SC511 (9820)

Computerized Control System for

Eyelet Buttonhole Machine

Version:2010-01

Foreword

Thank you for using Dahao 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 injuring. The signs and definitions of Marks are shown in below:

⚠ 危险 Danger	The incorrect operation due to negligence will cause the serious personal injury or even death.
⚠ 注意 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

⚠ 危险 Danger	
	For opening the control box, please turn off the power and take away the plug from socket firstly, then wait for at least 5 minutes before opening the control box. Touching the part with high voltage will cause the person injury.
⚠ 注意 Caution	
使用环境 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. 强电气干扰源可能会影响缝纫机的正常操作.
	电源电压的波动应该在额定电压的±20%以内的环境下使用. 电压大幅度的波动会影响缝纫机的正常操作，需配备稳压器.
	环境温度应在 5℃~35℃的范围内使用. 低温或高温会影响缝纫机的正常操作.
	相对湿度应在 45%~85%的范围内，并且设备内不会形成结露的环境下使用. 干燥、潮湿或结露的环境会影响缝纫机的正确操作.
	压缩空气的供气量应大于缝纫机所要求的总耗气量.压缩空气的供气量不足会导致缝纫机的动作不正常.
	万一发生雷电暴风雨时，关闭电源开关，并将电源插头从插座上拔下.雷电可能会影响缝纫机的正确操作.
安装	

	请让受过培训的技术人员来安装缝纫机.
	安装完成前，请不要连接电源. 如果误按启动开关，缝纫机动作会导致受伤.
	缝纫机头倒下或竖起时，请用双手操作.不要用力压缝纫机. 如缝纫机失去平衡，缝纫机滑落到地上会造成受伤或机器损坏.
	必须接地. 接驳地线不牢固，是造成触电或误动作的原因.
	所有电缆应固定在离活动部件至少 25mm 以外处.另外，不要过度弯曲或用卡钉固定得过紧.会引起火灾或触电的危险.
	请在机头上安装安全罩壳.

缝纫	
	本缝纫机仅限于接受过安全操作培训的人员使用.
	本缝纫机不能用于除缝纫外的任何用途.
	使用缝纫机时必须戴上保护眼镜. 如果不戴保护眼镜，断针时机针折断部分可能会弹入眼睛造成伤害.
	发生下列情况时，请立即切断电源.否则误按下启动开关时，会导致受伤. 1.机针穿线时　　2.更换机针时　　3.缝纫机不使用或人离开缝纫机时
	缝纫过程中，不要触摸任何运动部件或将物件靠在运动部件上，因为这会导致人员受伤或缝纫机损坏.
	如果缝纫机操作中发生误动作，或听到异常的噪声或闻到异常的气味，应立即切断电源.然后请与购买商店或受过培训的技术人员联系.
	如果缝纫机出现故障，请与购买商店或受过培训的技术人员联系.
维护和检查	
	只有经过训练的技术人员才能进行缝纫机的维修、保养和检查.
	与电气有关的维修、保养和检查请及时与电控厂家的专业人员进行联系.
	发生下列情况时，请关闭电源并拔下电源插头.否则误按启动开关时，会导致受伤. 1.检查、调整和维修　　2.更换弯针、切刀等易损零部件
	在检查、调整和修理任何使用气动设备之前，请先断开气源，并等压力表指针下降到“0”为止.

	在必须接上电源开关和气源开关进行调整时，务必十分小心遵守所有的安全注意事项.
	未经授权而对缝纫机进行改装而引起的缝纫机损坏不在保修范围内.

Content

1 General Information

1.1General

SC511 Series Computerized Control System for Sewing Machine is characterized by the advanced technology it adopted. Its main shaft motor features large torque, high efficiency, stable running and low noise by adopting the advanced AC Servo Control Technology; its operating panel can meet various demands from clients in attaching; its structure of system is designed in German style which is easy to repair and install; and its system control software can be updated via U disk, providing convenience to client in improving the function of product continuously.

1.2 Functions & Parameters

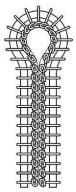
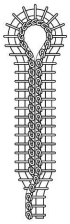
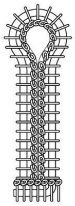
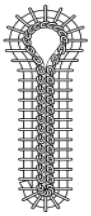
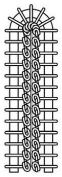
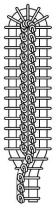
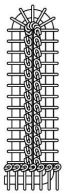
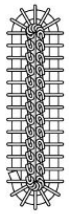
For the functions and parameters of SC511 Series AC Servo System, please refer to Table 1:

Table 1: Comparison of Functions & Parameters

No.	Model / Items	SC511
1	Usage	Man's cloth, Women's dress, Leisure wears, Jeans and Trousers
2	Sewing Speed	1000—2500rpm
3	Shapes of Stitch Form	Without Bar-tacking Sewing
		Taper bar-tacking Sewing
		Linear bar-tacking Sewing
		Round Bar-tacking Sewing
		Radial Tacking
4	Length of Buttonhole	Eyelet 8-42mm, Linear Buttonhole 5-42mm
5	Stitch Form Pitch	0.5-2.0mm
6	Stitch Form Width	1.5mm—5.0mm; Mechanical adjustment: 1.5—4.0mm
7	Length of Taper Bar-tacking	0-20mm
8	Presser Height	Standard 12mm（Max 16mm）
9	Start Mode	Double-pedal Switch or Hand Switch
10	Cloth-feeding Mode	X/Y/Z 3 Pulse Motor Intermittent Feeding
11	Drive Mode for Trimming Upper/ Bottom Thread	Driven by Solenoid Valve
12	Drive Mode of Knife	Driven by Solenoid Valve
13	Safety Device	Emergency Stop Switch, Head Turn-over Switch and Circuit Automatic Protection Function
14	Method for Pattern Input & Update	U Disk
15	Available Language in	Chinese & English

	Operation Panel	
16	Upper Axis Motor	Small AC Servo Motor 400W, Belt Transmission Drive Mode
17	Air Pressure	Main Adjuster: 0.5MPa; Air-hammer Pressure Adjuster:0.4Mpa
18	Power Supply	AC175V~AC265V

1.3 Shape of Stitch Form

Eyelet Buttonhole			
			
Without Bar-tacking	Taper Bar-tacking	Linear Bar-tacking	Round Bar-tacking
Linear Buttonhole			
			
Without Bar-tacking	Taper Bar-tacking	Linear Bar-tacking	Round Bar-tacking
Radial Hole			
			

1.4 Standardization

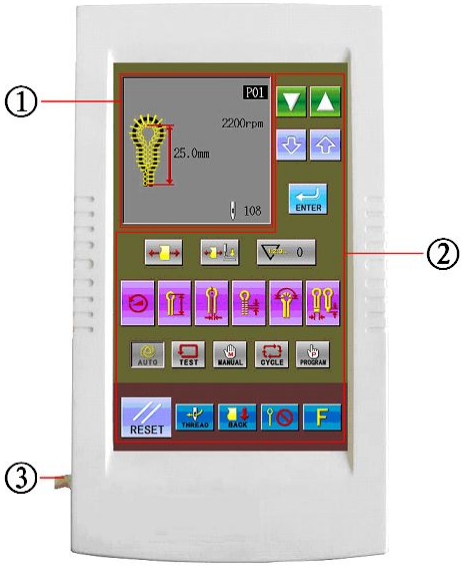
The functional keys attach the figure known by the public. Because the figure is the internal language, users from any country can recognize it.

1.5 Operation Method

By using TFT touching-panel screen, this system features the user-friendly interface and easy operation. For specific method of operation, please refer to the operation instruction.

2 Basic Operation Instruction

2.1 Operation Panel



（Front）

（Right Side）

① Display Area of Pattern Data

② Area for Functional Keys

③ Cable

④ U Disk Port

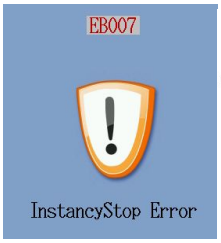
2.2 Basic Operation

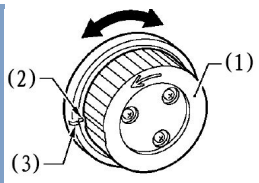
① Turn on the power supply

After user turns on the power supply, the following content will be successively displayed in the Pattern Data Display Area on the monitor:

Welcome to use SC511 Series Buttonhole Machine→SC511-00（01 or 02）→Create Data→ Please Start SW to Initialize.

Note: if figure A “EB012” is displayed on the operation panel when user turns on the power supply, please turn the wheel (1) in the directions shown in figure B and make the print (2) face to the gap (3) directly.

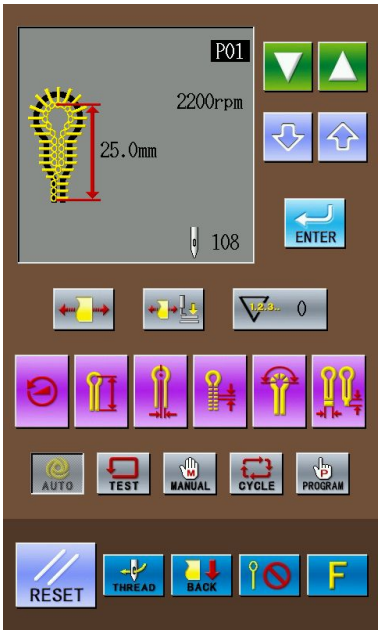




（A） （B）

② Step Pedal for Start

After user stepped the right pedal for start, the feeding board will move to the position where the cloth is located. In the operation panel, the readiness status of the previous operation mode (it might be Auto Mode, Manual Mode, Test Mode, Cycle Mode or Program Mode) will be displayed.



Note：The “Readiness Status” is the status before the next action when the system moves to a mode.

2.3 Settting Methods of Patten Program

2.3.1 Interface for Inputting Sewing Data

The data input interface is shown In the right figure. For detailed functional instructions, please refer to Table 1: Button Instruction Table.

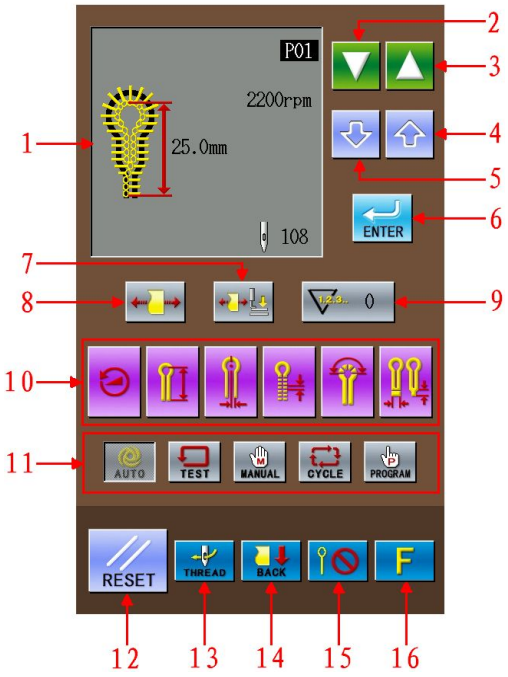
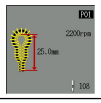
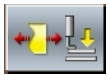
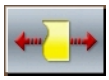
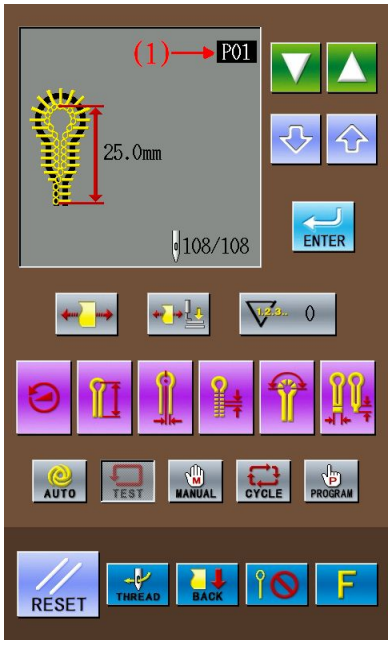


Table 1：Button Instruction Table

No.	Figure	Functions	Remarks
1		Display of Sewing Shape	Display the pattern number, patter shape, length, stitch number, sewing speed and so on.
2		Decrease Number of Software & Parameter	
3		Increase Number of Software & Parameter	
4		Increase Value & Parameter Content	
5		Decrease Value & Parameter Content	
6		ENTER（Confirmation）Key	Confirm the parameter and the pattern data.
7		Cloth-tightening before Dropping Presser：  Cloth-tightening after Dropping Presser： 	The default setting is the Cloth-tightening after Dropping Presser. If user sets it as Cloth-tightening before Dropping Presser, this parameter will return to default setting when one pattern is completed

No.	Figure	Functions	Remarks
8		Cloth-tightening Permitted:  Cloth-tightening Forbidden: 	The default setting is the Cloth-tightening Permitted. If user sets it as Cloth-tightening Forbidden, this parameter will return to default setting when one pattern is finished.
9		Display the value in Counter	
10		Hot Keys	Quickly change 6 parameter relating to the pattern
11		Sewing Mode	Five available sewing modes: Auto, Manual, Test, Cycle and Program
12		RESET	Release the display of incorrect information
13		THREAD	Have access to the threading mode
14		FRONT:  BACK: 	Shift the positions of the feeding board. Alternative positions: Front & Back.
15		Cut-before-Sewing:  Cut-after-Sewing:  Non-Cut: 	Set the actions of knife
16		Parameter Management	Have access to parameter setting

2.3.2 Setting of Pattern Program



It is advised to preset the pattern data parameters which are frequently used so that user would only need to select the pattern code to have access to the set pattern in the future usage, thus saves the time for resetting the parameters at each time.

