



**ET9384C ET9484C**

**Desktop Soldering Machine**

**Instruction Manual**



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**Thank you very much for purchasing our machine.**

**This operation manual describes the features and operation of the machine. The detailed description about the teaching and processing may refer to the operation manual of the “Teach Pendant”.**

**Before using, read the manual thoroughly for proper use of the machine. Store the manual in a safe easily accessible place for future reference.**

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# I. Safety Instruction

## 1.1 Safety Symbol

Serious warning	
	<ul style="list-style-type: none"><li>➤ The product poses a risk of electric shock.</li><li>➤ Only authorized person can change settings.</li><li>➤ Push the red emergency switch for power off in an emergency situation.</li><li>➤ Forbid working while the power wire was damaged.</li><li>➤ If the device remains unused for a long time, please pull the power cord out of power socket.</li><li>➤ During maintenance and inspection of the machine, attention power status and pull out the power plug of the controller.</li><li>➤ Install a Frame Ground to prevent electric shock.</li><li>➤ There is a dangerous voltage inside the device! Only be authorized by the experienced and be an expert can repair the equipment, or contact the agents, manufactures, when the system fails to repair.</li></ul>
	<ul style="list-style-type: none"><li>➤ Risk for injury.</li><li>➤ Do not extend your body to machine when it works well or powers on.</li><li>➤ Do not wet and disassemble the machine when used. Also do not pull power cord.</li><li>➤ Please keep the machine and table clean, which will help reduce accidents.</li></ul>
	<ul style="list-style-type: none"><li>➤ Unprofessional person can not change arbitrarily. When performing maintenance, please turn off the power supply and air pressure.</li><li>➤ This product is non-explosion-proof and is strictly prohibited for potential explosive environment.</li></ul>
	<ul style="list-style-type: none"><li>➤ Make sure that the heating controller parts are securely fastened to the machine before using it.</li><li>➤ Flammable and explosive objects or gas solvents are strictly prohibited in the working area.</li></ul>

## Warning



- Do not move the movements by hands to avoid damaging the machine.
- Do not touch the moving parts in your work, or you may damage the machine or accident.
- During the operation of the machine, please do not put your hand into the device, which may cause the user to get injured or cause substantial damage to the object involved.
- During the suspension of the machine, please check the condition carefully for manual operation, otherwise it may cause the user to get injured or cause substantial damage to the object involved.



- Avoid falling the fittings or having an accident, please take the device and fittings by help.
- Mind head, attention about the sheet metal.
- Carry to an applicable place, install the device on a flat floor.

0~40°C

- The product must be used or stored in an applicable environment.
- Working ambient temperature is 0~40°C, relative humidity is 20%~90%.



- The equipment is heavy and huge, do not pile up.
- Do not pile up items in the scope of the machine
- Before moving and carrying, make sure the movements is fixed (for example the X-axis may be fixed by sheet metal or lines for safety).
- Unfold the packaging, before using the machine, make sure the movements' fixture (for example the X-axis may be fixed by sheet metal or lines for safety) is torn down.



- Regularly inspect and maintain will increase durability and performance.
- Must operate the machine by standard procedure.
- Before starting a repetitive operation, make sure that there is no obstacle in the machine's working area.



- Please use machine within the standard requirements (such as voltage, air pressure, power frequency) as stated in the specification.
- Make sure the air source is clean and dry.
- Suggest the air pressure is less than 0.7Mpa.

#### Attention



- Do not throw the packaging and foamed plastic.
- If the machine should come back to the manufacture or agency, it must be folded by initial package.
- The machine must be placed vertically.
- The machine can be packet after fold by foamed plastic.
- The machine can not get wet in transit or stored procedures.

## 1.2 Unpacking & Inspection

Wooden case packing:

- ① Put wooden case packing on the floor vertically, tear up the fixed film.
- ② Take the screw out of the wooden case by drill and unfold the wooden case.
- ③ Take and carry the device by two or more people, put firmly on appropriate station.
- ④ **Unfold the packaging, before using the machine, make sure the movements' fixture (for example the X-axis may be fixed by sheet metal or lines for safety) is taken down.**
- ⑤ All fittings are in the table as follow.

Item	Part Name	Model	Quantity	Figure
1	Heating controller	QUICK 262	1	
2	Teach pendant	9011D	1	
3	Teach pendant cord	DB9	1	

Item	Part Name	Model	Quantity	Figure
4	Power cord		1	
5	Manual	Manual instructions	2	
6	Tin slag box	9026GE	1	

Check the machine carefully, if you have any problem, please contact manufacturer immediately!

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## II. Introduction

The machine is high-precision automatic soldering equipment. The system provides users with convenient programming instruction, larger storage space, fast processing speed, rich parameter setting and effective flow control, which can improve production capacity. According to actual production requirement, on the premise of meet the motion performance index, the optimization design was carried out on the product structure, to meet the requirements of flexible.



- Comprehensive 3-dimensional drawings support, such as 3-dimensional linear interpolation, capabilities of teaching 3D graphics and user-defined 3D array and so on.
- Group function: This function allows users copy, delete, modify, array, and pan multi-points.
- Excellent teach pendant. Supporting advanced function, such as array, group edit, sub-procedure, condition-call procedure etc.
- Unique merge function: Easy resolution to process complex multi-layers irregular array and non-array graphics.
- Capable to control the length of feeding solder wire at single point, and to edit the parameters of any multi-points at one time.
- Smooth functions of changing speed and hi-speed trajectory on the moving. User-definable speed parameters.
- Multiple processing modes, such as single-step operation, overall processing, and automatic loop processing.
- Smooth movement speed ensures product reliability
- Manual debugging, control the whole production process
- High power heating controller, high heat capacity tip, guarantee soldering quality and stability

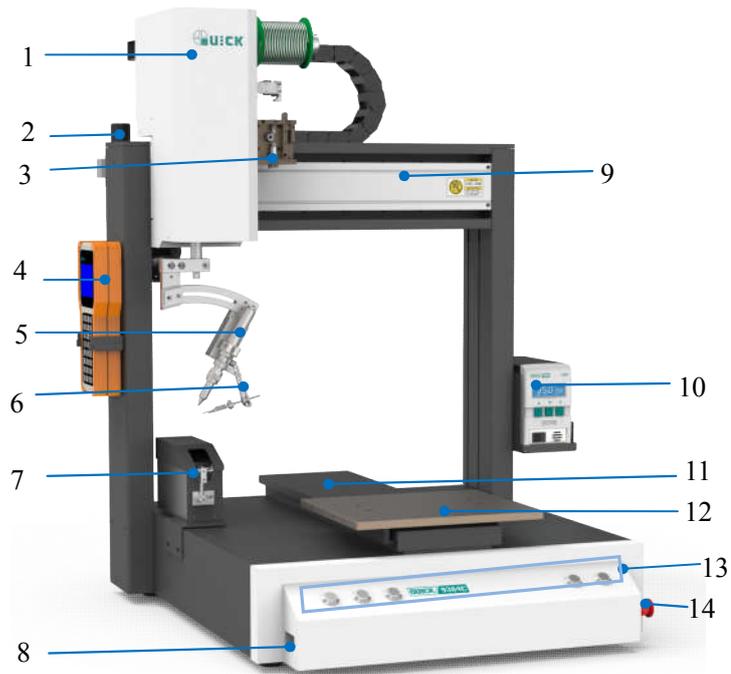
## 2.2 Technical Data

Equipment type		ET9384C	ET9484C
Input voltage (AC)		220V, 50Hz/60Hz	
Power (W)		280	280
Axes number		4	
Movement range	X (mm)	0~300	0~400
	Y (mm)	0~300	0~400
	Z (mm)	0~100	0~100
	R (°)	0~300	0~300
Moving speed range	X (mm/s)	0.1~600	
	Y (mm/s)	0.1~600	
	Z (mm/s)	0.1~200	
	R (°/s)	0.1~600	
Repeatable accuracy	X/Y/Z (mm)	±0.02	
	R (°)	±0.02	
Resolution ratio	X/Y/Z (mm)	0.01	
	R (°)	0.01	
Payload	Y (Kg)	5	
	Z&R (kg)	2	
Demo File Qty.		Max 255 files, Max 60000 points	
Process File Qty.		Max 128 files	
Motion Control		Motion Control PCBA + Teach Pendant	
Noise		<70dB (Measure in the distance of 1m)	
Operating Ambient	Temperature	0~40°C	
	Humidity	20%~90% (No condensation)	
Dimension	Length	620	720

(mm)	Width	605	705
	Height	890	890
Weight (kg)		45	55

NOTE: Ensure that your power supply data agrees with the information on the nameplate of the machine!

