

DL918 控制系統



Outline

- | | |
|-----------|---------------------------|
| 1. 規格說明 | Guide of specification |
| 2. 控制面板說明 | Guide of Control Panel |
| 3. 參數說明 | Illustration of Parameter |
| 4. 使用說明 | Manual |
| 5. 故障排除 | Troubleshooting |
| 6. 簡易維修 | Simple Repair |
| 7. 機構調整 | Adjustment of Mechanism |
| 8. 零件圖 | Parts List |
| 9. Q&A | |

Guide of specification

The Specification and Function of The Motor and The Electronic Controller

Item	Illustration
Power Voltage	AC 1Φ220V ±15% , 50Hz / 60Hz
Three-phase Sinusoidal Drive Motor	<ol style="list-style-type: none"> 1.Rated Output : 500W 2.Rated Current : 3A 3.Max. Current : 13A 4.Rated Speed : 5000rpm 5.Max. Speed : 5500rpm 6.Rated Torque : 0.95Nm 7.Max. Torque : 3.5Nm 8.Encoder 解析度 Pixel: 360pulse / 回轉 Rotation 9. Insulation Class : B class(130°C / 266°F) 10. Dust Level: IP40
馬達驅動型態' Types of Drive Motor	<ol style="list-style-type: none"> 1.三相弦波驅動 Three-Phase Sinusoidal Drive : AC Servo Motor 500W (BLDC) 2.停針位置誤差 ± 3 度 Needle Position Error of ± 3 degrees 3.速度指令值 Velocity Command Value : 200 ~ 5000rpm 4.切線速度值 Tangential Velocity Value : 200 ~ 300rpm 5.加速速率值 Accelerate The Rate of Value : 4500rpm/150ms 6.減速速率值 Deceleration Rate Value : 4500rpm/150ms 7.動力煞車 Dynamic Brake : 1 ~ 5 scale 8.動力煞車時間值 Time Value of Power Brakes : 50 ~ 990ms 9.速度變動率 : 切線、低速:±10spm , start/end : ±20spm ,最高速 : ±50spm Speed Rate of Change: Trimmer, Low Speed: :±10spm , start/end : ±20spm , Highest Speed: ±50spm ,

輸出輸入裝置規格與功能

The Specification and Function of Input and Output Device

項目 Item	內容說明 Illustration
速度回饋 Speed Feedback	Encoder (信號源 Source A & B & Z) & Hall Sensor

<p>輸入裝置 Input Device</p>	<p>1.控速器(+12V) Foot Switch : (+12V / Start / VC / Knee SW / 0V / Trimmer) Speed Controller 2.Safety Switch : (+12V / Safety SW / PSD / 0V) 3.選針盒 Operation Box : (U Sw. / R1 in / +12V / T1 out / 0V / CKU) 4.Encoder : (+5V / Up / Down / A Phase / B Phase / R / S / T / 0V) 5.抬壓腳 Foot Lifter : (OF / +24V) 6.倒縫開關(操作按鍵開關,手動控制倒縫電磁閥) Backstitch Switch (Operation Key Switch, Manual Control Backstitch Solenoid Valve) 7.掃線電磁閥電源開關 , 直接串接電磁閥電源線 , 控制掃線電磁閥 ON/OFF Sweep Line Solenoid Valve Power Switch, Direct Tandem Solenoid Valve Power Cord, Control Sweep Line Solenoid Valve ON/OFF</p>
----------------------------------	--

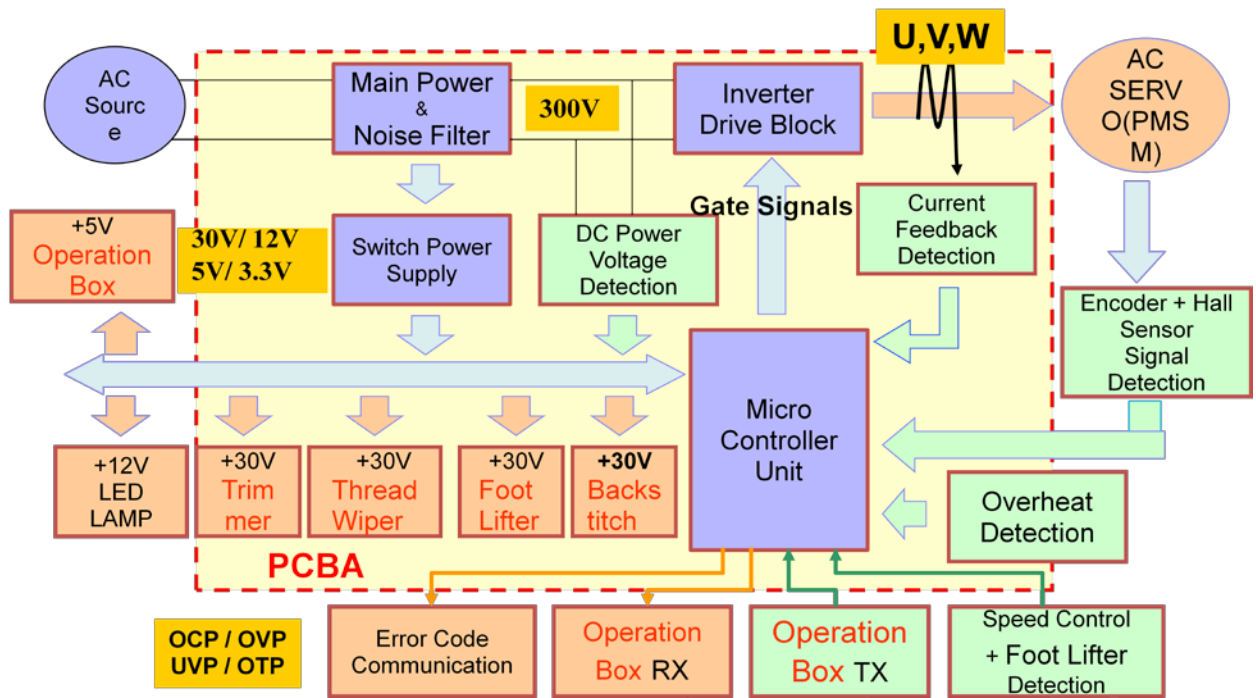
輸出輸入裝置規格與功能

The Specification and Function of Input and Output Device

項目 Item	內容說明 Illustration
<p>輸出裝置 Output Device</p>	<p>1.提供 +12V / 0.5A , 控制 LED Lamp Supply +12 V/ 0.5A, Control LED Lamp 2.故障現象顯示 LED Trouble Signal Display LED 3.車頭功能 Sewing Machine : 14 Pin Connector Pin1 : OA , Pin 8 : +24V → 切線電磁閥(LU25-E)(行程 6mm,阻抗 7.5ohm,吸力 5.5Kg/mm) Trimmer Solenoid (LU25-E)(distance 6mm mpedance .5ohm,suction5.5Kg/mm) Pin2 : OB , Pin 9 : +24V → 掃線電磁閥(GLU36)(行程 7mm,阻抗 8.5ohm,吸力 2.5Kg/mm) Thread Wiper Solenoid (GLU36) (distance7mm,impedance8.5ohm,suction2.5Kg/mm) Pin6 : OC , Pin13 : +24V → 倒縫電磁閥(LC209-A)(行程 8mm,阻抗 5.6ohm,拉力 4Kg/mm) Backstitch Solenoid (LC209-A)(distance 8mm,impedance 5.6ohm, Pull 4Kg/mm) Pin5 : INE 倒縫開關 , Pin12 : 0V → 操作按鍵開關,手動控制倒縫電磁閥 Pin5 : INE Backstitch Switch , Pin12 : 0V → Operation Key Switch, manual control backstitch solenoid valve Pin10 : Earth 接地 , Pin3 & 4 & 11 : NC</p>
<p>設定裝置 Setting Device</p>	<p>1.內部具有 DIP SW 裝置 , The DIP SW Device is installed in the internal machine. (1).起始倒縫 Start Backstitching (2).終止倒縫 Stop Backstitching (3).上停針 / 下停針 Upper Stop Pin / Down Stop Pin (4).慢速起縫 Stitching with slow speed 2.外部具有旋轉 VR 可調整 Max rpm ~ 0 rpm 之間的最大可運轉速 The rotation VR in the external machine can adjust the maximum speed within Max rpm ~ 0 rpm.</p>