The 20 patterns can be registered at most, whose parameters can be altered at any time.

When leaving the factory, pattern codes from P01 ~P20 save the default pattern program (The patterns from P01 ~ P20 are all the same.)

① Press TEST

② Select a pattern code from P01~P20 (1) for changing the content.

Pattern code (1) will change in the following sequence: P01 → P02 → … P20 → C1→C2…C9, at each pressing ▲. （press ▼ to change the code in the contrary direction.）

③ Press PROGRAM

The pattern data display area will display the parameter code and the specific parameter information at previous time.

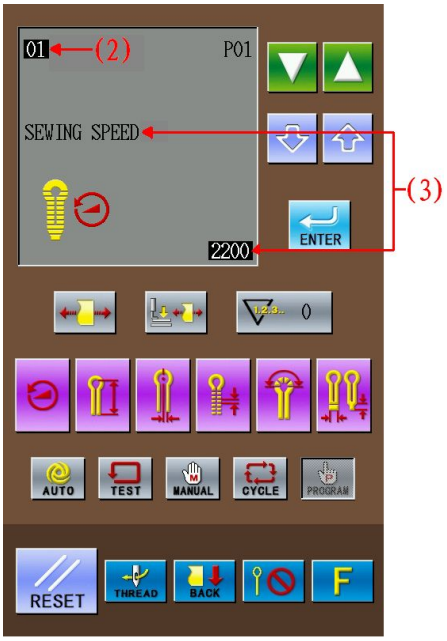
④ Press ▼ ▲ to select the parameter code.

⑤ Press ▽ △ to change the content of parameter.

The shining parameter information (3) means the content is uncertain

⑥ Press ENTER to confirm the changed content.

If the parameter information is still, that means it has been confirmed. If press any key among ▼, ▲, AUTO, TEST, MANUAL instead of ENTER at (3) shining, the changed parameter (3) will be abandoned and return to the original value.



⑦ Repeat the operation from 4 to 6 to change other parameters.

2.3.3 About Hot Keys

Among the Hot Keys (4), the following 6 parameters are registered for their frequent usage:

（5） Sewing Speed (Parameter code No.01)

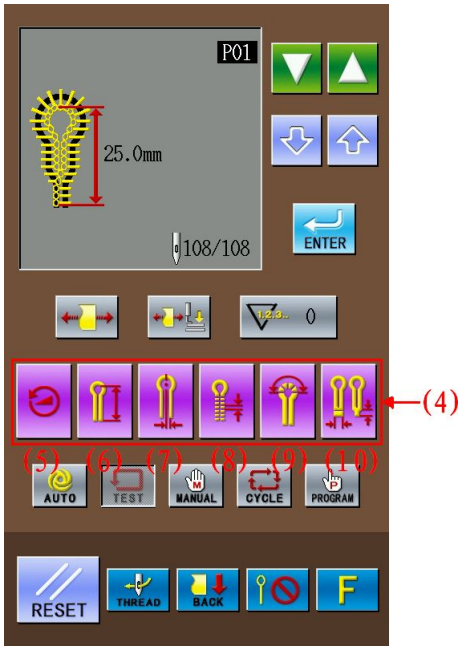
（6） Length of Lockstitch Sewing at Buttonhole (Parameter code No.02)

（7）Pitch of Knife (Parameter code No.03）

（8） Distance between Stitch Form (Parameter code No.04)

（9） Stitch Number at Eyelet Part （Parameter code No.05）

（10） Length of Bar-tacking (Parameter code No.06、No.08、No.10)



Note: The different bar-tacking sewing types set in parameter code No.40 are corresponding to the various values of bar-tacking sewing length parameter (10).

2.3.4 List of Pattern Parameters at S level

According to the set content of other parameters, the default value of some parameters may be unchangeable or invalid.

Parameter Code	Content	Range	Unit	Default Value
S01	Sewing Speed	1000~2500rpm	100	1800rpm
S02	Length of Lockstitch Sewing at Buttonhole	5~50mm	0.5	25mm
S03	Pitch of Knife	-2.5~0.5mm	0.05	0.2mm
S04	Distance between Stitch Form	0.5~2.0mm	0.1	1.0mm
S05	Stitch Number at Eyelet Part	4~20 Stitches	1	9 Stitch

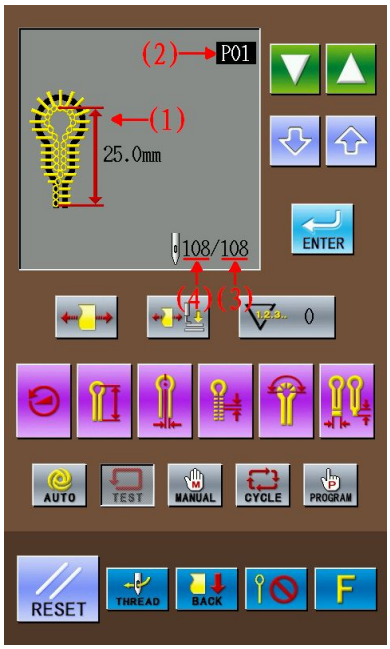
Parameter Code	Content	Range	Unit	Default Value
S06	Length of Taper 	1~20mm	1	6mm
S07	Offset 	0.5~2.0mm	0.1	1.5mm
S08	Length of Linear Bar-tacking 	2.0~6.0mm **（Each side at 3.0mm as MAX）**	0.1	5.0mm
S09	Stitch Number of Linear Bar-tacking 	5~18 Stitches	1	7 Stitches
S10	Stitch Number of Round Bar-tacking 	5~17 Stitches	1	7 Stitches
S11	Shape of Knife 	1~6 **（select the proper knife, according to the different knife code）**	1	2
S12	Sewing Width Adjustment 	-1.0~1.0mm	0.1	0.0mm
S13	Eyelet Part Low Speed 	-600~0rpm **（This parameter takes the default value of the parameter 01 sewing speed as standard.）**	100	0rpm
S14	Speed of Linear Bar-tacking 	1000~2500rpm **（if the sewing speed is lower than the linear bar-tacking speed, these two speeds will become equal.）**	100	1800rpm
S15	Stitch Number of Slow-start 	0~3 stitches	1	0 stitch
S16	Speed of Slow-start 	400~1500rpm **（if the sewing speed is lower than the slow-start speed, these two speed will**	100	700rpm

Parameter Code	Content	Range	Unit	Default Value
		become equal）		
S17	Knife Adjustment in X Direction 	-0.5~0.5mm	0.05	0.0mm
S18	Knife Adjustment in Y Direction 	-0.7~0.7mm	0.05	0.0mm
S19	Stitch number of bar-tacking at start 	0~4 Stitches	1	0 Stitch
S20	Stitch number of bar-tacking in end 	0~4 Stitches	1	0 Stitch
S21	Adjustment in X Direction 	-1~6	1	0
S22	Adjustment in Y Direction 	-1~6	1	0
S23	θ1Adjustment 	-3~3	1	0
S24	θ2Adjustment 	-3~3	1	0
S25	Taper Bar-tacking Angle 	-5~5	1	0
S26	Adjustment on Bar-tacking Width 	-1.0~0.0mm	0.1	0.0mm
S27	Coincidence Amount of Bar-tacking 	0.0mm~2.0mm	0.1	1.0mm
S28	Adjustment of Bar-tacking in X Direction 	-1.0mm~1.0mm	0.1	0.0mm
S29	Adjustment of incline angle of Bar-tacking	-3~1	1	0

Parameter Code	Content	Range	Unit	Default Value
				
S30	Reserved (For future use)			
S31	Pitch of bar-tacking at sewing-end 	20%~100%	5%	100%
S32	Stitch Number of Round coincidence 	1~4 Stitches（in 45°）	1	1 Stitch
S33	Stitch moving when without cutting 	1~2	1	1
S34	Cutting Size of Radial Hole 	2~5mm	1	2
S35	Stitch Number of Radial 	8~100 Stitches	1	20
S36	Coincident Stitch Number of Radial Hole 	1~5 Stitches（in 45°）	1	2
S37	Reserved (For future use)			
S38	Reserved (For future use)			
S39	Pattern Copy	OFF~P01~P20	1	OFF
S40	Type of bar-tacking 	1：No Bar-tacking 2：Taper Bar-tacking 3：Linear Bar-tacking 4：Round Bar-tacking	1	2

2.4 Confirm Pattern under Test Mode

Test Mode is that only cloth-feeding board works normally when the upper shaft keeps still. This mode is used to confirm the positional relation between needle and presser.



① **Press Test Key**

Press 

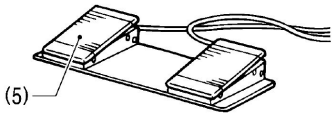
to display the stitch form (1), pattern code (2), total stitch number (3) and leftover stitch number in the pattern data display area.

② **Select the Pattern Code**

The pattern code will change in the following sequence: P01 → P02 → … P20 → C1→C2…C9…P01 at pressing the  . (Press  to reverse this sequence.)

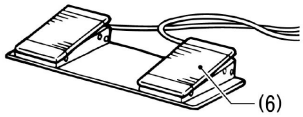
③ **Step Presser Pedal**

Step the left pedal (5) to lower the presser

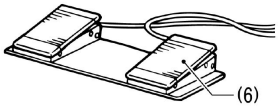


④ **Step the Start Pedal**

Step the right pedal (6) to make the cloth-feeding board move to the position of sewing start



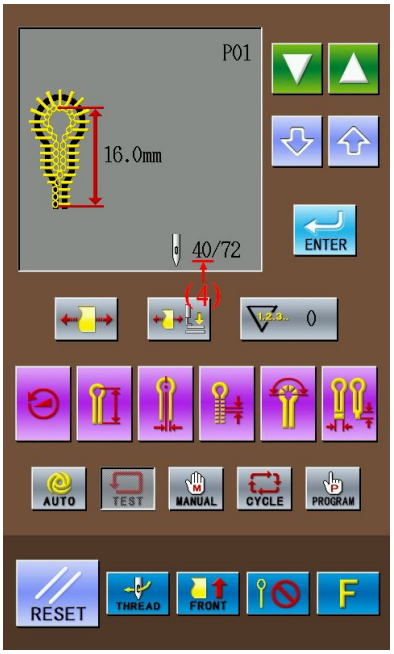
⑤ **Step Pedal（6）or press**  **to start the sewing under Test Mode.**



or 

（2 stitches will be sewn at each pressing.）

（Holding for continuous sewing）



Note: the leftover stitch number (4) displayed at the data display area will reduce 2 stitches at each time.

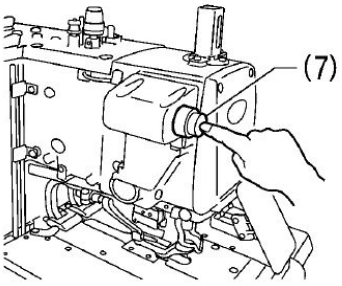
The buzzer will work at the last stitch.

No thread-trimming actions and knife actions in test mode.

⑥ **If user wishes the cloth-feeding board to return to the cloth setting position at the ending of the test:**

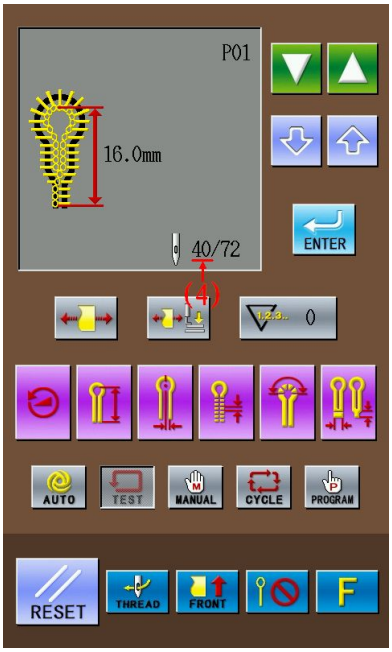
Please press Pause switch (7), and then press 

.



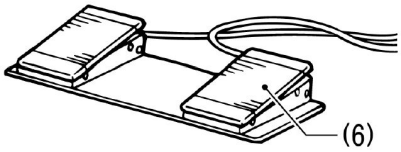
⑦ **During the cloth-feeding, if user wants cloth-feeding board to return to the former sewing position:**

Please press  , 2 stitches will be returned at each pressing. The leftover stitch number (4) will add 2 stitches at each time.



⑧ Last Stitch

Step Start Pedal (6) until the leftover stitch number turns to 0 and the cloth-feeding board returns to the position for setting cloth. After that, the pattern data area will display “END OF TEST FEED MODE”.

