VECTECH ET7583Z TWXBCB95

Desktop Screwing Machine

Instruction Manual

Thank you very much for purchasing this Machine.

This operation manual describes the features and operation of the machine. The detailed describes 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.

The specifications of the machine or the contents of this manual may be modified without prior notice to improve its quality.

Contents

1. Safety Instruction

1.1 Symbol Function

Serious warning	
	➢ The product poses a risk of electric shock. ➢ Only authorized personnel can change settings. ➢ Push the red emergency switch for power off in an emergency situation. ➢ Forbid working while the power wire was damaged. ➢ If the device remains unused for a long time, please pull the power cord out of power socket. ➢ During maintenance and inspection of the machine, attention power status and pull out the power plug of the controller. ➢ Install a Frame Ground to prevent electric shock. ➢ 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. ➢ Do not plug/unplug cables when the machine powers. If the machine has no long time be used, please pull out power cable.
	➢ Risk for injury. ➢ Do not extend your body when the machine works well or on power up. ➢ Do not wet and disassemble the machine when used. Also do not pull power cord. ➢ Please keep the machine and table clean, which will help reduce accidents.
	➢ Unprofessional can not change arbitrarily. When maintenance, please cut off the power supply and air pressure. ➢ This product is non-explosion-proof and is strictly prohibited for potential explosive environment.
	➢ Make sure that the heating controller parts are securely fastened to the machine before using it. ➢ Flammable and explosive objects or gas solvents are strictly prohibited in the working area.
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℃	➢ The product must be used or stored in an applicable environment. ➢ Working ambient temperature is 0~40℃,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) was 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.
<0.7MPa	➢ 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.

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.

④ All fittings are in the table as follow.

No.	Part Name	Model	Quantity	Figure
1	Screw feeder	ECS66	2pcs	
2	Teach pendant	7007	1pcs	
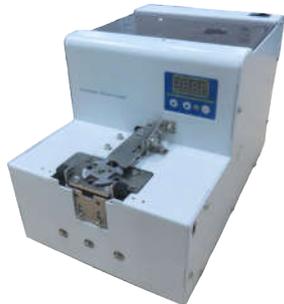
No.	Part Name	Model	Quantity	Figure
4	Teach pendant cord	DB9	1pcs	
5	Power cord		1pcs	
6	Manual	Manual instructions	1set	
7	Key box	8031HA	2pcs	

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

2. Introduction

The automatic locking screw machine is designed to adapt to the automatic direction of fast locking screw. It is a set of fully three-dimensional and high-precision special motion control equipment. The automatic locking screw machine needs to be fixed on the motor platform before use, and the machine is programmed. After programming, press the start button of the automatic locking screw, then the product can be released according to the process. According to actual production requirement, on the premise of meeting the motion performance index, the optimized design of product structure, which let the machine work on integration with other agencies, more adapt to the requirement of automatic locking screw machine.

● 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.

● 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.

2.1 Specifications

Equipment Type		ET7583Z-TWXBCB95
Input voltage range		220V AC 50/60HZ
Power consumption		500W
Axis number		3
Movement Range (max)	X (mm)	500
	Y (mm)	500
	Z (mm)	150
	R (degree)	--
Movement Speed	X (mm/sec)	0.1~1000
	Y (mm/sec)	0.1~1000
	Z (mm/sec)	0.1~300
	R (degree/sec)	--
Repeatability	X/Y/Z (mm)	±0.01
	R (degree)	--
Resolution	X/Y/Z (mm)	0.01
	R (degree)	--
Payload Weight(Kg)	Z Axis	--
	Y Axis	8
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℃
	Humidity	20％～90％（No condensation）
Weight(Kg)		115

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

2.2 Parts Description
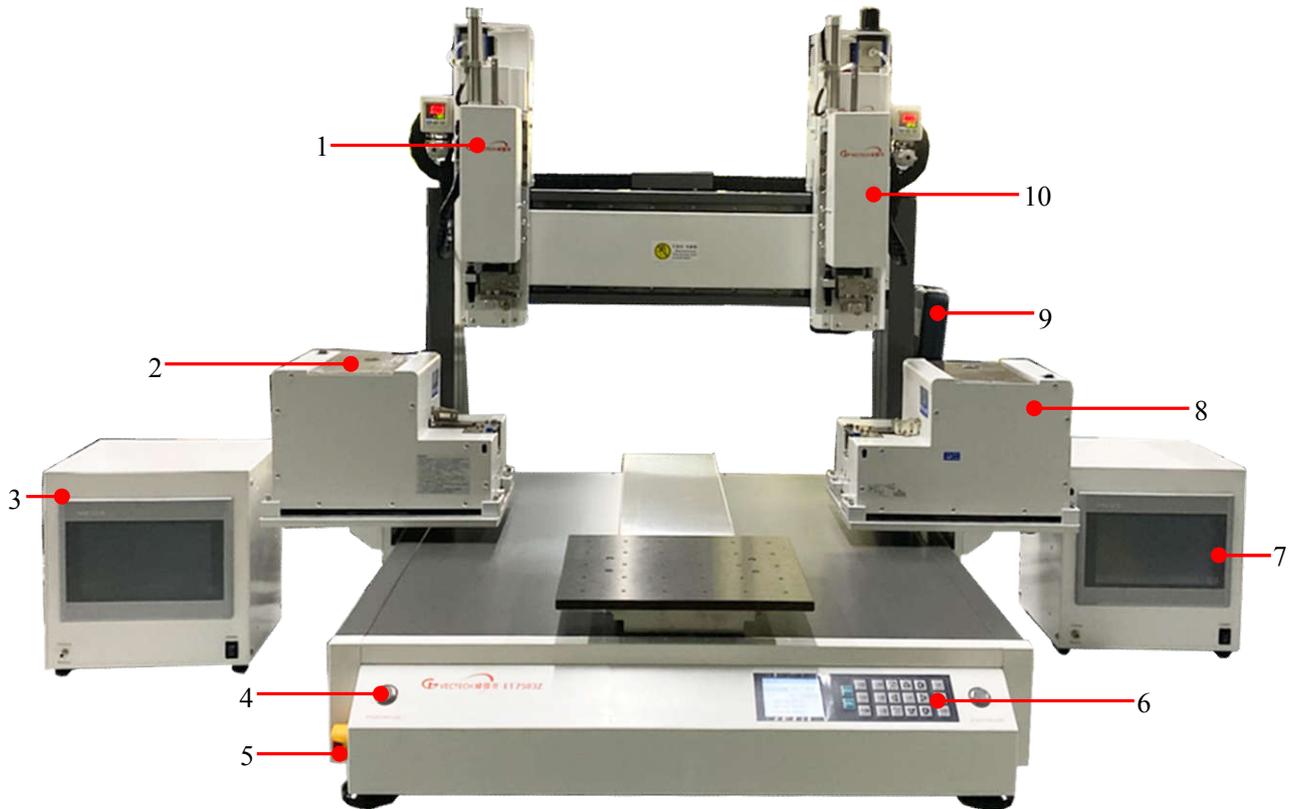
Parts name list:

Item	Part name	Item	Part name
1	Left Z axis module	6	Operation panel
2	Left screw feeder	7	Right screwdriver power supply controller
3	Left screwdriver power supply controller	8	Right screw feeder
4	Start/Pause button	9	Teach pendant
5	Emergency stop button	10	Right Z axis module

