

# SIRUBA®

銀爺牌工業用縫紉機

INDUSTRIAL SEWING MACHINE

# DL7000

## 控制器使用說明書 THE INSTRUCTION BOOK OF THE CONTROLLER



CE



高林股份有限公司  
KAULIN MFG. CO., LTD.

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## 1 前言 Preface

使用前請詳閱本說明書，如果在使用上有任何疑問，歡迎隨時與本公司聯繫。

Please read the manual carefully before using the controller. Please feel free to contact with us if you have any question and comment.



注意：

Caution:

此標示符號表示錯誤的機械安裝、操作及保養，恐會導致人員受傷或機器損壞！

**The warning sign indicates that incorrect machine installation, operation and maintenance may cause personnel injury or machine damage!**

安裝及維修作業請由專業人員處理。

For controller installment and maintenance, please contact with qualified technician for assistance.

禁止將本產品暴露在有水氣、腐蝕性氣體、可燃性氣體等物質的場所下使用，否則可能會造成觸電或火災。

Do not expose the controller to wet, corrosive, and flammable environment. It may cause electrical shock or fire hazards.

請確保產品使用場合與電氣規格符合要求，避免機器損壞。

Ensure the controller applies to proper application and environment.

電源線的接地線需確實連接到工廠接地線，接地不良可能會造成人員觸電。

Please connect the controller to a properly grounded outlet. If the grounding connection is not secured, it may cause serious electrical shock for human body.

在進行操作前準備例如穿針線時或是調適機器與維修安裝時，請務必關閉電源。

Please turn off the power prior to needles threading, mechanical adjustment or maintenance.

控制器電源線插入電源端時，請確認控制器開關電源為關閉狀態。

Please ensure the switch is at OFF stage when plugging the power into the system.

在運轉中請不要觸摸控制器之散熱片，否則可能會因高溫而發生燙傷。

Please do not touch the controller heat sink during operation to avoid burn hazard.

控制器關閉後，內部可能仍有高電壓。開關控制器應有1分鐘以上間隔，開啟控制盒須注意安全。

There might still be high voltage after switching off the controller. For safety concern, please keep minimal 1 minute interval before rebooting the controller and be cautious when opening up the controller case.

務必使用本公司提供或認可的零部件維修。

All the replacement parts for repairing must be provide or approved by supplier.

## 2 產品介紹 Product Introduction

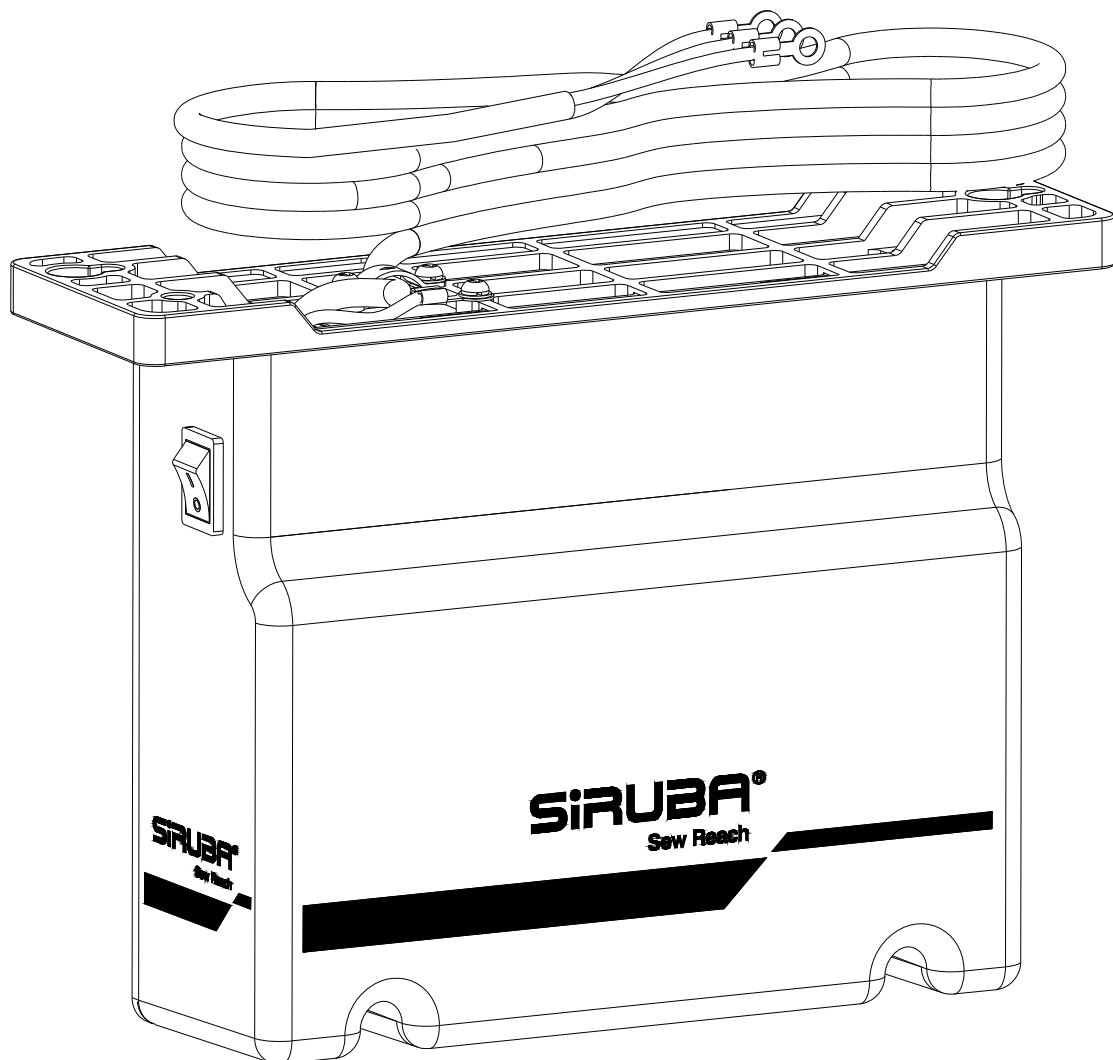
### 2.1 產品說明 Product Brief

本產品為工業縫紉機數位控制交流伺服馬達驅動系統，藉由數位系統控制，實現縫紉機急升、急降、精準定位及電磁閥或電磁鐵搭配縫衣時所需動作條件等之功能，進而提升縫製效率。本產品亦包含使用者操作介面-選針盒，使用者可透過選針盒設定參數、選擇模式、以及監控馬達運轉狀態。

The product is digital control AC Servo System and it can improve sewing efficiency through precise speed control and positioning. The user can use the operation box for parameter setting, mode selection, and servo motor state monitoring.