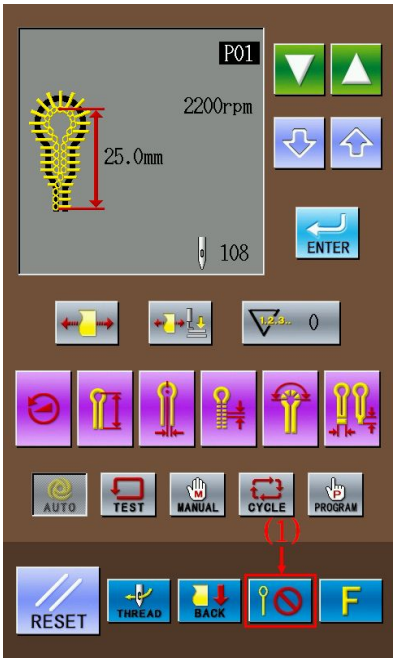


2.5 Shift of Knife Actions

① Non-Cut

No knife action during the sewing.

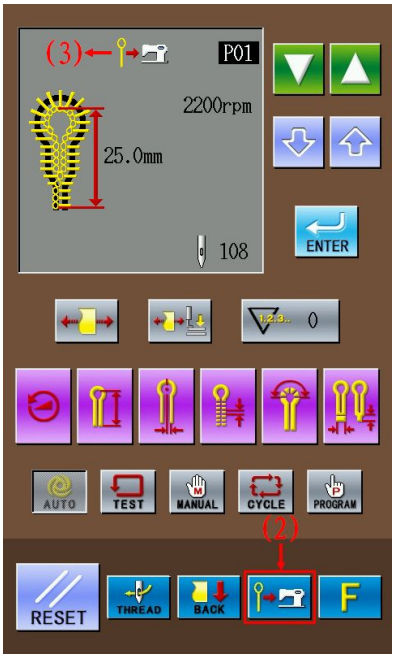
At this time, the interface shows as the picture at right. Press the Knife Mode Key to shift the status to Non-Cut (1).



② **Cut-before-Sewing**

The sewing actions are after the cutting.

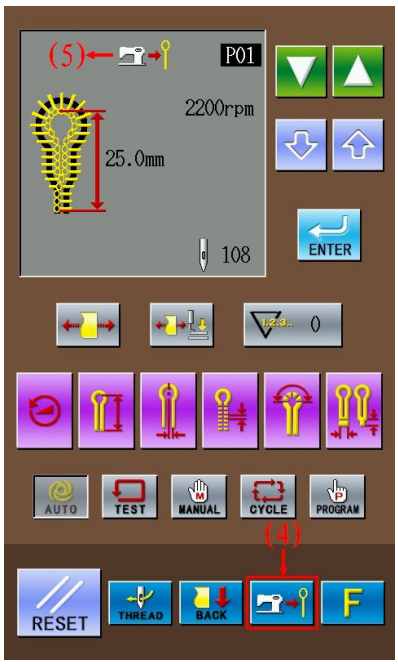
In the interface shown as the right figure, shift the Knife Mode to the status of Cut-before-Sewing (2). At this time, this mode will be displayed in area (3).



③ **Cut-after-Sewing**

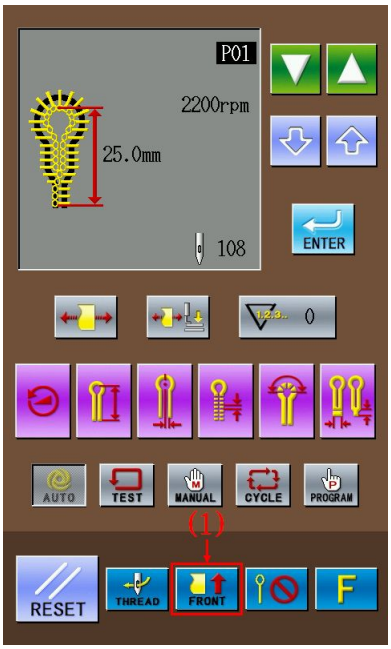
The sewing actions are before the cutting action.

In the interface as shown in right, press Knife Mode Key to shift the status to Cut-after-Sewing (4). At this time, this mode will be displayed at area (5).



2.6 Method for Shifting Cloth Position

Because this function can move the cloth-feeding board to a position more forward than standard position for setting cloth, it will be easy for setting the cloth. Especially at the status of Cut-after-Sewing, the time of the cycle is shortened.

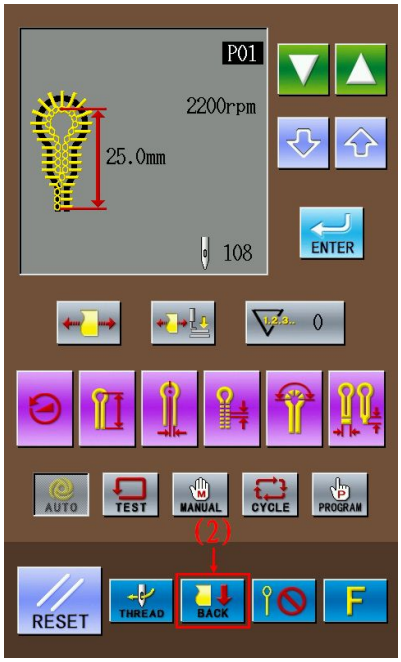


① **Move the cloth-feeding board to the front**

In the readiness status of Auto mode, Test mode or Manual mode, press Cloth Position Shift Key (1) to change the feeding mode to 

. At this time, the cloth-feeding board will be moved to the Front (position of sewing start).

Note：Front is the position nearer to the operator when he faces to the machine.



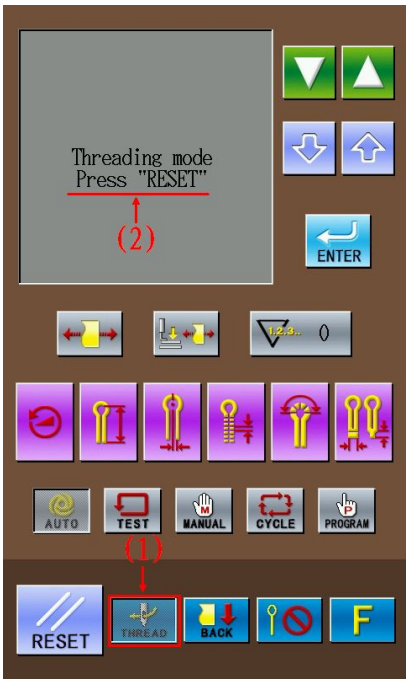
② **Move cloth-feeding board to backside (standard position for setting cloth)**

Press the Cloth Position Shift Key (2) again to change the cloth-feeding mode to 

. At the moment， the cloth-feeding board will return to the backside (the standard position for setting cloth).

2.7 Threading Mode

This mode is used in threading the upper thread. At threading mode, if the Z axis of needle rod turns 180 degree, the excitation of stepping motors on X, Y and Z axis will be cut off. At this time, the needle rod and cloth-feeding board can move freely so as to be easy for threading the upper thread.



① **Have access to threading mode**

In the readiness status of Auto mode, Test mode or Manual mode, press Threading Mode Key (1) to shift from cloth-feeding mode to threading mode. At this time:

1. The pattern data display area will have “Threading mode press ‘RESET’ ” (2).

2. The thread-holder goes into open status.

3. The buzzer rings and the needle rod returns for 180° , then the excitation of the stepping motors on X, Y & Z axis will be cut off

② **Threading Upper Thread**

After 3 minutes, the thread-holder will be turned off automatically.

③ **Finish of Threading Upper Thread**

After threading the upper threads, please press 

.

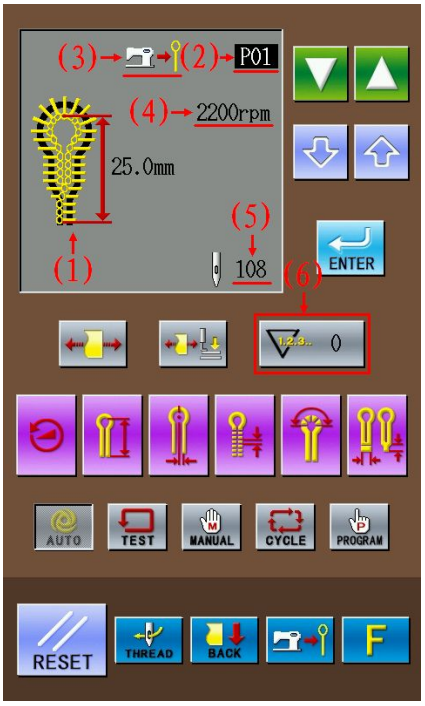
When the needle rod and cloth-feeding board are moved to origin for origin test, they will return to the position for setting cloth.

The thread-holder is off.

3 Instructions on Sewing Operations

3.1 Auto Mode

- For the automatic sewing at first time, do please perform the trial sewing.
- When using SC511 in the environment with low temperature, user shall perform the trial sewing for several times, so as to warm up the motor.



① **Press Auto Mode Key**

Press 

to show the Shape & Length Sewing Stitch Form (1), Pattern Code (2), Knife Action (3), Sewing Speed (4) and Total Stitch Number of Existing Pattern (5) at pattern data display area, as well as the Number of Production (6) at Production Counter Key.

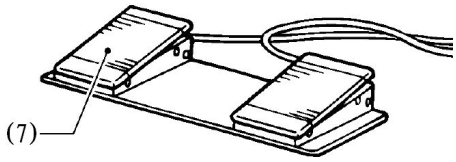
② **Press   to select the wanted pattern code (2)**

The pattern code will change in the following sequence: P01→P02→…P20→C1→C2…C9 at each pressing on  . Press  to change the code in the contrary direction.

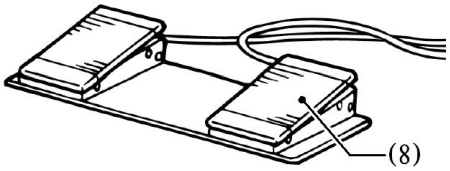
③ **Select the wanted action of knife (Non-Cut/ Cut-before-Sewing/ Cut-after-Sewing).**

Note: For the detailed shift method of Knife Action, please refer to **【 2.5 Shift of Knife Actions】**.

④ **Lay the fabric for sewing under the presser, step the presser pedal (7).**



⑤ **Step the start pedal (8) to start the sewing**

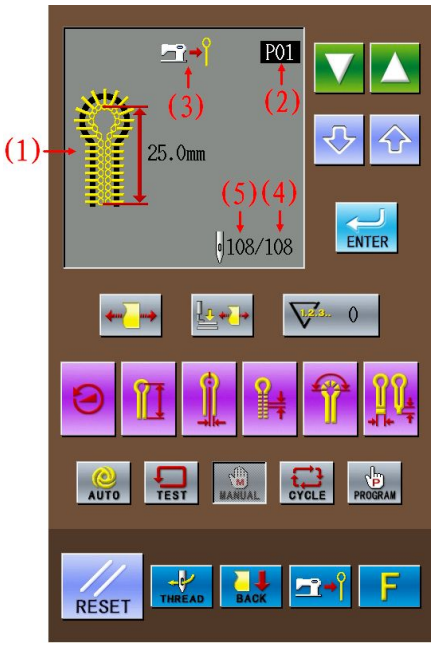


For sewing repetition, please repeat the operation in the 4th & 5th steps at above.

3.2 Manual Mode

⚠ Caution	
	**Due to the knife will act during the manual sewing, please keep hand away from the knife. Otherwise the operator may suffer serious injury.**

Under manual mode, turn the wheel to move the cloth-feeding board in stitch by stitch. This will simplify the operation in synchronizing adjustment of yarn-divider.



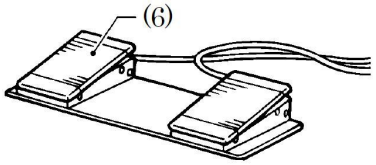
① **Press Manual Mode**

Shape of Sewing Stitch Form (1), Pattern Code (2), Knife Action (3), Total Stitch Number (4) and Leftover Stitch Number (5) are shown in the sewing data display area.

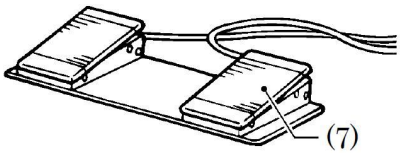
② **Press ▼▲ to select the wanted pattern code (2).**

The pattern code (2) will change in the following sequence: P01→P02→… P20→ C1 →C2…C9 at each pressing on ▲.

（Press ▼ to change the code in contrary direction.）



③ **Lay the fabric for sewing under the presser, step the presser pedal (6) to lower the presser.**

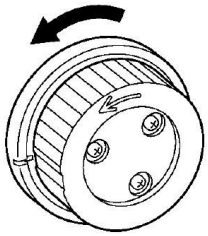


④ **Step start pedal (7) to move the cloth-feeding board to the position of sewing start.**

Caution：

When setting the knife action as “Cut-before-Sewing”, the operator shall look out for his hand at knife moving.

⑤ **Reverse of Hand-wheel at Upper Axis**



The cloth-feeding board will move to the sewing position of the next stitch at each turning round of upper axis hand-wheel. When the wheel reverses for half a cycle, the leftover stitch number (5) at sewing data display area will reduce 1 stitch

Caution：

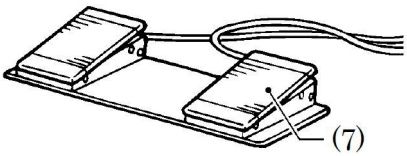
If the upper axis hand-wheel turns reversely, the cloth-feeding board will not move the shape with the set stitch form. Please don't turn the wheel reversely.