2.3 Dimension
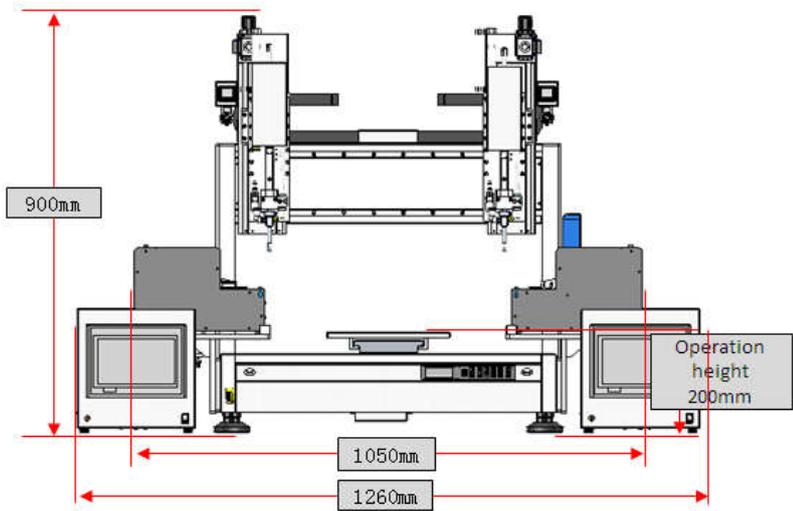
Front view   Left view
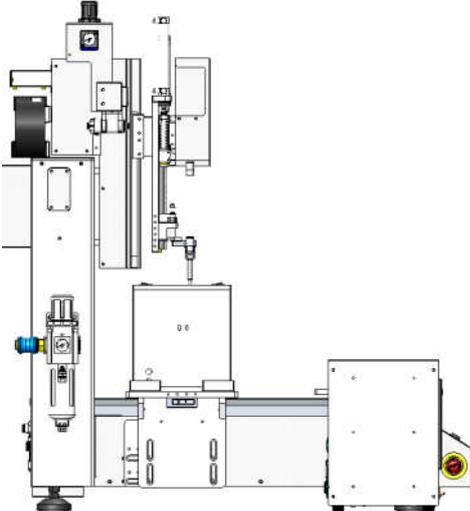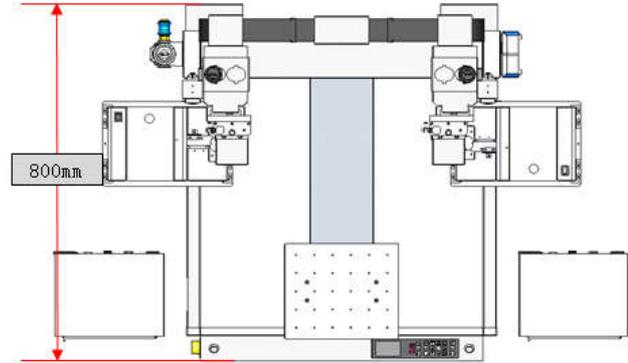
Top view   3D view
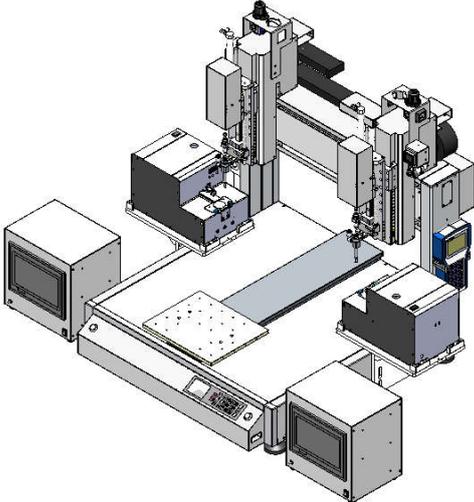
Unit: mm

3. Connection & Use

3.1 Connection
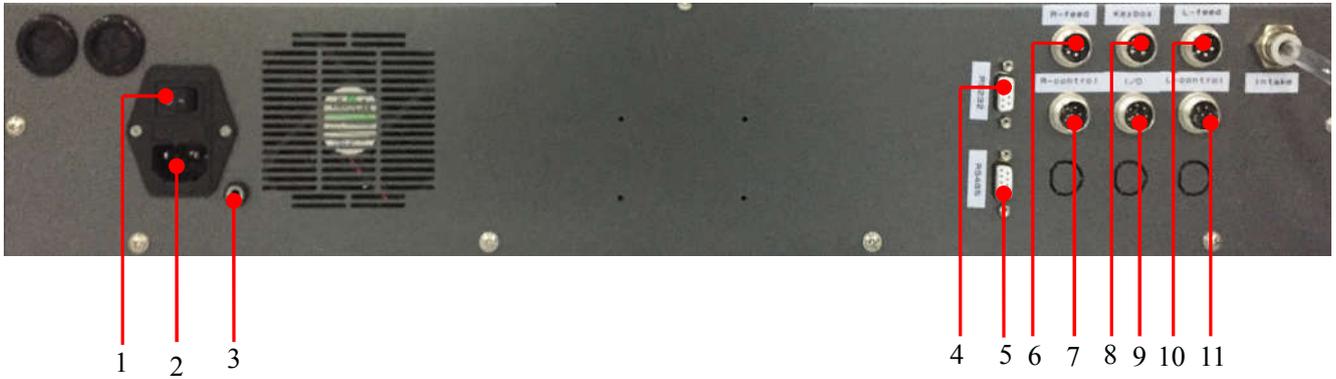
1. Power switch: connect/disconnect the power supply to machine.

2. Power inlet module: connect 220V AC line cord to power inlet module.

3. ESD socket: reliable grounding is essential for screwing machine.

4. DB9 socket 1: Follows RS 232 Standard Communication Protocol, pin's functions refer to **3.3.1 Pins Instruction of DB9 Socket 1**

5. DB9 socket 2: Follows RS 485 Standard Communication Protocol, pin's functions refer to **3.3.2 Pins Instruction of DB9 Socket 2.**

6. 5-pin socket: connect to right screwing feeder, refer to **3.2.3 5-pin Socket instruction.**

7. 6-pin socket: connect to right screwdriver power supply controller, refer to **3.2.4 6-pin Socket Instruction.**

8. 4-pin socket: connect to key box, refer to **3.2.2 4-pin Socket Instruction.**

9. 8-pin socket: spare, refer to **3.2.5 8-pin Socket Instruction.**

10. 5-pin socket: connect to left screwing feeder, refer to **3.2.3 5-pin Socket instruction.**

11. 6-pin socket: connect to left screwdriver power supply controller, refer to **3.2.4 6-pin Socket Instruction.**

