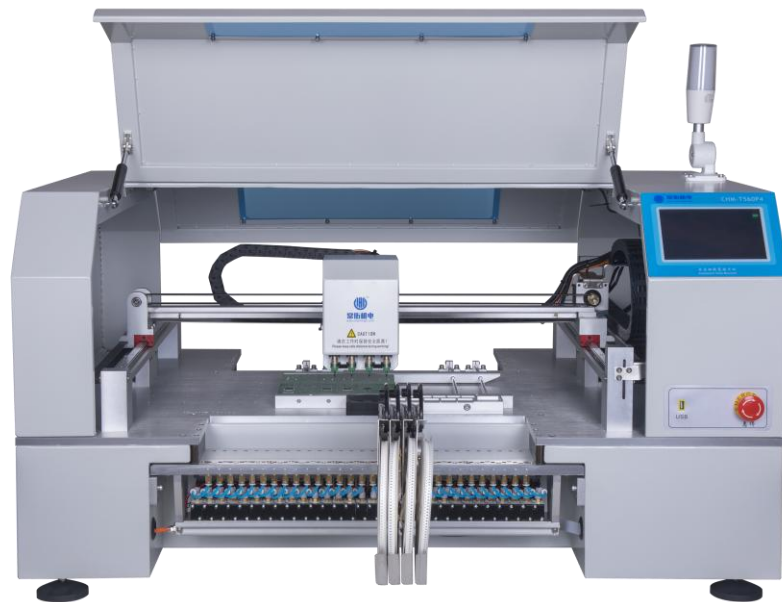


CHM-T560P4

PICK AND PLACE MACHINE USER MANUAL V2.5-2.0-1.0

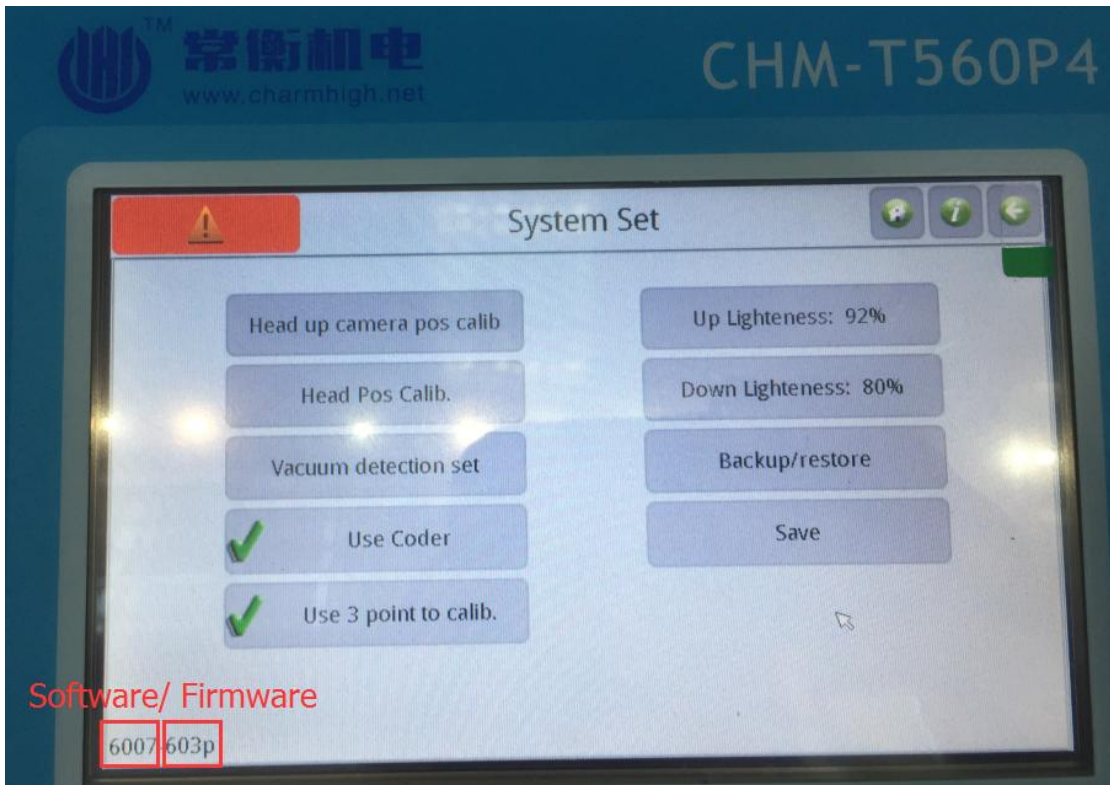
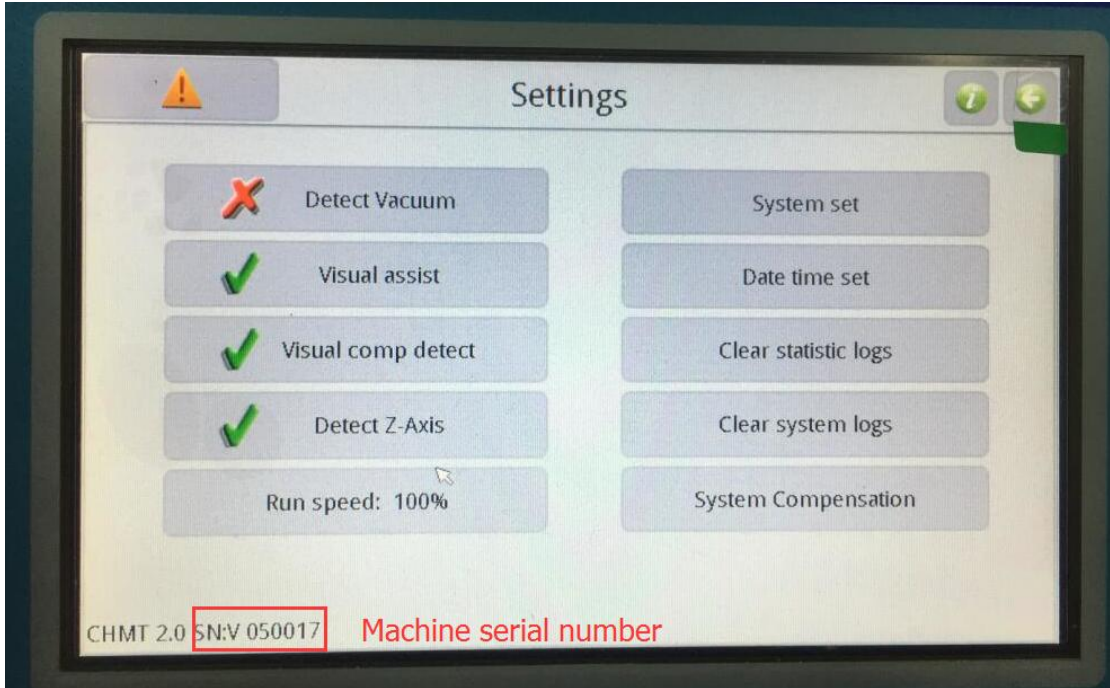


Technology Versus Future | **CHARMHIGH TECHNOLOGY LIMITED**

CATALOGUE

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1. Version update



2. Safety matters

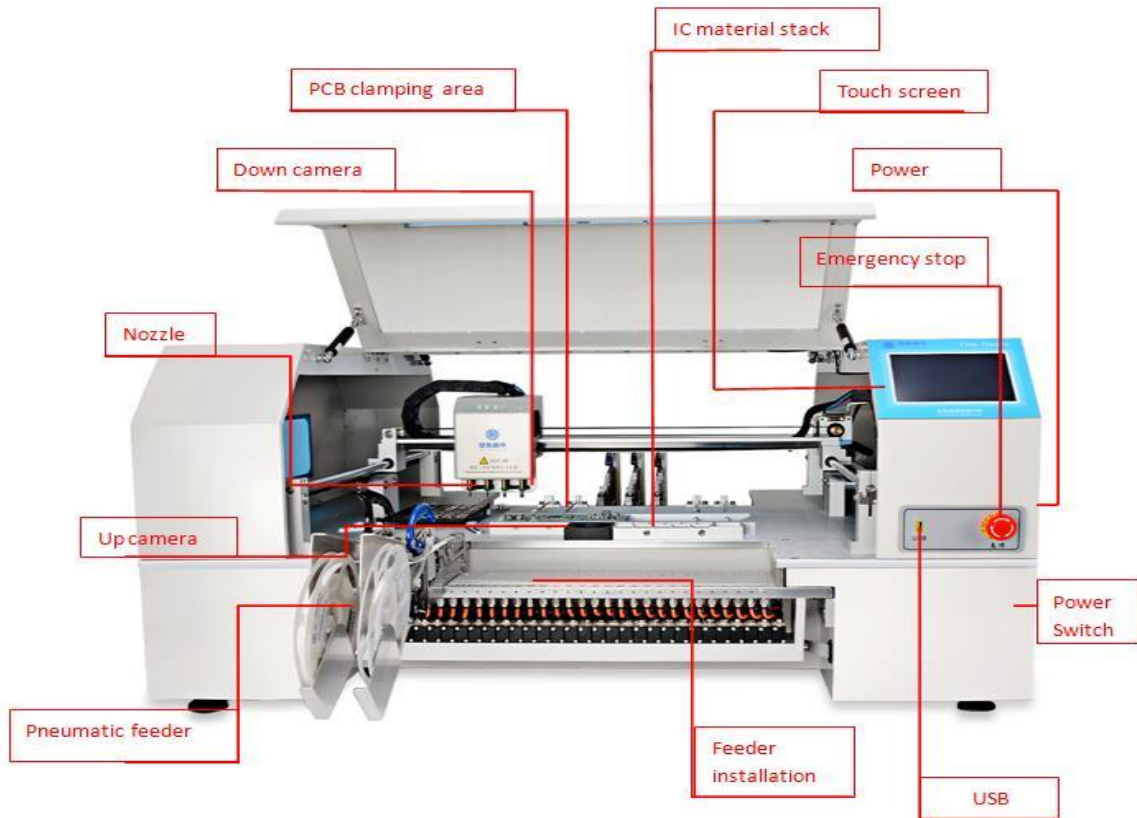
- (1) Stay away from dust and wet.
- (2) Stay away from inflammables and explosives.
- (3) Put machine on a stable platform, if not stable will lose of accuracy.
- (4) Keep it away from child.
- (5) Don't dismantling machine randomly, it will lose of accuracy or broke the machine.
- (6) Make sure power supply and air supply is standard and in good condition.
- (7) Make sure power supply connect earth well.
- (8) Don't touch machine during working.
- (9) Power cord only use for this machine.
- (10) Please read manual carefully before using.

