VECTECH 威鐵克

ET9484E

Desktop Soldering Machine

Instruction Manual

Thank you very much for purchasing our product.

This operation manual describes the features and operation of the machine. Before using, read the manual thoroughly for proper use of the unit. Store the manual in a safe easily accessible place for future reference.

Contents

1 General Notes

1.1 Safety Labels

Caution Electric Shock! Protect yourself against electric shock.

Do not plug or unplug cables when the machine is powered.

Keep hand away from moving parts to avoid injury!

Crush hazard keep hands clear. Lockout / tag out before maintenance.

Mind your head!

High temperature!

Shut off power and air supply at the source before performing maintenance. Failure to observe this can lead to electric shock and other accidents.

NOTE:

1. Use original spare parts from our manufacture to replace defective ones.
2. If the problem occurs on any designated purchasing components, clients can also source the same models from their own purchasing channels.
3. Do not plug or unplug cables with power on.

1.2 General Safety Information

1. Machine must be used or stored in an applicable environment:
   Operating ambient temperature is 0~40℃,relative humidity is 20%~90%(No condensation).
2. Follow the steps and drawings to maintenance.

1.3 Heating Controller Information

In order to ensure the safe operation and optimal performance of the heating controller, please follow all warnings and safety Introductions in this manual during process of controller operation.

1.3.1 Protection Requirement

When the heating controller is turned on and the soldering tip is in a high temperature status, do not touch it with your hands to avoid burns. When installing or disassembling, please remember to turn off the system and pull out the power plug to avoid damage to the machine or cause accidents.

1.3.2 Operation Introduction

You should read the following procedures before operating the heating controller.

1. Corresponding operators must be trained and examined and know the normal safety information for operating the heating controller.
2. Regular inspection and maintenance will prolong its lifetime.
3. Never touch the soldering tip when the heating controller power is turned on.
4. Please do not operate when it’s damaged.
5. Turn off the system when resting or after completion
6. Use rated voltage and frequency. (Please refer to the nameplate on the back of it.)
7. Do not modify heating controller without authorization.

1.4 Electrical Components Safety

1. Maintenance may only be performed by a certified electrician, or by persons who have been instructed in electrical engineering under the direction and supervision of a certified electrician in accordance with standard electrical engineering practice.
2. On machines with fixed connection, turn off power switch.
   Note: The power disconnecting device (power switch) itself is then still under voltage (live)! Wait for 120s to maintenance!

3. Disconnect the machine from the power supply before performing maintenance on any electrical or opening the switch cabinet.
4. Disconnect main power plug. Machine is safely isolated from the power supply.
5. Check safe isolation from the power supply with suitable measuring instruments (2-pole voltage tester).Only perform maintenance work on the system or machine that is safely isolated from power supply!
6. Maintenance work must be performed in accordance with related drawings.

1.4.1 Checking Safety Devices

Safety devices may only be disabled by technical persons if absolutely necessary as part of the maintenance work. Safety components such as limit sensors, safety door and emergency stop button must be enabled immediately after maintenance. Check if all safety devices are fully functioned before starting again.

1.4.2 Measuring Live Components

Seek the assistance of a second person if it is necessary to perform measurements on live components. In the case of emergency, the second person can have the ability to lock the switch in the OFF position and disconnect the power plug.

1.4.3 Electrical Current

- Defective electrical components may be live (under voltage), danger of death on contact with them.
- Molten particles can spray out in the event of short-circuits, risk of burn injuries.
- Defects which found on the electrical components and machine must be changed immediately.
- Check that all electrical connections are made and secure before starting up this machine.

1.4.4 Emergency Button

Activating the E-Stop button immediately stops the movement of all mechanical parts (include electrical and pneumatic supply) of the machine. After resolving the error, the E-Stop button must be counter clockwise pulled out as acknowledgement. Thereafter the error can be acknowledged on the software.

1.4.5 Power-ON

Ensure that the machine is supplied with power and compressed air. Please follow this sequence to turn on the machine:

1) Connect power cord and turn on power switch installed on the rear panel.
2) Turn on the heating controller.
3) Release the emergency button.

4) Click on **RESET** key to move all movement parts to home position.

NOTE: After switching off the system always wait for at least 120s before switching it on again.

1.4.6 Power-OFF

Please follow this sequence to turn off the machine:

1) Click on **RESET** key to move all movement parts to home position.
2) Turn off the heating controller.
3) Turn off power switch
4) Slowly plug the power supply cable and air supply tube.

1.5 Pneumatic

- Maintenance on pneumatic parts may only be performed by persons with special knowledge, and experience with pneumatic machine!
- Disconnect the air source before performing any maintenance. Compressed air tube must be depressurized before disconnecting!
- Set the appropriate using pressure, recommended below 0.7Mpa.

1.6 Residual Safety Check

1.6.1 Cleaning

- Hydrocarbons dissociate causing an explosion if contacting Zinc element. In this machine, Zinc plate is used.
- Only use solvents or cleaning agent without hydrocarbons! Before you use a solvent or cleaning agent, check its ingredients!

1.6.2 Safety at the Workplace

- Ensure adequate ventilation of the workplace to protect operator from dangerous fumes and vapors.
- Do not eat and drink at the workplace, keep soldering process away from food-stuff, beverages and feedstuff. The possibility of smoke in the soldering process may be contaminated food and drink.
- Keep workplace clean and tidy is the prerequisite for ensuring soldering.
- Keep safety datasheets for soldering maintenances clearly visible and accessible at the workplace.

2 Technical Data

2.1 Parameter

Machine Model		ET9484E
★ Input voltage		220V AC 50/60HZ
Power consumption		300W
Axis number		4
Movement Range	X (mm)	0.1~400
	Y (mm)	0.1~400
	Z (mm)	0.1~100
	R (degree)	±180
Movement Speed	X (mm/sec)	0.1~800
	Y (mm/sec)	0.1~800
	Z (mm/sec)	0.1~300
	R (degree/sec)	0.1~800
Repeatability	X/Y/Z (mm)	±0.01
	R (degree)	±0.02
Resolution	X/Y/Z (mm)	0.01
	R (degree)	0.01
Payload Weight(Kg)	Z&R Axis	3
	Y Axis	8
Motion Control		Motion Control PCBA +PC
Noise		＜70dB（Measure in the distance of 1m）
Operating Ambient	Temperature	0～40℃
	Humidity	20%～90% (No condensation)
Temperature stability		±3°
Weight(Kg)		55

Remark: Make sure that your power supply data agrees with the information on the nameplate of the machine.

3 Transport, Installation, Storage, Disposal

3.1 Transport

When lifting, transporting the machine, personnel should observe the following precautions:

- Transport work only be performed by properly trained and qualified personnel!
- Use proper lifting and transporting equipment which is suitable for the load!
- Do not stand or walk below suspended loads!
- Lift the machine always in the center of gravity.
- Transport must be in an upright position.

3.1.1 Unloading with a Forklift

The forklift must meet the minimum crate weight requirements.

To unload with a forklift:

1) Determine the center of gravity and suitable points of the crate for transport by way of trial.
2) Use the right lifting points to raise the machine.
3) Place machine on a flat.
4) Remove the forklift.

3.1.2 Unloading with a Crane

The crane must meet the minimum crate weight requirements.

To unload with a crane:

1) Load always to be lifted at the marked symbol of chain points, if there is no symbol, user determine the center of machine gravity.
2) Place machine on a flat.
3) Remove the ropes, chains and lifting device.

3.2 Installation

Machines can be packed in the crates before delivery. Check it carefully, if you have any problem, just tell us, we'll see if we can oblige.

3.2.1 Uncrating the Machine

To uncrate the machine:

1) Remove the steel bands.
2) Remove all 5 sides woods with suitable tools, and the woods have been screwed to the pallet

before delivery.

3) Remove the films covered the machine.

4) Remove the four machine - to -crate shipping brackets attached to the pallet.

3.2.2 Placing the Machine

When placing the machine, personnel should observe the following precautions.

- Operation only be performed by proper trained and qualified personnel!
- Lift the machine from the front only, other sides may cause serious damage.
- Do not close to flammable or explosive items.
- Keep the machines away from thermal sources.

To place the machine:

1) Use a forklift to gently lift the machine off the pallet.

- Dispose the pallet according to local regulations.

2) Move the machine to the location where it will be installed.

3) Slowly lower the forklift until the machine rail is at the approximate height of the matched upstream machine.

4) Clean up space around the machine, and keep enough space (with open doors, a 1 meter passageway is required) for operation and maintenance.

3.2.3 Unpacking the Box

All packaging materials are put into the box, user can check them according to packaging list.

To unpack the box:

1) Open the front maintenance door or rear cabinet door.

2) Take out the box.

3) Remove the packaging tap from box.

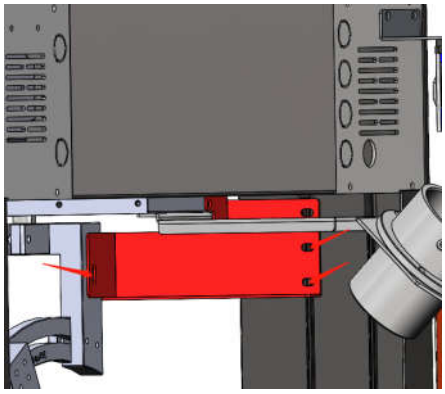
4) Check the pars from packing list.