⑥ **For stopping the manual sewing, press emergence stop switch (8) when the cloth-feeding board returns to the position for laying cloth.**

The "Pause Switch Is Pressed In Sewing" is displayed on operation board. Press  to return to sewing interface and then press  .

⑦ **At Last Stitch**

The needle rod stops at the upper position of needle. Step start pedal (7) at this time.

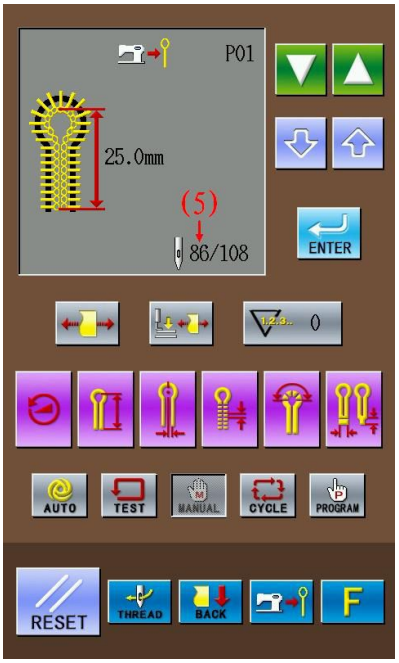


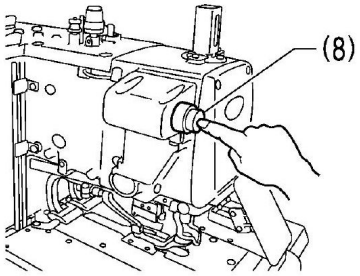
(Hold it until the cloth-feeding board returns to the position for laying cloth.)

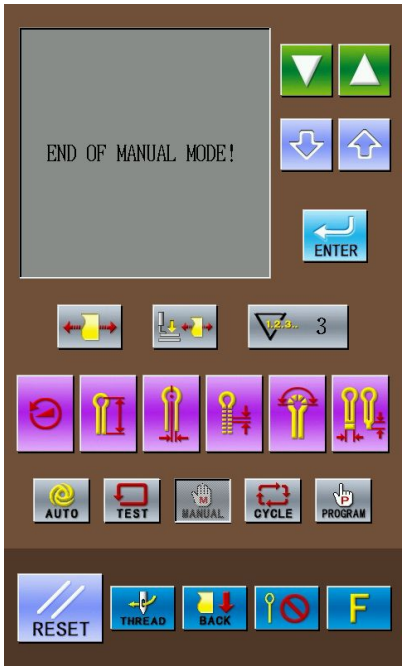
In thread-trimming actions, when the cloth-feeding board returns to the position for laying cloth, the system will hint "END OF MANUAL MODE" in the operation panel.

Caution：

When setting knife action as "Cut-after-Sewing", user shall look out the action of knife.







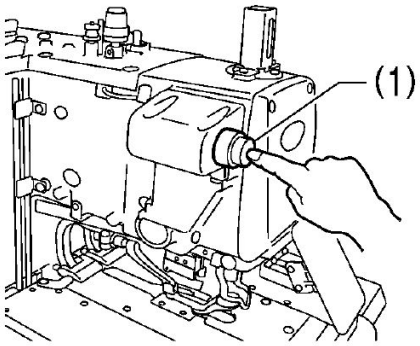
3.3 Pause Switch

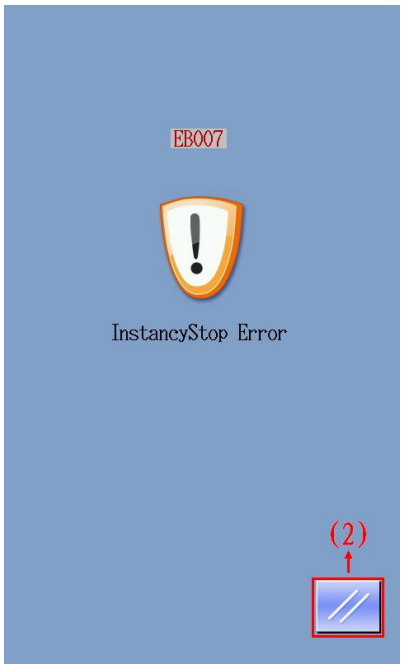
Pause in Auto Sewing

The pause switch is generally used for stopping the sewing machine at thread-breakage and other circumstance.

3.3.1 Methods for Pausing

During the sewing, press the pause switch (1) to stop the sewing machine, and then the operation panel will hint "InstancyStop Error".





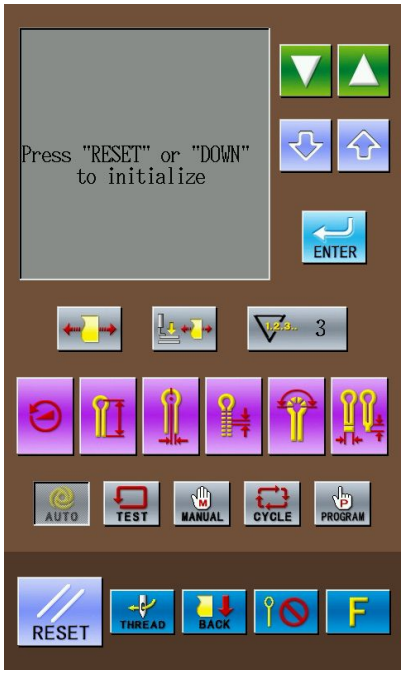
3.3.2 Method for Releasing Pause (For Stopping the Work)

① **Press (2)when the interface displays "Instancy Stop Error".（建议将此图标名改为 "Pause Error"）**

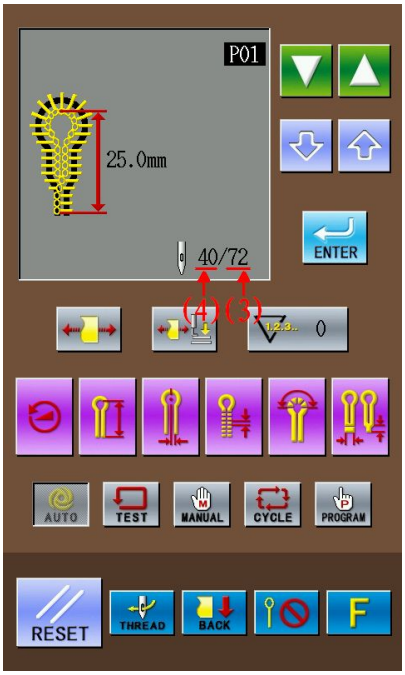
Then the operation penal will show the sewing interface, and the pattern data display area shows "Press 'Reset' or 'Down' to initialize".

② **Release the error causing the pause.**

③ **Press RESET. After the needle rod and the cloth-feeding board performs the origin test, they will return to the position for setting cloth.**



3.3.3 Method for Releasing Pause (For Continuing the Work)



① **Press**  **(2) when the interface displays "InstancyStop Error". （建议将此图标名改为 "Pause Error"）**

Then the operation penal will show the sewing interface, and the pattern data display area shows "Press 'Reset' or 'Down' to initialize".

② **Release the error causing the pause.**

If the upper thread is broken, press  to have access to the threading mode.

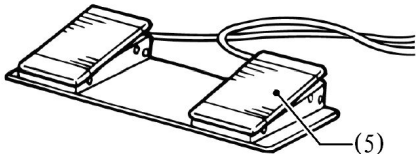
③ **Press**  **to display the total stitch number of pattern (3) and the leftover stitch number (4) in the pattern data display area.**

④ **Press**  **or**  **to move the cloth-feeding board according to the shape of pattern so as to confirm the position for continuing the sewing job.**

If the upper thread is broken, please press  to have access to threading mode.

Note: press  to proceed; press  to reverse. Holding means to keep proceeding or reversing.

⑤ **Select the position for continuing the sewing, step the start pedal (5) to continue the automatic sewing of the existing pattern.**



3.4 Usage Instructions on Cyclical Sewing Function

In the single pattern program (P01~P20), system can combine several edited single patterns together and register them into a "Cyclical Pattern Program" for continuous sewing, which is easy for using.

Cyclical Pattern Program：

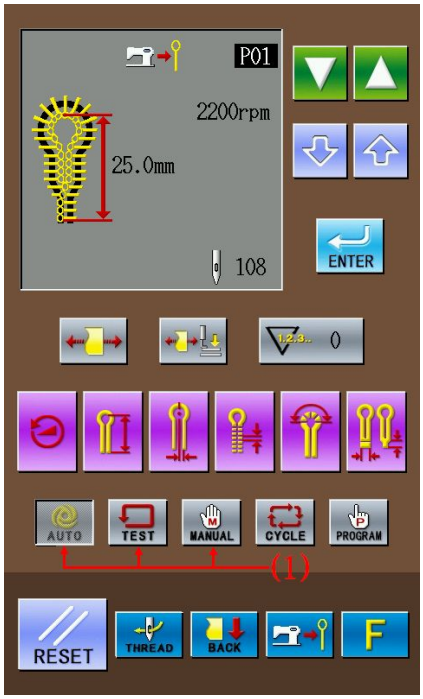
Max Amount for Cyclical Patterns	9 （C01~C09）
Max Amount of Single Pattern in a Cyclical Pattern	9 （S1~S9）(A single P pattern can be selected for many times)

Example：

We select a single pattern P01 (3 steps, with knife action) and a single pattern P03 (1 step, without knife action) to combine a cyclical pattern, which is set as C1 for example

The set contents of Cyclical Pattern Program C1：

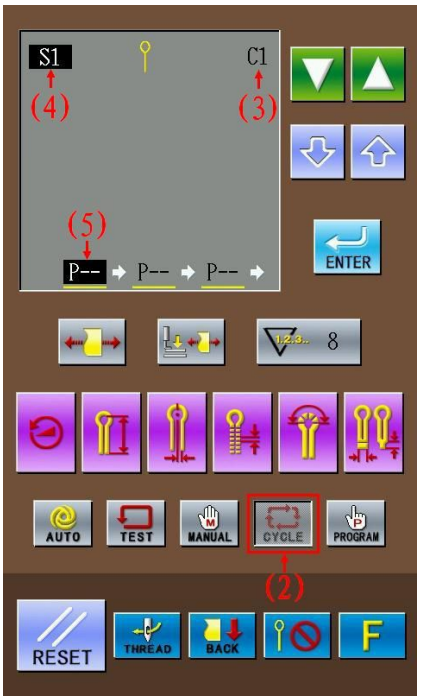
Step Code of C Pattern	S1	S2	S3	S4
Name of Single Pattern	P01	P01	P01	P03
Knife Action	Yes	Yes	Yes	No



① **Press the keys (1) at the right interface to select sewing mode in random.（Take the auto mode as example.）**

② **Press**  **to select C1, the pattern number of that cyclical pattern program.**

The pattern code will change in the following sequence: P01→P02→…P20→C1 →C2…C9…P01 at each pressing on  . （Press  to reverse the sequence.）



③ **Press Cycle Mode Key (2)**

The sewing data display area will show the following contents:

（3）Cyclic Program Code

（4）Step Code

（5）Pattern Content Set in S1.

④ **Press  to set the content of S1 (5) as <u>P01</u>**

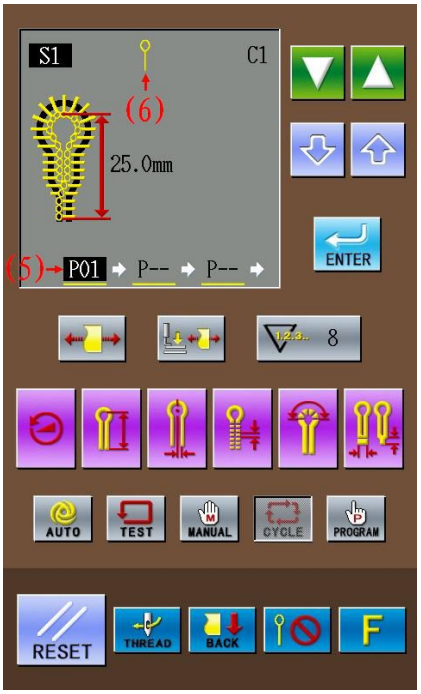
The "___" in "<u>P01</u>" means that this pattern has the knife action, therefore the knife mark (6) is shown in the sewing data display area

"--" in "P--" means the pattern in this step has not been set yet.

If you set the existing pattern as "P--", the content in the following steps will be deleted.

⑤ **Press  to confirm the changed content.**

At that time, the content of S1 (5) will not be shining any more.

