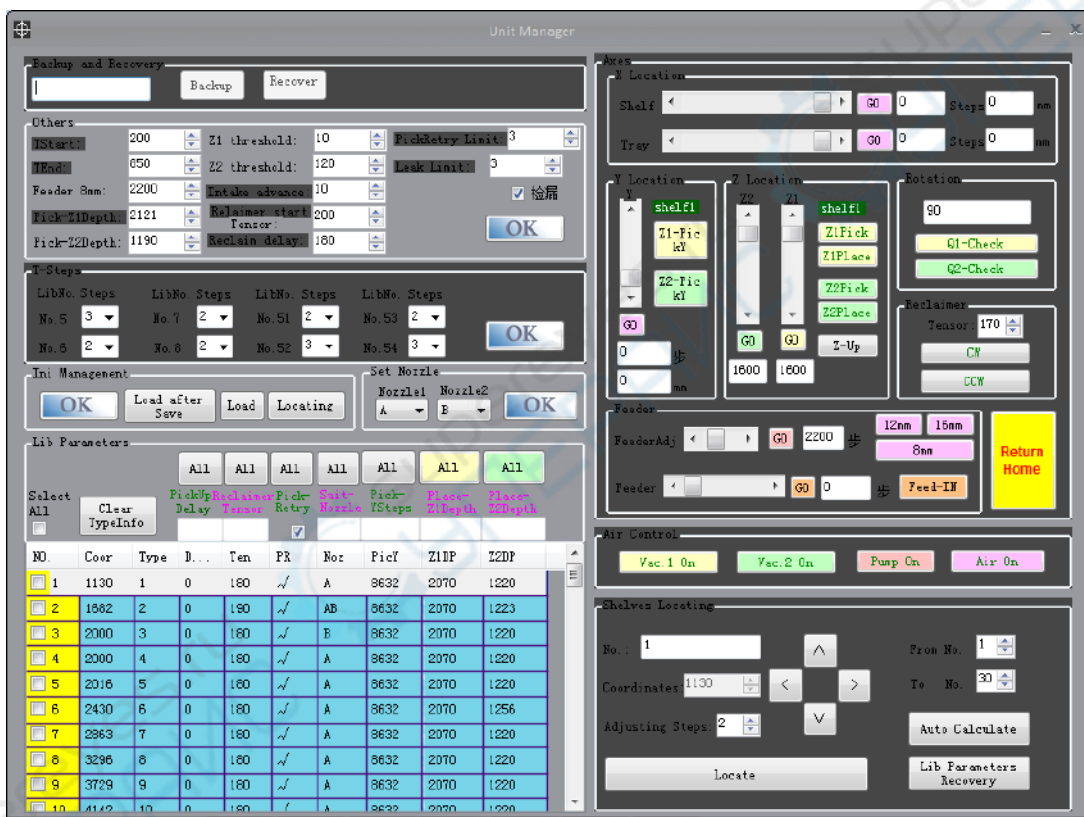
(1). Click Main menu - Unit manager, entry the information of feeders.



(2). Check feeders coordinate

Checking purpose: make nozzle locate in the middle of component between left and right.

Click “main menu” – “Unit manager”, click the number of checked feeder, click **Locate**, the nozzle will move to the feeder, click **Z-Pickup** and **Z-ReturnHome**, check whether the nozzle locates in the middle of component. If not, click **<** and **>**, then click **Send**, click **Locate** again, the nozzle will move the new coordinate, check again to confirm the position. Click **Send** after adjusted.



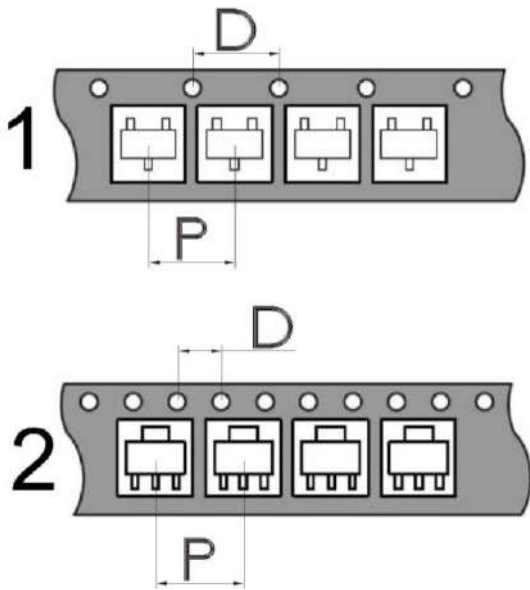
(3). Check pick- Y steps

Checking purpose: make nozzle locate in the middle of component between before and after.

Select any a feeder number, click **Locate**, then click **Feed-in** to push a component, coil the skin manually. Then copy the data of Y steps.

Click **Go**, the nozzle will be moved over the component. Click **Z-Pickup**, the nozzle lands on the component, check whether the nozzle locates in the middle of component. Copy the data to entry the pick Y steps. , click **Send** to save data.

(4). In pushing step length, according to the no. 31 ~ 36 loading of material situation, set up pushing step, click set  after the completion of the pushing step to save data.



- 1:  $P=D$  推料步长=1
- 2:  $P=D*2$  推料步长=2

3. Suction nozzle setting

(1) The machine is equipped with five different specifications of the suction nozzle, specifications and codes are: A inner diameter is 0.6 mm, B inner diameter is 0.8 mm, C inner diameter is 1.2 mm, D inner diameter is 1.5 mm, E inner diameter is 2.5 mm. In order to realize the customer's different specifications of the ideal of the patch SMT.

