ET8583YA
3-Axis Desktop
Dispensing 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

Ⅰ.Safety Instruction

Make sure the operator has read the operation manual and other materials thoroughly, so that all problems can be solved, thus minimizing damage during operation. To start operation of the machine, turn on the power switch of the machine controller device. Please read the following conditions for safety during operation.

1.1 Safety symbol

Serious warning	
	➢ Danger! High voltage! 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, pull out the power plug of the controller.
	➢ Install a Frame Ground to prevent electric shock.
	➢ Please use machine within the standard requirements (such as payload, speed, operational range, user environment) as stated in the specification. Make sure specifically that the single phase is not over AV230V/15A before turning the power on.
	➢ Keep the unit dry. Don't use or disconnect the unit with wet hands.
	➢ Please keep clean around the device, so that reduce having an accident.
	➢ Do not attach or detach the power cord while the power switch of the controller is turned ON.
	➢ When people and the machine are working together simultaneously, check for manual safety, especially while the power is ON and during the manual operation.
	➢ During maintenance and inspection of the machine, must power off. High voltage, Authorized personnel only.
	➢ The product is not explosion proof specification, forbid using in potentially explosive atmospheres.
Warning	
	➢ Do not move the movements by hands, avoid damaging the machine.
	➢ During processing, don't touch the movable parts.
	➢ Touch the device while the machine is working may hurt the operator or

	damage the device. ➢ While the procedure paused, must inspect before manual operation. ➢ Before starting the operation, make sure that there is no person or obstacle in the machine's working area.
	➢ 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. ➢ 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 taken down. ➢ Install the machine firmly so that it will not be shaken.
	➢ Regularly inspect and maintain will increase durability and performance. ➢ Must operate the machine by standard procedure. ➢ Before starting a repetitive operation, make sure that no obstacle is 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, it must be folded by initial. ➢ The machine must be placed vertically. ➢ The machine can be packet after fold by foamed plastic. ➢ The machine can't get wet ➢ Please don't reset the device in the 10s after power off or emergency stop.

1.2 Unpacking & Inspection

1.Carton packing：

①　Put carton packing on the floor vertically, tear up the fixed film.

②　Open the top cover, take fittings in the plastic foam

③　Take off plastic foam, two or more than two people hold up the device, carry to appropriate station. All fittings are in the table as follow.

2.Wooden case packing：

①　Put wooden case packing on the floor vertically, tear up the fixed film.

②　Take the screw out of the wooden case by drill and unfold the wooden case.

③　Take and carry the device by two or more people, put firmly on appropriate station.

④　Unfold the packaging, before using the machine, make sure the movements' fixture (for example the X-axis may be fixed by sheet metal or lines for safety) was taken down.

⑤　All fittings are in the table as follow.

List				
No.	Part Name	Model	Quantity	Figure
1	Dispensing controller	982D	1pcs	
2	Teach pendant	8009	1pcs	
3	Teach pendant cord	DB9	1pcs	
4	Power cord		1pcs	
5	Instruction manual		2pcs	

List				
No.	Part Name	Model	Quantity	Figure
6	Key box	8031A	2pcs	

Check the machine carefully. If you have any problem, please contact the manufacturer immediately.

Ⅱ.Summary

This desktop machine is designed fast automatic dispensing. It is a fully-automatic and high-precision dispensing control system with 4axes (X/Y/Z/R). Besides, this unit provides easier programming instructions, more parameters, a larger memory, and a higher speed. It highly improves the productivity effect.

2.1 Features

- Comprehensive 3-dimensional drawings support, such as 3-dimensional linear interpolation, capabilities of teaching 3D graphics and user-defined 3D array and so on.
- Capable to store with mass storage.
- User-defined array function: Easy solution for moulds deviation. Support user-defined 3D array.
- Group function: This function allows users copy, delete, modify, array, and pan multi-points.
- Excellent teaching 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.

2.2 Technical Data

Main technical parameters

Equipment Mode		QUICK ET8583YA
★ Input voltage range		220V AC 50/60HZ
Power consumption		300W
Axis number		3
Movement Range (max)	X (mm)	500
	Y (mm)	400
	Z (mm)	100
	R (degree)	--
Movement Speed	X (mm/sec)	0.1~800
	Y (mm/sec)	0.1~800
	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&R Axis	5
	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)		47

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

2.3 Parts Description

Item	Part Name	Item	Name
1	Z Axis stepper motor (with brake) + lead screw	7	Operation panel
2	Syringe	8	Emergency stop button
3	Dispensing controller	9	Right key box
4	Left Y Axis close loop stepper motor + synchronous belt	10	Right Y Axis close loop stepper motor + synchronous belt
5	DB9 socket (it follows RS422 standard communication protocol)	11	Teach pendant
6	Left key box	12	X Axis stepper motor + synchronous belt

Ⅲ.Connection & Use

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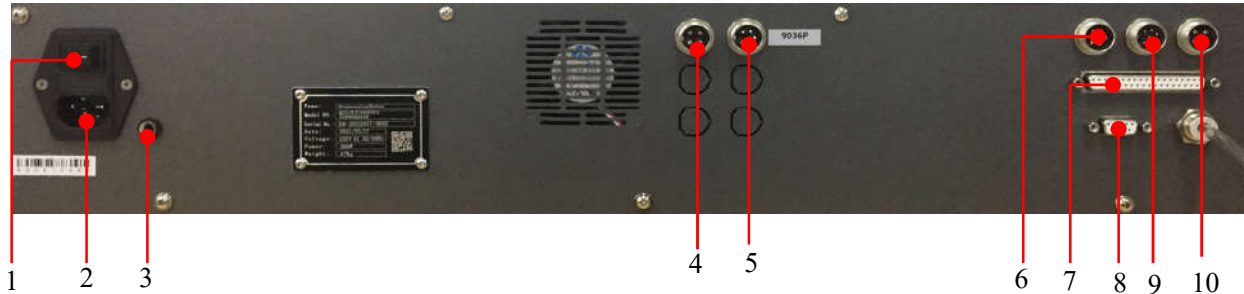
1. Power switch: connect/disconnect the power supply to machine.

