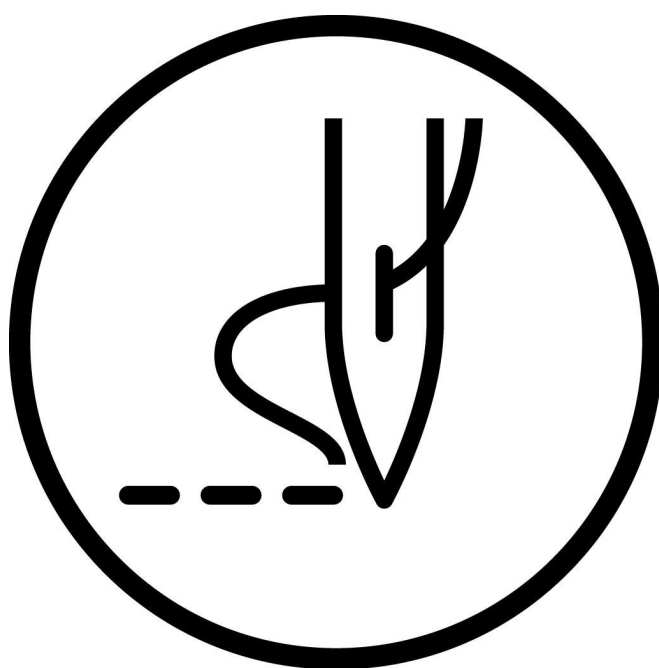# Instruction manual

# imitation buttonhole sewing machine

Read the instruction carefully before operation

Please keep the instruction appropriately

# brief

Welcome to using our specialized sewing machine controller, please note to read the instruction manual carefully to ensure the proper operation. We have no responsibilities on any loss because of the inproper operation. Please note to keep the instruction carefully, if any problem appears please contact us for technical supports.

# safety notes

## 1. safety icons

Please read the meaning of safety icons below to operating in a proper way:

| | |
|---|---|
| ⚠ | Serious injury or death may happen by wrong operation with showing this signal |
| ⚠ | Serious injury or machine damage may happen by wrong operation with showing this signal |
| ⚠ | "attention" icon, take notes of the icon(e.g. "Mind the injury" see picture on the left |
| 🚫 | "forbidden" icon |
| ⏚ | "must to do" icon |

## 2. safety notes

| | ⚠ danger |
|---|---|
| ⚡ | 。触摸带有高电压的区域会造成人员受伤。Please note to wait for at least 5 minutes after cut the power and pull out the plug when opening the controller |

| ⚠ notes | |
|---|---|
| **operating environment** | |
| ❗ | Do not use around strong electrical interference. Strong electrical interference may effect machine running state. |
| ❗ | Power supply voltage: ±20% |
| ❗ | Environment temperature: 5℃~35℃ |
| ❗ | Environment humidity: 45%~85% |
| ❗ | 。Air pressure supply should exceed machine consumption. |
| ❗ | Cut the power and pull out the plug on strong storm days |

| **installation** | |
|---|---|
| 🚫 | Please installed by trained technician |
| 🚫 | 。Please do not connect the electricity before the installation is done. |
| ⚠ | Please operation with both hands |
| ⏚ | 。Please use ground connection |
| ❗ | All wires should not be fixed within 25mm, electrical shock or fire may be caused by over bending wires |

| | Please install a cover on machine head. |
|---|---|

| sewing procedure | |
|---|---|
| ⊘ | Only operators with safety training are acceptable. |
| ⊘ | Do not use the machine for other purposes except sewing work. |
| ❗ | Please wear guard glasses when operating, or else eye injury may happen because of the needle breaking. |
| ⚠ | please cut the power under situations below: 1. Threading. 2. Needle replacement. 3. Operators away |
| ⚠ | 。 Injury or machine damage may happen by touching any running parts under sewing work. |
| ❗ | Please cut the power and contact the technician when unusual noise or smell occurs under sewing work. |
| ❗ | Any damages please contact the suppliers for technical supports. |
| maintenance | |
| ⊘ | Only trained technician maintenance are acceptable. |
| ❗ | Please contact the factory for electrical related maintenance supports. |
| ⚠ | please do cut the power and pull out the plug under situations below: 1. Machine under check, adjustment and maintenance. 2. Looper, knife and other parts replacement. |
| ⚠ | Cut the air supply before any pneumatic equipment activities. |
| ⚠ | 。 Please read the safety notes carefully when the electric supply and pneumatic supply are connected. |
| ⊘ | 。 Any development on machine will not under warranty. |

# Catalogue

# 1、 Controller Hareware

## 1.1  Inner Structure

| Motor Drive of Main Axis. | Main Board & Connector Board | Transformer |
| --- | --- | --- |
| | | 5V Power Supply |

J3controlling signal of main axis driver

J4 controlling signal of stepping

J3 , Display

J2, backup

J4

8P

safety switch

scissors

| JEx 6P,blue Z sensor | JEy 6P,black Air pressure sensor | JEz 6P,Yellow backup | JEu 6P,white Y sensor | JEv 6P,red X sensor |
| --- | --- | --- | --- | --- |

J6 , 6P, pedal

JP3 , 3P, Input of main axis driver

J5A , 14P, Electromagnet Signal

JP2 , 4P, 5V Supply

Cement Resistor

J1_DC24V Standby Supply

JP4,10P, Red Transformer

Motor Controlling Signal of Main Axis.

