2040-DSM-E

INSTRUCTION MANUAL

Foreword

This instruction manual will help you to operate, adjust and maintain the machine. In order to avoid any malfunctions, please read this manual carefully before using the machine.

1 Brief introduction

This machine is newly designed of rotating needles, top and bottom feed, 1&2 needle electronic ornamental stitch machine. With cam thread take-up lever, large shuttle hook and manual lubrication system. It contains 200 basic stitch patterns with single and double needles, it also can design the user patterns directly on the operational panel.

2 Application

For sewing heavy to extra heavy duty materials, such as leather, canvas, vinyl, synthetics, coated and laminated fabrics, etc. It is suitable for sewing sofas, tents, shoe uppers, bags, suitcases, jeans, etc.

3 Specifications

Max. sewing speed		600SPM
Max. stitch length		12mm
Presser foot lift	By hand	12mm
	By pedal	15mm
Needle system		DYx3
Needle gauge		6mm,8mm,10mm,12mm
Shuttle hook		KSP-204N
Motor		550W

4 Machine maintenance

4.1 Before delivery, the machine is well tested, but during the transportation, some parts may loose cause of vibration. So when use the machine, turn the handwheel to check if there is any obstruction, resistance or abnormal sound. If everything is all right, the user can test the machine.

4.2 Clean the machine after working a period of time, such places as machine surface, shuttle bed, feed dog, etc.

4.3 When clean the machine, pay attention to check the parts if worn out, if so it needs to repair or change the new parts. At least the machine should has a total cleaning for one year.

4.4 After clean the machine, make a full lubrication of the machine.

4.5 If sew with different material and thread, or change the parts, it required the trained operator to adjust the machine.

Warning:

Before cleaning and lubricating the machine, must turn off the power, and keep your foot away of the pedal in order to avoid any accidents if step on it carelessly.

5 Machine adjustments

5.1 Needle installation

The machine is used the needle DYx3. It needs to change the needle size for different materials, extra heavy duty materials use large size needle and heavy duty materials use small size needle. Turn the handwheel to lift the needle bar and stop at the highest position, loosen the setscrews, push the needle to the bottom of the hole in the needle bar, make the needle long groove toward the left, and fasten the setscrews.

5.2 Change the bobbin

Turn the handwheel to lift the thread take-up lever to its highest position, using left hand to push the hook latch, and the bobbin case is open, then take out the bobbin to change it.

5.3 Winding the bobbin

Install the bobbin winder on the table at the right side of the machine. Put the bobbin on the winding lever, pass the thread to bobbin winder as the order of coil, bracket, the hole of upper winding board, then wind some rounds of the thread counterclockwise by hand, then put down the lever to start winding. When the bobbin is full, the winding lever will automatically release and stop winding.

5.4 Threading the shuttle hook

Take out some bobbin threads, then put the bobbin to the shuttle, press the thread end under the thread pressing plate, pass the thread through the notch of shutlle, then pull some threads out around 50mm.At last, push the bobbin case to the shuttle base.

5.5 Threading the machine

Pull the two threads out from the thread stand, according to parts book, as the order of No.15(page 2), No.7(Page 18), No.4(Page 18), No.8(page 18), No.12(page 18), No.14(page 18), No.24(page 18), then through the hole of needle bar to the eyelet.

6 Machine Adjustments

6.1 Stitch length adjustment

On the operational panel, change the stitch length in the pitch box, after set the new stitch length, press the button Find Zero to save it.

6.2 Rotating needle adjustment

The machine comes with the alternate rotating needle and continuous feeding, so it can make beautiful pattern performance.

6.2.1 Turn the two needles 180°, it requires no much clearance when turning the needles. Adjust method: loosen the right screw No.19(parts book page 6) and adjust the height of the right part No.16(parts book page 6), upper is increase the clearance and lower is decrease the clearance.

6.2.2 Two needles should vertical to sewing direction and parallel with the slot of needle plate.

6.2.3 Time of needle rotating: When needle bar at the highest position, two needles turn 90°, parallel with sewing direction and vertical to the slot of needle plate. It is adjusted by the wheel No.12(Part book page 22).

6.3 Thread tension adjustment

The tension of thread is very important for the stitch performance. Turn the thread tension nut clockwise to increase the upper thread tension, and counterclockwise to decrease the tension. And loosen the screw of pressing spring on shuttle to decrease the bottom thread tension, and tighten the screw to increase the bottom thread tension.

6.4 Feed dog adjustment

6.4.1 The feed dog is in the middle of the needle plate. It is adjusted by the lower feeding front crank.

6.4.2 Set the max.stitch length, turn the handwheel, the clearance between feed dog and needle plate is about 1.5mm.

6.4.3 The feed dog is about 1.5-2.2mm higher of the needle plate. Turn the hanwheel until the feed dog lift to the highest position, loosen the screw No.25(parts book page 12), turn the shaft(No.16 in parts book page 12) clockwise to lift the feed dog, and counterclockwise to lower the feed dog. After adjust, tighten the screw.

6.4.4 When the needles get down from the highest position, the feed dog start to move forward. It can adjust the position of feeding cam and upper shaft.

6.4.5 The feed dog must at the highest position when start feeding. It can adjust the position of bushing(No.5 in parts book page 24) in the slot of outer roller carrier(No.4 in parts book page 24).

6.5 Adjust pressure of presser foot

It can be adjusted by the pressure regulator screw No.10(parts book page 16), turn the screw clockwise to increase the pressure, and counterclockwise to decrease the pressure.

6.6 Adjust the timing of hook and needle

6.6.1 Turn the handwheel, when the needles are about 5.5-6.0mm from the bottom position, the shuttle tip is just in the middle of two needles. Loosen the eccentric sleeve screw to adjust it.

6.6.2 When shuttle tip moves to the center of left needle, it is about 1.5-2.0mm higher of the eyelet. If not, it needs to adjust the height of the needle bar.