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

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

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

5. 5-pin socket: connect to needle position correction device, refer to **3.2.3 5-pin Socket Instruction.**

6. 5-pin socket: spare, refer to **3.2.3 5-pin Socket Instruction.**

7. DB37 socket: spare, refer to **3.3 Instruction about DB37 socket.**

8. DB9 socket: spare, refer to **3.4 Instruction about DB9 Socket**.

9. 7-pin socket: connect to **3.2.4 7-pin Socket Instruction.**

10. 4-pin socket: connect to left key box, refer to **3.2.2 4-pin Socket Instruction.**
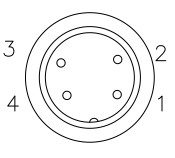
3.2 I/O Socket Instruction

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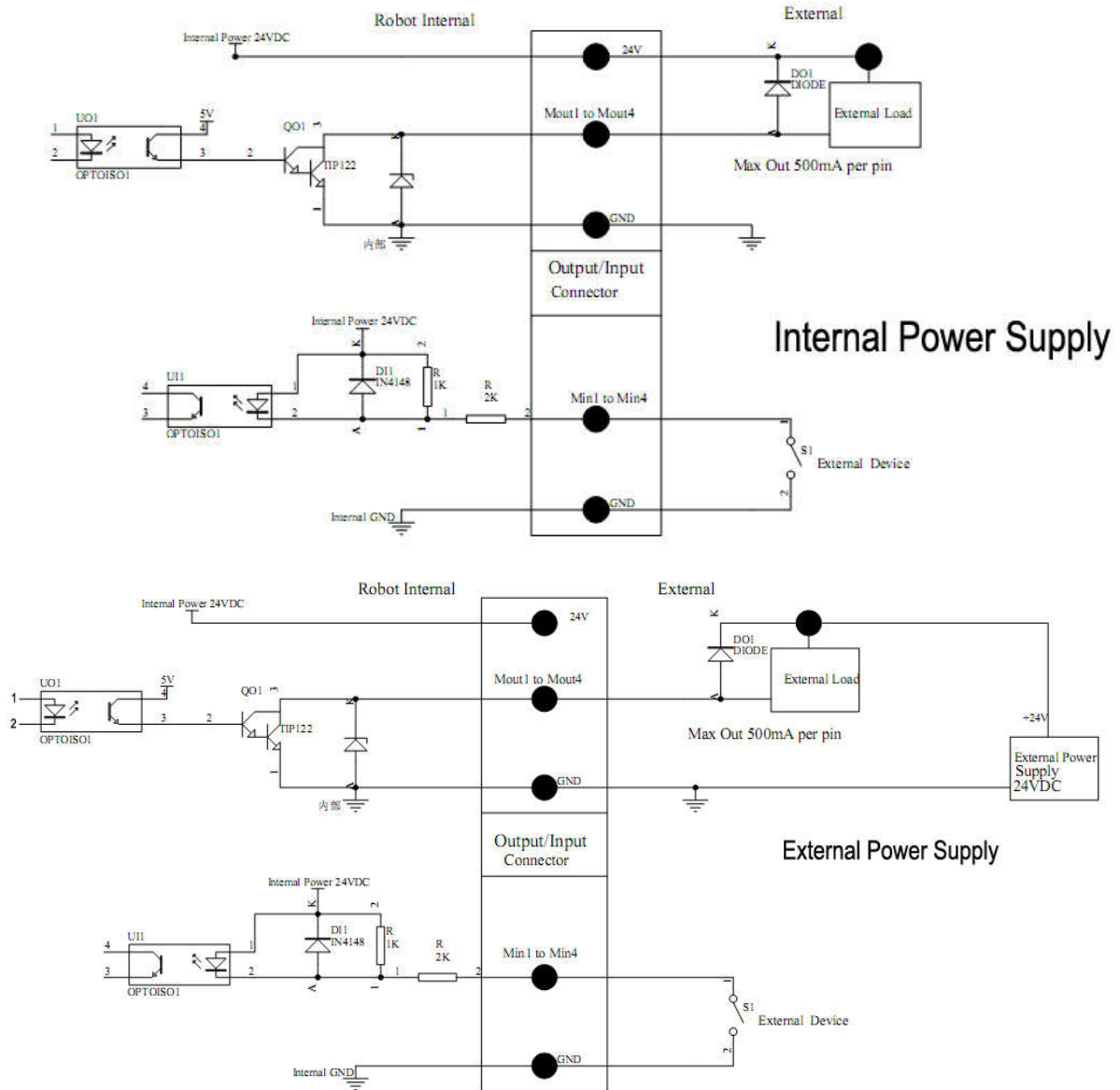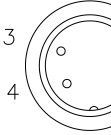
3.2.2 4-pin Socket Instruction

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

4-pin socket	Pin NO.	Pin Name	Remark
	4P-1	Min4	Connect to left "start/pause" button.
	4P-2	GND	"-"Power supply
	4P-3	Min1	Connect to reset (ORG) signal

	4P-4	Min2	Connect to emergency stop button1
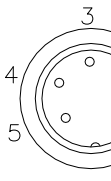
4-pin socket is connected to right key box, pin's functions refer to following table.

4-pin socket	Pin NO.	Pin Name	Remark
	1	Ein16	Connect to right "start/pause" button.
	2	GND	"-" Power supply
	3	Min1	Connect to reset (ORG) signal
	4	Min2	Connect to emergency stop button
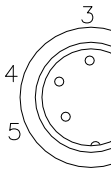
NOTE: * If the customers need special function, the input and output signal can be set again.

3.2.3 5-pin Socket Instruction

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

5-pin socket	Pin NO.	Pin Name	Remark
	5P-1	24VDC	"+" power supply
	5P-2	GND	"-"Power supply
	5P-3	Min3	Safety signal ,such as safety light curtain \safety door etc.
	5P-4	Ein13	Block material signal
	5P-5	Ein14	Temperature alarm signal
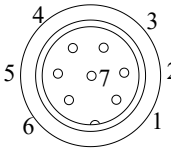
5-pin socket is connected to needle position correction device, pin's functions refer to following table.

5-pin socket	Pin NO.	Pin Name	Remark
	5P-1	24VDC	"+" power supply
	5P-2	GND	"-"Power supply
	5P-3	Ein9	X Axis home sensor
	5P-4	Ein10	Y Axis home sensor
	5P-5	Eout9	Trigger calibration file signal

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

3.2.4 7-pin Socket Instruction

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

7-pin socket	Pin NO.	Pin's name	Remark
	7P-1	24VDC	"24V"Power supply
	7P-2	0V	"0V"Power supply
	7P-3	Mout1	Glue feeding signal.
	7P-4	Mout4	It's used to cylinder movement signal.
	7P-5	Ein12	It's used to reset (ORG) signal, alarm when dispensing system lacks.
	7P-6	Mout2	It's used to output working state signal.
	7P-7	Mout5	It's only effective as pulse signal inputted.