Encoder Outlet

JFAN , 2P Fans

JP1 , 3P, AC220V Power Supply

JP5,4P Step Motor Power Supply

# Connector Diagram of Boards <span>(Main Controlling Board & Connector Board)</span>

```
┌─────────────────────────┐
│  Connector Board        │
│                         │
│                         │
└─────────────────────────┘

   ┌──────────────┐        ┌──────────────┐
   │ J3 Display   │        │ J2 backup    │
   └──────────────┘        └──────────────┘




         ┌─────────────────────────────┐
         │   Main Controlling Board    │
         │                             │
         └─────────────────────────────┘
```

## 1.3

Connector Diagram of Stepping Motor Drive

| | |
|---|---|
| X mo tor | U mo tor |
| | inpu t |
| Step ping cont rolli ng sign al | Step ping cont rolli ng sign |
| Y mo tor | Z mot or |
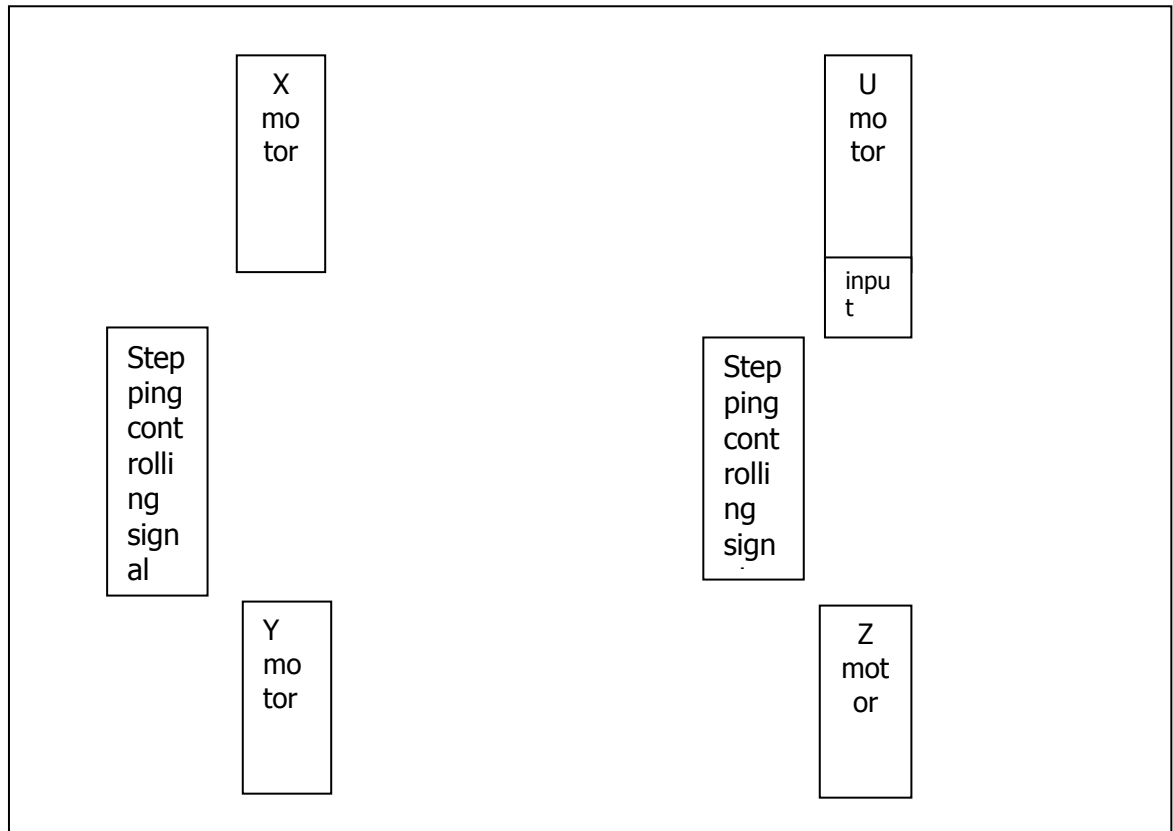
## 1.4  Power Supply Specification

220V±15%

Power Supply Voltage: Single Phase 220V±15%

Working Current: Average Current <3A, Peak Current <5A.