3.2 I/O Socket Instruction

3.2.1 Circuit Instruction of I/O Socket
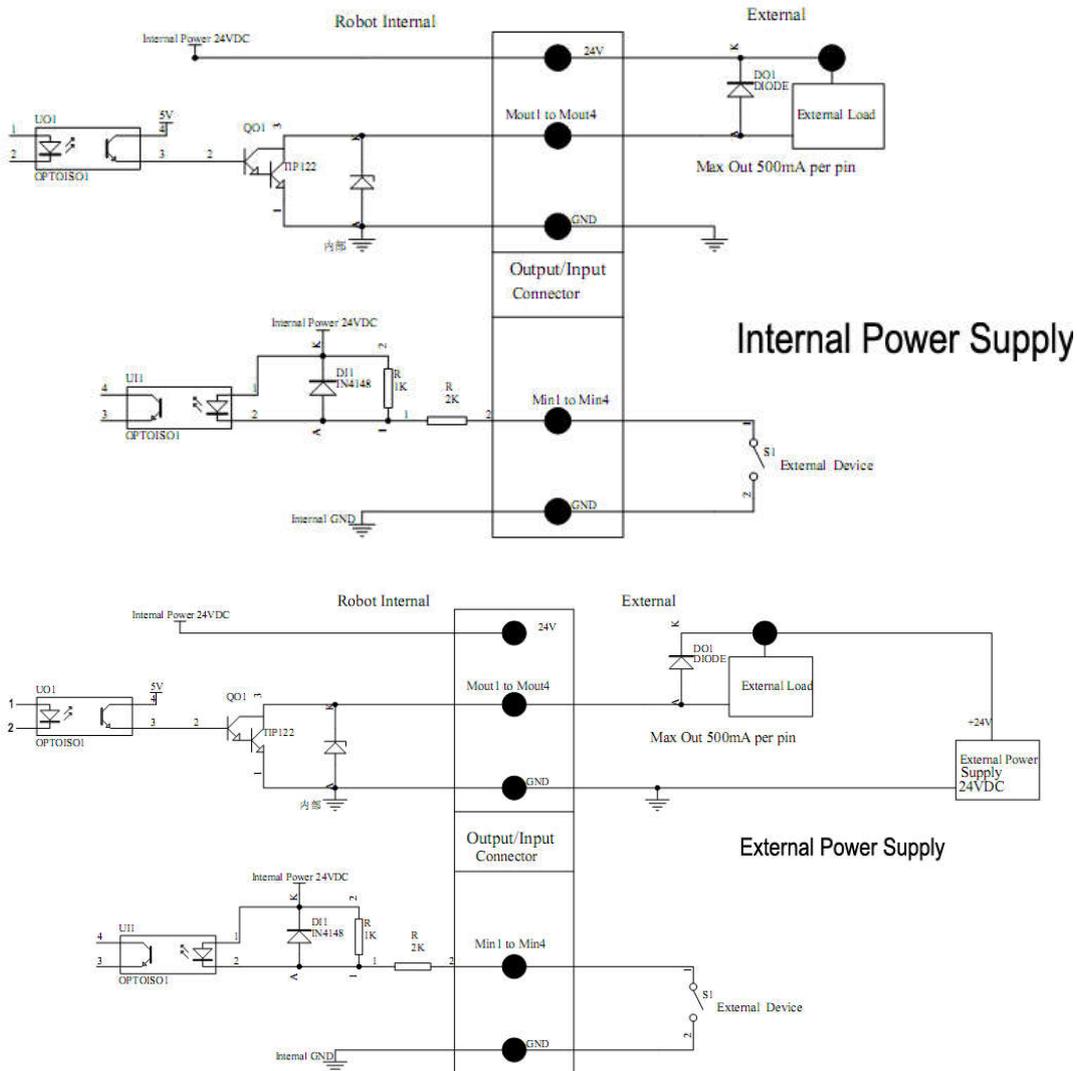
3.2.2 4-pin Socket Instruction

The following list describes the pins function of the 4-pin socket, it is connected to key box.

4-pin socket	Pin	Pin Name	Description
	4P-1	Min4	Connect to "START/PAUSE" button.
	4P-2	GND	"0V"
	4P-3	Min1	Connect to "ORG" button.
	4P-4	Min2	Connect to emergency stop button.

3.2.3 5-pin Socket instruction

5-pin socket is connected to left screwing feeder, pin's functions refer to following table.

5-pin socket	Pin	Pin Name	Description
	5P-1	24V	"24V" power supply
	5P-2	GND	"0V"power supply
	5P-3	Ein3	Left screw feeder ready signal
	5P-4	Ein4	Left screw feeder alarm signal
	5P-5	Eout3	Left screw feeder pick screw signal

5-pin socket is connected to right screwing feeder, pin's functions refer to following table.

5-pin socket	Pin	Pin Name	Description
	5P-1	24V	"24V" power supply
	5P-2	GND	"0V"power supply
	5P-3	Ein11	Right screw feeder ready signal
	5P-4	Ein12	Right screw feeder alarm signal
	5P-5	Eout11	Right screw feeder pick screw signal

3.2.4 6-pin Socket Instruction

6-pin socket is connected to left screwdriver power supply controller, pin's functions refer to following table.
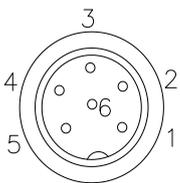
6-pin socket	Pin	Pin Name	Description
	6P-1	24V	"24V" power supply
	6P-2	GND	"0V"power supply
	6P-3	Eout1	Left screwdriver start movement signal
	6P-4	Eout2	Left screwdriver fast movement signal
	6P-5	Eout4	Left screwdriver reversal movement signal
	6P-6	Ein1	Left screwdriver ready signal

6-pin socket is connected to right screwdriver power supply controller, pin's functions refer to following table.
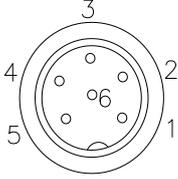
6-pin socket	Pin	Pin Name	Description
	6P-1	24V	"24V" power supply
	6P-2	GND	"0V"power supply
	6P-3	Eout9	Right screwdriver start movement signal
	6P-4	Eout10	Right screwdriver fast movement signal
	6P-5	Eout12	Right screwdriver reversal movement signal
	6P-6	Ein9	Right screwdriver ready signal

3.2.5 8-pin Socket Instruction

8-pin socket is spare socket, pin's functions refer to following table.

8-pin socket	Pin No.	Pin Name	Function
	8P-1	24V	"24V" power supply
	8P-2	GND	"0V"power supply
	8P-3	Eout14	Reserve
	8P-4	Eout15	Reserve
	8P-5	Eout16	Reserve
	8P-6	Ein14	Reserve
	8P-7	Ein15	Reserve
	8P-8	Ein16	Reserve
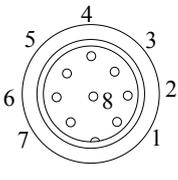
NOTE: * If the customers need special function, the input and output signal can be set again.