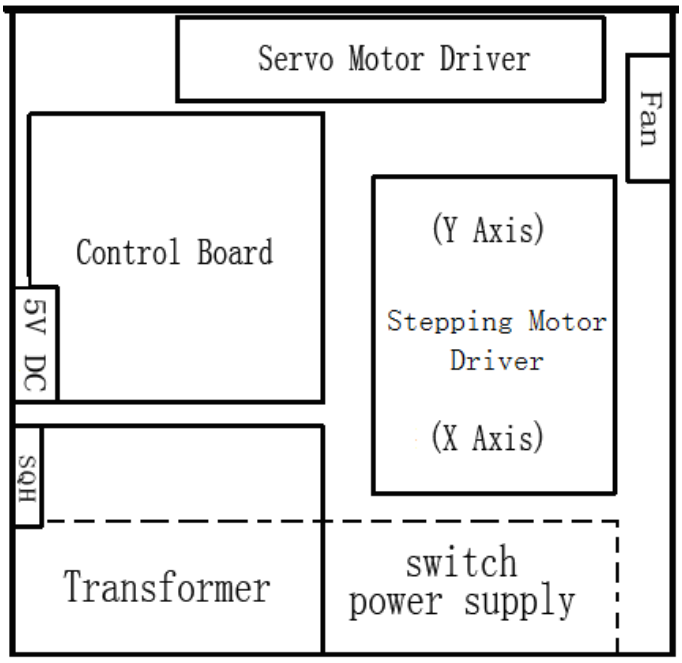
6.6.3 When needles are at highest position, the shuttle oscillated to the rightmost position, the thread loosing outlet is about 1.5mm left to the center hole of needle plate, and the thread outlet is about 2-3mm.

(Note: The machine is well adjusted before delivery. If it needs to make some adjustments, please ask the technician or trained operator.)

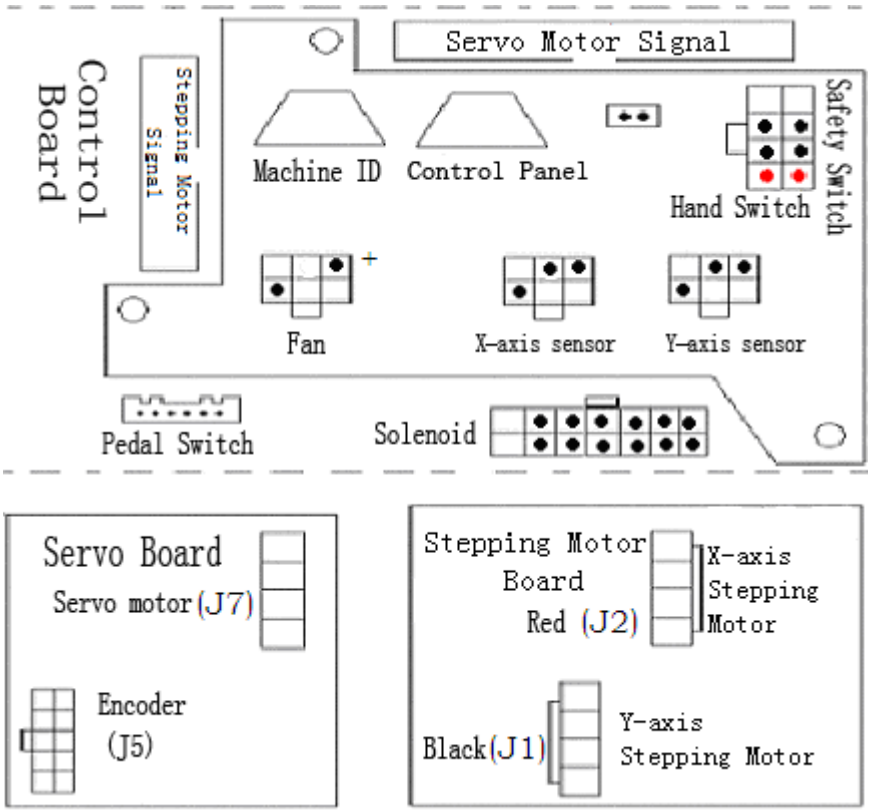
7 System instruction

7.1 Control box hardware instruction

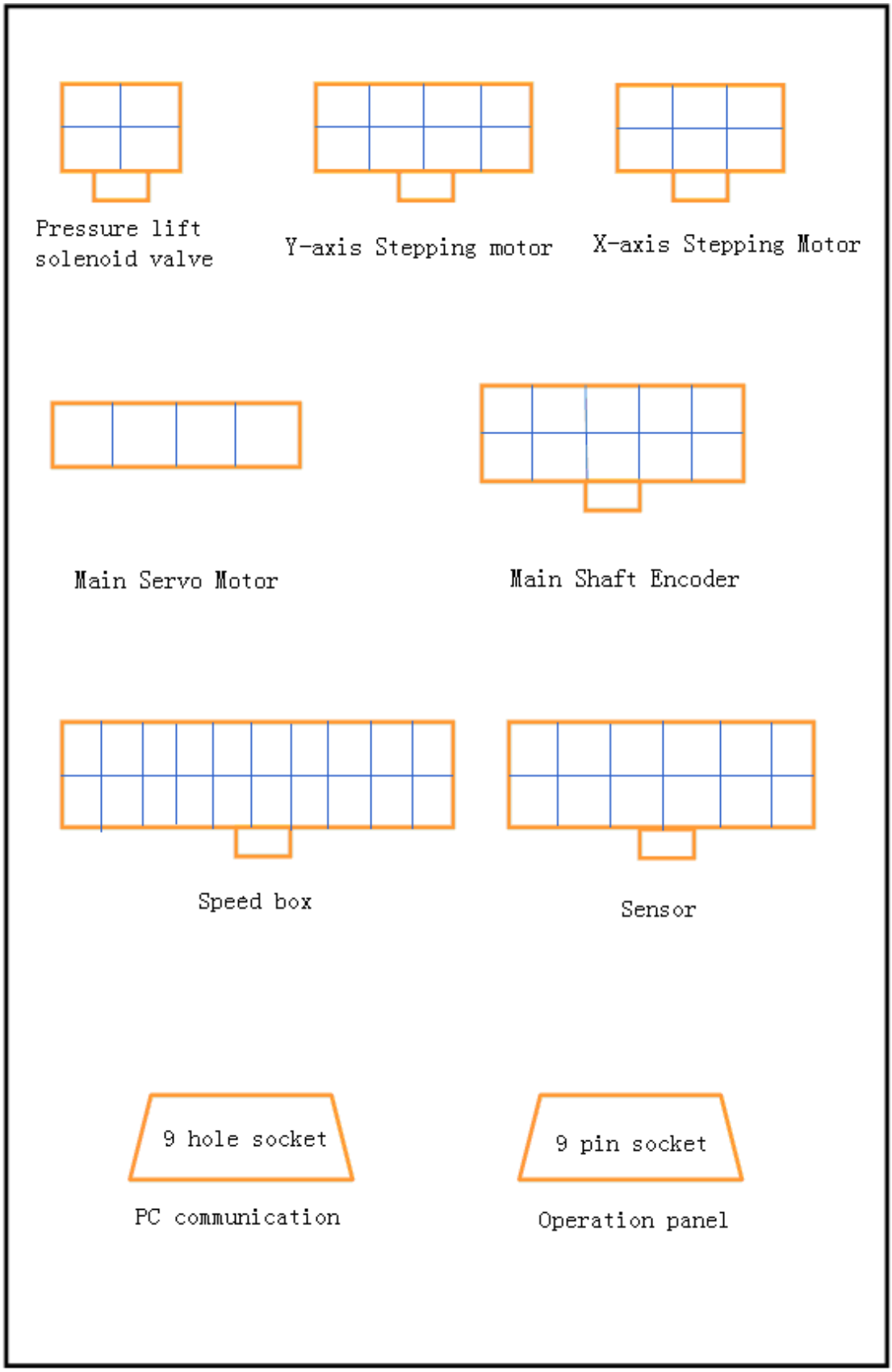
7.1.1 Control box inner structure



7.1.2 Control box internal interface



7.1.3 Control box external interface



7.1.4 Power specification

Power: Single phase 220V±20%

Current: Average current is lower than 3A. Peak current is lower than 7A.