電控器方塊圖 Electric Controller Block Diagram

6



控制面板介紹

Guide of Control Panel








1. Special Function Selection	9. 關閉照明用 LED LED OFF
2 Presser Foot Function After Thread Trimming	10. 參數功能別/參數內容選擇鍵 Parameter Increment / Decrement Key
3. 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. Parameter Setting	14. 起始回縫模式 Start Tacking Setting
7. 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

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.
自由縫 Free Stitching		<ol style="list-style-type: none"> 1. 踏板前踩時進行車縫 Forward tread the front part of foot pedal. The machine will run. 2. 踏板中立時停止車縫 Reset the foot pedal back to original position. The machine will stop. 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.
自動模式 One Shot Automatic Stitching		前踩踏板完成回縫之設定針數 Complete the stitch number in start / end tacking mode. 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>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 to enter Parameter Selection Mode. 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 to 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 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 LED light.</p>
<p>關閉 LED LED OFF</p>		<p>關閉照明用 LED Turn off 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>

參數介紹

Illustration of Parameter

參數 Parameter	參數功能 Function	設定範圍 Range	出廠值 Default	說明 Description
1	馬達速度 Motor Speed	200~4500	4000	單位 (Unit): rpm
2	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 completed and start next stitching cycle.
3	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"003" x "043"。 Set the counter ratio. It will be a multiple for the value set in "043". The real value will be "003" x "043". 當"042"設為 UTS 模式時無效，固定為 1 倍。 When "042" was set as UTS mode, the multiple is set default value (1).
4	起始回縫速度 Start Tacking Speed	200~4500	2000	單位 (Unit): rpm
5	終止回縫速度 End Tacking Speed	200~4500	2000	單位 (Unit): rpm
6	連續回縫速度 Bar Tacking Speed	200~4500	1800	單位 (Unit): rpm
7	慢速起縫速度 Soft Start Speed	200~3000	400	單位 (Unit): rpm
8	慢速起縫針數	0~99	2	

	Soft Start Stitch Number			
9	自動定寸縫速度 Auto Constant Stitching Speed	200~4500	3800	單位 (Unit): rpm
10	定寸縫後自動執行終 止回縫 Auto End Tacking after Constant Stitching	ON/OFF	ON	<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。</p> <p>ON: After last stitching cycle at constant stitching, automatically execute end tacking or thread trimming.</p> <p>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。)</p> <p>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>
12	起始回縫 模式類別 Mode Selection for Start 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。</p> <p>A: One shot sewing.</p> <p>M: 受踏板控制可任意控速與停止。</p> <p>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"027"調整控制。</p> <p>SU: One shot sewing while motor stops at needle UP with few ms interruption at end of each seam. The interruption time set by "027" 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。</p> <p>SD: One shot sewing while motor stops at needle DOWN</p>

				with few ms interruption at end of each seam. The interruption time set by "027" timer.
13	起始回縫結束點操作模式 Mode Selection at the End of Start Tacking	CON/STP	CON	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，必須再次前踏後始恢復一般功能。 STP: At the end of start tacking, the re-start must be controlled by foot pedal forward treading.
14	起始回縫功能 Start Tacking Function Selection	ON/OFF	ON	
15	起始回縫 A 段車縫針數 Stitch A Setting for Start Tacking	0~15	3	
16	起始回縫 B 段車縫針數 Stitch B Setting for Start Tacking	0~15	3	
17	起始回縫回數 Turns Setting for Start Tacking	0~4	3	
18	起始回縫 A 段針數補償 Stitch A Balance for Start Tacking	00~0F	0	
19	起始回縫 B 段針數補償 Stitch B Balance for Start Tacking	00~0F	0	
20	終止回縫模式 Mode Selection for End Tacking	A/SU/SD	A	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. 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"027"調整控制。 SU: One shot sewing while motor stops at needle UP with

				<p>few ms interruption at end of each seam. The interruption time set by "027" 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。</p> <p>SD: One shot sewing while motor stops at needle DOWN with few ms interruption at end of each seam. The interruption time set by "027" timer.</p>
21	終止回縫功能 End Tacking Function Selection	ON/OFF	ON	
22	終止回縫 C 段車縫針數 Stitch C Setting for End Tacking	0~15	3	
23	終止回縫 D 段車縫針數 Stitch D Setting for End Tacking	0~15	3	
24	終止回縫回數 Turns Setting for End Tacking	0~4	2	
25	終止回縫 C 段針數補償 Stitch C Balance for End Tacking	00~0F	0	
26	終止回縫 D 段段針數補償 Stitch D Balance for End Tacking	00~0F	0	
27	自動回縫段落停止時間 Interruption Time Setting at Section End of Tacking	0~999	50	單位 (Unit): ms
28	起始/終止回縫針數設定 Stitch Setting for Start / End Tacking	ON/OFF	OFF	<p>ON:有效</p> <p>ON: The function is Valid.</p> <p>OFF:無效</p> <p>OFF: The function is invalid.</p>
29	起始/終止回縫針數補	0~99	0	當執行起始或終止回縫功能

	償 Adding Stitches for Start / End Tacking			時，在各段的設定針數內自動追加 0~99 針(註:需在"028"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 "028" was set ON.)
30	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	自動連續回縫運動模式 Mode Selection for Bar Tacking	A/M/SU/SD	A	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"027"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 "027" 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"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 "027" timer.
32	連續回縫功能 Bar Tacking Function	ON/OFF	OFF	

	Selection			
33	連續回縫 A 段針數 Stitch A Setting for Bar Tacking	0~99	4	
34	連續回縫回數 Turns Setting for Bar Tacking	0~15	4	
35	連續回縫 B 段針數 Stitch B Setting for Bar Tacking	00~0F	4	
36	連續回縫 C 段針數 Stitch C Setting for Bar Tacking	00~0F	4	
37	定寸縫模式 Mode Selection for Constant Stitching	A/M	M	A: 前踏即動作 A: One Shot Sewing. 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.
38	定寸縫(15 段)選擇 Constant Stitching Function Selection	ON/OFF	OFF	
39	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.
37	定寸縫模式 Mode Selection for Constant Stitching	A/M	M	A: 前踏即動作 A: One Shot Sewing. 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.
38	定寸縫(15 段)選擇 Constant Stitching Function Selection	ON/OFF	OFF	

39	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.
43	計數目標值 Count Setting	1~9999	99	
44	計數值顯示 Current Count Display	0~99	顯示數值 Count # Display	
45	馬達速度顯示 Motor Speed Display	0~4500	顯示速度 Speed Display	

參數碼 Parameter	顯示 LED Display	功能描述 Function Description	可調範圍 Range	單位 Unit	出廠值 Default	說明 Description	備註 Note
47	MAC	縫紉機機型碼 選擇 Sewing Machine Code Selection (without / with Presser Foot Lifter)	11/13	//	13	縫紉機機型碼選擇 Sewing Machine Code Selection (without / with Presser Foot Lifter)	
48	N12	單定位功能選 擇 Needle Positioning Selection	ON/OFF	//	OFF	ON: 為單定位停針，僅停於 針上位置 (面板上停針開關若選設於 針下時為無效) ON: Needle Up Positioning Only. (The function is invalid if the setting is Needle Down in the operation box.) OFF: 為上下定位停針 (針上與針下之停針位置由 面板上的停針開關決定) OFF: Needle Up or Needle Down Positioning. (The positioning will be set by operation box.)	