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

3.3 Instruction about DB37 socket

NOTE: *DB37 socket is an optional fitting. It must be ordered if you need it to do information input or output.*

3.3.1 Pins Instruction of DB37

(socket of DB37)

NO.	Definition of DB37 pins	Corresponding I/O interface of DB37	NO.	Definition of DB37 pins	Corresponding I/O interface of DB37
1	GND	P01	20	GND	P20
2	Eout8	P02	21	Ein8	P21
3	Eout7	P03	22	Ein7	P22
4	Eout6	P04	23	Ein6	P23
5	Eout5	P05	24	Ein5	P24
6	Eout4	P06	25	Ein4	P25

NO.	Definition of DB37 pins	Corresponding I/O interface of DB37	NO.	Definition of DB37 pins	Corresponding I/O interface of DB37
7	Eout3	P07	26	Ein3	P26
8	Eout2	P08	27	Ein2	P27
9	Eout1	P09	28	Ein1	P28
10	COM	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			

3.3.2 Circuit Instruction of DB37

Robot Internal

TO ULN2803A 10PIN   Internal Power 24VDC

External

COM

UO1
OPTOISO1   5V   QO1   ULN2803A   DO1 DIODE   External Load
Eout1 to Eout16
Max Out 300mA per pin   +24V

Internal GND   GND   External Power Supply 24VDC

DB37Connector

External Power Supply

Internal Power 24VDC

UI1
OPTOISO1   DI1 IN4148   R 1K   R 2K
Ein1 to Ein16
S1 SWITCH

Internal GND   GND

GND	1 GND
20	
Ein8	2 Eout8
21	
Ein7	3 Eout7
22	
Ein6	4 Eout6
23	
Ein5	5 Eout5
24	
Ein4	6 Eout4
25	
Ein3	7 Eout3
26	
Ein2	8 Eout2
27	
Ein1	9 Eout1
28	
GND	10 COM
29	
Ein16	11 GND
30	
Ein15	12 Eout16
31	
Ein14	13 Eout15
32	
Ein13	14 Eout14
33	
Ein12	15 Eout13
34	
Ein11	16 Eout12
35	
Ein10	17 Eout11
36	
Ein9	18 Eout10
37	
	19 Eout9

DB37-插孔型

Plug of DB37 (pin type)

Connection of DB37 plug

3.4 Instruction about DB9 Socket

1
6

TX
RX
GND
2-485A
2-485B
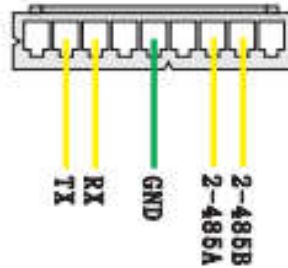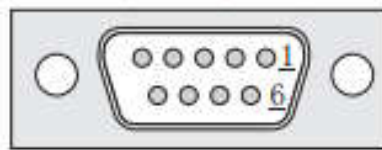
3.4.1 Pins Instruction of DB9

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	2-485A
3	9P-3	RX(Receiver signal)	8	9P-8	2-485B
4	9P-4	No connection	9	9P-9	No connection
5	9P-5	GND(power supply "0V")			

3.5 Instruction of Input & Output

● 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 Config" or "Output Config" of "System Config 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:

Board	Port	Function
Expansion input port	Ein12	Wire block alarm signal
	Ein13	Wire lack alarm signal
	Ein14	Temperature alarm signal (reserve)
	Ein16	Right start/pause button signal
Expansion output port	Eout9	Trigger calibration file signal
Main input port	Min1	Reset button signal
	Min2	Emergency stop button signal
	Min4	Left start/pause button signal
Main output port	Mout1	Wire feeder device motor pulse
	Mout3	Trigger tip cleaning signal
	Mout5	Wire feeder device motor direction

3.5.1 IO Function Definition

1.In the "Input Config 2" displaying window, it can set the input interface:

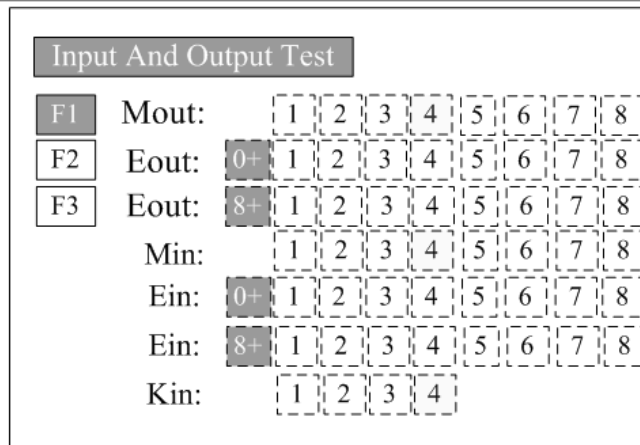| Input Interface	Optional Function
Min1	--, Shortcut1, Origin BTN, safe flag-1, safe flag-2
Min2	--, Shortcut 2, Stop BTN, safe flag-1, safe flag-2
Min3	--, Shortcut 3, Start BTN, safe flag-1, safe flag-2, Lack fault, Block fault, Temp fault, Temp\Feed fault, Upper CS, Nether CS
Min4	--, Shortcut 4, Foot BTN, safe flag-1, safe flag-2
Min5	--, Origin BTN, Stop BTN，Start BTN , Foot BTN，safe flag-1, safe flag-2, Lack fault, Block fault, Temp fault, Temp\Feed fault, Upper CS, Nether CS, pressure flag.
Min6	--, Origin BTN, Stop BTN，Start BTN , Foot BTN，safe flag-1, safe flag-2, Lack fault, Block fault, Temp fault, Temp\Feed fault, Upper CS, Nether CS, pressure flag.
Min7	--, Origin BTN, Stop BTN，Start BTN , Foot BTN，safe flag-1, safe flag-2, Lack fault, Block fault, Temp fault, Temp\Feed fault, Upper CS, Nether CS, pressure flag.
Min8	--, Origin BTN, Stop BTN，Start BTN , Foot BTN，safe flag-1, safe flag-2, Lack fault, Block fault, Temp fault, Temp\Feed fault, Upper CS, Nether CS, pressure flag.
Ein1~Ein8	--, Shortcut 5-259
Ein1	--, Origin BTN, Stop BTN，Start BTN , Foot BTN，safe flag-1, safe flag-2, Lack fault, Block fault, Temp fault, Temp\Feed fault, Upper CS, Nether CS, pressure flag，shortcut 5.
Ein2	--, Origin BTN, Stop BTN，Start BTN , Foot BTN，safe flag-1, safe flag-2, Lack fault, Block fault, Temp fault, Temp\Feed fault, Upper CS, Nether CS, pressure flag，shortcut 6
Ein3	--, Origin BTN, Stop BTN，Start BTN , Foot BTN，safe flag-1, safe flag-2, Lack fault, Block fault, Temp fault, Temp\Feed fault, Upper CS, Nether CS, pressure flag，shortcut 7
Ein4	--, Origin BTN, Stop BTN，Start BTN , Foot BTN，safe flag-1, safe flag-2, Lack fault, Block fault, Temp fault, Temp\Feed fault, Upper CS, Nether CS, pressure flag，shortcut 8
Ein5	--, Origin BTN, Stop BTN，Start BTN , Foot BTN，safe flag-1, safe flag-2, Lack fault, Block fault, Temp fault, Temp\Feed fault, Upper CS, Nether CS, pressure flag，shortcut 9
Ein6	--, Origin BTN, Stop BTN，Start BTN , Foot BTN，safe flag-1, safe flag-2, Lack fault, Block fault, Temp fault, Temp\Feed fault, Upper CS, Nether CS, pressure flag，shortcut 10
Ein7	--, Origin BTN, Stop BTN，Start BTN , Foot BTN，safe flag-1, safe flag-2,