(2) Users choose to maximum meet all of the SMT components installed on the material shelf two suction nozzle assembly requirements, installed on the suction nozzle 1, the suction nozzle 2.



(3) Click the main menu - equipment parameters - in the "current suction nozzle set" drop-down menu Settings, such as, code-named B of suction nozzle is installed on the suction nozzle 1, as shown below "suction nozzle 1" below the menu option "B", the same method for the suction nozzle 2 "Settings, set up is completed, click the current setting suction nozzle area  save data.

(4) According to the material on the element size set the suction nozzle. Of no. 0603 components using A suction nozzle SMT, 0805 and 1206 components using A and B, suction nozzle specifications for SMT, large size chip components suggest using D, E, suction nozzle for SMT. All other components according to the size to choose suitable for placement of the suction nozzle specifications.

4. Parameter adjustment

(1) Coordinate correction and pick up material depth adjustment

▲ adjustment purpose: suction nozzle is located in the rack to head is the central element direction and depth has the right to pick up.

▲ adjustment method:

NO.	Coord	Type	D...	Ten	PR	Noz	PicY	Z1DP	Z2DP
<input type="checkbox"/> 1	1130	1	0	180	✓	A	8632	2070	1220
<input type="checkbox"/> 2	1682	2	0	190	✓	AB	8632	2070	1223
<input type="checkbox"/> 3	2000	3	0	180	✓	B	8632	2070	1220
<input type="checkbox"/> 4	2000	4	0	180	✓	A	8632	2070	1220
<input type="checkbox"/> 5	2016	5	0	180	✓	A	8632	2070	1220
<input type="checkbox"/> 6	2430	6	0	180	✓	A	8632	2070	1256
<input type="checkbox"/> 7	2863	7	0	180	✓	A	8632	2070	1220

Shelves Locating

No.:

Coordinates:

Adjusting Steps:

From No.

To No.

Y Location

Y

步  mm

Z Location

Z2

Rotation

Reclaimer

Tensor:


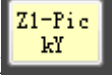
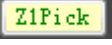





Feeder




FeederAdj   步


Feeder   步

Air Control

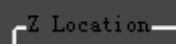

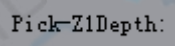



(1) In turn, click on the main menu - equipment parameters, the material parameter selection a marking bar, click , suction nozzle 1 will be shifted to the rack, click , near the suction nozzle to the material, click  on the suction nozzle 1 to fall on the components, observe whether suction nozzle 1 is located in the center position of the element left and right. If there is deviation, according to the migration direction and distance, click  or  adjust (click , rack position shift to the left, click , rack position moves to the right). Then click  on the suction nozzle 1 will be moved to the new coordinates, repeating observation adjustment, until the suction nozzle 1 is the central element is located in the left and right.

(2) Click  or  button, will change the selected material (position number increased to shift to the left, position number reduced to moves to the right), click , suction nozzle to the material. Repeat the first step of the operation, until all rack position adjustment.



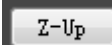




3, click  on the material management, to save parameters are adjusted to the MT - 602 hosts.

4, watch suction nozzle in the above check Z1 falls on components, whether to have enough buffer.

If need to adjust, click  on the main menu - equipment parameters, fine-tuning area Z1 slider and Z1 slider below , click to view at this time whether there is enough to the suction nozzle on the element of the buffer, adjust the appropriate after copying the value in the text box below the Z1 notification  to the text box at the back, the same method to adjust Z2 found material depth (note: Z2 to pick up the smaller depth, said the whereabouts of suction nozzle Z2 depth, the greater the Z1 pick up material depth, the greater the said Z1 falling depth is larger).

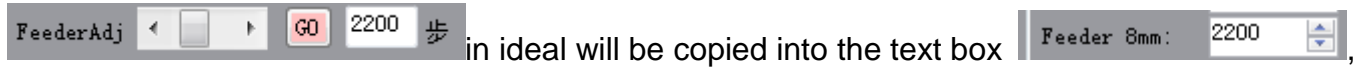
5, If parameter tuning out, press , material parameters all returned to the factory settings.

## (1) The adjustment of pushing mechanism

First in the material parameters of the bar, choose a 8 mm rack, then click , suction nozzle will be shifted to the rack, click  and , when the element suction nozzle 1 is located in the center of the left and right position, slide  the slider and click , pushing electric opportunity to the slider move in the direction of the translation, click   at the ends of the slider and then

click on pushing the motor position fine-tuning, when pushing motor to pushing needle at strip

pushing round hole left and right in the middle of the position, stop the adjustment, click right now, to see whether the normal launch patch element, adjust the value

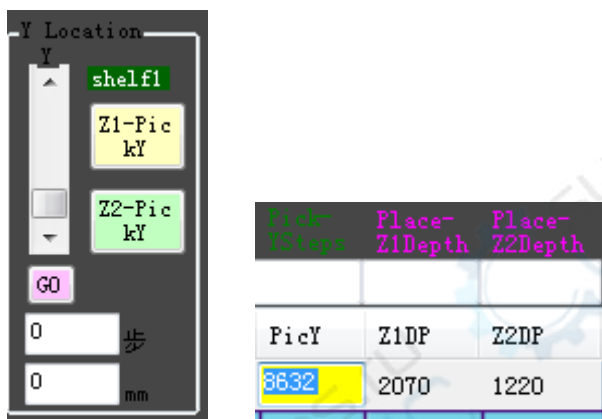


click in the to save data.

## (2) Check pick - Y steps

Checking purpose: make nozzle locate in the middle of component between before and after.

Select any a feeder number, click , then click to push a component, coil the skin manually. Then copy the data of Y steps.