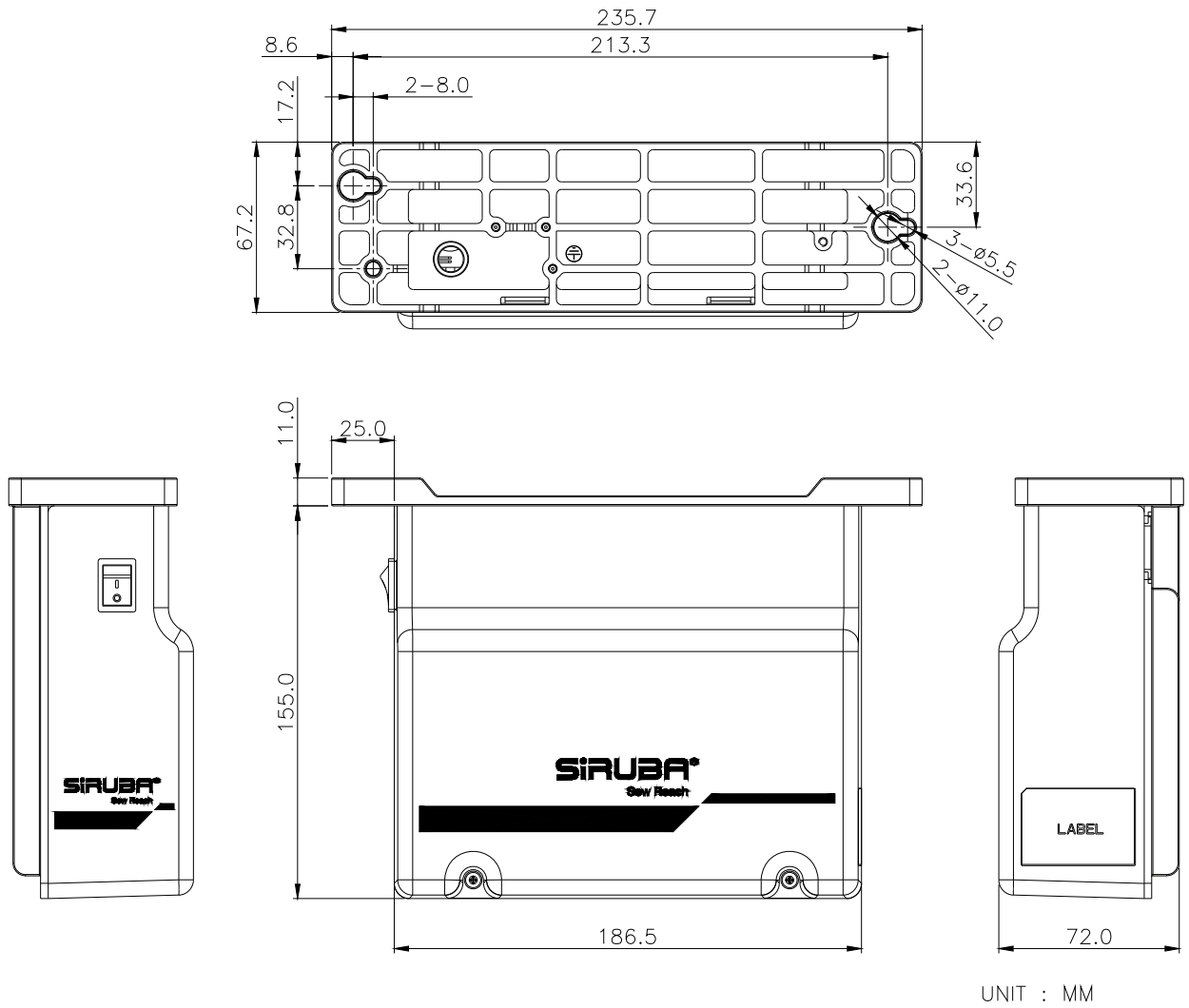
### 2.2 產品外觀 Product Appearance

#### 2.2.1 控制器外觀 Control Box Appearance

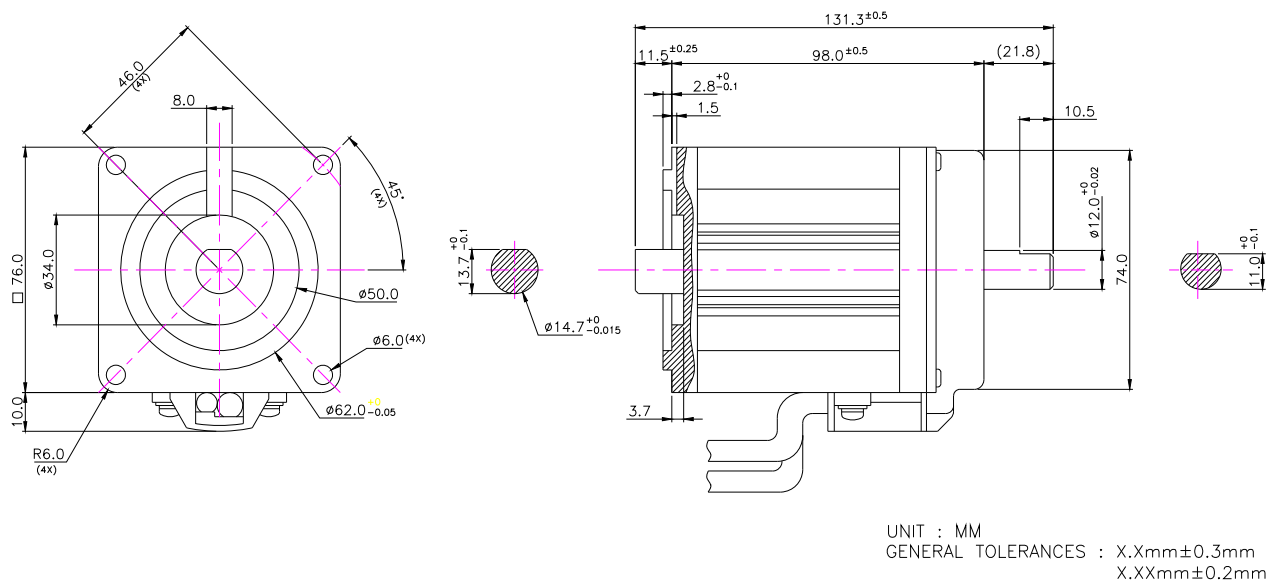




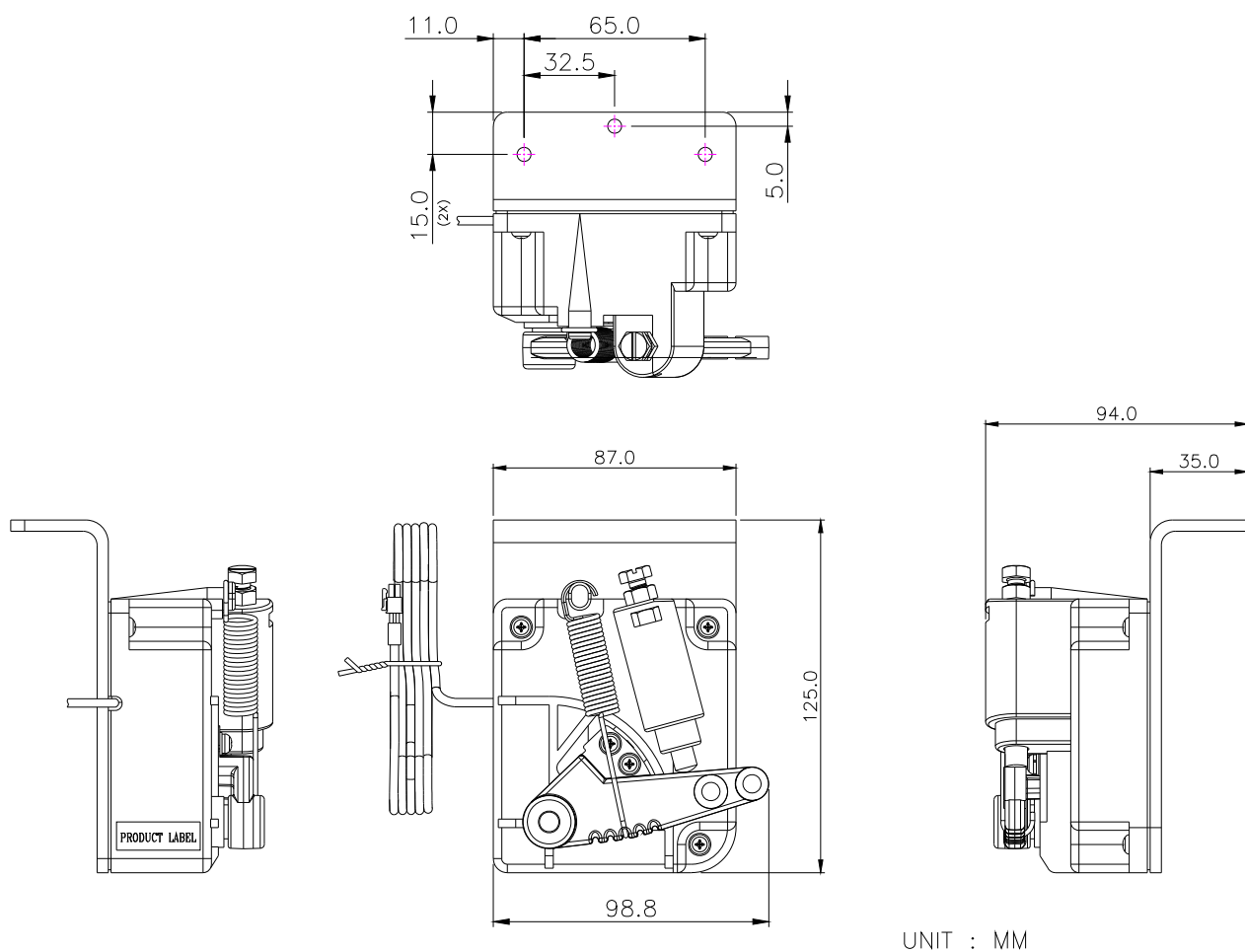
### 2.2.2 控制器外觀尺寸圖 Control Box Outline Dimension