3.3 Instruction about DB9 Socket
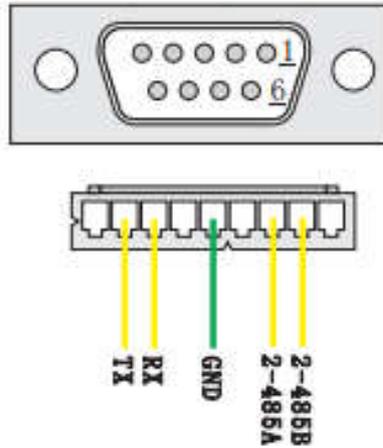
3.3.1 Pins Instruction of DB9 Socket 1

DB9 socket 1 follows Standard RS232 Communication Protocol.
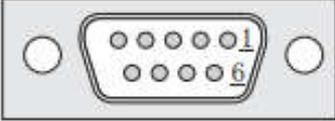
No.	Pins	Function	No.	Pins	Function
1	9P-1	No connection	6	9P-6	No connection
2	9P-2	TX (Transmitter signal)	7	9P-7	No connection
3	9P-3	RX (Receiver signal)	8	9P-8	No connection
4	9P-4	No connection	9	9P-9	No connection
5	9P-5	GND ("0V")			

3.3.2 Pins Instruction of DB9 Socket 2

DB9 socket 2 follows Standard RS485 Communication Protocol.
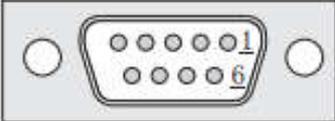
No.	Pins	Function	No.	Pins	Function
1	9P-1	No connection	6	9P-6	No connection
2	9P-2	No connection	7	9P-7	2-485A
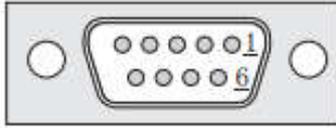
No.	Pins	Function	No.	Pins	Function
3	9P-3	No connection	8	9P-8	2-485B
4	9P-4	No connection	9	9P-9	No connection
5	9P-5	No connection			

3.4 Input & Output Instruction

● The following input interfaces and output interfaces are corresponding to the signal pins which are defined as "Min, Mout, Ein, Eout" at the above socket. Also, it is corresponding to the interface at the "IO Test" displaying window. After setting, it can test the function of IO interface at the "IO Test" displaying window.

● The interfaces in following table can be set at the "Input Configuration" or "Output Configuration" of "System Configuration 2" of teaching pendant.

● It can define the special function for the following input & output interfaces which are corresponding to the above sockets.

● Main board port define list:

Port	Description	Port	Description
Mout1	Left vacuum suction signal	Min1	Reset signal
Mout2	Left screwdriver down signal	Min2	Emergency stop signal
Mout3	Right vacuum suction signal	Min3	Safety signal
Mout4	Right screwdriver down signal	Min4	Left start signal
Mout5	Solenoid valve 1	Min5	Reserve
Eout1	Left screwdriver start movement signal	Ein1	Left screwdriver ready signal
Eout2	Left screwdriver fast movement signal	Ein2	Left pressure detection sensor
Eout3	Left screw feeder pick screw signal	Ein3	Left screw feeder ready signal
Eout4	Left screwdriver reversal movement signal	Ein4	Left screw feeder alarm signal
Eout5	Buzzer/light house	Ein5	Reserve
Eout6	Green light/light house	Ein6	Reserve

| Port	Description	Port	Description
Eout7	Yellow light/light house	Ein7	Reserve
Eout8	Red light/light house	Ein8	Reserve
Eout9	Right screwdriver start movement signal	Ein9	Right screwdriver ready signal
Eout10	Right screwdriver fast movement signal	Ein10	Right pressure detection sensor
Eout11	Right screw feeder pick screw signal	Ein11	Right screw feeder ready signal
Eout12	Right screwdriver reversal movement signal	Ein12	Right screw feeder alarm signal
Eout13	Solenoid valve 2	Ein13	Solenoid valve 3
Eout14	8P-6	Ein14	8P-3
Eout15	8P-7	Ein15	8P-4
Eout16	8P-68	Ein16	（8P-5）right Start button

3.4.1 I/O Ports Description

1. In the "Input Configuration " displaying window, it can set the input interface:Min1~Min4、Ein1-8、Ein09~Ein16.

Input Interface	Optional Function
Min1	--, Shortcut001, Origin BTN, Test input-1,Test input-2
Min2	--, Shortcut 002, Stop BTN, Test input-1,Test input-2
Min3	--, Shortcut003, Start BTN, Test input-1,Test input-2, Block fault, Upper CS, Nether CS
Min4	--, Shortcut 004, Foot BTN, Test input-1,Test input-2
Ein1~Ein8	--, Shortcut 5-259
Ein01-Ein04	--
Ein05	--, Origin BTN, Stop BTN, Start BTN, Foot BTN, Test input-1, Test input-2, Shortcut 009, Lack fault, Air fault
Ein06	--, Origin BTN, Stop BTN, Start BTN, Foot BTN, Test input-1,Test input-2, Shortcut 010, Lack fault, Air fault
Ein07	--, Origin BTN, Stop BTN, Start BTN, Foot BTN, Test input-1,Test input-2, Shortcut 011, Lack fault, Air fault
Ein08	--, Origin BTN, Stop BTN, Start BTN, Foot BTN, Test input-1,Test input-2, Shortcut 011, Lack fault, Air fault

Input Interface	Optional Function
Ein09-Ein12	--,
Ein13	--, Origin BTN, Stop BTN, Start BTN, Foot BTN, Test input-1,Test input-2, Shortcut 264, Lack fault, Upper CS, Nether CS, Air fault
Ein14	--, Origin BTN, Stop BTN, Start BTN, Foot BTN, Test input-1,Test input-2, Shortcut 265, Lack fault, Upper CS, Nether CS, Air fault
Ein15	--, Origin BTN, Stop BTN, Start BTN, Foot BTN, Test input-1,Test input-2, Shortcut 266, Lack fault, Upper CS, Nether CS, Air fault
Ein16	--, Origin BTN, Stop BTN, Start BTN, Foot BTN, Test input-1,Test input-2, Shortcut 267, Lack fault, Upper CS, Nether CS, Air fault
Kin1-Kin4	--

2. In the "Output Configuration " displaying window, it can set the output interface: Mout1~Mout4、Eout09~Eout12、Eout13~Eout16.

Output Interface	Optional Function
Mout1~Mout4	--
Eout09~Eout12	--
Eou13-Eou16	--, Ready Flag, Alarm Flag, Working Flag, WorkEnd Flag, Cylinder, Clean Output, Lock alarm, Lock error

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

Namely: "Eout8+ 1" is the expansion output interface "Eou09". "Eout8+ 2" is the expansion output interface "Eou10". "Eout8+3" is the expansion output interface Eout11, by parity of reasoning.

"Ein8+1" is the expansion input interface Ein09，"Ein8+2" is the expansion input interface Ein10，

"Ein8+3" is the expansion input interface Ein11, by parity of reasoning.

