

GLOBAL

BT 2900 A

**Instruction manual &
Parts book**

MSC20X/MASC20X
Tacking Machine

2016-02



3007522

Foreword






Thank you for using our Computerized Control System for Special Sewing Machine.

It is appreciated that you do read this manual carefully in order to operate the machine correctly and effectively. If the user operates the machine contrary to regulations herein, thus cause loss to user or third party, we will not take responsibility. Besides, you should keep this manual for future use. For any fault or problem of machine, please ask the professionals or the technicians authorized by us for repair service.







Safety Matters for Attention










1. Signs & Definitions of Safety Marks






This User's Manual and the Safety Marks printed on the products are to enable you to use this product correctly so as to be away from personal injury. The signs and definitions of Marks are shown in below:









 Danger Danger	The incorrect operation due to negligence will cause the serious personal injury or even death.
 Caution Caution	The incorrect operation due to negligence will cause the personal injury and the damage of mechanism.
	This kind of marks is "Matters for Attention", and the figure inside the triangle is the content for attention. (Exp. The left figure is "Watch Your Hand!")
	This kind of mark is "Forbidden".
	This kind of mark means "Must". The figure in the circle is the contents that have to be done. (Exp. The left figure is "Ground!")

2. Safety Matters for Attention

 Danger Danger	
	For opening the control box, please turn off the power and take away the plug from socket firstly, and then wait for at least 5 minutes before opening the control box. Touching the part with high voltage will cause the person injury.
 Caution Caution	
Usage Environment	
	Try not to use this sewing machine near the sources of strong disturbance like high-frequency welding machine. The source of strong disturbance will affect the normal operation of the sewing machine.
	The voltage fluctuation shall be within 10% of the rated voltage. The large fluctuation of voltage will affect the normal operations of sewing machine, Therefore a voltage regulator is needed in that situation.
	Working temperature: 0℃~45℃. The operation of the sewing machine will be affected by environment with temperature beyond the above range.

	Relative Humidity: 35% ~ 85%(No dew inside the machine), or the operation of sewing machine will be affected.
	The supply of compressed gas shall be over the consumption required by the sewing machine. The insufficient supply of compressed gas will lead to the abnormal action of sewing machine.
	In case of thunder, lightning or storm, please turn off the power and pull plug out the socket. Because these will have influence on the operation of sewing machine.
Installation	
	Please ask the trained technicians to install the sewing machine.
	Don't connect machine to power supply until the installation is finished. Otherwise the action of sewing machine may cause personal injury once the start switch is pressed at that situation by mistake.
	When you tilt or erect the head of sewing machine, please use both of your hand in that operation. And never press the sewing machine with strength. If the sewing machine loses its balance, it will fall into floor thus causes the personal injury or mechanical damage.
	Grounding is a must. If the grounding cable is not fixed, it may cause the electric-shock and mis-operation of machine
	The entire cables shall be fixed with a distance at 25mm away from the moving component at least. By the way, don't excessively bend or tightly fixed the cable with nails or clamps, or it may cause the fire or electric shock.
	Please add security cover on the machine head.

Sewing	
	This sewing machine can only be used by the trained staff.
	This sewing machine has no other usages but the sewing.
	When operating the sewing machine, please remember to put on the glasses. Otherwise, the broken needle will cause the personal injury in case the needle is broken.
	At following circumstances, please cut off the power at once so as to avoid the personal injury caused by the mis-operation of start switch: 1.Threading on needles; 2. Replacement of needles; 3. The sewing machine is left unused or beyond supervision
	At working, don't touch or lean anything on the moving components, because both of the above behaviors will cause the personal injury or the

	damage of the sewing machine.
	During working, if the mis-operation happens or the abnormal noise or smell is found at the sewing machine, user shall cut off the power at once, and then contact the trained technicians or the supplier of that machine for solution.
	For any trouble, please contact the trained technicians or the supplier of that machine.
Maintenance & Inspection	
	Only can the trained technicians perform the repair, maintenance and inspection of this sewing machine.
	For the repair, maintenance and inspection of the electrical component, please contact the professionals at the manufacturer of control system in time.
	At following circumstances, please cut off the power and pull off the plug at once so as to avoid the personal injury caused by the mis-operation of start switch: 1.Repair, adjustment and inspection; 2.Replacement of the component like curve needle, knife and so on
	Before the inspection, adjustment or repair of any gas-driven devices, user shall cut off the gas supply till the pressure indicator falls to 0.
	When adjusting the devices needing the power supply and gas supply, users can't be too careful to follow the entire Safety Matters for Attention.
	If the sewing machine damages due to the unauthorized modification, our company will not be responsible for it.



Contents

1. General Instruction	1
1.1 Specifications of SC201	1
1.2 Corresponding Machine Type	2
1.3 Input Mode	2
1.4 Display Method	2
1.5 Arrangement of the Panel	2
1.6 Standardization	2
1.7 Operation Mode	2
2. Operation Instruction	3
2.1 Instructions of the Panel	3
2.2 Installing the Main Motor	4
2.3 Test Mode	6
2.3.1 CP-1 (Input Signal Check)	8
2.3.2 CP-2 (Origin Retrieval)	9
2.3.3 CP-3 (Continuous Operation)	11
2.3.4 CP-4 (Main Motor Speed Check)	12
2.3.5 CP-6 (Presser and Trimming Motor / Origin Sensor Check)	13
2.3.6 CP-7 (Thread Clamp Motor / Origin Sensor Check)	14
2.4 Operation of the Sewing Machine (Basic)	15
2.4.1 Item Data Setting	15
2.4.2 Checking the Contour of a Sewing Pattern	17
2.4.3 Sewing	19
2.4.4 Change to Other Sewing Pattern	19
2.4.5 Winding a Bobbin	20
2.4.6 Thread Clamp Device	20
2.4.7 Bobbin Thread Counter	22
2.4.8 Temporary Stop	23
2.4.9 Setting the Pattern Thread Tension	23
2.4.10 Table of the Standard Patterns	24
2.5 Operations of P Pattern and C Pattern	28
2.5.1 Perform Sewing Using the Pattern Key (P1 P2 P3 P4 P5)	28
2.5.2 Perform Sewing Using the Combination Function	32
2.6 How to Use the Memory Switch (User Class)	34
2.6.1 Start and Change of the Memory Switch	35
2.6.2 Example of the Memory Switch Setting	35
2.6.3 Table of Functions of the User Class Memory Switch	40
3. Memory Switch (Service Class)	44
3.1 Start and Change of the Memory Switch (Service Class)	44
3.2 Table of Functions of the Service Class Memory Switch	44

3.3 Restore Default Setting	48
3.4 Software Version Display	50
3.5 Check Total Number of Stitches and Clear Lubrication Alarm	52
4. Lockstitch Button Sewing Function	53
4.1 Lockstitch Button Sewing Function Setting	53
4.2 Table of the Lockstitch Button Sewing Patterns	54
5. Update the Pattern Data by USB Flash	56
5.1 Pattern Data Update	56
6 Appendix 1	60
6.1 Error List	60
7 Appendix 2	68
7.1 Installation Size of Control Box	68
7.2 Installation Size of Operation Box	68
7.3 Diagram of Connection of the External Cable and Control Box	69
7.4 The Control System Diagram	71

1. General Instruction

1.1 Specifications of SC201

No.	TYPE ITEM	SC201
1	Purpose	Bartacking / Button Lockstitch
2	Sewing Area	X(lateral) direction 40mm × Y(longitudinal) direction 30mm
3	MAX. Sewing Speed	3000rpm (when sewing pitches are less than 4.5mm in X-direction and 3.5mm Y-direction)
4	Stitch Length	0.1mm – 10.0mm (adjustable in 0.1mm step)
5	Feed Motion of Work Clamp Foot	Intermittent Feed(2-draft drive by stepping motor)
6	Needle Bar Stroke	41.2mm
7	Needle	DP×5, DP×17
8	Type of driving Work Clamp Foot	Driven by pulse stepping motor
9	Lift of Work Clamp Foot	13mm (Standard), Max. 17mm
10	Total Number of Standard Patterns	50
11	Wiper Type	To work together with Work Clamp Foot driven by Stepping Motor
12	Thread Clamp	Standard : 0
13	Needle Thread Tension	Electrical Thread Tension Release
14	Shuttle	Standard Semi-rotary Hook (oil wick lubrication)
15	Lubricating Method	Rotary Part: Lubricate with minimum amount
16	Lubricating Oil (Liquid)	Ordinary Sewing Machine Lubricating Oil (Liquid)
17	Grease	Ordinary Sewing Machine Grease
18	Data Recording	Flash Memory
19	Enlarging/Reducing Facility	20%~200%(1% step) in X direction and Y direction respectively
20	Enlarging/Reducing Method	By increasing/decreasing the stitch length
21	Max. Sewing Speed Limitation	400-3000rpm (100rpm step)
22	Pattern Selection	Specifying Pattern No. Type(1-200)
23	Bobbin Thread Counter	Up/Down Type (0 – 9999)
24	Sewing Machine Motor	500W Compact AC Servomotor (Direct Drive)

25	Dimensions	263mm×153mm×212mm
26	Weight	10 Kg
27	Power Consumption	600W
28	Operation Temperature Range	0℃～45℃
29	Operation Humidity Range	35%～85% (No Dew Condensation)
30	Line Voltage	AC 220V ± 10%; 50/60Hz

※ Reduce the MAX. Sewing Speed in accordance with the sewing conditions.

※ Effective standard for product: QCYXDK0004—2016 《Computerized Control System for Industrial Sewing Machine》.

1.2 Corresponding Machine Type

MSC201/MASC201 Bartacking Machine

1.3 Input Mode

Use keys to input.

1.4 Display Method

Use 8-bit segment LED Display Module and LEDs to display all the information.

1.5 Arrangement of the Panel

The quadrate Panel can be divided into two parts, the display part and the operation part. There are 5 8-bit segment LED Display Module and 9 LEDs on the display part, and 11 keys on the operation part. For details, refer to **【2.1 Instructions of the Panel】**.

1.6 Standardization

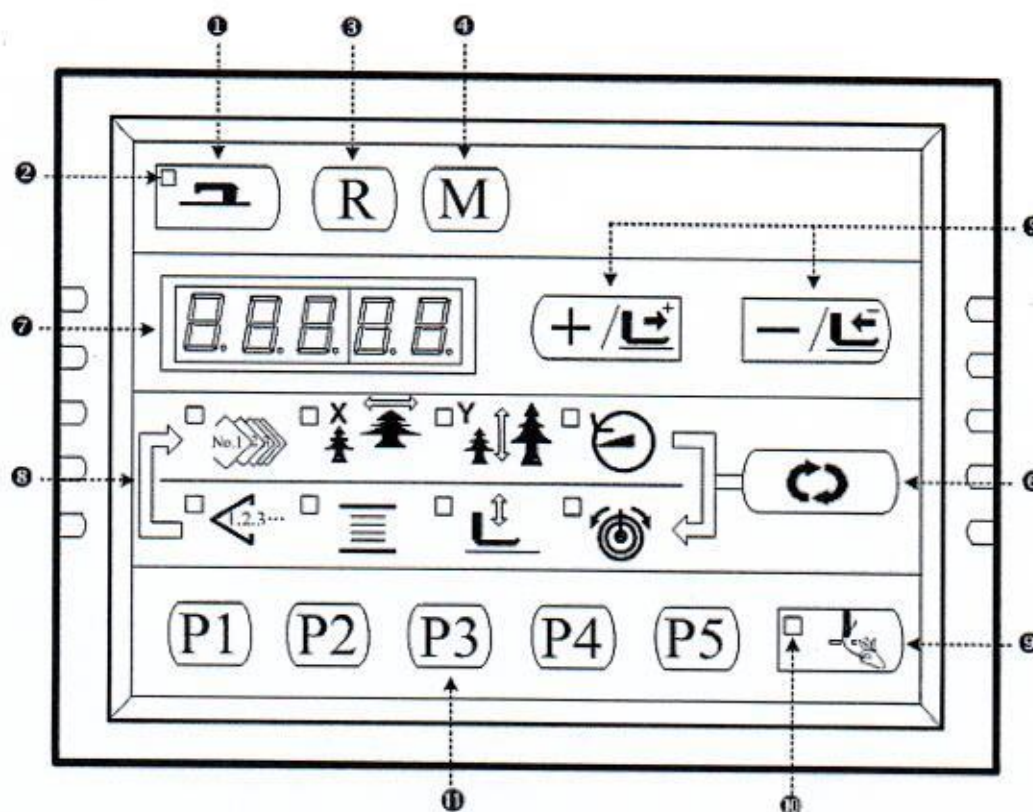
The function keys use standard icons recognized by the globe. Image is an international language that can be understood by any nation.

1.7 Operation Mode

Function keys include READY key, RESET key, MODE key, SELECTION key, etc. See operation instruction for detailed operating methods.

2. Operation Instruction

2.1 Instructions of the Panel



❶ “Ready” key

This key changes over the setting state from the panel to the sewing state where the sewing machine actually operates.

❷ “Sewing LED”

This LED goes off at the time of setting state and lights up at the time of sewing state. Change over can be performed with “Ready” key.

❸ “Reset” key

This key is used for canceling error or returning the set value to the initial value.

❹ “Mode” key

This key makes the setting mode of the memory switch.

❺ “+/Feed forward” key and “-/Feed backward” key

This key is used for changing pattern NO. and X/Y scale, and feed forward / feed backward.

❻ “Selection” key

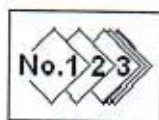
This key selects the item to be set. Item selection LED of the selected item and the set value are displayed.

❼ Data indication LED

This LED indicates the set values of the selected items such as pattern NO., X/Y scale, etc.

❽ Item selection LED

LEDs of the selected items light up.



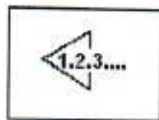
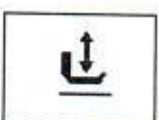
Pattern NO.



X Scale



Y Scale

Max, Speed
LimitationSewing
CounterBobbin
WinderWork Clamp
Foot LoweringThread
Tension

⑨ Needle thread clamp ON/OFF key

This key selects effective / ineffective of needle thread clamp. When it is effective, needle thread clamp display LED lights up.

⑩ Needle thread clamp display LED

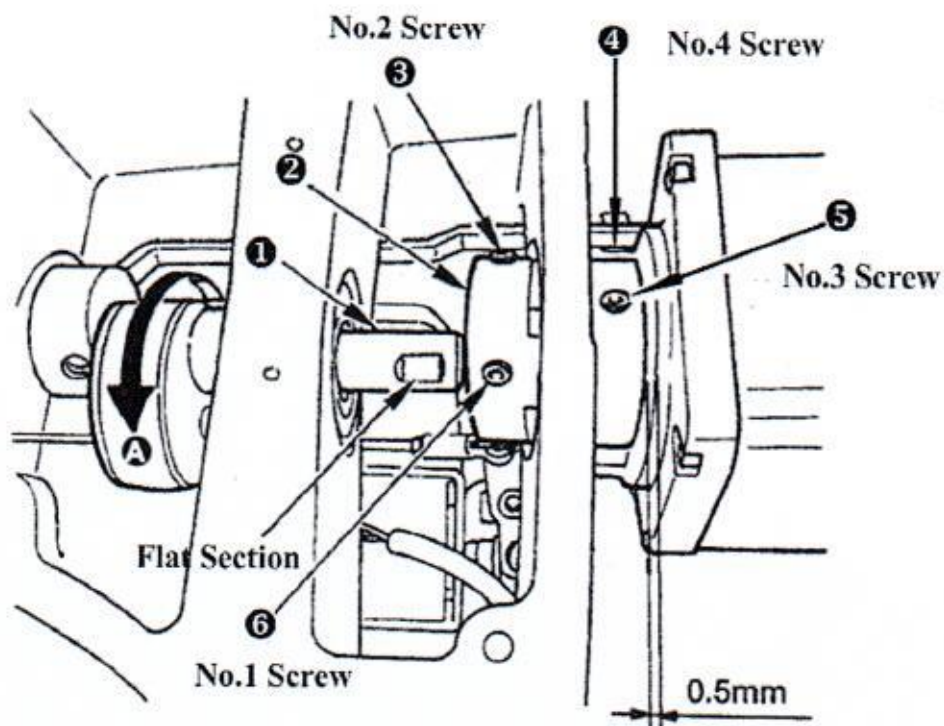
When this LED lights up, needle thread clamp operates.

⑪ Needle thread clamp display LED

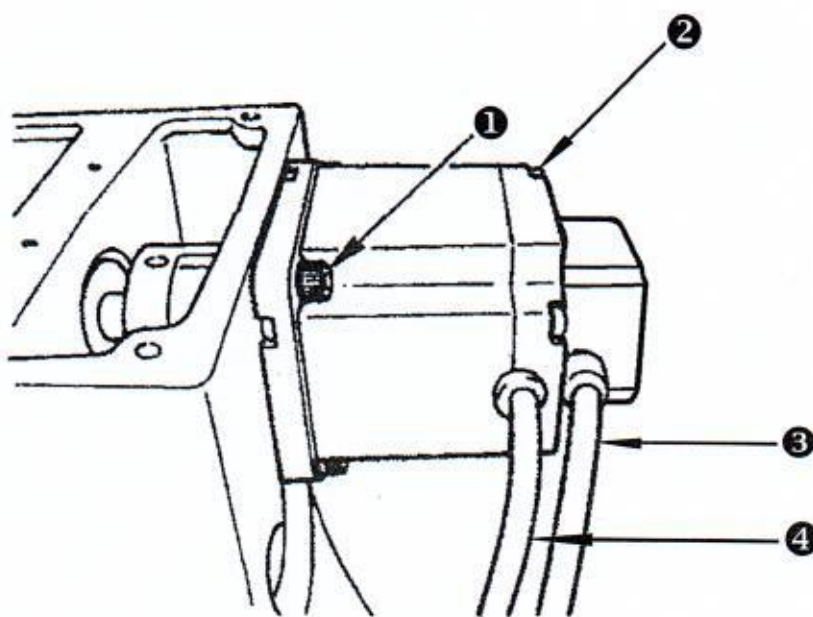
This key registers the pattern. When this key is pressed, the pattern registered here can sew immediately.

2.2 Installing the Main Motor

Assemble the main motor to the main shaft **①** through the coupling **②**. And you need 4 screws to fix the coupling to the main shaft and the main motor. Fix the coupling with No.1 Screw **⑥** and make sure that it is vertical towards the Flat Section, and then screw No.2 screw **③**. Fix the coupling to the main motor with No.3 screw **⑤**, and make sure it is vertical to the flat section of the main motor. Then screw the No.4 screw **④** to finish the assembling task. The following diagram shows you the details:




This following diagram shows you the position of the main motor (look from back, and the line is on your left-hand side):






① Screws for fixing the main motor, totally 4; ② Screws for fixing the back of the motor, totally 4; ③ Sensor Cable; ④ Power cord.