### 2.2.3 馬達外觀尺寸圖 Motor Outline Dimension

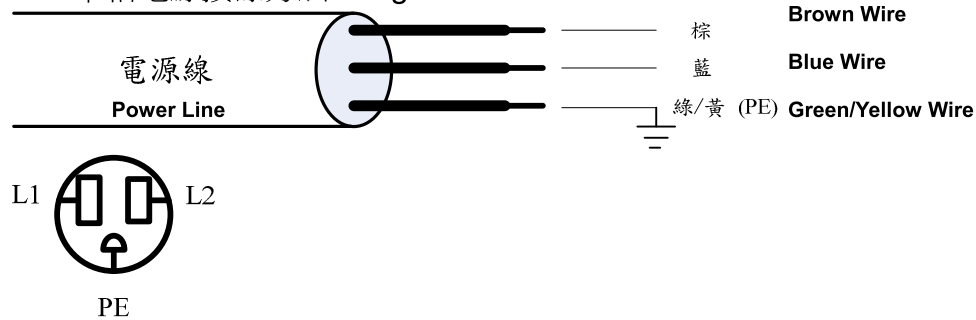


## 2.2.4 控速器尺寸 Speed Controller Outline Dimension




### 3. 接地與接線 Power Connection and Grounding

#### 3.1 單相電源接線方法 Single Phase Connection

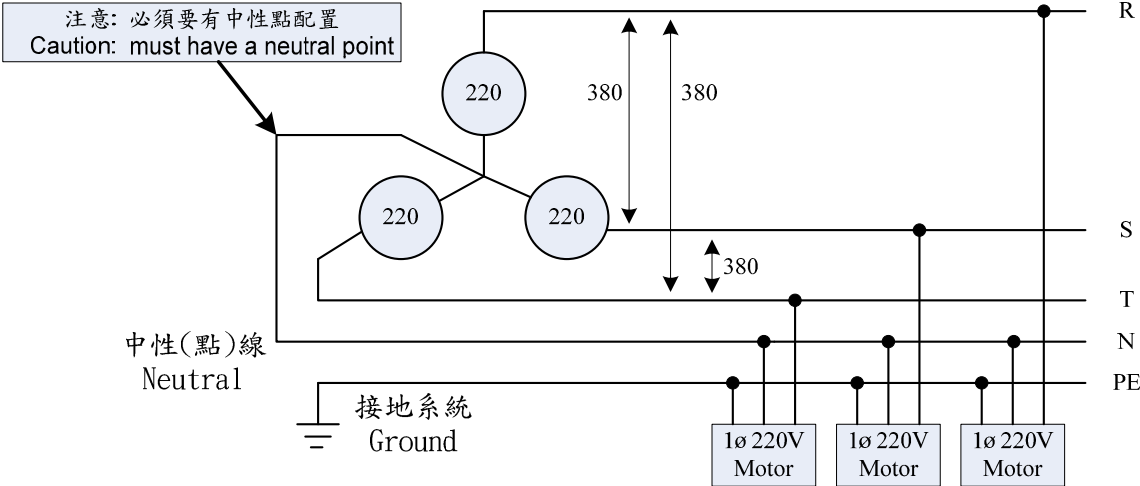


#### 3.2 當電源系統配置為三相四線式 380V 時，欲使用單相 220V 供應本控制器的接線方式

##### Connecting Single Phase / 220V Power from a 3 Phases / 380V Power Source

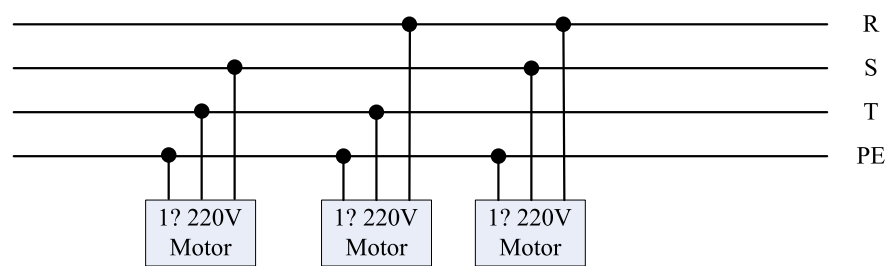


注意：如果此配置系統沒有“中性(點)線”時，則單相220V伺服電機不適合在此場所使用。  
 Caution: if the power source has no neutral point, the servo motor is not suitable for this connection.



#### 3.3 當單相 220V 伺服馬達欲使用在三相 220V 的電壓時，須注意配置使用上的平衡。

##### Load Balance for 1 Phase / 220V Motor with 3 Phases / 220V Power System

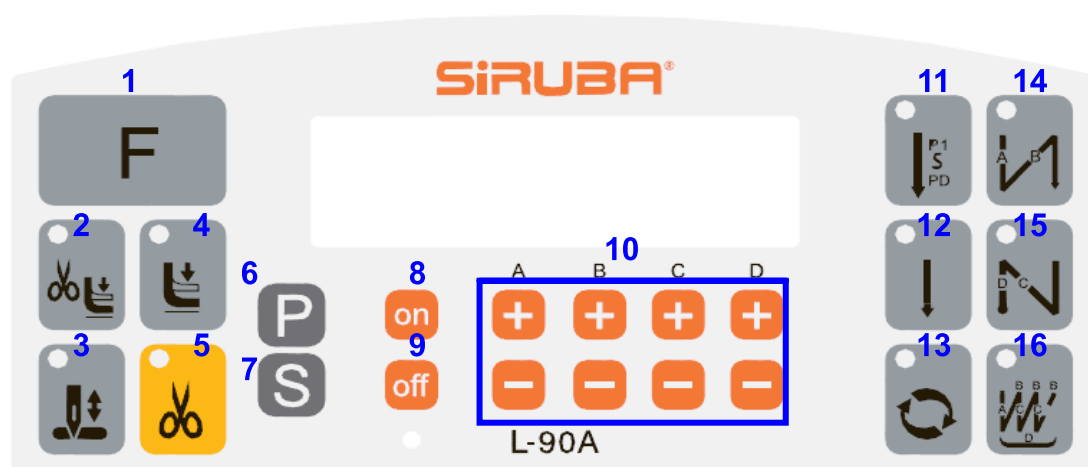


#### 4. 系統規格 System Specification

馬達類型 Motor Type	交流永磁伺服馬達 AC Servo Motor
電源電壓 Input Voltage Range	AC 176~264V 50/60 Hz
額定輸入功率 Rated Input Power	500W
輸出轉速 Max Sewing Speed	200 ~ 4500 RPM
額定輸出扭矩 Rated Torque	0.955 N-m
工作環境溫度 Operating Temp	0-55degC
絕緣耐壓 Insulation Voltage	AC 1500V / 1min
絕緣電阻 Insulation Resistance	DC 500V, 100M 歐姆以上 DC 500W, over 100M ohm
選針盒 Operation Box	有 Yes
淨重 Net Weight	控制器 1.4 Kg / 馬達 1.8 Kg / 控速器 0.7 Kg / 選針盒 0.17 Kg Control Box 1.4 Kg / Motor 1.8 Kg / Speed Controller 0.7Kg / Operation Box 0.17Kg

## 5. 選針盒操作設定 Operation Box Setting

### 5.1 按鍵說明 Figure and Description





1. 特殊功能選擇 Special Function Selection	9. 關閉照明用 LED LED OFF
2. 切線押腳功能 Presser Foot Function After Thread Trimming	10. 參數功能別/參數內容選擇鍵 Parameter Increment / Decrement Key
3. 補針功能 Forward Stitch Correction	11. 定寸縫模式 Constant Stitching Setting
4. 押腳功能 Presser Foot Function When Motor Stop	12. 自由縫模式 Free Stitching Setting
5. 切線功能 Auto Thread Trimming Function	13. 自動觸發模式 One Shot Automation Stitching
6. 參數設定 Parameter Setting	14. 起始回縫模式 Start Tacking Setting
7. 儲存參數設定並離開 Parameter Saving	15. 終止回縫模式 End Tacking Setting
8. 開啟照明用 LED LED ON	16. 連續回縫模式 Bar Tacking Setting

## 5.2 參數設定模式說明 Parameter Setting and Adjustment

1. 在一般模式中長按P鍵  可進入參數選擇模式。



In **Normal Mode**, press P Key  to enter **Parameter Selection Mode**.



2. 利用 D 區塊按鍵的增  減  選擇參數模式。

Use the increment key  and decrement key  in D block to select parameter.

3. 按S鍵  進入參數調整模式。

Press S Key  to enter **Parameter Adjustment Mode**.

4. 利用 ABCD 區塊按鍵進行增  減  設定參數。

Use the increment key  and decrement key  in A B C D block to adjust the parameter.

5. 按S鍵回到一般模式 / 或按P鍵回到參數選擇模式。

Press S Key to go back to **Normal Mode**. Or press P Key to go back to **Parameter Selection Mode**.

## 5.3 功能鍵說明 Functions and Operations

功能名稱 Function	按鍵圖示 Key	對應車縫動作 Sewing Machine Operation
起始/終止回縫功能 Start / End Tacking		執行起始回縫A、B段車縫一次 Single Start Tacking (A, B Sections)
		執行終止回縫C、D段車縫一次 Single End Tacking (C, D Sections)
連續回縫功能 Bar Tacking		執行連續回縫A 段一次，B、C段D次 Bar Tacking (A Section 1 Time / B, C Section D Times)
定寸縫功能 Constant Stitching		進入定寸縫功能，分為 P1~PF 共 15 段，可設定每段針數 Enter Constant Stitching Function. Set the stitch number.

<p>自由縫 Free Stitching</p>		<p>1. 踏板前踩時進行車縫 Forward tread the front part of foot pedal. The machine will run.</p> <p>2. 踏板中立時停止車縫 Reset the foot pedal back to original position. The machine will stop.</p> <p>3. 踏板後踩時進行切線、掃線、抬押腳等動作 Backward depress the back part of foot pedal. The machine trim threads automatically.</p>
<p>自動模式 One Shot Automatic Stitching</p>		<p>前踩踏板完成回縫之設定針數 Complete the stitch number in start / end tacking mode.</p> <p>定寸縫功能中則完成該段之針數 Complete the stitch number in defined section in constant stitching mode.</p>
<p>切線功能 Thread Trimming</p>		<p>選擇切線功能 Enable or disable thread trimming.</p>
<p>押腳功能 Presser Foot Function When Motor Stop</p>		<p>選擇車縫停止時，押腳是否動作 Presser foot action when motor stop.</p>
<p>切線押腳功能 Presser Foot Function After Thread Trimming</p>		<p>選擇切線之後，押腳應是否動作 Presser foot action after thread trimming.</p>
<p>補針功能 Forward Stitching Correction</p>		<p>依照參數設定在車縫結束之後補針 Forward stitching as adding stitch before machine stop.</p>
<p>特殊功能選擇 Special Function Selection</p>		<p>進入特殊功能選擇區後，選擇特殊功能 Enter Special Function Mode to select function.</p>
<p>參數設定 Parameter Setting</p>		<p>在一般模式中，長按此鍵進入參數選擇模式 In Normal Mode, press the key for few seconds to enter Parameter Selection Mode.</p> <p>調整設定參數後，按此鍵由參數設定跳回參數選擇模式 After parameter adjustment, press the key back to Parameter Selection Mode.</p>

<p>儲存參數設定並離開 Parameter Saving</p>		<p>在一般模式中，長按此鍵進入特殊功能選擇 In Normal Mode, press the key for few seconds to enter Special Function Mode. 於特殊功能模式中，按此鍵可回到一般模式 In Special Function Mode, press the key to return to Normal Mode. 調整設定參數後，按此鍵回到一般模式 After parameter adjustment, press the key to back to Normal Mode.</p>
<p>開啟 LED LED ON</p>		<p>開啟照明用 LED Turn on the LED light.</p>
<p>關閉 LED LED OFF</p>		<p>關閉照明用 LED Turn off the LED light.</p>
<p>參數功能別 / 參數內容 遞增 Increment Key</p>		<p>增加A、B、C、D針數 0~15 針(0~F) (Note: A=10, B=11, C=12, D=13, E=14, F=15) Stitching number increment from 0 to 15 (0~F) (Note: A=10, B=11, C=12, D=13, E=14, F=15) 參數功能別項次選擇遞增 / 參數內容調整 Increment for Parameter Selection and Adjustment.</p>
<p>參數功能別 / 參數內容 遞減 Decrement Key</p>		<p>減少A、B、C、D針數 15~0 針(F~0) (Note: F=15, E=14, D=13, C=12, B=11, A=10) Stitching number increment from 0 to 15 (0~F) (Note: F=15, E=14, D=13, C=12, B=11, A=10) 參數功能別項次選擇遞減 / 參數內容調整 Decrement for Parameter Selection and Adjustment.</p>