3. Main parameters

Parameters	Description
Model	CHM-T560P4
XYZ axis travel	600mm(X)×630mm(Y)×20mm(Z)
PCB area	400mm(L)×270mm(W)
Support component	0402,0603~5050, SOP, QFN,BGA
Mounting speed	<ul style="list-style-type: none"> ● Without vision: 8000cph ● With vision: 5500cph
Accuracy	0.015mm
Mounting head	4pcs
Feeding system	<ul style="list-style-type: none"> ● Support max 60pcs 8mm pneumatic feeder ● 4mm, 8mm, 12mm, 16mm, 24mm for option ● 11pcs general IC stack ● Support IC tray
Vision detection	Up & down camera
Motor control	<ul style="list-style-type: none"> ● XY axis stepper motor with encoder ● Flexible S deceleration ● Z axis reset detection
Component detection leakage	Vacuum detection & vision detection
Main board	High-reliability industry motherboard
Touch screen	7 inches industry screen
Operation system	Embedded Linux system
External air supply	0.5MPa
Power supply	AC220V 50Hz / AC110V 60Hz
Machine dimension	1180mm(L)×870mm(W)×600mm(H)
Power	250W
Net weight	160Kg

4. Machine intro

CHMT560P4 machine structure as below:



PIC4-1

- (1) **Nozzles:** 4 heads with Juki nozzle
- (2) **Down-looking camera:** help positioning and for mark point calibration.
- (3) **PCB clamping area:** push the PCB on the end of left corner
- (4) **Bulk IC material stack:** put some loose-packed ICs
- (5) **Full Touch screen:** Touch pen or external USB mouse supported
- (6) **Power:** 220v or 110v, fuse inside it
- (7) **Emergency button:** press it will emergency stop, rotate to right it will pop out and back to normal working
- (8) **Power switch:** turn ON/OFF machine
- (9) **USB:** connect external USB flash
- (10) **Up-looking camera:** use for component positioning and angle calibration
- (11) **Feeder installation area**

(12) **Pneumatic Feeder:** standard Yamaha feeder 8mm,12mm,16mm,24mm or Tube feeder.

5. Start

Power on, press "confirm" on the screen, machine self-check and operation system start, below is home page. You can normal use it now.

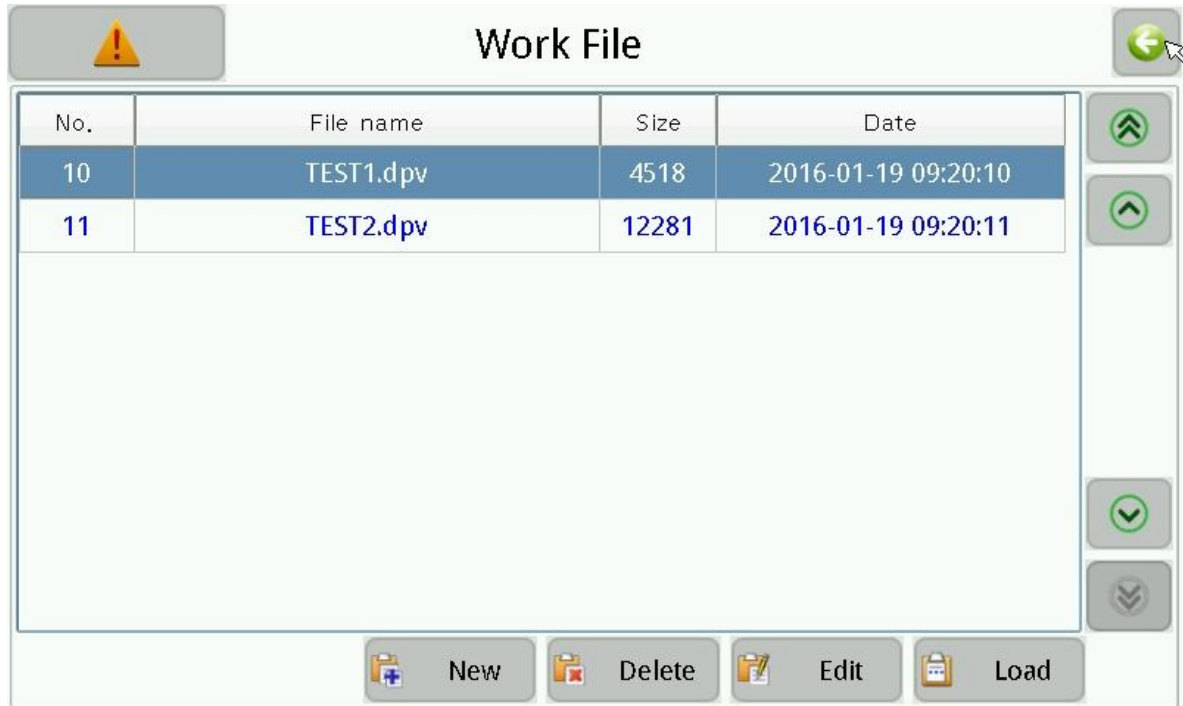


PIC5-1

- (1) **Alarm:** on the left-side up triangle corner, used to check alarm detail and history.
- (2) **Run:** Used to manage and run the working file.
- (3) **Test:** Used to test the machine's functions (can't amend any value, just for testing)
- (4) **Set:** For machine settings and system set
- (5) **Statistic:** Used to view statistics
- (6) **System log:** For the record information
- (7) **Files:** used to manage files and convert work file

6. RUN

Home page --- Run, then you will see below image:



PIC6-1






- (1) **Work file:** current working file
- (2) **New:** create a new working file by yourself
- (3) **Delete:** delete work file
- (4) **Edit:** Edit the selected working file
- (5) **Load:** loading the selected working file and ready to run
- (6) **Back:** on the right-side up corner of the screen, used to back to last page.

6.1. Edit work file

Below image is edit work file:

Work File EditTEST1.dpv

Component		MStack	IC tray		Batch	PCB calibrate				
Com.	IL	MHead	VStack	X	Y	Angle	Height	Speed	Designator	Comments
138	1	4	98.64	43.03	-15....	0.50	0	RA60_1_1_1	0603	
139	1	4	25.36	13.75	-30....	0.50	0	RA58_1_1_1	0603	
140	1	4	24.01	11.98	-45....	0.50	0	RA55_1_1_1	0603	
141	1	4	22.25	10.63	-60....	0.50	0	RA47_1_1_1	0603	
142	1	4	20.20	9.77	-75....	0.50	0	RA41_1_1_1	0603	
143	1	4	18.00	9.50	-90....	0.50	0	RA35_1_1_1	0603	
144	1	4	15.80	9.77	-10...	0.50	0	RA29_1_1_1	0603	
145	1	4	13.75	10.63	-12...	0.50	0	RA21_1_1_1	0603	
146	1	4	11.98	11.98	-13...	0.50	0	RA16_1_1_1	0603	

 Add
  Insert
  Delete
  Edit
  Save

PIC6-2

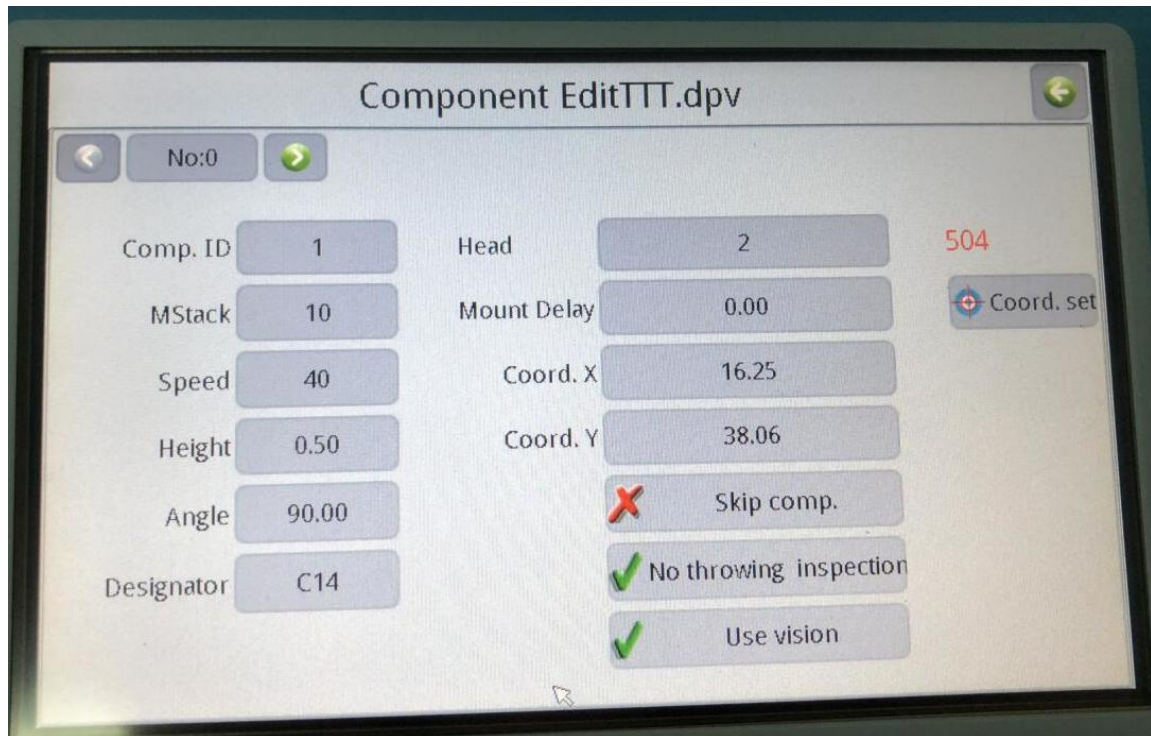
6.1.1.Component edit

As above picture:

- (1) **Component list**
- (2) **Add** : add a new component on the end of the sheet
- (3) **Insert**: insert a new component before current component.
- (4) **Delete**: delete a component
- (5) **Edit**: edit the selected component
- (6) **Save**: after amend the component list you need to save, if not save in time, the save button will twinkle, then press the button and save, the twinkle end.


6.1.1.1. Edit Component

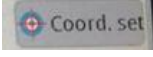
Below image:





PIC6-3


- (1) **Component number:** on the left-side up corner (start from No.0). Press it you can select the component number.
- (2) **Comp. ID:** unique number, it won't have 2 same comp. ID in one work file.
M Stack: stack **1-30, 31-60** is normal feeder on the two sides of machine, stack **81-91** is for front bulk IC, stack **92-100** is for vibration feeder, stack **101-119** is for IC tray.
- (3) **Speed:** 0 is default value, it stands for max speed(100). (For placing IC, you can lower down the speed to 20-50, it will be more accuracy.
- (4) **Height:** it is used for component height setting. 0.5 is default value, for under 3mm height component. More smaller value, means the component height will more lower, means the Z axis goes more down. For higher component, you need to set higher value. **(Note: machine general height is 0.5mm, the general PCB thickness is 1.6mm, you can adjust the height according to the thickness of your PCB)**
- (5) **Angle:** for rotate angle of component.
- (6) **Designator:** component identification information, such as R1, R2, C1, U1 etc.
- (7) **Comments:** component information, such as 0402, 0805 etc.
- (8) **M Head:** nozzle for this component
- (9) **Coordinate X:** usually work file generated from software no need to change the

setting. (If you create file manually, then you can press  to adjust the position.)

(10) **Coordinate Y:** usually work file generated from software no need to change the setting. (If you create file manually, then you can press  to adjust the position.)