## 2.3 Part Description



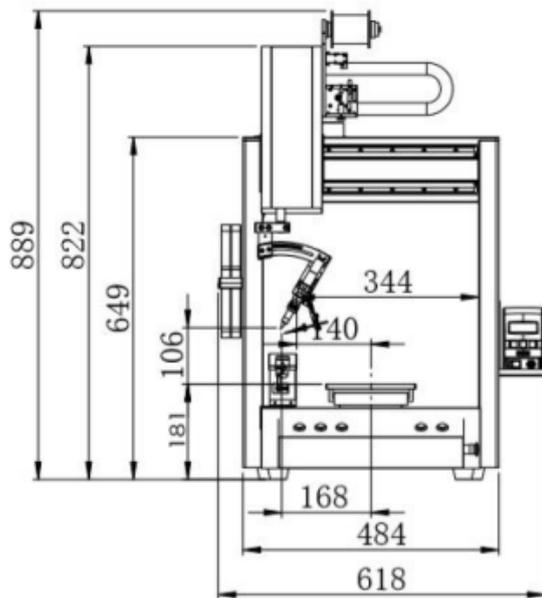
Item	Part Name	Item	Part Name
1	Z&R axes module	8	DB9 Socket (connect to teach pendant, it follows RS422 Communication Protocol)
2	Oil-water separator	9	X axis component
3	Wire feeder device	10	Heating controller
4	Teach pendant	11	Y axis module
5	Soldering iron	12	Base plate
6	Holder of solder wire tube	13	Operation panel
7	Tin slag box	14	Emergency button

## 2.4 Operation Panel Instruction

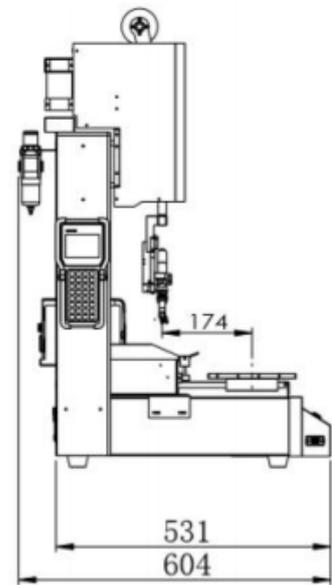
Icon	Name	Function
	<b>【FEED】</b>	Tin feeding command button, it is valid only when the teach pendant cable is unplugged from machine.
	<b>【RETURN】</b>	Tin back command button, it is valid only when the teach pendant cable is unplugged from machine.
	<b>【CLEAN】</b>	Tip cleaning command button, the operation is effective after unplugging teach pendant cable and downloading the cleaning file.
	<b>【ORG】</b>	Reset command button, control the moving axis back to the mechanical origin. The [ORG] button is only on the machine itself and on the teach pendant it is called [RESET].
	<b>【START】</b>	Program start or pause command button, short press it to start or pause program.
	<b>【EMERGENCY】</b>	The emergency button is a safety device, and it must be pressed in hazardous situations. Press it, the current operating mode is stopped immediately, all movements are stopped.