2.3 Test Mode


This mode is set to facilitate the electrical check for maintenance work.

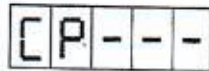
- 1) Press  key, while the Sewing LED is not illuminated, and then the Panel display




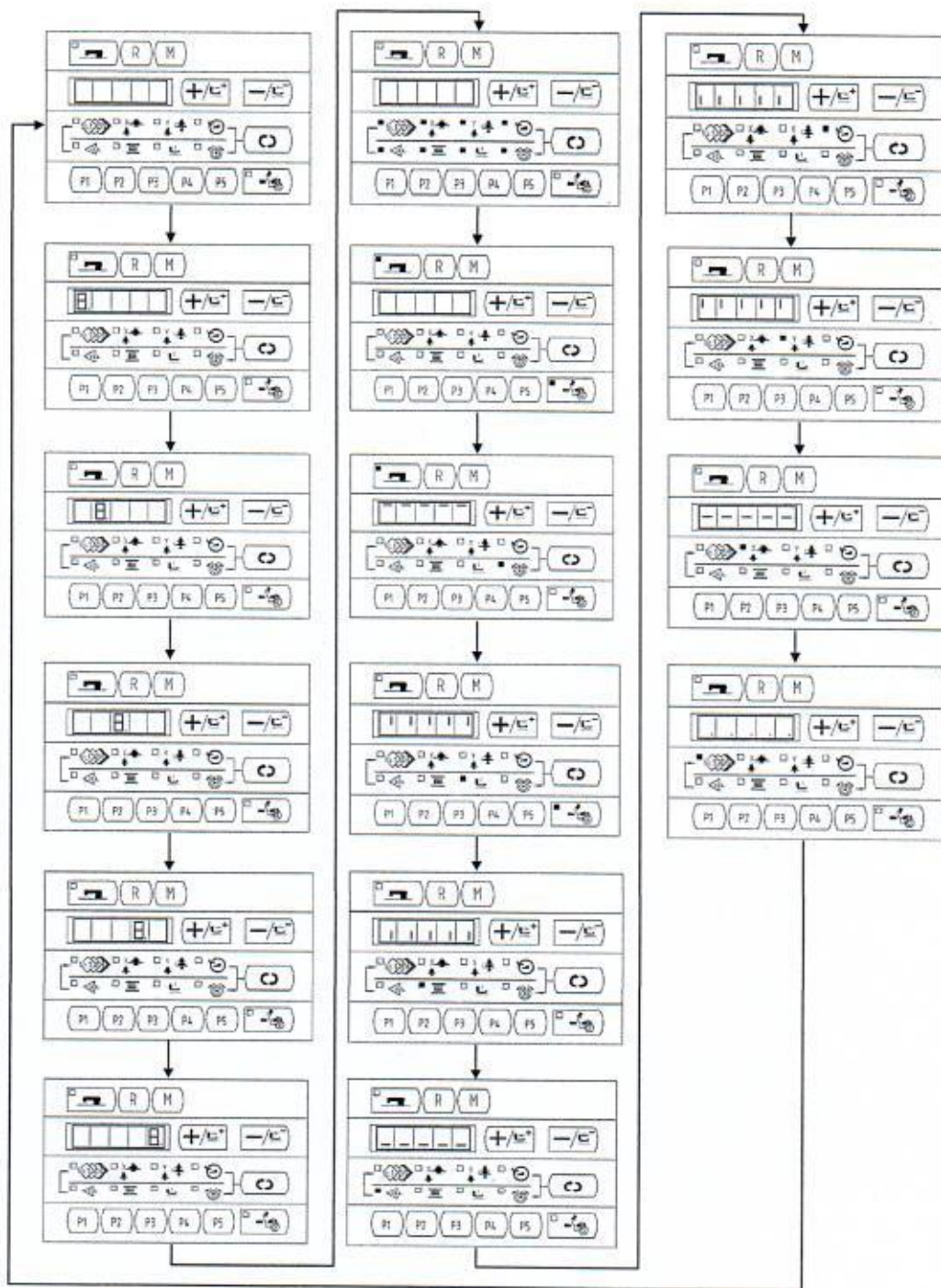
Press    simultaneously, you would hear the ring of the buzzer, and then you are able to enter the test mode.


Note: If you failed to press    simultaneously, then you cannot enter the test mode.

- 2) Press  key to enter the test mode, and the screen displays "CP---", as shown following:





- 3) Press  key to start the Display Test. It automatically examine every 8-bit segment LED Display Module and the LED light illuminated or not, in a cycle process. The process is shown following:

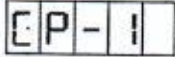
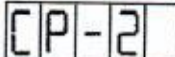
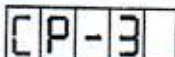

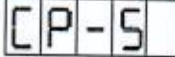
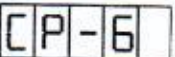
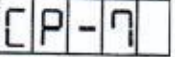




- 4) Press  key again to end the Display Mode and the screen displays "CP-1", as shown following:

CP-1

Note: You are not allowed to conduct other tests before the Display Mode Test.

- 5) Press   key to change the Indication NO. For details, please refer to the list below:


Indication No.	Item	Description
	Input signal check	State of the switch and the sensor will be indicated by 9 LEDs.
	X/Y motor and Original Retrieval check	To indicate the X/Y motor step motion and original adjustment.
	Continuous operation	Initial setting of the operation conditions will be performed, and the mode will move to the continuous aging mode.
	Number of revolutions of main shaft check	Output of the specified number of revolutions will be made and the actual number of revolutions will be indicated.
	_____	_____
	Presser and Trimming Original Retrieval check	Indicate the presser/trimming motor to move step by step; indicate original retrieval and the state of presser/trimming sensor.
	Thread Clamp and Original check	Indicate the thread clamp motor to move step by step; indicate original retrieval and the state of thread clamp/origin sensor.

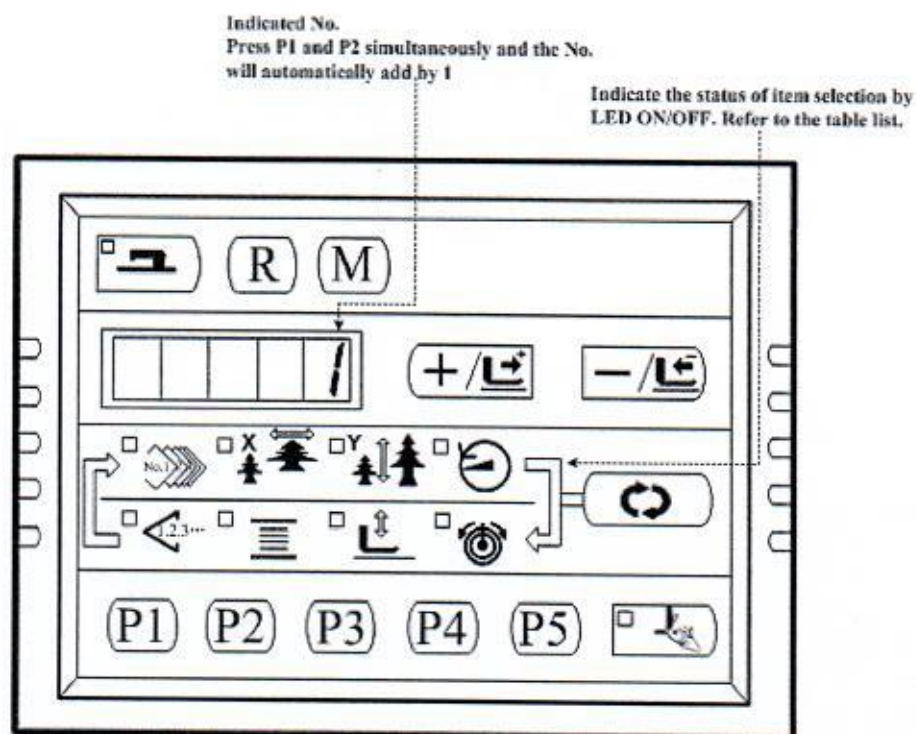
- 6) Press  key to check the items.
- 7) Press  to end up the test and return back to Step 5), however, if "CP-3" is selected, it is impossible to return to other test modes. Turn Off the power and turn On the power again in accordance with the starting way of the test mode.

2.3.1 CP-1 (Input Signal Check)

Status of input of switches and sensors is indicated on the 8 LEDs.

The table below is the list of LED indication, and you can understand to which LED each switch

or each sensor is assigned. When "CP-1" is indicated on the screen, press  key to enter into the mode and then number "1" is indicated.




Indication of No.



Input No.↗	Pattern NO. LED↗	X Scale Rate LED↗	Y Scale Rate LED↗	Max. Speed LED ↗	Sewing Counter LED↗	Bobbin Winder LED↗	Work Clamp footlowering LED↗	Thread Tension LED ↗
1↗	/↗	/↗						
2↗	/↗	/↗	/↗					
3↗	/↗	/↗	/↗	/↗	/↗	/↗	/↗	/↗
4↗	0 step of pedal ↗	1 step of pedal↗	2 step of pedal↗	/↗	/↗	/↗	/↗	/↗
5↗	Presser solenoid sensor ↗	Y origin sensor↗	X origin sensor↗	Thread Clamp origin sensor↗	Trimming sensor↗	Thread Clamp Sensor↗	/↗	/↗
6↗	Main shaft angle indication ↗							
7↗	/↗	/↗	/↗	/↗	/↗	/↗	/↗	/↗
8↗	/↗	/↗	/↗	/↗	/↗	Safety Switch↗	/↗	/↗

2.3.2 CP-2 (Origin Retrieval)

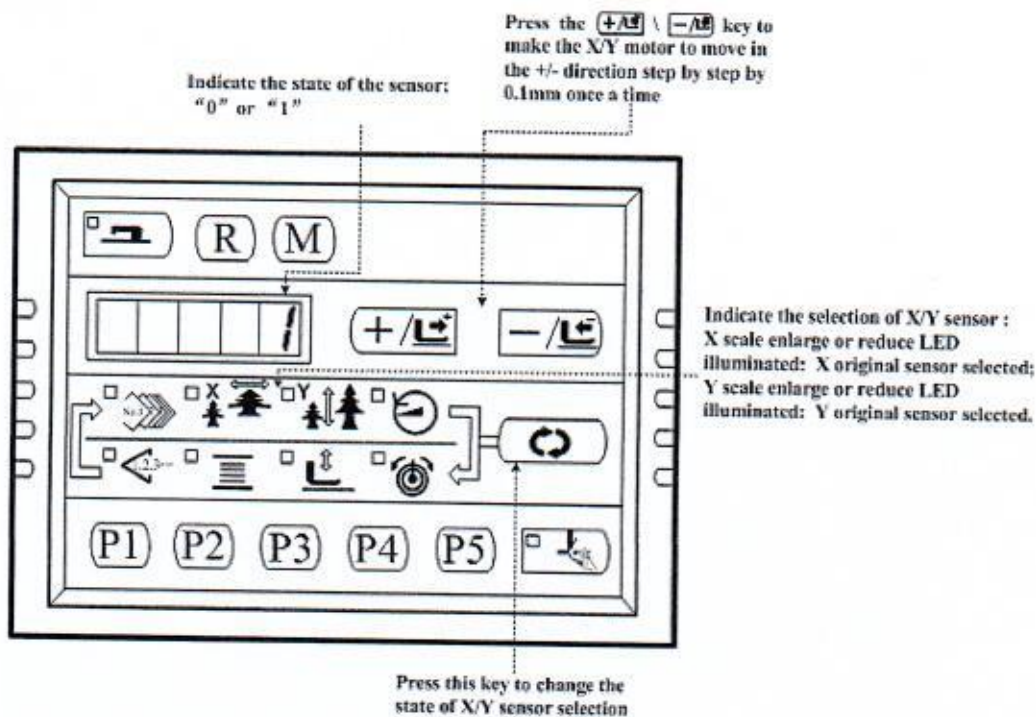
For origin adjustment, sensor adjustment of X/Y motor. The state of origin sensor and X/Y motor sensor will be indicated.

1. Preparation


Press  to have access to CP-2, and system displays "0" or "1" at screen.




Then press  to search the origins of thread holding/cutting and presser motors. At that time, the presser goes down and the Sewing LED is on (User can also perform step 2 directly without pressing ).


2. Operation



3. Manual X/Y Origin Adjustment



(1) Step Move Detection: At first, press  to have access to CP-2, the screen will display "--" and the X Scale Rate LED lights up. If the system is not in the ready status and user doesn't







press  to conduct origin retrieval after power on, user can press  or  to

move the X/Y motor step by step. Press  to shift between X/Y motors and the corresponding X/Y Scale Rate LED will light up to indicate the X/Y motor selection. At the same time, the winding LED and the presser LED refer to the signal status of the X motor origin optocoupler and Y motor origin optocoupler respectively: light on represent not covered and light off represents covered.


Winding LED	On	Off
X Origin Optocoupler	Not covered	Covered

Presser LED	On	Off
Y Origin Optocoupler	Not covered	Covered

If the system has ever entered ready status or the user has pressed  to conduct origin retrieval after power on, user need press  to conduct origin retrieval whenever to enter CP-2 mode before user can use direction keys to drive X/Y motor move. Under this circumstance, such operation is to manually adjust X/Y origin.

(2) Manual Origin Adjustment: when the system enters CP-2 and the screen displays "--", press  to make origin retrieval; at this time, the ready key light is on with the screen displaying "0.0" and also the X scale rate LED light is on. The scale rate LED light indicates the currently selected motor, while the number displayed on the LED segment means the origin adjustment value. User can press ,  to change the origin adjustment value and press  to change the selection of X/Y motors. After finishing the origin adjustment value change for both motors, press  to save and quit. If user doesn't want to save the changed value, press  to quit without saving.


2.3.3 CP-3 (Continuous Operation)




When "CP-3" is indicated on the screen, press  key to enter the continuous operation mode. Perform the initial setting of the operation conditions, and move to the continuous operation mode.

1) Pause time setting

Press the ,  key to set the time of pause.

Setting range: 1800 ms to 9999 ms (in a unit of 100 ms) (the default value is 2000ms)

Update the time of pause by pressing down the  key, and the setting moves to the automatic origin retrieval setting.




   20

2) Origin retrieval setting

Press the ,  key to set.

A0: Ineffective ;


A1: Every time .

   A0

Press the  key to finish setting and move to Pattern No. setting.

3) Continuous Operation


In the Ordinary Sewing Mode, you can change the Pattern No., X/Y scale Enlarge/Reduce

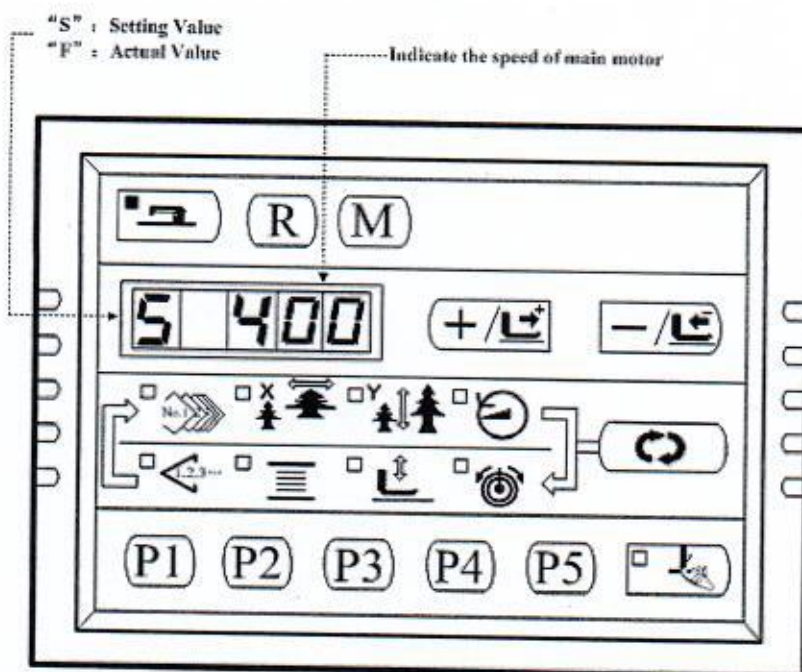
setting, the Max speed and so on. The continuous operation can be stopped at the time of pause by depressing the  key.

2.3.4 CP-4 (Main Motor Speed Check)



Set the revolving speed of the machine and then only activate the main motor to display the actual revolving speed.





1) Preparation

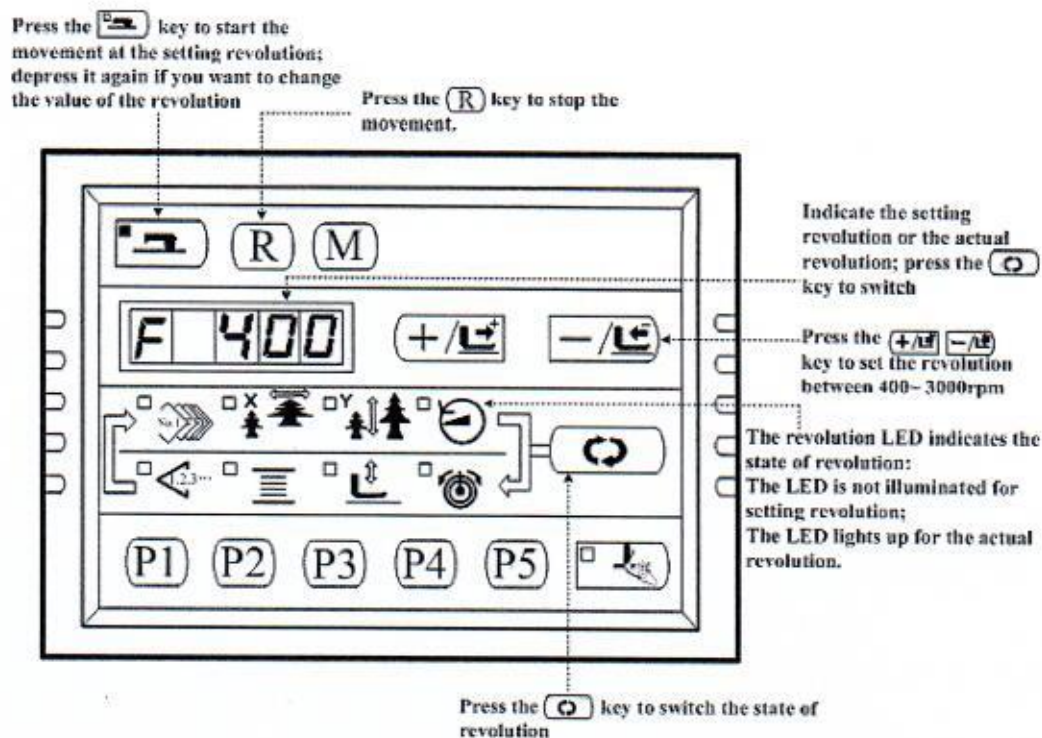
User shall press  to enter CP-4 to automatically search the origins of motors, including thread- catching motors, presser motors, and thread-trimming motors and at this time, the Sewing LED lights up and the screen displays "S400".