	Lack fault, Block fault, Temp fault, Temp\Feed fault, Upper CS, Nether CS, pressure flag，shortcut 11
Ein8	--, Origin BTN, Stop BTN，Start BTN , Foot BTN，safe flag-1, safe flag-2, Lack fault, Block fault, Temp fault, Temp\Feed fault, Upper CS, Nether CS, pressure flag，shortcut 12
Ein09	--, Origin BTN, Stop BTN, Start BTN, Foot BTN, safe flag-1, safe flag-2, Adj X-Limit, Shortcut 260, Upper CS, Nether CS, pressure flag
Ein10	--, Origin BTN, Stop BTN, Start BTN, Foot BTN, safe flag-1, safe flag-2, Adj X-Limit, Shortcut 261, Upper CS, Nether CS, pressure flag
Ein11	--, Origin BTN, Stop BTN, Start BTN, Foot BTN, safe flag-1, safe flag-2, Adj X-Limit, Shortcut 262, Upper CS, Nether CS, pressure flag
Ein12	--, Origin BTN, Stop BTN, Start BTN, Foot BTN, safe flag-1, safe flag-2, Shortcut 263, Lack fault, Block fault, Temp fault, Temp\Feed fault, Upper CS, Nether CS, pressure flag
Ein13	--, Origin BTN, Stop BTN, Start BTN, Foot BTN, safe flag-1, safe flag-2, Shortcut 264, Lack fault, Block fault, Temp fault, Temp\Feed fault, Upper CS, Nether CS, pressure flag
Ein14	--, Origin BTN, Stop BTN, Start BTN, Foot BTN, safe flag-1, safe flag-2, Shortcut 265, Lack fault, Block fault, Temp fault, Temp\Feed fault, Upper CS, Nether CS, pressure flag
Ein15	--, Origin BTN, Stop BTN, Start BTN, Foot BTN, safe flag-1, safe flag-2, Shortcut 266, Lack fault, Block fault, Temp fault, Temp\Feed fault, Upper CS, Nether CS, pressure flag
Ein16	--, Origin BTN, Stop BTN, Start BTN, Foot BTN, safe flag-1, safe flag-2, Shortcut 267, Lack fault, Block fault, Temp fault, Temp\Feed fault, Upper CS, Nether CS, pressure flag
Kin1	--、Upper CS, Nether CS
Kin2	--、Upper CS, Nether CS
Kin3	--、Upper CS, Nether CS
Kin4	--、Upper CS, Nether CS

2. In the "Output Config 2" display window, the input interface can be set:

Output Interface	Optional Function
Mout1~Mout4	--, Nozzle 1, Nozzle 2, Nozzle 3, Nozzle 4, Working Flag, WorkEnd Flag, Cylinder, Clean Output
Eout09~Eout16	--, Ready Flag, Alarm Flag, Working Flag, WorkEnd Flag, Cylinder, Clean Output, pause flag, left light flag, right light flag

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

Namely, "Eout8+ 1" is the output interface "Eou09". "Eout8+ 2" is the output interface "Eou10". "Eout8+ 3" is the output interface "Eou11", etc.

3.5.2 IO 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".
Safe flag-1	Input the signal "breakover ground" into the unit by corresponding signal pin and the unit comes into the testing state (cannot move and can only be programmed).
Safe flag-2	Input the signal "breakover 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..
Block fault	Input the signal "block fault" into the unit by corresponding signal pin and the unit comes into the process, such as stop working, alarming etc..
Temp fault	Input the signal "temp fault" into the unit by corresponding signal pin and the unit comes into the process, such as stop working, alarming etc..
Temp/Feed fault	Input the signal "temp/feed 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.
Adj X-Limit Adj Y-Limit Adj Z-Limit	It is effective only for the dispensing machine and only when connecting with "9036 tip calibration device". "Adj X-Limit" is corresponding to the "Ein09". Input the signal by "Ein09" to calibrate the X-axis of tip. "Adj Y-Limit" is corresponding to the "Ein10". Input the signal by "Ein10" to calibrate the Y-axis of tip. "Adj Z-Limit" is corresponding to the "Ein11". Input the signal by "Ein11" to calibrate the Z-axis of tip. (Note: only calibrating X/Y/Z at the same time, it can calibrate the tip's position.)
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.
Pressure flag	The condition of air pressure.
Function of Output	**Function Instruction**
--	Not have function.
Nozzle 1	Once the nozzle 1 comes to run the program, the output is in conducting state, or else not.
Nozzle 2	Once the nozzle 2 comes to run the program, the output is in conducting state, or else not.
Nozzle 3	Once the nozzle 3 comes to run the program, the output is in conducting state, or else not.
Nozzle 4	Once the nozzle 4 comes to run the program, the output is in conducting state, or else not.
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.
Pause flag	The condition of pause BTN
Left light flag	The condition of left light on keybox
Right light flag	The condition of right light on keybox

Note:

- The function settings of input & output cannot be accessed by the operator. It can only be operated by the manufacturer.
- Will not give advanced information if some functions are changed.

3.6 Debugging steps

3.6.1 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.

Attention high voltage, prevent electric shock.

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

1. Inspect if the power supply is standard requirements or not.

2. Inspect if the device is grounding standard or not.

3. Make sure there is no person or obstacle in the machines working area.

4. Inspect if the moving parts was fixed.

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

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

7. 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.

3.6.2 Operation of First Time

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

Step1: Install and Test

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

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

Test including: Check if there is any problem with the axes movements towards positive or negative direction