## 2.5 Dimension

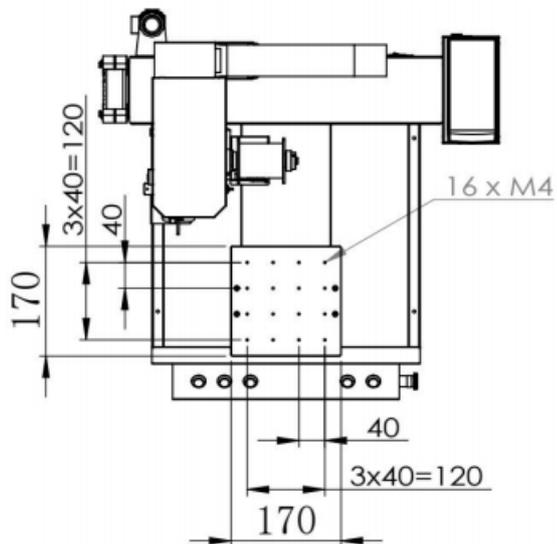
Front View



Left View



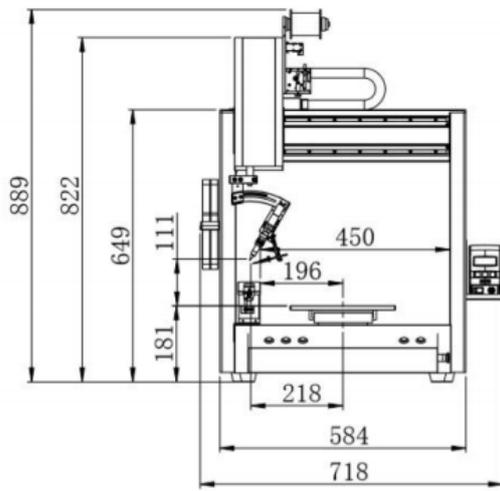
Top View



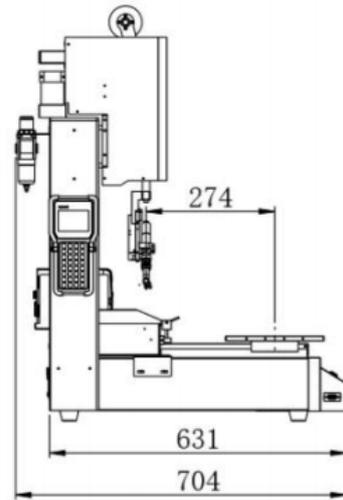
ET9384C Soldering machine figure ↑

Unit: mm

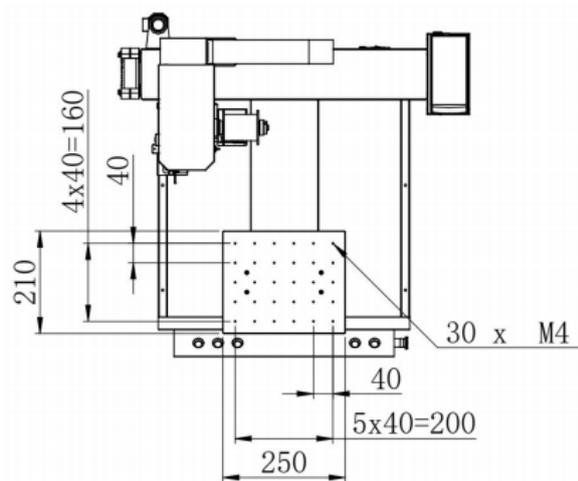
Front View



Left View



Top View



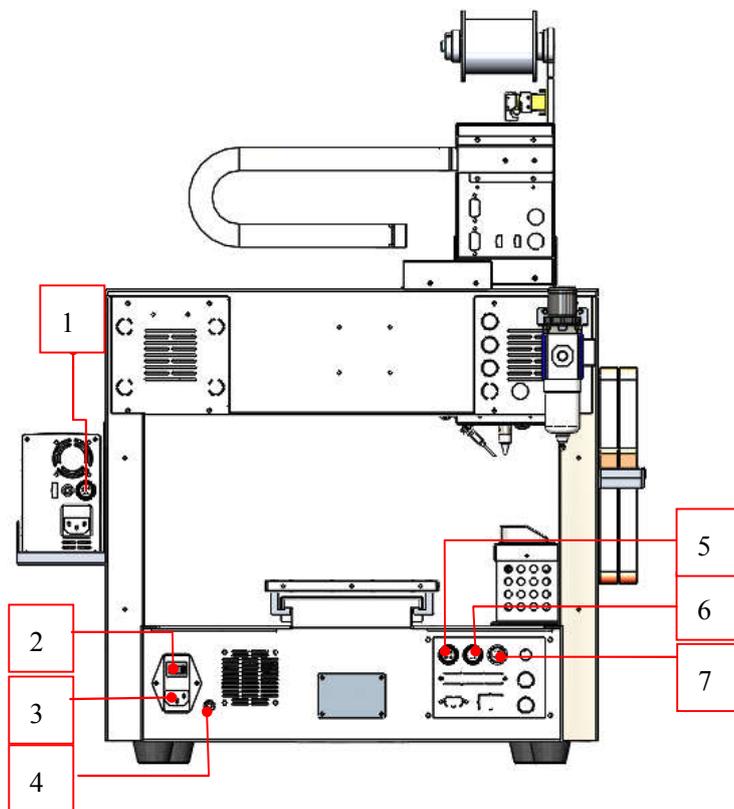
ET9484C Soldering machine figure ↑

Unit: mm

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## III. Connection

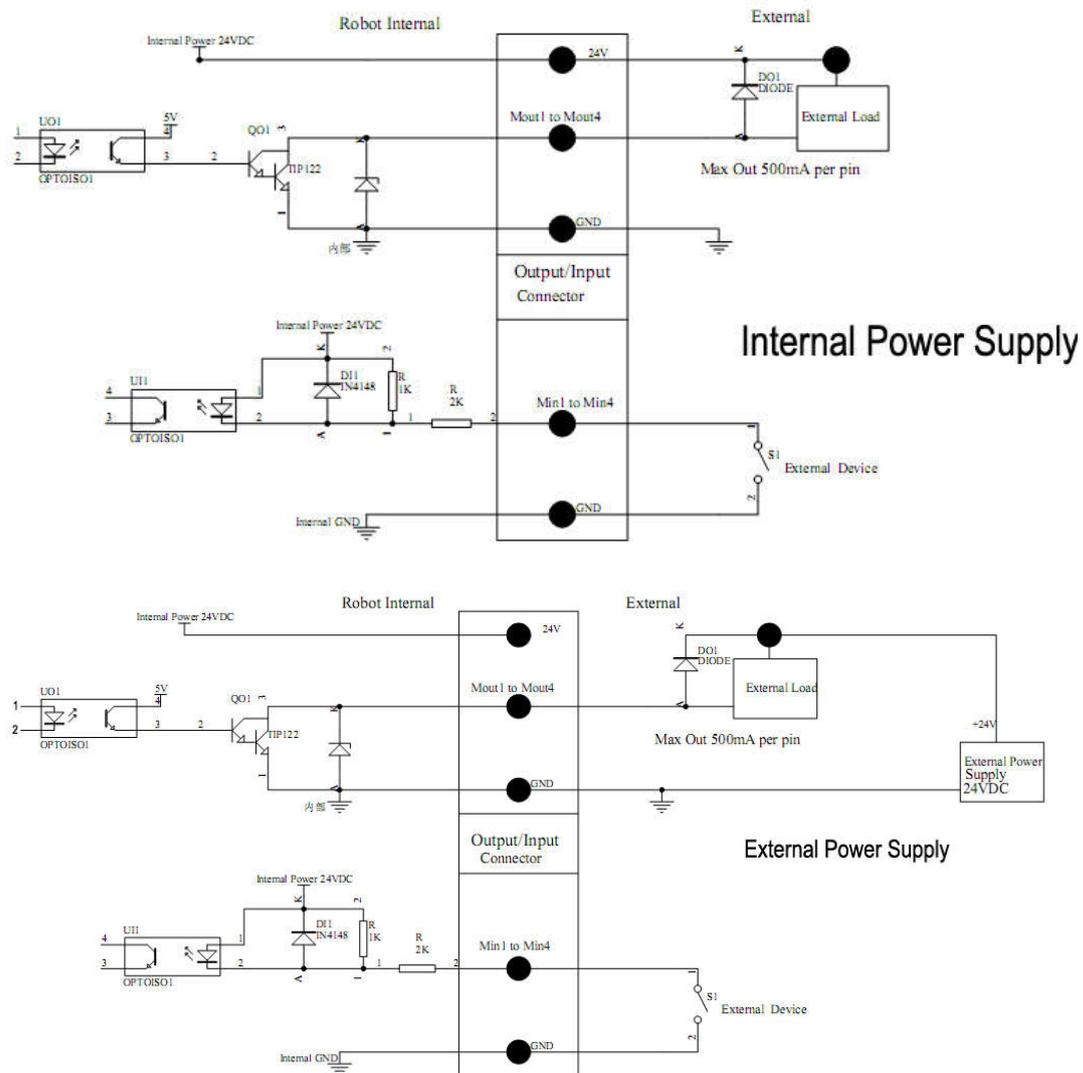
### 3.1 Connection



1. 6-pin socket: connect to heating controller, pin functions refer to 3.2.4 6-pin Socket Instruction.
2. Power switch: connect/disconnect power supply to equipment.
3. Power inlet module: connect 220V AC line cord to power inlet module.
4. ESD socket: reliable grounding is essential for soldering machine.
5. 5-pin socket: connect to heating controller, refer to [3.2.3 5-pin Socket instruction](#).
6. 7-pin socket: reserve, pin function refers to [3.2.4 7-pin Socket Instruction](#).
7. 4-pin socket: connect to key box, refer to [3.2.2 4-pin Socket instruction](#).

## 3.2 I/O Socket Instruction

### 3.2.1 Circuit Instruction of I/O Socket



### 3.2.2 4-pin Socket Instruction

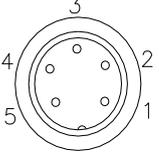
4-pin socket is connected to key box, pin's functions refer to following table.

4-pin socket	Pin No.	Pin Name	Function
	4P-1	Min4	Connect to "START" button.
	4P-2	GND	GND
	4P-3	Min1	Connect to "ORG" button.

	4P-4	Min2	Connect to emergency button.
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### 3.2.3 5-pin Socket Instruction

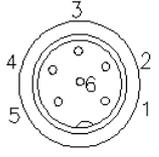
5-pin socket is connected to heating controller, pin's functions refer to following table.

5-pin socket	Pin No.	Pin Name	Function
	5P-1	24V DC	24V DC
	5P-2	0V	0V
	5P-3	Min 3	Reserve
	5P-4	Ein13	Connect to wire lack signal
	5P-5	Ein14	Reserve

NOTE: \* If the customers need special function, the input and output signal can be set again.

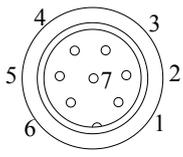
### 3.2.4 6-pin Socket Instruction

6-pin socket is connected to heating controller, pin's functions refer to following table.