7.1.5 Change fuses

There are 3 pieces fuses on power control board and 1 piece fuse on servo board.

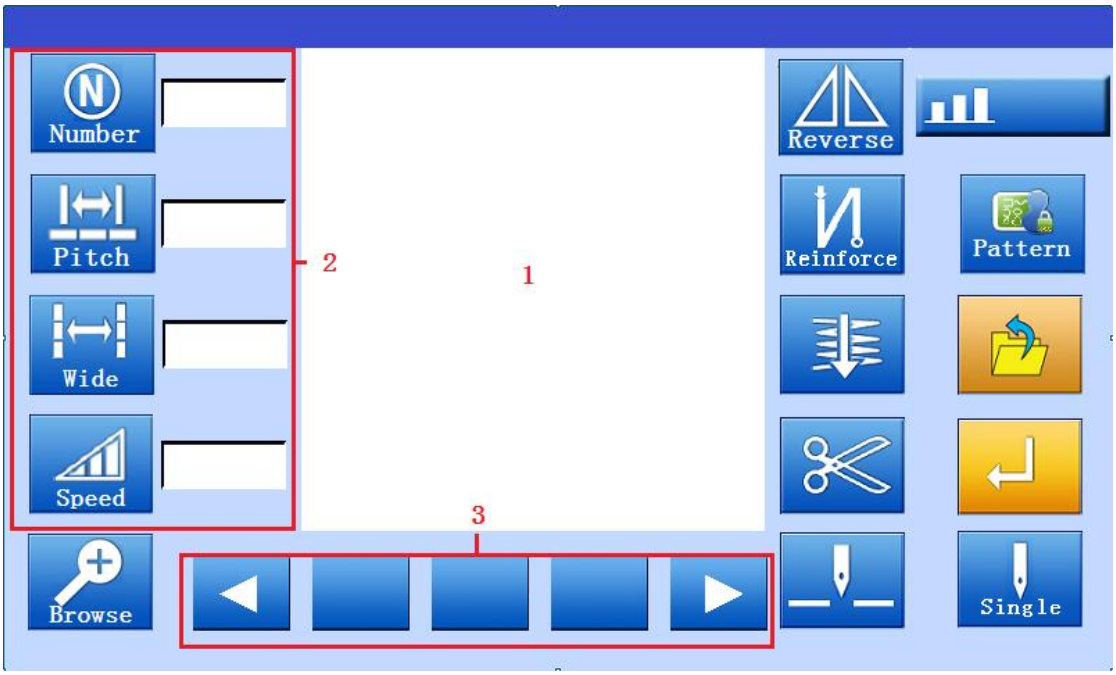
The capacity and the usage of the fuse:

No.	Capacity	Usage
FP1	10A	Protect the AC power
FP2	10A	Protect the step motor driver
FP4	10A	Protect the solenoids
F1	10A	Protect the servo motor driver

In order to avoid the electric shock, before open the control box cover, please power off and wait 3 minutes at least.

7.2 Operation panel and sewing operation

7.2.1 Operation Interface



1. Area 1: pattern displaying area, showing the designed pattern.

2. Area 2: pattern parameters, it shows the current pattern number, pitch(stitch length), width and sewing speed. It also can modify the pattern parameters directly, after modified the parameters, press “ok” and then press  to start sewing.

3. Area 3: pattern selection, it shows the pattern numbers, press left and right button to choose the pattern, the pattern shows in the area 1, and press the pattern number to confirm the sewn pattern.

4. 

Convert the pattern symmetrically. It only used for single needle, when select one pattern, press this button, the pattern will start sewing from the opposite position. If for double needle, press this button, there will be no change, because to convert the pattern 180°, it just turn the needles 180°, it is still the same.

5. 

Backtacking. Make the backtacking at the beginning or at the end.

6.  Base line. It is to set the pattern start position when editing the new pattern, the default is in the middle, also can be set to the left and the right.

7.  Thread trimmer. At present the machine do not have this function.

8.  Half stitch. It only used for single needle when sewing at the corner, press the button to sew the corner, and press again for normal sewing.

9.  Output. It can set the output numbers for the production amount.

10. 

Pattern management. It can download and upload the patterns by USB.

11.  Setting interface.

12.  Enter. After choose the pattern and set the parameters, press it to start sewing.

13. 

Current needle number.

14. 

Browse. Browse and choose the patterns.

7.2.2 Reverse

In the main interface, press 

to change the sewing direction, it is only used for single needle to make the pattern in a mirror-symmetrical way, 

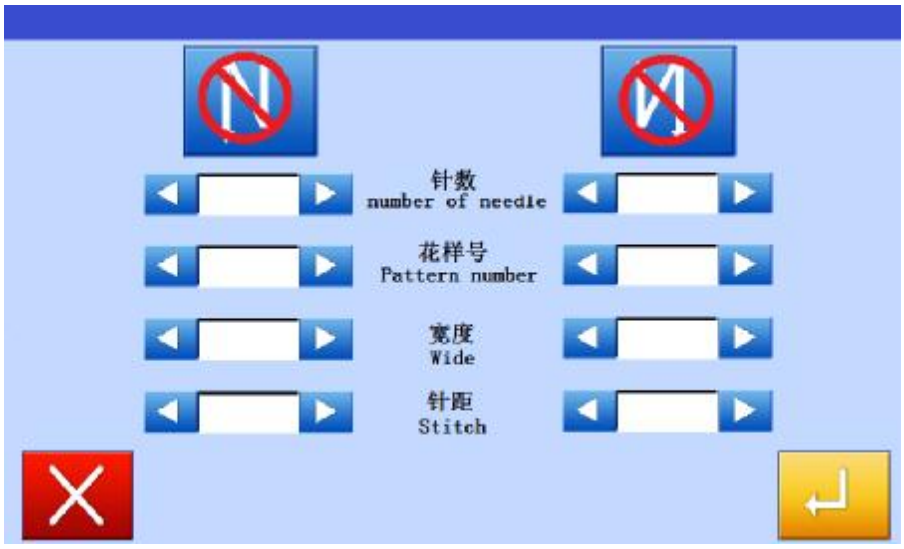
is closed, and 

is opened. For double needles, it is no use, because it is the rotating needle of 180°, press the button, it is the same.