Click , the nozzle will be moved over the component. Click , the nozzle lands on the component, check whether the nozzle locates in the middle of component. Copy the data to entry the pick Y steps. , click to save data.



## (3) the feeding depth adjustment


Feeding depth of  $\pm 10$  will have obvious change

adjustment purpose: due to the different thickness of components and circuit board thickness, adjust the that suction nozzle feeding with appropriate flexibility.

adjustment method:

1, 11 ~ 30 rack and 37 ~ 56 material feeding depth adjustment Will be pasted on the circuit board fixed on the tray, Y axis adjustment slider, X axis, the slider, the suction nozzle above 1 to circuit board. Adjust the Z1 slider, suction nozzle 1 after falling and circuit board, the distance between 1 after falling to suction nozzle, it is advisable to contact with the circuit board just. Copy Z1 slider

below the values in the text box, paste into the text box below  and select material 

to full box full frame materials, click on the button , the material of the Z1 feeding depth are set to the values in the text box. To adjust the feeding Z2 depth in the same way.

In the no. 2, 1 ~ 10 aircraft and 31 ~ 36 material feeding depth adjustment Rack and 31 1 ~ 10 ~ 36 rack for components have different thickness difference is bigger, so I need a single material. Will be pasted on the circuit board fixed on the tray, will adjust the rack components placed on the circuit board, Y axis adjustment slider, X axis, the slider, the suction nozzle above 1 to components. Adjust the Z1 slider, observe the suction nozzle 1 after falling and the distance between components, with suction nozzle 1 after falling, and element just slightly elastic contact is advisable. Copy Z1 slider below the values in the text box, paste to the material parameters of the area to adjust the material feeding Z1 bar text box. The same method to adjust the other rack and Z2 feeding depth.

3, the same method to adjust the feeding Z2 depth. All after the adjustment, click on OK and save material in the material parameter bar parameters.

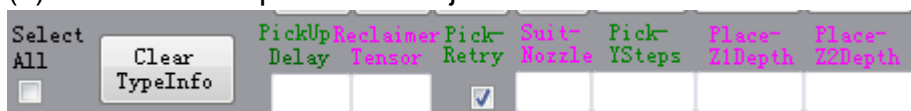
(4) Suction nozzle MARK point coordinate difference calculation:  
computation purposes:

Computing suction nozzle 2 relative to the suction nozzle 1 place in the X direction and Y direction deviation, so as to determine the suction nozzle device coordinates of 2.


calculation method:

- 1, have a small flag stop right at the tray.
- 2, open the placement machine control software, click edit graphics - click on the "1" suction nozzle, the mouse moved to the lower right graph area, the cursor into a black cross style.
- 3, move the mouse or press the direction key (keyboard to adjust the interval is inversely proportional to the magnification of the canvas, canvas magnification, the greater the keyboard adjustment interval is smaller, the adjustment precision is higher. Sliding the mouse wheel to zoom the canvas size), and makes the suction nozzle 1 corresponding move over the tray. Press the space bar, SMT machine suction nozzle 1 will fall, loosen the blank space key and suction nozzle 1 is raised.
- 4, use the mouse or the direction key to adjust the suction nozzle position, until the suction nozzle 1 center is for us to do MARK, press the Enter key, the cursor position MARK will appear blue cross point MARK. At this point, "suction nozzle 1" behind the two text box will show the MARK point coordinate values.
- 5, click on the "suction nozzle 2", the choice we make marked as benchmark, use the mouse or the direction key to adjust the suction nozzle position 2, until the suction nozzle 2 center right we do MARK in the block center, press the Enter key, the cursor position MARK will appear blue cross point MARK. At this point, "suction nozzle 2" behind the two text box will show the MARK point marker coordinates, press the ESC key to exit the MARK point positioning, suction nozzle 1 and suction nozzle 2 X and Y direction coordinate difference value is automatically calculated and displayed on the back of the two text box, click the "OK", transferred to the SMT machine.

(5) other material parameter adjustment:

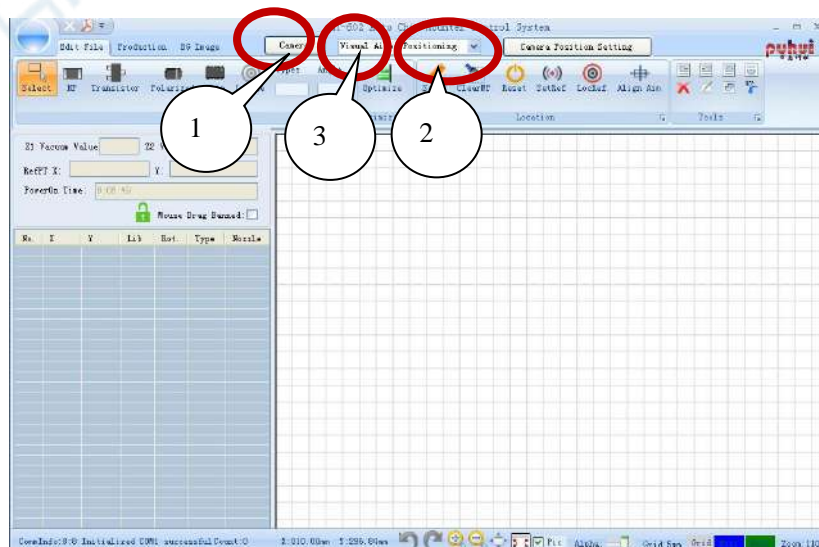


- 1, components are required when increasing material delay.
  - 2, components of material coated hard to tear apart, tension, increase recovery of coated strip break easily, reduce the tension of recycling.
- Enable/disable 3, leak detection function.