6-pin socket	Pin No.	Pin Name	Function
	6P-1	Sensor -	Sensor -
	6P-2	Sensor +	Sensor +
	6P-3	GND	GND
	6P-4	Heater +	Heater +
	6P-5	Heater -	Heater -
	6P-6	NC	No Connection

### 3.2.5 7-pin Socket Instruction

7-pin socket is connected to heating controller, pin's functions refer to following table.

7-pin socket	Pin No.	Pin Name	Function
	7P-1	24V DC	24V DC
	7P-2	GND	GND
	7P-3	Mout1	Reserve
	7P-4	Mout4	Reserve
	7P-5	Ein12	Reserve (it is used to connect to wire block signal)
	7P-6	Mout2	Reserve
	7P-7	Mout5	Reserve

NOTE: \* If the customers need special function, the input and output signal can be set again.

### 3.5 Instruction of Input & Output

- The following input windows and output windows are corresponding to the signal pins which are defined as “Min, Mout, Ein, Eout” at the above socket. Also, it is corresponding to the window at the “IO Test” displaying window.
- After setting, it can test the function of IO window at the “IO Test” displaying window.
- The windows in following table can be set at the “Input Config” or “Output Config” of “System Config 2” of teaching pendant. It can define the special function for the following input & output windows which are corresponding to the above sockets.
- Main board port define list:

Board	Port	Function
Expansion input port	Ein5	Tip cleaning signal
	Ein12	7P-5
	Ein13	Wire lack alarm signal
	Ein14	5P-5
Main input port	Min1	Reset signal
	Min2	Emergency stop signal
	Min4	Start signal
Main output port	Mout1	7P-3

Board	Port	Function
	Mout2	7P-6
	Mout3	Blow
	Mout4	7P-4
	Mout5	7P-7

### 3.5.1 IO Function Definition

1. In the “Input Config 2” displaying window, it can set the input window:

Input Port	Defined Function
Min1	ORG button
Min2	STOP button
Min3	Safe flag-1, Safe flag-2
Min4	Shortcut 4
Ein5	Shortcut 9
*Ein12	Lack fault
*Ein13	Block fault
Ein16	START button

2. In the “Output Config 2” display window, the output window can be set:

Output Port	Optional Function
Mout1~Mout5	--, Nozzle 1, Nozzle 2, Nozzle 3, Nozzle 4, Working Flag, Work End Flag, Cylinder, Clean Output

3. In the teaching pendant, “Eout09~Eout16” are corresponding to the “Eout8+ (0~8)” at the “IO Test” and “Output (point)” displaying window.

Input And Output Test	
F1 Mout:	1 2 3 4 5 6 7 8
F2 Eout: 0+	1 2 3 4 5 6 7 8
F3 Eout: 8+	1 2 3 4 5 6 7 8
Min:	1 2 3 4 5 6 7 8
Ein: 0+	1 2 3 4 5 6 7 8
Ein: 8+	1 2 3 4 5 6 7 8
Kin:	1 2 3 4

Namely, “Eout8+ 1” is the output window “Eou09”. “Eout8+ 2” is the output window “Eou10”. “Eout8+ 3” is the output window “Eou11”, etc.

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# IV. Commissioning

## 4.1 Commissioning Process

### 4.1.1 Security Check before Operation



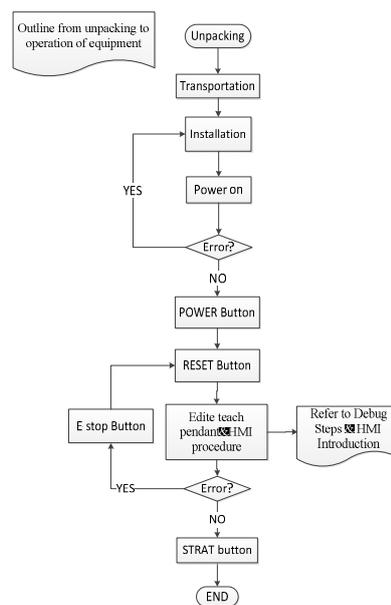
Inspect the line and do NOT power on if line was damaged or wet. Please invite the professional when the device needs maintenance.



Caution: High voltage, prevent electric shock.

User must inspect current and pneumatic station after installment or before first time using.

1. Inspect if the power supply is standard requirements or not.
2. Inspect if the device is grounding standard or not.
3. Make sure there is no person or obstacle in the machines working area.
4. Inspect if the moving parts was fixed.
5. Inspect if the emergency stop switch was pushed or not.
6. Inspect if the power switch was OFF or not.
7. Moving the moving parts back and forth to make sure they move smoothly..
8. Inspect if the socket and pipe is well-connected, make sure there is no leak.
9. Outline from unpacking to operation of equipment procedure



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## 4.1.2 Operation of First Time

If using the unit for the first time, user should test the basic functionalities at first.

### Step1: Install and Test

Before using, user should properly install and connect the system.

At first, user should test the basic functionalities of the system with the 'Test' function of the teaching pendant.

Test including: Is there any problem with the axes movements towards positive or negative direction?

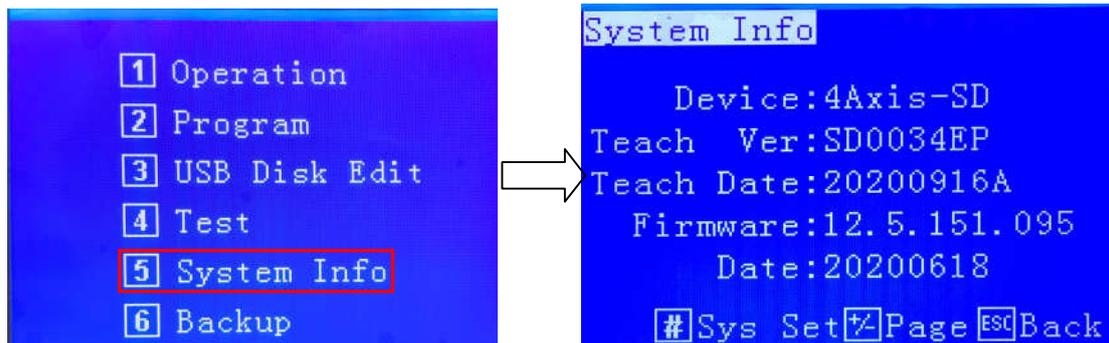
### Step2: Parameters Setting

Properly set the global parameters and other parameters using in the processing.

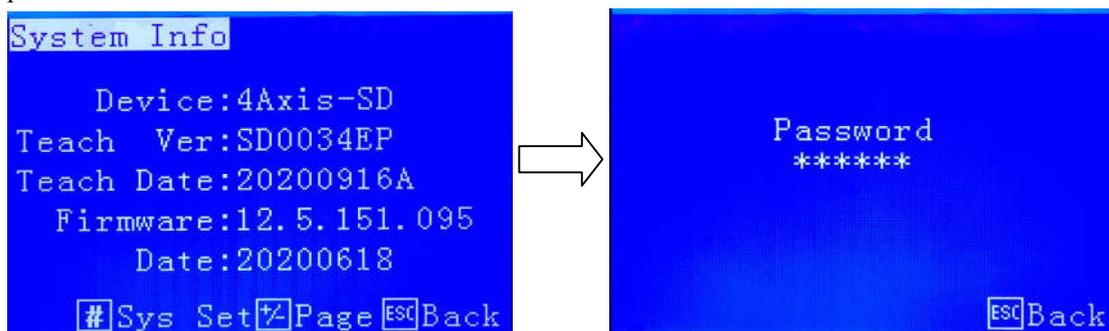
Remark: Failure to properly set the parameters will cause difficulties in using the system.

Setting program and cleaning shortcut number.