7.2.3 Reinforce Button

Press 

to enter the reinforce operation interface.




Reinforcement at the beginning is closed, press it again to open 
;


Reinforcement at the end is closed, press it again to open 
.

After open the stitch reinforcement, it can set number of needle(stitch numbers), pattern number, wide(width), stitch(stitch length) at the beginning or end. After set the parameters, press 
to save it.

7.2.4 Base Line

In the main interface, press  to change start position of the stitch, it is used for design new patterns. The default is in the middle  , press it to change to the left  , right  and back to middle  .

7.2.5 Half Stitch

This function is only used for single needle sewing. Before start sewing, press  to open or close the half stitch, the default is closed  , press it to open  , then it can make the half stitch sewing at low speed close to the corner.

- « The half stitch sewing speed is set by the system parameter P-03, the default is 200rpm. And the half stitch position is set by the system parameter P-60.

7.2.6 Pattern management

Press 

to enter the pattern management interface.

 Press the button to save the pattern from the machine to USB flash.

 Press the button to save the pattern from USB flash to the machine.

Press any of the above two buttons, it will enter the following interface:

Press single, it can only choose one pattern.

Press all, it will choose all the patterns.

Press rename, it can rename a pattern.

Press delete, it can delete a pattern.

Press save, it will save the patterns which selected.

After save the patterns, press  to exit.

7.2.7 Change single and double needles

In the main interface, it displays 

, it means the current is single needle, the pattern display area will show a single stitch pattern, and display 

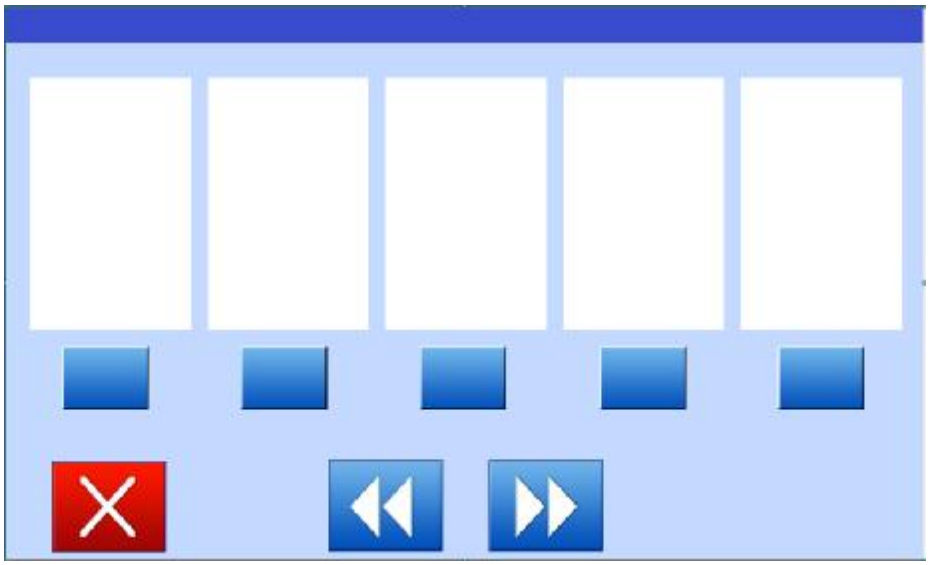
, it means the current is double needle, the pattern display area will show a double stitch pattern.

« Change single or double needles, which controlled by the system parameter P-48, 1 means single needle, 2 means double needles.

7.2.8 Browse mode

In the main interface, press 

to view the pattern picture larger and choose the pattern.



Press  to choose the pattern number, press  to view previous or next page.

7.3 Pattern Edit

7.3.1 Pattern edit interface

In the main interface, press  to enter the setting interface, and then press 

enter the pattern edit interface;

Press 

to create a new pattern, press 

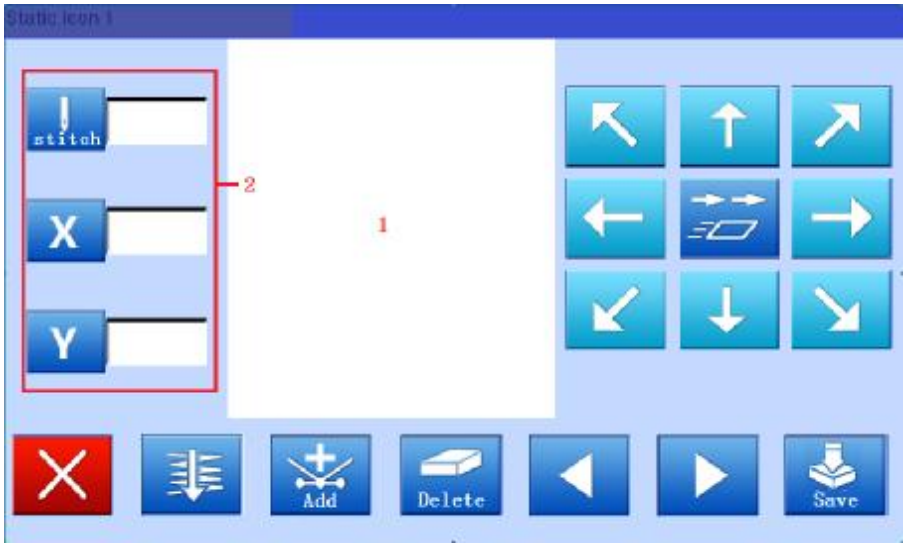
to modify the current pattern, and press 

to compensate the feeding for the pattern.

7.3.2 Create a new pattern

In the pattern edit interface, press 

to enter the creating new pattern interface:



1. Area 1: pattern displaying area. When design a new pattern, set the machine to one needle, and just need to deign a single stitch pattern, after finish the pattern, then set the machine to double needles, the pattern will be automatically changed to double stitch pattern.

2. Area 2: pattern information area, shows the pattern stitch numbers, X coordinate and Y coordinate of the designed pattern.

3.  Change the position of pattern start-point.

4. 

Add a stitch point, through directional keys to move to a stitch point where need to add a stitch point, then press the button.

5. 

Delete stitch point, through directional keys to move to a stitch point and press the button to delete it.