2) Operation

Press ,  to modify the revolving speed of the main shaft, and then press


 to activate the machine to run according to the set speed. At this moment, press  to display the set revolving speed and the actual revolving speed alternatively. If user need change the set speed, repeat the previous speed again. Press  to stop the machine and press  to quit this mode.




2.3.5 CP-6 (Presser and Trimming Motor / Origin Sensor Check)

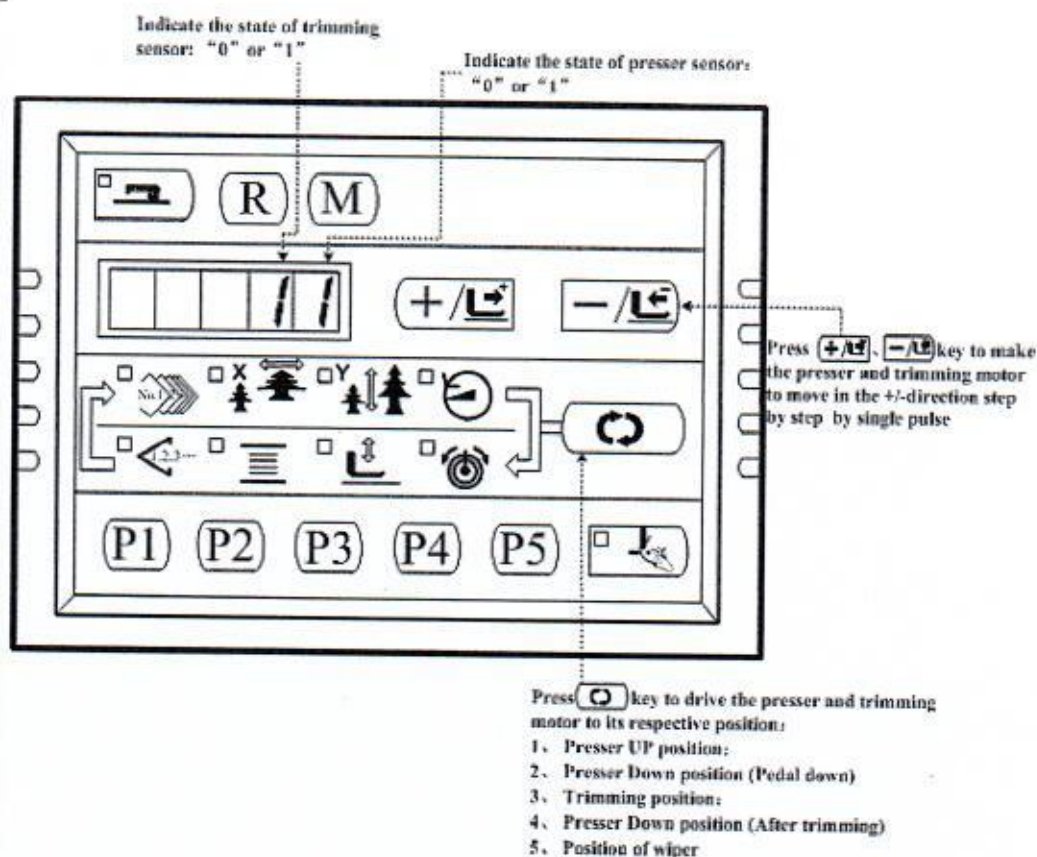
Indicate the presser and trimming motor to move step by step, origin retrieval and the state of origin sensor and thread trimming sensor.

1). Preparation

Firstly, user can press  to enter CP-6; at this time, the sewing LED is on; then step the pedal to level 2 to retrieve the origin. (Note: if the system is not in ready status when power on and enters CP-6, user need not step the pedal to retrieve the origin and can directly use +/- keys to step move the motor to check the status of the motor drive; if the system is in ready status or has done origin retrieval, user need step the pedal to level 2 to make origin retrieval whenever the system enters CP-2 before user can press +/- keys to step move the motor.)

2) Operation

Press  for 6 to 8 times, if the screen indication changes from "10" to "11", the trimming sensor works well; if not, please make proper adjustment.



Press $\left[\begin{smallmatrix} \circlearrowright \end{smallmatrix} \right]$ key to perform the functions above in a cycle. And press $\left[\begin{smallmatrix} M \end{smallmatrix} \right]$ key to exit this mode.

2.3.6 CP-7 (Thread Clamp Motor / Origin Sensor Check)

Indicate the thread clamp motor to move step by step, origin retrieval and the state of origin sensor and thread clamp sensor.

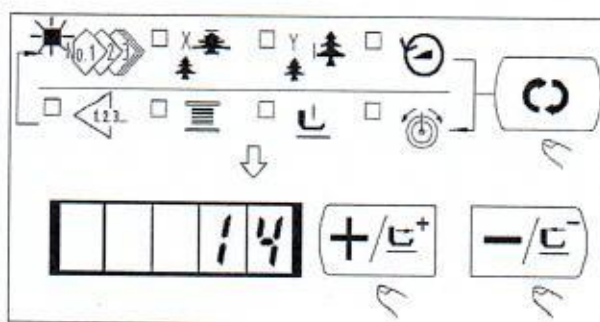
1) Preparation

Firstly, user can press $\left[\begin{smallmatrix} \circ \end{smallmatrix} \right]$ to enter CP-6; at this time, the sewing LED is on; then step the pedal to level 2 to retrieve the origin. (Note: if the system is not in ready status when power on and enters CP-6, user need not step the pedal to retrieve the origin and can directly use +/- keys to step move the motor to check the status of the motor drive; if the system is in ready status or has done origin retrieval, user need step the pedal to level 2 to make origin retrieval whenever the system enters CP-2 before user can press +/- keys to step move the motor.

2) Operation

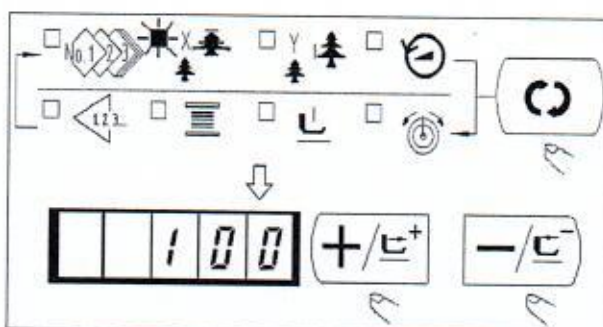
Press $\left[\begin{smallmatrix} + \\ \swarrow \end{smallmatrix} \right]$ $\left[\begin{smallmatrix} - \\ \swarrow \end{smallmatrix} \right]$ key to make the thread clamp motor move step by step by single pulse.

Press $\left[\begin{smallmatrix} + \\ \swarrow \end{smallmatrix} \right]$ key to move the thread clamp backward; press $\left[\begin{smallmatrix} - \\ \swarrow \end{smallmatrix} \right]$ key to move the thread



4. Setting of the X Scale

- (1) Press the key to indicate the item "Pattern No."
- (2) Press the or key to indicate "14" on the display.
(Pattern No. is set to 14.)
Caution: Refer the pattern No. to the separate table

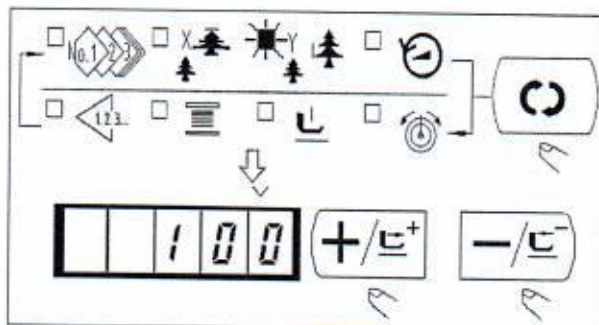


5. Setting of the Y Scale

- (1) Press the key to indicate the item "X scale"
- (2) Press the or to indicate "100". (Set X scale to 100%)

Caution:

The setting exceeding 100% is dangerous since the needle and the cloth presser interferes with each other and needle breakage or the like will occur.

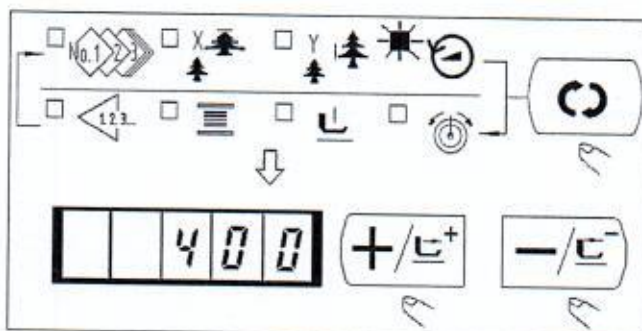


- (1) Press the key to indicate the item "Y Scale"
- (2) Press the or key to indicate "100". (Set X scale to 100%).

Caution:

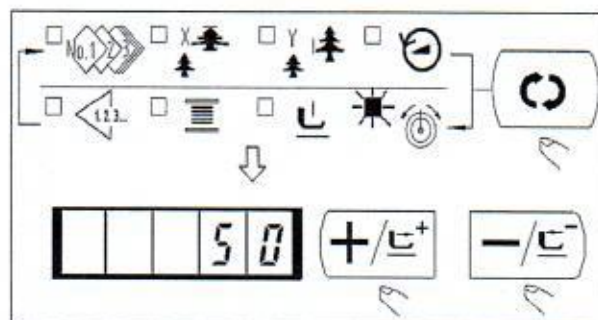
The setting exceeding 100% is dangerous since the needle and the cloth presser interferes with each other and needle breakage or the like will occur.





6. Setting of the Max. Sewing Speed Limitation



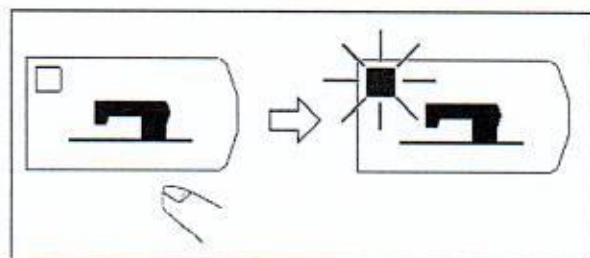
- (1) Press the key to indicate the item "Speed"
- (2) Press the or key to indicate "400" (Setting of 400rpm)
- (3) Press R key to set the system default value, the Max. speed.


7. Setting the Thread Tension



- (1) Press the  key to indicate the “Thread Tension” .
- (2) Press the  or  key to indicate “50” (0 to 200 can be set.)






8. Finsh of Setting



- (1) Press the  key.
- (2) After the work clamp feet have moved and gone up, the sewing LED lights up, and the sewing is ready.

Caution:

When the presser is raised, be careful that fingers are not caught in the presser since the presser moves after having lowered.

- ★ When  key is pressed, the set value of pattern No., X/Y scale, etc, are memorized.
- ★ If  key is pressed, you can make sure of the respective setting items again. However, the items can not be changed in the state that the Sewing LED is lit up.
- ★ When  key is pressed, the Ready LED goes off. Set values of the respective items can be changed.
- ★ Use the machine after confirming the pattern No. When  key is pressed while the pattern No. is indicated "0"(state at the time of delivery), error display E-10 appears. At this time, re-set the Pattern No.
- ★ When turning OFF the power without pressing  key, the set values of pattern NO., X/Y scale, number of max. rotation, and thread tension are not memorized.

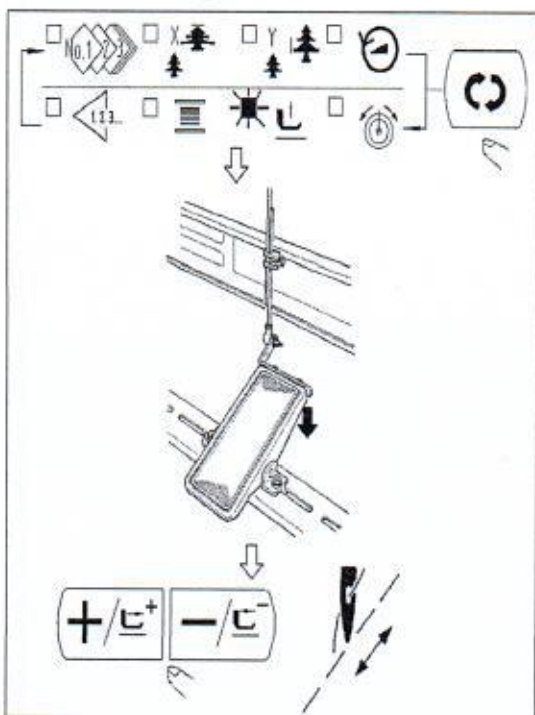
2.4.2 Checking the Contour of a Sewing Pattern

☞ **Warning:**

Make sure without fail of the contour of the sewing pattern after selection of the sewing pattern. If the sewing pattern extends outside the work clamp feet, the needle will interfere

with the work clamp feet during sewing, causing dangerous troubles including needle breakage.

(1) Test Sewing



1. Press to light up the Sewing LED.

2. Press to select , and then the screen displays "SinGL"; step the pedal to lower the presser.

3. When the presser is down, press .

4. Use and to confirm the shape. The confirmed pattern for sewing shall be within the permitted range of the presser.

5. Press to lift presser and return to the the sewing start.

Press to release the selection of (select other data item other than).

After that, press to end the trial sewing

(2) Threading

1. Make sure the sewing LED is off (unready status), and if not, press to turn off the sewing LED.

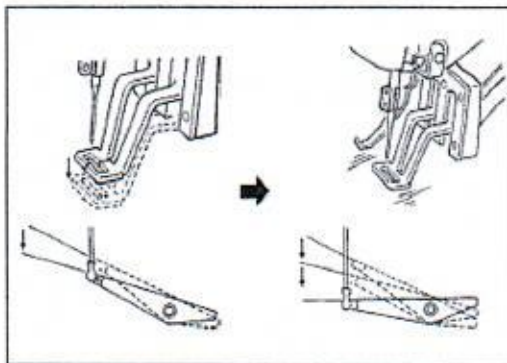
2. Press to select , and the screen displays

3. Press to lower the presser to enter the threading status, and the screen displays . Please note that under this condition you cannot press

to make other selections.

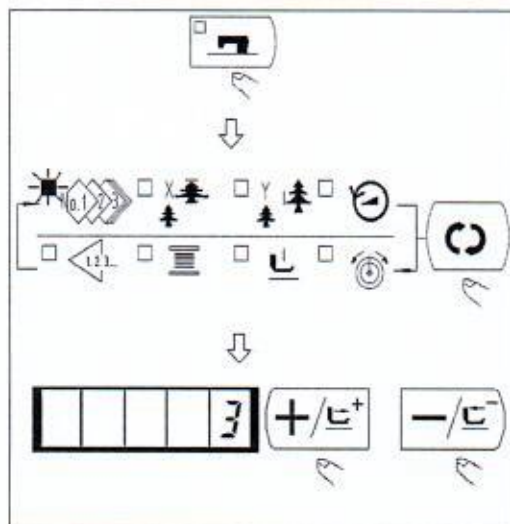
4. After finishing threading, press again to quit the threading mode.







2.4.3 Sewing



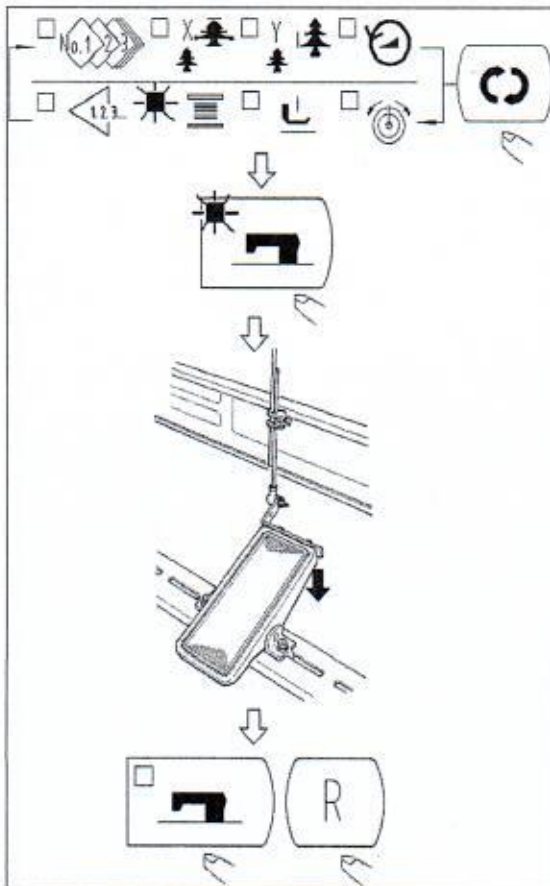
- (1) Set a workpiece on the work clamp foot section.
- (2) Depress the pedal switch to the first step, and the work clamp feet will come down. If you detach your foot from the pedal switch, the work clamp feet will go up.
- (3) Depress the pedal switch to the second step after descending the work clamp feet at the first step, and the sewing machine will start sewing.
- (4) After the sewing machine completes sewing, the work clamp feet will go up, and return to the sewing start position.


2.4.4 Change to Other Sewing Pattern




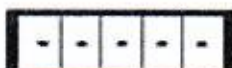




- (1) Make sure the Sewing LED go off with  key.
- (2) Press  key and select the item of pattern No. .
- (3) Set the pattern No. with  key or  key.
- (4) Similarly, setting of X/Y scale, speed, etc. is performed.
- (5) When  key is pressed, the Sewing LED light up and the sewing machine is in

2.4.5 Winding a Bobbin




The winding device will not work just after power-on. Please select a pattern number and press  to turn on the Sewing LED before the winding operation.

1. Press  to turn off Sewing LED.
2. Press  to select  and the screen will display . (It is unable to select when the Sewing LED is on.)
3. Press  to lower the presser and the Sewing LED lights up.
4. Step the pedal to start the sewing machine and the Sewing LED lights up.
5. Step the pedal switch or press  to stop machine and the Sewing LED will be off.