4, adjust, click  on the rack to save administrative zones

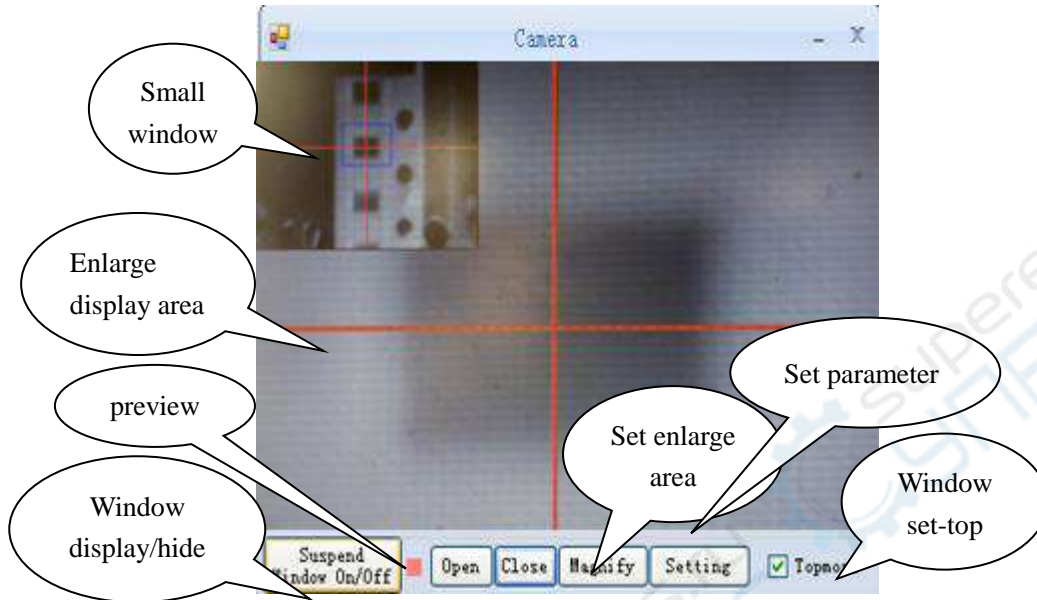
## MT-602 visual aids

### Main interface



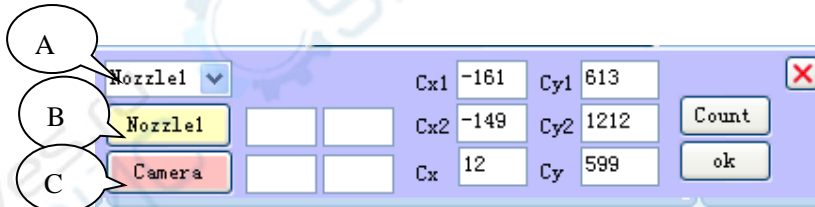
visual aids

- 1 Click button 1 ,open visual aids
- 2 Use method of visual aids



- (1) Click button 1 ,open camera。 Visual aids will display image at small window and preview 。
- (2) Click magnify, put mouse at small window ,choose a comment. it will display at enlarge area.
- (3) The center of red cross is the center of camera。
- (4) Using small window to make sure a general location ,make a accutate loctation at enlarge display.

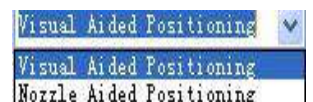
3 (1) Poission correction of Nozzle



Cx1. Cy1: position between Nozzle1 and camera Cx2. Cy2: position between Nozzle2 and camera  
Cx. Cy: position between Nozzle1 and Nozzle2

Click 2 of main interface,open position correction of Nozzle. Click A change Nozzle1/Nozzle2. Click B/C ,set a Mark at Same position,then will display a number at cx1 cy1 cx2 cy2 cx and cy. click Count,calculate the position between at Nozzle 1 and Nozzle 2 ,click OK.

(2) Make sure the position correction of Nozzle, click 3 in main interface ,choose Visual Aided Positioning to debug the correct position.



4 other description

We need reset the machine, after changing the pattern the Nozzle or Camera to avoid wrong operation for SMT machine machine structure


## Operation 3 — Create placement data document (Create coordinate )

### 1. Basic Operation

#### a. components edit

##### 1). Place component




Click  to choose a component type, click on the left side of the mouse for placing component in the plot area.

Tips: press the space bar to change the direction of rotation before placing; press F2 bar to change 90 degree of rotation. Click on the right side of mouse for quitting placing components state.

##### 2) Copy and paste



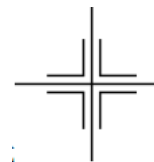
Select the copy components, click , select any component as the aim point, then move mouse to the paste point, click mouse to finish.

#### b. Set mark point

Purpose: find the corresponding coordinate, which corresponds to one point of PCB in the plate.

Steps:

1. Place PCB in the plate;



2. Click **SetMP**, move mouse to the plot area, the mouse pointer changes :

3. When move mouse or arrow keys, the nuzzle will be moved. Push the space bar, the nuzzle lands on the PCB. Loosen the space bar, the nuzzle rises.

4. Select a component as aim component, move mouse to make nozzle land in the center of aim component. Press Enter bar, the mouse pointer changes blue.