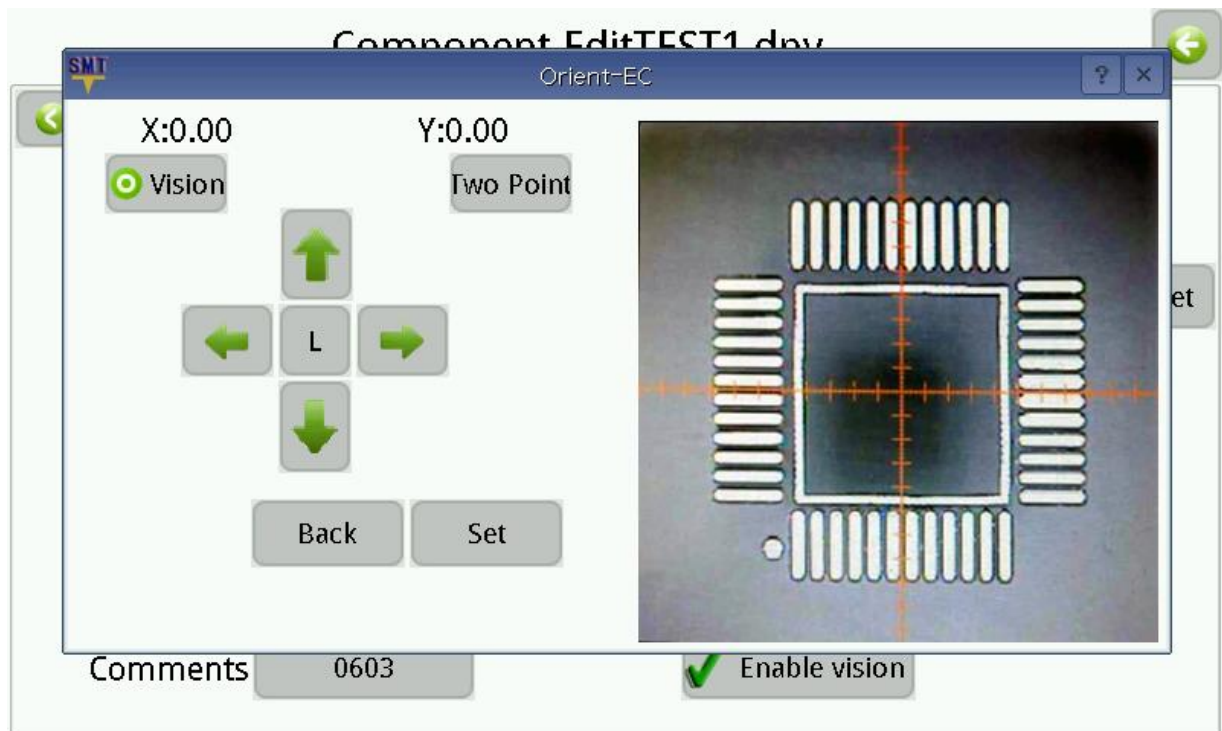
(11) **Skip comp:**  means not place this component

(12) **No throwing inspection:**  means forbid throwing materials due to lack of vacuum. (Note: 1. If you have enable "use vision" function, then this function can be OFF.)

(13) **Use vision:**  means open camera vision system, if turn off, the speed will increase but accuracy will be lower.

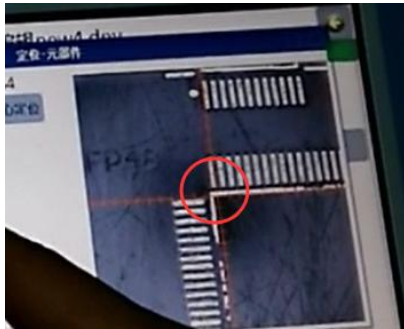
(14) **Coord. Set:** After press the cross, machine head moving to the component position, and you can move the arrow to set the component position seeing from down-looking camera (when you are creating work file manually in machine).

6.1.1.2. Coordinate set

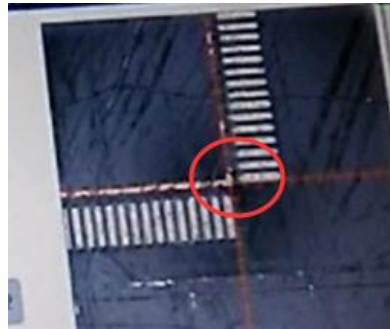


PIC6-4

- (1) **Coordinate:** X and Y's coordinate is relative coordinates, means the coordinate after movement comparing with previous coordinate.
- (2) **Vision:** press this button exchange nozzle positioning and vision positioning, we suggest use vision positioning, nozzle position not that accurate.
- (3) **Two point:** means diagonal positioning, left-up corner and right-down corner. We suggest use this function for some big ICs, pictures as below:



Left-up corner



right-down corner

Note: use this way of positioning, don't view printing silk frame, silk printing not accurate, you need to view the bonding pad.

- (4) **Move:** "L" for low speed, "H" for high speed.
- (5) **Set:** press it for save position changes

6.1.2. Material Stack Edit

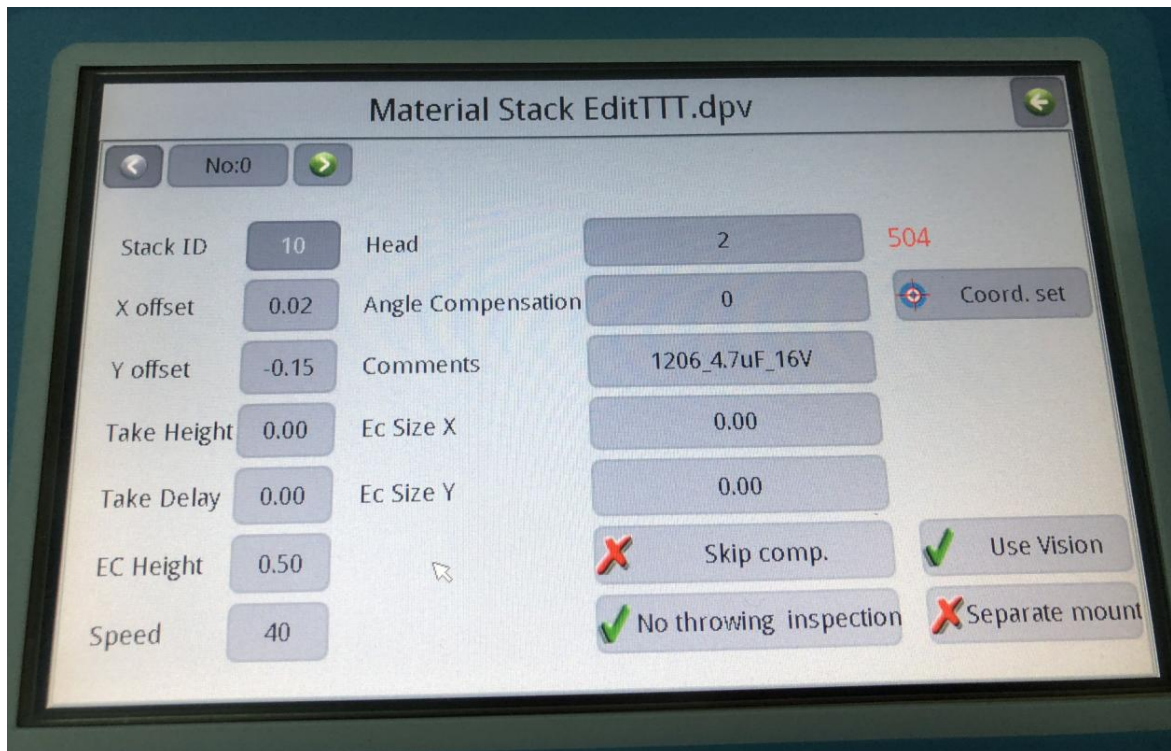
Material Stack Edit TEST1.dpv

Component	MStack	IC tray	Batch	PCB calibrate		
Stack ID	X offset	Y offset	Comments		Height	Speed
14	0.00	0.00	0603		0.50	0
15	0.00	0.00	0402		0.50	0
90	0.00	0.00	MB90352		0.50	0

+ Add
 + Insert
 ✖ Delete
 ✎ Edit
 💾 Save

PIC6-5

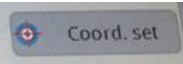
- (1) **M Stack list**
- (2) **Add:** add a new stack at the end of stack list;
- (3) **Insert:** insert a new stack
- (4) **Delete:** delete the selected stack, **note:** If delete this stack, the components will be delete as well.
- (5) **Edit:** edit selected stack, image as below:

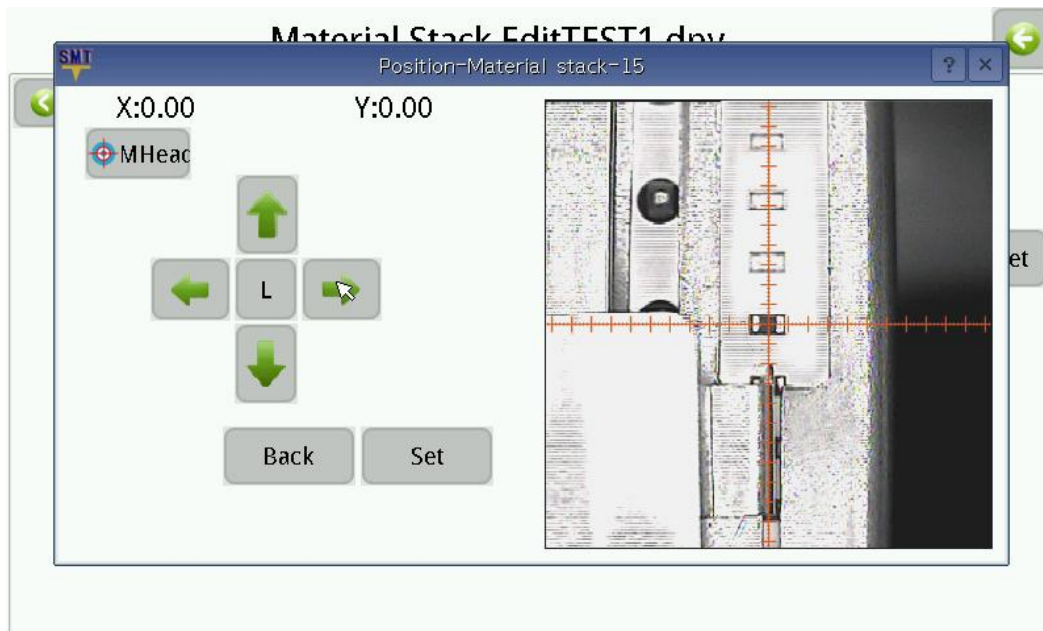


PIC6-6

- a) **Stack ID:** 1-30 /31-60 for normal feeder, 81-91 for front bulk IC material, 101-119 user defined IC tray, If edit the stack ID, all the component will be changed as well.
- b) **X/Y offset:** Default value is 0, after adjust the picking position, it will be changed.
- c) **Take Height:** means picking height, the component in the reel if too high, you can set the take height.
- d) **Take delay:** it means the picking head stopping time on the component. (It is for heavy component and ICs)
- e) **EC height:** means component height, normal component height is 3mm, when you have higher component, then set this value higher.
- f) **Speed:** means the **Z axis** up and down speed, 0 stands for max speed(100). For

ICs, please slow down the speed.