2.4.6 Thread Clamp Device

Trouble of sewing (slip-off of needle thread, stitch skipping, or stain of needle thread) at the time of high speed start can be prevented with the thread clamp device. The thread clamp device works in the state that the thread clamp indication LED lights up and does not work when the LED goes off.

Changeover of ON/OFF motion is performed with  key. When the thread clamp device is OFF, the start automatically becomes the slow start.

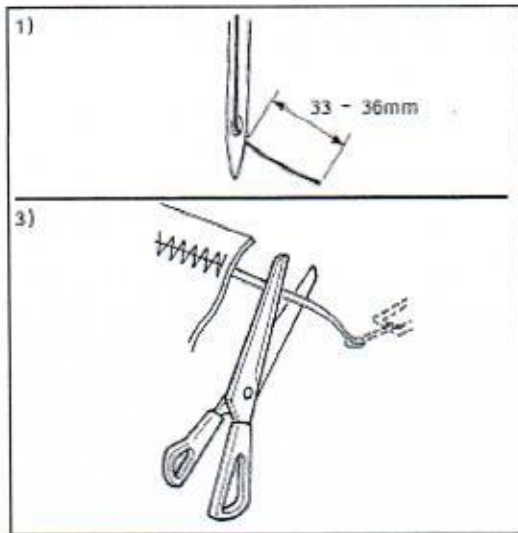
Caution: When memory switch No.35 is "1"(prohibited), the thread clamp does not work.


In addition,  key is ineffective.

***Masters that demand special attention when using the needle thread clamp device**

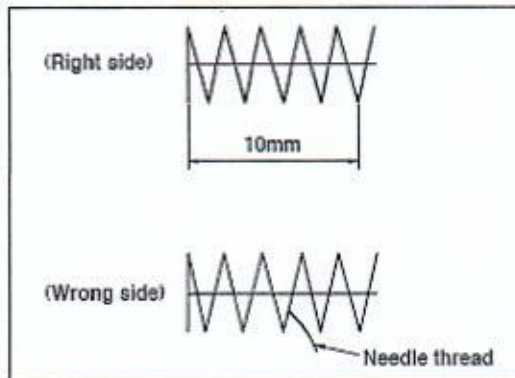
- (1) In case of with the needle thread clamp (motion), make shorter the length of needle thread remaining on the needle at the sewing start for use. When the length of needle thread is lengthened, needle thread on the wrong side of material is apt to protrude. In addition, when

the length is excessively lengthened, the end of needle thread held by the needle thread clamp may be rolled in the seams.



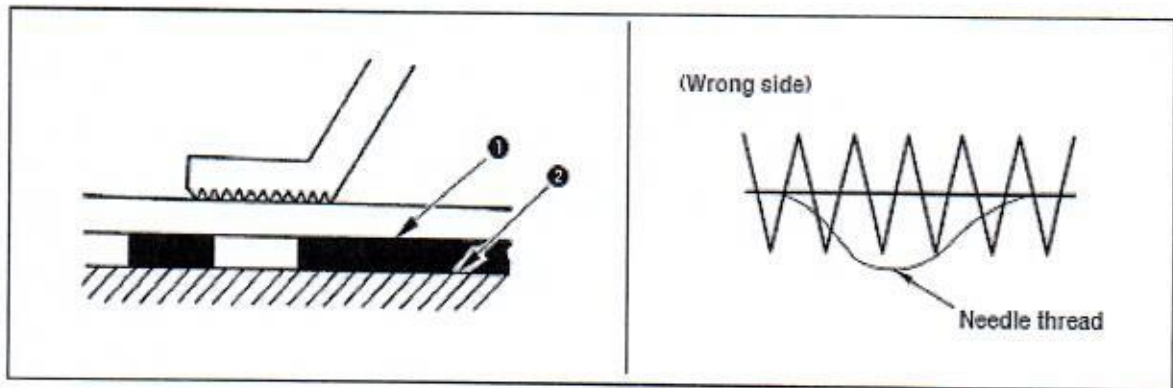
1. In case of with the needle thread clamp, the standard of the length is 33 – 36mm.
2. When needle threadlong after replacing thread or the like or sewing while holding needle thread by hand, Turn OFF the THREAD CLAMP  key.
3. When the needle thread held with the thread clamp is rolled in the seams, do not draw the material forcibly and cut the connecting needle thread with the scissors or the like. The seams are not damaged since it is the needle thread at the sewing start.

- (2) It is possible to adjust needle thread shorter by making the needle thread clamp work while holding the stabilized sewing at the start of sewing and the gathering (bird's nest) of needle thread on the wrong side of material can be lessened. However, for the pattern which the stitch for neatly rolling in needle thread is short, needle thread may protrude from the wrong side of material. Select with/without thread clamp referring to the item below.



1. When the sewing length is short(less than approximately 10mm), the end of needle thread may protrude like beard even adjusting needle thread shorter.

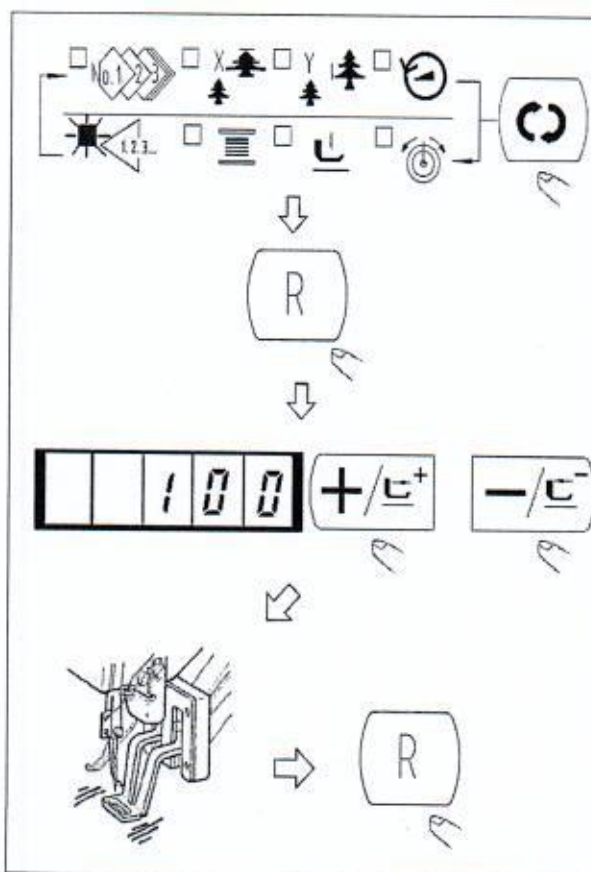
- (3) When the type of lower plate ❶ that material does not come in closely contact with throat plate ❷ is used, needle thread on the wrong side of material may be rolled in the seams regardless of needle thread play or sewing length.



- (4) When the thread clamp is used, and bobbin thread at the sewing start appears on the right side of material, reduce thread tension at the sewing start (2 to 3 stitches) and bobbin thread becomes less conspicuous.

[Example of setting] Tension of 1 to 2 stitches at the sewing start is "20" when sewing tension setting is "35".

2.4.7 Bobbin Thread Counter



- (1) Press key to indicate the Counter

- (2) Then press the key.

- (3) Then press the or key, and set the specified number of times that can be sewn with a bobbin.

- (4) Every time, the sewing machine finishes a sewing cycle, counting-down is made by one.

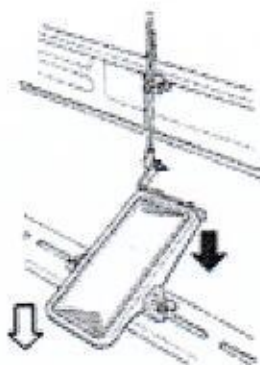
- (5) When the sewing machine finishes the specified number of times, the sewing machine does not start even if depressing the pedal.

- (6) Replace the bobbin with a new one, and press the key. The value of the counter returns to the set value.

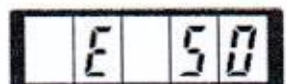
- (7) Repeat the steps of procedure from the steps (3) to (5).

2.4.8 Temporary Stop

1. Pedal Stop Function: The new pedal has three levels: Level 1 for lowering presser; Level 2 for normal sewing; Level 3 for emergency stop.

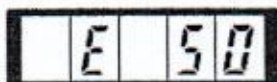


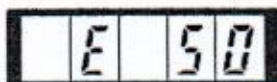
- 1) Press Ready Key and step the front part of pedal ↓ to lower the presser;
- 2) Step the front part of pedal ↓ to start sewing;
- 3) During sewing, if user needs to stop machine immediately, user can step the back part of the pedal ↑ to stop machine, and the screen will display



2. Emergency Stop from Panel: When parameter No.31 is set to "1", \overline{R} key can be used as the temporary stop key.

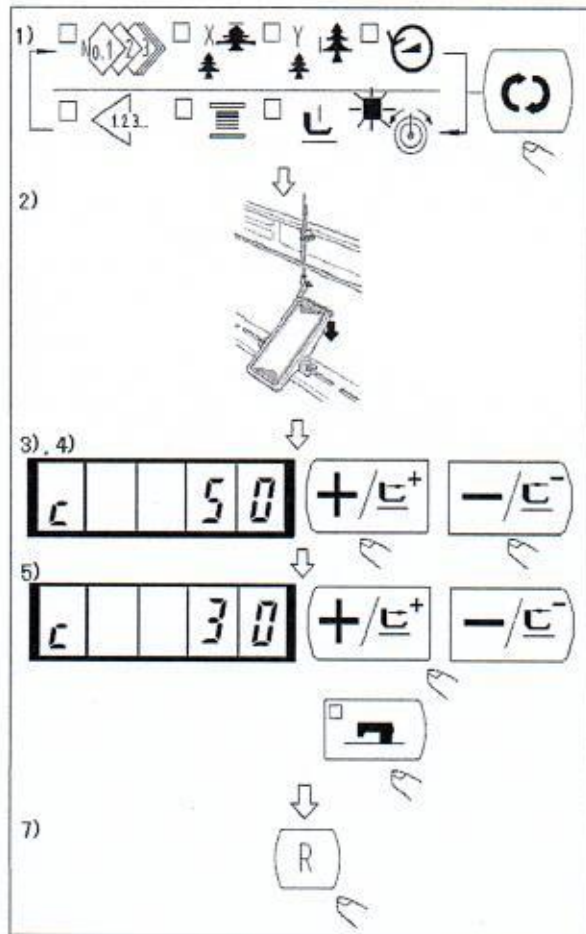
3. Tread-trimming and manual frame movement operations after the above-mentioned emergency stops



- (1) When the screen displays  in case of emergency stop, press \overline{R} key to clear the error information and the machine will execute thread-trimming operation. When the panel displays "MovE", user can conduct manual frame movement.
- (2) At this time, user can press $\left[\begin{smallmatrix} + \\ \text{E}^+ \end{smallmatrix} \right]$ or $\left[\begin{smallmatrix} - \\ \text{E}^- \end{smallmatrix} \right]$ to manually move the frame to feed and then step the pedal at level 2 to finish the sewing, or press again \overline{R} key to return to the origin.

2.4.9 Setting the Pattern Thread Tension






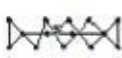




















Needle thread tension for 6 stitches at the sewing start, the portion which is changed over from basting stitch to zigzag stitch, and the portion of the stitch at the sewing end can be individually set.























































- 1) When the sewing LED lights up, press **C** key to indicate the needle thread tension.
- 2) Lower the presser with foot pedal. (Caution: When the foot pedal is depressed until it will go no further, the sewing machine starts. So, be careful.)
- 3) Move the feed with **+/-** or **-/-** key.
- 4) "c" is indicated at the position where the tension position is possible.
- 5) Pressing **R** key, set the tension with **+/-** or **-/-** key.
- 6) Repeat steps 3), 4) and 5) to set the tension.
- 7) When setting is complete, press **R** key. The presser moves to the origin and goes up.

2.4.10 Table of the Standard Patterns

NO.	Stitch Diagram	Num bers of Stitc hes	L×W (mm)	NO.	Stitch Diagram	Num bers of Stitc hes	L×W (mm)
1		41	16.1×2	2		41	10.2×2
3		41	16×2.4	4		41	24×3
5		27	10.1×2	6		27	16×2.4
7		35	10.1×2	8		35	16×2.4

NO.	Stitch Diagram	Num bers of Stitc hes	L×W (mm)	NO.	Stitch Diagram	Num bers of Stitc hes	L×W (mm)
9		55	24×3	10		63	24×3
11		20	6.1×2.4	12		27	6.2×2.4
13		35	6.1×2.4	14		14	8×2
15		20	8×2	16		27	8×2
17		20	10×0	18		27	10×0
19		27	25.2×0	20		35	24.8×0
21		40	25.2×0	22		43	35×0
23		27	4×20	24		35	4×20
25		41	4×20	26		55	4×20
27		17	0×20	28		20	0×10
29		20	0×20	30		27	0×20
31		51	10.1×7	32		62	12.1×7
33		23	10.2×6	34		30	12×6

NO.	Stitch Diagram	Num bers of Stitc hes	L×W (mm)	NO.	Stitch Diagram	Num bers of Stitc hes	L×W (mm)
35		47	7×10	36		47	7×10
37		89	24×3	38		27	8×2
39		25	11.8×12	40		45	12×12
41		28	2.4×20	42		38	2.4×25
43		38	2.4×25	44		57	2.4×30
45		75	2.4×30	46		41	2.4×30
47		89	8×8	48		98	8×8
49		147	8×8	50		163	8×8
51		110	7.9×7.9	52		120	7.9×7.9
53		130	7.9×7.9	54		51	12.4×10. 2
55		50	12.4×10. 2	56		52	21×6
57		57	21×6	58		102	19×3
59		115	40×5	60		115	40×5

NO.	Stitch Diagram	Num bers of Stitc hes	L×W (mm)	NO.	Stitch Diagram	Num bers of Stitc hes	L×W (mm)
61		308	6×25	62		257	6×20
63		108	40×30	64		80	40×30
65		64	40×30	66		96	30×30
67		76	30×30	68		60	30×30
69		52	40×30	70		40	40×30
71		32	40×30	72		44	30×30
73		36	30×30	74		28	30×30
75		60	40×30	76		48	40×30
77		36	40×30	78		56	30×30
79		44	30×30	80		36	30×30
81		67	40×30	82		51	40×30
83		39	40×30	84		55	30×30
85		35	30×30	86		42	30×30

NO.	Stitch Diagram	Numbers of Stitches	L×W (mm)	NO.	Stitch Diagram	Numbers of Stitches	L×W (mm)
87		145	16.2×16.2	88		153	12×12.4
89		74	20×24	90		54	20×24
91		65	20×20	92		49	20×20
93		39	20×20	94		63	25×20
95		51	25×20	96		45	25×20
97		42	25×20	98		33	25×20
99		27	25×20	100		88	30×25

2.5 Operations of P Pattern and C Pattern

2.5.1 Perform Sewing Using the Pattern Key ()

Patterns (No.1 to 200) which have been already registered can be registered to P1 to P99. It is possible to change and register the scale, max speed limitation, thread tension and sewing position. Same as the patterns (No.1 to 200), P1 to P50 are used by the selection by scrolling the pattern Nos. The pattern calling from P1 to P25 can be made by one-touch as well.

When selecting P6 to P25, perform the selection by combination (simultaneously pressing) of

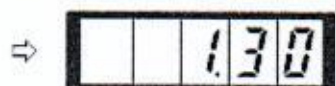
keys as shown in the table below.

P-No.	Selection Key	P-No.	Selection Key	P-N o.	Selection Key	P-No.	Selection Key
P1	P1	P8	P1+P4	P15	P4 +P5	P22	P2+P3+P4
P2	P2	P9	P1+P5	P16	P1+P2+P3	P23	P2+P3+P5
P3	P3	P10	P2+P3	P17	P1+P2+P4	P24	P2+P4+P5
P4	P4	P11	P2+P4	P18	P1+P2+P5	P25	P3+P4+P5
P5	P5	P12	P2+P5	P19	P1+P3+P4		
P6	P1+P2	P13	P3+P4	P20	P1+P3+P5		
P7	P1+P3	P14	P3+P5	P21	P1+P4+P5		

1. Register of the Pattern Key

Setting example: Register following setting to the P2, Pattern No.3, X scale rate: 50%, Y scale rate: 80%, Max. speed limitation: 2000 rpm, Pattern position: 0.5 mm to the right and 1 mm to the front.

- 1) Turn ON the power switch and press **(M)** key to enter mode setting (memory switch setting).
(Sewing LED should be put out.)

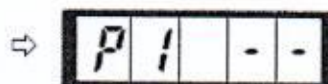


- 2) Indicate the pattern register mode

with **+ / ⏏** or **- / ⏏** key.



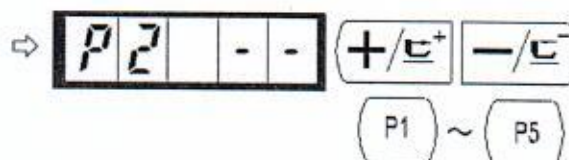
- 3) Press **(P)** key.



Enter the pattern register mode.

- 4) Press **(P2)** key. (Select P-No. to be registered.)

Selection can be performed with **+ / ⏏** or **- / ⏏** key.



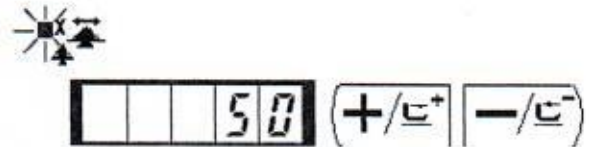
- 5) Press **(C)** key to indicate the Pattern No.

Set the Pattern No. to "3" with **+ / ⏏** or **- / ⏏** key.

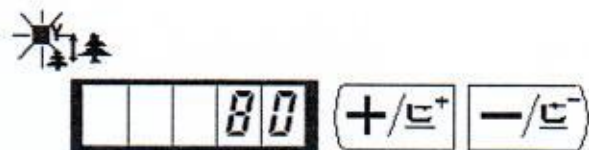


6) Press and set as follows with or key.

X Scale rate : 50%,



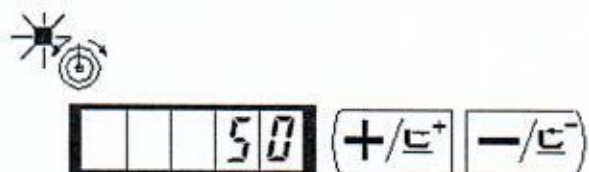
Y Scale rate : 80%,



Max speed limitation :
"2000" rpm



Thread Tension "50"



7) Press key and "X Scale rate " indication becomes 0.0.

Traveling amount in X direction can be

set in 0.1mm unit. Set 0.5 with or key.



8) Press key and "Y Scale rate " indication becomes 0.0.

indication becomes 0.0.