5. Press ESC bar to quit Mark state.

c. Align aim

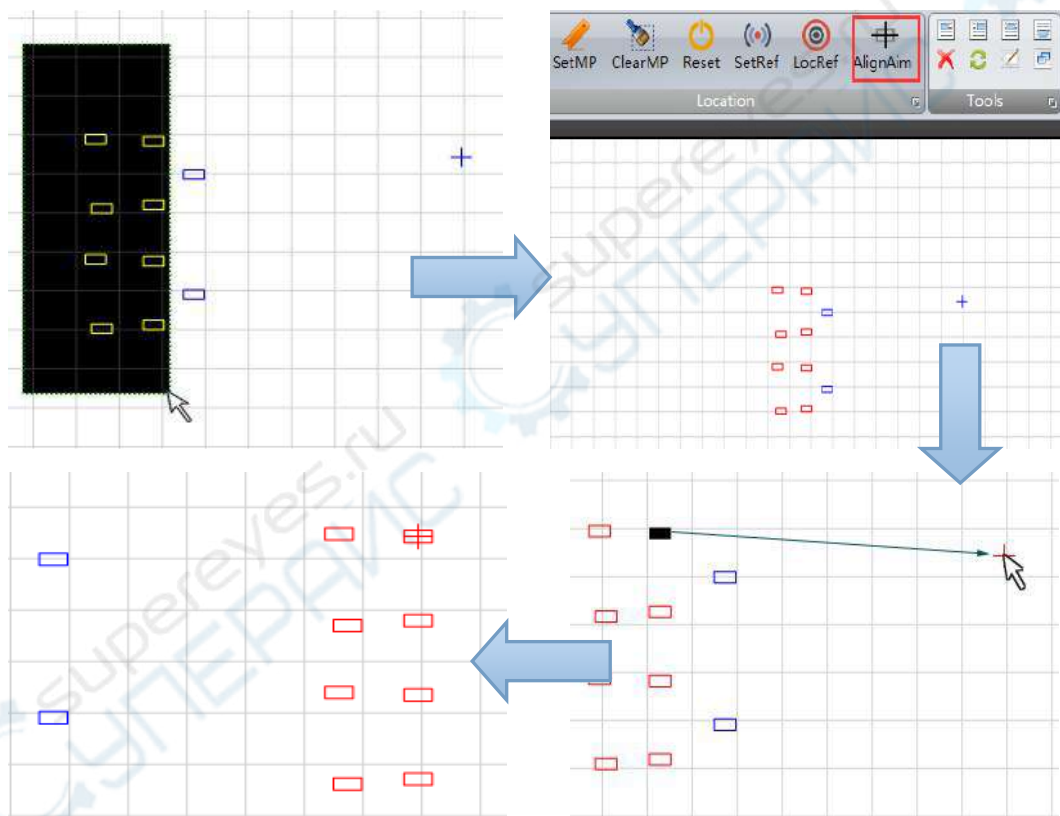
1. Select all need to move components.



2. Click **AlignAim**, click the aim component, it changes black.

3. Click the blue mark point, all the need to move components will be moved to the new area.

4. Press ESC to quit align aim state.



2. Create placement data document

There are 3 types to create placement data document. Mark every point, import PCB coordinate document, Mark printer scan.

2. Create placement data document

MT - 602 can be used in the patch there are three kinds of coordinate data to establish a way: point

positioning entry, PCB file to import, scan location input, circular.

point positioning

1, the MARK point positioning by component, the corresponding MARK tag elements, until all components have the corresponding MARK points. (note: use the same suction nozzle)

2, in all the MARK point location place component.

PCB file imports

PCB file output and format conversion (see MT - 602 automatic placement machine PCB file output and format instructions. )

scan location entry

1, ready to scanner, circuit board, and image processing software

2, circuit board to be included in the scanner, as far as possible with scanner edge parallel, 1:1 scanning, will obtain the image into the computer. Using image processing software to upper and bottom level, image rotation and the image of PCB image beyond the edge of the cutting, save.

3, open the MT - 602, click on the background image, click the insert pictures, find the image of the second step, open.

4, hold the left mouse button over the image and drag the image to the upper right corner of the plot area.

5, according to the position of each element in the image manually placed component, until all components in place.

create element circular array

1, according to the situation of annular array to determine the reference element, element starting Angle, circular starting Angle, the radius of the circular array and circular array element number.

2, in the plot area placed a polar components, Angle set component, hold down the ALT key and double-click the component, on the "create element circular array" window, fill in the parameters, click ok to generate the element circular array.

Component starting Angle: reference element of lines and the Angle between the horizontal line.

Circular starting Angle: the benchmark of connections between components center and the circular array center of a circle with the Angle between the horizontal.

### 3. engineering data file is established

(a) makeup veneer patch data files. With reference to the first three ways.

(2) the MARK all single boards reference element corresponding MARK points.

(3) after all the components selected veneer, copy and paste. Repeated until the component number consistent with makeup.

(4) select each veneer block elements, and with all single boards MARK point benchmark counterpoint.

(5) repeat the step until all single boards MARK point center and the reference element.

(6)Click the main menu - save. Data files to establish completed.

### Operation 4— Set reference point

a. Mark point as the reference point of PCB in the plot area (via hole, pad holes, etc)

b. Click , mouse pointer changes , click on the left side of mouse to set reference point.

c. Select the reference point, move to the mark point by align aim.