Step2: Parameters Setting

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

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

Step3: Teaching Program

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

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

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

2. Set file parameters.

Step5: Download & Process

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

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

# 3.6.3 Debugging steps (take a point for example)

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

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

2. Turn the pressure regulating valve for a appropriate air pressure.

3. Turn off the Dispensing controller.

4. Entering File Edit interface, insert a POINT and moving the needles to the place you need dispensing by teach pendant. Details are as follow:
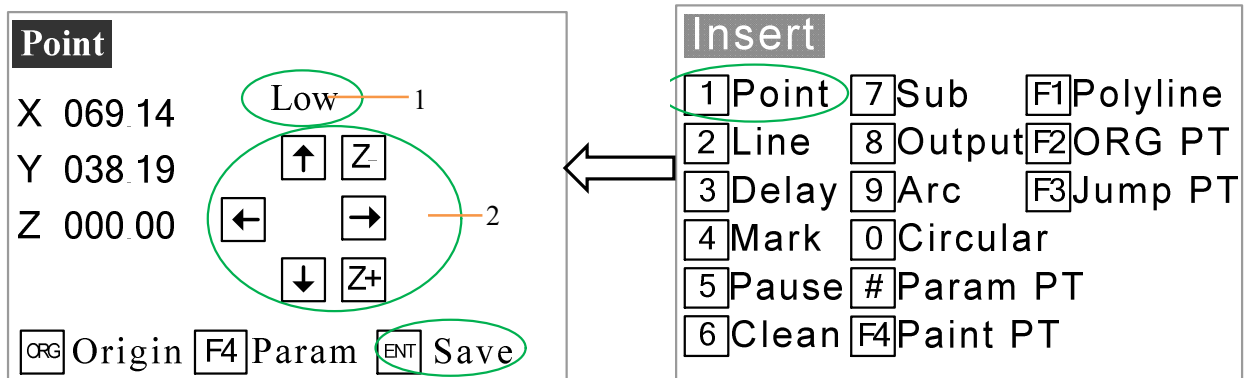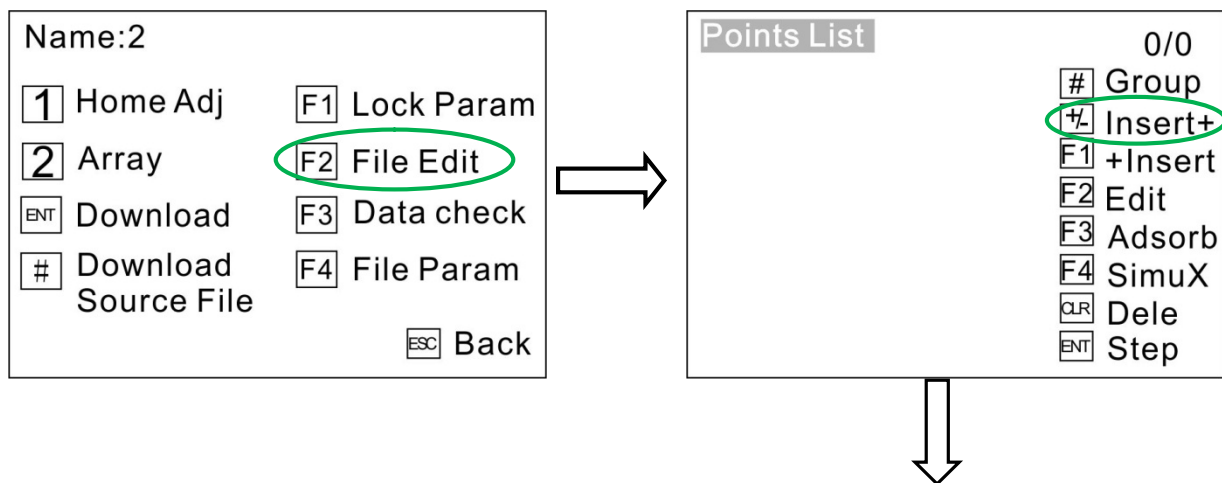
1) Press 2 to enter File List window.

2) Press F1 to create a new file.

3) Press F2 to edit the new file,

4) Press ENT to save it, see picture.
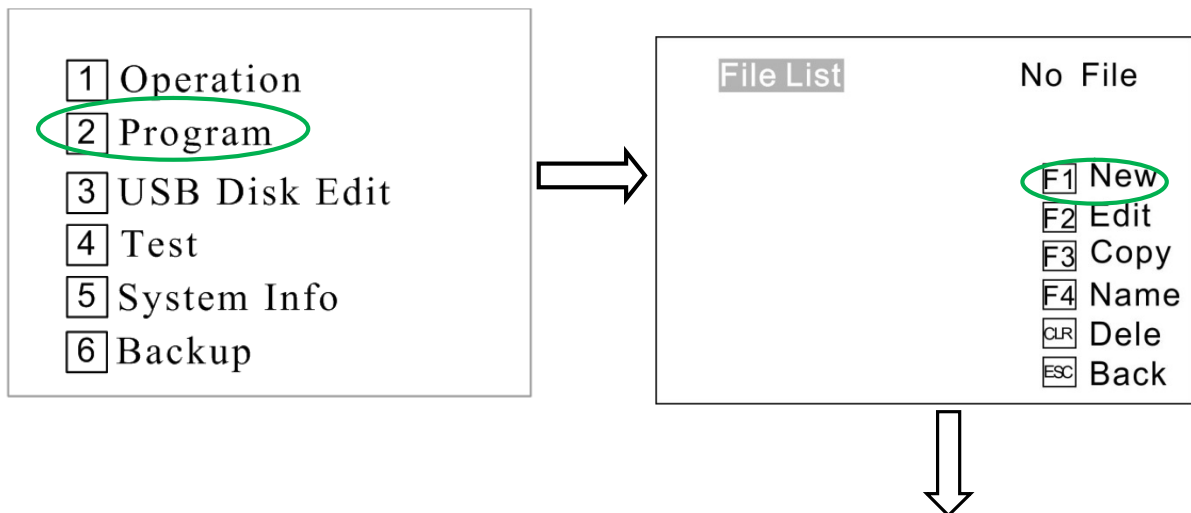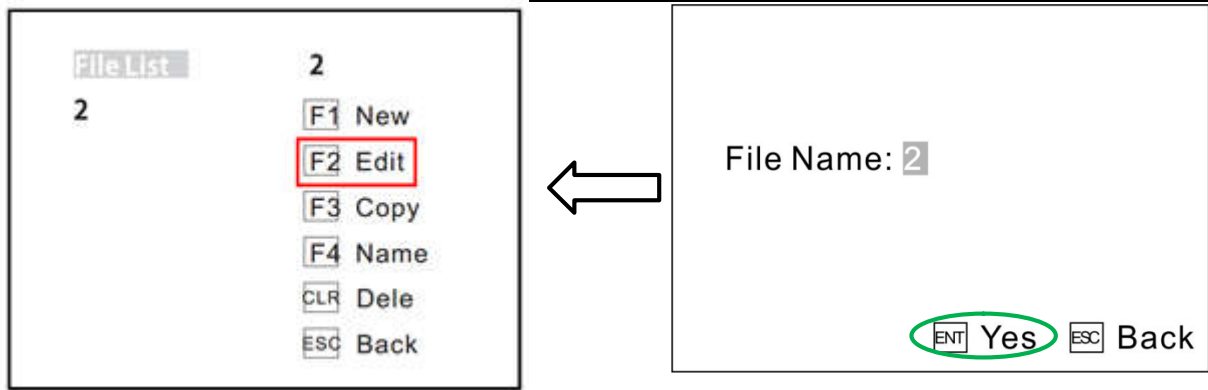
5) Press F2 to enter Points List window.

6) Press +/- to enter Insert window and press 1 to enter Point window.

1 The speed (machine steps) can be adjusted by changing it.

2 All axis can be moved manually by clicking "X-",   "X+" or   "Y-",   "Y+" or "Z-", "Z+".

7) Press F4 to enter Point parameter window.

8) Press 2 to set parameters and press ENT to enter.