Traveling amount in Y direction can be

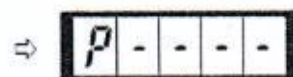
set in 0.1mm unit. Set -1.0 with $\boxed{+/\text{C}^+}$ or $\boxed{-/\text{C}^-}$ key.



9) Press $\boxed{\text{P}}$ key to finalize the setting.



10) Press $\boxed{\text{M}}$ key.



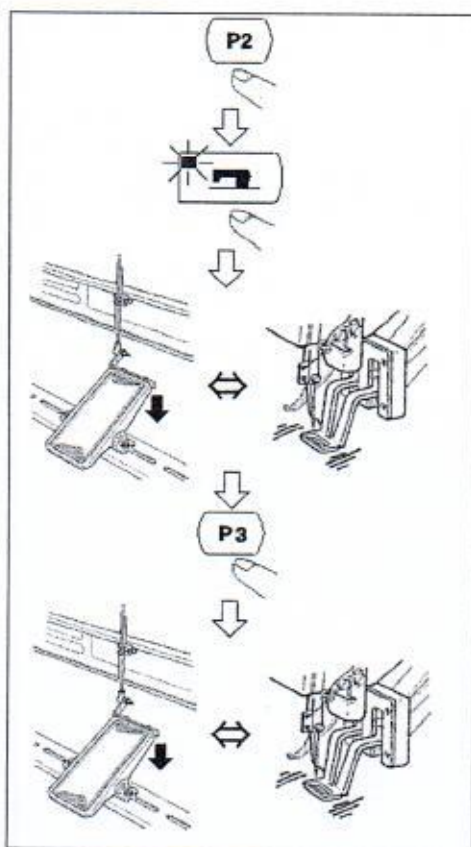
Pattern register mode is finalized.


11) Press $\boxed{\text{M}}$ key.

Mode setting is finalized and the mode returns to the normal mode.

2. Sewing

Operation Example: After perform sewing of the contents of the register P2, perform sewing with the contents of P3.



- (1) Turn ON the power switch.
- (2) Press the **P2** key.
- (3) Press the  key, and when the sewing LED lights up, the work clamp foot goes up after it has moved.
- (4) Check the contour of the sewing pattern.
(Refer to the item "Checking the Contour of a Sewing Pattern").
- (5) If the contour of the sewing pattern is acceptable, the sewing can be made.
- (6) Press **P3** key after completion of sewing and the presser comes down. The presser moves to the sewing start point after origin retrieval and goes up.
- (7) Perform the above item (4) and (5).

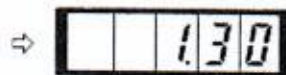
2.5.2 Perform Sewing Using the Combination Function

By arranging in order to use the pattern register (P1 to P99) which have been already registered and registering in C1 to C50, the sewing pattern will change in the order every time the sewing machine finishes the sewing. Every one combination No. can be registered up to the maximum 99 patterns.

i. Register of the Combination


Setting example: Combine in the order of P1, P2 and P3, and register them in the C1.

- 1) Turn ON the power switch and press **M** key to enter the mode setting (memory switch setting).
(Sewing LED should be put out.)



- 2) Indicate the combination mode with **+/-** or **-/-** key.



- 3) Press  key. Sewing LED lights up to enter the

combination mode. C1 to C50 can be selected with

$\boxed{+/\text{C}^+}$ or $\boxed{-/\text{C}^-}$ key.

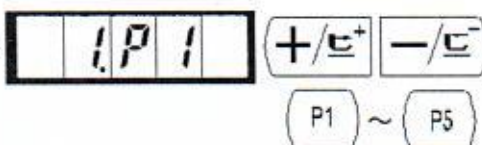
⇒ 

- 4) Press $\boxed{\text{C}}$ key, and then press $\boxed{\text{P1}}$ key.

$\boxed{\text{P1}}$ is set to the first pattern of C1. P1

to P99 can be selected with $\boxed{+/\text{C}^+}$ or $\boxed{-/\text{C}^-}$

key as well.

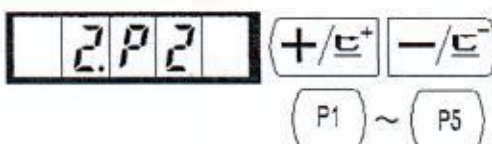
⇒ 

- 5) Press $\boxed{\text{C}}$ key, and then press $\boxed{\text{P2}}$ key.

P2 is set to the second pattern of C1. P1

to P99 can be selected with $\boxed{+/\text{C}^+}$ or $\boxed{-/\text{C}^-}$

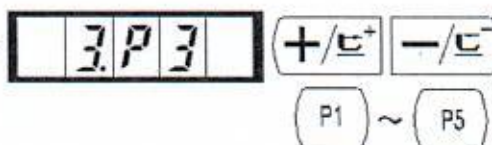
key as well.

⇒ 

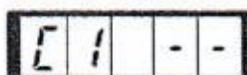
- 6) Press $\boxed{\text{C}}$ key, and then press $\boxed{\text{P3}}$ key.

P3 is set to the third pattern of C1. P1 to P99

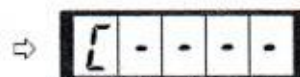
can be selected with $\boxed{+/\text{C}^+}$ or $\boxed{-/\text{C}^-}$ key as well.

⇒ 

- 7) Press $\boxed{\text{M}}$ key to finalize the register.

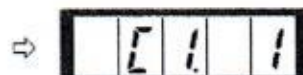
⇒ 

- 8) Press $\boxed{\text{M}}$ key. Combination register mode is finalized.



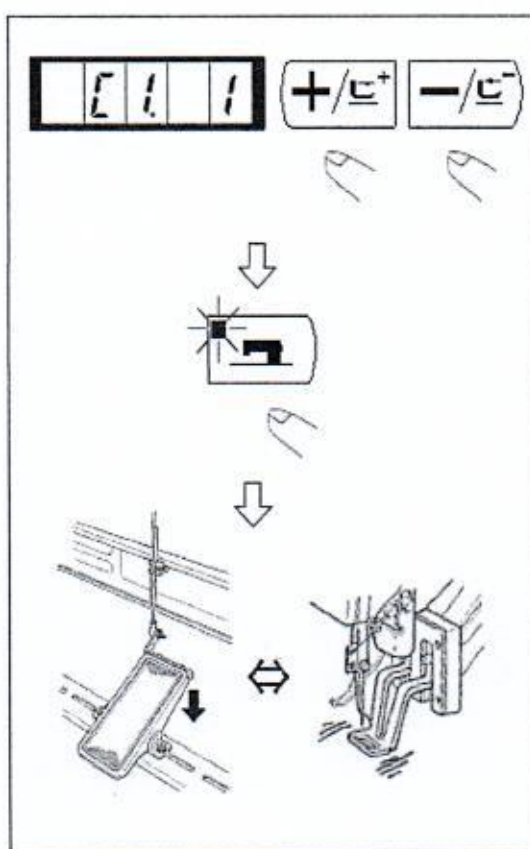
- 9) Press **M** key.

Mode setting is finalized and the mode returns to the normal mode.



ii. Sewing Operation

Operation example: Perform sewing with the contents of the registered C1.



- (1) Turn ON the power switch.
 - (2) Set the pattern No. to "C1" using the **+ C+** or **- C-** key.
 - (3) Press the **SEW** key. When the sewing LED lights up, the work clamp feet will go up after having moved.
 - (4) If the contour of the pattern is acceptable, the sewing can be made.
 - (5) Every time the sewing is finished, the step is made in the order of the combination. After completing one cycle of sewing., the step returns to the first step.
- ✧ When you desire to return the pattern to the previous one or skip the next pattern after sewing, press **+ C+** or **- C-** key in a state that the sewing LED lights up.
 - ✧ If the contents of P1 to P99 are changed after registration of C1 to C50, the contents of P1 to P99 used in C1 to C50 will change. So, be careful.
 - ✧ Make sure of the contour of the pattern for each or the patterns. (Refer to the item "Checking the contour of the sewing pattern".)

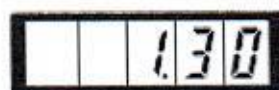
2.6 How to Use the Memory Switch (User Class)

The sewing machine operation can be changed by changing the setting of the memory switch.

2.6.1 Start and Change of the Memory Switch

- 1) When **M** key is pressed in the state that the sewing LED is put out, the memory switch setting mode is obtained.

1.30 which is indicated when “M” key is pressed indicates that the max. speed limitation of the first memory switch is 3,000 rpm. (State at the time of delivery from factory)

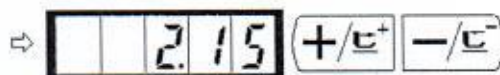


Three figures from the top are memory switch Nos.

Two figures from the bottom are contents of setting.

- 2) Change the memory switch No. with

+/- or **-/-** key.



- 3) Adjust the memory switch No. to the No.

you desire to change, and press **□** key,

the sewing LED lights up.

- 4) Change the content of the memory switch

with **+/-** or **-/-** key.



- 5) The value can be returned to the value at the time of delivery from the factory with **R** key.

- 6) Press **R** key to register the contents of change. Sewing LED goes off and the mode returns to the selective state of the memory switch No.

- 7) Press **M** key to finalize the memory switch setting mode and the mode returns to the normal mode.

2.6.2 Example of the Memory Switch Setting

1. Setting the Max. speed Limitation

Setting example: Setting the max. speed limitation to 1,800 rpm.

- 1) Press **M** key in the state that the sewing LED is put out.



The memory switch is started and the contents of memory switch No.1 are indicated.

It is not necessary to change the sewing speed since the max. speed limitation of the sewing machine is set with memory switch No.1. The indicated memory switch No. can be changed

over with $\boxed{+/\text{C}^+}$ or $\boxed{-/\text{C}^-}$ key.

- 2) Press $\boxed{\text{M}}$ key in the state that memory switch

NO.1 is indicated to make the sewing LED light up. The contents of memory switch No.1 (max. speed limitation value of the sewing machine) are indicated.

⇒

- 3) Set "1800" with $\boxed{+/\text{C}^+}$ or $\boxed{-/\text{C}^-}$ key.

⇒

- 4) Register the value with $\boxed{\text{M}}$ key. Sewing LED goes off.

- 5) Press $\boxed{\text{M}}$ key to return to the normal state.

2. Setting the Soft Start Speed at the Sewing Start

The speed of the first stitch to the fifth stitch at the sewing start can be set in a unit of 100 rpm. Two kinds of settings, in case of with needle thread clamp and without needle thread clamp can be performed. (See Table of Functions of the Memory Switch.)

In case of needle thread clamp unit: rpm

	State when delivered (rpm)	Setting range
1 st Stitch	1500	400~1500
2 nd Stitch	3000	400~3000
3 rd Stitch	3000	400~3000
4 th Stitch	3000	400~3000
5 th Stitch	3000	400~3000

Setting Example: In case of with needle thread clamp, the speed is changed as follows.

1st stitch form 1,500 to 1,000 rpm and 2nd stitch form 3,000 to 2,000 rpm.

- 1) Press $\boxed{\text{M}}$ in the state that the sewing LED is put out.


⇒

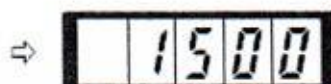
- 2) Indicate memory switch No.2 with $\boxed{+/\text{C}^+}$




or $\boxed{-/\text{C}^-}$ key. Here, set the sewing speed of


the first stitch.

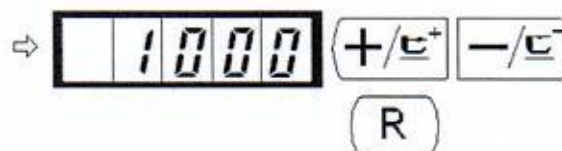



- 3) Press  key. The sewing LED lights up and the set value of the first stitch is indicated.

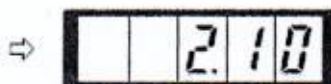




- 4) Indicate "1000" with  or  key. The value returns to the initial value at the time of delivery from the factory with  key.

Press  key to cancel the operation here and return to the state of step 2).




- 5) Press  key. The sewing LED goes off and the set value of the first stitch is registered.





- 6) Indicate memory switch No.3 with  or  key. Here, set the sewing speed of second stitch.

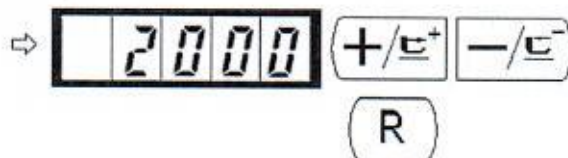



- 7) Press  key. The sewing LED lights up and the set value of the second stitch is indicated.

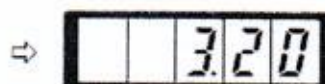


- 8) Indicate "2000" with  or  key. The value

returns to the initial value at the time of delivery from the factory with **R**. Press **M** key to cancel the operation here and return to the state of step 6).



- 9) Press  key. The sewing LED goes off and the set value of the second stitch is registered.



- 10) Press **M** key. The memory switch setting mode is finalized and the mode returns to the normal mode.

3. Setting Whether the Calling of Pattern Data is Operative or Not

By making inoperative the calling of the unnecessary pattern, this setting prevents the different pattern from calling by mistake.

Also, it is possible to call and use the necessary pattern.


Setting Example: Make the calling of pattern Nos.2 and 3 inoperative.

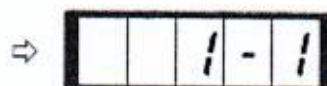
- 1) Press **M** key in the state that the sewing LED is put out.



- 2) Indicate memory switch No.201 with **+/⌂+** or **-/⌂-** key.




- 3) Press  key. The sewing LED lights up and the set value of pattern No.1 is indicated.


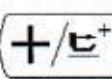
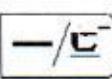



Set value 1: Calling is operative.



Set value0: Calling is inoperative.


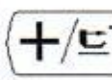
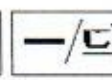
- 4) Set pattern No.2 with **+/⌂+** or **-/⌂-** key

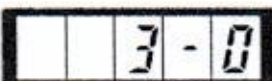
- 5) Set the set value to "0" with  key.


⇒   

⇒ 


- 6) Set the pattern No.3 with  or  key.


⇒   

⇒ 

- 7) Set the set value to "0" with  key.


⇒ 

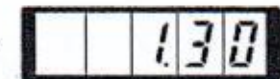
- 8) Press  key to register the set value. The



- 9) Press  key. The memory switch setting mode is finalized and the mode returns to the normal mode.

4. Setting the Counter Operation


Setting Example: The production counter (adding method) can be changed to the bobbin thread counter (subtracting method).


- 1) Press  key in the state that the sewing LED is put out.


⇒ 

- 2) Indicate the memory switch No.18 with  or  key.

⇒   

- 3) Press  key. The sewing LED lights up and the set value of counter motion is indicated.



⇒ 

- 4) Set the set value to "1" with  key.

Set value 0: Production counter

Set value 1: Bobbin thread counter



- 5) Press  key to register the set value. The sewing LED goes off.
- 6) Press  key. The memory switch setting mode is finalized and the mode returns to the normal mode.

2.6.3 Table of Functions of the User Class Memory Switch

No.	Functions	Adjustment Range	Default Value	Remarks
1.30	Max Speed of Sewing (it can be set in step of 100rpm)	400~3200	3000	
2.15	Sewing speed of 1 st Stitch (thread-catching) (It can be set in step of 100rpm)	400~1500	1200	
3.30	Sewing speed of 2 nd Stitch (thread-catching) (It can be set in step of 100rpm)	400~3200	2500	
4.30	Sewing speed of 3 rd Stitch (thread-catching) (It can be set in step of 100rpm)	400~3200	2700	
5.30	Sewing speed of 4 th Stitch (thread-catching) (It can be set in step of 100rpm)	400~3200	3000	
6.30	Sewing speed of 5 th Stitch (thread-catching) (It can be set in step of 100rpm)	400~3200	3200	
7.--	Thread tension of 1 st Stitch (thread-catching)	0~200	200	
8.--	Thread tension at the time of thread-trimming	0~200	0	
9.--	Changeover time of thread tension at thread-trimming	-6~4	4	
10. 4	Sewing speed of 1 st Stitch (no thread-catching) (It can be set in step of 100rpm)	400~1500	400	
11. 9	Sewing speed of 2 nd Stitch (no thread-catching)	400~3000	900	

No.	Functions	Adjustment Range	Default Value	Remarks
	(It can be set in step of 100rpm)			
12.30	Sewing speed of 3 rd Stitch (no thread-catching) (It can be set in step of 100rpm)	400~3000	3000	
13.30	Sewing speed of 4 th Stitch (no thread-catching) (It can be set in step of 100rpm)	400~3000	3000	
14.30	Sewing speed of 5 th Stitch (no thread-catching) (It can be set in step of 100rpm)	400~3000	3000	
15.--	Thread tension of 1 st Stitch (no thread-catching)	0~200	0	
16.--	Changeover timing of thread tension at the sewing start (no thread-catching)	-5~2	0	
17.0	Whether to change or indicate the XY scale rate and max speed limitation	0: changeable 1: unchangeable	0	
18.0	Action of Counter	0: Production Counter (Adding Method) 1: Robbin Thread Counter (Subtracting Method)	0	
25.1	Presser Division	0: Divide 1: Not divided;	1	
26.70	Adjustment of presser height in section	50~90	70	
31.0	Use keyboard (Clear Key) to stop sewing machine	0: invalid 1: RESET key	0	
32.1	Buzzer forbidden	0: no voice 1: panel operation voice 2: panel operation voice and alarm voice	2	
33.1	Set number of stitches that thread-catching releases	1~7	2	
34.--	Time deferrable in catching thread	-20~0	0	


No.	Functions	Adjustment Range	Default Value	Remarks
35.1	Enable to forbid the control on catching upper thread	0: Normal 1: Forbidden	1	
36.--	Select the Feed time. When stitches are not well tightened, set the value in “-” direction.	-8~16	12	
37.1	Presser status at sewing end	0: Back to sewing start and then lift 1: Back to sewing start and at the same time lift	1	
39.0	Search origin at sewing end of each time	0: Not search origin 1: Search Origin	0	
40.0	Search origin at cyclic sewing	0: Not Search origin 1: Search origin after the finish of each pattern	0	
41.0	Search origin at sewing of P pattern	0: Not search origin 1: Search Origin	0	
42.0	Stop position of needle bar	0: upper position 1: highest position	0	
46.0	Forbid thread-trimming	0: normal 1: forbid thread-trimming	0	
49.16	Set winding speed	800~2000	1600	
55.0	Forbid start back tacking at button sewing	0: start back tacking 1: no start back tacking	0	
62.0	Pattern data update	0: normal mode 1: import (add) pattern to replace the existing pattern with the same pattern number 2: export all extraposition patterns to USB storage device 3: clear (format) the storage area for extraposition patterns	0	

No.	Functions	Adjustment Range	Default Value	Remarks
63.0	Setting method of X/Y scale rate	0: by percentage 1: by size	0	
97.1	Thread-trimming method after temporary stop	0: automatic thread-trimming 1: manual thread-trimming	1	
135.0	Presser movement order before sewing	0: stand-by at the sewing start 1: stand-by at the origin	0	
167.5	Brightness of LED lights lamp at the machine head	0~10	5	The larger value, the brighter; 0 means off.
201.--	Whether to read the pattern data.	0: unable 1: able	Up to machine type	
212.0	Air valve separate presser lowering order	0: lowering at the same time 1: lower left presser first and then right presser 2: lower right presser first and then left presser	0	
213.0	Air valve separate presser lifting order	0: lowering at the same time 1: lift left presser first and then right presser 2: lift right presser first and then left presser	0	
214.1	Overturn Presser Availability	0: forbidden 1: available	1	
P- - -	Register pattern			
C- - -	Register the cyclic sewing			

3. Memory Switch (Service Class)

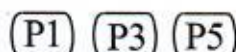
Service class memory switch is different from the user class and it is not allowed to be changed by users. We provide these functions to the professional for adjustment and maintenance.