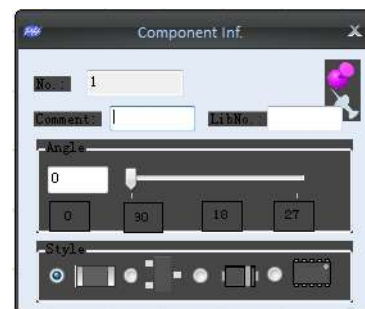
### Operation 5—Entry information of component



## 1 basic operations:

### (1) Unit element editing

On the edit graphical interface---Graphing Area, double-click the *component* and *component parameter editing bar* appears, you can enter component parameters. Click the left mouse button on the space allows *component parameter editing bar* disappears



### (2) Multi-element edit

Make a note of the corresponding rack number for each component and Select the same type of components(hold CTRL can select more),to input the model corresponding rack number in text-box Under Toolbar--Types for all, and click Types For All, this can modify component model in batch.

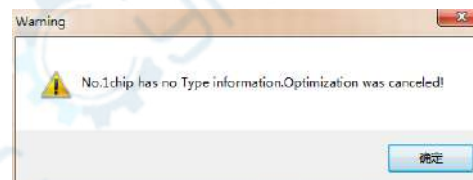
According to PCB, select the components having the same angle,to input target component' angle in Text-box under Angle For All of Toolbar , and click Angle For All, this way can modify components' angle in batch.

## 2 Improve patch data

(1) After finishing editing for all of patch, click optimize and system will finish the match for racks and optimizing for patch data

(2) After finishing optimizing ,to click SAVE in Menu,this way can save patch data into computer.

(3) Click Menu-Transform, select Send to 0x in Dialog-Box(Mt-602 can save 20 kinds of patch data and can work without computer. When transform, to avoid the document zine that had data, or original data will be gone.



## ➤ Operating procedures6-----operate the mount file and produce

### 1 Run online

(1) Put the printed circuit board solder paste fixed on the tray holder according to the established direction

(2) Open MT-602 control software and MT-602 main power to run online operation

(3) When successfully online, click Production--Run--Run document 0X, the machine will work.

(4) When mounter finished and reset, the next circuit board can be done


(5) Leak detection and set the threshold adjustment

#### ◆ Introduce of leak detection features

Mt602 could alarm and stop picking and placing of it can not suck the patch(component) according to the set threshold. (menu--nuit manager--others--Z1 threshold/Z2threshold)

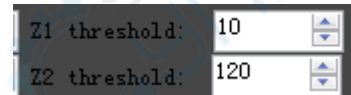
#### ◆ Check for leak detection alarm

If pop up leak detection hint, check the machine status and do the operations related to the following table

machine status	Corresponding operation
The current tray parts have not been exhausted	Exclude the following fault, press  for continue 1、 The component' Pick coordinate is not modified. (corresponding rack coordinate and corresponding rack' Pick Y )

	<p>2、 The component' pick-depth is not right</p> <p>3、 The component' Relaimer Start Tensor is not right, cause cover film on component can not be teared and it obstructs the component to not be picked</p> <p>4、 Nozzle type and component's size is not matched, the diameter of nozzle is bigger than component , which cause pressure leak.</p> <p>5、 Z1/Z2 threshold is not right. Modify and reset threshold</p>
The current tray parts exhausted	Stop mounting, after replace new trays, to mount the next circuit or to mount for trapping.

◆ leak detection threshold settings



According to the condition of pick for component and Menu-Production--Information--DZ1/DZ2, to modify Unit Manager-Others--Z1/Z2 threshold.

Machine Status	Corresponding setting
selection of nozzle type is properly and drawing of element is right, machine prompts leak	The Z1 / Z2 leak detection threshold is increased to a value that is greater than the value of reported leakage of DZ1 / DZ2
Component can not be picked and machine can not alarm	The Z1 / Z2 leak detection threshold is increased to a value that is smaller than the value of DZ1 / DZ2 when mounting

◆ trapping method for circuit board that leaked mounting

1. way of selection

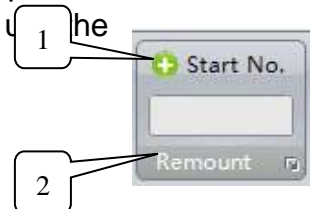
Selection with Mouse: In the Run window or click the marquee to choose the subsidy element needed

Input Serial Number: Enter the number on the text box showing on Picture2 and click on a button, you can select all the elements from the beginning of the subsequent number

Mixed Selection: After use the way of Input Serial Number, you can use the way of Selection with Mouse to increase or decrease elements

2. Trapping




After selection, you can click on *trapping*









## MT-602 operation (not connect with computer)




### Production (Pick and Place)

1 Turn on the power

(1) Press   to Offline operation, press , select placement file

(2) press  , select file, press , press , check if nozzle is in the center of reference point,