# 2、 Basic Operation Instruction

## 2.1Panel Instruction

**(1) Pattern Selection**

**(2) Functions Selection**

**(3) Cable**

**(4) USD Port**

**(5) PC Communication Port**

**(6) Radio Output**

**(7) Power Supply Indicator**

## 2.2 Functions on Main Panel

The machine will automatically start when the power supply of control box is ON. During the START, there will be an initialization after that the controller comes to the normal working status. The operation page would be showed as below:
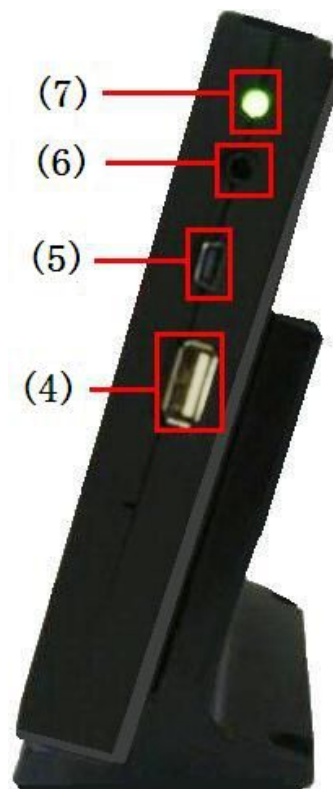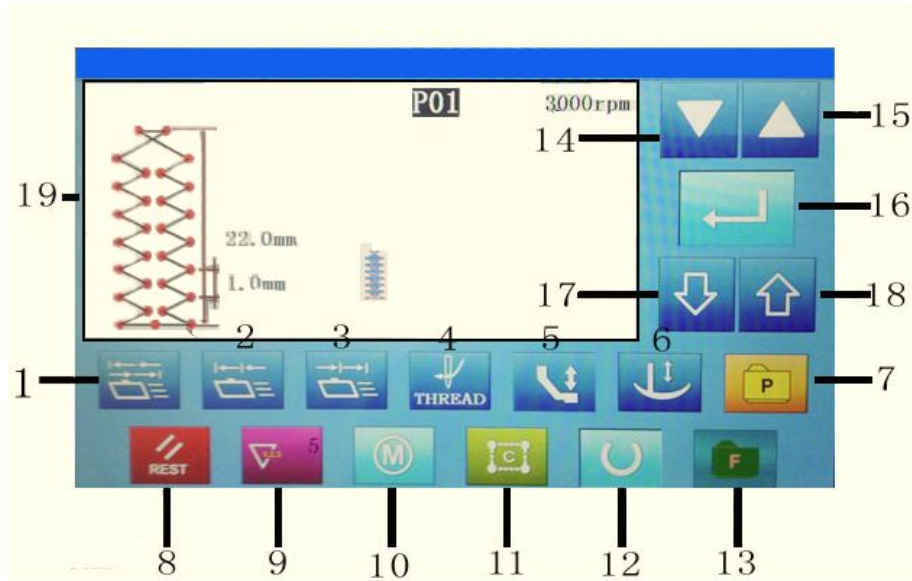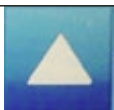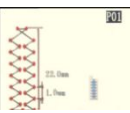
Sheet 1: Instruction of Icons

| No. | Icons | Identification of icons | Functions |
|-----|-------|------------------------|-----------|
| 1 | | Left Edge / Right Edge. | Automatically moves left edge/right edge after pressing it |
| 2 | | Moving Left | Move to left in one unit, under the recycled mode. |
| 3 | | Moving Right | Move to right in one unit, under the recycle mode. |
| 4 | | Threading | Threading by press once. After threading, press icon 8 ( REST) to exit. |
| 5 | | Main Presser Foot | Main presser foot. Lift up / down by pressing. |
| 6 | | Small Presser Foot | Small presser foot. Lift up / down by pressing. |
| 7 | | Parameter Adjusting | The parameters can be readjusted by Icon 17&18 after pressing. Exit by pressing Icon 12. |
| 8 | | （REST） Reset | Mainly used to clear or remove faults. |
| 9 | | Counting. | Come to counting page by pressing. |

## 2.3 names and specifications of main interface under threading mode

| No. | Icons | Button names | specifications |
|-----|-------|--------------|----------------|
| 10 | | Manual | Turn the wheel by manual, feeding device moves forward stitch by stitch. Press Key 12 to exit. |
| 11 | | Automatic Shift | It`s used to shift between automatic recycle mode and semi-automatic recycle mode. |
| 12 | | Sewing start. | Come to Sewing Mode by pressing it. |
| 13 | | Functions. | Adjust the functions by pressing. |
| 14 | | Patterns (backward) | Change Patterns |
| 15 | | Patterns (forward) | Change patterns |
| 16 | | ENTER | Confirm the parameter setting |
| 17 | | Parameter Adjusting (DOWN) | Adjust parameters |
| 18 | | Parameter Adjusting (UP) | Adjust parameters |
| 19 | | Menu display. | all your selected patterns, sizes, speed etc are showed in this area. |