3.4.2 I/O Function Instruction

Function of Input	Function Instruction
--	N/A.
Origin BTN	Input the reset signal into the unit by corresponding signal pin, and the unit will run the reset (ORG) operation.
Stop BTN	Input the stop signal into the unit by corresponding signal pin, and the unit stops the current operation.
Start BTN	Input the start signal into the unit by corresponding signal pin, and the unit starts to work or pauses the current work.
Foot BTN	Input the foot switch signal into the unit by corresponding signal pin and the unit runs the foot switch operation and the function is similar with the "Start BTN".
Test input-1	Input the signal "break over ground" into the unit by corresponding signal pin and the unit comes into the testing state (cannot move and can only be programmed).。
Test input-1	Input the signal "break over ground" into the unit by corresponding signal pin and the unit comes into the testing state (cannot move and can only be programmed).
Lack fault	Input the signal "lack fault" into the unit by corresponding signal pin and the unit comes into the process, such as stop working, alarming etc.
Upper CS	Input the signal "cylinder up sensor (in retraction state)" into the unit by corresponding signal pin and the unit judges the position of cylinder whether in retraction state.
Nether CS	Input the signal "cylinder down sensor (in reaching state)" into the unit by corresponding signal pin and the unit judges the position of cylinder whether in reaching state.
Shortcut	It is corresponding to the shortcut of processing file. The shortcut can be set in the "File Name" display window of teaching pendant. It can be used do find the required processing files quickly.
Shortcut1	Min1
Shortcut 2	Min2
Shortcut 3	Min3
Shortcut 4	Min4
Shortcut 5~259	It is corresponding to the "Ein1~Ein8". Namely, the high & low electrical level of "Ein1~Ein8" can form 255 (1~255) kinds signal. The shortcut (5~259) is the sum of the electrical level digit add 4.

Function of Output	Function Instruction
--	Have no function.

Function of Output	Function Instruction
Ready Flag	When the unit comes into the normal ready state, the output is in conducting state, namely, once receiving the "START" signal, it comes to run. And it closes the output after running.
Alarm Flag	When set the mode as alarming, once it detects the abnormal state, the output is in conducting state, or else not.
Working Flag	When the unit comes into the working state, the output is in conducting state, or else not.
WorkEnd Flag	After t finishing the process, the output is keeping in conducting state 200ms, or else not.
Cylinder	Once the unit comes to run the cylinder process, the output is in conducting state, control cylinder motion, or else not.
Clean output	Once the unit comes to run the clean process, the output is in conducting state, do the clean (blowing or revolving brush), or else not.

Note: 1、The function settings of input & output cannot be accessed by the operator. It can only be operated by the manufacturer.

2、Will not give advanced information if some functions are changed.

4. Commissioning

4.1 Debug Steps

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 are fixed.

5. Inspect if the emergency stop switch was pushed or not.

6. Inspect if the power switch was OFF or not.

7. Attach and detach the moving parts to make sure it is smooth.

8. Inspect if the socket and pipe is well-connected, make sure there is no leak.

4.1.2 Operation of First Time

Outline from unpacking to operation of equipment procedure
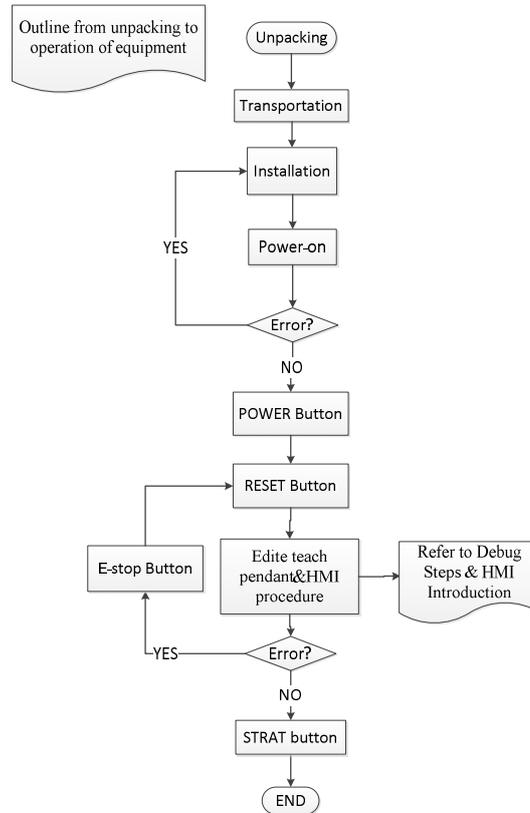
4.1.3 Set Screwing Position

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

Caution: If the device is double-Y, it has left PT and right PT. If the device is single Y, it will only have a left PT/ right PT.

1. Connect all the sockets, power cord and air input pipe.

2. Turn on power switch, adjust appropriate pressure.

3. Insert a point to need locking by teach pendant, the details are as follow:

① Select 2 "program" in the main interface of the teach pendant.
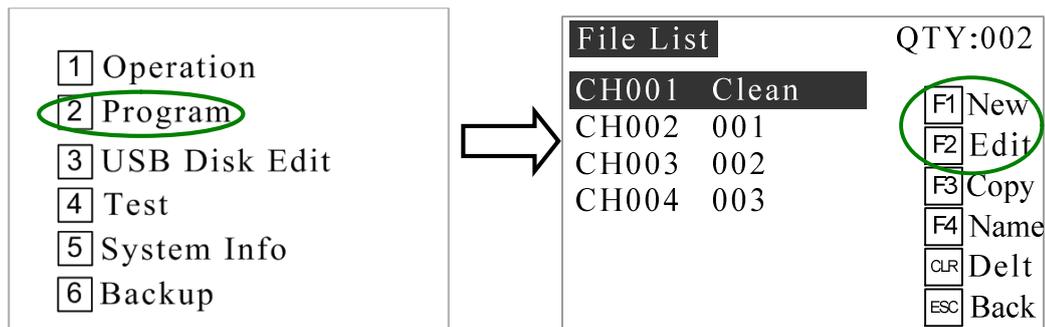
② After entering the window of the instruction program, select 1 "new" file, or select 2 "edit" to modify

the existing program. Below is the interface that enters after clicking F1 or F2

```
Name:
 1  Home Adj      F1  Lock Param
 2  Array         F2  File Edit
ENT Download       F3  Data Check
 #  Download      F4  File Param
    Source File
                           ESC Back
                           C
```
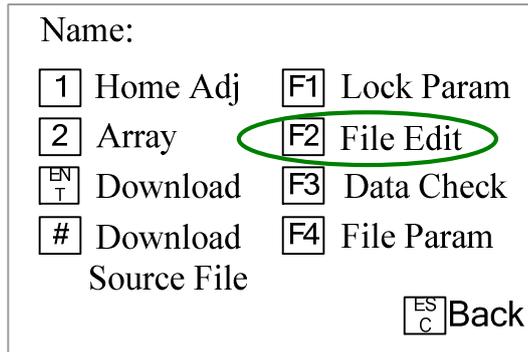
③ →After entering the file window, select 2 "file edit"