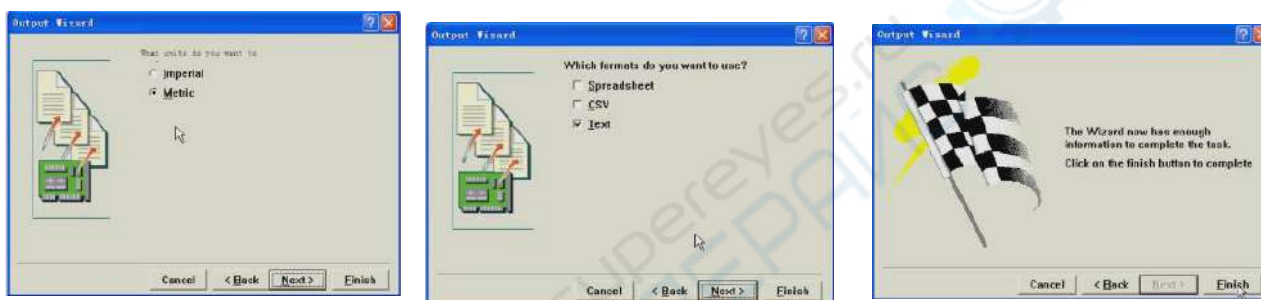
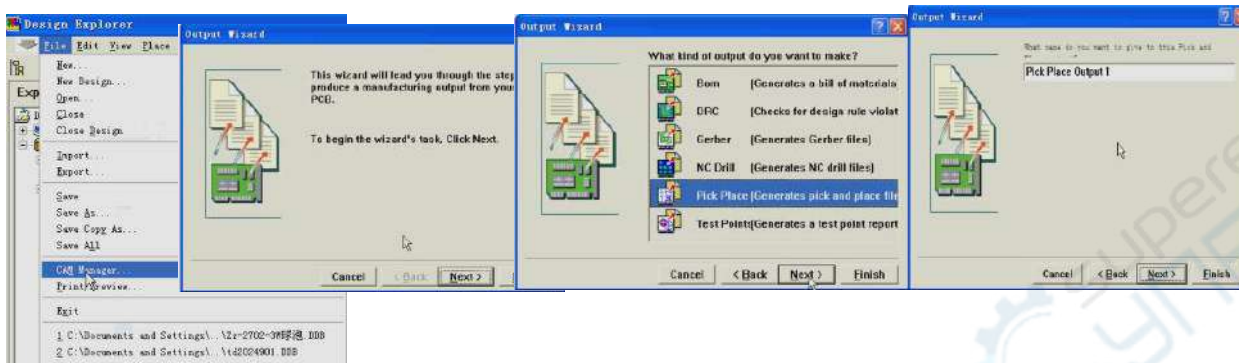
if not, press    adjust nozzle in the center, press , start mounting.

(3) When mounting, press  to stop mounting, press  continue mounting, press  return home.

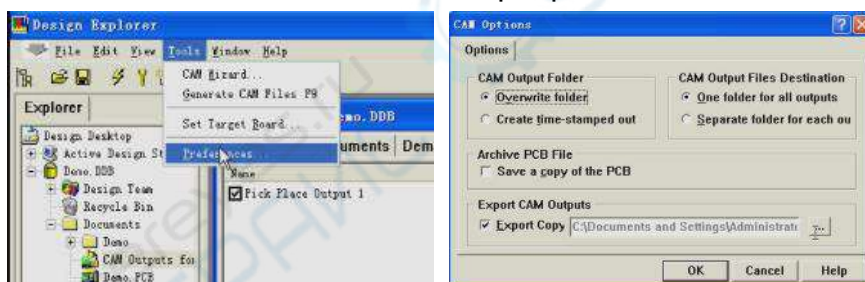


## Create Pick & Place file (Protel 99SE for example)

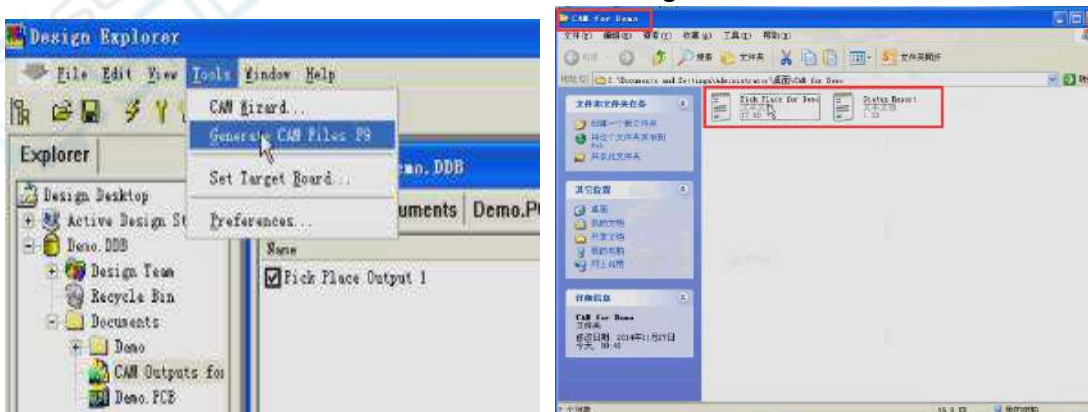
1. Open the PCB file in Protel 99SE.
2. Click File-CAM manager-Next-choose "Pick Place", then click Next-Next-choose CSV or Text, then choose Next-Choose "Metric", and then click Next-Finish.



3. Click Tools-Preferences-choose output path, then click OK.



4. Click Tools-Generate CAM Files, then it will generate a folder named CAM for \*\*

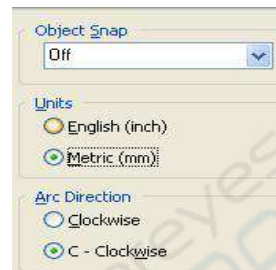


## Using DXP output Gerber file

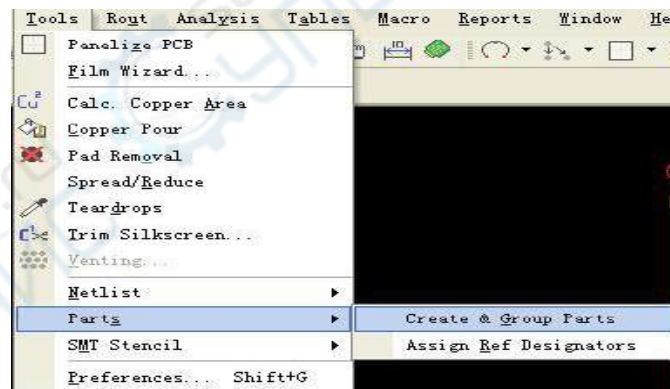
- 1 Open PCB file . GTS
- 2 Click menu bar (Tools) -choose Preferences.