- g) **Head:** machine's head
- h) **Angle compensation:** you can set this to adjust the offset of angle.
- i) **Comments:** component information(for your own recognize)
- j) **EC size X/Y:** Aid function for camera vision calibrate, **please keep it 0.**
- k) **Skip comp.** Not place this component, same as above mentioned.
- l) **No throwing inspection:** function the same as “component edit” as above.
- m) **Use vision:** function the same as “component edit” as above.
- n) **Coord. set:** press  to select the pick position, image as below:
(For picking position, the cross must aim and pick the first component showing on the feeder)

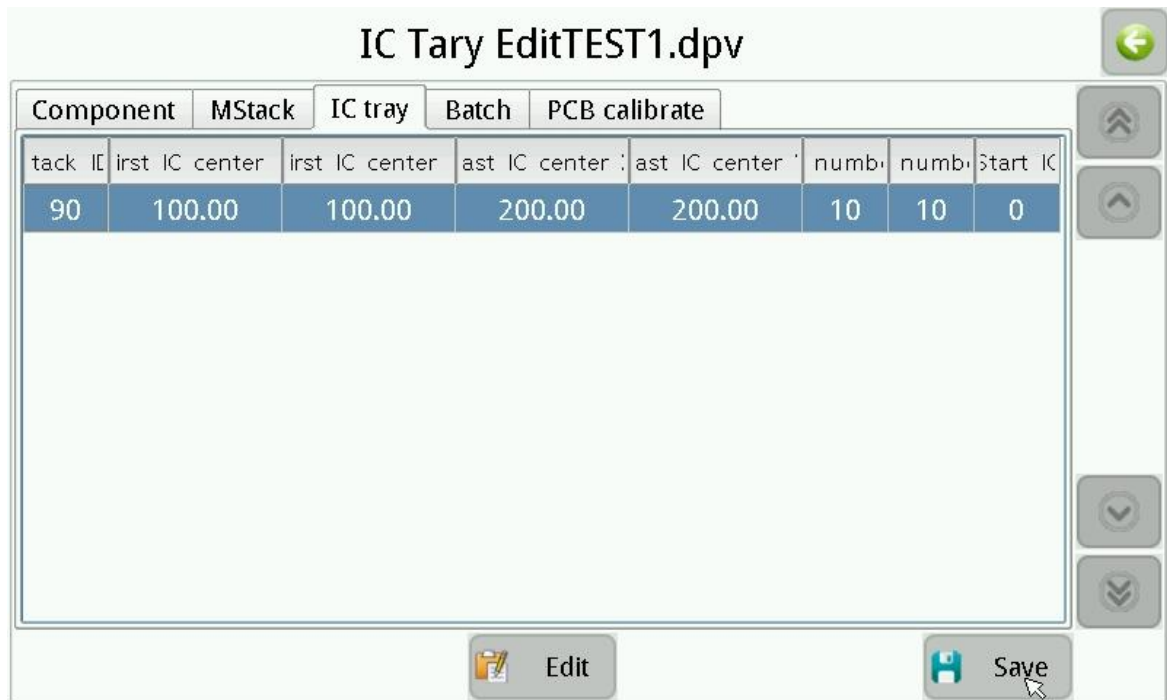


PIC6-7

6.1.3. IC Tray edit

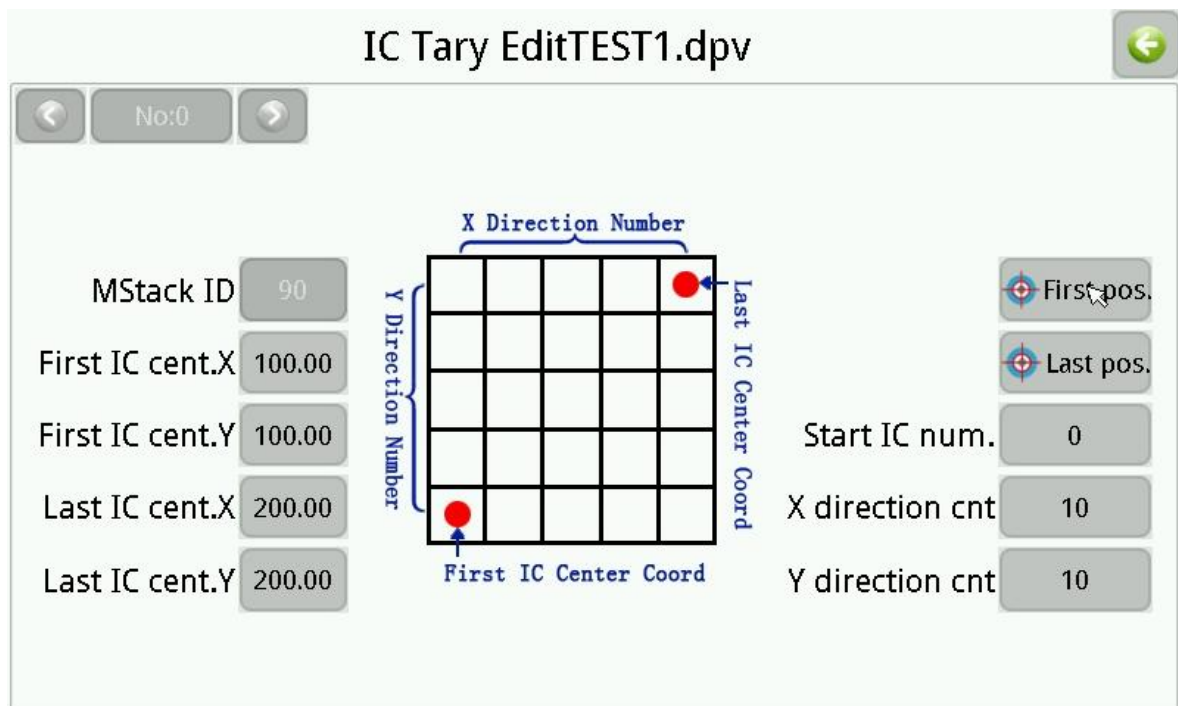
IC tray stack number from **101-119**, software allow max 20pcs IC tray.

IC tray fixed on the holding area, you can put anywhere on the machine's work area. some IC out in a whole black tray with array shape, machine will pick the IC from left to right, down to up. IC tray edit image as below:



PIC6-8

The stack number is from 81 -100, IC tray edit image as below:



PIC6-9

- (1) **First IC center coord. X/Y:** on the left-down side corner;
- (2) **Last IC center coord. X/Y:** on the right-up side corner;
- (3) **X/Y direction number:** The number of X/Y direction on IC
- (4) **Start IC number:** from number 0, IC number from left to right, up to down, when running, machine will start from your selected IC number.

6.1.4. Batch edit

Batch is very convenient for same multi PCBs. There are 2 ways of Batch: "**Coord**" or "**Array**" positioning for PCB. "Coord" positioning according to the origin point of each PCB, "Coord" way is complicated but more accurate; "Array" positioning need to know how many PCB quantity for X and Y direction. And each board's X and Y direction Spacing (means board size, you can use a ruler to measure the size), then machine will calculate the origin point automatically.

Reference teaching video:

Batch 1 - Array

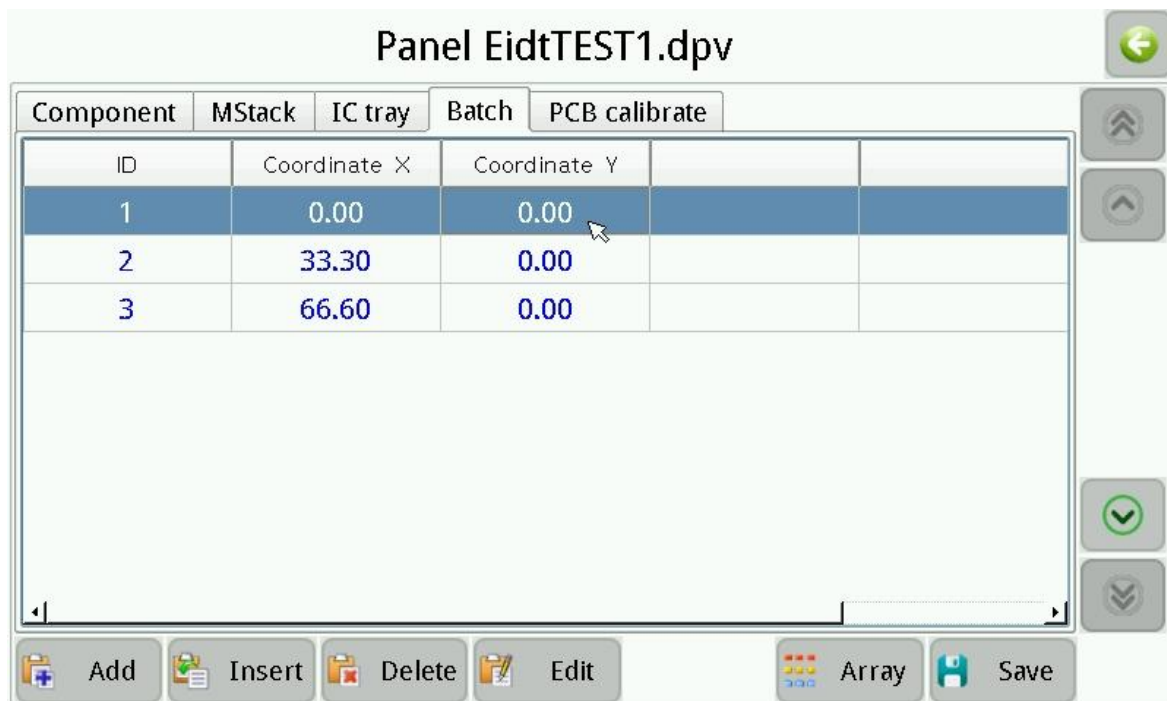
<https://www.youtube.com/watch?v=HrLop771aJ8&feature=youtu.be>

Batch 2 - coordinate

www.youtube.com/watch?v=kuQAqu-MFS4)

6.1.4.1. Coord.

Coordinate way image as below:

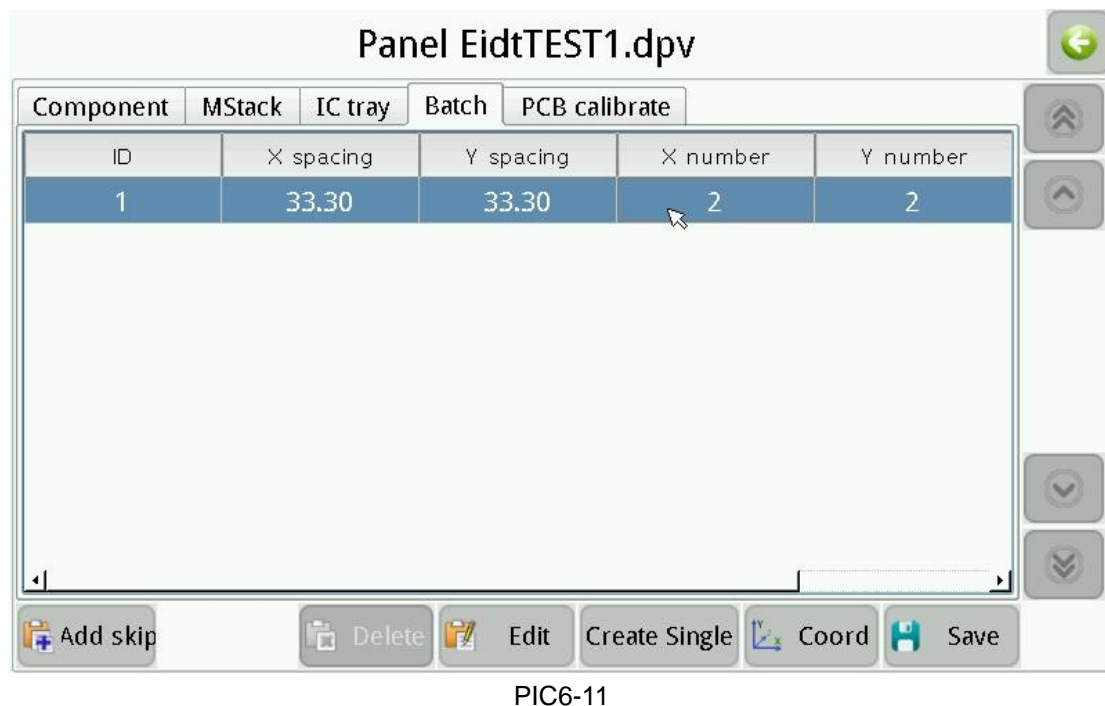


PIC6-10

Above picture, one line for one PCB, X and Y for origin point coordinate.