3.2.4 Removing the Stoppers

Follow the steps to remove the soldering head and Y Axis positioning parts (red).

Removing the soldering head positioning parts steps:

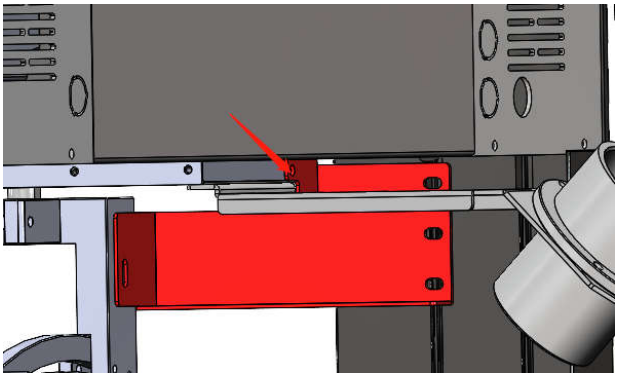
1) Use a 5mm hex key to loosen the three screws.



2) Remove these three screws.

3) Move the soldering head to the center position of X axis.

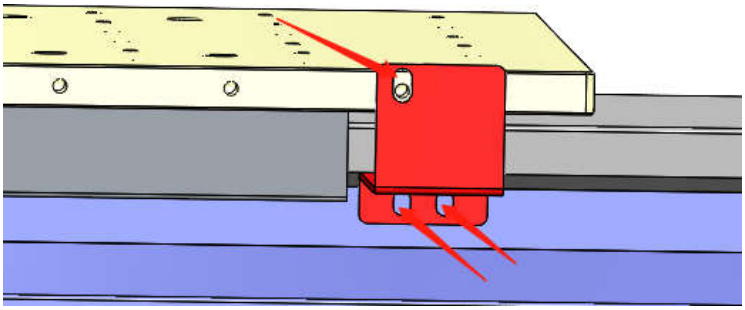
4) Remove the top screw, see picture.



Note: The stopper of the soldering header is only one.

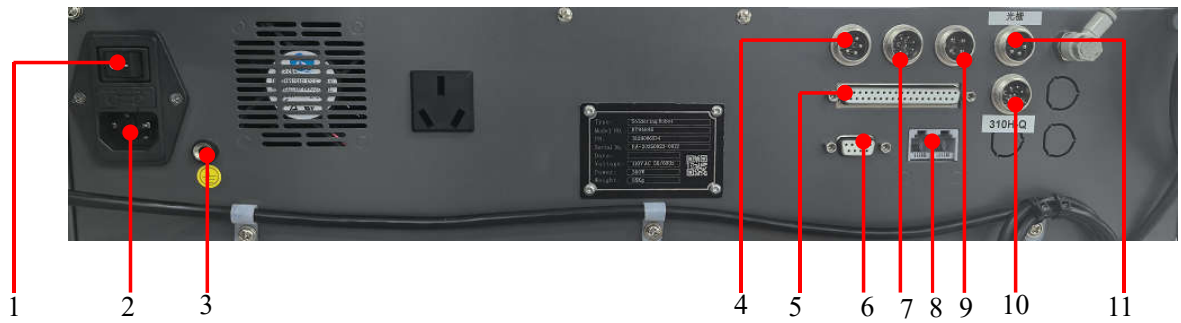
Removing the Y Axis steps:

5) Use a 5mm hex key to loosen the three screws.



6) Remove these three screws.

3.2.5 Connecting Rear Panel



1. Power switch: connect/disconnect power supply to machine.
2. Power inlet module: connect 220V AC line cord to power inlet module.
3. ESD socket: reliable grounding is essential for soldering machine.
4. 5-pin socket: connect to heating controller, refer to **5-pin Socket instruction**.
5. DB37 socket: spare, refer to **Instruction about DB37 socket**.
6. DB9 socket: spare, refer to **Instruction about DB9 socket**.
7. 7-pin socket: connect to heating controller refer to **7-pin Socket Instruction**.
8. RJ11 socket: connect to heating controller, it follows RS485 Standard Communication Protocol.
9. 4-pin socket: connect to key box, refer to **4-pin Socket Instruction**.
10. 7-pin socket: connect to tip cleaner, refer to **7-pin Socket Instruction**.
11. 5-pin socket: connect to light curtain, refer to **5-pin Socket Instruction**.

3.2.6 Connecting the Power and Air Supply

Caution about connecting the power & air supply:

- Operation only performed by proper trained and qualified personnel!
- Consult the electrical drawings carefully.
- Make sure the voltage and pressure supply information agrees with the nameplate.

To connect power supply:

1) Connect the male power cable to power supply device.

To connect air supply:

Air inlet port of soldering station is located in the left column of the machine.

1) Check and make sure the handle valve is in the OFF.

2) Connect the air supply of factory into inlet port of oil water separator.

3.3 Storage

1. Protect the machine from the weather (moisture, humidity, sea air, fog). If necessary, provide the machine with dehumidifier and air-tight packaging.
2. Storage conditions

- Allowed storage temperature: 0~40℃
- Allowed relative humidity in storage: 20%~90% (No condensation)

3.4 Disposal

1. Disposal packaging materials in a safe and environmentally friendly manner.
2. Soldering material is a kind of hazardous waste. It is strictly prohibited to discharge it together with

domestic waste.

3. Processing materials and replaced parts shall be disposed in a safe and environmentally friendly manner.

4. Waste shall be classified and disposed according to relevant environmental laws and regulations.

4 Commissioning

4.1 Switching ON Machine

4.1.1 Check before Starting

●Make sure that the machine is connected to the required power supply and compressed air supply.

●Operate the system only with a suitable transformer. Incorrect voltage and power rating can cause damage.

●Check that all safety devices (protective covers, e-stop button, light curtain, light house) have been installed correctly and are fully functional.

●Use your hands to feel if there is hot or cool air coming from out of the nozzle vents.

4.1.2 Switching ON

- After switching off the system always wait for at least 120s before switching it on again.
- If a mistake is made, switch off the machine and wait for at least 120s before switching it on again.
- Switch on the machine process as follows:

1) Connect the power cord to the appropriate power supply.
2) Install the new tip.
3) Switch on the power switch.
4) Turn on the heating controller.
5) Release the emergency stop button.

4.2 PC User Preference

User preferences are located on the PC, you may change these preferences at any time.

NOTE : Changing a preference establishes a new default setting. And the new setting will be in effect until the preference is changed again.

4.2.1 Language

This feature lets you select the language.

NOTE: The default language is Chinese. In order to select another language, the corresponding language file must be installed.

To set up language:

1. Click on **System Configuration** iron () in the right top corner of **Main** menu.
   - **System Window** opens.
2. Select and click on **Function Option**.
   - **Function Option Window** opens.
3. In the **Language** field, click on the small triangle on the right.
4. Click on desired language.
5. Click on **Save** button to confirm.
   - A prompt (Save success, and restart system to take effect!) appears.
6. Click on **Confirm** and restart the **Q Soldering**.
   - **Q Soldering** is now in the selected language.

4.2.2 User Logging

The software is password-protected, you should login it before operating.

To set up logging:

1. Double click on **Q soldering** iron (

) on the desktop.
   - **User Menu** opens.
2. In the **User Name** section, scroll down the list and click on the desired name.
   - The factory default name is **Admin**.
3. In the **Password** section, enter the right password.
   - The factory default password is **1**.
4. Click on **Log in** to confirm.
   - A prompt “Success (Welcome) admin!” appears on the right corner and the **Home Menu** opens.

NOTE: Be sure to login otherwise the software should not be operated.

4.2.3 Change Password

Only access the operation level, the password can be changed.

Setup a new password procedure:

1) Click on  key in the **Title Bar**.
   - The **User Menu** opens.
2) Type in the new password in the **Password** field.
3) Retype the new password in the **Re-enter** field.

4) Click on **Change Password** key to confirm.

- A prompt “Edit Successfully!” opens on the right corner of menu.

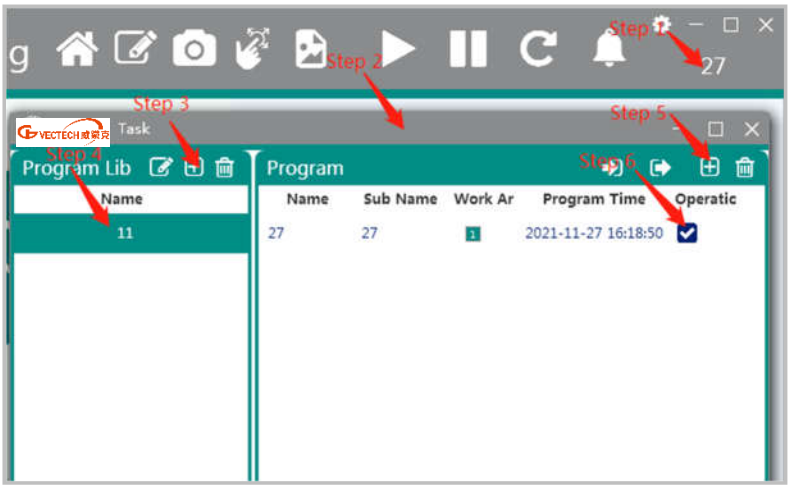
NOTE : The password is changed successfully after the same new password is entered both times.