3.1 Start and Change of the Memory Switch (Service Class)

When  key is pressed in the state that the sewing LED is put out, the memory switch setting mode is obtained and



is indicated. Then press



simultaneously, and you will hear the buzzer ring. After that you have started the memory switch and you are allowed to change the settings.

The operation of service class memory switch is the same as that of user class memory switch. Refer to **【2.6 How to Use the Memory Switch (User Class)】** for details.

3.2 Table of Functions of the Service Class Memory Switch

No.	Definition	Adjustment Range	Initial Value	Remarks
19.30	Lifting time of pneumatic outer frame	0~90	30	
21.--	Positions of standard pedal & pedal switch	50-200	70	
22.--	Position of standard pedal & stroke switch of high/low section.	50-200	120	
23.--	Position of standard pedal & start switch	50-200	185	
24.0	Pedal Type	0: Analog Single Pedal 1: Digital Singel Pedal 2: Double Pedals 3: Double Pedals, but only the operation pedal controls	0	
27.--	Dropping speed of presser at depressing pedal	100-4000pps	4000	
28.--	Lifting speed of presser at depressing pedal	100-4000pps	1500	
29.--	Lifting speed of thread-trimming presser at sewing end	100-4000pps	3000	

No.	Definition	Adjustment Range	Initial Value	Remarks
38.--	Start sewing with switch when presser keeps still	0: Normal 1: Not lift presser	0	
43.4	Selection of machine rotating number at thread-trimming	3~7	4	
44.0	Selection on whether to feed cloth in the easy direction at thread-trimming	0: Not Feed 1: Feed Cloth	0	
45.16	Guide diameter of needle hole for feeding cloth at thread-trimming (Changing step can be set at 0.2mm.)	16~40 (1.6mm~4.0mm)	16	
56.--	Limited range of motion in +X direction (Right)	0~50mm	20	
57.--	Limited range of motion in -X direction (Left)	0~50mm	20	
58.--	Limited range of motion in +Y direction (Back)	0~30mm	15	
59.--	Limited range of motion in -Y direction (Front)	0~30mm	15	
64.0	Select thread wiping method	0: solenoid 1: motor	1	
65.--	System device software version	1. PAnL: software version of control panel 2. CtrL: software version of lower computer 3. dSP1: software version of stepping motor DSP1 4. dSP2: software version of stepping motor DSP2		Enter the submenu for more detailed information
66.45	Impulse number for coactions of presser and wiper	30~60	45	
67.8	Default parameter transfer	0~90	Up to machine type	Effective after restart
70.--	Firmware program update of the system	1-PnL: firmware program update of the panel 2-Ctr: firmware program update of the main control		Enter the submenu for more detailed information

No.	Definition	Adjustment Range	Initial Value	Remarks
74.1	Presser control mode shift	0: air valve control 1: motor control	1	
95.--	Thread-trimming angle	-10~10	0	
102.7	X stepping motor full-current parameter	0~15	7	Effective after restart
104.11	Y stepping motor full-current parameter	0~15	11	Effective after restart
106.2	Thread-catching stepping motor full-current parameter	0~15	2	Effective after restart
108.14	Presser stepping motor full-current parameter	0~15	14	Effective after restart
109.7	X stepping motor semi-current parameter	0~15	7	Effective after restart
110.6	Y stepping motor semi-current parameter	0~15	6	Effective after restart
111.5	Presser stepping motor semi-current parameter	0~15	5	Effective after restart
112.--	Main shaft stop correction	-10~10	0	
121.0	Counter Lock	0: Can Clear and Plus/Minus ; 1: Can Clear Only ; 2: Can Plus/Minus Only; 3: Can not Clear and Plus/Minus	0	Need unlock password
120.--	Alarm to add lubricating oil	3000~12000	5000	Unit: ten thousand stitches
122.--	OC length adjustment	-128~128	0	
123.--	OD length adjustment	-128~128	0	
124.--	BD length adjustment	-512~512	0	
125.--	OC length	1780~2380	2080	
126.--	OD length	1440~2040	1740	
127.--	BD length	430~630	530	

No.	Definition	Adjustment Range	Initial Value	Remarks
128.0	Stepping Open/Close Loop Shift	0:DSP1Close DSP2Close 1:DSP1Open DSP2Open 2:DSP1Close DSP2Open 3:DSP1Open DSP2Open	0	Effective after restart
136.--	Thread-separating delay	-10~30	0	
137.--	Thread clamp release angle at sewing start	-150~150	0	
138.--	Thread clamp time after trimming at sewing start	-1~1	0	
140.0	Thread Tension Control Method	0: electronic clamp 1: machanical clamp	0	
141.--	Suction force adjustment of branch thread tension solenoid	-20~20	0	
142.--	Holding force adjustment of branch thread tension solenoid	-40~40	0	
150.0	Invalidity of head tilt safety switch	0: Normal 1: The safe shape of head tilt is invalid.	0	
163	Intermediate Presser Control Method	0: no control 1: not used 2: solenoid control 3: mechanical control	0	
174.1	Sensor availability at the cutter position	0: forbidden 1: in use	1	
241.0	Functional selections	0: Bar-tacking 5: Pattern bar-tacking 7: Button sewing	0	
245.--	Clear false alarm to add lubricating oil	Free R key.	The screen displays the total number of stitches.	
268.--	Password management	0. LoCk: lock with password 1. UkCH: mechanic password check 2. UkMo: mechanic password modification 3. UkCL: mechanic password recovery 4. kkCH: key password check	0. LoCk	Enter the submenu for more detailed information

No.	Definition	Adjustment Range	Initial Value	Remarks
		5. kkMo: key password modification 6. kkCL: key password recovery		
CP---	System Check Mode			

Note: the above parameters are for the use of repairers only and user should not change them without caution.

3.3 Restore Default Setting

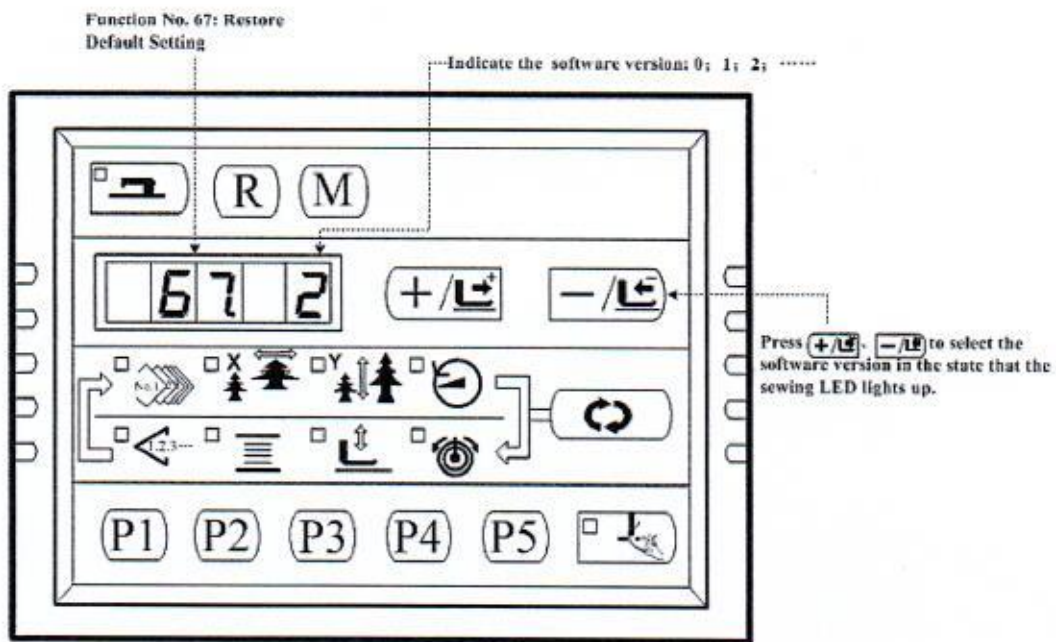
If the user changes some parameters by mistake, which are properly set at delivery, he will use the function of "Recovery to Default Setting" to restore the system.



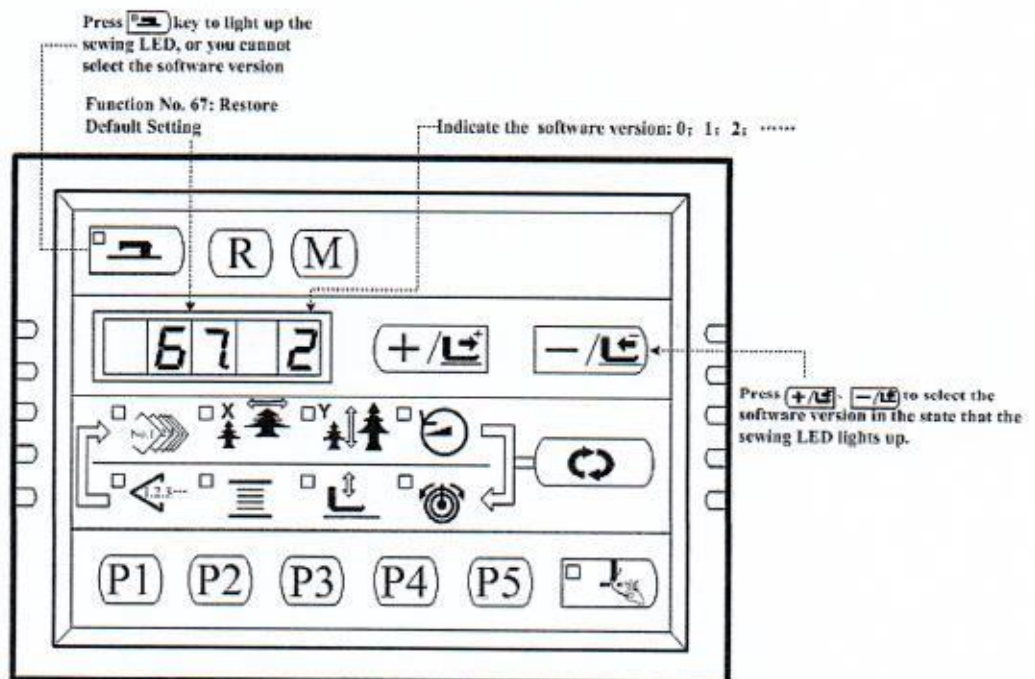
At recovering the default settings, the entire parameters that are set by user before will be recovered. Therefore, please take caution in using this function. For anything unknown, please contact the technicians of the manufacturer, and operate the machine with the instruction from the professionals

The following is the specific operation step:

1. When the Sewing LED is off, operator can press **M** to have system display **1.30**, and then the operator needs to press **P1** **P3** **P5** together. Following the voice from buzzer, the modification of service parameters is started.
2. By using the **+/-** & **-/-**, the operator can select the parameter No.67:



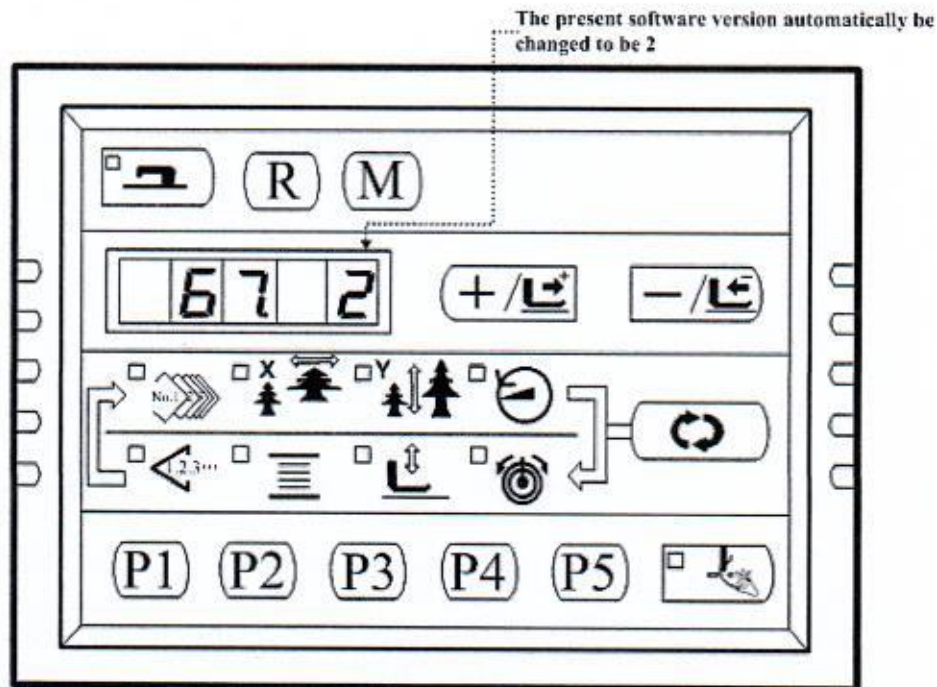
3. Press to turn on the sewing LED, then press to select the items needing recovery: 67=0: to restore the panel parameters; 67=25: to restore the machine head board parameters.



4. After selecting the parameters needed to be restored, press to confirm the software version you want to restore, and when the sewing LED is off, the screen displays "PoFF" (if you select to restore the machine head board parameters, the screen will display "EEP" before "PoFF")

to remind you to shut off the power supply and then turns it on. (Note: if you select invalid value, there will be no recovery.) Press **M** to quit the service parameter setting mode and return to normal sewing mode.

5. When power on, the screen displays "init" indicating parameters are being restored (if you have selected to restore the machine head board parameters, the recovery has been finished and ready for your direct use when the power is on), and after a few seconds the screen will display the sewing interface for pattern No. 1, which means the parameters have been restored and ready for your use.



Note: During the restoring process (20 seconds after power on), if the power is cut by accident, the restoring process has to be aborted and you failed to restore the default setting. The software will return to the former state before restoring.

3.4 Software Version Display


In the parameter setting mode, use parameter No.65 to enter the next submenu and there are 4 subparameters to indicate the information of the system software version:


When the power is on, initiate the service parameter setting, then press **+/←**, **-/→** to select parameter No.65 with the screen displaying "65.--", and then press **↩** to enter the software version display mode when the sewing LED lights up.

- 1.PAnL: to display the software version of control panel
- 2.CtrL: to display the software version of lower computer

3.dSP1: to display the software version of stepping driver DSP1

4.dSP2: to display the software version of stepping driver DSP2

Select the parameter for display. If you need display the software version of control panel, press  to display the detailed information when the screen displays "1. PAnL".

At this time, pattern number LED lights up and displays "-A" (or other letters, due to different software versions) which refers to the manufacturer information. Press  to light up X/Y scale, rotation speed, and thread tension in a cyclic manner to display detailed information of the software version respectively as follows:

Pattern Number LED	X Scale LED	Y Scale LED	Rotation Speed LED	Thread Tension LED
—A	MA201	15	1.	2.
Manufacturer Code	Mechine Type	Software Version No.	Software Mother Version No.	Software Daughter Version No.







The above information can be represented comprehensively by MASC201-A-V1.2.15.

The information of different machine types is as follows:

Machine Type Display	Machine Type Information
SC201	III Generation (Open Loop Stepping) SC201 (1900A)
SC203	III Generation (Open Loop Stepping) SC203 (1906A)
AS201	III Generation (Close Loop Stepping) ASC201 (1900A)
AS203	III Generation (Close Loop Stepping) ASC201 (1900A) ASC203 (1906A)
MS201	V Generation (Open Loop Stepping) MSC201 (1900A)
MS203	V Generation (Open Loop Stepping) MSC203 (1906A)
MA201	V Generation (Close Loop Stepping) ASC201 (1900A) MASC201 (1900A)
MA203	V Generation (Close Loop Stepping) ASC201 (1900A) MASC203 (1906A)


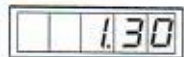



Other parameters about the detailed information of software version shall be explained in the same way as described above.

3.5 Check Total Number of Stitches and Clear Lubrication Alarm

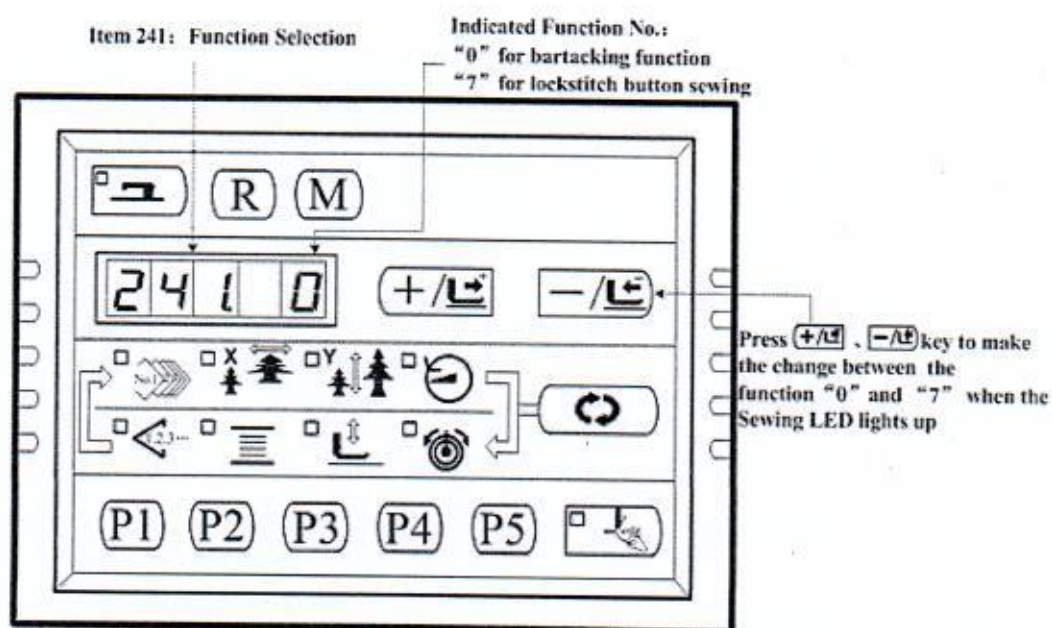
After the machine runs for a period of time, there may appear E221 "Add Lubricating Oil Alarm" which means you should add lubricating oil. Under this circumstance, initiate service parameter setting after power on, then press ,  to change the screen display to "245.--", and then press  to display the total number of stitches when sewing LED lights up. Press  to display respectively the number with the counting unit of "ten thousand stitches" on the pattern number LED segment and that of "one stitch" on counter LED segment. The total number of stitches equals to 10000 *(number of "ten thousand stitches") + number of "one stitch". After adding the lubricating oil, press  to clear the total number of stitches and then the machine can continue to work normally. (Note: if you just want to check the total number of stitches and clear not, press  to return to parameter setting mode.)