④ →After entering the "file edit", select 1 "insert+"

```
Points List                    0/0
                        #  Group
                        +/ Insert+
                        F1 +Insert
                        F2 Edit
                        F3 Clean
                        F4 Simu ×
                        CLR Dele
                        ENT Step
```
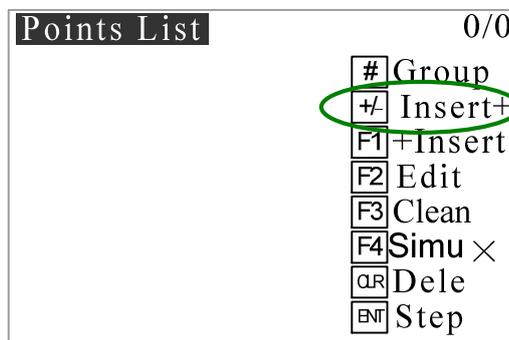
⑤ →And then select 1 "left pt"

```
Insert

 1  Left Pt    6  MARK
 2  Right Pt   7  Jump Pt
 3  Delay      8  Flag Pt
 4  Pause      9  Point
 5  OUT        F1 Mid Pt
                      ESC Back
```
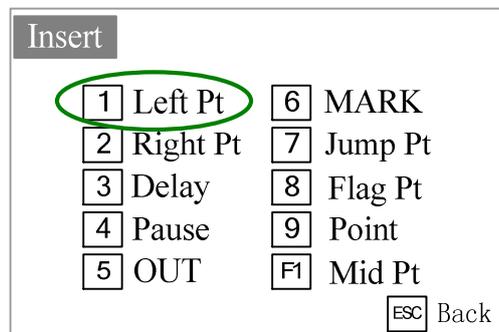
→The interface automatically returns to the top level, and the editing interface can see a newly inserted "left pt"
inside the program list inside the file.

```
Points List                    0/0
 001    Left Pt         #  Group
 002    Left Pt         +/ Insert+
                        F1 +Insert
                        F2 Edit
                        F3 Clean
                        F4 Simu ×
                        CLR Dele
                        ENT Step
```
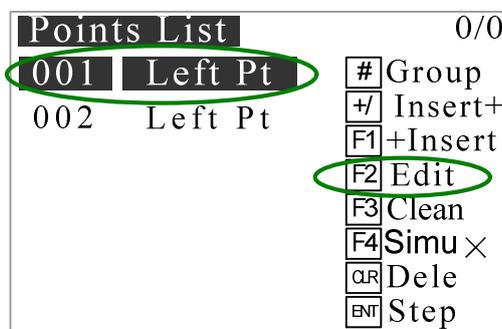
→Select the point needs to edit by navigation BTN, it will display with white background when it was select.

```
┌─────────────────────────────────────┐
│  ▐ Left Pt ▌                         │
│                    ⟨  Low  ⟩         │
│  X  069 14                           │
│                      ⟨↑⟩ ⟨Z-⟩        │
│  Y  038 19                           │
│                   ⟨←⟩      ⟨→⟩        │
│  Z  000 00                           │
│                      ⟨↓⟩ ⟨Z+⟩        │
│                                      │
│  ⟨ORG⟩ Origin ⟨F4⟩ Param ⟨ENT⟩ Save  │
└─────────────────────────────────────┘
```
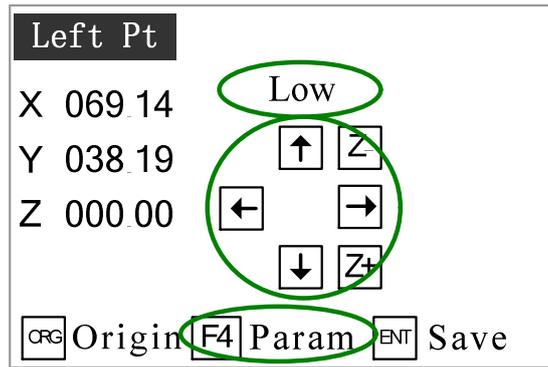
⑥   →Then you can change the location of point by navigation BTN, press SHF transform the speed (low, mid, high). Press ENT to save it.

⑦   →Edit left screw position:

```
┌──────────────────────────────┐        ┌──────────────────────────────┐
│  Name:                       │        │  ▐ Lock Screw Param ▌        │
│                              │        │    1  Left Screw Pos         │
│   1  Home Adj   F1 Lock Param│        │    2  Right Screw Pos        │
│   2  Array      F2 File Edit │   ⟹    │    3  Speed Param            │
│  ENT Download   F3 Data Check│        │    4  Time Pram              │
│   #  Download   F4 File Param│        │    5  Distance Param         │
│      Source File             │        │    6  Action Alarm           │
│                  ESC Back    │        │                              │
└──────────────────────────────┘        └──────────────────────────────┘
```

Select left screw position and navigate to take screw position.

```
┌─────────────────────────────────────┐
│  ▐ Left Taking ▌                     │
│                    ⟨  Low  ⟩         │
│  X  069 14           ⟨↑⟩ ⟨Z-⟩        │
│  Y  038 19        ⟨←⟩      ⟨→⟩        │
│  Z  000 00           ⟨↓⟩ ⟨Z+⟩        │
│                                      │
│  ⟨ORG⟩ Origin ⟨F4⟩ Param ⟨ENT⟩ Save  │
└─────────────────────────────────────┘
```
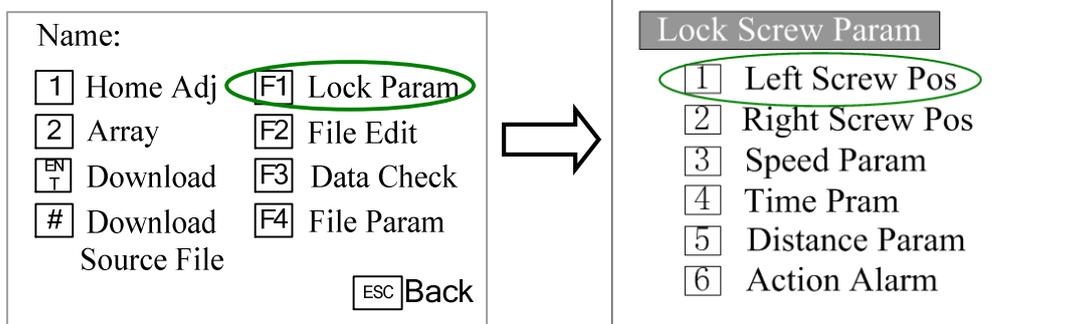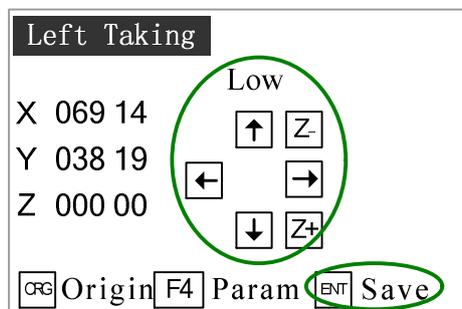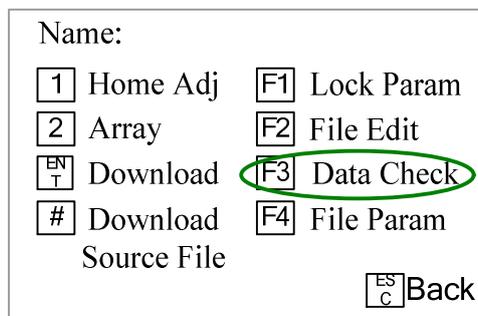
⑧   →Back to program interface, press data check. If your program is out of moving range, it won't display DATA CORRECT, you must enter point edition interface and edit the location which is out of rage.

```
┌──────────────────────────────┐
│  Name:                       │
│                              │
│   1  Home Adj   F1 Lock Param│
│   2  Array      F2 File Edit │
│  ENT Download   F3 Data Check│
│   #  Download   F4 File Param│
│      Source File             │
│                   ESC Back   │
└──────────────────────────────┘
```