4.3 Beginning Programming

4.3.1 Entering Shortcut Window

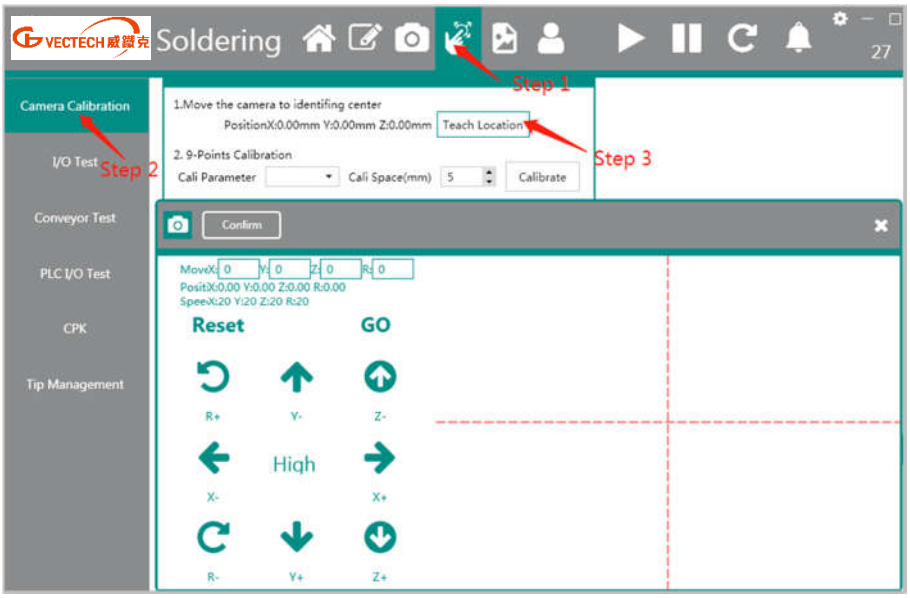
Steps	Description	Remark
1	Move the cursor to the right corner and a **Two Opposing Directional Arrows (** **)** appears. Click on the arrows symbol, the shortcutting window opens.	The shortcutting window can be operated in each menu except windows.
2	Press **Heating Controller** key to power on/off it.	
3	Press **Feeder** key to turn on/off wire feeder device.	
4	Click on **Feed** key to feed the solder wire, press and hold it, the solder wire will be fed continuously.	
5	Click on **Return** key to back the solder wire, press and hold it, the solder wire will be back continued.	
6	Press **Teach Box** to view the **Position Control** window where all axes can be moved by manually.	
7	Press **IO** to view the **IO Control** window where the **Main Board** ports can be checked and operated.	
8	Press **Safe Door** key to enable / disable safety door function.	

4.3.2 Creating New Program File

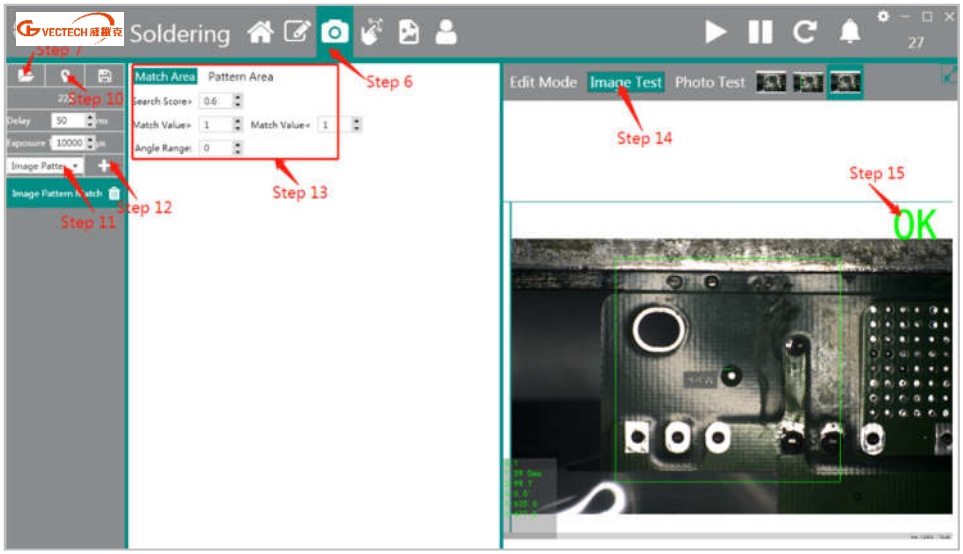


Steps	Description	Remark
1	Move the cursor to the right top corner of title bar, and the **Task** frame will become green.	The Library and Program names can not be repeated.
2	Click on **Task** to view the **Task** window. It includes two parts, left is Program Library and the right is Program.	
3	Click on icon in **Library** to create a new program library.	
4	Select the new program library and the name will become green.	
5	Click on icon in **Program** to create a new program.	
6	Click on square under **Operation** and the grogram will be selected.	
7	Click on × icon to close the Task window. If there's a prompt "Adjust conveyor width?", press Cancel.	

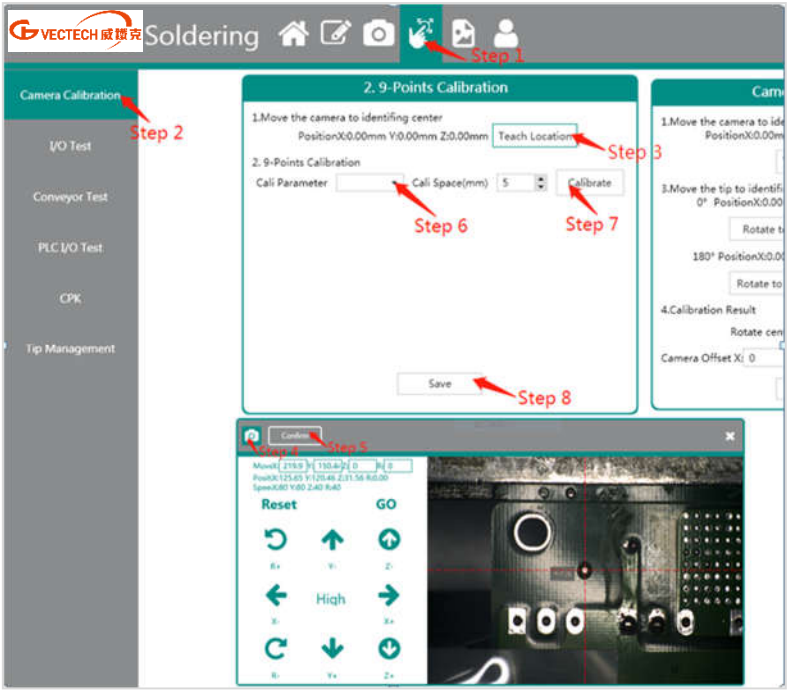
4.3.3 Teaching a Model Mark



Steps	Description	Remark
1	In the **Title Bar**, click on  icon to view the **Daily Check** menu.	Load a board before starting a model Mark.
2	In the left part, click on the **Camera Calibration** to view the **Calibration** window.	The window includes three parts: 9-Points Calibration, Camera Calibration 1, Camera Calibration 2.
3	Click on the **Teach Location** to enter **Position Control** window.	
4	Using the **Position Control** to move the camera to the **Mark** position and center the crosshairs on the Mark.	The Mark is a Mark.
5	Click on **Confirm** and **Position Control** window will be closed.	

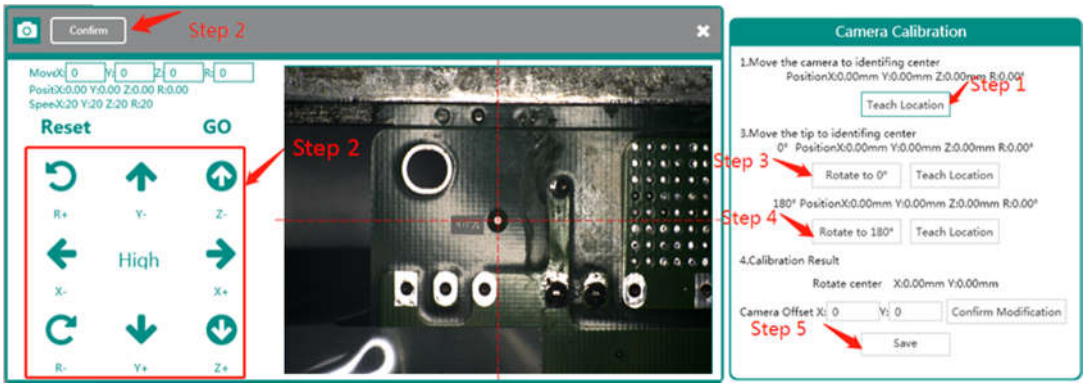


Steps	Description	Remark
6	In the **Title Bar**, click on icon to view the Vision menu.	Operation steps refer to Creating a new program file.
7	Click on **Load** to create a new Vison file. Select **9-Points Calibration Identify**.	
8	Enter a new name and click on **Confirm**, the file name can be seen in **Vision Parameter**.	
9	Double click on new vision file name to open.	
10	Click on **Take Photo** and a captured picture will appear in the right part. Press **Confirm** key in the **Position Control** window.	
11	Select **Image Pattern Match**.	
12	Click on cross icon on the right of **Image Pattern Match**, and the **Area Parameter** can be seen.	
13	Adjust the **Search Score**, **Match Value**, **Angle Range** if necessary.	
14	Click on the **Image Test**, and the Mark finder result **OK/NG** appear in the right corner.	
15	Click on to save.	