## Functions on the main panel under threading

Threading Mode: Come to Threading Mode by pressing Icon 1 ( Threading). After the threading, exit it by pressing Icon 2 (REST).
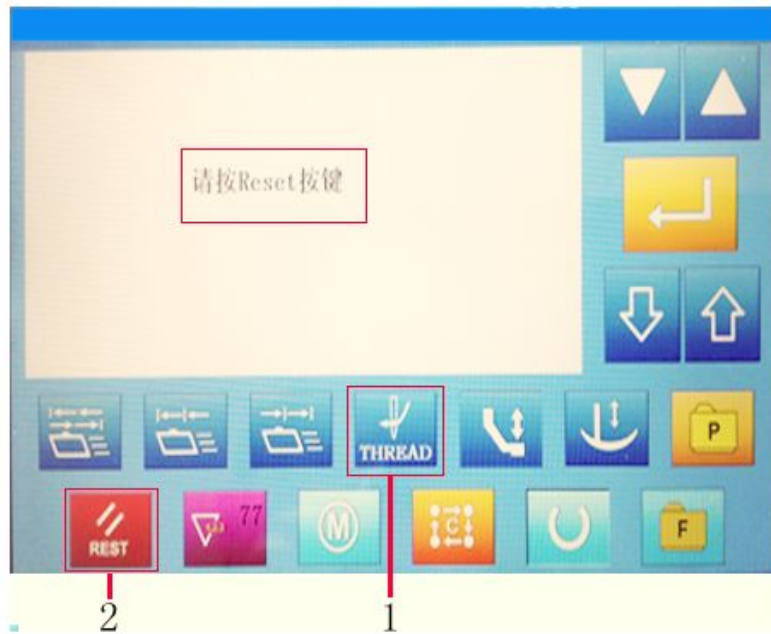
1. 

Main presser foot. Lift up / down by pressing.

2. 

Small presser foot. Lift up / down by pressing
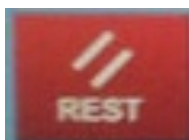
3. 

Reset. Mainly used to clear or remove faults.

Counting. The figure on the up right is the production value. Come to the Setting Page by pressing it. The page will be showed as below:
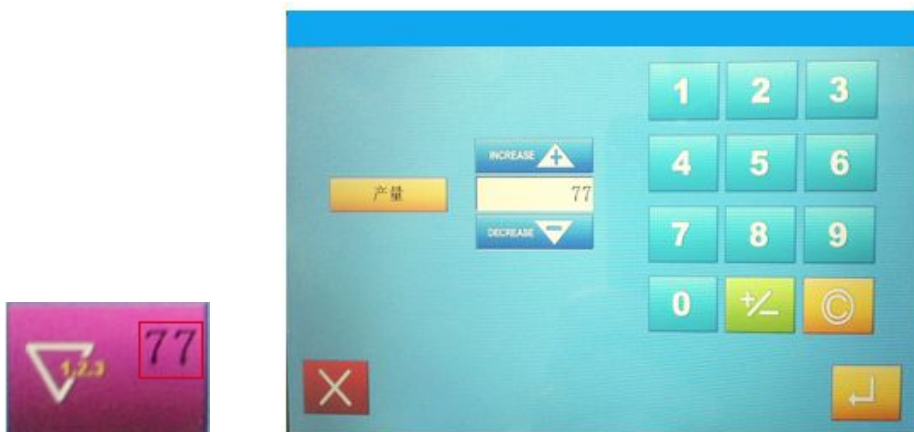
**5.**

Manual （Icon 1）. Turn the wheel by manual, feeding device moves forward stitch by stitch. Press Key 12 to exit.
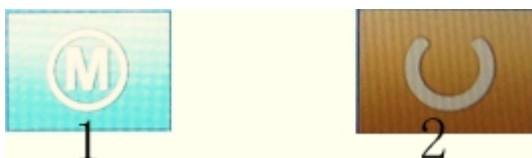


**6.**

Automatic shift. It`s used to shift between automatic recycle mode (Picture 2)  and semi-automatic recycle mode (Picture 1)



图1
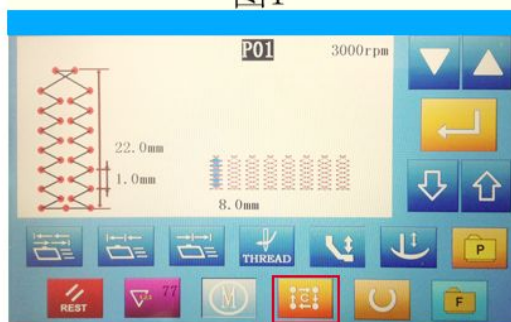


图2

Sewing Start. Come to Sewing Mode by pressing it, and push the foot pedal to start sewing.

## 2.4Modification of Eyelet Parameters

Come to the setting page of Parameter values by pressing Icon 6. Press Icon 1 or 2 as the above picture to choose the parameters, then adjust the parameter values through Icon 4 or 5. Confirm the modification by pressing Icon 3.

No. 01 Parameter: Buttomhole length (Unit 0.5mm). Adjust the length through Icon 4 or 5, range from 15.0-25.0mm. Confirm all modificaton by pressing Icon 3. The previous value will be kept without confrim by Icon 3.

; Exit the Setting of Parameters by Icon 7.