53	POL	電源 ON 時第一針慢速起縫 First Stitch Soft Start at Power ON	ON/OFF	//	ON	ON: 每次開電時，如設定 ON 第一針會自動以 "007.S" 設定值執行 ON: The first stitch will follow the setting in "007.S" at power on. OFF: 無動作 OFF: The function is disable.
60	L	馬達低速度調整 Motor Low Speed Adjustment	200~300	rpm	200	馬達低速度調整 Motor Slow Speed Adjustment
61	T	切線速度 Trimming Speed	200~300	rpm	300	馬達切線速度調整 Trimming Speed Adjustment
63	FTP	自動壓腳提升器型式選擇 Presser Foot Lifter Type Selection	M/A	//	M	M: 電磁式輸出 M: Solenoid Type A: 空氣式輸出 (當設定為 A 模式時 "064.FO" & "065.FC" 無動作) A: Pneumatic Type (When set at A type, "064.FO" & "065.FC" is invalid.)
64	FO	壓腳電磁鐵出力初始全額輸出時間 Full On Time Setting for Presser Foot Lifter Solenoid	0~990	ms	250	"063.FTP" 設為 M 模式才有效 Valid when "063.FTP" sets at M Mode
65	FC	壓腳電磁鐵出力動作週期 % Duty Cycle Setting for Pressor Foot Lifter Solenoid	10~90%	%	20	"063.FTP" 設為 M 模式才有效 Valid when "063.FTP" sets at M Mode
66	FD	馬達啟動時間延遲 Motor Delay Time Setting	0~990	ms	300	確保此時壓腳以放下 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	0.01 秒	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	HD	半後踏抬壓腳確認時間 Half Heeling Pedal Delay Time	0~990	ms	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	HHC	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 padeling). OFF:不取消半後踏抬壓腳 OFF: Enable preser foot lifter at half heeling.
71	FL	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.
73	FSN	抬壓腳偵測功能選擇 Presser Foot Lifter Function Sensing Selection	ON/OFF	//	ON	ON: 啟動偵測抬壓腳功能 ON: Enable presser foot lifter sensing function OFF: 取消偵測抬壓腳功能 OFF: Disable presser foot lifter sensing function

74	SFT	安全開關功能選擇 Safety Switch Function Selection	ON/OFF		ON	ON: 啟動安全開關保護 ON: Enable safety switch protection OFF: 取消安全開關保護 OFF: Disable safety switch protection
75	SFM	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
81	TS	切線電磁閥動作角度 Trimmer Solenoid Enabled Angle	0~360	角度 Degree	45	
82	T1	切線電磁閥動作時間 Delay Time Prior to Trimmer Enabled	0~990	ms	70	
85	D1	鬆線電磁閥動作角度 Thread Tension Solenoid Enabled Angle	0~360	角度 Degree	45	
86	D2	鬆線電磁閥動作時間 Delay Time prior to Thread Tension Release	0~990	ms	70	
87	C1	夾線電磁閥出力功能 Thread Grip Function	ON/OFF	//	OFF	ON: 開啟 ON: Enable Thread Grip Function OFF: 關閉 OFF: Disable Thread Grip Function
88	C2	夾線電磁閥動作角度 Thread Grip Solenoid Enabled Angle	0~360	角度 Degree		

89	C3	夾線電磁閥動作時間 Delay Time Prior to Thread Grip Enabled	0~990	ms			
92	W1	撥線延遲時間 Delay Time Prior to Wiper Enabled	0~990	ms	10	於針上訊號被觸發後，進行掃線動作前的間隔時間 Delay time prior to wiper enabled.	
93	W2	撥線動作時間 Wiper Time Setting	0~990	ms	50		
94	WF	壓腳延遲時間 Delay Time Prior to Presser Foot Lifter Enabled	0-990	//	80	掃線後與抬壓腳動作前的間隔時間 Duration between wiper and presser foot lifter enabled.	
101	S1	回縫電磁閥開啟提前角度 (起始回縫) Solenoid Advanced Open Angle (Start Tacking)	0~1440	角度 Degree	TBD	Default will be different by different sewing machine model.	
102	S2	回縫電磁閥關閉提前角度 (起始回縫) Solenoid Advanced Close Angle (Start Tacking)	0~1440	角度 Degree	TBD	Default will be different by different sewing machine model.	
103	E1	回縫電磁閥開啟提前角度 (終止回縫) Solenoid Advanced Open Angle (End Tacking)	0~1440	角度 Degree	TBD	Default will be different by different sewing machine model.	
104	E2	回縫電磁閥關閉提前角度 (終止回縫) Solenoid Advanced Close Angle (End Tacking)	0~1440	角度 Degree	TBD	Default will be different by different sewing machine model.	

105	B1	回縫電磁閥開啟提前角度(連續回縫) Solenoid Advanced Open Angle (Bar Tacking)	0~1440	角度 Degree	TBD	Default will be different by different sewing machine model.
106	B2	回縫電磁閥關閉提前角度(連續回縫) Solenoid Advanced Close Angle (Bar Tacking)	0~1440	角度 Degree	TBD	Default will be different by different sewing machine model.
113	DEG	針下停止角度 Needle Down Position Stop Angle	0-360	角度 Degree	25	
114	UEG	針上停止角度 Needle Up Position Stop Angle	0-360	角度	220	
117	ER	故障顯示碼 Error Code Record	10	組	1	可記憶最近 10 組故障代碼 Record of Latest 10 sets Error Codes
120	FHM	踏板全後踏操作模式選擇 Full Heeling Pedal Mode Selection	FU/NU/NO/NUF	//	FU	FU: 全後踏有切線及抬壓腳 FU: Trimmer and presser foot lifter enabled at full heeling pedal. NU: 全後踏只有提針功能 NU: Only needle moving upward at full heeling pedal. NO: 全後踏無抬壓腳功能 NO: No presser lifter function at full heeling pedal. NUF: 全後踏抬壓腳及提針 NUF: presser lifter enabled and needle moving upward at full heeling pedal.

121	ANU	開電自動提針 Needle Automatic Moving Upward After Power ON	ON/OFF	//	ON	ON: 於開電後將自動提針 至上定位位置 ON: The needle will automotive moving upward to needle up position OFF: 無此功能 OFF: The function is invalid.
122	HL	車頭最高速度 限制 Maximum Speed Limit	200~4500	rpm	4500	最高速度限制 Maximum speed limit
125	USM	針上/針下開關 的對應功能模 式 Needle Position Switch Selection Mode	A/B/C/D	//	A	A: 針轉換+緩慢移動 A: Needle position change with low speed movement B: 針轉換 B: Needle position change C: 提針 C: Needle upward moving D: 提針和抬壓腳 D: Needle upward moving and enable presser foot lifter
126	USA	針上/針下開關 有效時機 Needle Position Switch Enable Function	ON/OFF	//	OFF	ON: 隨時有效 ON: Enable OFF: 只在中途停車時有效 OFF: Only enable when when machine stopped.
127	MAV	最高電壓紀錄 顯示 Maximum Voltage Display	//	//	//	紀錄最高一次電壓顯示 Display maximum voltage in record
128	MIV	最低電壓紀錄 顯示 Minimum Voltage Display	//	//	//	紀錄最低一次電壓顯示 Display minimum voltage in record
129	PV	目前電壓顯示 Present Voltage Display	//	//	即時顯 示 Real Time Display	目前電壓顯示 Display present voltage

135	TOT	自動運轉全程時間設定 Automatic Cycling Test Duration Setting	1~240	小時	8	自動運轉全程時間設定 Set the time limit for auto running.
136	TM1	自動運轉動作時間設定 Automatic Cycling Test - ON Time Setting	1~20	s	5	自動運轉動作時間設定 Automatic cycling test - ON time setting
137	TM2	自動運轉停止時間設定 Automatic Cycling Test - OFF Time Setting	1~20	s	5	自動運轉停止時間設定 Automatic cycling test - OFF time setting
138	UTD	自動運轉功能 Automatic Cycling Test Function	ON/OFF	//	OFF	ON:自動運轉測試開始 ON: Enable automatic cycling test OFF:自動運轉關閉 (關電即恢復 OFF 狀態) OFF: Disable automatic cycling test (After power off, the cycling test is disable.)
168	P1	迴路增益 P1 Feedback Loop Gain P1	0-9999		4096	請勿調整 Cannot Adjust.
169	P2	迴路增益 P2 Feedback Loop Gain P2	0-9999		4096	請勿調整 Cannot Adjust.
170	P3	迴路增益 P3 Feedback Loop Gain P3	0-9999		4096	請勿調整 Cannot Adjust.
171	P4	迴路增益 P4 Feedback Loop Gain P4	0-9999		4096	請勿調整 Cannot Adjust.
208	VER	軟體版本顯示 Firmware Revision				軟體版本顯示 Firmware revision