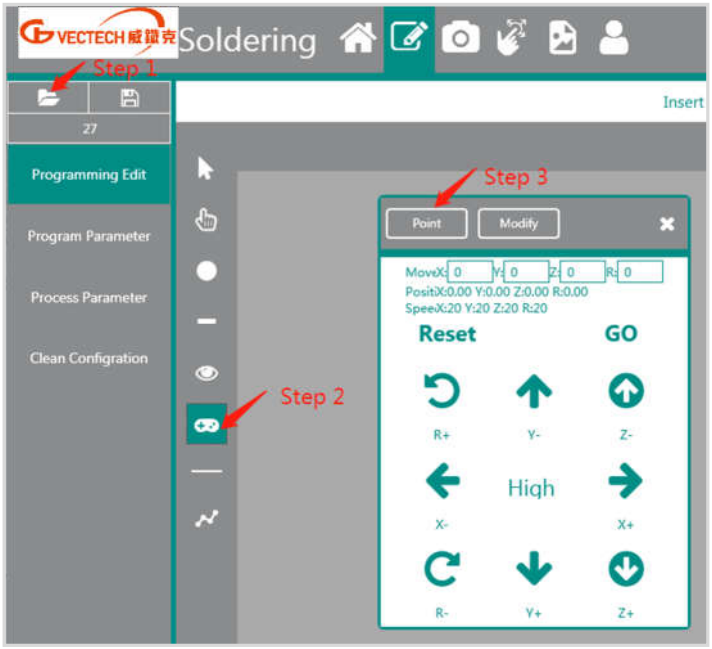
Steps	Description	Remark
1	In the **Title Bar**, click on icon to view the **Daily Check** menu.	Teach a mode Mark before camera calibration.
2	In the left part, click on **Camera Calibration** to view the **Calibration** window.	
3	Click on **Teach Location** to enter **Position Control** window.	
4	Click on icon to open video and check if the camera cross is in **Mark** center.	
5	Click on **Confirm** key.	
6	Select the vision file by clicking on right triangle.	
7	Click on the **Calibrate** and the camera will capture nine times continuously.	
8	A calibration result prompt will appear in the right corner of menu. If error, check and modify the Mark parameters to recalibrate.	If there is a prompt "Calibration error", refer to Step 13 "Teaching a mode Mark".
	If success, click on the Save.	

4.3.4 Calibrating the Tip

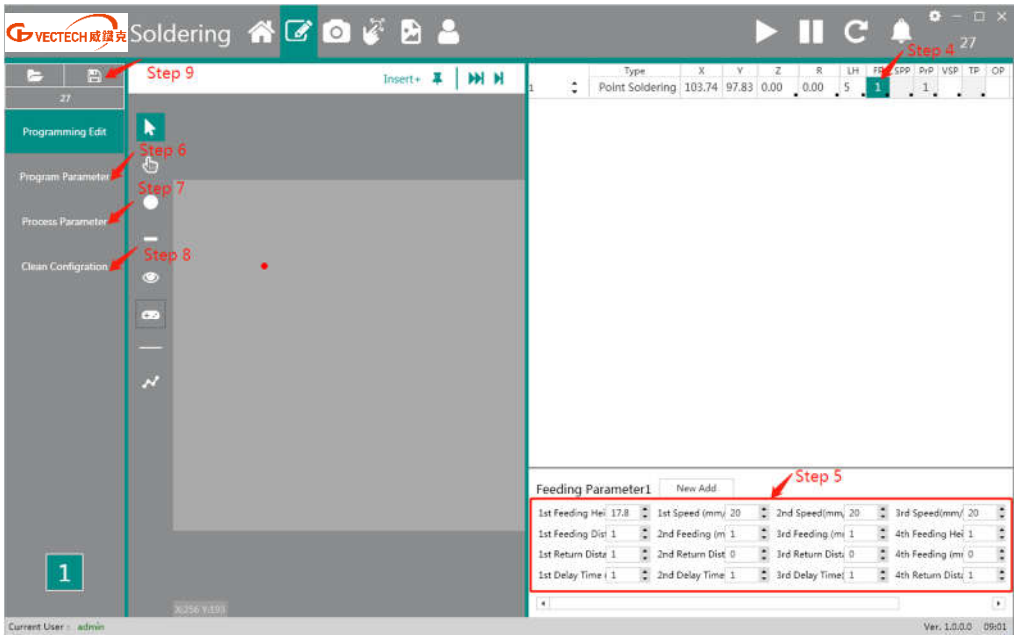


Steps	Description	Remark
1	Click on **Teach Location** to enter **Position Control** window.	Camera needs to be calibrated before tip calibration.
2	Move the tip to the center of **Mark** position and click on **Confirm** to save.	
3	Click on the **Rotate to 0°** to move the soldering head to 0° position, then click on the **Teach Location** and move the tip to Mark center position by **Position Control** window.	
4	Click on the **Rotate to 180°** to move the soldering head to 180° position, then click on the **Teach Location** and move the tip to Mark center by **Position Control** window.	
5	Click on **Save**.	

4.3.5 Creating a Soldering Point



Steps	Description	Remark
1	Load a program file by clicking on  icon.	**The loading file steps refer to Creating a new file.**
2	Click on **Teach Point** to enter **Position Control** window.	
3	Move the tip to the required soldering position, and click on **Point** to save.	



Steps	Description	Remark
4	Click on **FP** column box below and the **Feeding Parameter 1** can be edited.	The default parameters is Feeding Parameter 1
5	Enter the **Feeding Height, Distance, Delay Time** and **Speed** etc.	Enter the Feeding Parameters according to soldering requirement.
6	Click on the **Program Parameter** to set soldering temperature, running speed etc.	
7	Click on the **Process Parameter** to set feeding parameters etc.	
8	Click on the **Clean Configuration** to set cleaning position, time etc.	
9	Click on **Save** to confirm.	

Note: If you have any problem, please contact us for supporting.

5 Function Introductions

5.1 Safety Device Function

5.1.1 Power Switch

The power switch connects the system to the electrical circuit or disconnects it from circuit. It is a power safety device. The power switch has 2 switch positions: ON and OFF positions.

ON: switch ON power to the machine.

OFF: shut down the machine, but the computer remains ON.

5.1.2 Emergency Button

The emergency button is a safety feature device located on the front panel, activating it all pressure in the pneumatic system, de-energizes the motor power, and cuts power to all system components except the computer.

5.2 Components Introduction

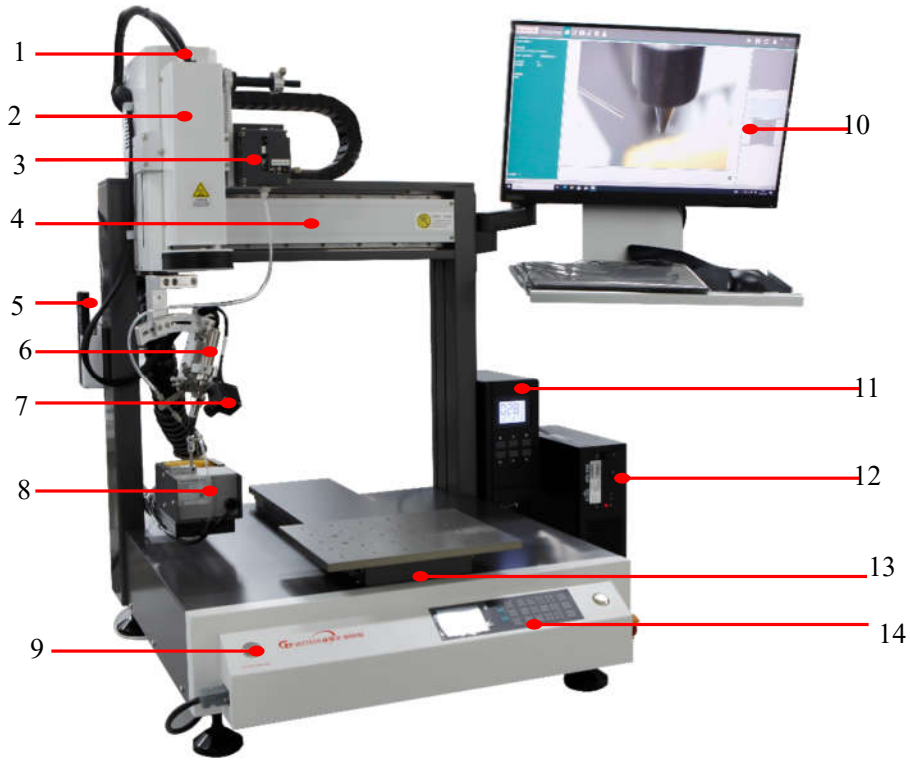


Table: Parts name list:

Item	Part Name	Item	Part Name
1	Soldering head	8	Tip cleaner
2	Vision module	9	Left start button
3	Wire feeder device	10	Software display
4	X axis module	11	Heating controller
5	Handle programmer	12	Computer
6	Soldering iron	13	Y axis module
7	Soldering process camera	14	Operation panel

5.2.1 Key Box

Key box functional list:

Button	Function
	**Reset command button** Pressing it to move all axes to home position. Note: Make sure there are no obstacles in the machine before pressing.
	**Emergency command button** In an emergency, activating the button immediately stops the movement of all mechanical parts of the machine. After resolving the error, the emergency stop button must be pulled out as acknowledgement.
	**Start command button** Pressing it to activate the processing program. Note: Make sure there are no obstacles in the machine before pressing.