4. Start locking screw:

Back to program interface, press ENT and download source file. It will enter processing interface, press START and the program will be processed.

Name:

1	Home Adj	F1	Lock Param
2	Array	F2	File Edit
ENT	Download	F3	Data Check
#	Download Source File	F4	File Param
		ESC	Back

Processing file name

Name: 001   0000.0s   ← Processing time

Displaying point's coordinate
X 026. 20
Y 030. 00
Z 025. 00

Status: Stop   ← Processing status
Loop00010/00010   ← Loop-processing count
F1 Start F2 Stop
F3 Clean F4 Set
ORG Org   CLR Clear
ESC Back
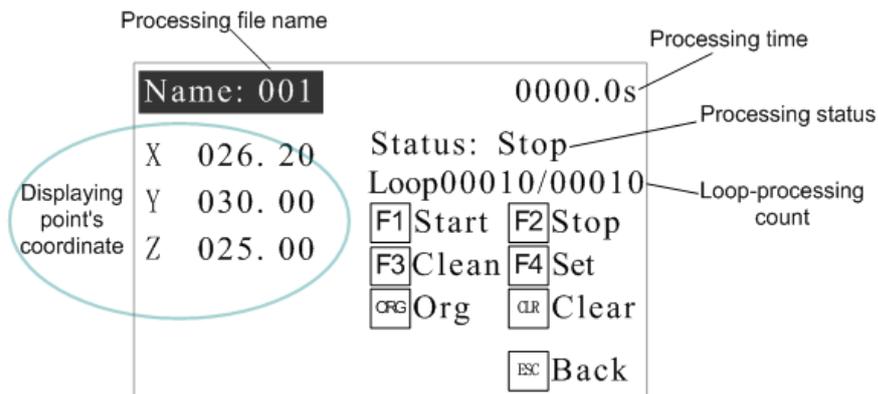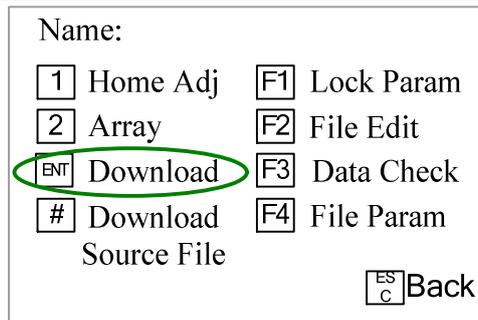
4.2 Interrupt and Continue

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 the "START" button and keep more than 2s not loosen, the machine will continue to work from the interrupted point. If press and hold the "START" button for 2s, the machine will start the work from the start-point of the processing file.

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 alarm*	A/B/C/D	Stop immediately
6	Block alarm*	A/B/C/D	Stop immediately

⚠ Caution：

● If it was interrupted by emergency stop, you can continue after dismiss the emergency stop and reset

● The above "interrupt type" is effective in the processing mode, and at the teaching mode and debugging mode, the "interrupt type" with "*" is ineffective.

4. A/B/C/D is interrupted mark, these mean:

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

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

5. Operation Panel

5.1 Introduction
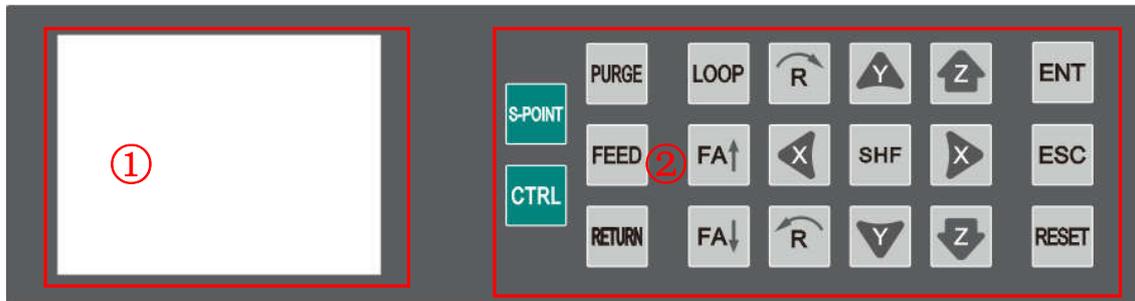
① Display area

Display temperature\communication\version information.

② Operation button

Operation button functions list:

Operation Button	Functional Description
	1. Direction Button 2. Manual control shift (X,Y,Z,R) movement
	1. Cylinder switch 2. "FA↑" cylinder ON button, "FA↓" cylinder OFF button
	1. Soldering tip purge button 2. The button will active when the purge file downloads. 3. The button is reserved in screwing machine.
	1. Speed change button 2. Total three speed: Low, Mid, Hig.
	Confirm button
	Reset button, press it to move the axis to default home position.

| Operation Button	Functional Description
LOOP	In the off-line status, press this button to enter into Loop window.
S-POINT	Start point button
ESC	1.Back button 2. Press this button to return main window, and the parameter will not save.
FEED	1. Wire feeding button 2. The button is reserved in screwing machine
RETURN	1. Wire back button 2. The button is reserved in screwing machine
CTRL	1. Heating controller switch (Built-in heating controller is effective) 2. The button is reserved in screwing machine.

5.2   Main Window (with teach pendant)

● Connect the power cord to the power supply.

● Connect teach pendant line from operation panel.

● Display version and communication information, see picture

5.3   Main Window (disconnect teach pendant cord)

Disconnect teach pendant cord from operation panel and it will automatic enter into Work Mission window, see following picture:
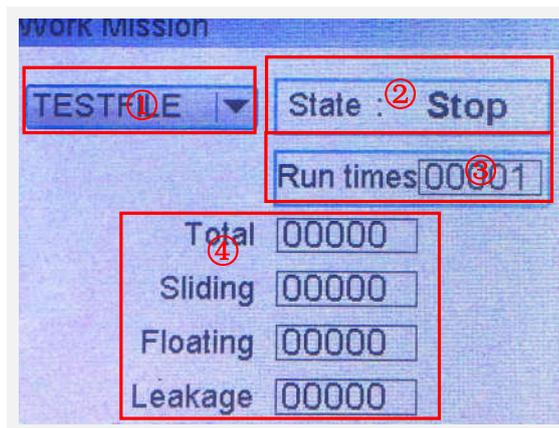
① The current work process file name.