F 多功能使用鍵

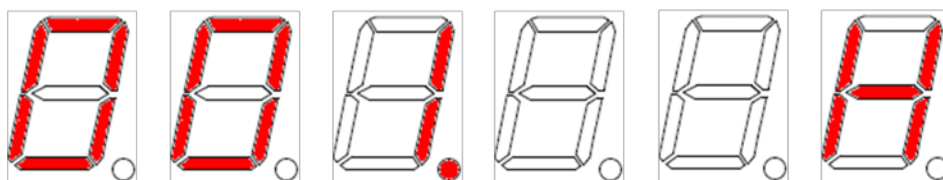
F1		N/A				
F2		撥線出力功能 Wiper Function Selection	ON/OFF	//	ON	ON:開啟撥線功能 ON: Enable wiper function OFF:關閉 OFF: Disable wiper function
F3		上下停針選擇 Up / Down Needle Positioning Selection	ON/OFF	//	OFF	ON:上停針 ON: Needle up positioning OFF:下停針 OFF: Needle down positioning
F4		慢速起功能選 擇 Soft Start Function Selection	ON/OFF		OFF	ON: 開啟慢速起縫 ON: Enable soft start OFF:關閉 OFF: Disable soft start

使用說明

Manual

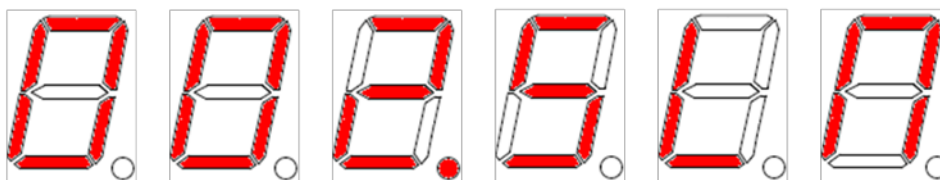
1. 在一般模式下，長按P鍵  可進入參數選擇模式

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



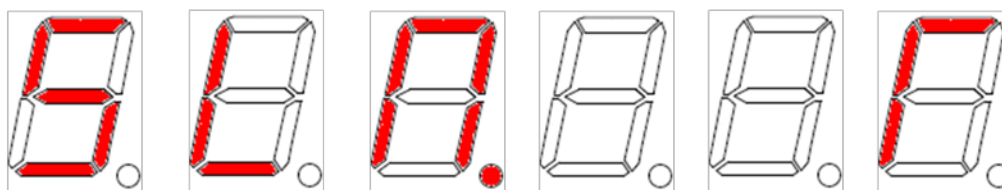
2. 利用D區塊的增加鍵  選擇參數。

Use the increment key  in D block to select parameter.





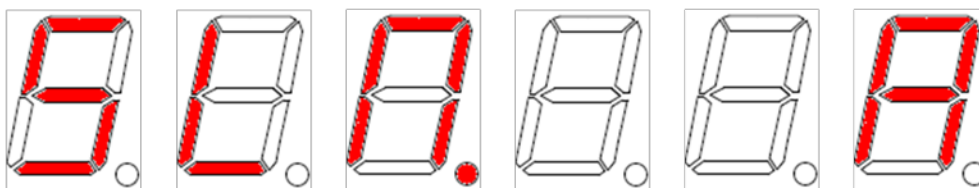
3. 按S鍵  進入參數調整模式。

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。

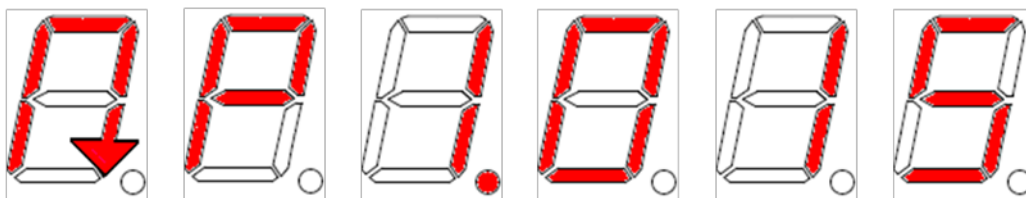
Press S Key to go back to **Normal Mode**. Or press P Key to go back to **Parameter Selection Mode**.

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**.




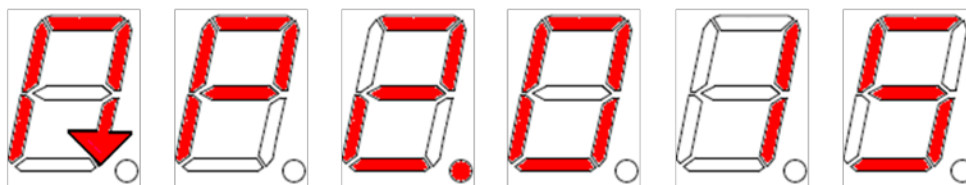
表示運行中選針盒的跑馬燈，在一般模式下會持續旋轉



shows the Operation Box is running.

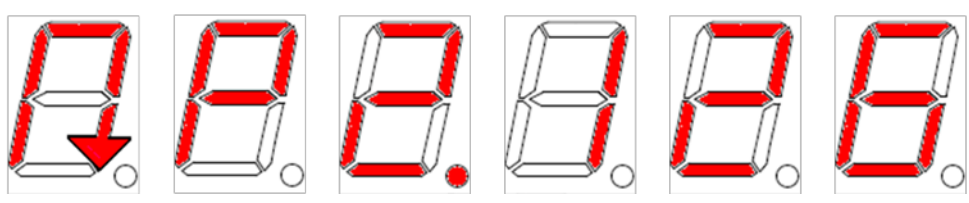
2. 按A區塊的增加鍵  可調整段數P1表示第一段，PA表示第十段，PD表示第13段。

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 by 1.

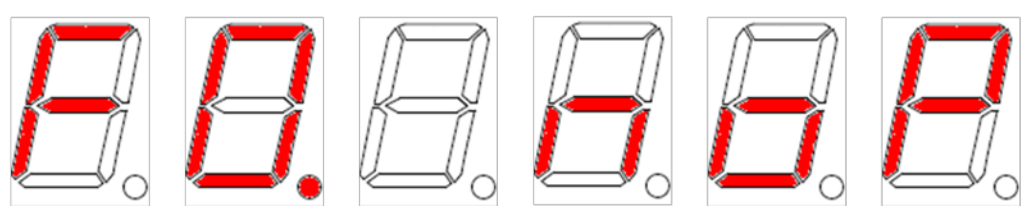


特殊功能設定模式

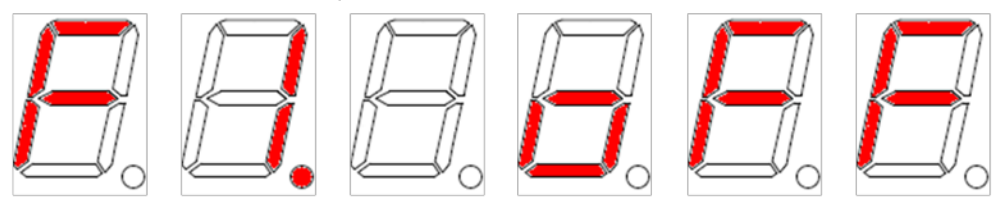
Special Function Setting Details

1. 在一般模式下長按S鍵  可進入特殊功能模式。

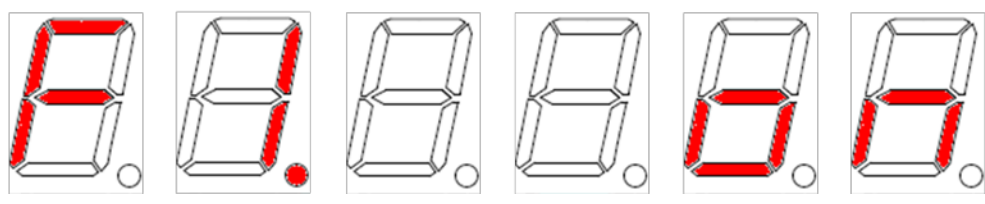
In Normal Mode, Press S Key  to enter **Special Function Mode**.




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.