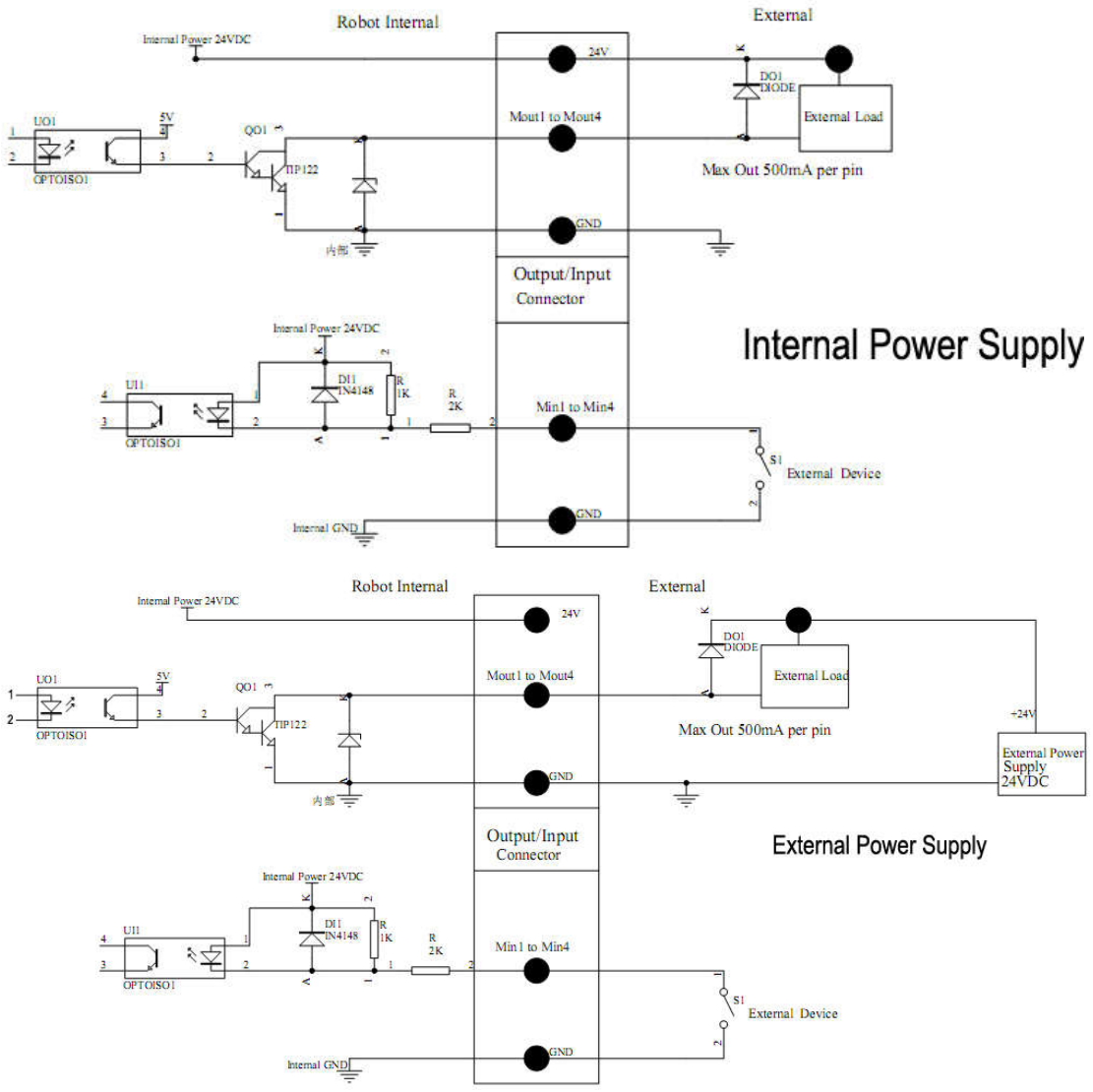
5.3 I/O Functions

Main board	Name	Port	Function
9075A	Main output	Mout1	Wire feeder device motor (PULE)
		Mout2	Trigger fume extractor “ON”
		Mout3	Trigger tin slag box blow
		Mout5	Wire feeder device motor (DIRECTION)
	Main input	Min1	Reset button (Key box)
		Min2	Emergency stop button(Key box)
		Min3	5P-3
		Min4	Start button (Key box)
	External input	Ein12	Block alarm signal

Main board	Name	Port	Function
		Ein13	Lack alarm signal
		Ein14	Temperature alarm signal

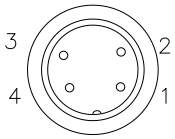
5.4 I/O Socket Instruction

5.4.1 Circuit Instruction of I/O Socket



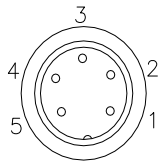
5.4.2 4-pin Socket Instruction

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

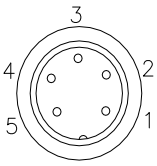
4-pin socket	Pin No.	Pin Name	Function
	4P-1	Min4	Connect to "START/PAUSE" button.
	4P-2	GND	GND
	4P-3	Min1	Connect to "ORG" button.
	4P-4	Min2	Connect to emergency stop button.

5.4.3 5-pin Socket Instruction

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

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

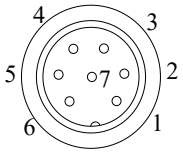
5-pin socket is connected to light curtain, pin's functions refer to table.

5-pin socket	Pin No.	Pin Name	Function
	5P-1	24V	24V DC
	5P-2	0V	0V
	5P-3	Ein1	Connect to light curtain
	5P-4	NC	No connection
	5P-5	NC	No connection

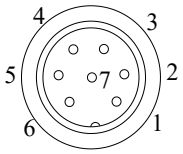
5.4.4 7-pin Socket Instruction

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

7-pin socket	Pin No.	Pin Name	Function
	7P-1	24V	24V DC

	7P-2	0V	0V
	7P-3	Mout1	It is used to feeding signal.
	7P-4	Mout4	It is used to cylinder movement signal.
	7P-5	Ein12	It is used to connect to block material sensor.
	7P-6	Mout2	It is used to output working status signal.
	7P-7	Mout5	In effective only in pulse signal.

7-pin socket is connected to tip cleaner, pin's functions refer to table.

7-pin socket	Pin No.	Pin Name	Function
	7P-1	24V	24V DC
	7P-2	0V	0V
	7P-3	NC	No connection
	7P-4	Mout4	Connect to tip cleaner
	7P-5	NC	No connection
	7P-6	NC	No connection
	7P-7	NC	No connection

5.5 Instruction about DB37 Socket

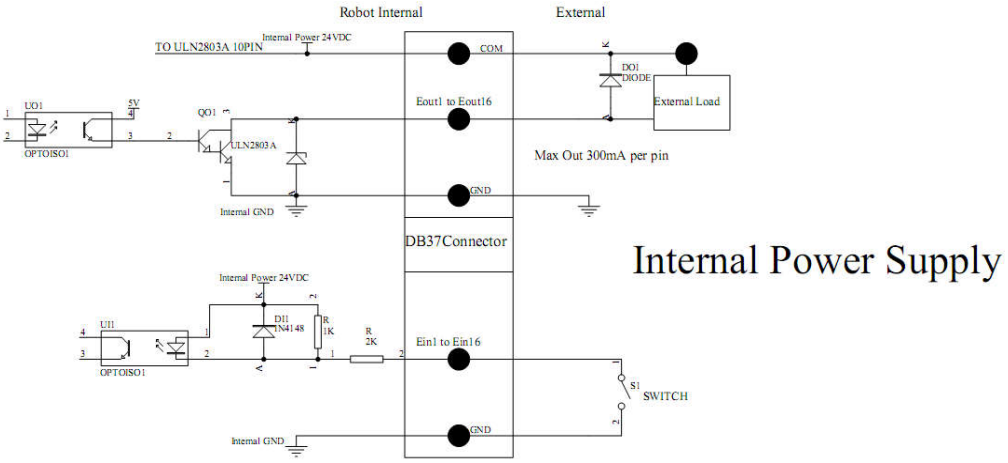
NOTE: ***DB37 socket is connected to operating button. It must be ordered if you need it to do information input or output.***