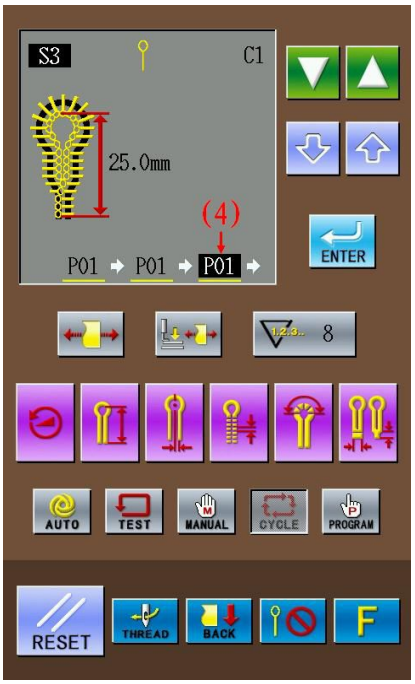


⑥ **Press  to change the step code（4）to S2.**

⑦ **Repeat the operations in steps 4 & 5 at above to set the content of S2 as "<u>P01</u>", which is as same as that of S1**

Repeat the operations in steps 4 & 5 at above to set the content of S3 as "<u>P01</u>", which is as same as that of S1

⑧ **Press  to confirm the changed content.**



⑨ **Press to change the Step Code （4）to S4.**

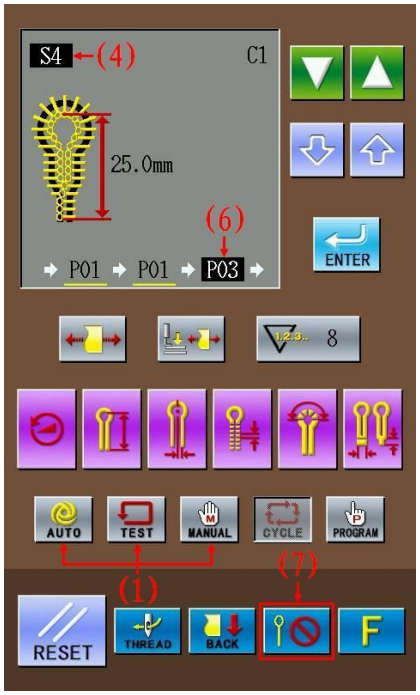
Press to set the content of S4(6) as P03.

Press Knife Action Key (7) to change the "P03" at (6) to "P03".（Without Knife Action）

⑩ **Press to confirm the changed content.**

Press any key in （1）to end the setting in the Cycle Mode

Note: When selecting the cyclical program to perform the automatic sewing, the user can change the knife action in the Auto Mode. And the knife action in the C pattern will be kept same to the knife mode set at present.



4 Interface of Parameter Setting Mode

In the interface for inputting sewing data, press  to shift the data input interface and parameter setting mode interface (as shown in right). In the interface of parameter mode, user can make some detailed settings and edition operations.

In the interface for inputting sewing data, hold  for 3 seconds, then the system will have access to the setting mode Level 2.

Setting Mode Level 1

Setting Mode Level 2

4.1 Description of Functions

Setting Mode Level 2：

No.	Figure	Functions	Remarks
1		Inquiry of software version.	

2		Initialize the U disk	
3		Lightness adjustment	
4		Error information record	
5		Communication mode	
6		U level parameter	
7		Recovery to default setting	

4.2 Software Version Inquiry

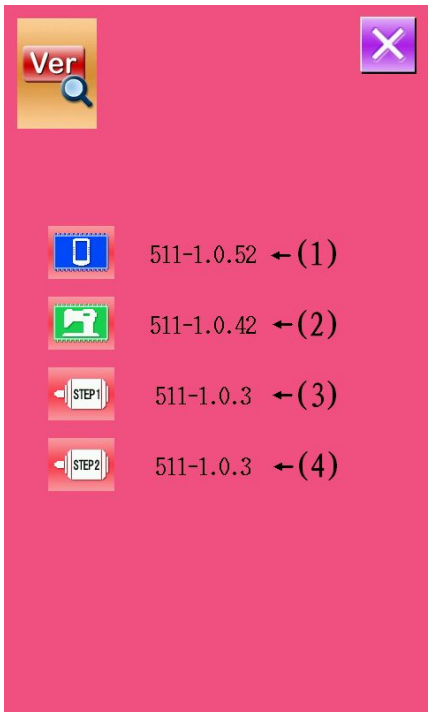
In Level 1 of Setting Mode, press  to have access to the interface for inquiring the software version (as shown in the right figure).

(1): Version of Operation Penal Program

(2): Version of Controller Program

(3): Version of X Axis & Y Axis Stepping Motor Program

(4): Version of Z Axis Stepping Motor Program

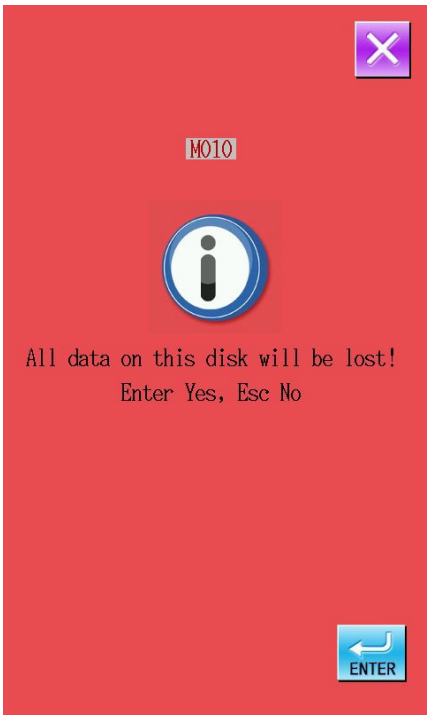


4.3 Operation of U Disk Initialization

In Level 1 of Setting Mode, press  to have access to the interface for initializing the U disk.

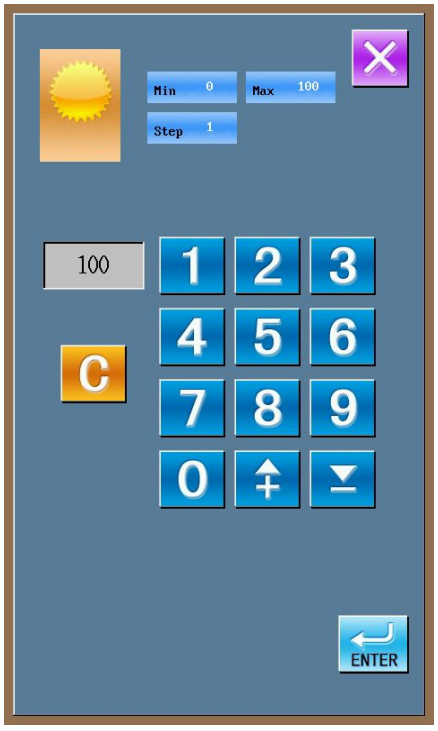
Press  to delete the entire data on the U disk.

Press  to withdraw the operation and return to the interface of parameter setting mode.



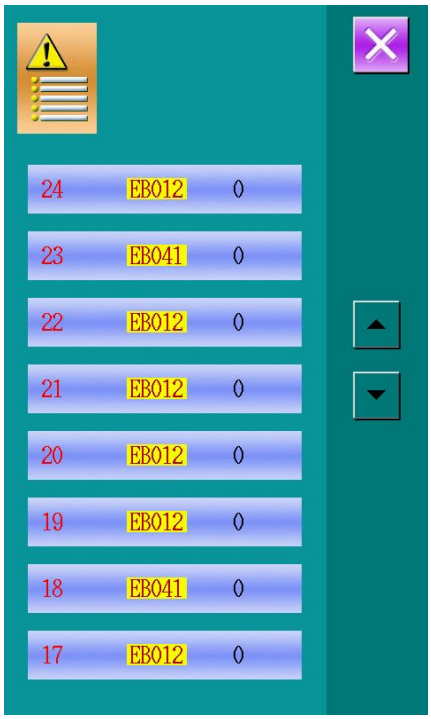
4.4 Lightness Adjustment

In Level 1 of Setting Mode, press  to have access to the interface of lightness adjustment (as shown in the right figure), whose range is from 0 to 100. User can press  or  to adjust the value and it is also possible to input the value via the number keys. Press  to confirm the input.



4.5 Error Information Record

In Level 1 of Setting Mode, press  to have access to the interface for recording the error information (as shown in right). In the interface, the times of the various kinds of errors and the recent error information will be displayed(for the error information corresponded to the error code, please refer to 【5.1 Error Information List】). User can use  or  to turn the pages for checking more error information.



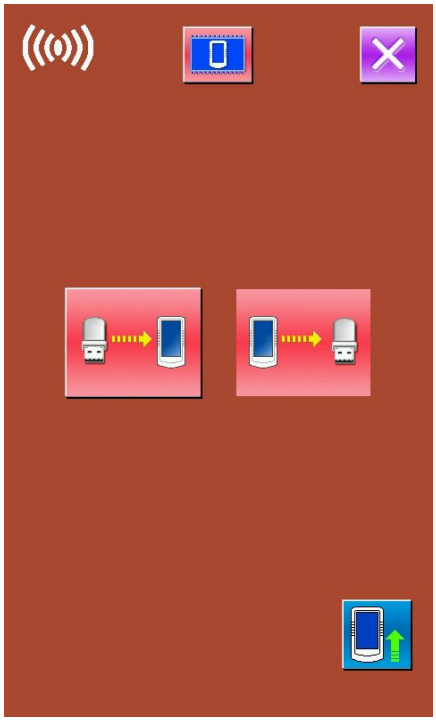
4. 6 Communication Function

The Communication Function can help the operation penal program to update via the U disk; it can also load the U level parameter and pattern memory parameter data from U disk to operation penal or Output such data from penal to U disk.

4.6.1 Operation Penal Update

① Have access to the interface of communication function

Insert U disk, in Level 2 of Setting Mode, press  to have access to the communication function mode (as shown in the right figure).



② **Selection of Update Type**

Press  to have access to the interface for selecting the communication operations.

Press  and  for confirmation.

 : Operation Penal Program Update

 : Stepping Motor Program Update (Unavailable at present)

 : Main Controller Program Update (Unavailable at present)

 : Input/ Output the U Level Parameters

 : Input/ Output the Pattern Data in Memory

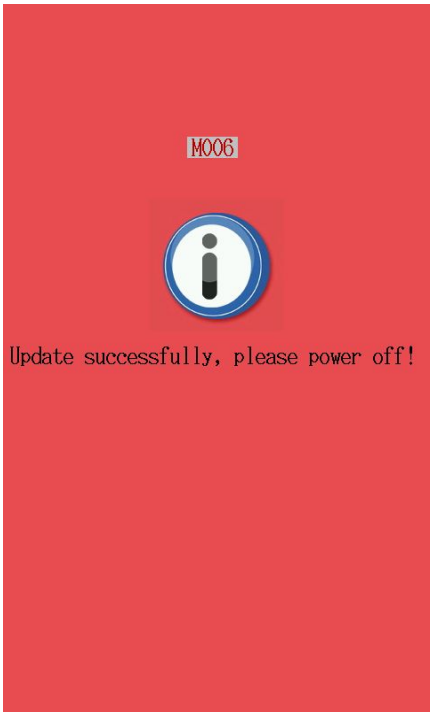
③ **Select the Update File**

Press  to have access to the interface for selecting the update file. The update file is displayed. Please select the file for updating. When the figure in front of the file name is pressed, the file name will disappear, but the file will not be updated.

Press  to confirm the selection.

④ **Start Updating**

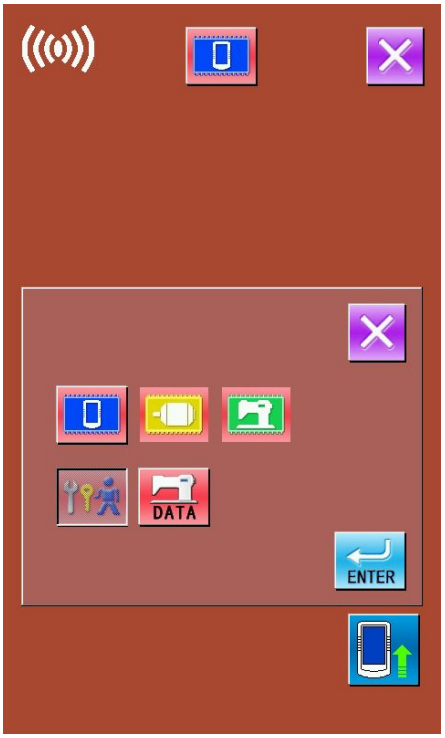
Press  to update. After the successful update, user needs to power on the machine again.



4.6.2 Input/ Output U Level Parameters

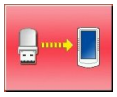
① **Selection of Update Type**

Insert U disk. In the level 2 of Setting Mode, press  to have access to the Communication function mode. Press  to have access to the interface for selecting the communication operations, and then press  .



② Input/ Output the Pattern Data

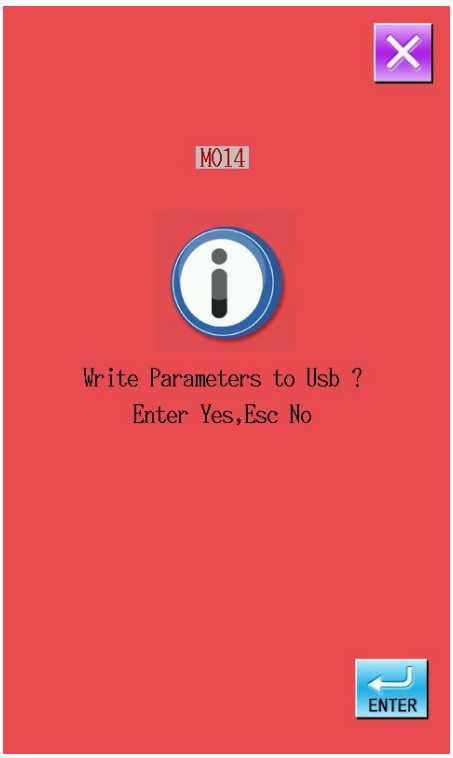
Press 

to have the interface return to the Communication Function Mode. At this time,  and  are available.