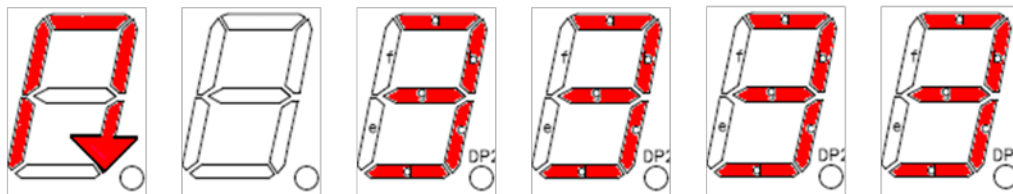


3. 按F鍵  可調整參數 **Press F Key  to adjust parameter.**







































4. 按S鍵  可離開特殊功能模式，回到一般模式。

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

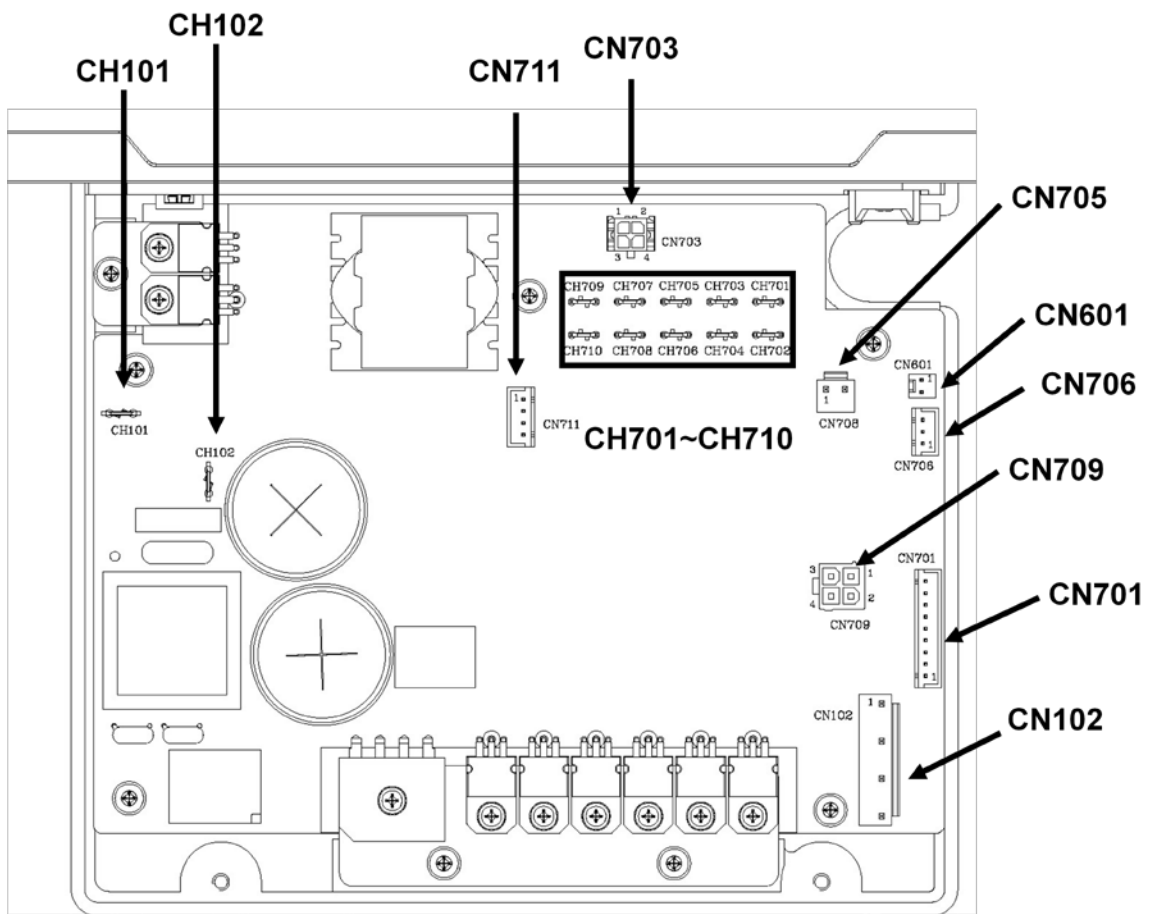


顯示器對照表

Display Table

Value	0	1	2	3	4	5	6	7	8	9
Display										
Value	A	B	C	D	E	F	G	H	I	J
Display										
Value	K	L	M	N	O	P	Q	R	S	T
Display										
Value	U	V	W	X	Y	Z				
Display										

Connector Diagram



CN102 Motor Power Connector			CN701 Motor Encoder Connector		
1	U	紅 Red	1	A+	Green
2	V	白 White	2	B+	White
3	W	黑 Black	3	Z+	Yellow
4	PE	黃/綠 Yellow / Green	4	+5V	Red
			5	5VGND	Black
			6	U+	Brown
			7	W+	Gray
			8	V+	Orange
			9		

CN709 Speed Controller		CN703 Operation Box		Input Power		CN706 安全開關 Safety Switch		CN601 LED	
1	12V	1	5V	CH101	Line	1	N/A	1	12V
2	Signal	2	GND	CH102	Neutral	2	5V	2	GND
3	GND	3	Rx			3	N/A		
4	N/A	4	Tx			4	GND		

電磁閥 Electromagnetic Valve											
切線 Trimmer		掃線 Wiper		回縫 Reverser		預留接口 Reserved		CN705 抬押腳 Foot Lifter		CN711 回縫開關 Revere Switch	
CH701	30V	CH703	30V	CH705	30V	CH707	N/A	1	30V	1	GND
CH702	TRIM	CH704	WIPER	CH706	REVERSE	CH708	N/A	2	FOOT	2	REVER_SW
						CH709	N/A			3	N/A
						CH710	N/A			4	N/A

故障排除

Troubleshooting

錯誤碼 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	1. 關閉電源。 Turn off the power. 2. 確認 IGBT 模組工作正常。 Check if the IGBT module is normal. 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.

Err 1 過電流保護 Over Current Protection

- 控制器檢知Motor運轉電流值 ≥ 20 時。
Controller detects Motor operation current value ≥ 20
- 異常保護停止期間，選針盒Error Code顯示1。
The stop period for protect the abnormal, the needle selection box Error Code displays 1.
- 故障排除：Troubleshooting
 - <1>檢查負載是否過大 Check if the load is too large.
 - <2>IGBT是否損毀 Is the IGBT broken?
 - <3>馬達編碼器是否異常 Is the motor encoder abnormal?
 - <4>硬體放電迴路是否異常。 Is hardware discharge circuit abnormal?

錯誤碼 Error Code	異常現象說明 Cause of the Problem	解決措施 Measurement and Solution
Err 4	過電壓保護 Over Voltage Protection	<p>1. 關閉電源。 Turn off the power.</p> <p>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 source or if the voltage for power line is too high.</p> <p>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 for power line is too high, please wait for reboot before power line comes back to normal. If not, reboot the control box after 1 min.</p> <p>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.</p>

Err 4 過/欠電壓保護 Over Voltage Protection

- 說明：檢知Bulk voltage發生最大值時，Motor 不再啟動。
Description: Detect the Bulk voltage occurs the biggest value, the Motor won't start.
- 條件：電容電壓(Vbulk) > 450VDC，維持0.4秒。
Condition: Capacitor Voltage (Vbulk) > 450VDC for 0.4 seconds.
- 異常保護停止期間，選針盒Error Code顯示4。
The stop period for protecting the abnormal, the operation box Error Code displays 4.
- 故障排除：量測C101,C102兩端電壓是否過高。
Troubleshooting: Measure if both the ends of the voltage C101, C102 are too high.

錯誤碼 Error Code	異常現象說明 Cause of the Problem	解決措施 Measurement and Solution
Err 7	堵轉檢知遮斷 Over Torque	<p>1. 關閉電源。 Turn off the power.</p> <p>2. 檢查馬達動力線插頭配線(CN102)是否接觸不良。 Check the connection for motor power cable (CN102).</p>

		<p>3. 是否有異物纏繞機頭或加工物是否過厚。 Check if any abnormal on machine head and if the textile is too thick.</p> <p>4. 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 trouble fix. If the error code still happens, please contact with qualified technician.</p>
--	--	--

Err 7 馬達堵轉

Over Torque

- 說明：因機台零件損毀或不可抗拒因素造成馬達堵轉
Description : Cause the motor stall due to the machine parts damaged and other force majeure.
- 條件：電流大於14A且維持2秒
Conditions : Current is greater than 14A for 2 seconds.
- 異常保護停止期間，選針盒Error Code顯示7。
The stop period for protecting the abnormal, the operation box Error Code displays 7.
- 故障排除：Troubleshooting
<1>檢查機台是否有異物纏繞機頭上，或機體有零件損毀。
Check the machine, whether the foreign body wrapped around the machine head or there are some parts broken in the machine.
<2>IGBT是否有損毀 Is the IGBT damaged?