Please adjust the detail setting of parameters according to the sheet as below:

### Parameter Setting Table

| No. | Parameter | Setting Range | Initial Value | Setting Unit | Detail setting |
|---|---|---|---|---|---|
| P01 | Buttonhole Length | 15.0--25.0 | 22.0 | 0.5mm | Adjusting the Length of Buttonholes |
| P02 | Stitches distance of buttonhole | 0.5--2.5 | 1.0 | 0.1mm | Adjusting Distance of each stitches |
| P03 | Space of buttonhole | 0.1—1.5 | 1.0 | 0.1mm | Adjusting Width of the Buttonhole |
| P04 | No.s of buttonholes | 2--8 | 4 | 1 | Setting of Buttonhole numbers |

| | | | | | |
|---|---|---|---|---|---|
| P05 | Distance between buttonholes | 8.0—32.0 | 16.0 | 1.0mm | Setting of Distance between each two Buttonholes |
| P06 | Max. speed | 1500--3800 | 3000 | 100rpm | Setting Maximum speed of Main Axis Motor |
| P07 | Rotation Angle of Bevel Motor | 0-30 | 0 | 1° | Setting the Ratation Angle |
| P08 | Round Stitches Distance | 0.5—2.5 | 1.0 | 0.1mm | Adjusting Round Stitches Distance |
| P09 | Knotting Pattern | 0/1 | 0 | 1 | 0 flat head, 1 round head |
| P10 | Knoting Stitches | 1X,2X,3X | 1 | 1 | Setting the stitches of knot. |
| P11 | Equal Distance between Buttonholes | 0/1 | 0 | 1 | Setting the EQUAL Stitches Distance between Buttonholes |
| P12 | Distance between No. 1 & 2 | 4.0-32.0 | 4.0 | 1 | Setting the Distance between No. 1 & 2 Buttonholes |
| P13 | Distance between No. 2 & 3 | 4.0-32.0 | 4.0 | 1 | |
| P14 | Distance between No. 3 & 4 | 4.0-32.0 | 4.0 | 1 | |
| P15 | Distance between No. 4 & 5 | 4.0-32.0 | 4.0 | 1 | |
| P16 | Distance between No. 5 & 6 | 4.0-32.0 | 4.0 | 1 | |
| P17 | Distance between No. 6 & 7 | 4.0-32.0 | 4.0 | 1 | |
| P18 | Distance between No. 7 & 8 | 4.0-32.0 | 4.0 | 1 | |

# 3、 System Setting

To meet the detail requirements, users may setting the working parameters through the following setting page.

## 3.1 Setting of Basic Function

Press Key F as the above marked, come to the following page:
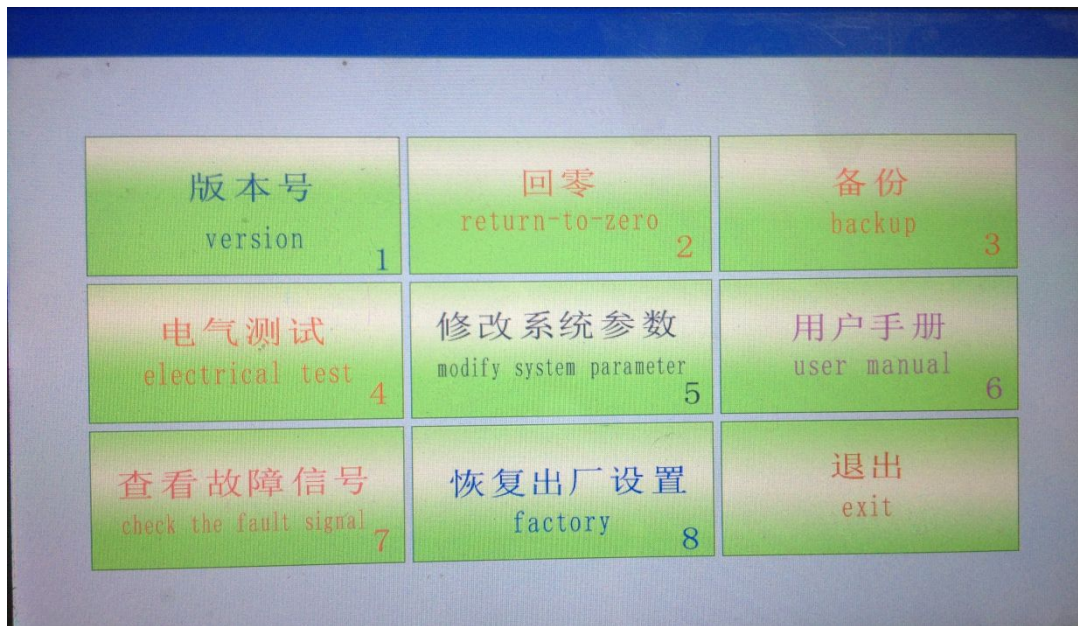


1. Key 1；check the version

2. Key 2: restart to zero

3. Key3: back-ups of patterns or parameters

4. Key 4: electric testing

5. Key 5: revise system parameters

6. Key 6: check the manual

7. Key 7: check the error or faults

**8.** Key 8:to default setting

**3.2**

**Modification of Users` Parameter**

Revise the Users` Parameters by Pressing Icon 5, the page would be showed as below:

| 项 目 (ITEM) | 值 (VALUE) | 项 目 (ITEM) | 值 (VALUE) |
|---|---|---|---|
| U001 送布方式 Feeding Methods | 1 | U002 圆头速度 Eyelet RPM | 2000 |
| U003 套结速度 BarTack RPM | 2000 | U004 慢起针针数 Slow Stitches | 1 |
| U005 慢起针速度 Slow Stitches RPM | 2000 | U006 圆头补偿 Eyelet is -5 to 1 | 0 |
| U007 y轴送布补偿 y Feeding MakeUp | 0 | U008 Z轴补偿 Z MakeUp | 0 |
| U009 剪线开关 TrimmingSwitch | ON | U010 松线开关 ThreadSlack Switch | ON |
| U011 扫线开关 SwingLine Switch | ON | U012 圆头偏移量 Eyelet Offset | 0 |
| | | | |

U001: adjusting feeding methods

U002: adjusting eylet speed

U003: adjusting knotting speed

U004: adjusting numbers of slow stitches

U005: adjusting speed of slow sitches

U006: adjusting offset of round head

U007: adjusting feeding offset of Y axis.