Select  to output the data to U disk for back-up.

③ **Output Data to U Disk**

After pressing  , the interface will display the hint as shown in right figure.

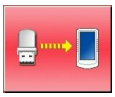


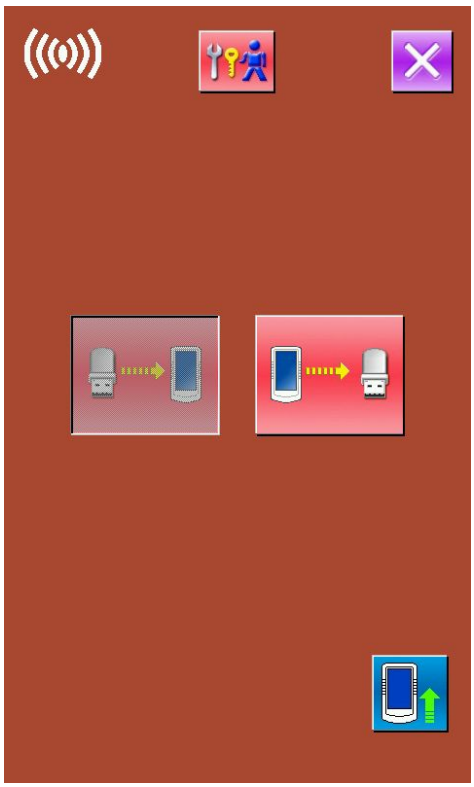
④ **Start Back-up Operation**

After pressing 

for confirmation, the system will back up the parameter data to U disk with the file name of SC-511.SWD. After the back-up, the system will return to the interface for selecting input/output data.

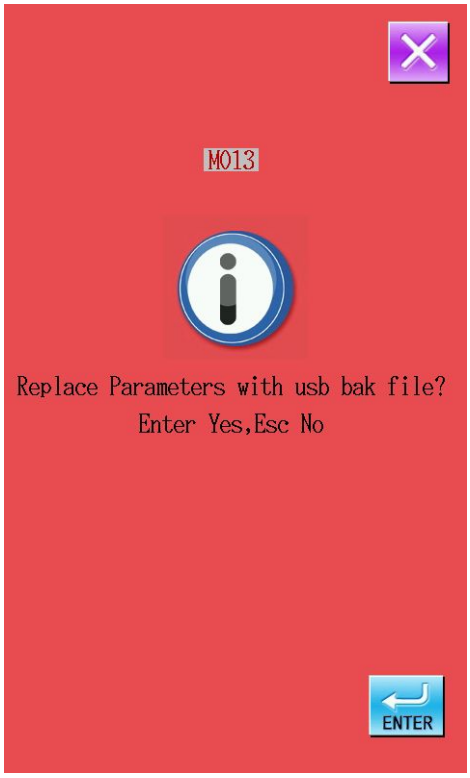
⑤ **Input data from U disk to operation panel**

In the interface of communication function mode; press  to input the parameter data from the U disk to the operation penal.



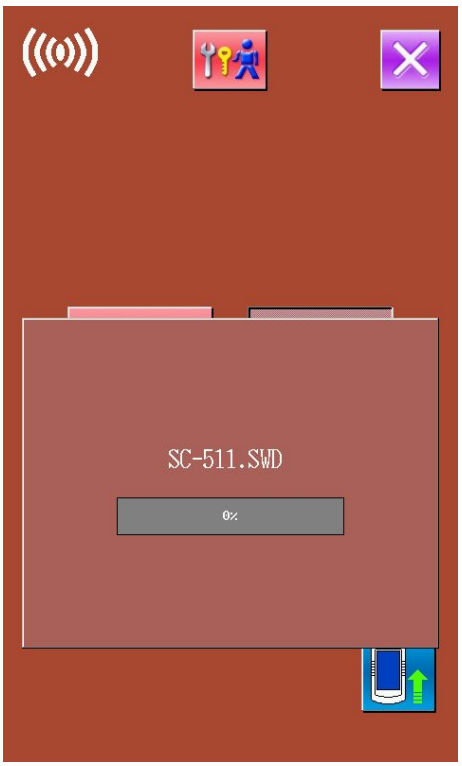
⑥ Input the data to penal

After pressing  , the system will display the hint as show in right.



⑦ Start Back-up Operation

Press  for confirmation. Then the system will Input the parameter date from U disk to operation penal. After the back-up, the system will return to the interface of data input/output.



4.6.3 Input/ Output Pattern Data in Memory

① **Selection of Update Type**

Insert U disk. In the Level 2 of Setting Mode, press  to have access to the interface of communication function mode. Press  to have access to the interface for selecting communication operations, in which 

shall be pressed.

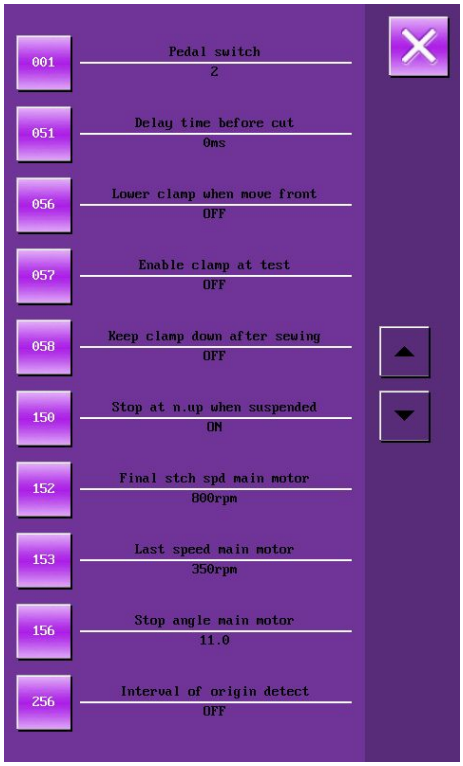
For other steps, please refer to the Step 2~7 in **4.6.2 Input/ Output U Level Parameters**.

4.7 Parameter Setting

4.7.1Method for Setting Parameters

① **Have Access to Parameter Setting Interface**

In Level 2 of Setting Mode, press  to have access to the interface for setting U level parameters (as shown in right picture).



② **Parameter Modification**

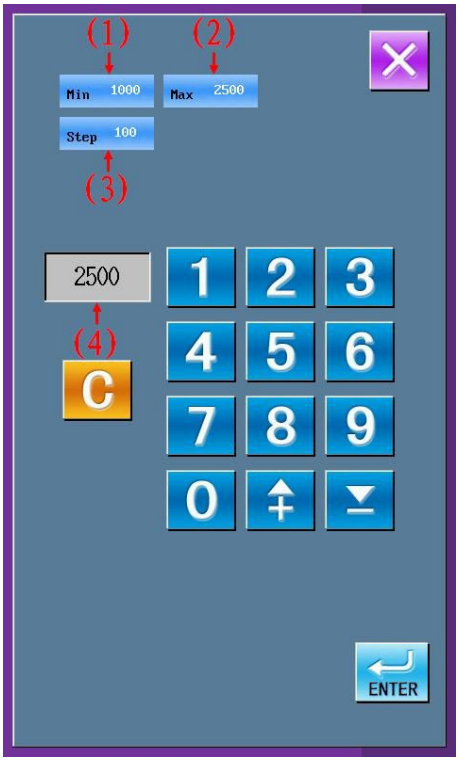
Press  to turn page for searching parameters. Press the number button of a parameter to have access to the setting mode. Let's take No.450 parameter "Max Sewing Speed" as an example:

（1）: Min value of that parameter

（2）: Max Value of that parameter

（3）: Min Step of that parameter

（4）: Current value of that parameter



Press  or  to adjust the value; user can also adjust that value via the keyboard. The inputted value will be shown at (4). Press  to restore to the default value, and then press  to finish the input operation.

4.7.2 List of Parameters at U Level

No.	Functions	Description	Range	Changing Step	Default Setting
U001	Pedal switch	1: Step the start pedal to lower the presser, and the sewing machine starts. 2：Press the presser switch to lower the presser. Then step the start pedal to start the sewing machine.	1~2	1	2
U051	Delay time before cut	For automatic sewing in Cut-before-Sewing mode, this parameter will determine the delay time of knife action after the pedal 1 is stepped	0~800	50ms	0
U056	Lower clamp when move front	0：OFF After sewing, the cloth-feeding board moves to the position set before with the presser at up position; the presser keeps up at searching the original 1：ON After sewing, the presser doesn't rise until the cloth-feeding board moves to the position for laying cloth; during the process of searching origin, the presser keeps going down when each axis return to origin. The presser doesn't rise until the frame goes to the position for laying cloth.	0~1	1	0

No.	Functions	Description	Range	Changing Step	Default Setting
U057	Enable clamp at test	0：OFF The raise of presser is forbidden in test mode 1：ON In Test mode, the following operations can make presser go up： （A）: Manual switch type or double pedal type: press presser switch （B）: pedal type：return to pedal In restarting the test mode, the following operations have to be done for lowering the presser （A）: Manual switch type or double pedal type: press presser switch （B）: pedal type：return to pedal	0~1	1	0
U058	Keep clamp down after sewing	0：OFF Presser goes up when the automatic sewing is finished 1：ON Presser keeps going down when the automatic sewing is finished. Please perform the following operations when the presser rise: （A）: Manual switch type or double pedal type: press presser switch （B）: pedal type：return to pedal	0~1	1	0
U150	Stop at n. up when suspended	OFF：At pause, the upper axis is in the status of emergency stop ON：At pause, the upper axis stop at needle upper position	0~1	1	1
U152	Final stch spd main shaft	Set speed of the last stitch	700~900	10rpm	800
U153	Last speed main shaft	Set the stop speed	250~450	10rpm	350
U156	Stop angle main shaft	The stop control section will be prolonged when this value goes up.	2.5~17.5	0.5°	11.0
U256	Interval of origin detect	0：OFF Do not detect origin after sewing 1~9：Detect the origin position after sewing in certain times.	0~9	1	0
U301	Parameter column in Auto Mode	1：Sewing length 2：Interval	1~2	1	1
U310	Touching sensitivity		1~5	1	3

No.	Functions	Description	Range	Changing Step	Default Setting
U350	Forbid Program Mode	0：OFF General Conditions 1：ON Forbid to enter program mode, the hotkeys are invalid.	0~1	1	0
U351	Forbid Cycle Mode	0：OFF General Conditions 1：ON Forbid to enter cycle mode	0~1	1	0
U352	Forbid to change counter	0：OFF General Conditions 1：ON Forbid to change the value in products counter	0~1	1	0
U353	Forbid to edit sewing speed	0：OFF General Conditions 1：ON Forbid to change the sewing speed	0~1	1	0
U354	Forbid to edit the program code	0：OFF General Conditions 1：ON Forbid to change the program code, but the step number in cycle can be changed	0~1	1	0
U355	Forbid to change Cut-before-Sewing	0：OFF General Conditions 1：ON Forbid to change the action of Cut-before-Sewing (If existing status is Cut-before-Sewing, it will change to Non-cut automatically.)	0~1	1	0
U356	Forbid to change Cut-after-Sewing	0：OFF General Conditions 1：ON Forbid to change the action of Cut-after-Sewing (if existing status is Cut-after-Sewing, it will change to Non-cut automatically)	0~1	1	0
U450	Max sewing speed	Set the Max sewing speed	1000~2500	100rpm	2500
U451	Max cycle program number	Number of effective cycle program number (if user doesn't use the cycle program number, this parameter can be set at 0).	0~9	1	9

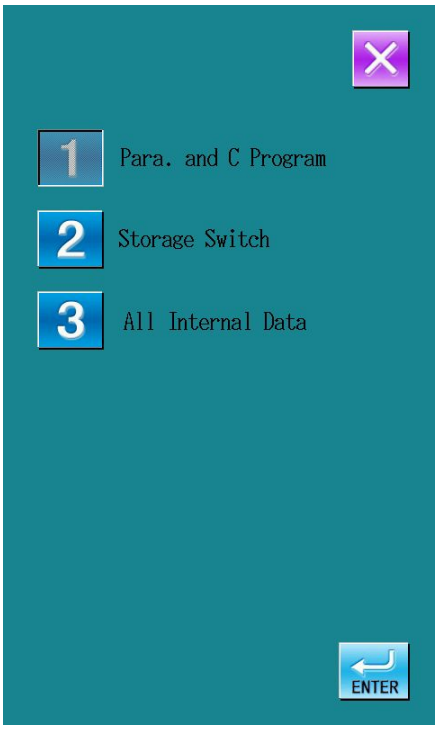
No.	Functions	Description	Range	Changing Step	Default Setting
U452	Product count for cycle pattern	0：OFF Count after sewing a hole 1：ON Count after sewing a cycle	0~1	1	0
U453	Max knife interval	Set the max knife interval	0.5~0.8	0.3mm	0.5
U454	Max linear bar-tacking length	Set the max length of linear bar-tacking	6~9	3	6
U455	Additional needle swing at Non-cut	If the Non-cut is used, the needle swing will be added automatically.	0~1.0	0.1mm	0
U456	Adjustment of needle swing at start	Set adjustment of needle swing at sewing start	-1.0~0.0	0.1mm	0
U550	Time for air-hammer ON	The larger value, the longer contact time between air-hammer and knife will become.	25~200	5ms	25
U551	Air-hammer origin height	In readiness status, Error code E650 will be activated when the value of air-hammer position sensor is smaller than this value. (only effective when the air-hammer origin error detection is turned on)	150~170	1	160
U552	Air-hammer origin error detection	0：OFF No air-hammer origin error detection (used when the air-hammer position sensor is down) 1：ON Have air-hammer origin error	0~1	1	1
U553	Determine air-hammer rise position by time	0：OFF According to position of air-hammer to detect the lowering of air-hammer 50~500：Detect the lowering of air-hammer according to time（used when the air-harmer position sensor is down）	0~500	50	0
U554	Determined air-hammer lowering by time	0：OFF Determine the position of air-hammer for lowering. 50~500：Detect the lowering of the air-hammer according to time (used when the air-hammer position sensor is down.)	0~500	50	0
U555	Increase of	0：OFF	0~3	1mm	0