4. Lockstitch Button Sewing Function

4.1 Lockstitch Button Sewing Function Setting

- 1、Press  key, while the Sewing LED is not illuminated, and then the Panel display . Press    simultaneously, you would hear the ring of the buzzer, and then you are able to adjust the setting.































- 2、Press ,  key to select No.241:






- 3、Press  key to light up the sewing LED, and then press  or  key to change the Function NO. to "7". Press  key again to save the setting and the Sewing LED goes off.
- 4、Press  key to exit and Power off. Power on, and the machine has changed to be a lockstitch button sewing machine.

Attention: The lockstitch button sewing function need particular Presser, for details, please contact your machine agent.

4.2 Table of the Lockstitch Button Sewing Patterns

No.	Stitch Shape	Threads	Sewing Size X(mm)	Sewing Size Y(mm)	No.	Stitch Shape	Threads	Sewing Size X(mm)	Sewing Size Y(mm)
1 • 34		6-6	3.4	3.4	18 • 44		6	3.4	0
2 • 35		8-8			19 • 45		8		
3		10-10			20		10		
4		12-12			21		12		
5 • 36		6-6			22		16		
6 • 37		8-8			23 • 46		6	0	3.4
7		10-10			24		10		
8		12-12			25		12		
9 • 38		6-6			26 • 47		6-6	3.4	3.4
10 • 39		8-8			27		10-10		
11		10-10			28 • 48		6-6		
12 • 40		6-6			29		10-10		
13 • 41		8-8			30 • 49		5-5-5	3.0	2.5
14		10-10			31		8-8-8		
15 • 42		6-6			32 • 50		5-5-5		

No.	Stitch Shape	Threads	Sewing Size X(mm)	Sewing Size Y(mm)	No.	Stitch Shape	Threads	Sewing Size X(mm)	Sewing Size Y(mm)
16 • 43		8-8			33		8-8-8		
17		10-10							

5. Update the Pattern Data by USB Flash

5.1 Pattern Data Update

Support import (addition) of single VDT pattern:


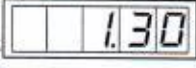









62=1: import (add) pattern, and cover the pattern of the same number with imported pattern;

62=2: export all extraposition patterns to USB storage device;

62=3: clear (format) the panel's storage area for extraposition patterns;

Pattern Data Update Operations:

User can import VDT format patterns to the control system via U disk, with the updated pattern number from 101 to 200. User can also export existing patterns numbered 101~200 that are stored in the control system to U disk. (Note: V Generation computerized control system doesn't support BIN format patterns.)

1. Use pattern-making software to make pattern file in VDT format and name it by "XXX.VDT". (Note: XXX shall be a number between 101~200 which at the same time is the updated pattern number.)
2. Create a new file folder named DH under the root directory of U disk, and save the pattern made in the previous step under the directory of DH (many patterns at one time).
3. When the sewing LED is off, press  to have the screen display , and then press    together. Following the voice from the buzzer, the modification of service parameters is started.
4. Press ,  to select parameter No. 62 and connect the U disk where patterns are stored to the USB interface at the right side of the panel.
5. Press , then press ,  to change the function number to "1" when the sewing LED lights up, and then press  to confirm the function number.

Note: before this operation, please confirm the U disk having been connected to USB interface; if not, this update operation cannot be done and the panel will hint error E512 "USB storage device not found".


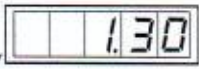


6. When the panel displays "USB——", it means the pattern data update operation is being conducted. After the update is finished, the panel will automatically shift to parameter interface and the screen will display "62.0" which indicates the completion of pattern data update.
7. After the update is finished, the patterns numbered 101~200 that have already been stored in the system before the update will be back-uped under the DH directory of the U disk and renamed in the form of "BAK_XXX.VDT" (note: XXX is the original pattern number between 101~200).

Note: if there are already patterns numbered 101~200 in the system, patterns named with

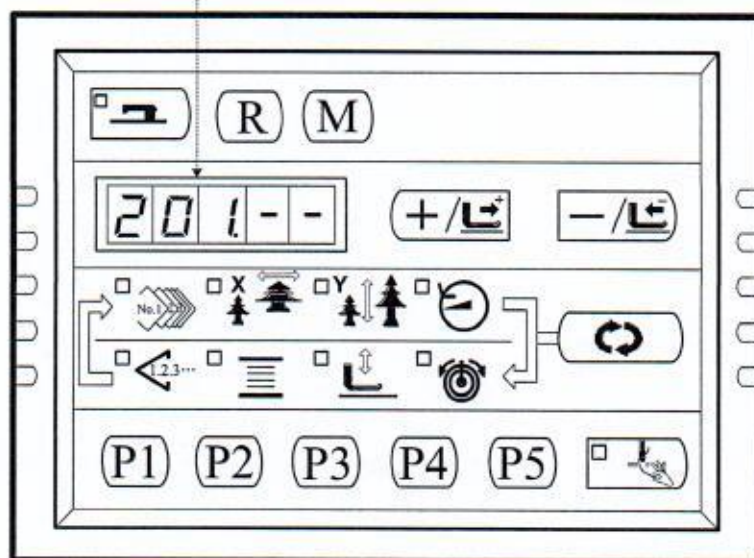
different numbers can be added to the system via U disk following the above operations; if the pattern numbers in the U disk are the same with those in the system, the patterns with the same number in the system will be replaced.


In addition, apart from the pattern update import operation under function number “1”, user can also change the function number to “2” and “3” to export patterns and delete operations respectively. To change function number to “2” actually equals to manual operation of step 7 to back up patterns, while to change function number to “3” is to delete all patterns numbered 101~200, which may be done in case of error E506 “Extrapolation Pattern Storage Area Full” and error E507 “Extrapolation Pattern Storage Area Format Abnormal”.

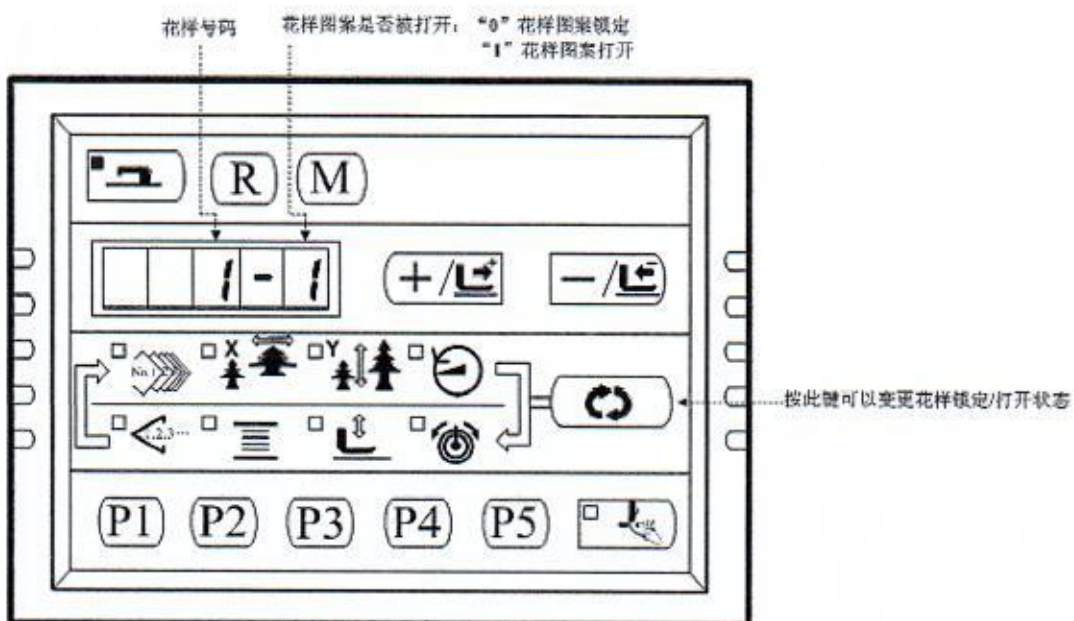
8. Open pattern lock: after update, if the patterns updated via U disk cannot be selected on the sewing interface, the possible reason is that the pattern lock is unopened, for the default setting of patterns number 101~200 is locked and unable to be selected. User need make the following operation:

9. Press  to have the screen display , and then press ,  to select parameter No. 201.

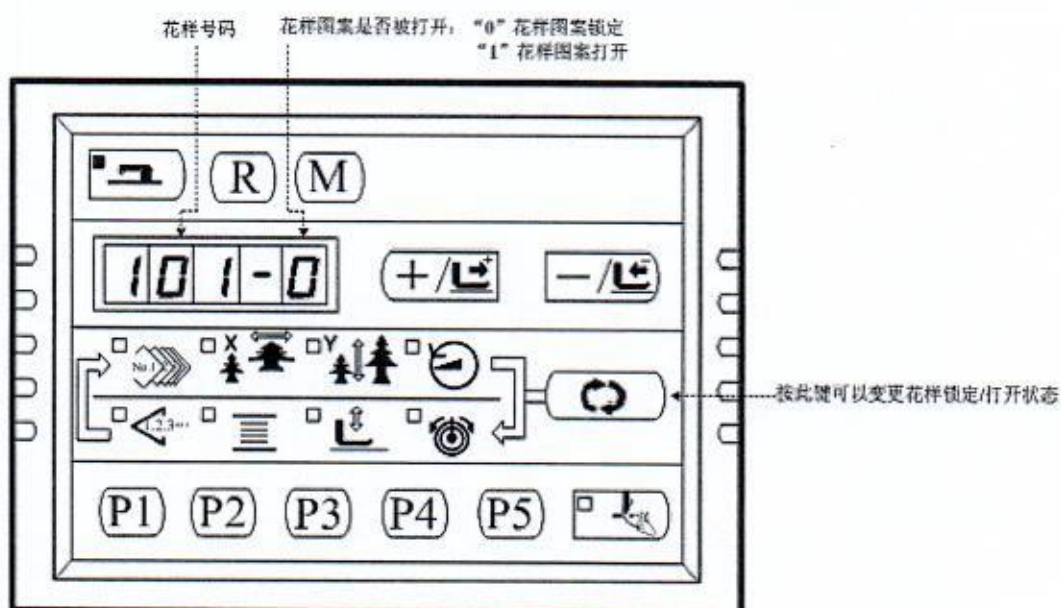
用户参数列表中的“201”号参数：
设定是否可以读出图案数据



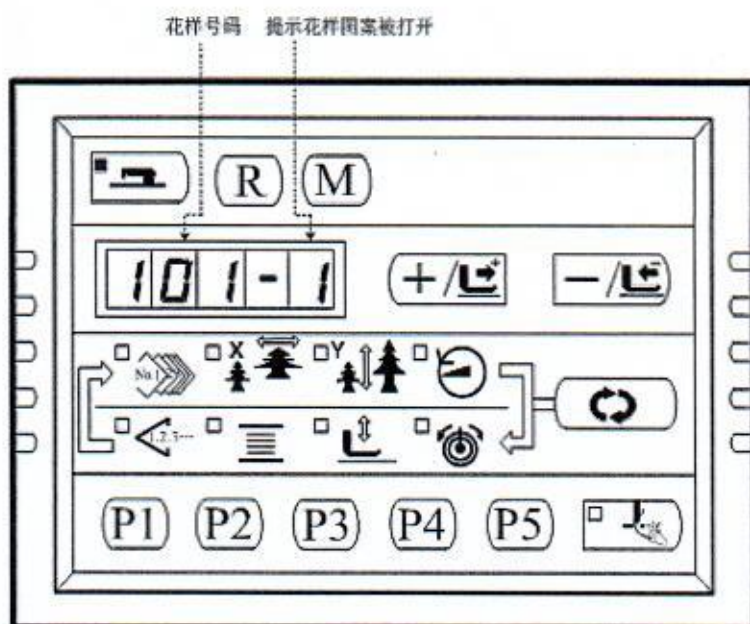
10. Press  to enter pattern switching mode when the sewing LED lights up, and the screen displays “1-1”:








11. Press to select the pattern number needed (such as pattern No. 101):



12. Press to change “101-0” to “101-1”, that is, to unlock pattern No. 101:



13. Press  to save the set parameter and return to the interface of step 11 when the sewing LED is off; user can repeat the operations of steps 11-12, to lock or unlock all the patterns needed.
14. Press  to return to normal sewing mode.
15. Use  to select pattern number icon (refer to [2.4.1 Item Data Setting]), and then press ,  to check the unlocked pattern No. 101 and start sewing.

6 Appendix 1

6.1 Error List

Display	Error Name	Content of Error	Solution
E7	Machine Lock Error	The main-shaft of sewing machine can't rotate due to some problem.	Turn off power and release the trouble
E10	Pattern NO. Error	The prepared pattern number is not registered in ROM or it is set at unreadable. The pattern is 0.	Press RESET switch to confirm the pattern NO. Confirm the content in memory switch No.201.
E30	Needle Bar Up Position Error	The needle bar is not at UP position.	Turn the hand pulley to return the needle bar to its UP position.
E40	Sewing Area Over	The sewing area is over the limit.	Press RESET switch to confirm the X/Y scale rate
E43	Enlargement Error	The sewing stitch is below 10mm.	Press RESET switch and confirm the pattern and X/Y scale rate.
E50	Pause	Press the RESET switch while sewing machine is running. The machine pauses.	Restart or return-to-origin after pressing RESET switch for thread-trimming
E221	Abnormal alarm to add lubricating oil	It is time to add lubricating oil to certain parts of the machine, so the machine stops working.	Restart the machine, enter parameter No. 245 and press RESET key, and then power on again
E302	Head Tilt Error	Head tilt detection switch is turned ON.	The sewing machine cannot be operated with the head tilted. Return the sewing machine head to its proper position
E303	24V Power Supply Error	24V voltage is below level.	Turn off the power, and after a while power on again.
E305	Presser Position Error	Presser is not at proper position.	Turn off the power and check connection of the CZ025 at the head signal circuit board. If the connection is ok, check the optocoupler.
E306	Thread-catching position error	The thread-catching device is at wrong position.	Turn off the power and check the connection of the CZ026 at the head signal circuit board. If the connection is ok, check the optocoupler.

E307	Cutter Position Error	The cutter is not at the right position.	Turn off the power and check the connection of the CZ024 at the head signal circuit board. If the connection is ok, check the optocoupler.
E500	Pattern parameter unavailable on the control panel	The control panel cannot read the pattern parameter from EEPROM.	
E501	Control panel memory parameter range abnormal	The control panel cannot read the memory parameter from EEPROM.	Press RESET key to enter parameter No. 67 and restore the default setting
E502	Lower computer parameter abnormal	The machine head board parameter received by control panel from the lower computer is abnormal.	Press RESET key to enter parameter No. 67 and restore the default setting
E503	Abnormal Pattern Parameter of the Control Panel	Pattern parameter doesn't exist when used by the control panel.	
E504	Abnormal Pattern Parameter Range of the Control Panel	Pattern parameter range is abnormal when used by the control panel.	Press RESET key to enter parameter No. 67 and restore the default setting
E505	Abnormal Pattern Format of the Control Panel	Pattern format is abnormal when the control panel reads pattern sewing data	Select other patterns
E506	The Storage Space for Extrapolation Patterns Full	When patterns are imported to the control panel via USB, the storage space for such patterns is found full.	Use parameter No. 62 to export patterns stored and format the storage area. Then try to import patterns again.
E507	Extrapolation Pattern Pormat Abnormal	Pattern data is found abnormal when its format data is read by the control panel	Use parameter No. 62 to format the storage area
E508	Patterns imported via USB already exist	Patterns with same numbers are found when patterns are imported via USB	Change the pattern number of the patterns to be imported
E509	USB Patterns Not Found	The pattern number to be imported can not be found after USB connection	Import the existing patterns first
E510	Extrapolation patterns delete error	The pattern number to be deleted can not be found	Delete the existing patterns first

E511	Extrapolation patterns read error	The pattern data is abnormal when read by the control panel	Select other patterns
E512	USB storage device error	It is abnormal to read the USB storage device in case of pattern import and export.	Change the USB storage device
E513	Machine type parameter error	The machine type data read by the control head is not within the set range.	Press RESET key to automatically enter parameter No. 241 to save the machine type
E515	Main control firmware program check error	The firmware file fails the check before program update via USB	Check whether firmware program file "mControl" is under the "update" directory of the U disk
E516	Main control firmware program update failure	Update failure is caused by error occurring during the main control firmware program update	Check the update file and update again
E517	Panel firmware program not found	The update file is not found in the U disk when update	Check whether firmware program file "Kdpanel" is under the "update" directory of the U disk
E518	Panel firmware program check error	The firmware file fails the check before program update via USB	Check whether firmware program file "Kdpanel" is under the "update" directory of the U disk and whether the file is valid
E519	Panel firmware program update failure	Update failure is caused by error occurring during the panel firmware program update	Check the update file and update again
E600	Pedal not in the middle position	Pedal is depressed when entering the ready sewing status	Make sure the pedal is not depressed when entering the ready sewing status
E601	Air valve (fan) problem	After start, the system detects abnormal signal about the voltage of the air valve or fan	Shut down the machine to check if there is any short circuit
E602	Motor running abnormal	When the main shaft motor is running, the range of the electrical angle is abnormal at 0°	Shut down the machine to check the motor encoder
E603	Emergency stop switch not at normal position	Before start the emergency stop switch is found pressed down	Manually solve the problem