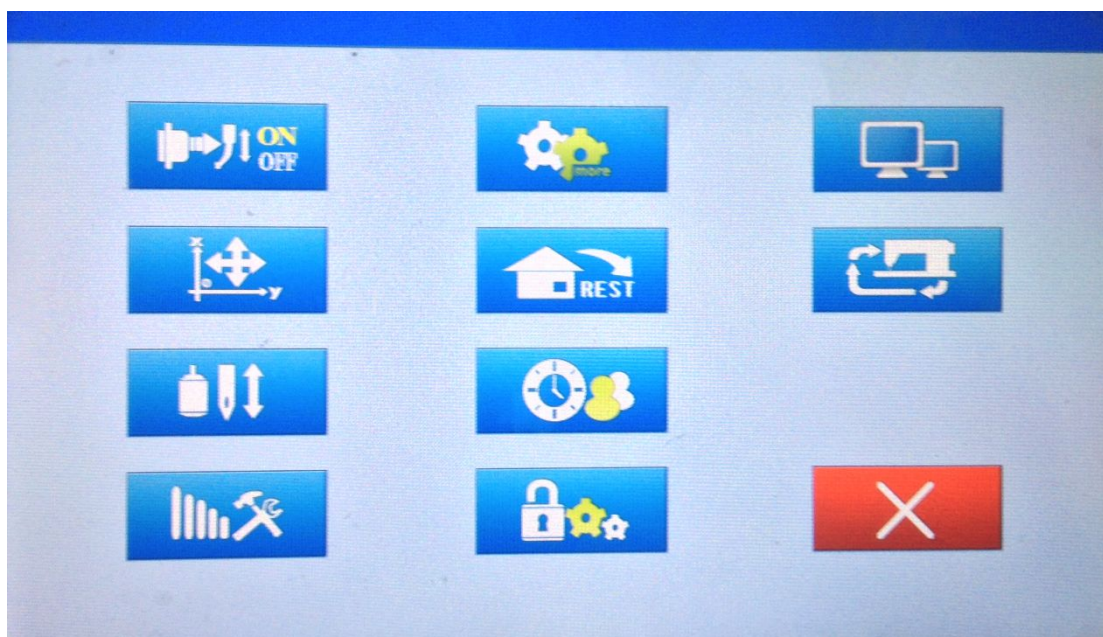U008: adjusting offset o f Z axis

U009: cutting switch

U010: thread loosng switch

U011: thread wipe switch

U012: adjusting the offset.

## 3.3  Setting of Electric Testing

Press Icon 4 to Electric Testing as below:

:

| No. | Icon | Function | Details |
|-----|------|----------|---------|
| 1 |  | Electromagnet Detection | Come to the electromagnet detecting page by pressing it. |
| 2 |  | Stepping Detection | Come to the detecting page of x,y,z,u,w axis by pressing it. |
| 3 |  | Servo Detection | Come to servo detecting page by pressing it |
| 4 |  | Signal Detection | Come to signal detecting page by pressing it |
| 5 |  | System Parameter | Revise system parameter |
| 6 |  | Initialization | Initialize the system parameters |
| 7 |  | Operating Life | Revise the using life |
| 8 |  | Revise password | Revise the password |
| 9 |  | WC Page | Come to WC page by clicking it to exit the software |
| 10 |  | Off-line | Work automatically through off-line by pressing it. |

## 3.4 Setting of System Parameter

Press Icon 4 on Function Setting Page to Electric Testing Page, then input password to the system setting by pressing Icon 5
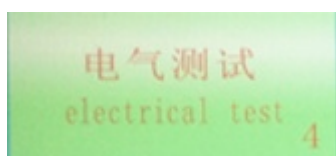
 