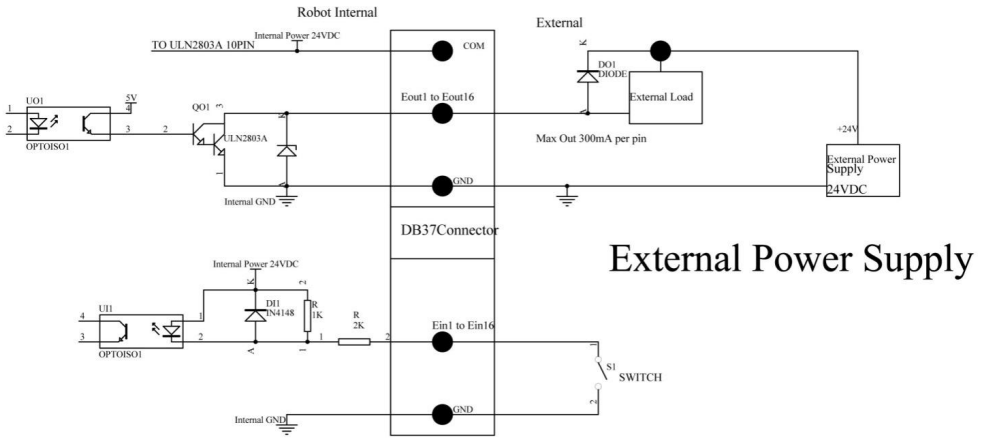
5.5.1 Pins Instruction of DB37

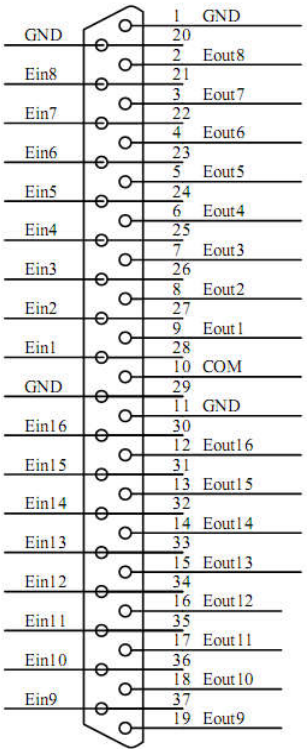
NO.	Pins port	Corresponding I/O window of DB37	NO.	Pins port	Corresponding I/O window of DB37
1	GND	P01	20	GND	P20
2	Eout8	P02	21	Ein8	P21

NO.	Pins port	Corresponding I/O window of DB37	NO.	Pins port	Corresponding I/O window of DB37
3	Eout7	P03	22	Ein7	P22
4	Eout6	P04	23	Ein6	P23
5	Eout5	P05	24	Ein5	P24
6	Eout4	P06	25	Ein4	P25
7	Eout3	P07	26	Ein3	P26
8	Eout2	P08	27	Ein2	P27
9	Eout1	P09	28	Ein1	P28
10	24V DC	P10	29	GND	P29
11	GND	P11	30	Ein16	P30
12	Eout16	P12	31	Ein15	P31
13	Eout15	P13	32	Ein14	P32
14	Eout14	P14	33	Ein13	P33
15	Eout13	P15	34	Ein12	P34
16	Eout12	P16	35	Ein11	P35
17	Eout11	P17	36	Ein10	P36
18	Eout10	P18	37	Ein9	P37
19	Eout9	P19			

5.5.2 Circuit Instruction of DB37

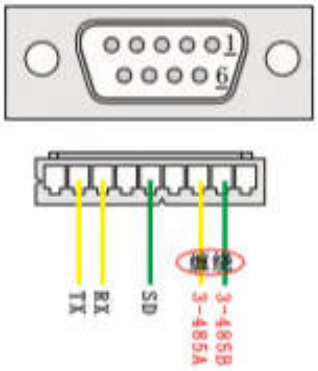




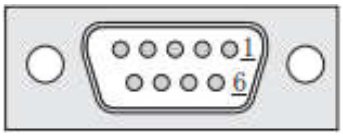


Plug of DB37 (pin type)

5.6 Instruction about DB9 Socket

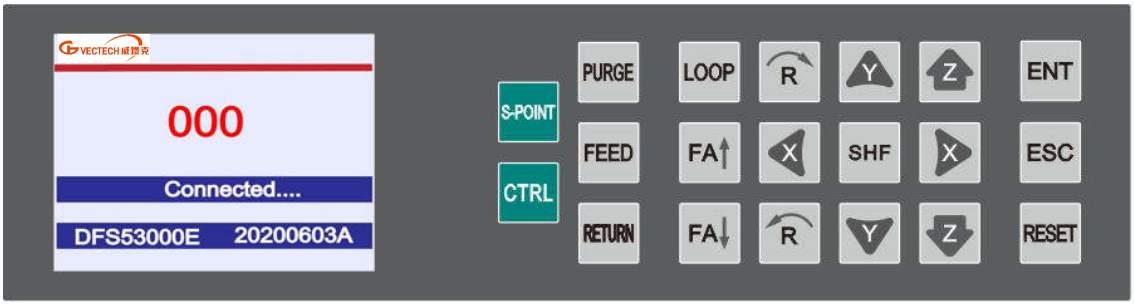


5.6.1 Pins Instruction of DB9



Item	Pins	Function	Item	Pins	Function
1	9P-1	No connection	6	9P-6	No connection
2	9P-2	TX(Transmitter signal)	7	9P-7	3-485A
3	9P-3	RX(Receiver signal)	8	9P-8	3-485B
4	9P-4	No connection	9	9P-9	No connection
5	9P-5	GND			

5.7 Operation Panel Introduction



In the operation panel field, the soldering machine can be controlled manually. On the left side, information is displayed, refer to **Main Window (connect teach pendant line).**

On the right side, all axes can be homed automatically by clicking "**RESET**" and all movement axes can be moved manually by clicking **"X", "Y", "Z", "R"** key. The machine step speed can be adjusted by clicking "**SHF**" key. Click on "**PURGE**" key, the soldering iron moves to tin slag box position and the cleaning file

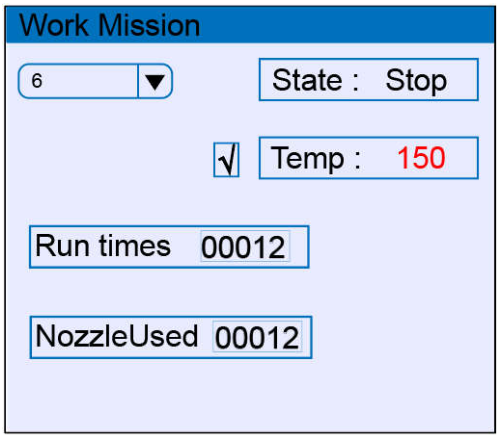
will be activated. Press "**FEED**" key once to feed wire by 2mm, press and hold it to continuously feed. Press "**RETURN**" key once to return wire by 2mm, press and hold it to continuously return.
Press "**S-POINT**" key to move the axis to defined start-point position, refer to **S-point Window**. Press "**CTRL**" key to turn ON/OFF heating controller. Press "**LOOP**" key to enter into loop window, refer to **Loop Window.** In the **Work Mission** window, press and hold "**SHF**" key 5s to enter into temperature calibration window, refer to **Temperature Calibration Window.**

5.7.1 Main Window (connect teach pendant)

When the machine and teach pedant are powered, the Main Window will be opened automatically. The real-time temperature, communication status and operation panel version are displayed

5.7.2 Main Window (disconnect teach pendant)

Disconnect the teach pendant line from operation panel after the machine is powered OFF. It will automatic enter into **Work Mission** window when the machine has been powered again, see picture:



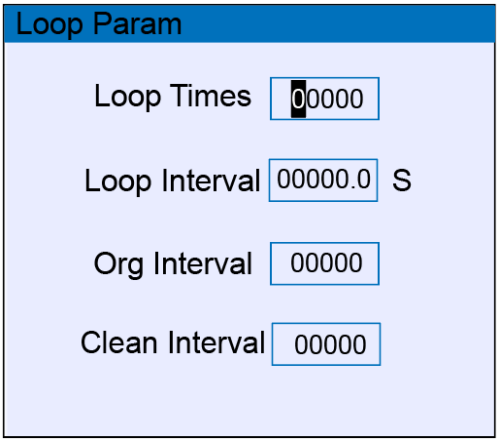
Work Mission window options

Item	Name	Description
1	6 ▼	1. The current work process file name. 2. Press **"Y+" "Y-"** key to change the file.

2	State : Stop	Show machine current status.
3	Temp : 150	Show tip current temperature. NOTE: press **"CTRL"** key to activate the temperature heating function.
4	√	Select box, only selected it the heating controller is operated by operation panel, and the right temperature is vaild.
5	Run times 00012	Display machine operation totalizer.
6	NozzleUsed 00012	Display solderig tip operation totalizer, press **"ENT"** button to reset.

5.7.3 Loop Window

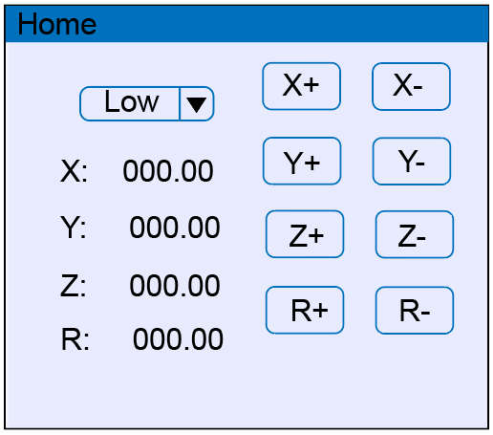
In the **Work Mission** window, press "**Loop"** key to enter into Loop window.