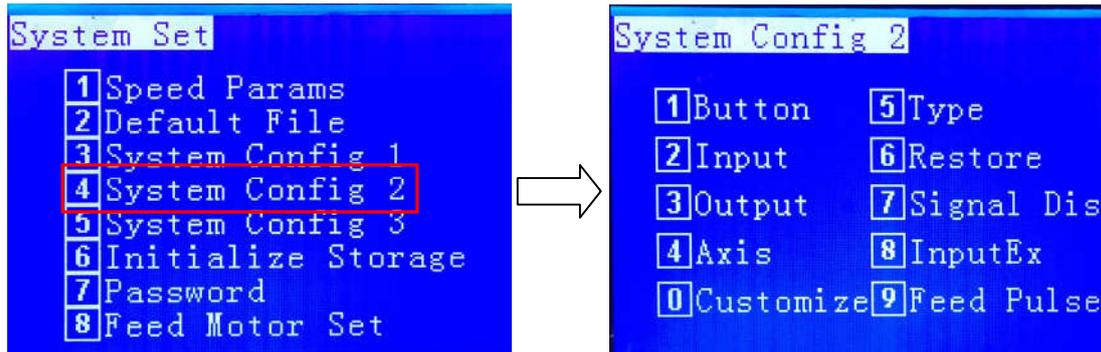
- 1) Click on **5** to enter into System Info Window.



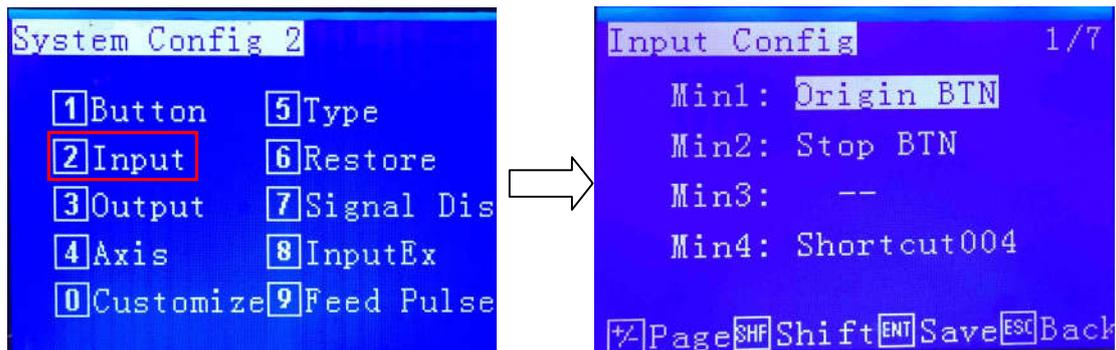
- 2) In the System Info Window, click # key to open Password Window, enter the default password: 888888.



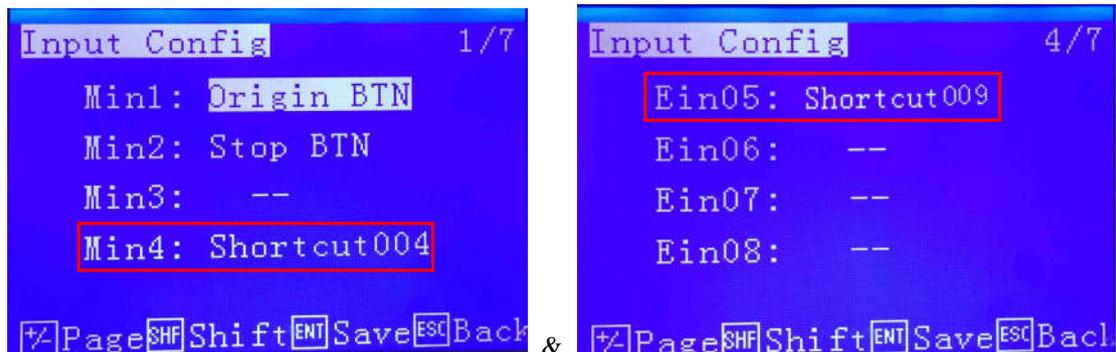
- 3) In the System Set Window, select **4** to enter into System Config 2 Window.



4) In the System Config 2 Window, select **2** to enter into Input Config Window.



5) In the Input Config Window, Min4 is set to Shortcut 004, and Ein5 is set to Shortcut 009.



6) Click on **ENT** to save.

### Step3: Teaching Program

Program a graphic with teaching pendant. Refer to the instruction manual of the teaching pendant.

### Step4: Origin Calibration & Set the Parameters of the Teaching Pendant

1. Origin calibration: User should adjust the start point when a teaching file is created for the first time.
2. Set file parameters.

### Step5: Download & Process

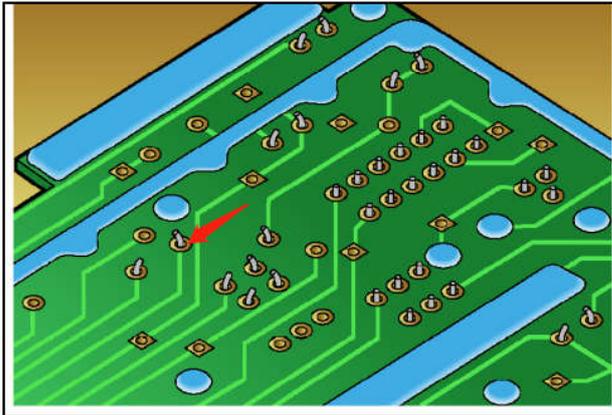
1. Download: please refer to instruction manual of the teaching pendant "Teaching File Download".
2. Process: please refer to instruction manual of the teaching pendant "File Processing".

### 4.1.3 Creating a New File



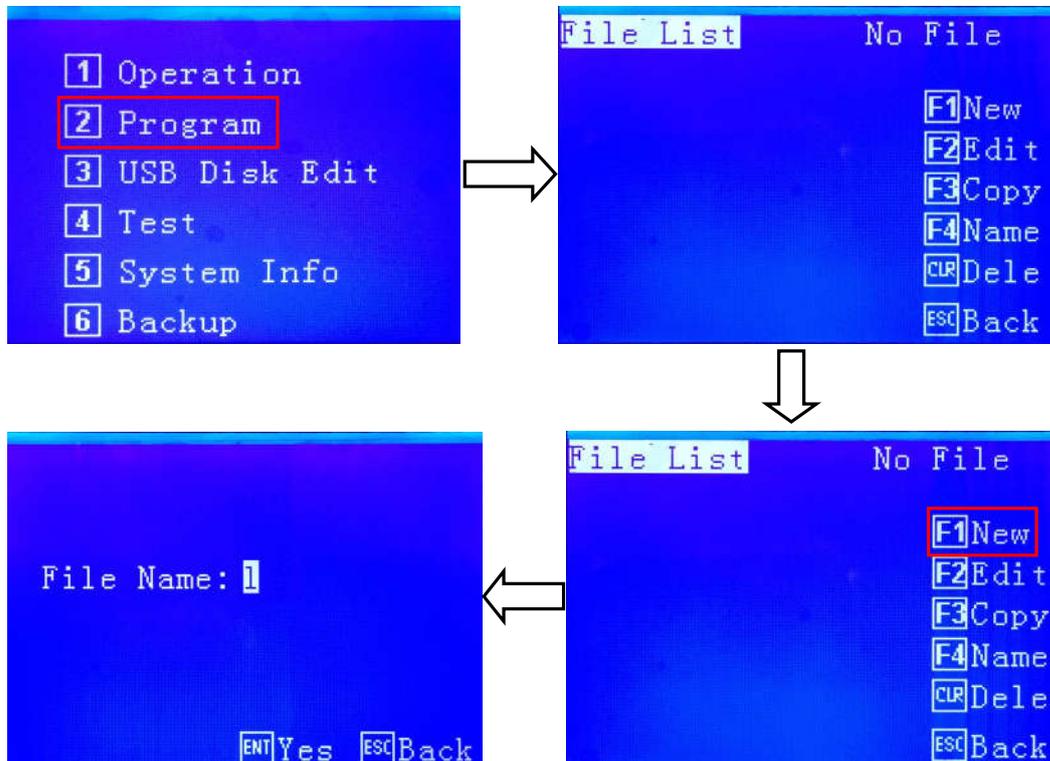
Do not touch or put your hands on the moving parts when the machine is working!