Point

X 069.14   Low
Y 038.19   ↑ Z-
Z 000.00   ← →
            ↓ Z+

ORG Origin F4 Param ENT Save

Point Params
1 Nozzle
2 Teach Params
3 Sloping Line Params
4 Lift Set
5 Axis Status
6 Downstream distance
7 Feedback Params ESC Back

9) Press F2 to enter into parameters window.

Parameters--Default 1 1/1
　Feed on delay:00000ms
　Feed off delay:00000ms
　Retract Speed:010.0mm/s
　Retract Height:000.0mm

⌶ Page SHF Shift ENT Save

Params--Feed
F1 Not
F2 Default: 1 2 3 4 5
F3 Custom

Edit ENT Save ESC Back

10) Set parameters and press ENT to save it.

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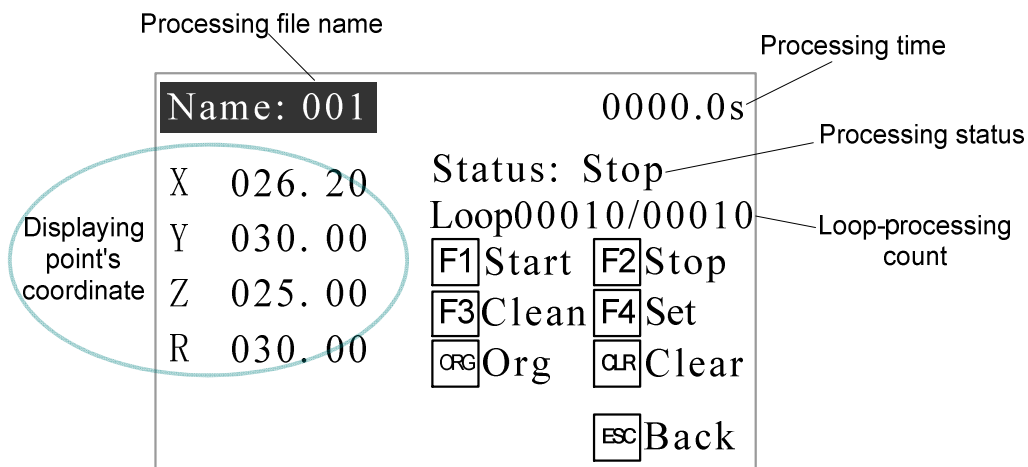ENT Download   F3 Data Check
Download   F4 File Param
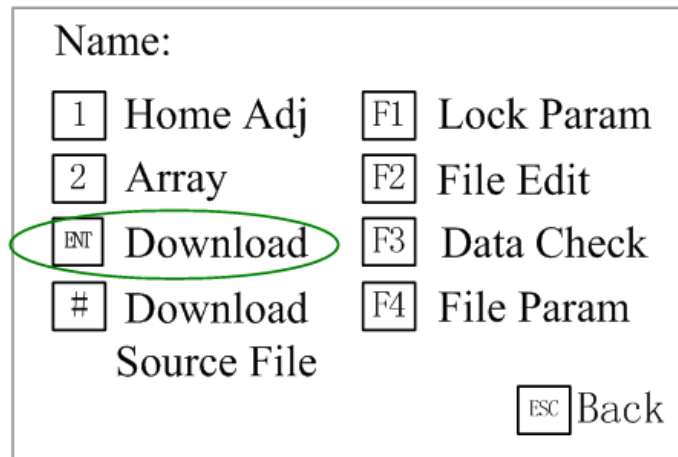Source File
                  ESC Back

11) Press F3 button and the teach pendant will test if the program is out of the limit range. If it disappear DATA CORRECT, you can operate the follow steps.   If it don't disappear DATA CORRECT, you must back and edit the program.

12) Then you can run the program after press ENT.   If you are not satisfied with the Dispensing result, you can do the STEP.

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

X   026.20   Status: Stop   Processing status
Y   030.00   Loop00010/00010   Loop-processing count
Z   025.00   F1 Start F2 Stop
R   030.00   F3 Clean F4 Set
                    ORG Org   CLR Clear
Displaying point's coordinate
                    ESC Back

3.7 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, the machine will continue to work from the interrupted point.

If press the "START" button and keep less than 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 |

⚠ 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 dispensing finish	Jump interruption dispensing, go straight to next point.
B	Moving between two dispensing point.	Go straight to next dispensing point.
C	Pause	Go to next dispensing point.
D	Holding up distance after dispensing	Go to next dispensing point.

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

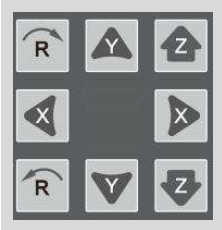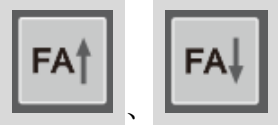# Ⅳ. Operation Panel Instruction

4.1 Introduction

① Display area

Display communication\version information ect.

② Operation button

Operation button functions list:

Operation Button	Functional Description
	1. Direction Button 2. Manual control shift (X,Y,Z,R Axis) movement
	1. Cylinder switch 2. "FA ↑ " cylinder ON button, "FA ↓ " cylinder OFF button
	1. Dispensing needle purge button 2. The button will active when the purge file downloads.
	1. Speed change button 2. Total three speed: Low, Mid, Hig.
	Confirm button
	Reset button

Operation Button	Functional Description
LOOP	In the off-line status, press this button to enter into Loop window.
ESC	1.Back button 2. Press this button to return main window, and the parameter will not save.
FEED	Feeding button
RETURN	Return button

4.2 Main Window (with teach pendant)

● Connect the power cord to the power supply.

● Connect teach pendant line from operation panel.
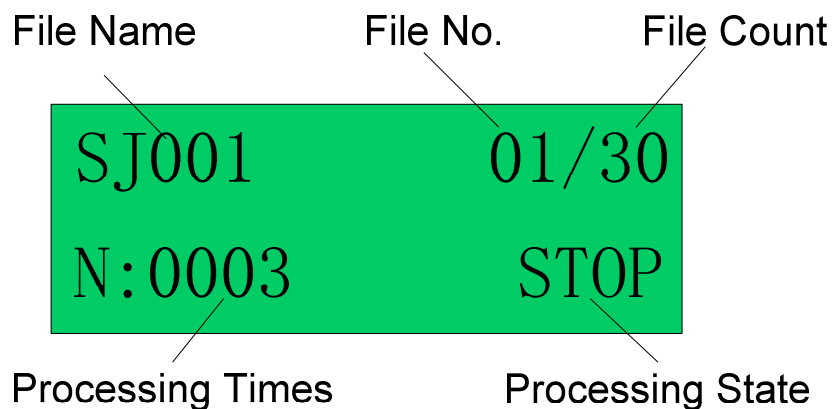
● Display version and communication information, see picture

4.3 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 buttons] button to change the file name.

② Processing times

Display nozzle operation totalizer.

③ File No. & File count

File No.: the active file No.

File count: the files totalizer.