Press "**X+", "X-"**key to change the digital; press "**Y+", "Y-"** key to change the number; press **SHF** key to move the cursor. Press **ENT** key to save, and press **ESC** key to back to **Work Mission** window.

5.7.4 Home Window

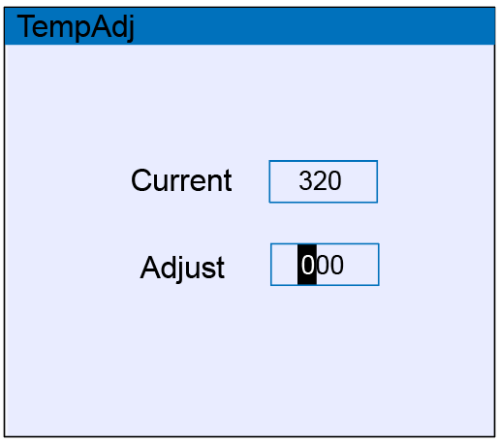
In the **Work Mission** window, Press "**HOME**" key to enter into Home calibration window.



In the left side, the soldering iron coordinates are displayed, and you can press the "**SHIF**" key to select movement speed (Low/High/Middle) during operating; in the right side, All axis can be moved manually by clicking "**X+**", "**X-**", "**Y+**", "**Y-**", "**Z+**", "**Z-**", "**R+**", "**R-**" key. Press **ENT** key to save, and press **ESC** key to back to **Work Mission** window.

5.7.5 Temperature Calibration Window

In the **Work Mission** window, Press and hold **SHIF** key for 3s to enter into the temperature calibration window.



Press **"X+", "X-"** key to change the digital; press "**Y+**", **"Y-"** key to change the number. Press **ENT** key to calibrate, and press **ESC** key to back to **Work Mission** window.

6 Troubleshooting

6.1 Overview

If you have difficulty operating machine, use this section to identify a possible solution to the problem. If you have difficulties not listed in this section, or the suggested solution does not correct the problem, contact us for supporting.

6.2 Record Keeping

The type of procedure performed should be recorded in a maintenance record. Dates, picture of replaced parts, changing times and other pertinent information should be recorded.

6.3 Basic Troubleshooting

6.3.1 Machine Power

Malfunction Type	Possible Cause	Correction
Machine does not power on.	The power command button is not pressed.	Press it.
	Power supply cable is disconnected.	Connect the power supply cable to an AC source.
	E-stop button has been activated.	Pull the E-stop button counter clockwise until it pops out.
Machine fails to start	The operating mode is manual.	Switch to automatic loop mode.
	E-stop button has been activated.	① Pull the E-stop button counter clockwise until it pops out. ② Press RESET command button on the front panel.
	START key error	Replace a new one

6.3.2 Pneumatic System

Malfunction Type	Possible Cause	Correction
No air pressure	Compressed air source is not connected.	Check and connection
	Main air solenoid close.	Check and open it.
	Air pressure setting too low.	Set a proper air pressure.

6.3.3 Machine Startup

Malfunction Type	Possible Cause	Correction
Communication Error	Communication failure	① Verify COM port settings. ② Check if the communication cables are attached or not. ③ See if the Main Board is functioning.
Axis not motion	No power	Follow the Power-ON step to power.
	Limiting sensor cable disconnected.	Connect cable.
	No click on START key	Press and hold two START buttons simultaneously for 2s to activate process file.

6.3.4 Camera System

Malfunction Type	Possible Cause	Correction
No image in the monitor display.	Camera not connected.	Connect it.
	Camera cable faults.	Replace a required one.
	Lens is blocked.	Remove and inspect the lens, if necessary, replace it.
	Light source intensity is too low.	Increase light level.
Light source is OFF	Camera not connected.	Connect
	Camera cable faults.	Replace a required one.
	Light source is closed.	Open it.

Malfunction Type	Possible Cause	Correction
Un-focused Image	Substrate is not within height focus limits.	Adjust
	Lens is loose.	Tighten
	Lens is damaged or blocked	① Replace a new one, ② Remove the blocks.

6.3.5 Limiting Sensor

Malfunction Type	Possible Cause	Correction
Limiting sensor does not power on.	The power cable is not plugged in.	Check and plug in.
Limiting Sensor does not trigger.	Sensor is damaged	Replace, refer to **7.3.5 Limiting Sensor Replacement.**
Intermittent function.	Loose or frayed cables	① Tighten cable ② Replace a new

6.3.6 Heating Controller

Malfunction Type	Possible Cause	Correction
Heating controller does not power	① Power cord is disconnected. ② The heating controller is set a temperature value below 100℃ by teach pendant.	① Connect. ② Increase temperature value.
Heating controller is power but no temperature.	The heating controller is in sleeping mode. (When the set temperature is more than 200℃, the standby temperature will be 200℃ when in sleep mode, when the set temperature is below 200 ℃, the standby temperature will be 50 ℃).	① Click on any button in heating controller panel to wake up. ② Trigger the process program.

6.3.7 Movement Parts

Malfunction Type	Possible Cause	Correction
One axis is offset intermittently during processing, but the other axes are normal.	1) Synchronous belts or retaining screws are loose. 2) Z & R axes connection cables are disconnected or loose. 3) Maybe the captured Mark picture is error, if the machine has a vision system. 4) Maybe the motor, main board or driver has problem.	1) Tension them, see **Tensioning Synchronous Belts**. 2) Remove the axis cover and tighten them, see **Removing Axis Covers**. 3) Recreate a new obvious point as the Mark, see **Creating a Mark File**. 4) Inspect and replace if necessary, see **Replacing Servo Driver**, **Replacing Main Board**.

NOTE: If you have any problem out of list, please contact us for supporting!

7 Maintenance

7.1 Daily Inspection

Safety Introductions:

Risk of electric shock!

Be sure to open the cabinet door after the power off.

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!

Risk of electric shock and injury!

After the repair, please do not forget the tool in the cabinet switch, make sure the door of the cabinet switch is closed.

The power switch should be labeled "no power supply" during maintenance, so as to prevent non-related personnel from closing the switch.

Daily check:

1) Check if there are flammable or explosive items close to the machine.
2) Check if the working voltage is correct.
3) Check if pneumatic system is normal, if the air tube is smooth.
4) Check if home position of each axis is correct.
5) Test the movement and communication performance of the machine.
6) Check if the emergency button can be pushed and unscrewed normally.
7) Check if the external screws of the machine are screwed well.
8) Clean the working environment of machine.
9) Write down machine condition in each shift.
10) Run a testing program after each shift.

7.1.1 Inspection before ON

Parts	Item	Service	Remarks
Ground cable & other cables.	Looseness	Re-tightening	
	Breaking or damage of wire	Replacement	
Working voltage.	Checking		
Motion platform	Attachment of spatter or dust.	Removal of spatter or dust.	Do not blow them off with compressed air, dust and spatter may enter the clearance or inside the cover, resulting in damage to the machine.
	Looseness	Re-tightening	
Safety door	Damage	Replacement	Read the technical information on their manual.
Working area	Tidiness		

7.1.2 Inspection after ON

Note: check that no personnel are present within the working area before turning on the power.

Parts	Item	Service	Remarks
Emergency stop button	Turn off the servo power immediately.	Replacement	Do not use the machine unless the button is repaired.
Motion platform	Each axis makes steady and smooth motions (no abnormal vibration, noise or looseness) in manual and operation mode.		Do not use the machine unless the motion platform is repaired.
Limiting sensor	When the home return is completed, the origin limit sensor is sheltered.	Replacement	
Cooling Fan	Cooling air inlet fan of the switch cabinet. Attachment of dust on the fan.	Clean	Turn off the power before cleaning the fan.
Testing	Run a testing program.		

Parts	Item	Service	Remarks
Light house	Damage	Replacement	

7.2 Parts Maintenance Schedule

7.2.1 Lubrication Chart

Machine part	Standard Grease	Remark
X Axis component	THK AFB-LF Grease	Grease nipple type: A-M6F
Y Axis component	THK AFB-LF Grease	Grease nipple type: A-M6F
Soldering head component	THK AFB-LF Grease	Grease nipple type: PB107

7.2.2 Guide & Screw Lubrication

1. Thoroughly wipe off the anti-rust oil before using the product.
2. Lubrication is needed to let the module demonstrate their functions fully. Using the product without sufficient lubrication may increase wear of the rolling elements or shorten the service life.
3. Do not mix different lubricants. Mixing greases using the same type of thickening agent may still cause adverse interaction. Use grease according to the attached lubrication chart.
4. When using the product in locations exposed to constant vibrations or in special environments such as clean rooms, vacuum and low/high temperature, use the grease appropriate for the specification/environment.
5. Because the intervals between greasing vary depending on the conditions of product use, it is recommended that the greasing interval be determined through an initial inspection. Although the lubrication interval may vary according to use condition and the service environment, lubrication should be performed approximately every 100km in travel distance (3 to 6months).It is recommended to add grease to the ball screw and guide rail. Replace the grease if there is any color change.
6. Machine lubrication part bases the attached lubrication chart.