1. Connect all the sockets, power cord and the main air input pipe.
2. Turn the pressure regulating valve for appropriate air pressure.
3. Turn off the heater controller and the solder feeder.
4. Typical view of the soldering point is marked by a red arrow.



5. Creating a new file:

- 1) Using the tutorial block, create and name a new file name.



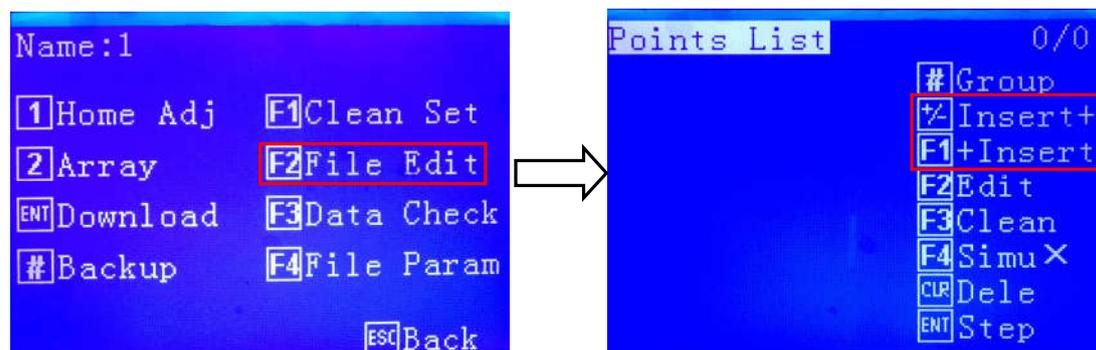
- 2) Press ENT key to save and the new file name will be appeared in the file list.

#### 4.1.4 Debugging Soldering Program

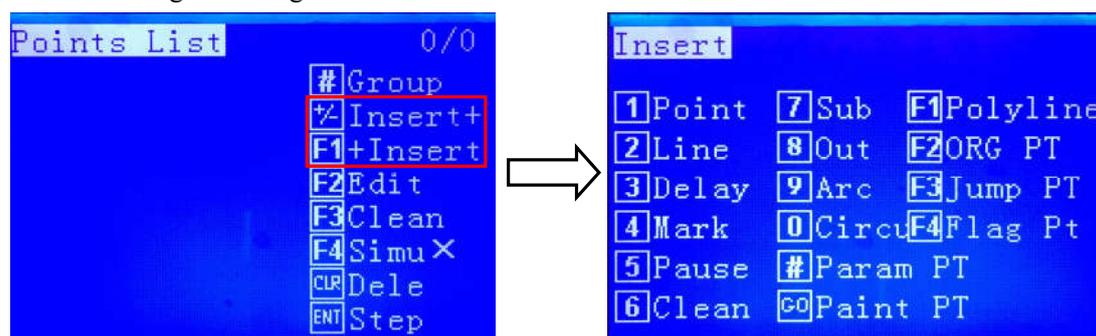
- 1) Select the created name in the file list and switch to the file editing mode.



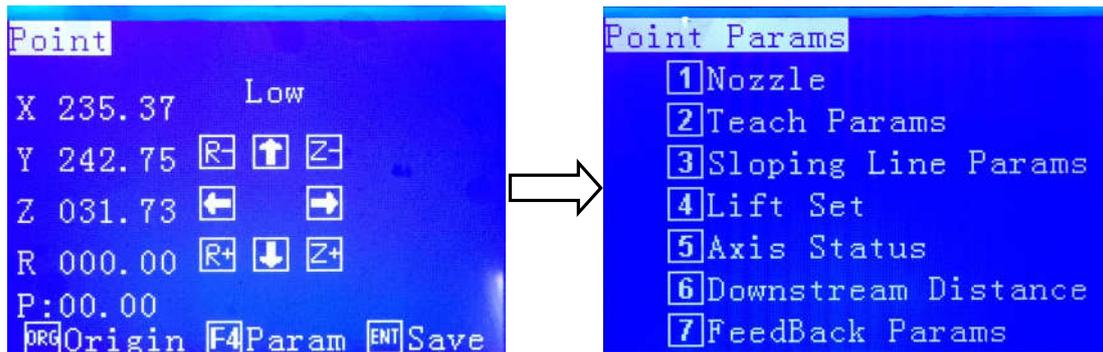
- 2) In the Points List window, select [F1] +Insert to go to the Insert window. If [+/-] Insert+ is selected, the points will be created before the selected point, i.e. the program will be created from the end to the beginning. If you select [F1] +Insert the points will be created in normal direction.



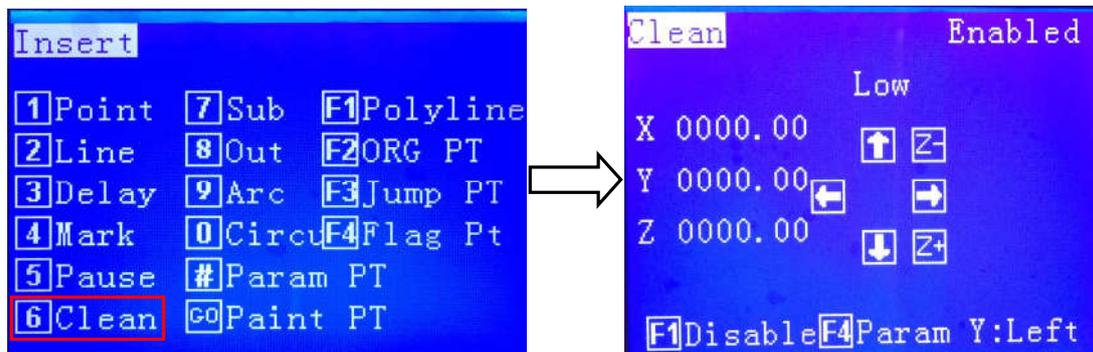
- 3) In the Insert window select what you want to create: a point, a line, a cleaning point or something else and go to the coordinated window.



- 4) Use the navigation keys of the teach pendant to bring the soldering tip to the soldering point and press [F4] to enter the soldering parameters (see the instruction manual of the teach pendant).



- 5) Press [ENT] key to save.
- 6) Repeat the creation of soldering points as many times as necessary.
- 7) The last created point is the cleaning point of the soldering tip.
- 8) In the Insert window, select [6] key to enter **Clean** window, use the navigation keys of the teach pendant to bring the soldering tip to the clean position and press [F4] to enter the clean parameters (see the instruction manual of the teach pendant).