- 3 Units choose Metric, OK .

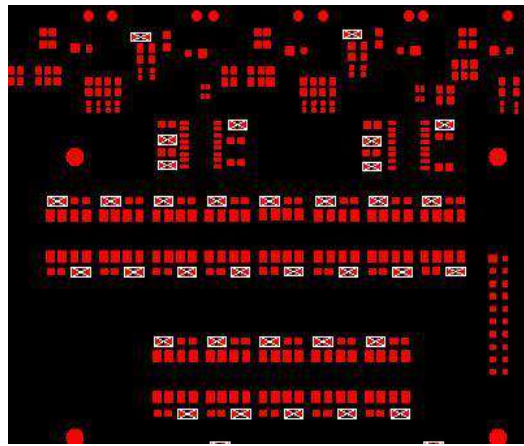


- 4 Click menu bar Tools-Parts-Creat&Group Parts.



- 5 Click all welding plate include the components,click the right mouse button,show Assign/Group Parts. Input component model at Description text box,input component angle at Rotation(Deg) text box. Type choose SMT, OK. Choose the other components with the same method.

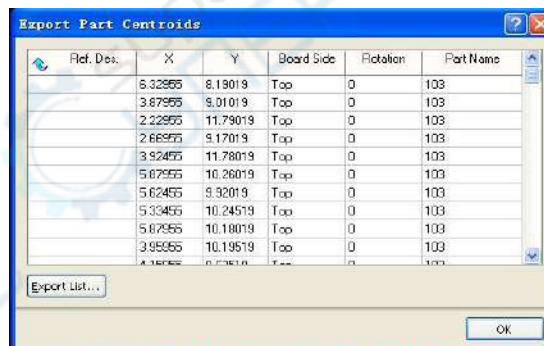
- 6 When all component edit over,click the right of mouse quit editing state.



7 Click menu bar Tables-Parts, show Export Part Centroids .



8 Click Export List, show Write Centroid Parts window, choose the path of output, click OK. Output . pcf file format.



9 Open the system of MT-602,click “menu”-”lead”,click “ open file”,choose . pcf file. Click “open” “transform preview” “lead” creating . PH file.

## Import P&P file to convert for mounting machine

1. File the software of mounting machine, click main menu-import. You will see a pop-up dialog.



2. Click **Open File**, choose P&P file to open.

3. choose output software model  DXP  All格, choose DXP generally.

4. Click **Overview**.

5. For polarized components, 360° replace with 0°.

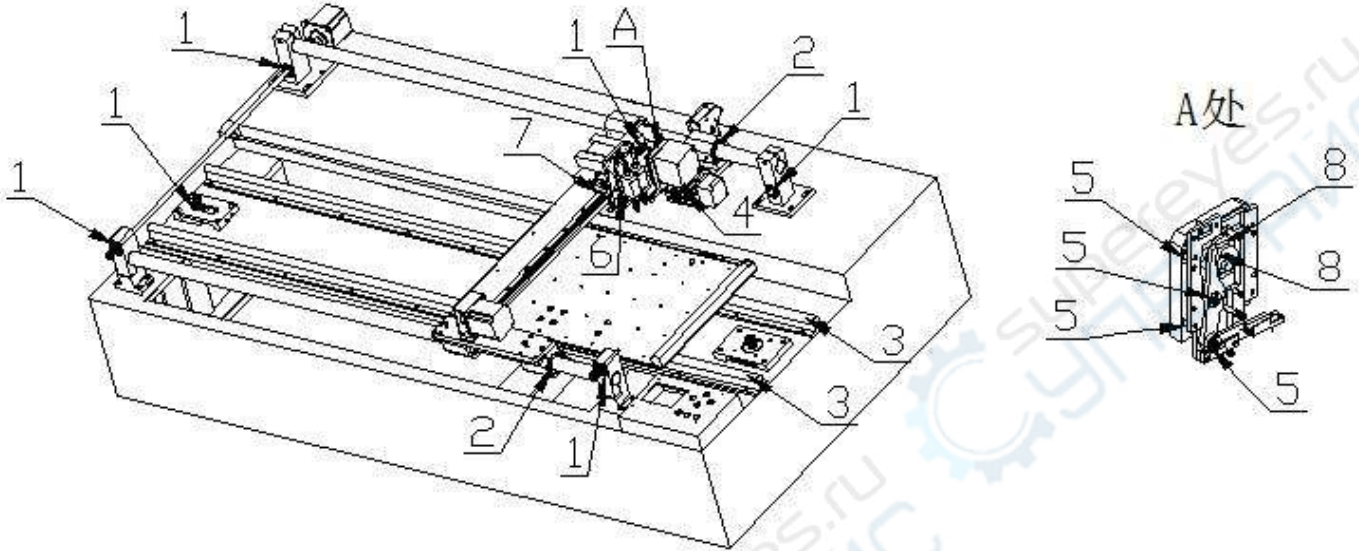
For unpolarized components, 180° replace with 0°, 270° replace with 90°, 360° replace with 0°

6. Select the layer  TOP  BOT  Flip, click **Import**. Components will be showed in the plot area.

7. Click main menu-save

## Maintenance

SMT machine maintenance and lubrication chart



organization	608 bearing	LM25 line bearing	SBR16 slider	LM8 line bearing	619-3 bearing	9mm line slider	15mm line slider	
position	1	2	3	4	5	6	7	8
number	12	4	4	2	9	2	1	2
lubricant	lubricating oil							lubricating grease