Press [Y▲] [Y▼] button to change the file.

② State.

Show machine current state.

③ Run times

Display electric screwdriver operation totalizer.

④ Total

Display locking screw totalizer.

Sliding

Display sliding screw totalizer.

Floating

Display floating screw totalizer.

Leakage

Display leakage screw totalizer.

5.3.1 Loop Window
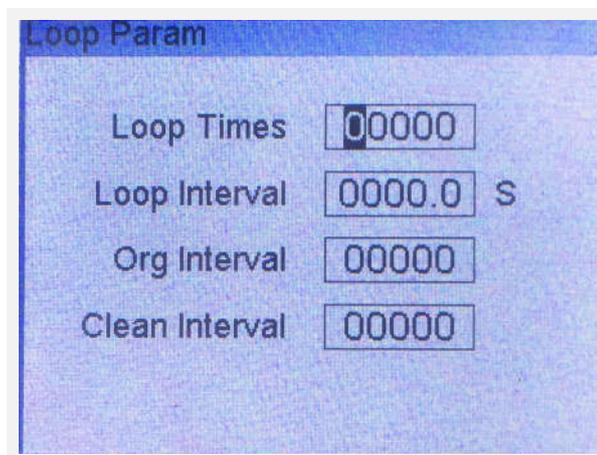
Press [LOOP] button to enter into Loop window.

Press button to change the digital; press button to change the number.

5.3.2 S-point Window
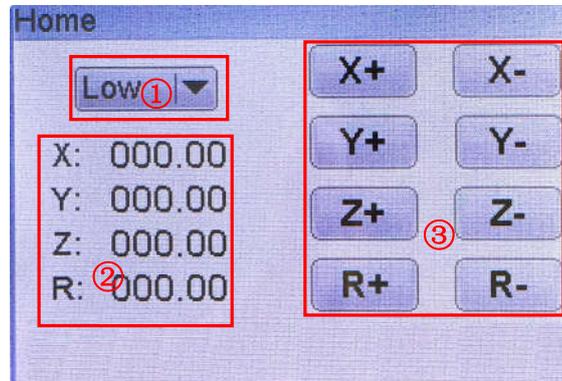
Press button to enter into Home calibration window.

① Speed smbol

Press the SHIF button to select Low/High/Medium speed.

② Display area

Display the current position of the bit.

③ Jog mode

All axis can be moved manually by clicking ,,,,,,,.

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

6. Troubleshooting & Maintenance

6.1 Troubleshooting

NO.	Troubleshooting	Reason	Measure
1	The unit can't reset.	Please check if the emergency BTN was pressed or not.	Dismiss the emergency BTN and press the ORG BTN.
2	The z axis unit movement wasn'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 was abnormal.	The board or the motor was 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 firmware always displays EMERGENCY STOP PLEASE RESET.	Was not reset.	Please dismiss the emergency BTN and reset the unit, if it doesn't work, the relay of the power board was abnormal.
5	The fuse has burned.	If the replacement of the fuse is still malfunctioning, it could be that the motherboard is broken.	Replace it
6	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.
7	X-axis only turns to one direction motion.	Driver board of X-axis broken.	Replace it
8	The unit is always	If overcome the trouble it	Press the emergency BTN and check if

NO.	Troubleshooting	Reason	Measure
	alarming.	was still alarming, maybe the emergency BTN was bad or the alarm flag wasn't feedback.	power will be cut or not. If the power wasn't cut, the emergency BTN is bad.
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	Sports parts are jammed.	The screw of the proximity sensor loosens, leading to a deviation near the sensor position.	Calibration of proximity sensors.
11	The accuracy of the machine declined.	1. Loose linear guide. 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.
12	There is something strange in the lead screw.	1. The bearings are damaged. 2. Lack of lubricating oil.	1. Clean or change the bearings. 2. Add the lubricating oil.
13	The lead screw was shaking while moving.	1. The lead screw was bent. 2. The lead screw and the motor are not concentric.	1. Change the lead screw. 2. Adjust the place of the lead screw.
14	The pressure watch is beating at work, and the pressure value is set to swing back and forth.	The sealing surface of the valve is attached to water or oxides.	Remove the valve and clean the moisture and oxides.
15	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.
16	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

NO.	Troubleshooting	Reason	Measure
			repair the puncture site.
17	Sometimes it is not available when the electrical batch is in place.	1. Electrical batch error 2. Program of power panel error.	1. Replace electrical batch. 2. Renew the program.
18	The device is out of step and starts to screw at the specified position.	CPU unit error	Replace CPU

6.2 Daily Check & Maintenance

Safety instructions:

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 electric control cabinet, make sure the door of the electric control cabinet is closed.

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 machine:

1) Check if there's flammable or explosive item close to the machine.

2) Check if the working voltage is correct.

3) Clean the nozzle. Check if the nozzle is corroded or worn out. If so, please replace it.

4) Check if the tube of screw 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 machine.

8) Check if the emergency button can be pushed and unscrewed normally.

9) Clean the working environment of machine.

10) Check if the external screws of the machine are screwed well.

11) Write down equipment condition in each shift.

12) Run a testing program after each shift.

Examination period of machine projects:

Inspecting with power off						
Items	**Inspecting position**	**Routine**	**Monthly**	**3 months**	**6 months**	**12 months**
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 is curving or position	The axis position of the machine	√	√	√	√	√

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

Inspecting with power on						
Items	Position	Routine	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 stop keys function.	Operation Interface, emergency stop keys, light house.	√	√	√	√	√
Check whether motion and vibration is normal.	Entire	√	√	√	√	√

6.2.1 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.

6.2.2 Emergency Stop Button

The emergency stop button is a safety device, and it must be pressed in hazardous situations. When pressed, the emergency stop 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 stop button must be pulled out as acknowledgement.

6.2.3 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 dirt after working.

2. Must change or clean the nozzle 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 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.

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.

6.2.4 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.

6.2.5 Linear Guide

1. Lubricate the linear track every 100km (3 months) 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.

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

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

6.2.6 Screw Feeder

● Check and clean the screw machine cavity regularly in case of blocking.

● Different specifications of the screw need to use different specifications of the screw feeder, such as Φ 2 mm

and Φ 3 mm screw cannot use the same screw feeder machine.

Note: it before use to avoid damaging the machine or affecting the screw effect.

6.2.7 Cleaning

● Hydrocarbons dissociate causing an explosion if contacting aluminum (Zn) and chrome-plate. In this machine, aluminum (Zn) and chrome-plate surface are used.

●Only use solvents or cleaning agent without hydrocarbons! Before you use a solvent or cleaning agent, check its ingredients!