6.  Backward key, select one stitch point before the current stitch.

7.  Forward key, select one stitch point next to the current stitch.

8. 

Save key, save the designed pattern.

9.  Speed regulation of directional keys, press it to speed up or slow down the speed of directional keys. If it changes to 

, then it can add a stitch point through the directional keys, no need to press 

.

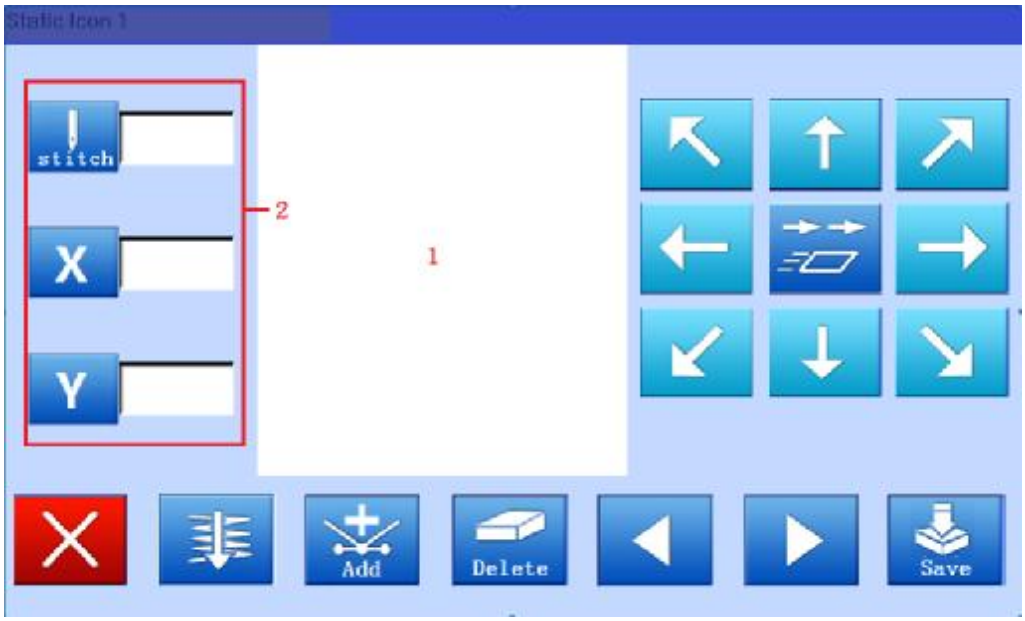
- After finish a new pattern, press the save button, it will show the following:

Name the pattern number and press  to save it.

7.3.3 Modify pattern

In the pattern design interface, press 

to enter the pattern modifying interface;



It is similar to the creating new pattern interface, only without adding a stitch point 

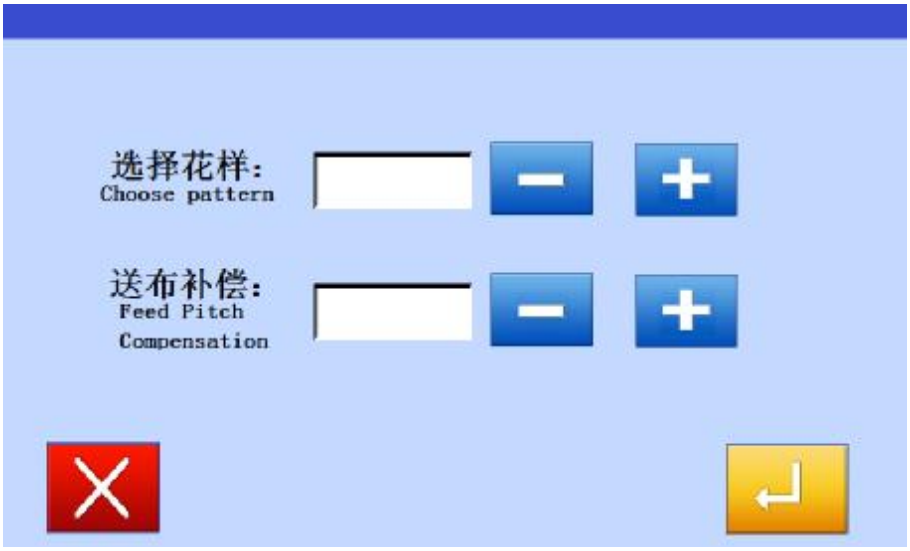
when change the speed 

of directional keys.

7.3.4 Feed pitch compensation

In the pattern edit interface, press 

to enter the feed pitch compensation interface;

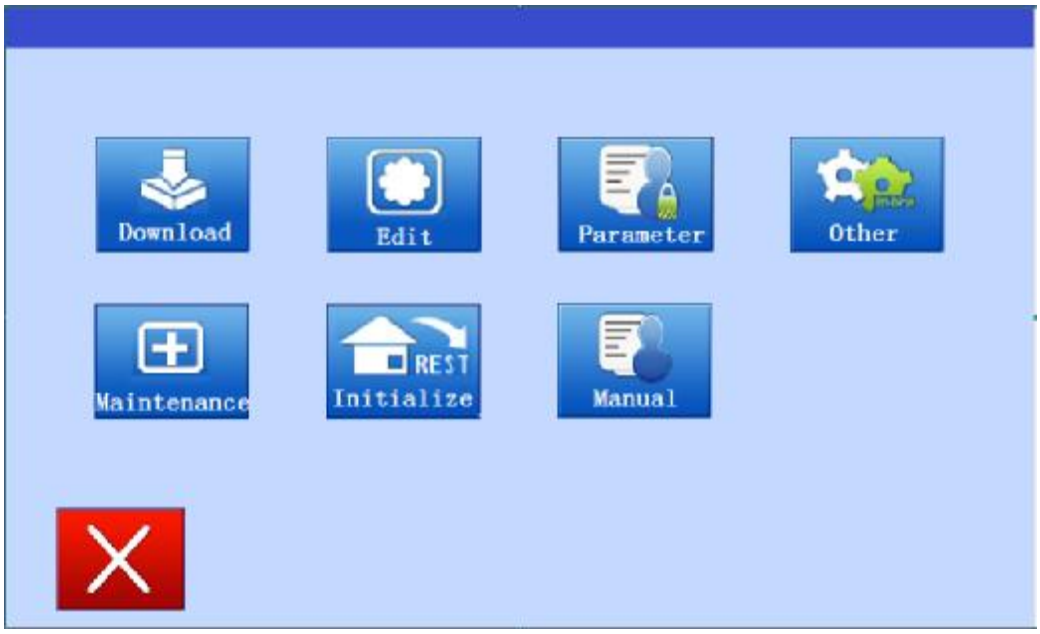


Choose the pattern number, and then press the button  on the right of Feed Pitch Compensation to increase or decrease the stitch points, it also can input the value directly in the box  .