6.1.4.2. Array

Array way image as below:



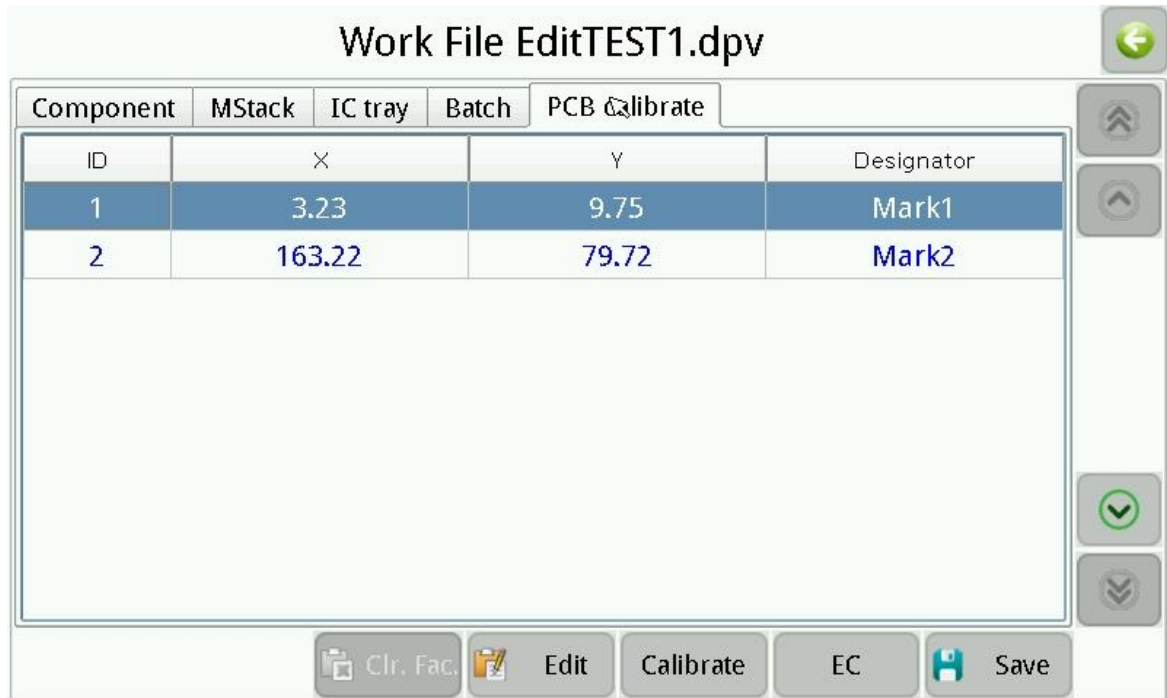
“Add skip”, it can skip some PCB and not mounting this PCB.

“Create single” used to all the small PCB expand to one PCB, and save into a new work file. This function means you can adjust one single component in this new PCB. New work file will show “Single” at end for the name.

6.1.5. PCB calibrate

Due to each PCB is different, it has some offset when placing the second board, in order to ensure the accuracy, you need to calibrate the actual position of the PCB and component. Machine will auto find 2 components position of PCB, more smaller component, higher precision.

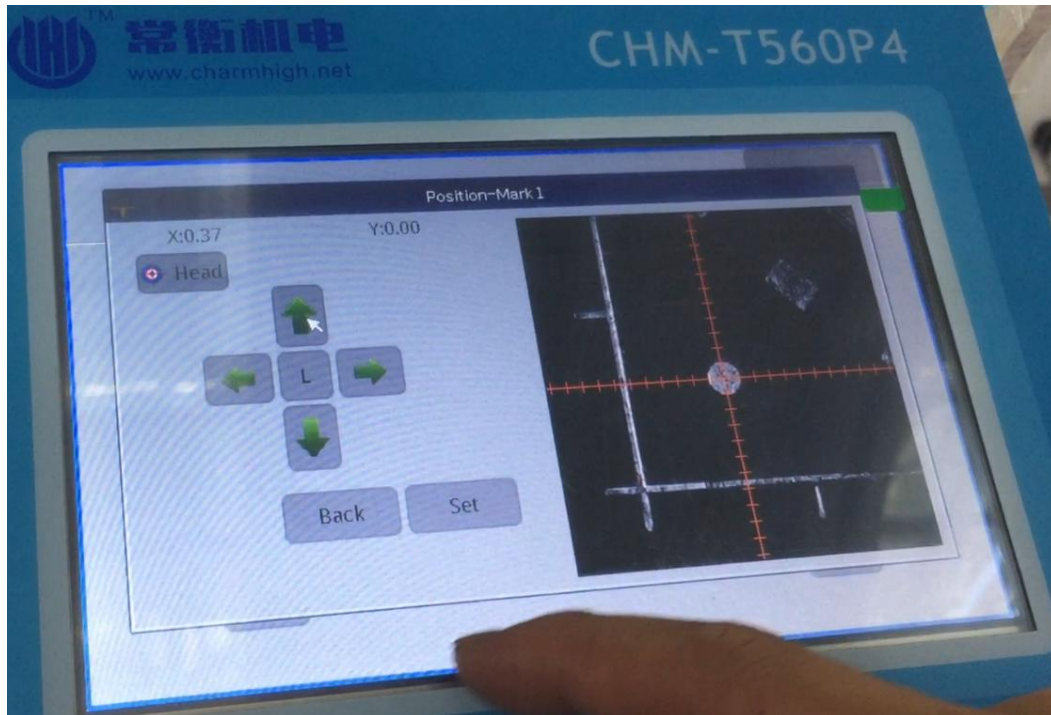
Image as below:



PIC6-12

Two ways of PCB calibrate:

- **Component coordinate:** the left-up corner component + the right-down corner component.
- **Mark point:** you can use 2 random components as Mark point, or use the mark point of this PCB directly, after positioning the two points, then all of other components of this PCB will be correction automatically. (Note: 2 mark points need to be far apart, such as one in left-up corner and another in right-down corner.)



PIC6-13






How to set Mark point Auto Calibration CHMT 5 series models:
www.youtube.com/watch?v=HLL6ignTYyU

6.2. Run

After work file completion, now you can run this file!

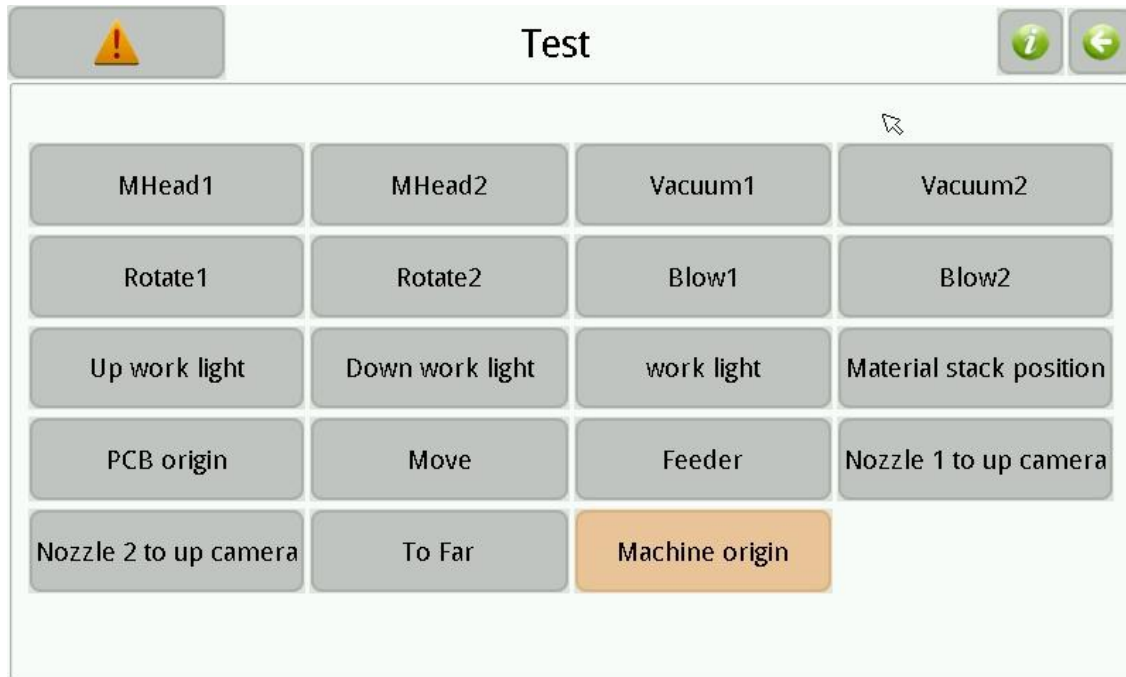
Image as below:



- (1) **Comp. ID**
- (2) **PCB ID:** display current panel's quantity.
- (3) **Comp. cnt:** component count.
- (4) **PCB cnt:** PCB count.
- (5) **Ave. speed:** average speed, cph.
- (6) **Time cnt:** time count.
- (7) **Tray start:** set the start number for IC tray
- (8)  **Up-looking camera:** press it will show the component by up-looking camera
- (9)  **Working lamp**
- (10)  **PCB calibrate**
- (11)  **Vacuum detect:** if you turn off vacuum detect, machine will not detection of pick failure;
- (12)  **Head to the machine initial position:** press it the head will move to the initial position, convenient for your operation).
- (13) **Step:** single step;
- (14) **Run**
- (15) **Stop:** end working

7. Test

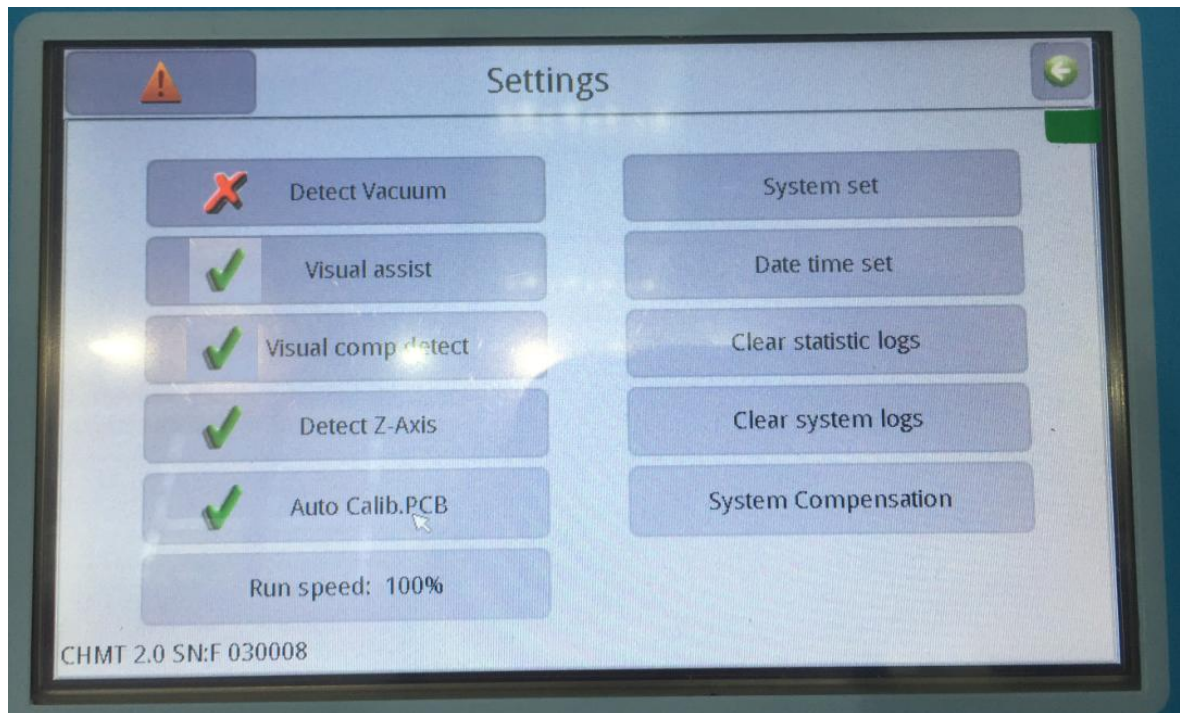
Test used to test if each function in normal condition, you can't edit value in this page:



PIC7-1

- (1) **M Head 1/2**
- (2) **Vacuum 1/2**
- (3) **Rotate 1/2**: press it rotate 180 degree;
- (4) **Blow 1/2**
- (5) **Up work light**
- (6) **Down work light**
- (7) **Work light**
- (8) **Material stack position**: press it to selected pick position
- (9) **PCB origin**: head moves to PCB origin
- (10) **Move**: move the head position randomly
- (11) **Feeder**: test feeder's Feeding function
- (12) **Nozzle 1 to up camera**: move nozzle 1/2 to up-looking camera
- (13) **To far**: nozzle back to the farthest place of origin point
- (14) **Machine origin**: press it and back to origin

8. Set



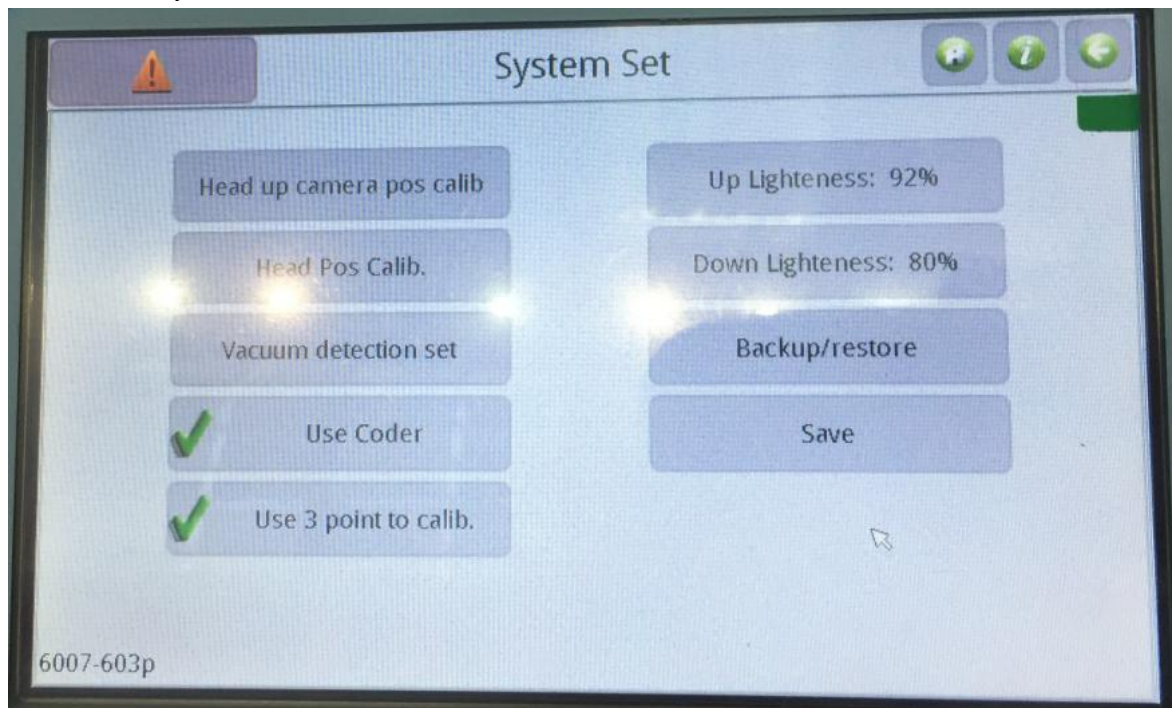
PIC8-1

- (16) **Detect Vacuum:** usually it keeps turn off, because you are enable "visual component detect" already, then this function is useless. This function means machine will detection of pick failure, and go pick again.
- (1) **Visual assist:** enable it camera vision system will working
- (2) **Visual comp detect:** if you turn on this function, system will pick again when it detects lack of materials. If detect many lack of material many times, machine will alarm and stop working.
- (3) **Z Axis detect:** if you turn on this function, if Z axis lose step when mounting, Z axis will back to origin automatically. Turn on this function will help to prevent Z axis due to incorrect setting of component height.
- (4) **Auto Calib. PCB:** if you turn on this function, machine will doing PCB calibrate automatically by down-looking camera before running.
- (5) **Run speed:** it stands for the whole speed of this machine.
- (6) **System set:** setting up the system advanced parameter, need to enter code **"123456"**, if machine work fine, then no need to amend the setting.
- (7) **Date time set**
- (8) **Clear statistic log**

- (9) **Clear system log**
- (10) **System comp. set:** used to set component entire offset and angle compensation.

8.1. System set

Note: in "system set", machine's value all set well by factory, usually don't need to change the value in system set.



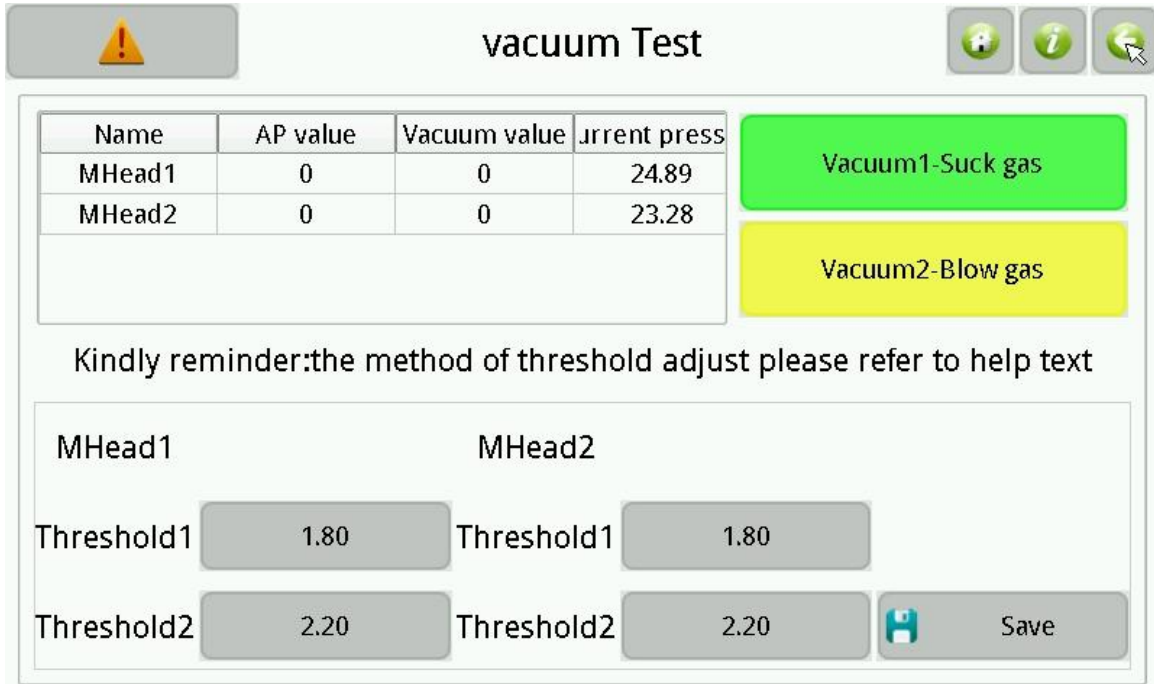
PIC8-2

- (1) **Head up camera position calibrate:** this function is for adjusting the nozzle and camera position, usually factory will set well, don't need to change it.
- (2) **Nozzle position calibrate:** after set well the nozzle1 position, then set the nozzle2,3,4. Aim at the center of the cross.
- (3) **Vacuum detection set:**
- (4) **Use system stack offset:** if turn on this function, stack offset will be saved in system, different work files all use one same offset. If turn off this function, stack offset will be saved in work file (not system), different work files have different offset information. **(Usually we suggest turn off this function)**
- (5) **TS calibrate (touch screen calibrate):** after calibration, the system will restart.
- (6) **Backup/restore:** For load in and load out machine system parameters (factory setting).
- (7) **Save:** used to save all system setting. Note: if just changed the setting but not

saved, then the setting only valid one time, next time after start machine, the setting will back to the previous setting.

8.2. Vacuum detection set

Image as below:



PIC8-3

(1) **Vacuum1-Suck gas** **Vacuum1-Suck gas:** nozzle 1/2 change to suck gas condition, you can use your finger to block the nozzle tip, then you can see

the changing current pressure.

Current press
24.89
23.28

 So that you can check if the vacuum pump in good condition.

(2) **Vacuum2-Blow gas** **Vacuum2-Blow gas:** change to nozzle1/2 to Blow gas condition.

(3)

Name	AP value	Vacuum value	Current press
MHead1	0	0	24.89
MHead2	0	0	23.28

Value sheet: AP

value means Atmospheric pressure value, it means nozzle not suck any component. Vacuum value means the value after suck the component minus the AP value, bigger vacuum value, better mounting effect. Note: AP value and vacuum value will display after 1 time normal suction, otherwise the value is 0.

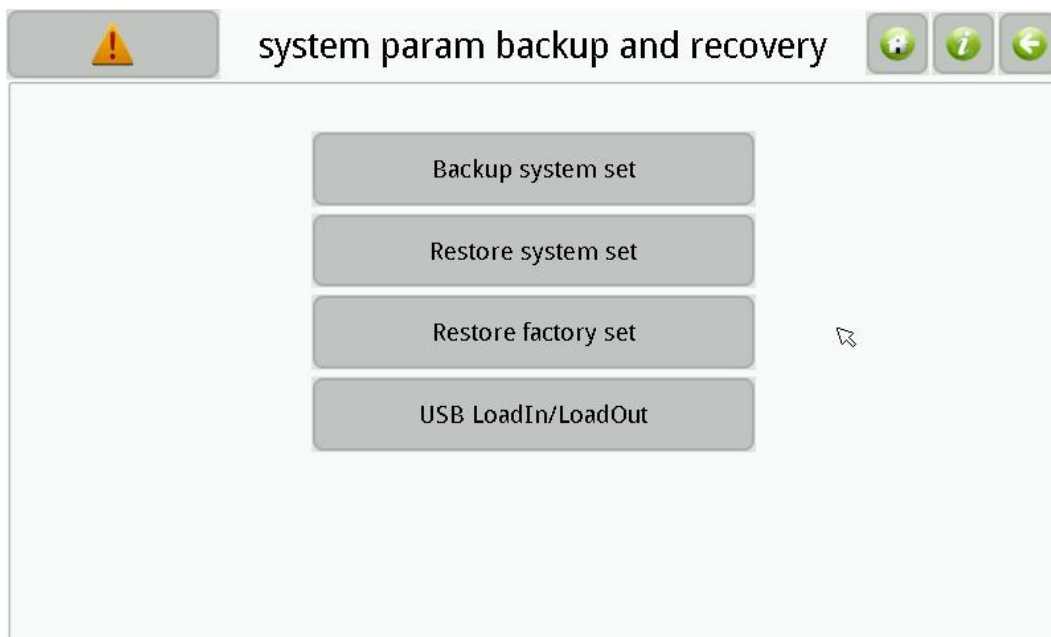
(4) **M head 1/2 threshold 1:** when machine suck component, if detect

current vacuum value **smaller** than threshold value1, then machine will judge nozzle not suck the component and it will suck again the component. If vacuum value **bigger** than threshold value1, then continue judge threshold value2.