## 5.4 參數說明 Parameter List

參數 Parameter	參數功能 Function	設定範圍 Range	出廠值 Default	說明 Description
1. H	馬達速度 Motor Speed	200~450 0	4000	單位 (Unit): rpm
2. LMS	慢速起縫模式 Soft Start Stitch Mode	A/T	T	A: 往前輕觸踏板時，自動執行慢速起縫。 A: Automatic soft start stitching when treading forward foot pedal. T: 切線動作結束後下一次執行車縫動作時，自動執行慢速起縫。 T: Automatic soft start stitching when thread trimming completed and start next stitching cycle.
3. CRS	計數比例選擇 Counter Ratio Selection	1-100	1	設定計數，為"043"的倍數值。實際值為?3. CRS? ?3. KT? Set the counter ratio. It will be a multiple for the value set in ?43? The real value will be?3. CRS? x ?3. KT? 當?42. KMS?設為 UTS 模式時無效，固定為 1 倍。 When?42. KMS□ as set as UTS mode, the multiple is set default value (1).
4. B	起始回縫速度 Start Tacking Speed	200~450 0	2000	
5. E	終止回縫速度 End Tacking Speed	200~450 0	2000	
6. C	連續回縫速度 Bar Tacking Speed	200~450 0	1800	
7. L	慢速起縫速度 Soft Start Speed	200~300 0	400	
8. LSS	慢速起縫針數 Soft Start Stitch Number	0~99	1	
9. A	自動定寸縫速度 Auto Constant Stitching Speed	200~450 0	3800	

<p>10. AES</p>	<p>定寸縫後自動執行終止回縫 Auto End Tacking after Constant Stitching</p>	<p>ON/OFF</p>	<p>ON</p>	<p>ON: 在執行完最後一段定針縫後，即自動執行終止回縫或切線動作。 ON: After last stitching cycle at constant stitching, automatically execute end tacking or thread trimming. OFF: 再執行完最後一段定針縫後，將無自動執行終止回縫或切線動作(需要後踩才可執行終止回縫或切線。) OFF: After last stitching cycle at constant stitching, the end tacking or thread trimming will not be executed unless depressing backward on foot pedal.</p>
<p>12. BMS</p>	<p>起始回縫模式類別 Mode Selection for Start Tacking</p>	<p>A/M/SU/ SD</p>	<p>A</p>	<p>A: 往前輕觸踏板，即自動執行完起始回縫段針數。 A: One shot sewing. M: 受踏板控制可任意控速與停止。 M: Motor can adjust speed and stop during operation via foot pedal control. SU: 於各段轉角處自動暫停針上後，始繼續執行下一段針數，暫停時間由參數"27. CT"調整控制。 SU: One shot sewing while motor stops at needle UP with few ms interruption at end of each seam. The interruption time set by "27. CT" timer. SD: 於各段轉角處自動暫停針下後，始繼續執行下一段針數，暫停時間由參數"27. CT"調整控制。 SD: One shot sewing while motor stops at needle DOWN with few ms interruption at end of each seam. The interruption time set by "27. CT" timer.</p>
<p>13. BDS</p>	<p>起始回縫結束點操作模式 Mode Selection at the End of Start Tacking</p>	<p>CON/ST P</p>	<p>CON</p>	<p>CON: 執行完起始回縫段針數後，即自動連續執行下一段的功能設定。 CON: At the end of start tacking, it continues operations if foot pedal presses. STP: 執行完起始回縫段針數後，必須再次前踏後才會開始下一車縫模式。 STP: At the end of start tacking, the re-start must be controlled by foot pedal forward treading.</p>

14. BFS	起始回縫功能 Start Tacking Function Selection	ON/OFF	ON	
15. BAS	起始回縫A段車縫針數 Stitch A Setting for Start Tacking	0~15	3	
16. BBS	起始回縫B段車縫針數 Stitch B Setting for Start Tacking	0~15	3	
17. BNS	起始回縫回數 Turns Setting for Start Tacking	0~4	3	
18. BTA	起始回縫A段針數補償 Stitch A Balance for Start Tacking	00~0F	0	
19. BTB	起始回縫B段針數補償 Stitch B Balance for Start Tacking	00~0F	0	
20. EMS	終止回縫模式 Mode Selection for End Tacking	A/SU/SD	A	<p>A: 車縫後觸動全後踏功能，即自動執行完終止回縫段針數。 A: One shot sewing.</p> <p>SU: 於各段轉角處自動暫停針上後，始繼續執行下一段針數，暫停時間由參數"27. CT "調整控制。 SU: One shot sewing while motor stops at needle UP with few ms interruption at end of each seam. The interruption time set by ?7. CT?timer.</p> <p>SD: 於各段轉角處自動暫停針下後，始繼續執行下一段針數，暫停時間由參數"027"調整控制。 SD: One shot sewing while motor stops at needle DOWN with few ms interruption at end of each seam. The interruption time set by ?7. CT?timer.</p>
21. EFS	終止回縫功能 End Tacking Function Selection	ON/OFF	ON	

22. ECS	終止回縫C段車縫針數 Stitch C Setting for End Tacking	0~15	3	
23. EDS	終止回縫D段車縫針數 Stitch D Setting for End Tacking	0~15	3	
24. ENS	終止回縫回數 Turns Setting for End Tacking	0~4	2	
25. ETC	終止回縫C段針數補償 Stitch C Balance for End Tacking	00~0F	0	
26. ETD	終止回縫D段段針數補償 Stitch D Balance for End Tacking	00~0F	0	
27. CT	自動回縫段落停止時間 Interruption Time Setting at Section End of Tacking	0~999	50	
28. BES	起始/終止回縫針數設定 Stitch Setting for Start / End Tacking	ON/OFF	OFF	ON:有效 ON: The function is Valid. OFF:無效 OFF: The function is invalid.
29. BEP	起始/終止回縫針數補償 Adding Stitches for Start / End Tacking	0~99	0	當執行起始或終止回縫功能時，在各段的設定針數內自動追加 0~99 針(註:需在"28. BES "為 ON 時才有效) When executing start / end tacking, it will automatically add 0~99 stitches. (Note: the function will be valid only when ?8. BES?was set ON.)
30. EC1	終止回縫C段多加1針 Adding 1 Stitch to the Stitch C of End Tacking	ON/OFF	OFF	ON:當執行終止回縫功能時，再第一段的C段內自動追加一針。 ON: When executing end tacking, it will automatically add 1 stitch in C Section. OFF:無效 OFF: The function is invalid.

31. EMS	自動連續回縫運動模式 Mode Selection for Bar Tacking	A/M/SU/ SD	A	<p>A: 往前輕觸踏板，即自動執行完起始回縫段針數。 A: One Shot Sewing.</p> <p>M: 受踏板控制可任意控速與停止。 M: Motor can adjust speed and stop during operation via foot pedal control.</p> <p>SU: 於各段轉角處自動暫停針上後，始繼續執行下一段針數，暫停時間由參數"27. CT "調整控制。 SU: One shot sewing while motor stops at needle UP with few ms interruption at end of each seam. The interruption time set by ?7. CT?timer.</p> <p>SD: 於各段轉角處自動暫停針下後，始繼續執行下一段針數，暫停時間由參數"27. CT "調整控制。 SD: One shot sewing while motor stops at needle DOWN with few ms interruption at end of each seam. The interruption time set by ?27?timer.</p>
32. CFS	連續回縫功能 Bar Tacking Function Selection	ON/OFF	OFF	
33. CAS	連續回縫A段針數 Stitch A Setting for Bar Tacking	0~99	4	
34. CNS	連續回縫回數 Turns Setting for Bar Tacking	0~15	4	
35. CBS	連續回縫B段針數 Stitch B Setting for Bar Tacking	00~0F	4	
36. CCS	連續回縫C段針數 Stitch C Setting for Bar Tacking	00~0F	4	
37. AMS	定寸縫模式 Mode Selection for Constant Stitching	A/M	M	<p>A: 前踏即動作 A: One Shot Sewing.</p> <p>M: 由踏板控制且馬達可中途停止 M: Motor can adjust speed and stop during operation via foot pedal control.</p>

38. AS	定寸縫(15段)選擇 Constant Stitching Function Selection	ON/OFF	OFF	
39. PS	定寸縫針數設定 Stitches Setting for Constant Stitching	0~250	15	使用 P1~PF 功能時 P1~P4 段出廠設定針數為 15， 如未使用之段，其針數必須設為 0。 When using P1~PF functions, the default setting are 15 stitches, while other unused stitches need to set to 0 stitch.
40. WFS	撥線出力功能 Wiper Function Selection	ON/OFF	ON	
41. TS	切線出力功能 Trimmer Function Selection	ON/OFF	ON	
42. KMS	計數器模式 Counter Mode Selection	NOP/UT S	NOP	NOP: 無計數器功能 NOP: The counter is invalid. UTS: 切線後往上計數一次，當達到設定的馬達自 動停止，按操作盒A鍵重新計數 UTS: Count up by trimming. When count is over the limit, the motor stops and the counter must be reset by Key A on the Operation Box.
43. KT	計數目標值 Count Setting	1~9999	99	
44. KV	計數值顯示 Current Count Display	0~99	顯示數 值 Count # Display	
45. SV	馬達速度顯示 Motor Speed Display	0~4500	顯示速 度 Speed Display	
66. MD	馬達啟動時間延遲 Motor Delay Time Setting	0~990	300	壓腳放下到馬達啟動的延遲時間 If pressor foot lifter is installed, set the delay time to ensure the presser foot lifter will come down first.