7.2.3 Pneumatics System

Maintenance Schedule

Task	Operating hours	Daily	Weekly	Monthly	Every 3 months	Every 6 months	Annually
Check air pressure	8	√					
Clean	40					√	
Check for leaks			√				
Check Water Trap, replace soiled Water Trap.							√

7.2.4 Heating Controller

Parts	Item	Service	Remarks
Power Switch	Press it to power on heating controller	Replacement	
Connection Line	Check if loosen	Retighten	

7.3 Routine Parts Maintenance

7.3.1 Prolong Tip Lifetime

Coat the soldering tip with solder to prevent oxide.

Set the temperature as per application but as low as possible.

Choose the right type of soldering tips.

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 time continuous using).

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

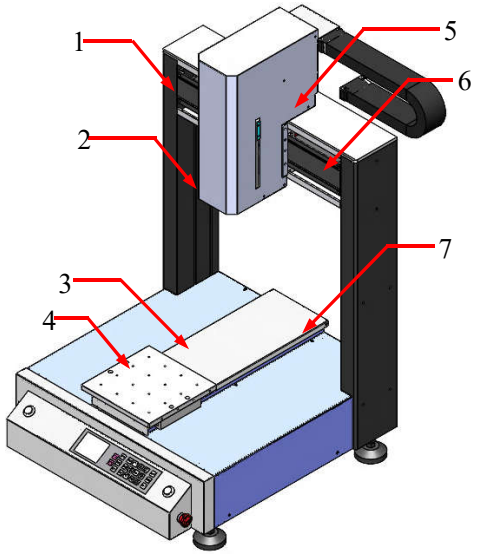
The plating would be broken if the tip is bent. Do not use the soldering tip as a detecting tool.

Activated rosin will corrode the tip plating. Choose the solder wire with less activated rosin.

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.

7.3.2 Removing Axis Covers

In order to lubricate the linear guides and tension the cables, it will be necessary to remove the axis covers. The shout down procedure should be performed before removing the covers of axes.



Item	Description	Item	Description
1	X-Axis cover	5	Soldering head screw
2	Soldering head cover	6	X-Axis screw
3	Jig baseplate	7	Y-Axis screw
4	Y-Axis cover		

Fig. Movement covers position

To remove the X-Axis cover:

1) Move the soldering head to the middle of X-axis by hand.
2) Use a hex key to loosen the four X-Axis screws (6).
3) Slide out the X axis cover (1) from right side and set aside.

To remove the Y-axis cover:

1) Use a hex key to loosen the four Y-Axis screws (7).
2) Slide out the Y axis cover (4) from front side and set aside.

NOTE: Make sure the jig baseplate (3) should not be removed.

To remove the soldering head cover:

1) Disconnect the feed and iron cables from the rear side of the soldering head.

2) Remove the wire feed device from soldering head and set aside.

3) Use a hex key to loosen the eight soldering head screws (5).

4) Remove the soldering head cover (2).

7.3.3 Lubricating Guide & Screw

To ensure smooth movement, the X &Y guides and Z axis screw must be lubricated approximately every three months or 100km in travel distance. Before perform the following procedure, you need consult **Lubrication Chart**.

To lubricate guide and screw:

1) Follow the Turn off sequence to shut down power supply.

2) Move the soldering head to the front of working area.

3) Remove the X,Y&Z axes covers, see **Removing Axis Covers**.

4) Using a clean and soft cloth to clean and wipe the X,Y&Z rails.

➢ Manually move the X, Y & Z axes to reach all parts of the rails.

5) Locate the grease fitting on each of the rails.

6) Attach grease gun to each fitting and pull the grease gun lever one time to squirt grease, .

7) Use a soft cloth to clean up excess grease.

8) Replace the X,Y&Z Axes covers.

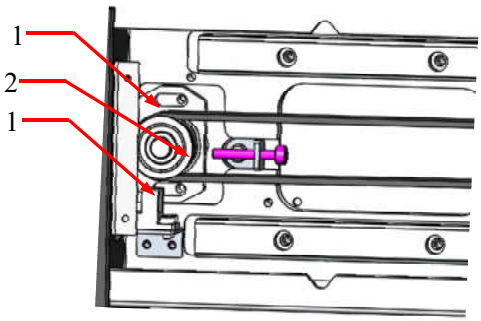
9) Power on the machine when all lubrication steps are finished.

10) In the Manual window of software. Click on Manual Key(X, Y, Z) to move the soldering head back and forth in X,Y&Z axes.

11) Use a clean and soft cloth to clean up the working area.

7.3.4 Tensioning Synchronous Belts

To ensure smooth moving jig substrate, the belts must be inspected approximately every six months. If the belts are replaced or loosen, tensioning it.



Item	Description
1	Tensioner screw

Item	Description
2	Adjustable screw

Fig. Belt component

To tension belts:

1) Follow the Turn off sequence to shut down power supply.

2) Remove the axes covers, see **Removing Axis Covers**.

3) Loosen the two tensioner screws (1).

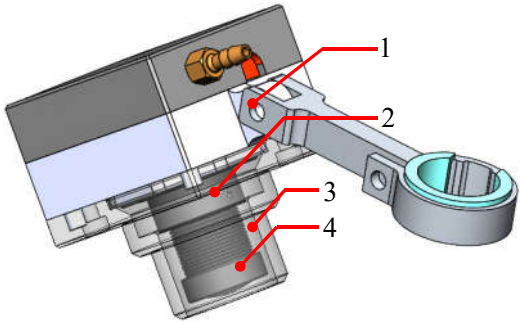
4) Rotate the adjustable screw (2) clockwise until the desired tension is obtained, and if the tension is force, rotate it count clockwise to decrease.

5) Tighten the tensioner screws.

7.3.5 Focusing Monitor Camera

If the monitor is displayed to accommodate a different iron height, the monitor camera focusing procedure need be performed again. The camera focusing procedure must contain following conditions:

- The machine has been powered on.
- The soldering iron is in room temperature.
- The camera has been installed.



Pic. Monitor camera

Table: Monitor camera component parts list:

Item	Part Name	Item	Part Name
1	M3 Screw	3	Protection cover
2	Cross Screw	4	Knob

Follow the steps below:

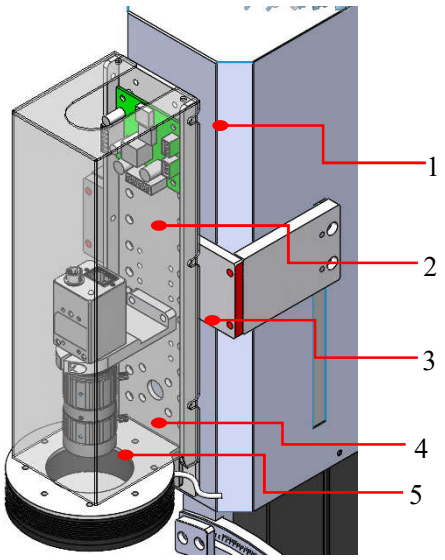
1. Unscrew the M3 screw (1) with hex wrench to adjust the camera angle.
2. Remove the protection cover (3) (magnetic type, no need of tools).
3. Loosen the cross screw (2) installed in the camera.
4. Rotate the knob (3) until the image displays clearly in the monitor.

5. Tighten the cross screw (2).
6. Fit the protection cover (3).

7.3.6 Focusing Vision Camera

If the vision system is displayed to accommodate a different product height, the vision camera focusing procedure need be performed again. The camera focusing procedure must contain following conditions:

- The machine has been powered on.
- The soldering iron is in room temperature.
- The camera has been installed.
- The vision system shows the actual picture what camera captures.



Pic. Vision camera

Table: Vision camera component parts list:

Item	Part Name	Item	Part Name
1	6-M3 Screws	4	Cross screw
2	2-M3 Screw	5	Knob
3	Protection cover		

Follow the steps below:

1. In the vision system, click on  icon and the video window opens.
2. Using the teach pendant to move the jig baseplate.

- Stop moving until camera is above the jig baseplate.

3. Unscrew six M3 screws (1) with hex wrench, and remove the protection cover (3).

4. Unscrew two M3 screws (2) with hex wrench to adjust the camera height.

➢ Slowly move the camera component up and down until a required image area appears.

5. Loosen the cross screw (4) installed in the camera.
6. Rotate the knob (5) until the image displays clearly in the monitor.
7. Tighten the cross screw (4).
8. Fit the protection cover (3).

NOTE: If you have any problem, please contact us for supporting.

7.3.7 Draining Water Trap

To drain water trap:

1) Turn off the machine**.**
2) The Water Trap is located at the front of machine.
3) Disconnect the compressed air supply from the Pneumatic System.
4) Put a container under the Water Trap to catch the waste water.
5) Press the Water Drain knob.
6) Loosen the Water Drain knob, when it has been drained.
7) Connect the compressed air supply tube into Air Port.

7.3.8 Cleaning Camera Lens

To clean camera lens:

1) Turn off the machine, refer to **Power-OFF Procedure.**
2) Slowly pull the camera lens protective cover,

➢ The lens is located in camera by three magnet pins.

3) Use a soft and clean cloth with alcohol to wipe the lens dirt.
4) After 2-3 minutes, clean it again with a dry lint-free cloth.
5) Slowly install the camera protection cover.