錯誤碼 Error Code	異常現象說明 Cause of the Problem	解決措施 Measurement and Solution
Err 8	選針盒通訊介面異常 Operation Box Communication Error	<p>1. 關閉電源。 Turn off the power.</p> <p>2. 檢查選針盒連接線(CN703)是否脫落、鬆動、破損。 Check the connection between operation box and control box (CN703).</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>
Err 20	控制器過熱保護 Control Box Over Temperature Protection	<p>1. 關閉電源，10 分鐘後重新送電。 Turn off the power. Reboot the control box after 10mins.</p> <p>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.</p>

Err 8 選針盒通訊介面異常

Operation Box Communication Error

- 說明：選針盒通訊介面傳輸發生異常。
Description: Communications interface transfer operation box is abnormal.
- 通訊異常期間，選針盒Error Code顯示8。
During the abnormal communication, the operation Error Code displays 8.
- 故障排除：檢查選針盒連接線是否確實插上。
Troubleshooting: Check if the wires of the operation box is appropriately plugged.

Err 20 IGBT過熱保護

Control Box Over Temperature Protection

- 說明：IGBT藉ON/OFF動作,呈現近似弦波波形控制Motor運轉及動作電流，在開關動作頻繁及負載電流通過時，由於導通損失及切換損失，造成溫度上升。
Illustration: IGBT acts by ON/OFF, showing the approximate sinusoidal waveform control the operation of Motor and action current. When the frequent switching and load current, cause the temperature to rise due to the conduction losses and switch losses.
- 條件：NTC感知溫度 > 100度以上時此時將Motor OFF。
Condition: Let Motor Off when NTC the perception temperature > 100 degrees.
- 異常保護期間，選針盒Error Code顯示20。
The stop period for protecting the abnormal, the operation box Error Code displays 20.
- 故障排除：確認是否負載過大或運轉時間過長。
Troubleshooting: Check if the load is too large or the working time is too long.

錯誤碼 Error Code	異常現象說明 Cause of the Problem	解決措施 Measurement and Solution
Err 21	Hall sensor 異常 Hall Sensor Abnormal	<p>1. 關閉電源。 Turn off the power.</p> <p>2. 檢查電機編碼器連接線(CN701)是否接觸不良或馬達編碼器是否故障。 Check the connection between motor encoder and control box or (CN701) 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>
	安全開關檢知遮斷 Safety Switch Error	<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(CN706)是否故障。 Turn off the power and check the connection for safety switch (CN706).</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>

Err 21 Hall Sensor 異常 Hall Sensor Abnormal

- 說明：馬達位置訊號因斷線或損毀，導致MCU偵測發生異常，Motor不再啟動。

Description: The motor position signal is damaged or lost, so it is abnormal to detect MCU.

- 條件：連續5回偵測位置訊號異常

Condition: The detective position signal is abnormal in 5 consecutive times.

- 異常保護停止期間，選針盒Error Code顯示21。



The stop period for protecting the abnormal, the operation box Error Code displays 21.

- 故障排除：馬達訊號線是否斷線或損毀。

Troubleshooting: Is the motor signal wire damaged or disconnected.

安全開關檢知

Safety Switch Error

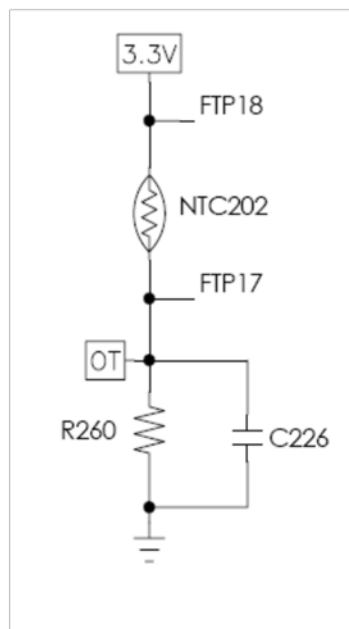
- 說明：安全開關異常 
Description: The safety switch is unusual.
- 條件：安全開關判定未壓下
Condition: The safety switch is not pressed yet.
- 異常保護停止期間，選針盒顯示 
The stop period for protecting the abnormal, the operation box displays .
- 故障排除：
Troubleshooting:
 - <1>檢查安全開關是否壓下 Check if the safety switch is pressed.
 - <2>檢查安全開關對應參數設定
Check the safety switch corresponds with the parameter setting.

簡易維修

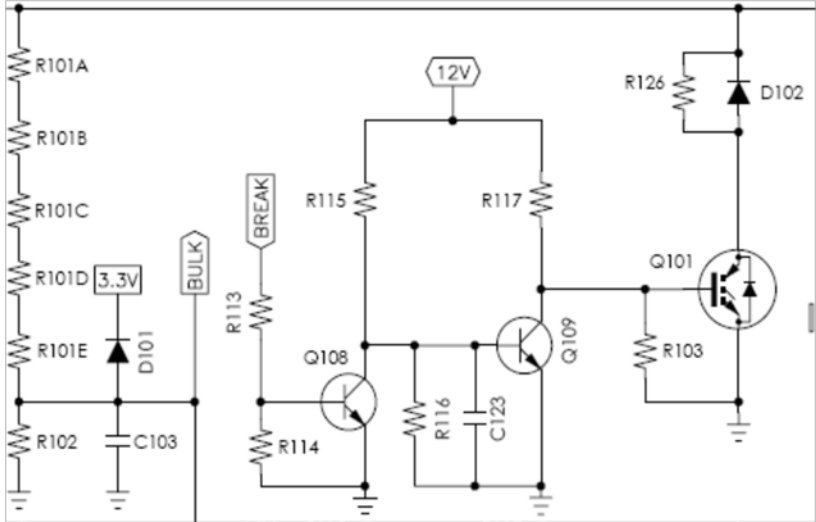
Simple Repair

- 轉速偏低 The rotation speed is too low.
 - ▣ 檢查R264, R788, R789 Check R264, R788, R789.
- LED不亮(LED201, LED701) LED isn't lit.
 - ▣ 檢查LED燈迴路 Check the LED lights loop.
- 電磁鐵不動作 Electromagnet is not activated.
 - ▣ 檢查Q701 Q702 Q704 Q706 Q707
Check Q701 Q702 Q704 Q706 Q707.
- 三相控制電壓無法送至馬達
Three control voltage can not be sent to the motor.
 - ▣ 檢查IC203及IC101, IC102, IC103周邊電路
Check IC203, IC101, IC102, and IC103 peripheral circuit.