7.4 Setting interface

7.4.1 Settings

Press  to enter the setting interface:



1.  Download patterns from PC to the system with cable line.
2.  Pattern design interface.
3.  System parameters interface.

4. 

Other settings interface, it can set the version, time limit, password and logo information.

5. 

Equipment maintenance interface.

6. 

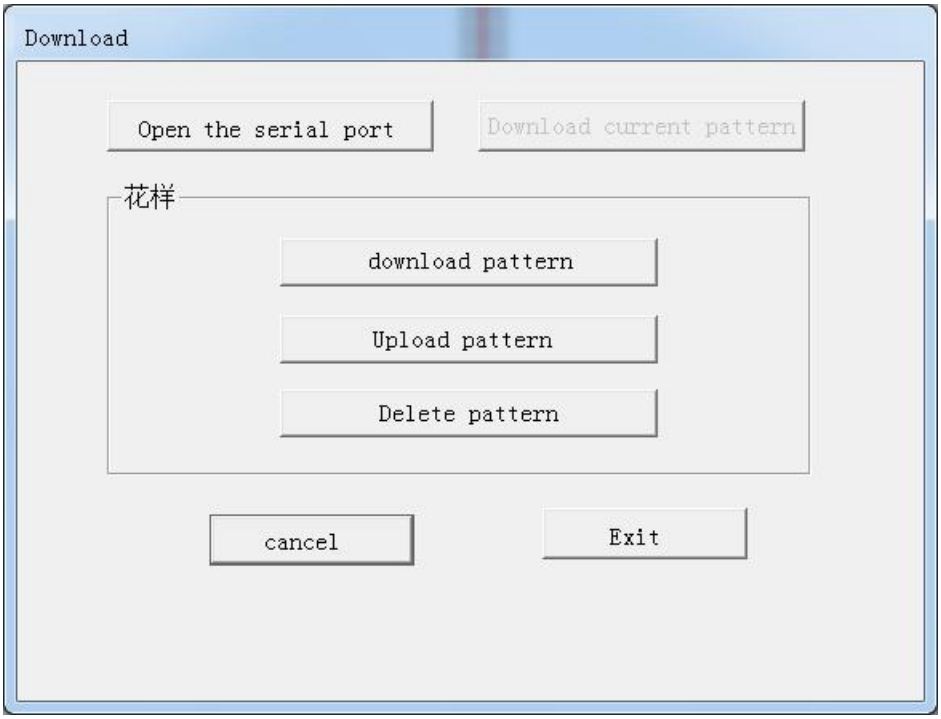
Initialize system parameters.

7. 

System instruction manual.

7.4.2 Download pattern

Connect the panel with PC through the cable line, then open the pattern editing software  and click  to download the pattern：



Click open the serial port, then download pattern, and select the patterns which need to download to the system, click OK to start downloading, after finish, click exit.

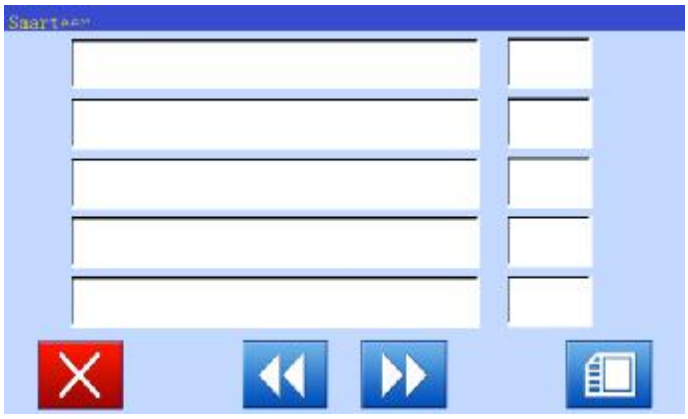
7.4.3 System parameters

It can solve some malfunctions, or adjust the machine to the best working condition by modifying some system parameters.

7.4.3.1 Set system parameters

In the setting interface, press 

and input the password (**7788**) to enter the system parameters interface:



Press  to move to the previous or next page, press  to return to the setting interface. Press the long box to set the current parameter value, and press  to save the setting, then it will show the following:

7.4.3.2 List of system parameters

ID	Function and instruction	Range	Remark
P-01	Up stop position	1-7199	
P-02	Max. sewing speed	100-1000	
P-03	Half stitch speed	100-600	
P-04	Max. pattern width	0-160	
P-05	Max. stitch length	0-140	
P-06	Timing of X position	1-7199	
P-07	Timing of Y position	1-7199	
P-08	Reverse feeding position	1-7199	
P-09	X origin	-800-800	
P-10	Y origin	-150-150	
P-11	The sensor polarity of X motor	0-1	
P-12	X transmission ratio	80-800	
P-13	X initial speed calibration	20-500	
P-14	X axis speed test	20-500	
P-15	X acceleration time verification	20-500	
P-16	The sensor polarity of Y motor	0-1	
P-17	Y transmission ratio	80-800	
P-18	Y initial speed calibration	20-500	
P-19	Y axis speed test	20-500	
P-20	Y acceleration time verification	20-500	
P-21	Limited speed	100-1000	
P-22	Sewing speed while trimming	100-500	
P-23	Servo motor polarity	0-1	
P-24	Servo motor transmission ratio	3-5	
P-25	Soft start switch	0-1	
P-26	Speed of 1^{st} stitch	100-600	
P-27	Speed of 2^{nd} stitch	100-800	
P-28	Speed of 3^{rd} stitch	100-1000	
P-29	Speed of 4^{th} stitch	100-1000	
P-30	Speed of 5^{th} stitch	100-1000	
P-31	Test 1 Produce 0	0-1	
P-32	Waiting time after trimming	20-250	
P-33	Open angle of the thread trimmer	10-180	
P-34	Close angle of the thread trimmer	1-360	
P-35	Open angle of the thread wiper	1-360	
P-36	Close angle of the thread wiper	1-360	
P-37	Presser foot acting time	4-500	
P-38	Press foot down time	4-2000	
P-39	Foot lift solenoid conduction ratio	1-100	
P-40	PWM time	100-10000	
P-41	Open angle of the thread nipper	210-340	
P-42	Close angle of the thread nipper	1-360	
P-43	PWM period	5000-30000	
P-44	Working time on testing	1-60	
P-45	Pause time on testing	0-60	
P-46	Presser foot lift time	1-120	

P-47	Servo motor work or not	0-1	
P-48	Change single/double needles	1-2	
P-49	Double needle distance is fixed or changeable	0-1	
P-50	Max. speed of reinforcement	100-800	
P-51	Speed decreasing angle of last cycle	180-340	
P-52	Calibration value of up stop position	-120-120	
P-53	Loosen stitch numbers when start sewing	0-3	
P-54	Open angle of the thread sweeper	220-360	
P-55	Close angle of the thread sweeper	300-360	
P-56	Calibration of up stop position while trimming	-120-120	
P-57	Password modification of secondary parameter	0-9999	
P-58	Main shaft direction	0-1	
P-59	Product serial number	0-999999	
P-60	Down stop position	1-3599	

7.4.4 Initialization

In the setting interface, press 

, input the password to initialize the system parameters.