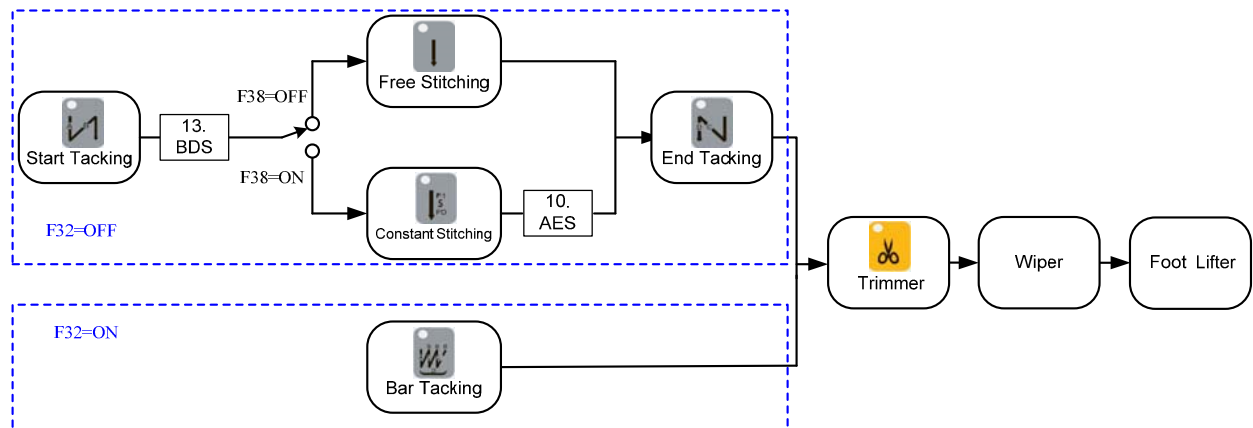
67. FPM	壓腳電磁閥動作時的保護功能開啟選擇 Protection Function Selection when Presser Foot Lifter Solenoid Enabled	ON/OFF	ON	ON: 有效 (以"068.FP"設定值為準) ON: Enable (Follow the time setting value at "068.FP") OFF: 無效 OFF: Disable
68. FP	壓腳電磁閥動作時的保護時間設定 Protection Function Delay Time when Presser Foot Lifter Solenoid Enabled	(0~9990) *0.01S	3000	當"067.FRM"為 ON 時有效 (壓腳放下前 2 Sec 有警示音) Enable when "067.SRM" set at ON. The buzzer will alarm 2 secs prior to presser foot lifter goes down.
69. HT	半後踏抬壓腳確認時間 Half Heeling Pedal Delay Time	0~990	100	設定半後踏抬壓腳的延遲時間，一般設為 100ms Set half heeling delay time. The default is 100ms.
70. HFS	半後踏抬壓腳功能選擇 Half Heeling Pedal Function Canceling	ON/OFF	OFF	ON:取消半後踏抬壓腳 (車縫後半後踏即切線) ON: No presser foot lifter at half heeling. (The trimmer will be enable when half heeling pedaling). OFF:不取消半後踏抬壓腳 OFF: Enable presser foot lifter at half heeling.
71. FS	全後踏抬壓腳功能選擇 Full Heeling Pedal Function Canceling	ON/OFF	OFF	ON:取消全後踏抬壓腳 ON: No presser foot lifter at full heeling. OFF:不取消全後踏抬壓腳 OFF: Enable presser foot lifter at full heeling.
75.	安全開關保護信號形式 Safety Switch Protection Mode	NC/NO	NO	NC:SAFETY SW 為常閉 NC: Safety switch normal close NO:SAFETY SW 為常開 NO: Safety switch normal open
92. WD	撥線延遲時間 Delay Time Prior to Wiper Enabled	0~990	10	切線完成到撥線動作的延遲時間 Delay time prior to wiper enabled.
93. WT	撥線動作時間 Wiper Time Setting	0~990	50	
94. F1	壓腳延遲時間 Delay Time Prior to Presser Foot Lifter Enabled	0~990	80	撥線完成到抬壓腳動作的延遲時間 Duration between wiper and presser foot lifter enabled.

特殊功能設定模式 Special Function Setting Mode				
F2	撥線出力功能 Wiper Function Selection	ON/OFF	ON	ON: 開啟撥線功能 ON: Enable wiper function OFF: 關閉撥線功能 OFF: Disable wiper function
F3	上下停針選擇 Up / Down Needle Positioning Selection	ON/OFF	OFF	ON: 上停針 ON: Needle up positioning OFF: 下停針 OFF: Needle down positioning
F4	慢速起功能選擇 Soft Start Function Selection	ON/OFF	OFF	ON: 開啟慢速起縫 ON: Enable soft start OFF: 關閉慢速起縫 OFF: Disable soft start

註: 參數設定後, 需在下一個車縫流程才有效

Note: Any parameter setting will work after finish the preceding process.

\*Reference Stitch Flow Chart.

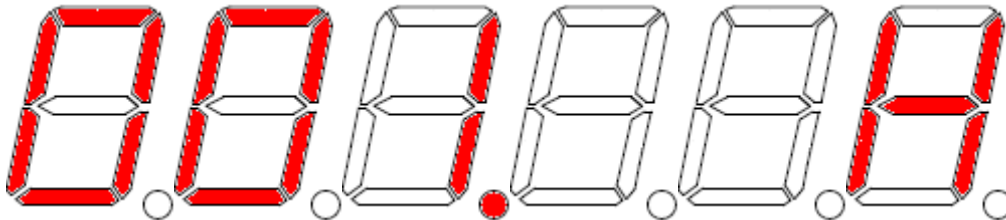






## 5.5 參數設定詳細步驟 Parameter Setting Details

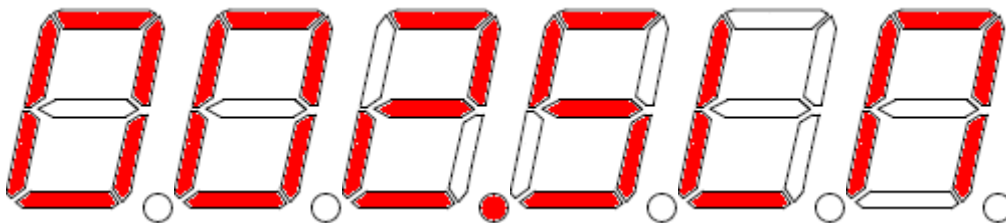
1. 在一般模式下，長按P鍵  可進入參數選擇模式。


In **Normal Mode**, press P Key  for few seconds to enter **Parameter Selection Mode**.



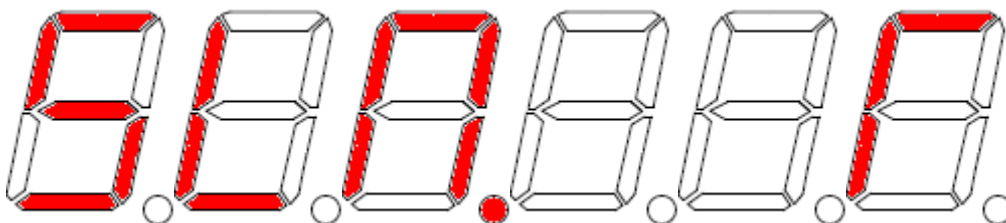
2. 利用D區塊的增加鍵   選擇參數。



Use the increment key   in D block to select parameter.





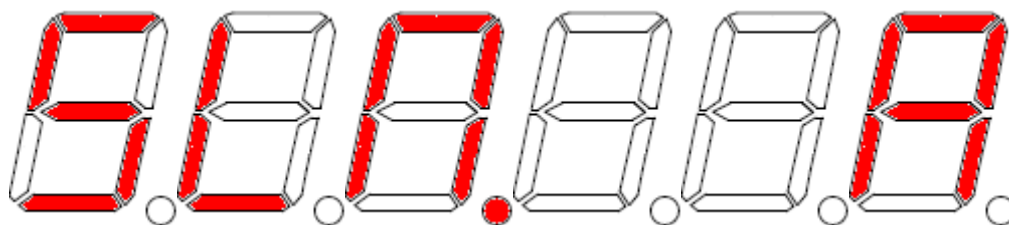
3. 按S鍵  進入參數調整模式。

Press S Key  to enter **Parameter Adjustment Mode**.



4. 利用 ABCD 區塊的增減鍵   設定參數。

Use the increment key and decrement key   in A B C D block to adjust the parameter.




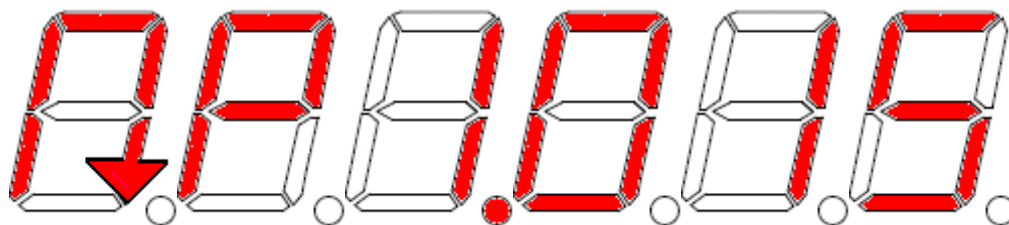
5. 按S鍵回到 一般模式 / 或按P鍵  回到參數選擇模式。


Press S Key to go back to **Normal Mode**. Or press P Key  to go back to **Parameter Selection Mode**.

### 5.6 定寸縫詳細步驟 Constant Stitching Parameter Setting Details


1. 按定寸縫功能鍵  可進入定寸縫設定模式。


Press Constant Stitch Key  to enter **Constant Stitching Mode**.