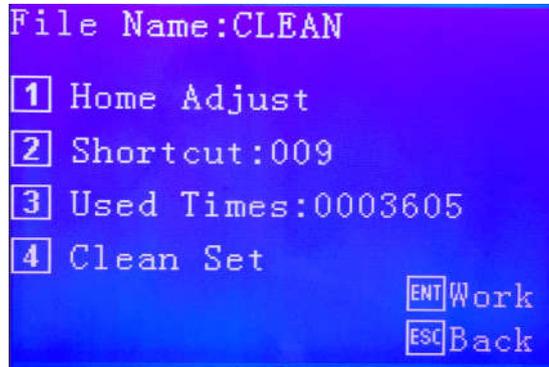
- 9) Enter the clean time, the default is 150ms and press [ENT] key to save.
- 10) In the **Name** window, press [ENT] key to download the file and press [F1] of the teach pendant to start program.
- 11) Check the process of the soldering tip movement, make parameters change if necessary.
- 12) Press [F1] of the teach pendant to set loop times and press [ESC] key to back to **Main** window.
- 13) In the **Main** window of the teach pendant, press [1] key to set shortcut 004.
- 14) Turn on the heating controller and press **START** button which is installed in the operation panel to run the program.

#### 4.1.5 Creating a Clean File

- 1) Create a clean file and the file name should be set **CLEAN**.
- 2) Select the **CLEAN** name in the file list and switch to the file editing mode.
- 3) In the Insert window, select [6] key to enter **Clean** window, use the navigation keys of the teach pendant to bring the soldering tip to the clean position and press [F4] to enter the clean

parameters (see the instruction manual of the teach pendant).

- 4) In the **Name** window, press [ENT] key to download the file and press [F1] of the teach pendant to start program.
- 5) Check the process of the soldering clean, make time changes if necessary.
- 6) In the **Main** window of the teach pendant, press [1] key to set shortcut 009.



- 7) Turn on the heating controller and press **CLEAN** button which is installed in the operation panel to run the clean program.

## 4.2 Interrupt and Continue

1. **Function:** For an interrupted processing file, it can continue to work at the next point of the interrupted point after troubleshooting.
2. **The manner of continue the interrupted work:** After troubleshooting, press **STAR** button, and the machine will continue from the interrupted point.

As the different interrupt type, it can classify the interrupted point as the following table:

No.	Interrupted condition	Mark	Action of Stop after be Interrupted
1	Press STOP BTN	A/B/C/D	Stop immediately
2	Press EMERGENCY BTN	A/B/C/D	Stop immediately
3	Press ORG BTN	A/B/C/D	Stop immediately
4	Press PAUSE BTN	A/B/C/D	Stop immediately
5	Lack soldering alarm*	A/B/C/D	Stop immediately
6	Block soldering alarm*	A/B/C/D	Stop immediately
7	Temperature alarm*	A/B/C/D	Stop immediately



Caution:

- 1) The STOP button is only on the teach pendant, on the machine it is the START button and it only stops the execution of the program when it is a point. If at the moment the button is pressed the line is being soldered, then the movement and feeding of the solder will stop only at the end point of the line.
  - 2) The EMEEGENCY button is on the machine itself.
  - 3) The ORG button is only on the machine itself and on the teach pendant it is called RESET. Press it not only stops program but also resets it to the first point and returns all moving parts to the starting point.
  - 4) The PAUSE button is nowhere to be found in this version
3. A/B/C/D is interrupted mark, these mean:

Interrupted stop method

Interrupt mark	Interrupted station	Continue station
A	From Start feeding to soldering finish	Jump interruption soldering, go straight to next point.
B	Moving between two soldering point.	Go straight to next soldering point.
C	Pause	Go to next soldering point.
D	Holding up distance after soldering	Go to next soldering point.



**Caution:** *If power outages during the operation, it cannot continue the interrupted work after troubleshooting.*

# V. Troubleshooting & Maintenance

## 5.1 Troubleshooting

No.	Malfunction	Possible Reason	Correction
1	The unit can't reset.	Please check if the EMERGENCY button is pressed or not.	Dismiss the EMERGENCY button and press the RESET button.
2	The Z axis unit movement isn't accurate.	Out of the weight or the speed.	If the unit's accurate decreased, reduce the speed and it will be remission. Adjust the verticality or parallelism of the track, tighten the screws of the tracks.
3	The motor is abnormal.	The board or the motor is bad.	If it was still bad after changed the signal wires of motor, the board doesn't have matter .change the wires of drivers, if the bad one works after changed the wires, it proves the motor was bad, if the normal one doesn't work, it proves the driver is bad.
4	The fuse has burned.	If the replacement of the fuse is still malfunctioning, it could be that the motherboard is broken.	Replace it.
5	The motor is vibrating at the origin when reset.	The photoelectric switch is bad or the drive plate has a problem.	Replacing the photoelectric remains the problem, it will be driven problem.
6	X-axis only turns to one direction motion.	Driver board of X-axis is broken.	Replace it
7	The unit is always alarming.	If overcome the trouble it was still alarming, maybe the emergency BTN was bad or the alarm flag wasn't feedback.	Press the emergency BTN and check if power will be cut or not. If the power wasn't cut, the emergency BTN is bad.

No.	Malfunction	Possible Reason	Correction
8	The high temperature of the motor, no power input.	The chain guide wheel falls off or breaks.	Change guide wheel.
9	Drive shaft of motor fracture.	Because of the long time force operation, the drive shaft and the base screw loose, creating a gap, resulting in wear and tear.	Remove the drive shaft and weld and tighten the loose screws.
10	The motor position is tilted and the running chain is abnormal.	The motor bracket is not fixed with the limit bolt.	Adjust the motor position and fix it.
11	Cylinder problem.	Cylinder regulating valve damages.	Replace the cylinder.
12	Sports parts are jammed.	The screw of the proximity sensor loosens, leading to a deviation near the sensor position.	Calibration of proximity sensors.
13	The accuracy of the machine declined.	1. Loose guide rail 2. X-axis and Y-axis out of the vertical.	1. Readjust the straightness, perpendicularity and levelness of the guide rail. 2. Adjust the bolts of the crossbar and machine link.
14	There is something strange in the lead screw.	1. The bearings are damaged. 2. short of lubricating oil.	1. Clean or change the bearings. 2. Add the lubricating oil.
15	The lead screw is shaking while moving.	1. The lead screw is bent. 2. The lead screw is not concentricity with the motor.	1. Change the lead screw. 2. Adjust the place of the lead screw.
16	The pressure watch is beating at work, and the pressure value is set to swing	The sealing surface of the valve is attached to water or oxides.	Remove the valve and clean the moisture and oxides.

No.	Malfunction	Possible Reason	Correction
	back and forth.		
17	The belts slipped.	1. The belts loosen. 2. There is some lubricating oil on the belts.	1. Adjust the motor's place for tightening the belt. 2. Clean the lubricating oil.
18	The sliding block movement is retarded, the guide way is febrile, and wear phenomenon.	The gap between guide rail and slider is too small.	1. Adjust the clearance between guide rail and slide block. 2. When the puncture is worn, it needs to remove the guide rail and slide, and repair the puncture site.

## 5.2 Daily Check & Maintenance

Safety instructions:

Risk of electric shock



Be sure to open the cabinet door after the power off

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Cut off the power supply for 5 minutes and replace the servo unit (including the rectifier) and control the power unit. During this time, please do not touch the terminal!

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Risk of electric shock and injury

After the repair, please do not forget the tool in the switch cabinet ( if has), make sure the door of the electric control cabinet is closed.

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The total power supply control cabinet and the relevant control box should be labeled "no power supply", so as to prevent non-related personnel from closing the switch

Daily check of soldering machine:

- 1) Check if there's flammable or explosive item close to the soldering machine.
- 2) Check if the working voltage is correct.
- 3) Clean the soldering tip. Check if the tip is corroded or worn out. If so, please replace it.
- 4) Check if the tube of wire feeder is in good condition. Check if the tube is blocked.

- 5) Check if airflow is normal, if the air tube is smooth.
- 6) Check if zero position of each axis is correct.
- 7) Test the movement and communication performance of soldering machine.
- 8) Check if the emergency button can be pushed and unscrewed normally.
- 9) Clean the working environment of soldering machine.
- 10) Check if the external screws of the soldering machine are screwed well.
- 11) Write down equipment condition in each shift.
- 12) Run a testing program after each shift.
- 13) Machine maintenance schedule, refer to following table.