If the password is wrong, it will display:

If the password is correct, it will display:

7.4.5 Other settings

In the settings interface, press 

to enter other settings interface:

7.4.5.1 Version information

In the other settings interface, press 

:

It will display the version and date of APP, MCU, OS and the serial number. The serial number is the same as the system parameter P-59.

7.4.5.2 The period of use

In the other settings interface, press 

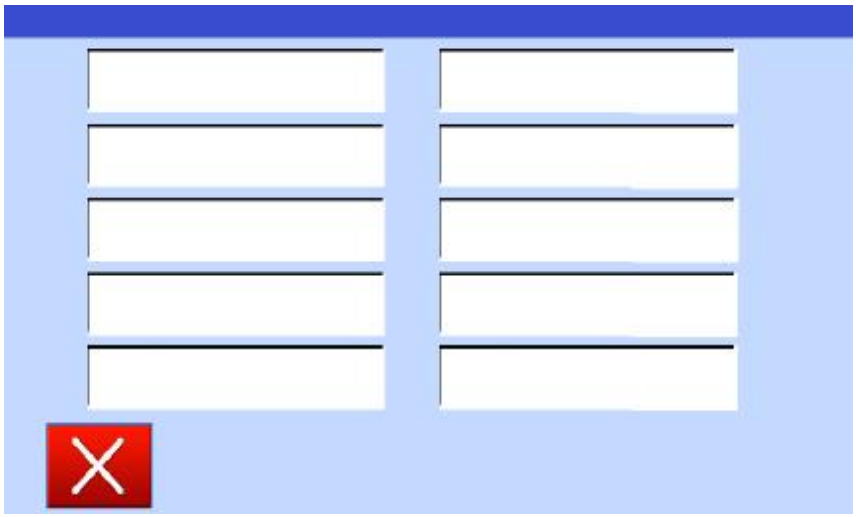
, input the password to check the time limit:

The total of using time can be modified, and the serial number is the same as the system parameter P-59.

7.4.5.3 Logo management

In the other settings interface, press 

, input the password to enter logo management interface:



Select one logo as the boot logo, press  to exit.

7.5 Equipment maintenance

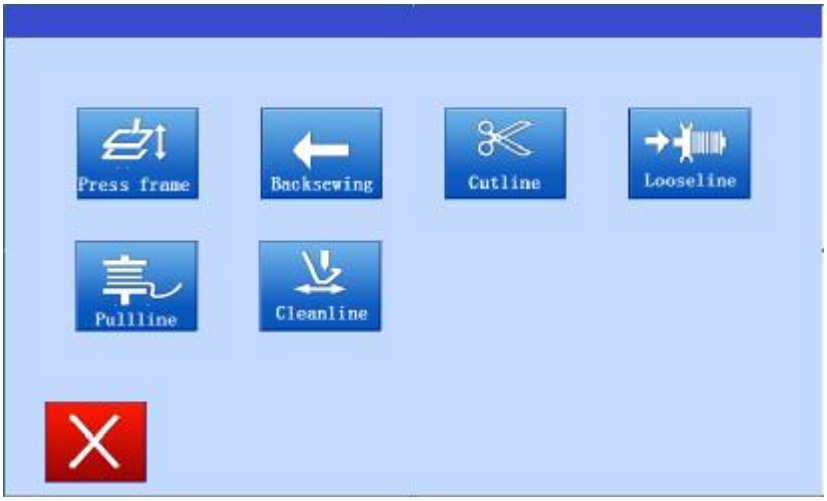
In the setting interface, press 

to enter the equipment maintenance interface:

7.5.1 Electromagnet detection

In the equipment maintenance interface, press 

to enter the electromagnet detection interface:

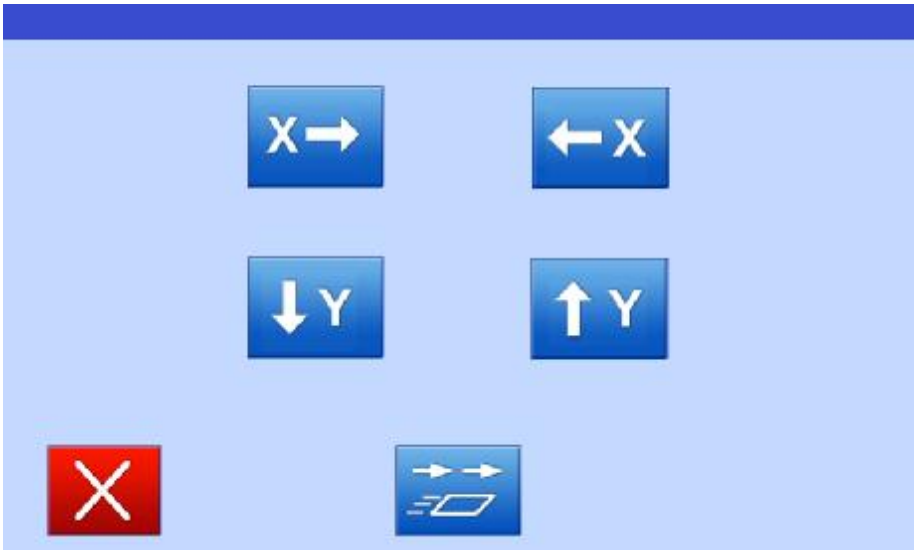


Press each button, the relative electromagnet will pull and release.