④ Processing State.

Show machine current state.

1. After initialization, the system will enter the "Processing Interface". This interface is frequently used when not connected to with the teaching pendant. Jump into the other setting interface through the processing interface.

2. In the circulating processing interface, the LCD will display information as "already processed times /set processing times".

    All information showing at the LCD display are as followings:

Fig. 4-2: **Processing Interface** of non Loop-work

File Name   File No.   File Count

SJ001   01/30

N:0003   STOP

Processing Times   Processing State
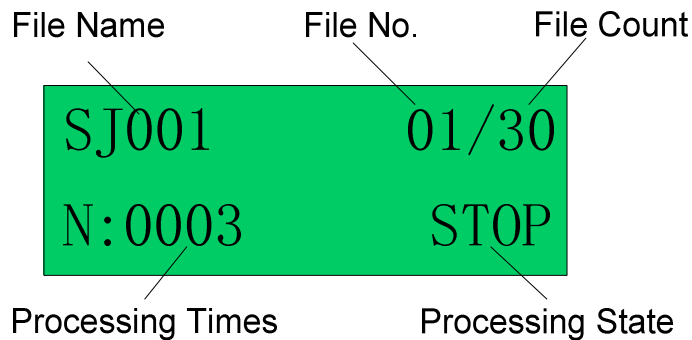
Fig. 4-3: **Processing Interface** of Loop-work

SJ001   01/30

0001/0002   STOP

Current Processing Times   Set Times about the Loop-Work
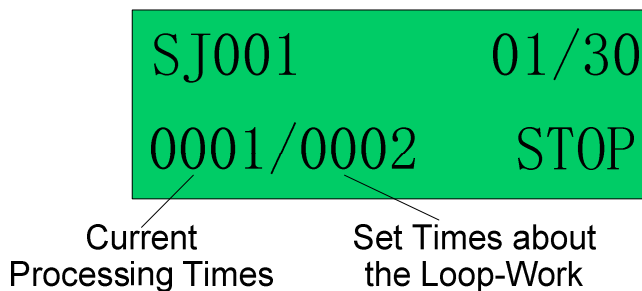
3. Enter the "Origin calibration Interface" by pressing the "HOME" button.

4. Enter the "Testing Interface" by pressing the "ESC" button.

5. Enter the "Loop-work Processing Work" by pressing the "LOOP" button.

6. In any submenu, it can return "File Processing Interface" by pressing the "ESC" button, but the set parameters will not be saved.

7. At the any one submenu, press the "ENT" button to save the set parameters and then return "Processing Interface".

4.3.1 Select Processing File

1. Select the processing file by the six directionality buttons.

2. " ← \ ↑ \ Z↑ " three buttons can be used to select previous file, and " → \ ↓ \ Z↓ " three buttons can be used to select next file.

4.3.2 File Process

Press the "START/PAUSE" button to begin processing the selected file.

This button also can used to pause a file processing and then continue a file processing.

4.3.3 Stop the File Processing

It can press "START/PAUSE" button or Emergency Switch to pause the processing file.

START/PAUSE: only pause file processing, and the file state changes from "WORK" to "PAUSE". If press this button again, the system will continue the paused processing file, and the file state changes as "WORK".

Emergency Switch: stop file processing and cut off the power supply of the driver, the LCD displays "EMERGENCY STOP PLEASE RESET".

Turn the emergency switch clockwise along the arrows to reset it. And then press the "ORG" button to make the nozzle returning return to zero point. After that, it can run the emergency switch again.

4.3.4 File Processing Count & State

1. At the lower left corner of processing window, display the processing times. Press "SHF" button can clear the

digit as 0.

2. At the lower right corner of processing window, display the file processing state. The processing state is changing with the processing course. The file processing state is as following table.

Table 4-1: File Processing State

Work State	Remark
RESET	The system is resetting.
STOP	The process has been stopped.
WORK	In the processing.
PAUSE	The process has been paused.
WAIT	Waiting time for hanging a work-piece during the loop-work process.

4.3.5 Origin Calibration Window

1. During the file processing, it can calibrate the deviation between the processing file and the real route by the origin calibration.

2. At the file processing window, press "ORG" button into the origin calibration window.

```
X 033.3    Y 067.5
Z 00000    R 00000
```
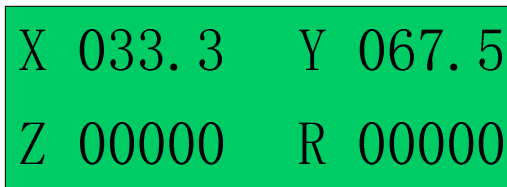
Origin Calibration Window

X/Y/Z/R displays the nozzle's current position.

"MID" means the current processing speed is middle.
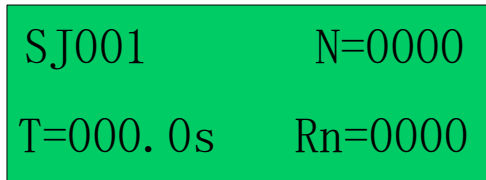
3. **Orientation**: the nozzle will move to the origin automatically when coming into the origin calibration window.

4. **Adjusting the nozzle's position:**

After orientation, press the arrow buttons " ← / → / ↑ / ↓ / Z↑ / Z↓ /Ⓡ /Ⓡ " to adjust the nozzle's position.

5. **Adjust the point's speed:** click the "SHF" button to change the point speed, MID – LOW – HI.

6. **Calibration**: after calibration, press "ENT" button to save the origin change and then return file processing window. If press "ESC" button, it will not save the calibration result, and directly return file processing

window.

4.3.6 Loop-work Parameter Setting Window

1. By the loop-work parameters setting, the unit can start the process without people at the locale.

2. Press the "LOOP" button at the processing window and then into the "loop–work parameter setting window".

```
SJ001          N=0000

T=000.0s      Rn=0000
```

N:　　　Loop processing times set
T:　　　Loop processing interval times set
Rn:　Reset after loop N times
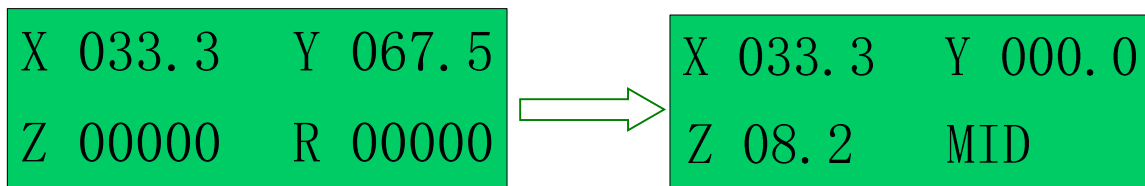
Loop–work Parameter Setting Window

3. When setting, select digit by moving the cursor under the digit. Arrow buttons " ← " & " → " can move the cursor left and right, Arrow buttons " ↑ " & " ↓ " can move the cursor up and down.