(5) **M head 1/2 threshold 2:** when machine suck component, if detect current vacuum value smaller threshold value2 (and also bigger than threshold value1), then machine will detect suction bad, and machine will throw material then suck again. Or else that means suction good, machine will continue mounting.

Note: threshold value1 MUST bigger than the vacuum value when machine at no suction condition; threshold value1 MUST be less than threshold value2. We suggest threshold value1 less than threshold value2 about **0.2**; threshold value2 MUST less than the **current vacuum value** about **0.3**. (Note: Current vacuum value get from 1-3 times good suction)

8.3. Backup and recovery



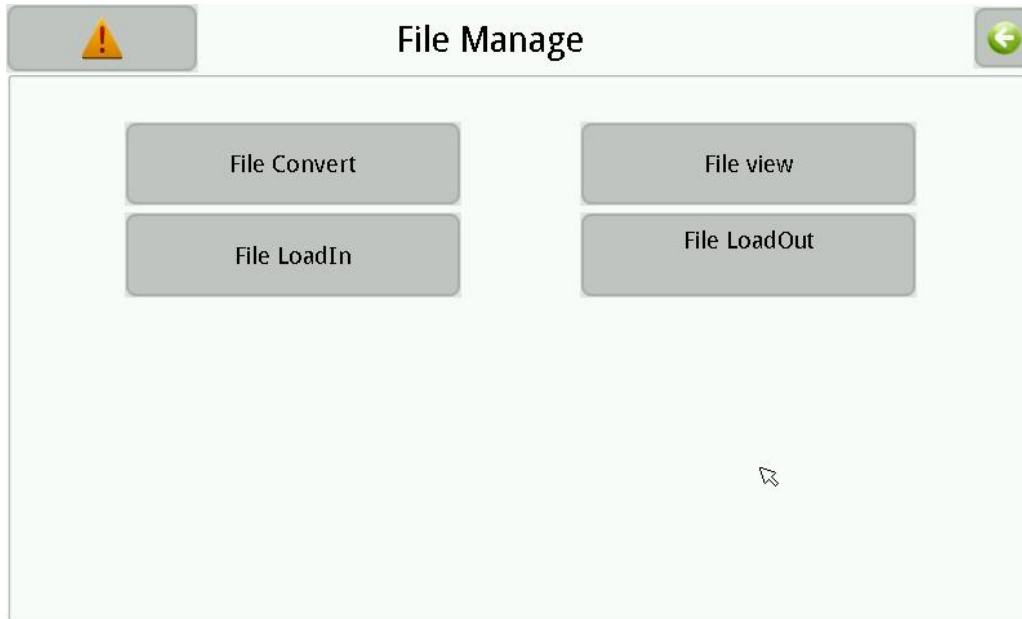
PIC8-4

- (1) **Backup system set:** backup all the current parameters of system.
- (2) **Restore system set:** restore previous backup parameters, machine will restart after restore.
- (3) **Restore factory set:** restore all the system parameters to factory setting.
- (4) **USB Load In / Load Out:** Load in all the parameters from USB or load out all the

parameters into USB. **Note:** After load in the system parameters, you need to press "Restore System Set", otherwise parameters didn't be activated.

9. File manage

Manage the CSV file which generate from PCB software, and also the work file.



PIC9-1

- (1) **File convert:** Machine can not directly use the CSV file from PCB software. You need to [convert the CSV file to DPV file](#) which machine can be recognize.
- (2) **File view:** check all the current CSV file and DPV file in system.
- (3) **File Load In / Load Out:** Insert USB flash and load in or load out the CSV or DPV file.

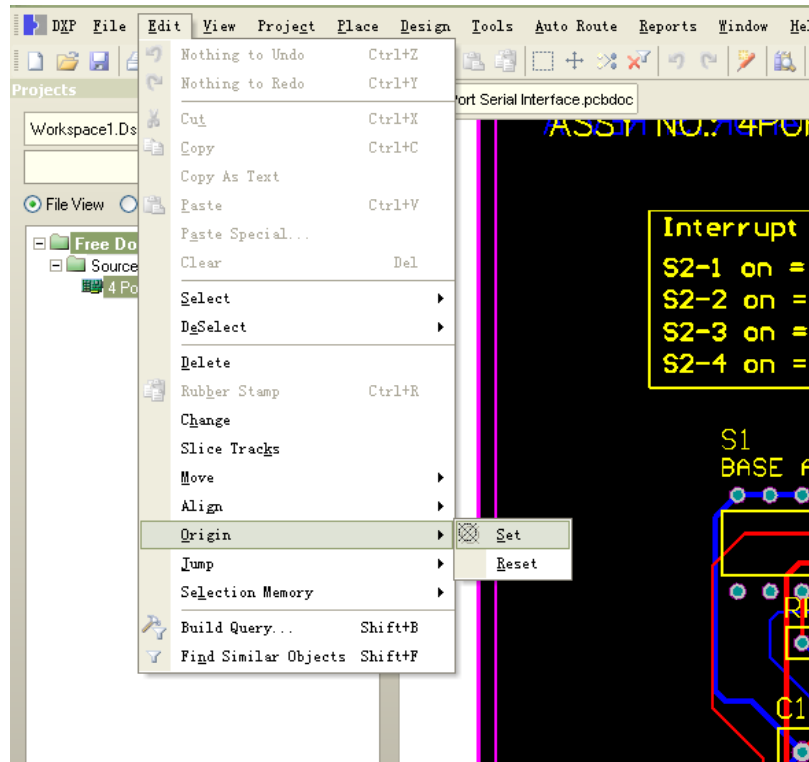
9.1. Generate CSV file

Running this pnp machine, one way is you can create new file manually, another way is simple, generate the CSV file from your PCB design software, and then load the CSV file into machine convert to DPV file to run. **Note: the CSV file must have coordinates, then machine can recognize it.**

9.1.1 By Altium Designer

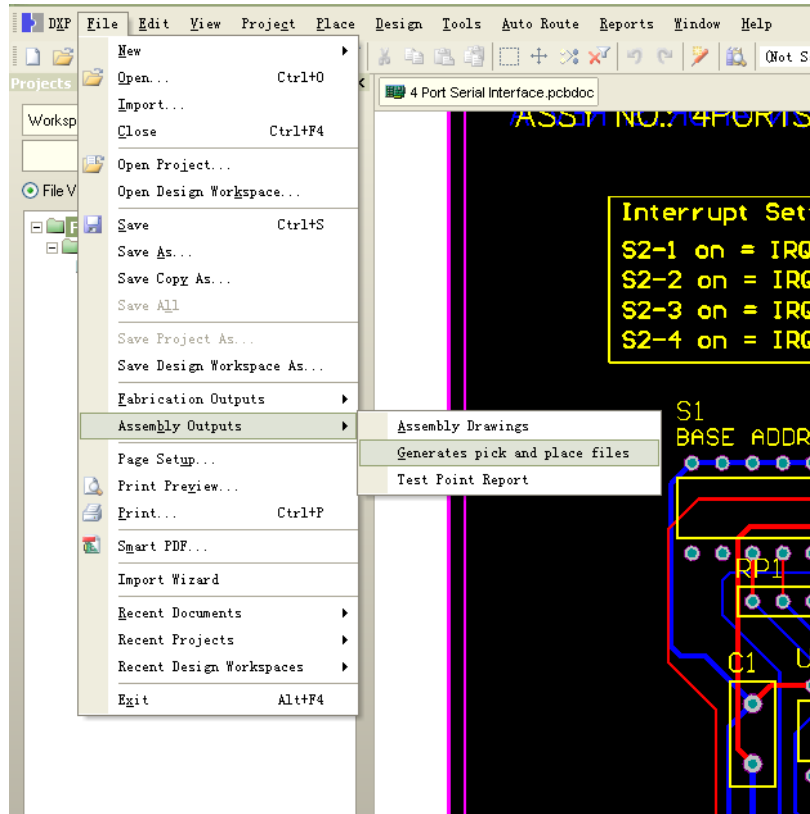
Steps for generate CSV file from Altium Designer software:

- (1) Open existing PCB file, note: same component must have same designator, otherwise one component may occupies more than one material stack, since convert tool identifies different material stack by designator of component;
- (2) Set PCB origin, figure as below, note, for top layer setting origin in left bottom corner of PCB, for bottom layer setting origin in bottom right corner of PCB and check mirror image option when converting;



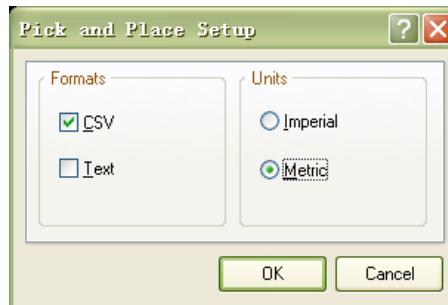
PIC9-2

- (3) Image as below, select “File”-“Assembly Output”-“Generates pick and place for files” in menu bar;



PIC9-3

- (4) Image as below, select “CSV” and “Metric” in popup dialog box, click “OK” to finish.



PIC9-4

9.2. File convert

After generate the CSV file, all of generated CSV files in system are displayed in the list, then convert it to DPV file, picture as below:

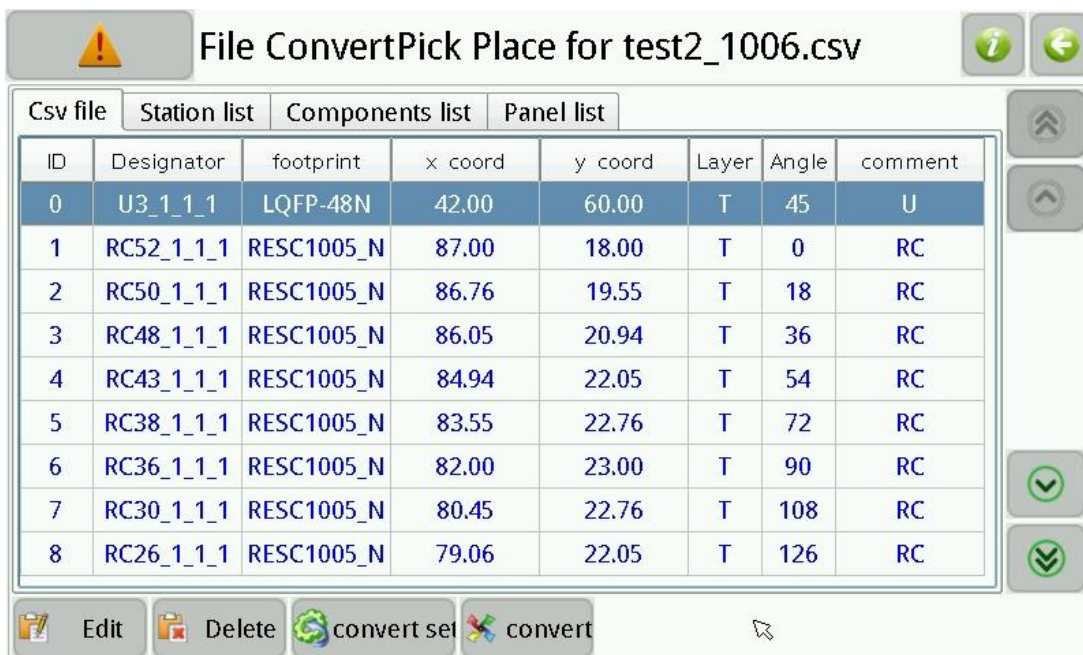


PIC9-5

- (1) **Open:** select the CSV to convert;
- (2) **Delete:** delete selected CSV file.