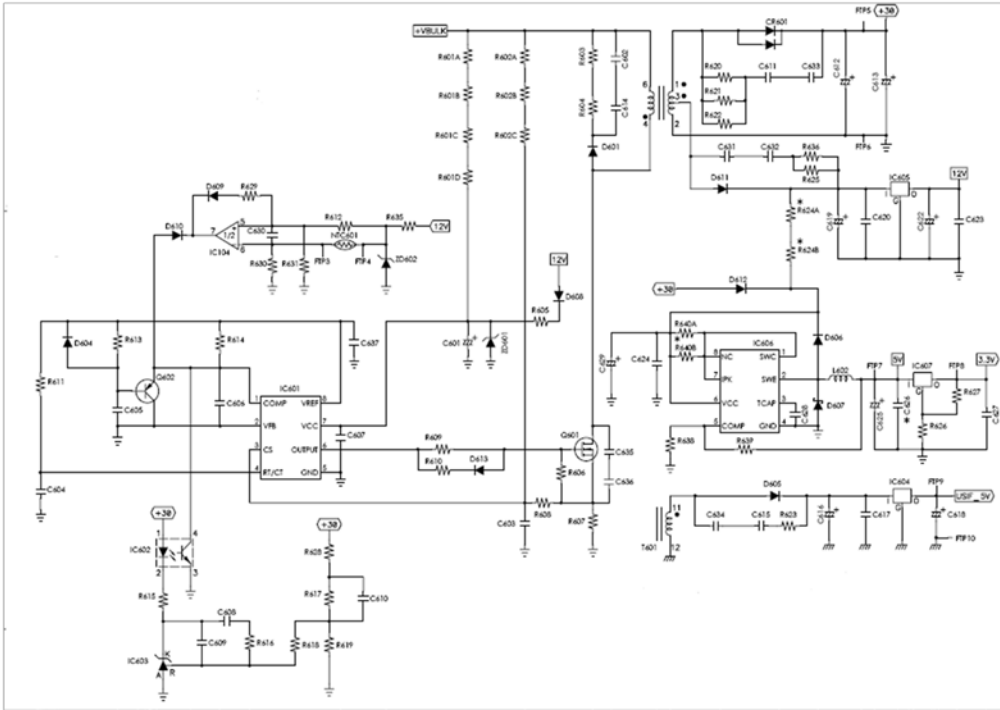
溫度檢知迴路 Temperature Detection Circuit



放電迴路 Discharge Circuit



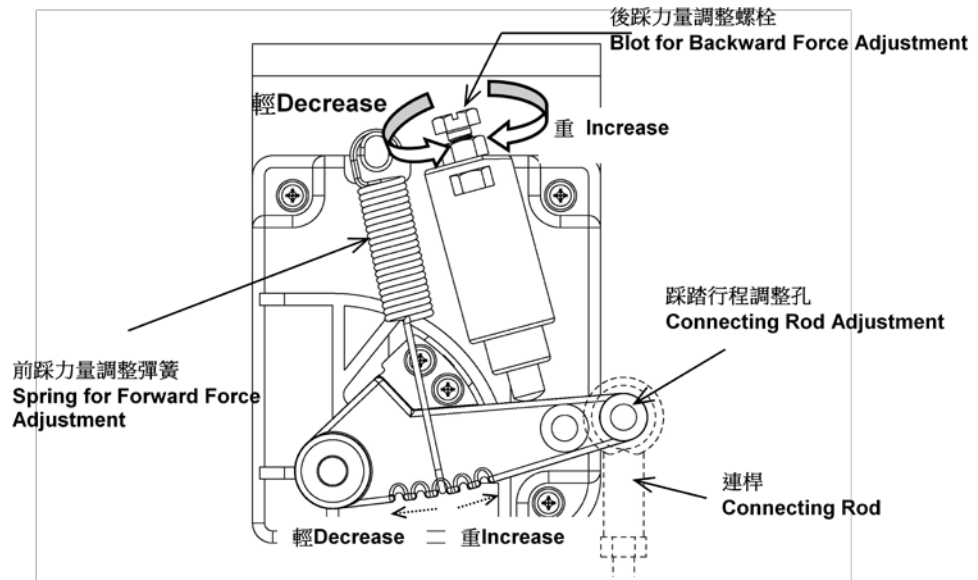
輔助電源電路圖 Auxiliary Power Supply Circuit



機構調整

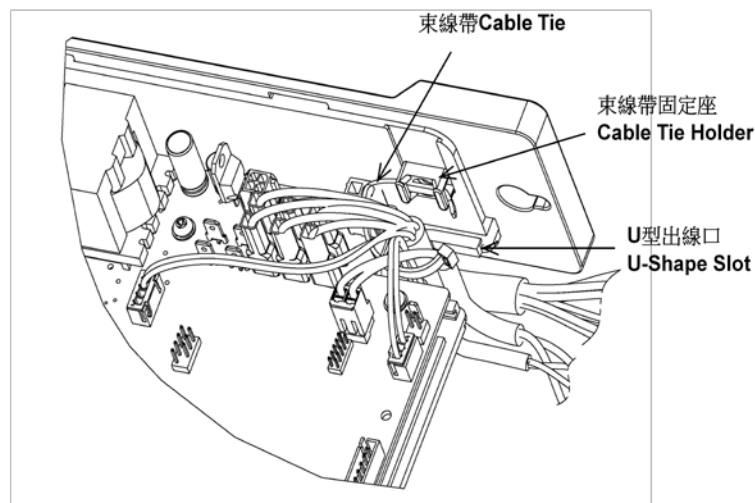
Adjustment of Mechanism

控速器調校方式 Speed Controller Adjustmen



理線方式如下圖所示 Wire Harnesses Arrangement

輸出線與連接器安裝完成後，所有線材穿過上圖之U型出線口，並用束線帶將輸出線捆綁固定。
After all the connectors and cable are installed, arrange all the wire harnesses through U-shape slot and fix these wire harnesses with cable tie through cable tie holder.



上蓋組裝方式如下圖所示 Cover Assembly

步驟1：依圖示將上蓋兩處角落對齊下蓋後依箭頭方向下壓到底。

Step 1: Align 2 key slots on the cover with metal chassis and assemble down to the board.

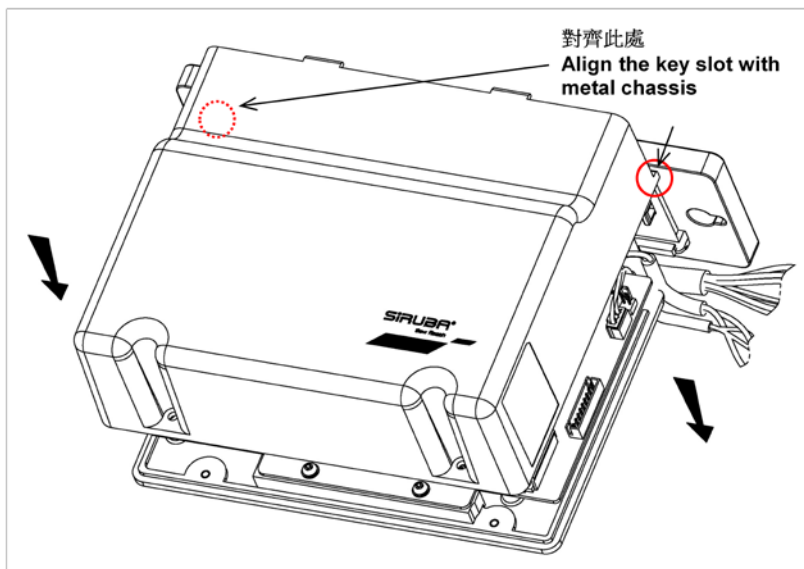
步驟2：依圖示箭頭方向將上蓋推到定點。

Step 2: When the cover touches metal chassis, positioning 2 key slots to the metal chassis.

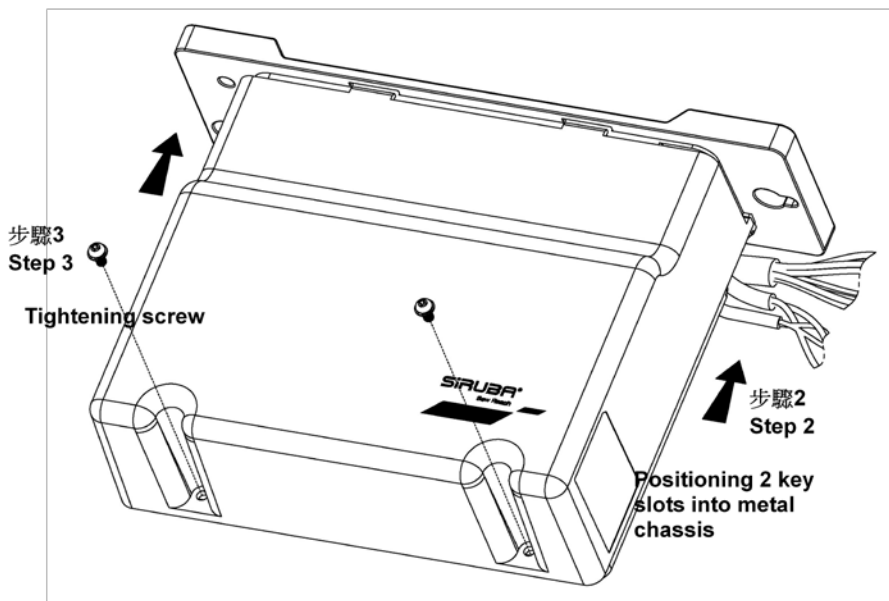
步驟3：依圖示用十字起子將兩個螺絲鎖緊。

Step 3: Use screw driver to tighten the 2 screws.