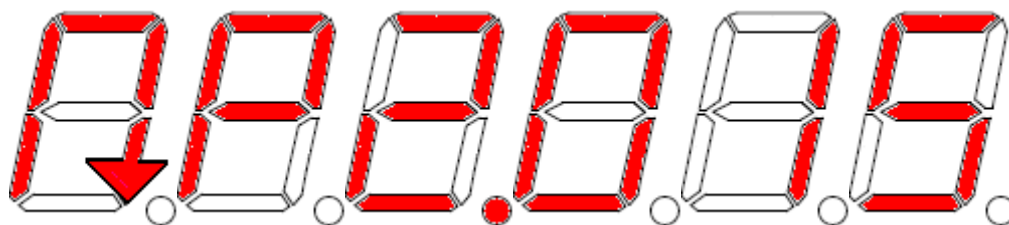


註:  表示運行中選針盒的跑馬燈，在一般模式下會持續旋轉。




Note:  shows the Operation Box is running.

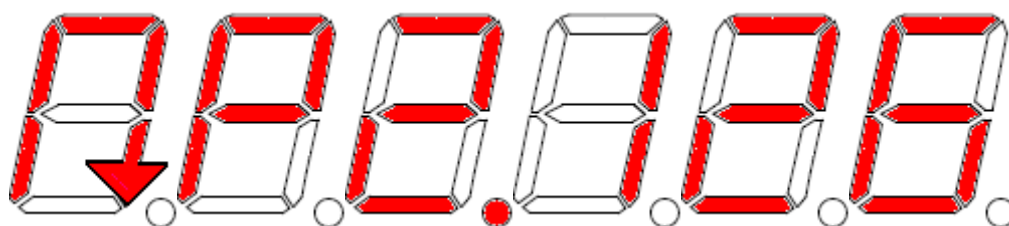
2. 按A區塊的增加鍵  可調整段數 P1 表示第一段，PA 表示第十段，PD 表示第 13 段。

Press Increment Key  in A Block to adjust stitch number. For example, P1 refers to 1 stitch, PA refers to 10 stitches, while PD refers to 13 stitches.




3. 按 BCD 區塊的增減鍵   可調整各段針數, B 控制百位, C 控制十位, D 控制個位數, 各按一次增加鍵  則加 111。

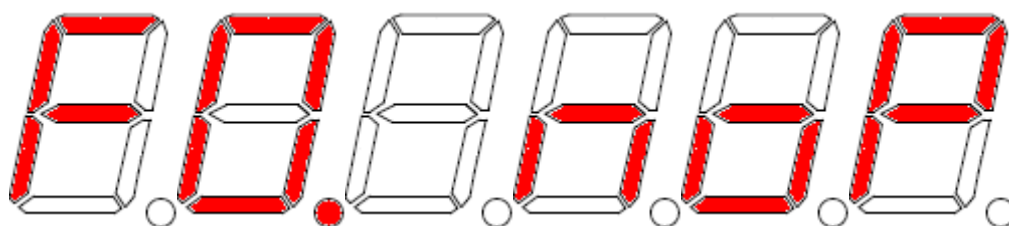
Press Increment Key and Decrement Key   can adjust stitches number. For example, the stitches number will increase by 111 if push all Increment Keys  in B, C, D Block each one time.



### 5.7 特殊功能設定模式 Special Function Setting Details

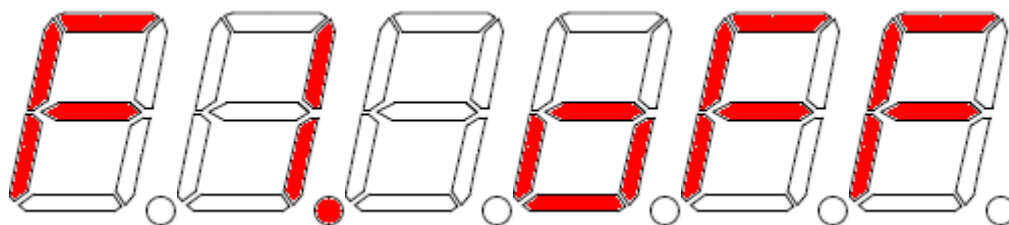
1. 在一般模式下長按S鍵  可進入特殊功能模式。

In **Normal Mode**, Press S Key  for few seconds to enter **Special Function Mode**.



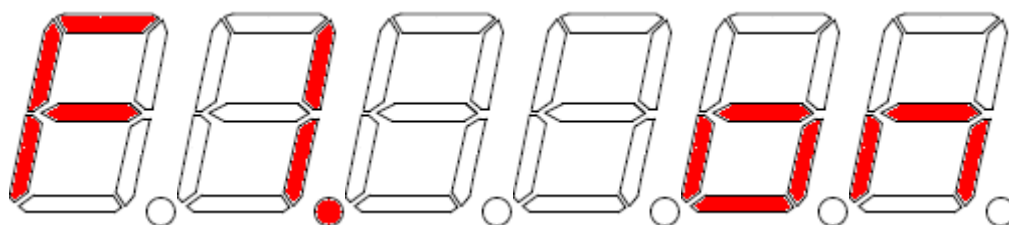
2. 按D區塊的增減鍵可調整功能。F0 表示 Function 0，F6 表示 Function 6。

Press Increment Key and Decrement Key in D Block to adjust function. F0 refers for Function 0, while F6 refers to Function 6.



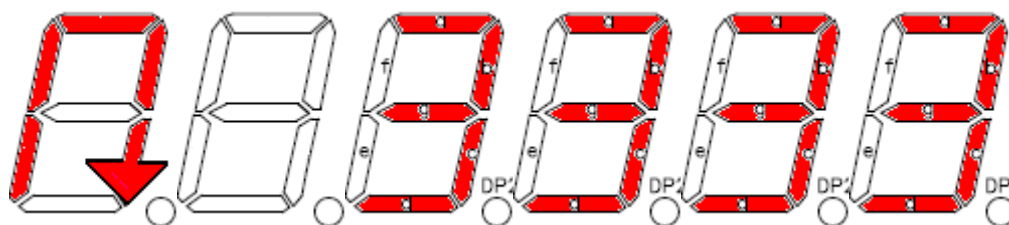
3. 按F鍵 **F** 可調整參數。

Press F Key **F** to adjust parameter.



4. 按S鍵 **S** 可離開特殊功能模式，回到一般模式。

Press S Key **S** to leave **Special Function Mode** and back to **Normal Mode**.



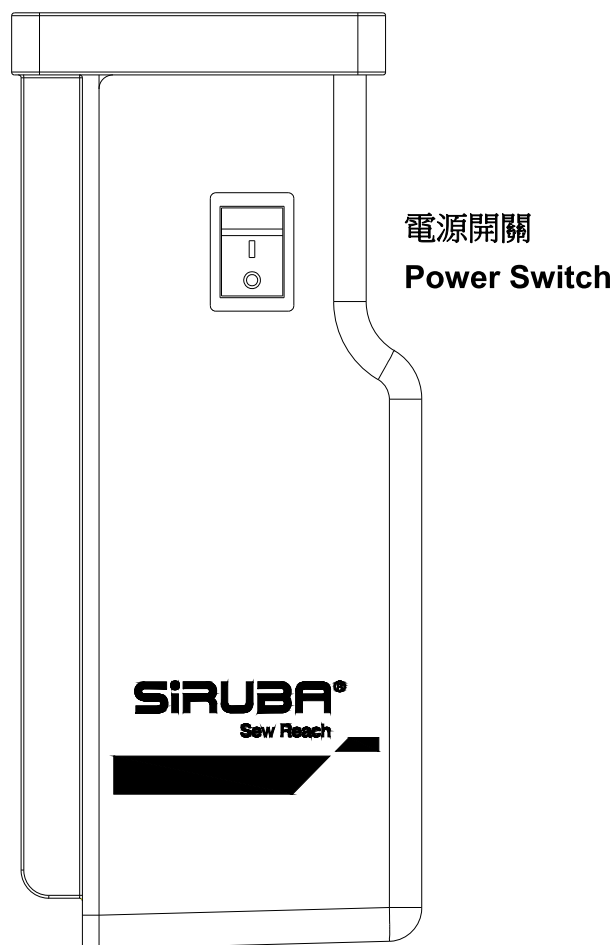
## 5.8 顯示器對照表 Display Table

Value	0	1	2	3	4	5	6	7	8	9
Display	0	1	2	3	4	5	6	7	8	9

Value	A	B	C	D	E	F	G	H	I	J
Display	A	b	C	d	E	F	G	H	,	J
Value	K	L	M	N	O	P	Q	R	S	T
Display	t	L	n	n	o	P	q	r	S	T
Value	U	V	W	X	Y	Z				
Display	U	v	W		Y	≡				