7.5.2 Stepping motor test

In the equipment maintenance interface, press 

to enter the stepping motor test interface:

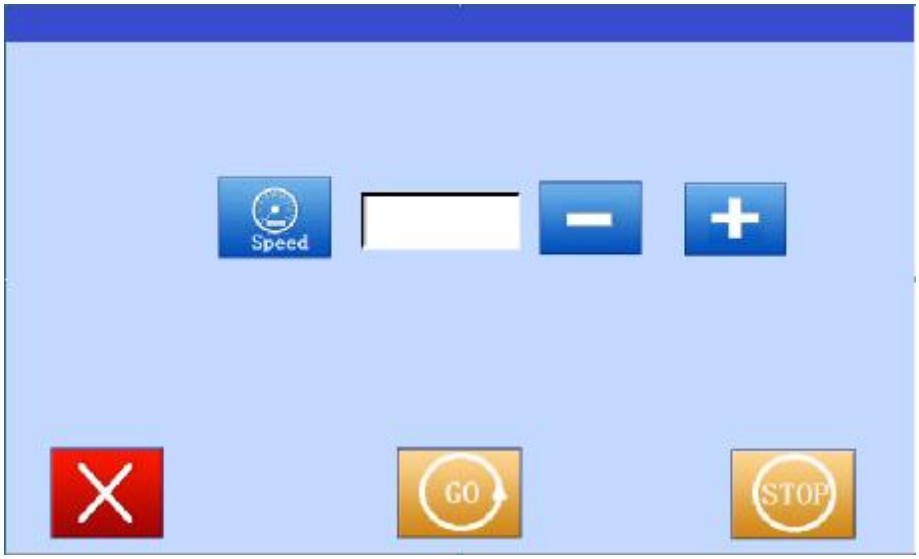


Press each directional keys, the X,Y stepping motors will move quiet and at steady speed. Press  to speed up or slow down the speed.

7.5.3 Servo motor test

In the equipment maintenance interface, press 

to enter servo motor test interface:



Press  to increase or decrease the speed, also can press 

to set the speed directly(range:100-1000). After set, press 

to start, and press 

to stop, then press  to return to the equipment maintenance interface.

7.5.4 Signal detection

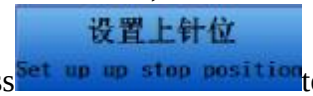
In the equipment maintenance interface, press 

to enter the signal detection interface:

Press  to show all the signals:

When X,Y axis sensor is blocked, L is for low power level, H is for high power level.

The signals of reverse key, security key and the pedals encoding are alternately on and off.

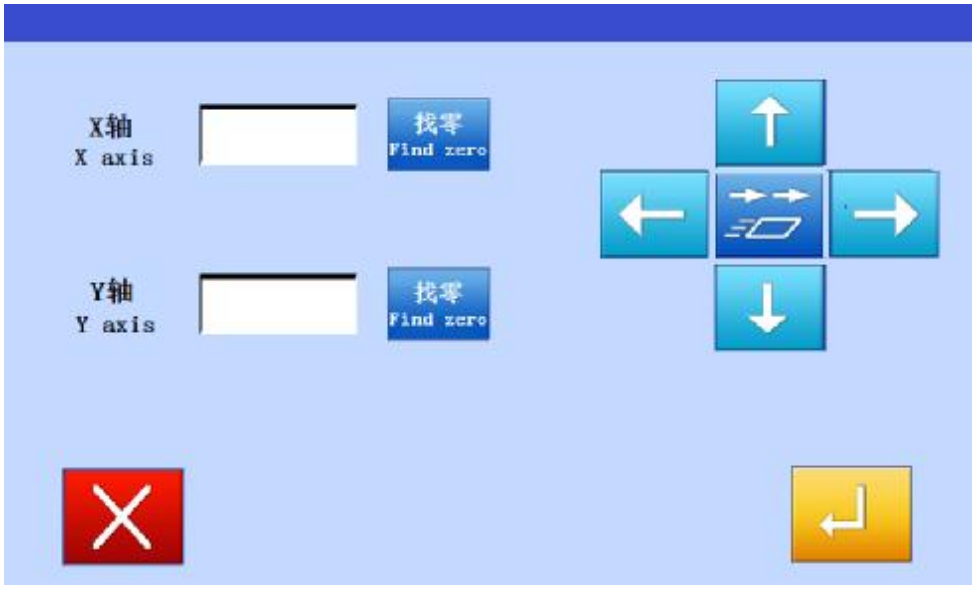
Up stop position coding is the same as the system parameter P-01, main shaft rotates a circle, up stop position signal will from on to off, press 

to set the up stop position to the current up stop position.

7.5.5 Origin adjustment

In the equipment maintenance interface, press 

to enter the origin adjustment interface:

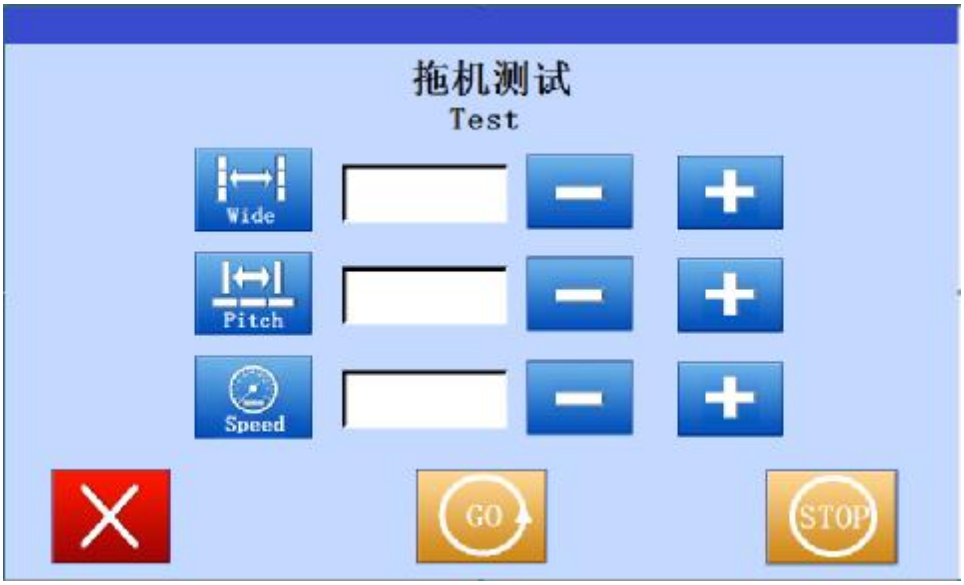


Press directional keys to adjust X,Y origin, make sure the needle is in the center of 4 directions “front, back, left and right”. It is better not to adjust the X,Y origin directly by pressing the button Find Zero. After adjust the X,Y origin, press  to save it, and press  to exit the origin adjustment interface.

7.5.6 Testing

In the equipment maintenance interface, press 

to enter the sewing testing interface:



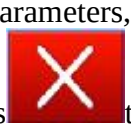
To test a pattern, press  to change the relative parameters, also can press 

, 

, 

to set the width, stitch length and sewing speed. After set the parameters, press 

to test the pattern sewing, and press 

to stop, and press  to return to the equipment maintenance interface.