4. After finishing adjust, press "ENT" button to save the parameters and return to file processing window. When the "N=0000" or "N=0001", without loop work processing and the file only processes one time.

4.3.7 Off-line Testing Window

Press the ESC button into the testing window. In the testing window, it can test the common system functions whether are in right running or not.

The operating window is as following:

```
X 033.3    Y 067.5        X 033.3    Y 000.0

Z 00000    R 00000    →    Z 08.2    MID
```

Testing Window

4.4 Times of Nozzle Window

At testing window, click the ESC button again, namely click the ESC button twice at "Processing Window", it comes into the "times of nozzle" window (Fig.4-7).

At "times of nozzle" window, displays the times of nozzle has been used and maximal limit times. The window only can be viewed and cannot be set. Setting methods need refer "teaching pendant".

"*****/*****": The front digits mean the used times, the latter digits mean the maximal limit times. When used times have been up to the maximal limit times, the system will alarm and hint change the nozzle. If the latter

digit is "00000", it means that it doesn't limit the using times of nozzle.

```
Times of nozzle:
  00000/00000
```

Times of Nozzle Window

Ⅴ.Troubleshooting & Maintenance

5.1 Troubleshooting and Analysis

Item	Trouble shooting	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 unit is always alarming.	If overcome the trouble it was still alarming, maybe the emergency BTN was bad or the alarm flag wasn't feedback.	Press the emergency BTN and check if power will be cut or not. If the power wasn't cut, the emergency BTN is bad.
8	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.
9	The lead screw was	1. The lead screw was bent	1. Change the lead screw.

Item	Trouble shooting	Reason	Measure
	shaking while moving.	2. The lead screw was not concentricity with the motor.	2. Adjust the place of the lead screw.
11	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.

5.2 Maintenance and Inspection

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.

● **Daily check**

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

2) Check if the working voltage is correct.

3) Clean the needle, syringe, barrel and dispensing valve regularly. Replace them if they're blocked.

4) Check if the airflow is normal.

5) Check if zero position of each axis is correct.

6) Test the movement and communication performance of dispensing machine.

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

8) Check if the air tube is smooth.

9) Clean the working environment of dispensing machine.

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

11) Write down equipment condition in each shift.

12) Run a testing program after each shift.

● **Daily Maintenance**

1) Hold the bottom plate of dispensing machine when move it. Don't hold the X axis, in case of damaging the precision.

2) Over weight of platform will damage the equipment.

3) Plug out the teach pendant line from DB9 socket (it follows RS232 Standard Communication Protocol).

4) Do not drop off the teach pendant in case of damage.

5) Do not move the X/Y/Z axis by hand when the machine is powered on.

6) Do not wet the dispensing machine or pull the power cord.

7) Press the emergency stop button in case of any emergency.

8) Make the X/Y/Z axis back to zero position every time when replace components like syringe, valve or re-starting a new process program.

9) Check the needle, syringe and adapter regularly. The needle, syringe could be blocked because of the cure of glue.

10) Turn off the dispensing controller when not use. Cut off the power when not use for long time.

11) Use reliable grounding before operation, use power cable with reliable grounding.

12) Change the fuse of dispensing machine if it is broken.

13) Plug off the power cord, remove the cover for fuse.

14) Replace the defective fuse with a new one, assemble the cover.

Examination period of machine projects:

Inspecting with power off						
Items	**Position**	**Routine**	**Monthly**	**3 months**	**6 months**	**12 months**
Check whether screws and structure is fastened.	Screws in the covers.	√	√	√	√	√
	Screws in the 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	Machine appearance.	√	√	√	√	√
	External cables.		√	√	√	√

Inspecting with power off						
Items	**Position**	**Routine**	**Monthly**	**3 months**	**6 months**	**12 months**
abrasion. Clean dust on the equipment.						
Check whether it is curving or position skewing. Please repair or send to repair station if necessary.	Machine every axle position.	√	√	√	√	√
Lubrication condition.	Refer to lubrication instruction.				√	√

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. If there are touch screens, check whether the function is normal.	Operation Interface, emergency stop button, light house.	√	√	√	√	√

Inspecting with power on						
Items	Position	Routine	Monthly	3 months	6 months	12 months
Check whether motion and vibration is normal.	Entire	√	√	√	√	√

The period of maintenance:

Maintenance part	Maintenance items	Maintenance	Remarks
Fans.	Make sure fans are working.	Appropriate.	Power on
Emergency stop button.	Check motion.	Appropriate.	Servo start

5.2.1 Cooling Fan

If cooling fans work abnormally, temperature will increase and lead to trouble shooting. Cooling fans will working after power on, please check fans and flow so that estimate the cooling fans are working regularly.

5.2.2 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.

5.2.3 Mechanism Maintenance

To keep the machine working normally and continuously and prolong the lifespan of all the components, it is necessary to maintain it besides operating it according to this manual.

During the service of machine, it is necessary to maintain it periodically. The periodic maintenance includes shift maintenance, weekly maintenance, monthly maintenance, half-year maintenance, annual maintenance. Problems found in the maintenance can be solved by operator or professional according to specific situation, while the others, for which much workload is required, must be sent to service station or repair shop to be solved.

5.2.4 Shift Maintenance

Shift maintenance includes routine items, such as routine inspection, adjustment, lubrication, fixture, cleaning, antisepsis, and following maintenance items regulated below.

Operator should complete shift maintenance independently, which is the operator's routine inspection job.

1.Clean the glue residue after working.

2.Must change or clean the needle often.

3.Don't touch the track for avoiding rust.

5.2.5 Regular Maintenance

Weekly maintenance should include all the shift maintenance items.

Operator should complete weekly maintenance independently, some items of heavy (or difficult) workload can be completed with the help of relevant personnel.

Monthly maintenance should include weekly maintenance items. Some items of heavy workload can be completed with the help of relevant personnel and technicians.

After half a year or one years running, all the motion parts must have been worn, and the capabilities of other motionless parts will change too. So they need adjustment, maintenance, and replacement. The jobs need to be completed by professionals at professional stations or repair shops according to the advice from facility management technicians.

1.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.

2.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.

3.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.

4.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 fixed the screws.

5.Check the linear rail straightness and accuracy. Adjust it if it is abnormal.

6.Replace the worn component.

5.2.6 Oil-water Separator

1. Suggested working pressure is lower than 0.7Mpa.

2. Drain regularly to keep the valve clean and dry.

5.2.7 LinearTrack

1.Lubricate the linear track every 100km walking.

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.Prevent impurities getting into the inside from conjunction.

5.How to inject the grease:

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

②　Push the block for a round trip so that all the beads can be lubricated.

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

5.2.8 Ball Screw

1.Inject grease with grease gun by many times. Roll the screw spindle half-turn after injecting one time. Do not inject rated grease, otherwise, it will not be lubricated completely.

2.Finished lubricating rated grease, Push the block for a round trip to spread grease.

5.2.9 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!