9.2.1. CSV File

After selected one CSV file, display as below, all the components information included.



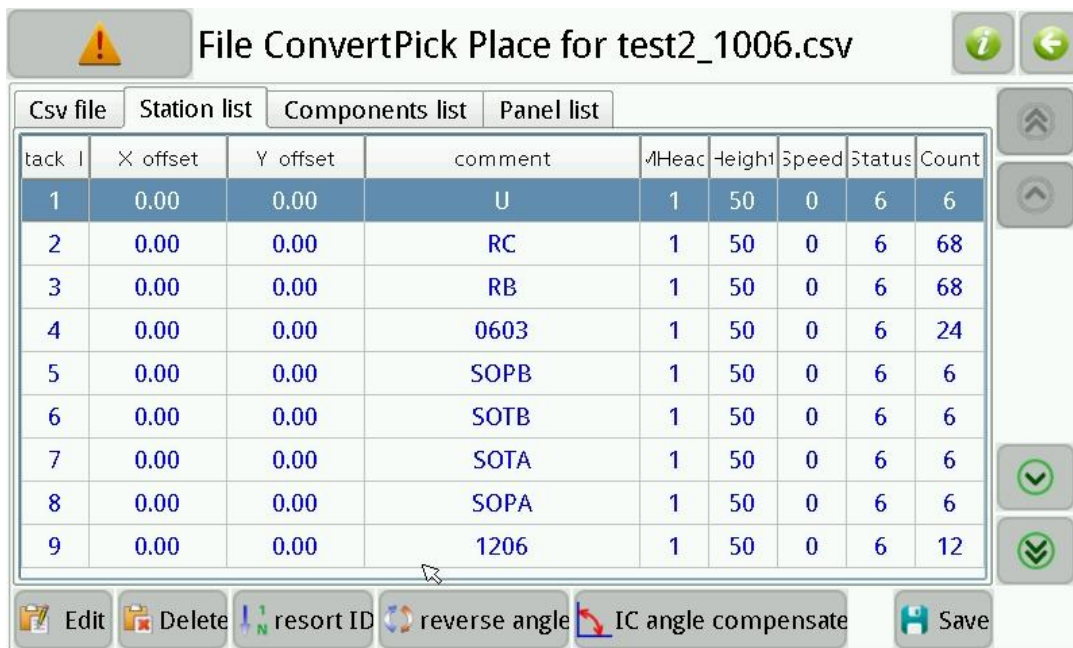
PIC9-6

- (1) **Edit:** edit information of selected component;

- (2) **Delete:** delete selected component;
- (3) **Convert set:** Set convert to the [top of the device](#) or the [underlying device](#), (the underlying device can set whether mirror or not.)
- (4) **Convert:** Convert CSV file to DPV work file,

9.2.2. Material stack station list

Image as below, stack was generated according to the comment of the CSV file. The same comment of components will use the same stack number. Therefore, how many different comments, then how many stacks.



stack I	X offset	Y offset	comment	VHeac	Height	Speed	Status	Count
1	0.00	0.00	U	1	50	0	6	6
2	0.00	0.00	RC	1	50	0	6	68
3	0.00	0.00	RB	1	50	0	6	68
4	0.00	0.00	0603	1	50	0	6	24
5	0.00	0.00	SOPB	1	50	0	6	6
6	0.00	0.00	SOTB	1	50	0	6	6
7	0.00	0.00	SOTA	1	50	0	6	6
8	0.00	0.00	SOPA	1	50	0	6	6
9	0.00	0.00	1206	1	50	0	6	12







PIC9-7

- (1) **Edit:** Edit selected material stack. (Note: all of relevant components will be changed if amend this stack);
- (2) **Delete:** Delete the selected material stack. (Note: all of relevant components will be delete if delete this stack);
- (3) **Resort ID:** The material stack ID starting from 1 in ascending order;
- (4) **Reverse angle:** Use this function will make the selected stack of components will rotate 180 degree, all of relevant components will be changed. Some stack with diode will need to use this function.
- (5) **IC Angle compensate:** Compensate IC, rotate 90 degree. Some component need angle compensate, e.g. SOPB, QFN, etc.

9.2.3. Components list

File ConvertPick Place for test2_1006.csv

Ec ID	Head	tatio	x coord	y coord	Angle	leigh	speed	tatu:	comment	Designator
1	1	1	42.00	60.00	45...	50	0	6	U	U3_1_1_1
2	1	2	87.00	18.00	0.00	50	0	6	RC	RC52_1_...
3	1	2	86.75	19.54	18...	50	0	6	RC	RC50_1_...
4	1	2	86.04	20.93	36...	50	0	6	RC	RC48_1_...
5	1	2	84.93	22.04	54...	50	0	6	RC	RC43_1_...
6	1	2	83.54	22.75	72...	50	0	6	RC	RC38_1_...
7	1	2	82.00	23.00	90...	50	0	6	RC	RC36_1_...
8	1	2	80.45	22.75	10...	50	0	6	RC	RC30_1_...
9	1	2	79.06	22.04	12...	50	0	6	RC	RC26_1_...

 Edit
  Delete
  resort ID
  Use dual nozzle1
  Use dual nozzle2
  Save

PIC9-8

- (1) **Edit:** Edit selected component;
- (2) **Delete:** Delete selected component;
- (3) **Resort ID:** The device number starting from 1 in ascending order;
- (4) **Use dual nozzle1:** Use nozzle1 and nozzle2 pick component in same material stack. NOTE: All components must 1,2,1,2... in order.
- (5) **Use dual nozzle2:** Means nozzle1 take component of stack1 and nozzle2 take component of stack2, then placing to two components. (It only can used to near by stacks)

10. Log

Log list as below, it records all the history of mounting.

Load time	End time	Work file(B)	Comp. cnt	PCB cnt.
2016-01-19 10:41:10	2016-01-19 10:44:17	FFFFFFFFFFFFCop...	24	1
2016-01-19 10:46:26	2016-01-19 10:46:38	SJnew2?504???.dpv	0	0
2016-01-19 10:46:42	2016-01-19 10:47:51	FFFFFFFFFFFFCop...	7	0
2016-01-19 10:47:53	2016-01-19 10:48:29	FFFFFFFFFFFF.dpv	0	0
2016-01-19 10:49:25	2016-01-19 11:03:08	FFFFFFFFFFFF.dpv	24	1
2016-01-19 11:05:18	2016-01-19 11:05:31	FFFFFFFFFFFF.dpv	6	0
2016-01-19 11:05:35	2016-01-19 11:05:38	FFFFFFFFFFFFCop...	0	0
2016-01-19 11:05:59	2016-01-19 11:07:03	FFFFFFFFFFFFCop...	23	1
2016-01-19 11:08:24	2016-01-19 11:10:25	FFFFFFFFFFFFCop...	25	1

PIC10-1

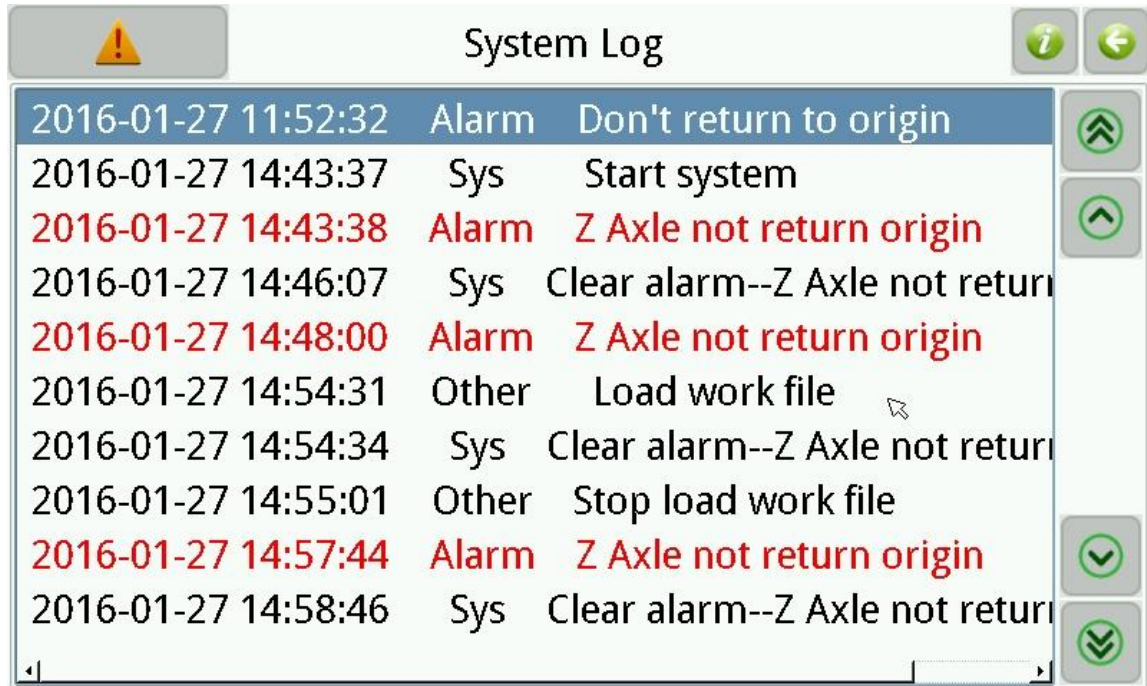
- (1) **Log list:** Each line records information of one running time;
- (2) **Record:** image as below, displays the detail running information:

Stack II	0	1	2	3	4	5	6	7	8	9
0+	0	0	0	0	0	0	0	0	0	0
10+	0	0	0	0	24	0	0	0	0	0
20+	0	0	0	0	0	0	0	0	0	0
60+	0	0	0	0	0	0	0	0	0	0
70+	0	0	0	0	0	0	0	0	0	0
80+	0	0	0	0	0	0	0	0	0	0
90+	0	0	0	0	0	0	0	0	0	0

PIC10-2

11. System log

System log used to view all kinds of records generated by the system, image as show below.



PIC11-1

12. Maintenance

1. Close power switch and air source after working done, clearing the machine.
2. Add some grease to the bearings regularly according to actual condition, make sure machine working in smooth condition.

3. Warranty

- Warranty range: SMT machine itself;
- Warranty period: 12 months;
- If there are problems in using, please contact us promptly, don't repair by yourself to avoid damage to machine, or will lose your warranty;
- If accessories are breakdown, we will send a new one to you after receiving the broken one;
- During warranty period, freight of send back to us is paid by user, freight of send to user is paid by us;
- Problems caused by below, we provide paid repair during warranty period:
 - Faulty operation, disassembly without permission;
 - Using environment that do not fit for specification;
 - Wrong power supply;
 - Earthquake, fire, lightning or accident beyond control