- Inspection before power on machine

<b>Inspecting with power off</b>						
<b>Items</b>	<b>Position</b>	<b>Daily</b>	<b>Monthly</b>	<b>3 months</b>	<b>6 months</b>	<b>12 months</b>
Check whether screws and structure is fastened.	Screws in the covers.	√	√	√	√	√
	Screws in the machine.	√	√	√	√	√
	locking bolt of machine	√	√	√	√	√
	Screws in the axles.					√
	Motor and reducer screws.					√
Check whether socket is fastened.	Socket on the surface of machine.	√	√	√	√	√
	Socket in the machine		√	√	√	√
Check whether machine is abrasion. Clean dust on the equipment.	Machine appearance	√	√	√	√	√
	External cables		√	√	√	√
Check whether it	The axis position of	√	√	√	√	√

Inspecting with power off						
Items	Position	Daily	Monthly	3 months	6 months	12 months
is curving or position skewing. Please repair or send to repair station if necessary.	the machine					
The condition of the grease	Please refer to the "maintenance of ball screw" and "linear guide rail".				√	√

- Inspection after power on machine

Inspecting with power on						
Items	Position	Daily	Monthly	3 months	6 months	12 months
Inspecting the working area.	Every axle					√
Shake tenderly and check whether lines are break.	External cable				√	√
Press and check whether axles shaking while MOTOR ON status.	Every axle.					√
Inspecting Human-computer interface. Including keys, buttons, lights, emergency buttons function.	Operation panel, emergency button, light house.	√	√	√	√	√
Check whether motion and vibration is normal.	Entire	√	√	√	√	√

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## 5.2.1 Cooling Fan

Cooling fan rotation is abnormal, the temperature in the control cabinet will rise, the electric control cabinet will malfunction, all should check cooling fan

Control the fan in the cabinet and the back fan to turn when the power is connected, so check whether the fan is rotating, and the air volume of the outlet and the suction vents are checked to confirm whether the rotation is normal.

## 5.2.2 Emergency button

The emergency button is a safety device, and it must be pressed in hazardous situations. When pressed, the emergency button locks in and therefore remains active. The current operating mode is stopped immediately, all movements are stopped; fault and error message appears; the machine cannot be restarted as the button locks in when pressed and thus remains active. After resolving the error, the emergency button must be pulled out as acknowledgement.

## 5.2.3 Machine Movement Mechanism

Machine is a precision equipment, need time and maintenance, keep good lubrication condition, must strengthen the maintenance and maintenance, at any time, timing, clean up dirt, oil, ensure the machine to work under a good condition, this can avoid some faults occur frequently, reduce downtime, and can guarantee or to extend the service life of machine.

### (一) Daily Maintenance

1. Clean the solder and glue after working.
2. Must change or clean the tips frequently.
3. Don't touch the track for avoiding rust.
4. Check if the parts are normal before work.

### (二) Regular Maintenance

You should maintain the machine about three months, if you always use it. The details are as follow: Take off the cover of X-axis, clean the screw and track, check the screw if loose or not, spread lubricant on the screw and track, move the X-axis for spread more lubricant. Then take on the cover. Take off the cover of Y-axis, clean the screw and track, check the screw if loose or not, spread lubricant on the screw and track, move the Y-axis for spread more lubricant. Check the screw of light

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sensor. Then take on the cover. Take off the cover of Z-axis, clean the screw and track, check the screw if loose or not, spread lubricant on the screw and track, move the Z-axis for spread more lubricant. Check the screw of light sensor. Then take on the cover.

Belt: check if the belt is loosened. Adjust the belt if it loosened: firstly, disassemble the fixed screw. Secondly, pull the motor back. Then press the belt 10N stress at the mid of the belt, bend 10~15mm. Finally it is fixed. Check the straightness, perpendicularity and operating accuracy of the guide regularly every quarter. If abnormal, it should be adjusted in time.

Replace the worn component. The maintenance of the electrical part is mainly to check the connection of the conductor. Check whether the pins of each plug are crooked, whether the wires are broken and the soldering falls off. Clean the internal dust of the electric control cabinet carefully and check whether the connection is loose, whether the appearance of the components appears abnormal, and whether the switch and button are normal. After the inspection, check the signal and then measure the motion characteristics. After an error-free time, you can set up a file to run for ten minutes without losing your step (which requires all directions to go to the limit), then complete the regular maintenance. For users who use less frequently, regular maintenance time can be half a year, maintenance content is the same.

## 5.2.4 Oil-water Separator

1. When installing, it is forbidden to drop or make it suffer a strong shock to avoid damage.
2. Make sure to use the screws to secure a secure fixture on the welding machine before it can be used.
3. The recommended use of air pressure is less than 0.7Mpa.
4. Regularly remove water from oil and water separator, remove regularly and wash with tube brush.

## 5.2.5 Linear Guide

1. Lubricate the linear track every 100km walking. Even if you don't use it very often, you need to add it regularly.
2. Do not lubricate too much grease.
3. Inject the grease into the block. Do not straightly smear the grease on the surface of block.
4. Avoid sliding block into foreign body to affect life.

How to inject the grease:

1. Stop the unit. Inject into the nozzle 0.7cc grease.

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2. Allow the slider to move back and forth, allowing the inner steel to roll completely.

Repeat ①&②, inspect whether grease adhere to the end of track.

### 5.2.6 Ball Screw

1. Inject grease with grease gun by many times. Roll the screw spindle half-turn after injecting one time (Inject 0.7cc each time). Notice: Do not inject rated grease, otherwise it will not be lubricated completely.
2. Finished lubricating rated grease, Push the block for a round trip to spread grease.
3. Daily maintenance of the wire feeder unit.
4. The tube of solder wire feeder would be blocked by the rosin after a long period of using. Check and clean it (with alcohol) regularly.
5. Do not over bend or rotate the tube in case of wire jam.
6. Check if the diameter of the tube assembly is same as which of the wire feeder.
7. Turn the pressure adjustment screw clockwise if the wire cannot be fed smoothly. Turn it anti-clockwise if the wire was pressed too much.
8. Do not tighten the press adjustment screw too much to protect the press spring.

### 5.2.7 Heating Controller

1. Turn off the heating controller when not in use. Pull out the power cable if not use it for a long time.
2. Reliable grounding is essential for the soldering machine. Do not use the power cable without ground.
3. Replace the fuse of the heating controller if it is broken: Turn off the heating controller, pull out the power cable, remove the fuse cover, take out the defective fuse and put a new one.

### 5.2.8 Soldering Tip

1. High temperature would affect/decrease the lifetime of soldering tip. Set the temperature as per application but as low as possible.
2. The oxide and carbide produced by residual flux will damage the soldering tip, like soldering deviation and slow heat conduction etc. Clean the soldering tip regularly (every week for long

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time continuous using).

3. Under high temperature, the solder in tip will produce oxide, which will damage its heat conduction. Turn off the heating controller when not use.

### 5.2.9 Prolong the Lifetime of Soldering Tip

1. Coat the soldering tip with solder to prevent oxide.
2. Set the temperature as per application but as low as possible.
3. Choose the right type of soldering tip.
4. The plating would be broken if the tip is bent. Do not use the soldering tip as a detecting tool.
5. Activated rosin will corrode the tip plating. Choose the solder wire with less activated rosin.
6. Do not press the soldering tip. Much pressure is not helpful for heat conduction. Melt the solder wire to create a solder bridge between tip and point, to speed up heat transfer.

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