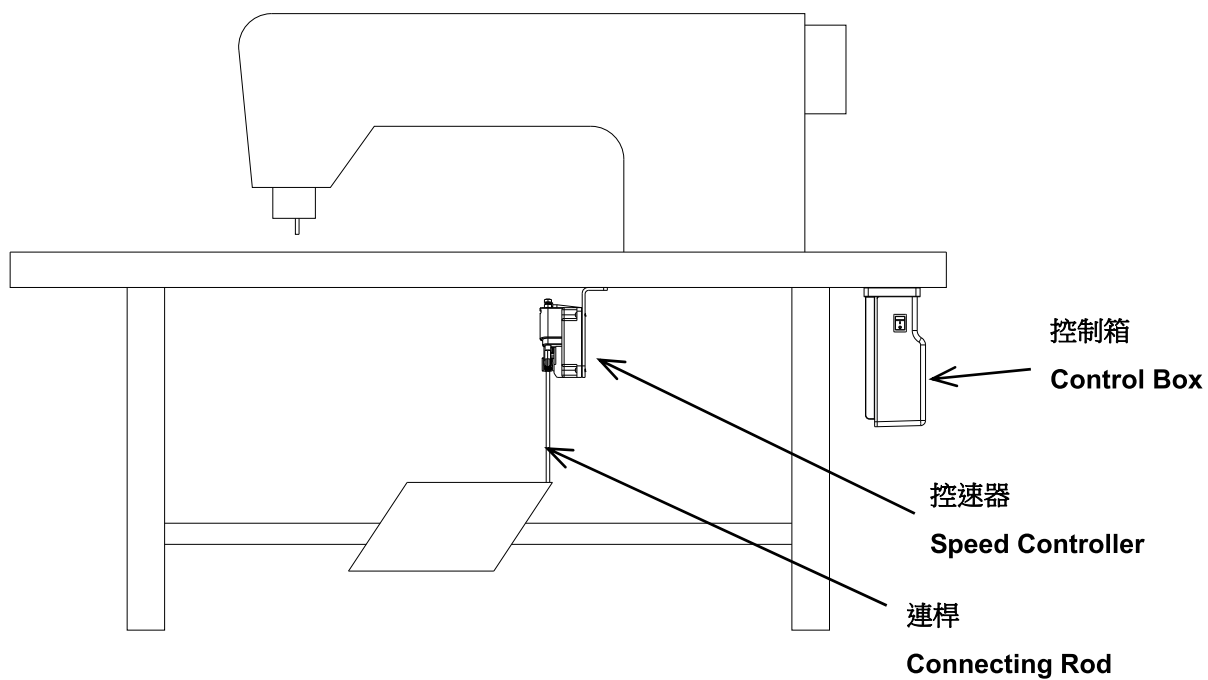
## 6. 操作介面及安裝說明 User Interface and Installation

### 6.1 使用者介面說明 Control Box User Interface

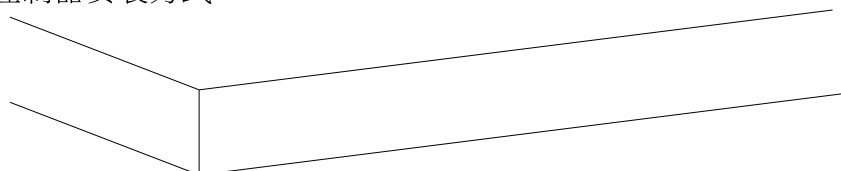


### 6.2 控制器安裝示意圖 Control Box Installation

#### 6.2.1 安裝位置 Installation Location

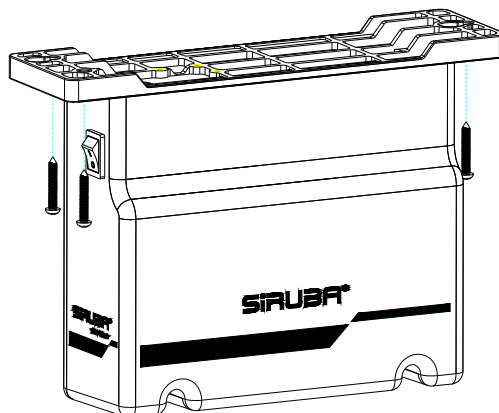


## 6.2.2 控制器安裝方式 Control Box Installation



桌板 Table

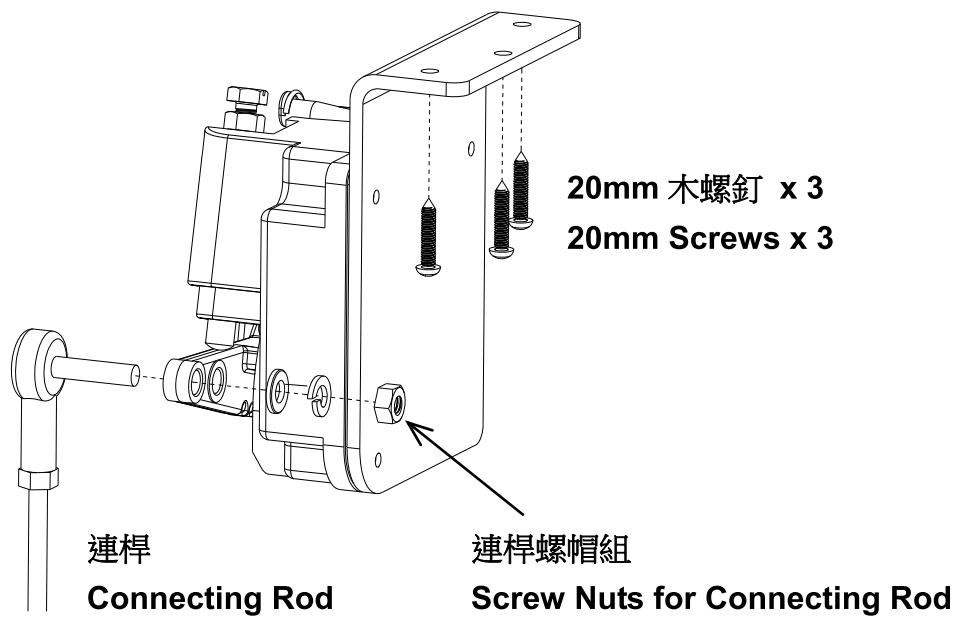
25mm 木螺釘 x 3  
25mm Screws x 3



## 6.2.3 控速器安裝方式 Speed Controller Installation



桌板 Table

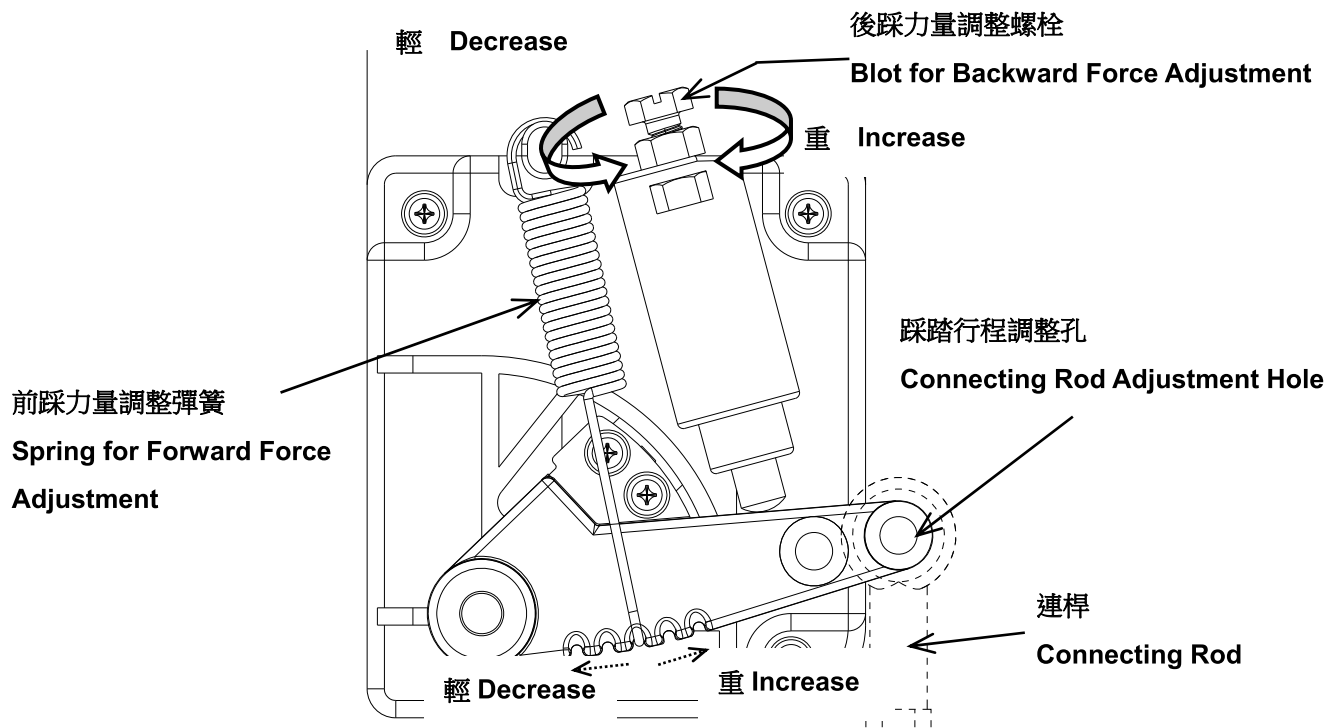


## 6.2.4 控速器調校方式 Speed Controller Adjustment



在進行控速器調校前，請務必關閉電源。

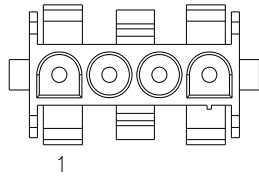
Turn off the power before the speed controller adjustment.



調整項目 Adjustment Items	調整方式 Adjustment Method
踏板前踩力量調整 Forward Force Adjustment	(1) 將調整彈簧往右移，前踩力量越"重" When spring moving to the right, the forward force increases. (2) 將調整彈簧往左移，前踩力量越"輕" When spring moving to the left, the forward force decreases.
踏板後踩力量調整 Backward Force Adjustment	(1) 將調整螺栓順時針轉動，後踩力量越"重" When bolt turns clockwise, the backward force increases. (2) 將調整螺栓逆時針轉動，後踩力量越"輕" When bolt turns counterclockwise, the backward force decreases.
踏板行程調整 Connecting Rod Adjustment	(1) 將連桿安裝於右側孔中，踏板行程較"長" When the connecting rod secures at right hole, the stroke is longer. (2) 將連桿安裝於左側孔中，踏板行程較"短" When the connecting rod secures at left hole, the stroke is shorter.