No.	Functions	Description	Range	Changing Step	Default Setting
	leftover upper thread	General Conditions 1~3：Because only the sequence delay of trimming upper thread is set, the leftover upper thread may be increase after sewing.			
U556	Time for loosing upper thread	The larger value, the longer the time for loosing upper thread after thread-trimming.	0~100	2ms	50
U558	Forbid to use bottom thread trimmer device	0：OFF General Conditions (Bottom thread trimmer device is activated） 1：ON Forbid to use bottom thread trimmer device	0~1	1	0
U559	Neglect of bottom thread knife sensor and counter	0：OFF Detect the bottom thread knife device is off according to the OFF sensor of bottom thread trimmer 5~50：Detect the bottom thread knife device is off according to time. Set this parameter with a step at 5ms	0~50	5ms	0
U650	Time to buzzer stop	0：OFF Buzzer keeps ringing from the start of error to the release of it 5~15：At the error, the buzzer stop ringing after the set time	0~15	5s	0
U651	Motor excitation status at error	0：OFF At unrecoverable problem, the excitation of pulse motor will be off. 1：ON At unrecoverable problem, the excitation of pulse motor remains.	0~1	1	0
U752	Adjustment of X position on knife	The set value is the adjustment of X position on knife, which will be added into entire pattern program.	-0.50~0.50	0.05mm	0
U850	Sewing machine head configuration	0：-00 Set configuration as -00 1：-01 Set configuration as -01 2：-02 Set configuration as -02	0~2	1	0

No.	Functions	Description	Range	Changing Step	Default Setting
U852	Radial Hole Presser	0：OFF Use general presser (except that of radial hole) 1：ON Use the special program for radial hole presser. The displayed is the special parameter for radial hole.	0~1	1	0
U853	Language	0：Chinese 1：English	0~1	1	0
U911	Senor of knife position offset	The set value is Senor of knife position's offset	0~60	1	15

4.8 Initialization of Parameters

① In level 2 of setting mode, press  to have access to interface of parameter initialization, as shown in right:



User can select:

LEVEL1：Para. And C Program (Level S pattern parameter and C pattern cycle program)

LEVEL2 ： Storage Data (Including U level parameters)

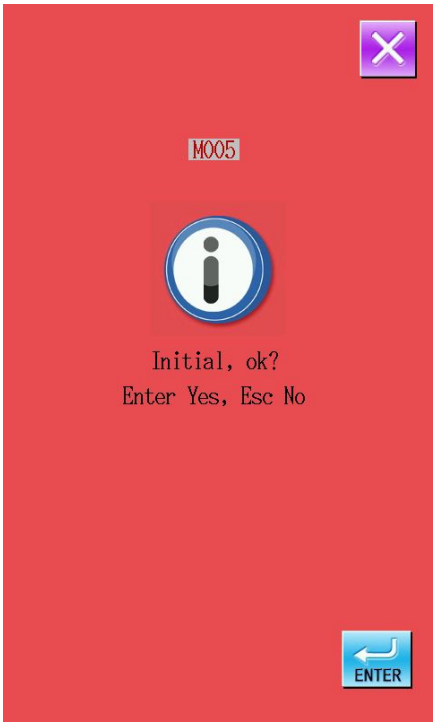
LEVEL3：All Internal Data

The detailed initialization content is at below:

Level, Content & Clear of Initialization			
	LEVEL1	LEVEL2	LEVEL3
Program Content	Default value	—	Default value
Cycle program	Clear	—	Clear
Storage switch	—	Default value	Default value
Program code	—	—	1
Parameter code	—	—	1
Production counter	—	—	0
Mode	—	—	Program
Position for locating cloth	—	—	Built-in
Knife action	—	—	OFF

② Select the parameter for initialization, then press ENTER for confirmation.

The right interface will be displayed on the screen, press ENTER to initialize the parameter.



5 Appendix 1

5.1List of Warning Information

Malfunction code	Name of Malfunction	Method for Settlement
Ordinary Malfunctions		
EP001	Pattern data error	Press
EP002	"Storage parameter error!"	Press RESET
EP003	"Read index file loose!"	Press
EP004	"Update failed, please power off!"	Turn off machine
EP005	"File size over!"	Press
EP006	"File read error!"	Press
EP007	"File write error!"	Press
EP008	"Format error!"	Press
EP009	"Communication error"	Turn off machine
EP010	"Over the Sewing Range!"	Press
EP011	"Please change battery!"	Turn off machine
EP012	"System version disagree!"	Turn off machine
EP013	"Machine type error"	Turn off machine
System Malfunctions		
EB01	"IPM abnormality"	Turn off machine
EB02	"Assistant voltage(24v) over"	Turn off machine
EB03	Assistant voltage(24v) low"	Turn off machine
EB04	"EEPROM error"	Turn off machine
EB05	"Main motor run error"	Turn off machine
Special Malfunctions		
EB06	"Instancy stop error"建议改为"Pause error"	Release pause switch
EB07	"Instancy stop error"建议改为"Pause error"	Press RESET
EB08	"Instancy stop switch error" 建议改为"Pause switch error"	Turn off machine
EB09	"Run switch error"	Release start switch or turn off machine. Check whether the start

Malfunction code	Name of Malfunction	Method for Settlement
Ordinary Malfunctions		
		switch conducts current abnormally.
EB10	"Pedal switch error"	Release presser switch or turn off machine. Check whether the presser switch conducts current abnormally.
EB11	"Head tilt confirmation "	Turn off machine
EB12	"Needle bar upper position failure"	Turn the wheel to upper needle position
EB13	"Coder connect error"	Turn off machine
EB14	"X motor origin retrieval error "	Turn off machine
EB15	"Y motor origin retrieval error "	Turn off machine
EB16	Z motor origin retrieval error	Turn off machine
EB17	IPM Over-current 建议改为 IPM over-current	Turn off machine
EB18	IPM Over-current 建议改为 IPM over-current	Turn off machine
EB19	"Step motor driver version error"	Turn off machine
EB20	"Thread breakage detection error"	Press 
EB21	"Bobbin thread detection error"	Turn off machine
EB22	"Sinker down error"	Turn off machine
EB23	"Sinker no down error"	Turn off machine
EB24	"Voltage(300v) over"	Turn off machine
EB25	"Step motor driver power abnormality"	Turn off machine
EB26	"Voltage(300v) low"	Turn off machine
EB27	"Step motor current over "	Turn off machine
EB28	"Cold fan work error"	Turn off machine
EB29	"Sinker down not sufficient"	Turn off machine, enlarge the pressure on knife
EB30	"Step motor driver communication error"	Turn off machine
EB31	X motor run error	Turn off machine
EB32	Y motor run error	Turn off machine
EB33	"The set cloth board over edge"	Turn off machine

Malfunction code	Name of Malfunction	Method for Settlement
Ordinary Malfunctions		
EB34	Z motor run error	Turn off machine
EB35	"Motor close loop error"	Turn off machine
EB36	"Main motor Z signal error"	Turn off machine
EB37	"Main motor coder error"	Turn off machine
EB38	"Main motor stop error"	Turn off machine
EB39	"Machine stop error"	Turn off machine
EB40	"SPI communication busy error"	Turn off machine
EB41	In out stitch signal error	Turn off machine

5.2 List for Information Hint

Information code	Name of Information
M001	Please insert the USB slave
M002	Not found pattern data!
M003	Please power off!
M004	Setting value overflow
M005	Initial, ok? Enter Yes, Esc No
M006	Update successfully, please power off!
M007	Delete file? Enter Yes, Esc No
M008	Overlap file? Enter Yes, Esc No
M009	Without error note
M010	All data on this disk will be lost! Enter Yes, Esc No
M011	Not found data file!
M012	Found data file! Import file will replace old parameters!
M013	Replace parameters with usb back file? Enter Yes, Esc No
M014	Write parameters to Usb? Enter Yes, Esc No

5.3 Malfunctions Settlement

Malfunctions	Reason	Settlement
Thread-breakage	Thread-tension is so high.	Adjust the thread-tension to proper level
	The needle is not properly installed.	Install the needle in the right direction
	Compared to needle, the thread is so thick.	Select the thread fitting to the needle
	The needle doesn't match to the bend needle.	Adjust the pitch between the needle land bend needle, as well as the height of needle rod, bend needle and yarn divider.
	There is damage or rags on needle, bend needle, yarn divider, winding plate or thread rail.	Polish or replace the rough parts.
	Threading method is wrong.	Thread correctly.
Needle-jumping	The upper thread tension is too large or too small.	Adjust the upper thread tension to a proper level
	The needle tip is broken or crooked.	Replace for a new needle
	The interval between needle and bend needle tip is incorrect.	Adjust the interval between the needle and bend needle tip to a proper level.
	The needle, bend needle and yarn divider don't match to each other.	Adjust the relationships among these three.
	The needle and needle stand are not adjusted properly.	Properly adjust the needle stand.
	The bend needle tip is blunt.	Polish it or replace it.
	The needle is not properly installed.	Install the needle in right direction.
	The needle is too thin.	Select needles fit the sewing conditions
Needle-breakage	The needle is crooked	Replace a new needle
	The needle, bend needle and yarn divider don't match to each other	Adjust the relationships among these three.
	The needle and needle stand are not adjusted properly.	Properly adjust the needle stand.
	The needle is too thin.	Select needles fit the sewing conditions

Upper thread is not cut off.	The upper knife is not so sharp	Replace a new upper knife
	The pressure is too low to let upper knife cut to bottom.	Adjust the pressure
	The upper knife can't catch the upper thread.	Install a upper thread bend needle, and cut the tread at the stitch before the last one
	At the last stitch, the upper knife can't catch the upper thread due to the needle-jumping	Refer to "Needle-jumping", try to avoid the needle from jumping
	The position of upper knife is improper	Adjust the position of upper knife
Bottom thread is not cut off.	The knife is not so sharp.	Replace a new knife.
	The pressure is too low to let upper knife cut to bottom	Adjust the pressure
	The position of knife is improper	Adjust the position of the knife and thread-scanning
	The pressure on knife for trimming bottom thread is too low	Adjust to a proper knife pressure level
Stitch-missing at sewing start	Can't hold bottom thread.	Adjust the bottom thread holder (configuration 01) or bottom thread pressing board (configuration 02)
	The leftover part of the upper thread after trimming is too short.	Adjust the assistant thread holder.
	The release upper thread is far from sufficient.	Adjust the amount of released upper thread.
Cutting function abnormal	Low pressure on cutting device	Adjust the pressure to a proper level
	Knife doesn't properly contact to the cutting hammer	Polish the surface of cutting hammer
	The knife is not so sharp.	Replace a new knife.
Low thread density	The tension of upper thread is so strong or so weak	Adjust the upper thread tension to a proper level.
	The tension of bottom thread is so strong or so weak	Adjust the bottom thread tension to a proper level.
	The strength and stroke of take-up spring are improper.	Adjust the strength and stroke of take-up spring.