Functions of icons

| No. | Icons | Functions |
|-----|-------|-----------|
| 1 | Max. Speed | Setting the maximum speed |
| 2 | Air Valve Status | Allow or forbid to open the valve |
| 3 | 10-500 Closing Time of Threading | Setting the time of stopping threading. 10 is Minimun, 500 is Maximum. |
| 4 | Stopping Position of Main Axis | Setting the Stopping Position of Main Axis |
| 5 | Polarity of Emergency Stopping Switch | Unchange or reverse the polarity of emergency stopping switch |
| 6 | Synchronized Timing of Feeding | Choose the Synchronized Timing of Feeding |
| 7 | Open Time of Thread Wiper | Setting of the starting time of thread wiper |
| 8 | Time of Needle down | Setting the time of needle down of the main axis |
| 9 | Closing time of thread wiper | Setting the ending time of thread wiper |
| 10 | X original point | Setting the X original point |
| 11 | Y original point | Setting the Y original point |
| 12 | Open time of thread cutting | Setting the open time of cutting thread |
| 13 | Open time of thead loosing | Setting the open time of thread loosing |
| 14 | 10-500 Closing time of thread | Setting the time of thread loosing. 10 is Minimun, 500 is Maximum. |

| | | loosing | |
|---|---|---|---|
| 15 | Electromagnet of main presser foot PWM | Setting the duty ratio of electromagnet presser foot |
| 16 | Thread loosing electromagnet PWM | Setting the duty ratio of thread loosing electromagnet. |
| 17 | Polarity of X sensor | Unchange or reverse the polarity of X sensor |
| 18 | Polarity of Y sensor | Unchange or reverse the polarity of Y sensor |
| 19 | Verify of stopping position | Setting the verifing point of stopping position of main axis. |
| 20 | X axis offset | Setting the offset of X axis |
| 21 | Starting time of main axis | Setting the starting time of main axis |
| 22 | Polarity of Z axis sensor | Unchange or reverse the polarity of Z-axis sensor |
| 23 | Natural status of main presser foot | Lift or put down the main presser foot when starting the program or ending the sewing. |
| 24 | Speed of threading | Setting the speed of thread cutting |
| 25 | Switch of process/testing | Setting of machine process or testing |
| 26 | Pause testing | Seting the pause time of testing |
| 27 | Z axis original point | Setting the original point of Z axis. |
| 28 | 30-300 Time of presser foot | Setting the time of presser foot,30 is Minimun, 300 is Maximum. |
| 29 | 50-450) Verify the X speed | Setting the verifying factor of X speed,50 is Minimun, 450 is Maximum. |
| 30 | (100-700) Verify the Y speed | Setting the verifying factor of y speed,100 is Minimun, 700 is Maximum. |
| 31 | (50-150) Verify the time of Y speed up | Setting the verifying factor of Y accelerating time |
| 32 | Motor Original point of U axis | Setting the original position of motor on U axis |
| 33 | V axis original point | Setting the original position of V axis |
| 34 | Motor drive ratio of U axis | Setting the drive ratio of motor on U axis |
| 35 | (50-500) | . |

| | | |
|---|---|---|
| | Veryfying the initial speed of U axis | Setting the verifying factor of initial speed on U axis. |
| 36 | (50-500)<br>Verify the target speed of U axis | Setting the verifying factor of target speed on U axis |
| 37 | 50-500)<br>Verify the accelerating time of U axis | Setting the verifying factor of accelerating time on U axis |
| 38 | clockwise0-<br>anticlockwise1 )<br><br>Rotation direction on U axis | Setting the rotation direction. 0 is clockwise, 1 is anticlockwise |
| 39 | Polarity of sensor on U axis | 0-unchanged 1-reverse |
| 40 | Foot pedal types (1,2) | Setting the foot pedal, the default is 2 |
| 41 | (50-200)<br>Verify the X accelerating time | Setting the verifying factor of X axis accelerating time |

# Device Detection

Please enter the Testing Page when any faults occurs in the controlling system. Check the main device of input and output independently so that find out the reasons of the faults.

As described above, the Testing Page would be appeared the Electric Testing Page

**4.1**

**Electromagnet Detection**

Come to Electromagnet Detection Page (Picture 2) by pressing Icon 1 "Electromagnet Detection"
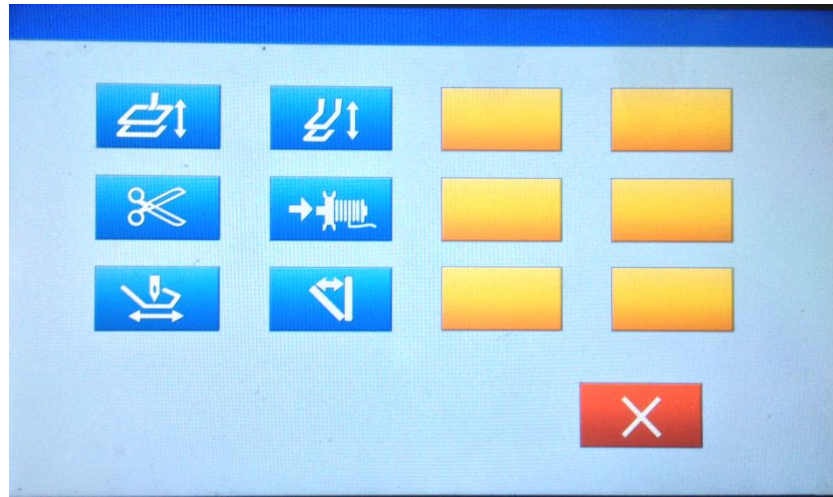
（ picture 1 ）                                            （ picture 2 ）