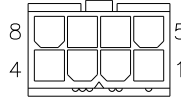


### 6.3 外部連接器連接說明 Outside Connector Diagram



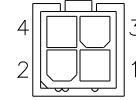
馬達電源線

Motor Power Connector



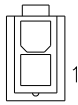
馬達編碼器訊號線

Motor Encoder Connector



安全開關

Safety Switch



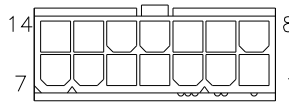
抬押腳

Foot Lifter



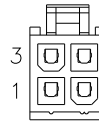
選針盒

Operation Box



電磁閥

Electromagnetic Valve



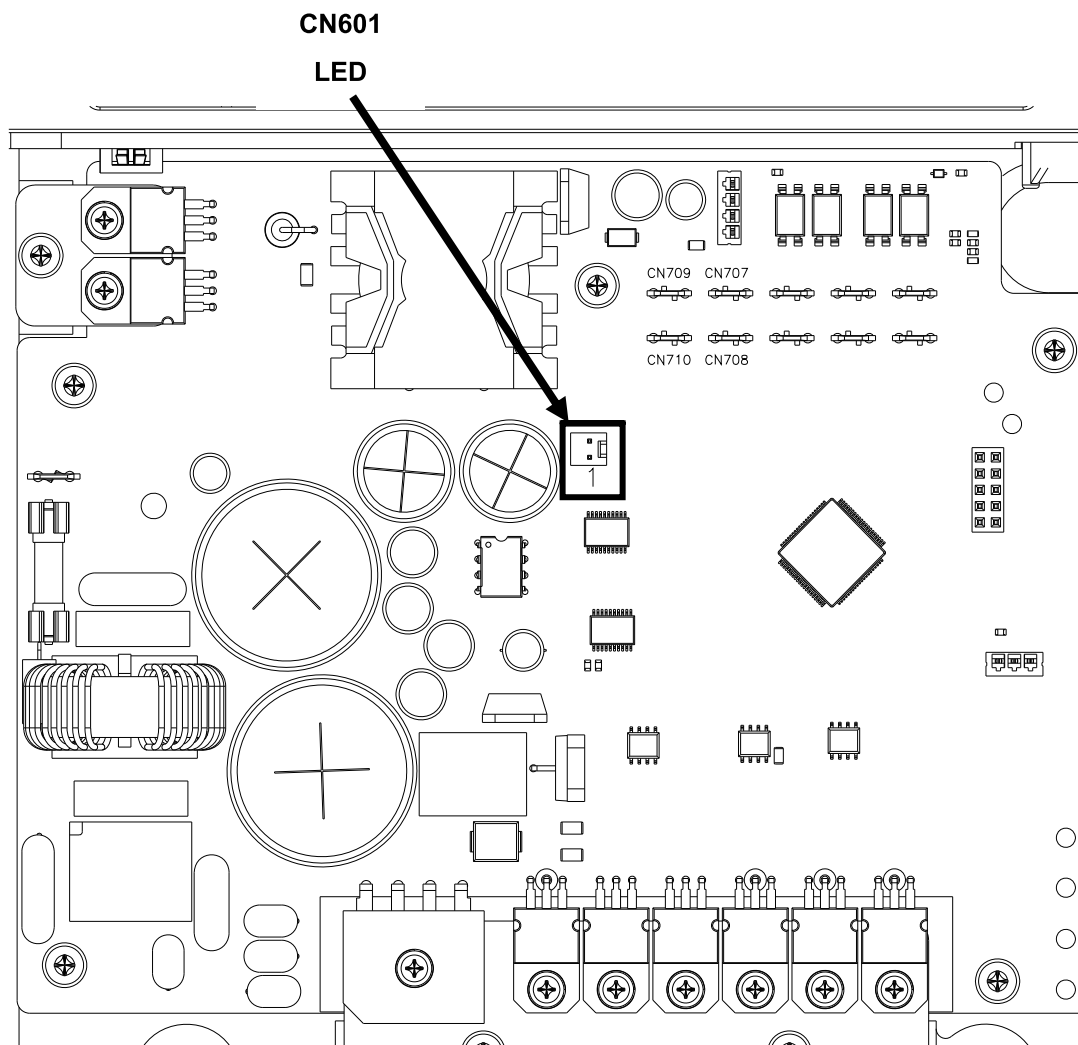
控速器

Speed Controller

馬達電源線 Motor Power Connector			馬達編碼器訊號線 Motor Encoder Connector			控速器 Speed Controller			選針盒 Operation Box		
1	U	紅 Red	1	A+	綠 Green	1	12V	紅 Red	1	5V	紅 Red
2	V	白 White	2	B+	白 White	2	Signal	綠 Green	2	GND	黑 Black
3	W	黑 Black	3	Z+	黃 Yellow	3	GND	黑 Black	3	Rx	白 White
4	PE	黃/綠 Yellow/Green	4	+5V	紅 Red	4	N/A	N/A	4	Tx	綠 Green
			5	5VGND	黑 Black						
			6	U+	棕 Brown						
			7	W+	灰 Gray						
			8	V+	橙 Orange						

安全開關 Safety Switch			抬押腳 Foot Lifter			電磁閥 Electromagnetic Valve					
1	N/A	N/A	1	30V	白 White	1	30V	藍 Blue	8	切線 Trimmer	棕 Brown
2	GND	白 White	2	Foot	黑 Black	2	30V	紅 Red	9	掃線 Wiper	橘 Orange
3	N/A	N/A				3	N/A	N/A	10	N/A	N/A
4	5V	黑 Black				4	N/A	N/A	11	N/A	N/A
						5	回縫開關 Reverse Switch	黑 Black	12	GND	白 White
						6	回縫 Reverse	黃 Yellow	13	30V	綠 Green
						7	N/A	N/A	14	N/A	N/A

## 6.4 内部连接器説明 Inside Connector Diagram




CN601 LED	
1	12V
2	GND

## 7 故障排除 Error Code & Trouble Shooting

選針盒顯示錯誤碼 Operation Box Error Code	異常現象說明 Cause of the Problem	解決措施 Measurement and Solution
Err 1	過電流保護 Over Current Protection	<ol style="list-style-type: none"> <li>1. 關閉電源。 Turn off the power.</li> <li>2. 確認 IGBT 模組工作正常。 Check if the IGBT module is normal.</li> <li>3. 一分鐘後重新送電。控制器若仍有錯誤碼顯示，請更換控制器並通知廠商。 Reboot the control box after 1 min. If the error code still happens, please exchange control box and contact with qualified technician.</li> </ol>
Err 4	過電壓保護 Over Voltage Protection	<ol style="list-style-type: none"> <li>1. 關閉電源。 Turn off the power.</li> <li>2. 請檢查是否插錯供應電源或電壓過高。 Check if the control box is applied to wrong power supply or the voltage is too high.</li> <li>3. 如電壓過高，則待電壓回復正常後重新開機。如無，則一分鐘後重新送電。 If the voltage is too high, please wait for reboot after power becomes normal. If not, reboot the control box after 1 min.</li> <li>4. 控制器若仍有錯誤碼顯示，請更換控制器並通知廠商。 If the error code still happens, please exchange control box and contact with qualified technician.</li> </ol>

Err 7	堵轉檢知遮斷 Over Torque	<ol style="list-style-type: none"> <li>1. 關閉電源。 Turn off the power.</li> <li>2. 檢查馬達動力線插頭配線是否接觸不良。 Check the connection for motor power cable.</li> <li>3. 是否有異物纏繞機頭、其他機械結構干涉異常、或紡織物是否過厚。 Check if any abnormal on machine head, other mechanism abnormal, or if the textile is too thick.</li> <li>4. 確認切刀是否磨耗需更換。 Check if the trimmer has been worn out and need replacement.</li> <li>5. 排除後重新送電，若仍無法正常運轉，請通知廠商。 Reboot the control box after troubleshooting. If the error code is still there, please contact with qualified technician.</li> </ol>
Err 8	選針盒通訊介面異常 Operation Box Communication Error	<ol style="list-style-type: none"> <li>1. 關閉電源。 Turn off the power.</li> <li>2. 檢查選針盒連接線是否脫落、鬆動、破損、插入方向錯誤。 Check if the connector between operation box and control box has been loosen, broken or wrong plug in orientation.</li> <li>3. 排除後重新送電，若仍無法正常運轉，請通知廠商。 Turn on the power again. If the machine still cannot operate normally, please contact with qualified technician.</li> </ol>
Err 20	控制器過熱保護 Control Box Over Heat Protection	<ol style="list-style-type: none"> <li>1. 關閉電源，10 分鐘後重新送電。 Turn off the power. Reboot the control box after 10mins.</li> <li>2. 控制器若仍有故障燈顯示，請通知廠商。 If the error code still happens, please exchange control box and contact with qualified technician.</li> </ol>

<p>Err 21</p>	<p>馬達編碼板異常 Motor Encoder Abnormal</p>	<p>1. 關閉電源。 Turn off the power.</p> <p>2. 檢查馬達編碼器連接線是否接觸不良或馬達編碼器是否故障。 Check the connector between motor encoder and control box or if any malfunction on motor encoder board.</p> <p>3. 排除後重新送電，若仍無法正常運轉，請通知廠商。 Turn on the power again. If the machine still cannot operate normally, please contact with qualified technician.</p>
<p>Err 23</p>	<p>倒縫開關異常 Reverse Stitching Switch Abnormal</p>	<p>1. 關閉電源。 Turn off the power.</p> <p>2. 檢察倒縫開關接線是否有錯誤或倒縫開關是否短路。 Check if there is connection error or short on reverse stitching stitch.</p> <p>3. 排除後重新送電，若仍無法正常運轉，請通知廠商。 Turn on the power again. If the machine still cannot operate normally, please contact with qualified technician.</p>
	<p>安全開關檢知遮斷 Safety Switch Error</p>	<p>一般模式下，旋轉符號不轉動時： When the motor rotating symbol stops during Normal Mode:</p> <p>1. 關閉電源，檢查縫紉機安全開關是否故障。 Turn off the power and check the connection for safety switch.</p> <p>2. 排除後重新送電，若仍無法正常運轉，請通知廠商。 Turn on the power again. If the machine still cannot operate normally, please contact with qualified technician.</p>



# DL7000

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