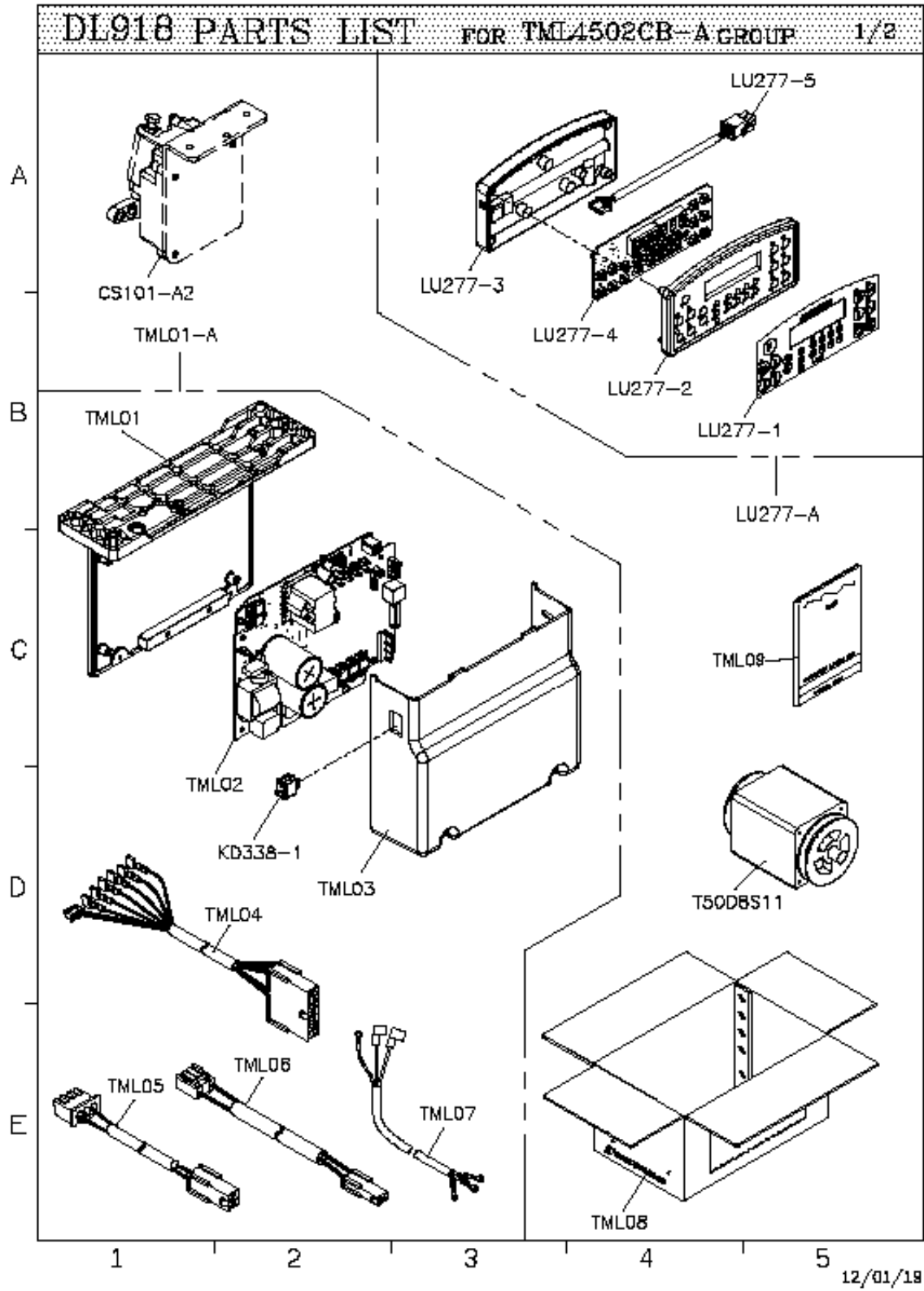
上蓋組裝方式如下圖所示 Cover Assembly



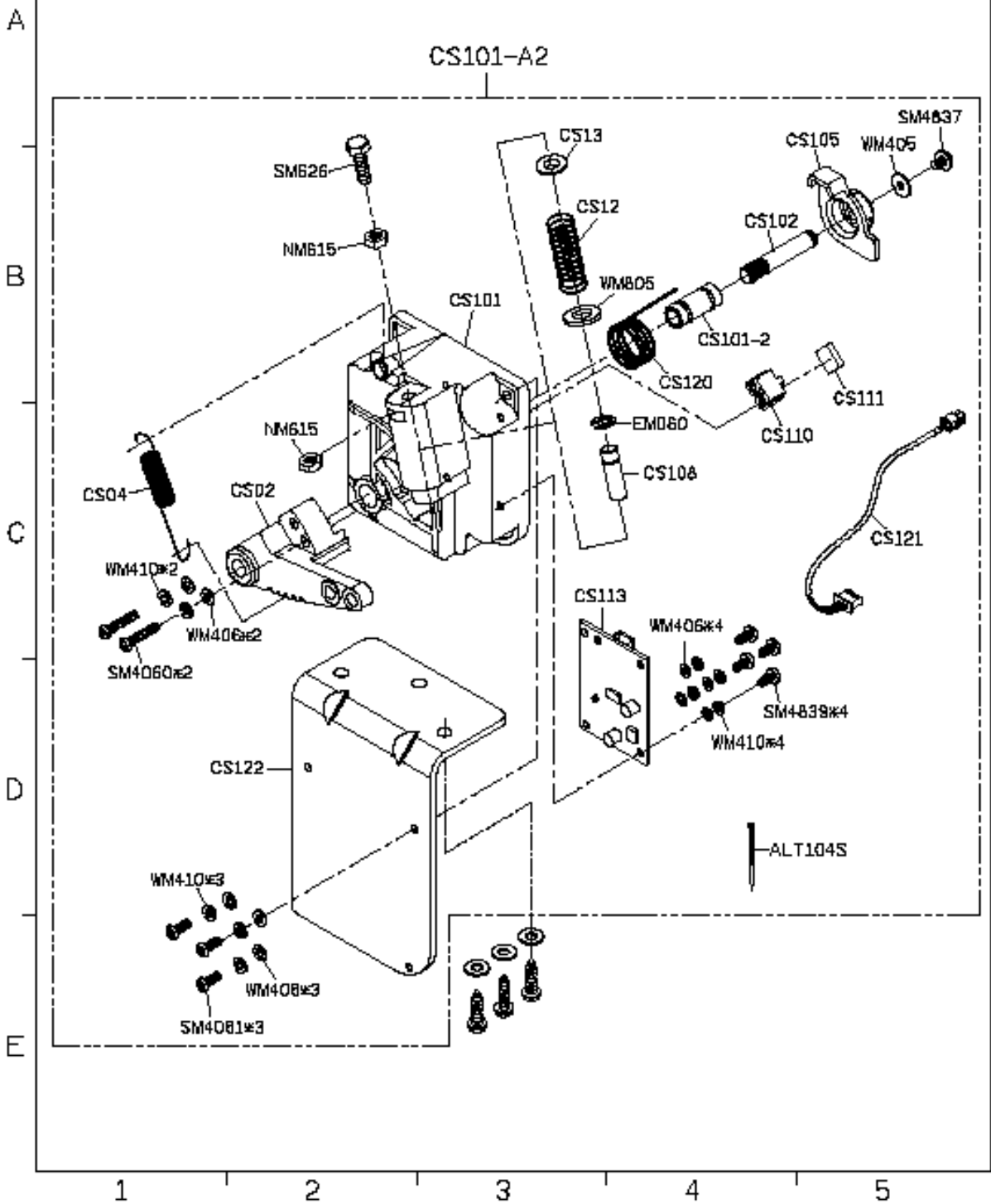
上蓋組裝方式如下圖所示 Cover Assembly



零件圖 Parts List



DL918 PARTS LIST FOR TML450ZCB--A GROUP P.2/2



2011/11/16

Q & A