6 Appendix 2

6.1 Installation Size of Control Box

At present, there are three kinds of installation methods for the computerized controllers of our company, which are 4-hole installation, 3-hole installation and 4-slot installation. For the detailed size, please refer to the picture as below:

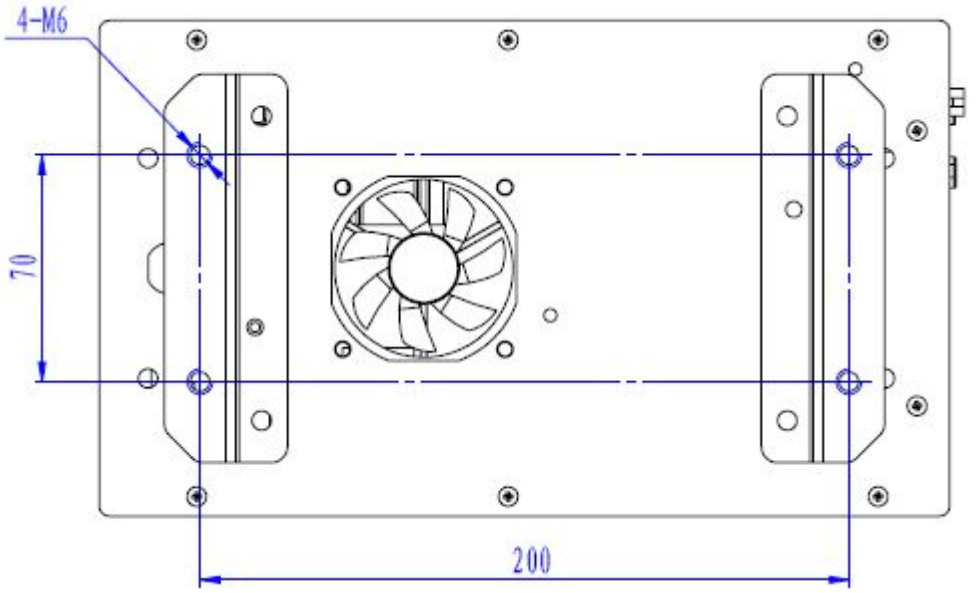


Figure 1 Size of 4-hole Installation

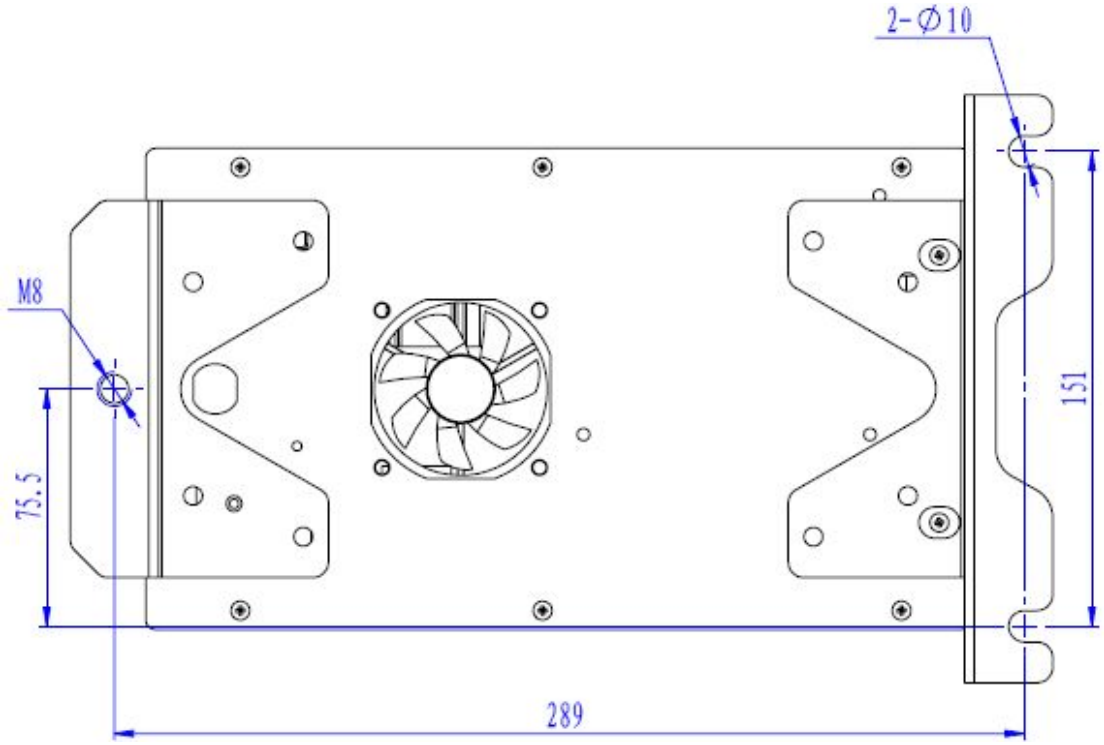


Figure 2 Size of 3-hole Installation

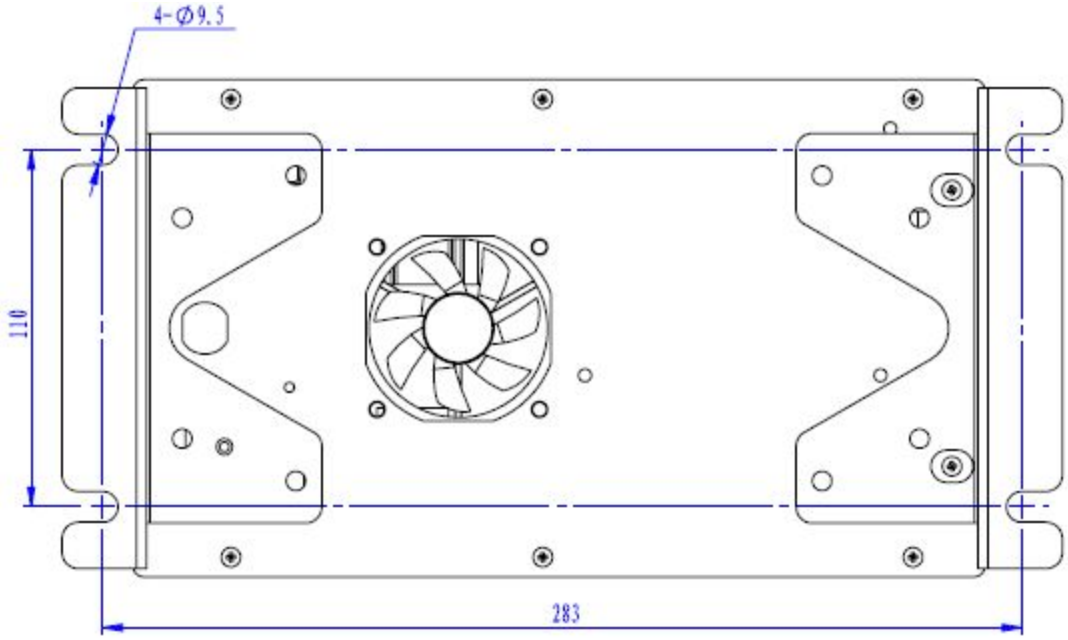


Figure 3 Size of 4-slot Installation

6.2 Installation Size of Control Box

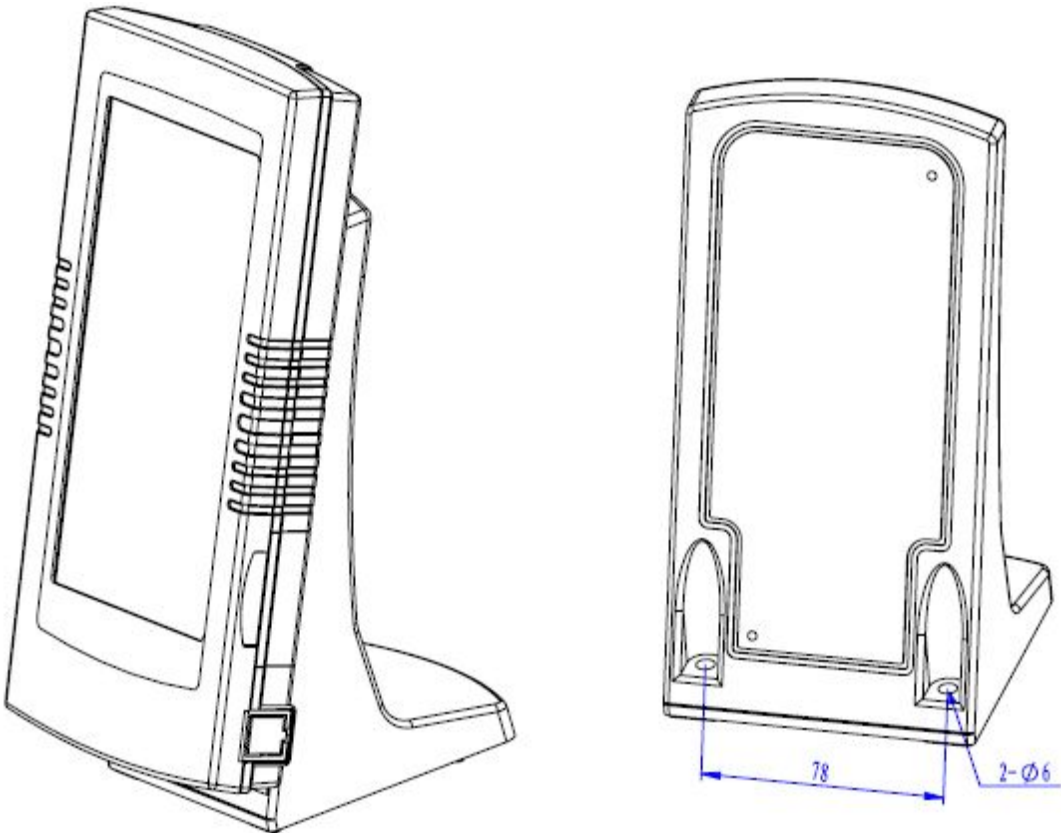
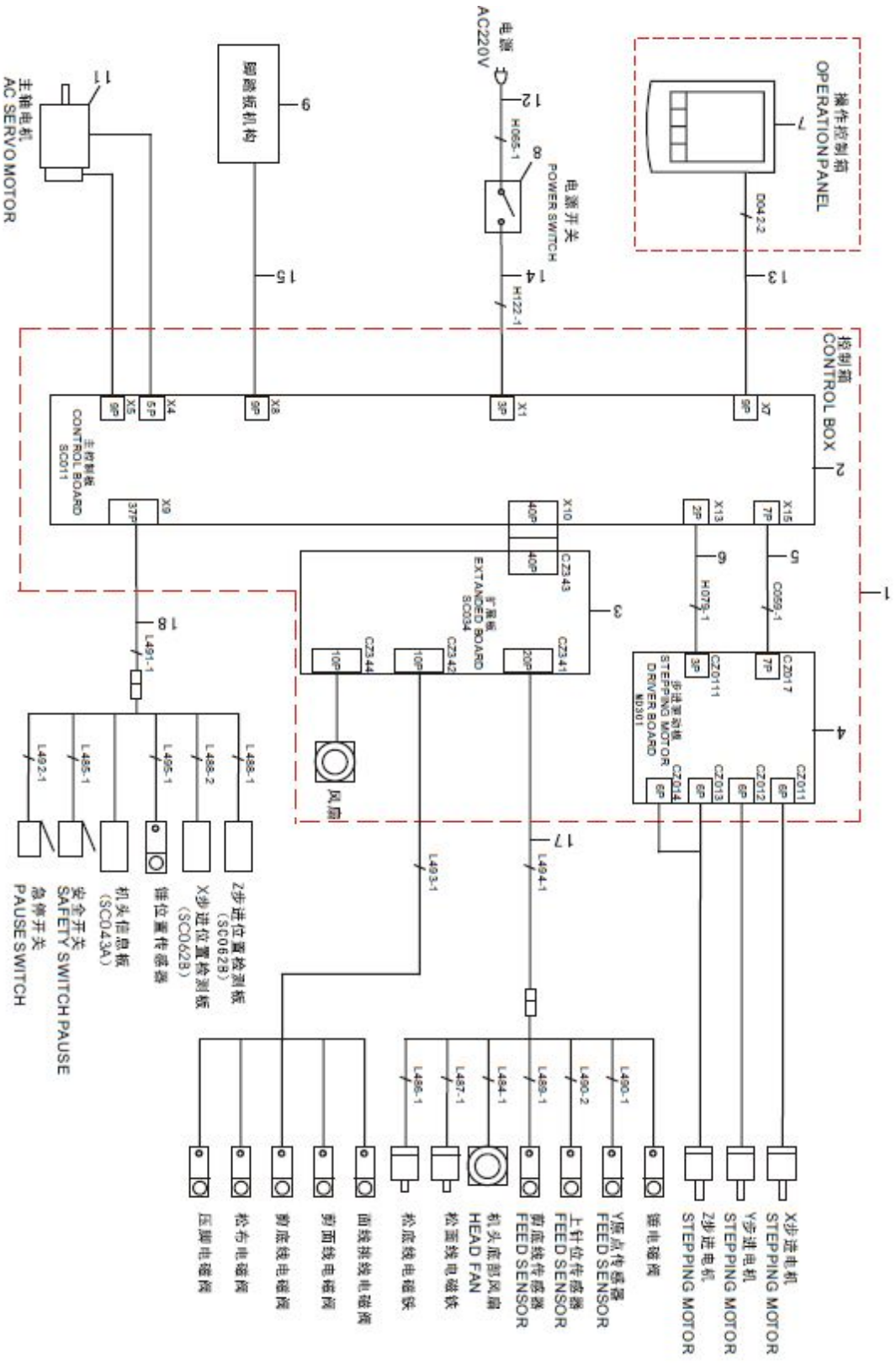


Figure 4 Installation Size of Control Box

6.3 SC511(9820) Eyelet Buttonhole Machine System Diagram



Note:

脚踏板机构：Pedal device

松面线电磁铁：Solenoid for loosing upper thread

松底线电磁铁：Solenoid for loosing bottom thread

面线挑线电磁阀：Solenoid valve for taking up upper thread

剪面线电磁阀：Solenoid valve for trimming upper thread

松布电磁阀：Solenoid valve for loosing cloth

压脚电磁阀：Presser solenoid valve