E604	Machine stop due to aging	In aging mode, the machine stops.	Shut down the machine
E680	Stepping Close Loop DSP1(X25/X27) Communication Error	The verification of the received order at stepping board is failed	Check the connection of SPI communication cable
E681	Stepping Close Loop DSP1 1 st Route (X27) Over-Current	Large current is detected by hardware	At first, please check motor. Then check the resistance and sensor value. If the motor is ok, user should check the hardware on stepping board
E682	Stepping Close Loop DSP1 1st Route (X27) Position Error	The detected encoder response position is not same to the position set tin order	Change the stepping motor to open loop mode and run it. If the motor can work normally, the motor should be ok. If the motor can not work normally, user should check the driving part on the stepping board and the motor itself. After the above works, user should check the encoder. Make sure the connection and the condition of the encoder cable is ok. And make sure the signal response part on the stepping board and the encoder itself is ok.
E683	Stepping Close Loop DSP1 1st Route (X27) Over-speed	The system will give this warning when it detects the abnormal motor speed via the encoder response signal	The checking method is same to that in Position Error
E685	Stepping Close Loop DSP1 2nd Route (X25) Over-Current	Large current is detected by hardware	At first, please check motor. Then check the resistance and sensor value. If the motor is ok, user should check the hardware on stepping board

E686	Stepping Close Loop DSP12nd Route (X25) Position Error	The detected encoder response position is not same to the position set tin order	Change the stepping motor to open loop mode and run it. If the motor can work normally, the motor should be ok. If the motor can not work normally, user should check the driving part on the stepping board and the motor itself. After the above works, user should check the encoder. Make sure the connection and the condition of the encoder cable is ok. And make sure the signal response part on the stepping board and the encoder itself is ok.
E687	Stepping Close Loop DSP12nd Route (X25) Over- speed	The system will give this warning when it detects the abnormal motor speed via the encoder response signal	The checking method is same to that in Position Error
E690	Stepping Close Loop DSP2(X21/X23) Communication Error	The verification of the received order at stepping board is failed	Check the connection of SPI communication cable
E691	Stepping Close Loop DSP21st Route (X23) Over-Current	Large current is detected by hardware	At first, please check motor. Then check the resistance and sensor value. If the motor is ok, user should check the hardware on stepping board
E692	Stepping Close Loop DSP21st Route (X23) Position Error	The detected encoder response position is not same to the position set tin order	Change the stepping motor to open loop mode and run it. If the motor can work normally, the motor should be ok. If the motor can not work normally, user should check the driving part on the stepping board and the motor itself. After the above works, user should check the encoder. Make sure the connection and the condition of the encoder cable is ok. And make sure the signal response part on the stepping board and the encoder itself is ok.
E693	Stepping Close Loop DSP21st Route (X23) Over- speed	The system will give this warning when it detects the abnormal motor speed via the encoder response signal	The checking method is same to that in Position Error

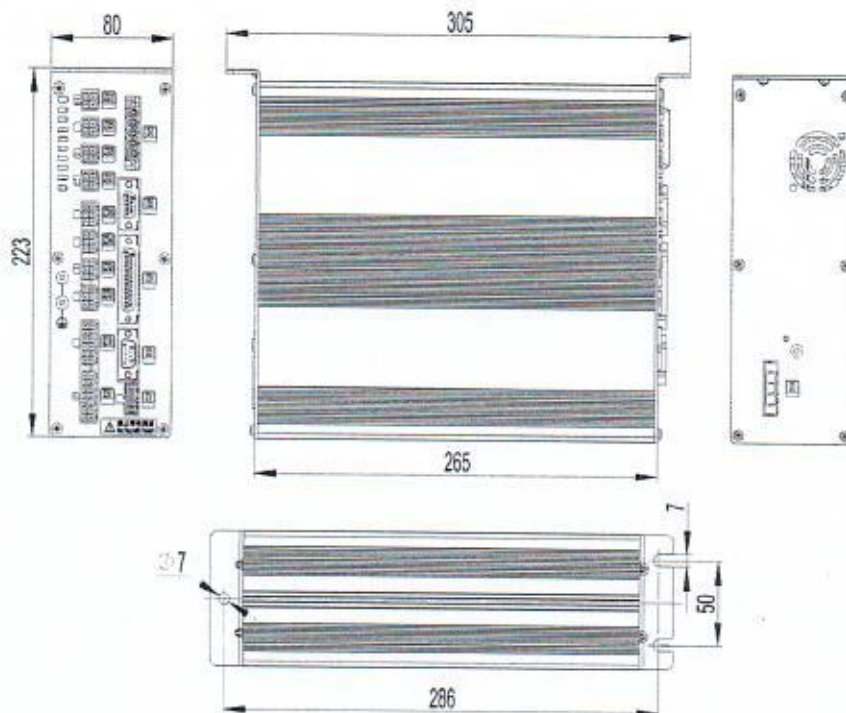
E695	Stepping Close Loop DSP22nd Route (X21)Over-current	Large current is detected by hardware	At first, please check motor. Then check the resistance and sensor value. If the motor is ok, user should check the hardware on stepping board
E696	Stepping Close Loop DSP2 2nd Route (X21) Position Error	The detected encoder response position is not same to the position set tin order	Change the stepping motor to open loop mode and run it. If the motor can work normally, the motor should be ok. If the motor can not work normally, user should check the driving part on the stepping board and the motor itself. After the above works, user should check the encoder. Make sure the connection and the condition of the encoder cable is ok. And make sure the signal response part on the stepping board and the encoder itself is ok.
E697	Stepping Close Loop DSP2 2nd Route (X21) Over- speed	The system will give this warning when it detects the abnormal motor speed via the encoder response signal	The checking method is same to that in Position Error
E730	Encoder error	The Encoder of main-shaft Motor is no signal	Check the cable of main-shaft motor
E733	MainShaft Over-current	Motor stop	If there is no machenic problem, then check the connection of the main shaft encoder
E735	Current abnormal when stop	Over-current occurs during the stop process of the main shaft	Turn off the power and repower the machine after a while. Change the main shaft motor if the motor is damaged; if problem remains, change the main board.
E736	Main board IPM sudden over-current	The current for the main board IPM drive module is too much within a short period of time	Turn off the power and repower the machine after a while. Change the main shaft motor if the motor is damaged; if problem remains, change the main board.
E737	Main board IPM multiple over-current	Over-current happens repeatedly to the main board IPM drive module after power on	Turn off the power and repower the machine after a while. Change the main shaft motor if the motor is damaged; if problem remains, change the main board.
E740	Main Shaft Over-speed	The system detects the actual speed of the main shaft motor exceeding the speed limit	Turn off the power and repower the machine after a while.
E 811	Overvoltage Error	The voltage of power is over the specified value.	Confirm the voltage of power

E 813	Low Voltage Error	The voltage of power is too low.	Confirm the voltage of power.
E 901	Main shaft driver abnormal	The error is detected in main shaft driver.	Turn off the power and repower the machine after a while.
E 902	Stepping board 90V power supply error	Stepping board 90V short circuit,	Turn off the power supply and then turn it on again after a while.
E 903	Stepping driver Error	Over-current occurs to stepping drive board.	Turn off the power and repower the machine after a while.
E 904	24V power supply error,	24V over-current	Turn off the power supply and then turn it on again after a while.
E 907	X Origin Search Error	X origin sensor doesn't change.	Turn off power and check the connections of CZ021 on head signal circuit board and X9 on control box.
E 908	Y Origin Search Error	Y origin sensor doesn't change.	Turn off power and check the connections of CZ022 on head signal circuit board and X9 on control box.
E909	Thread-trimming Motor Origin Search Error	Thread-trimming origin sensor doesn't change.	Turn off power and check the connections of CZ022 on head signal circuit board and X9 on control box.
E 910	Presser Origin Search Error	Presser origin sensor doesn't change.	Turn off power and check the connections of CZ025 on head signal circuit board and X9 on control box.
E 913	Thread-catching Origin Search Error	Thread-catching origin sensor doesn't change.	Turn off power and check the connections of CZ026 on head signal circuit board and X9 on control box.
E 916	Communication Error between Main-board and Stepping Board	Communication between Main-board and Stepping Board is down.	Turn off the power and repower the machine after a while. Check the connections of the communication cable, main board and drive board.
E920	Stepping Software Version Error	The software versin for the stepping board is false.	Change the stepping board or update the stepping board program.
E943	Machine Head Board Parameter Abnormal with Lower Computer	The lower computer read abnormal parameter from the machine head board.	Check the machine head board and the connection of X9 cable. Press RESET key to use parameter No. 67 to restore the parameters of the machine head board.

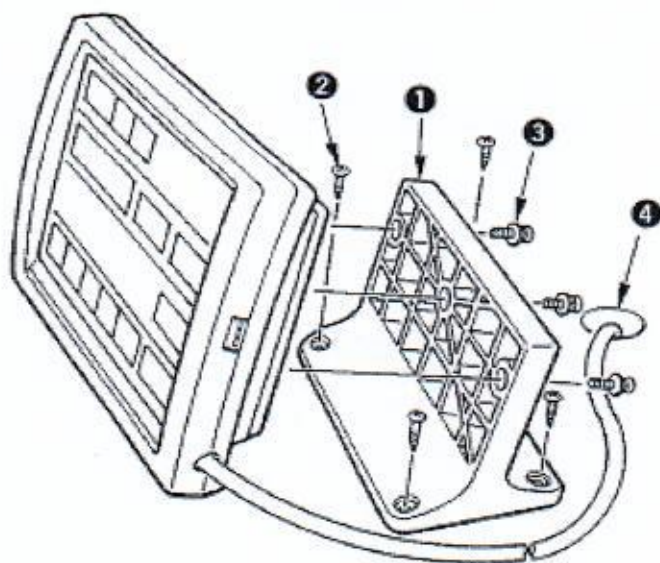
E946	Control Panel Circuit Board EEPROM Read and Write Error	Control panel circuit board can not read and write EEPROM.	Turn off the power and repower the machine after a while.
E999	Undefined Error	The control panel can not identify the error code sent by the lower computer.	Shut down the machine and update the control panel program.

7 Appendix 2

7.1 Installation Size of Control Box



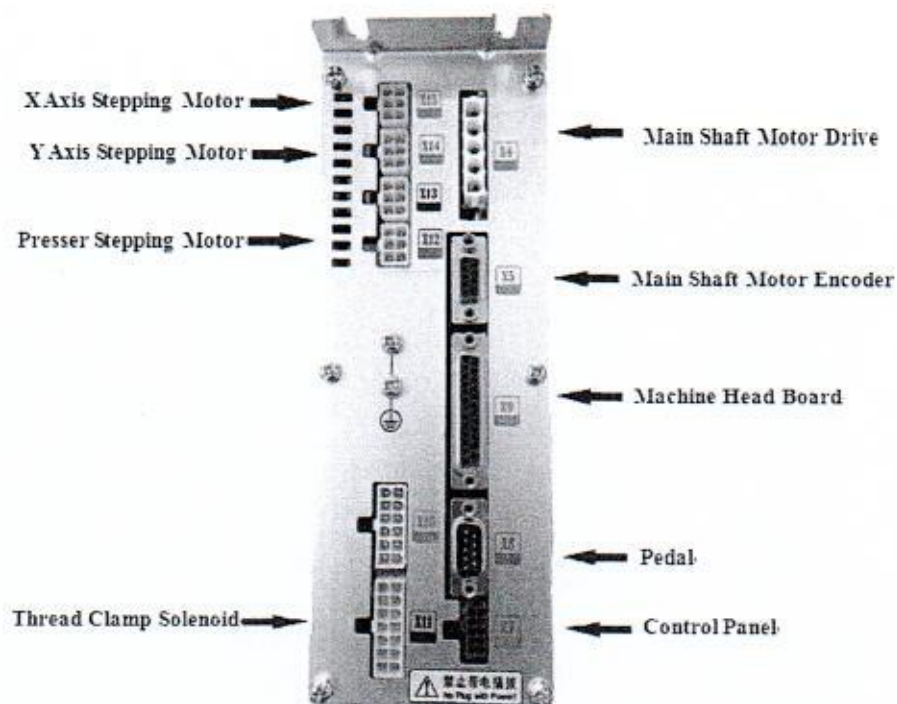
7.2 Installation Size of Operation Box



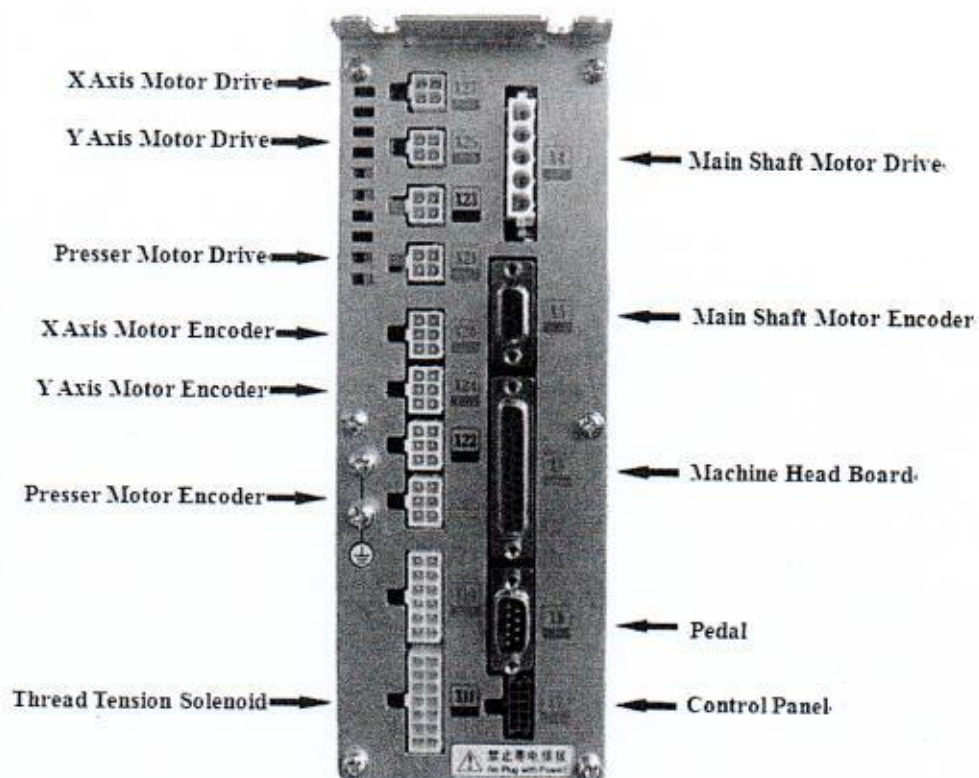
7.3 Diagram of Connection of the External Cable and Control Box

1、MSC201 Control Box Back Wiring Interface Diagram

Note: the external cables bear corresponding serial number, and please check carefully before connection (refer to diagram No. 5).

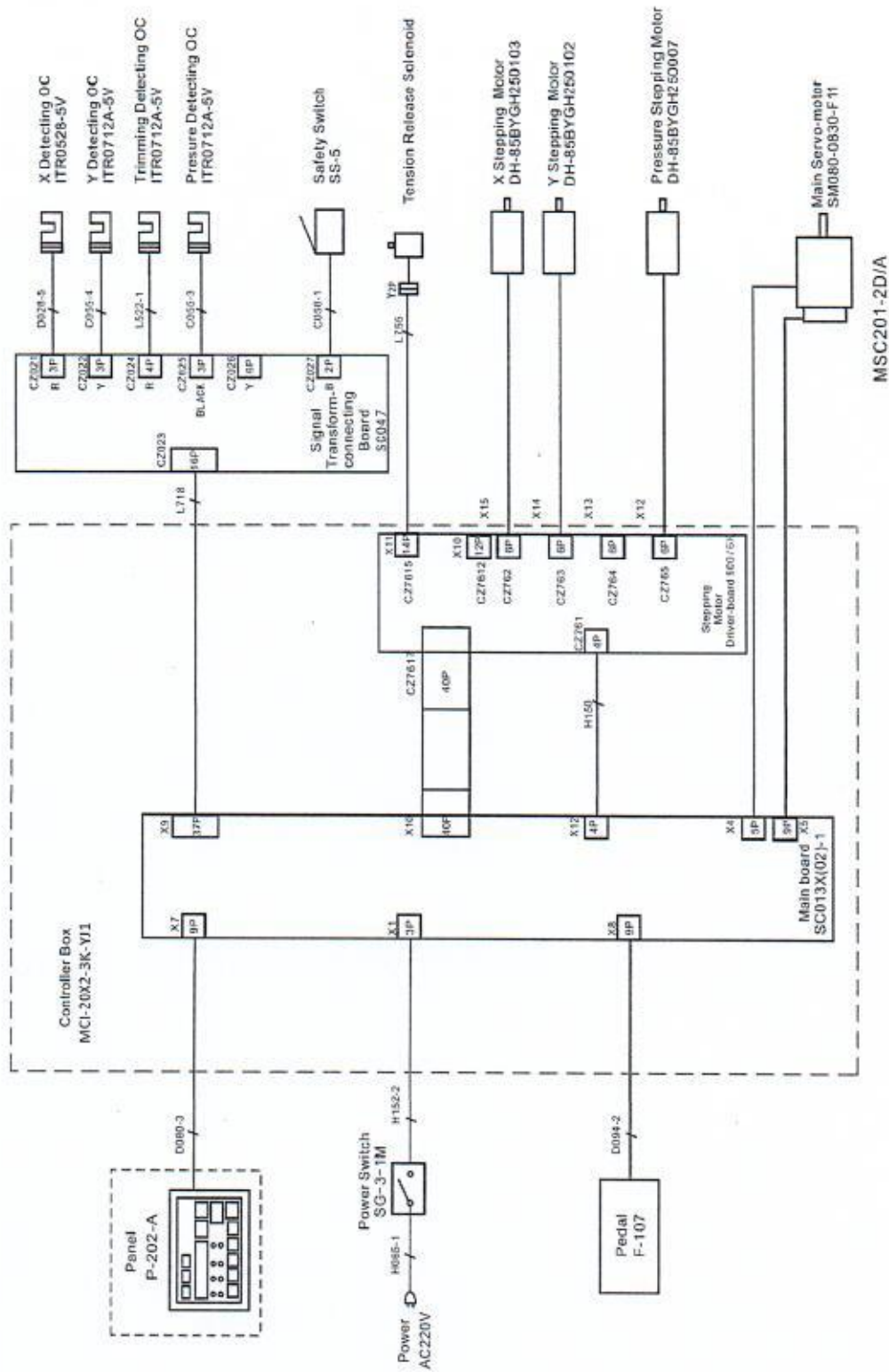


2、MASC201Control Box Back Wiring Interface Diagram



7.4 The Control System Diagram

1、MSC201-2D/A



2、MASC201-2D/A