: Functions of the Icons

| No. | Icons | Function |
|-----|-------|----------|
| 1 | | detection for main presser foot |
| 2 | | detection for small presser foot |
| 3 | | detection for threading switch |
| 4 | | detection for thread loosing switch |
| 5 | | detection for thread wiper switch |
| 6 | | detection for rotary cylinder |

## 4.2  Stepping Detection

Come to Stepping Detecting Page (Picute 2) by pressing Icon 2 "stepping detection"
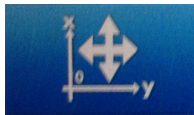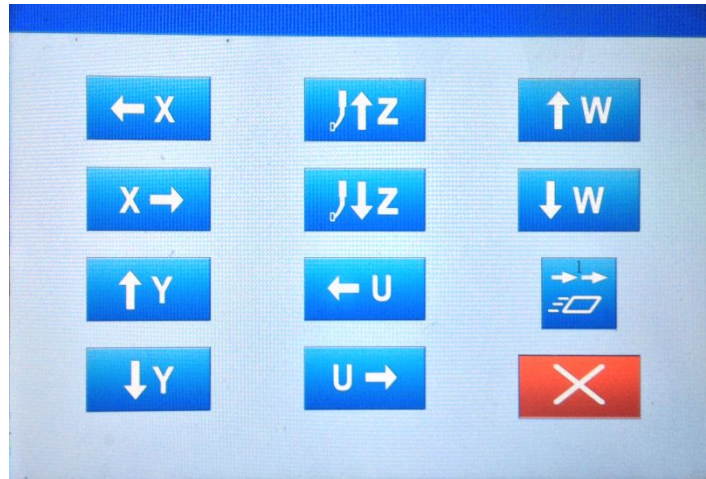
( picture 1 )                 ( picture 2 )

As the picture showed, users can make the detection to the forward and reverse of x,y, z, u,w axis of electronic sewing machines and also the stepping speed
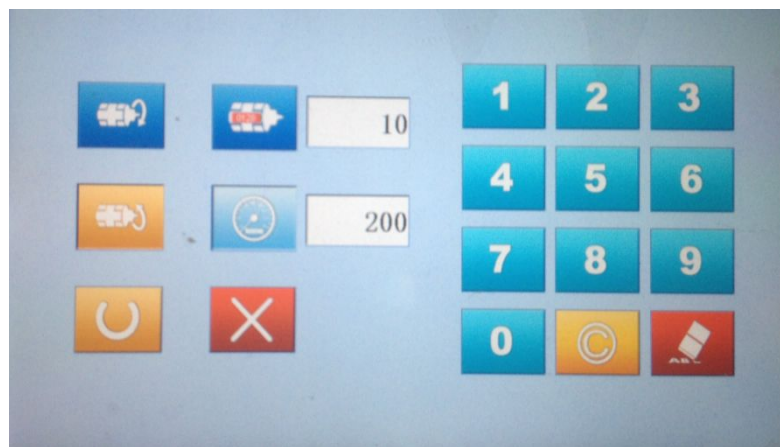
.

## 4.3 Servo Detection

Come to Servo Testing Page (Picture 2) by pressing Icon 3 "Servo Detection"



( picture1 )                 ( picture2 )

: Functions of Icons

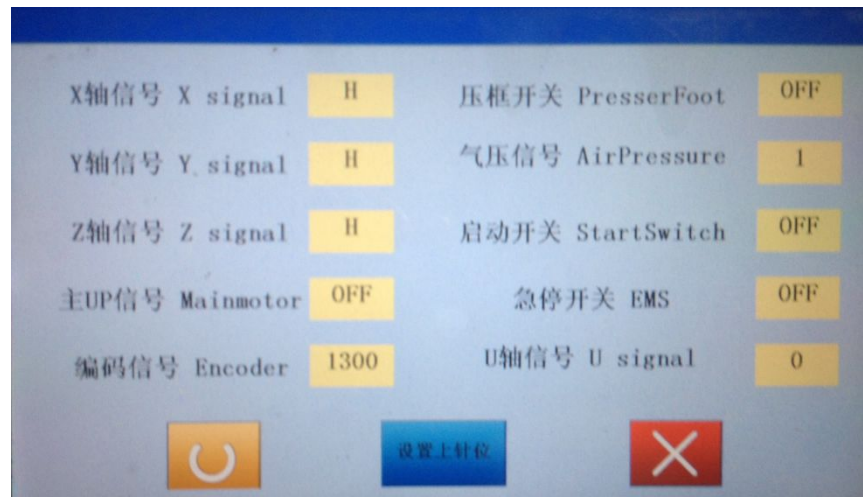| No. | Icon | Functions |
|-----|------|-----------|

| | | |
|---|---|---|
| 1 |  | make a clockwise detection to the motor |
| 2 |  | Setting the turns number that motor is running |
| 3 |  | make a anticlockwise detection to the motor |
| 4 |  | Setting the rotate speed of motor |

## 4.4  Signal Detection

Come to Servo Detection Page（Picture 2) by pressing Icon 4 "Signal Detection"
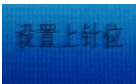


（picture1）                                （picture2）

As the above picture showed, press  to make a detection for signal.

Setting the upper stopping position by pressing , but  the upper stopping position should be adjusted first.