AC 伺服控制系統說明書

目錄

一、 安全上的注意事項

使用前請詳細閱讀本技術資料與所搭配的縫製機械說明書，配合正確使用，並須由接受過正確訓練的人員來安裝或操作。
在使用或安裝 L10 型伺服馬達系列控制箱驅動裝置時，請注意下列事項。
本驅動裝置僅適用於指定範圍的縫製機械，請勿移做其他用途。

（一） 作業環境的安全

(1).電源電壓 ：
電源電壓請遵照控制箱銘牌所標示之規格 ±10 %範圍內操作。
(2).電磁波干擾 ：
請遠離高周磁波機器或電波發射器等，以免所產生的電磁波干擾本驅動裝置因而發生錯誤動作。
(3).溫濕度 ：
a.請不要在室溫 45° C 以上或 5° C 以下的場所操作。
b.請不要在日光直接照射的場所 請遠離通訊干擾
c.請不要在暖氣（電熱器）旁邊作。
d.請不要在相對濕度 30 % 以下或 95 % 以上或有露水的場所運作。
(4).空氣 ：
a.請不要在多灰塵或具有腐蝕性物質的場所操作。
b.請不要在有揮發性氣體的場所操作。

（二）安裝的安全

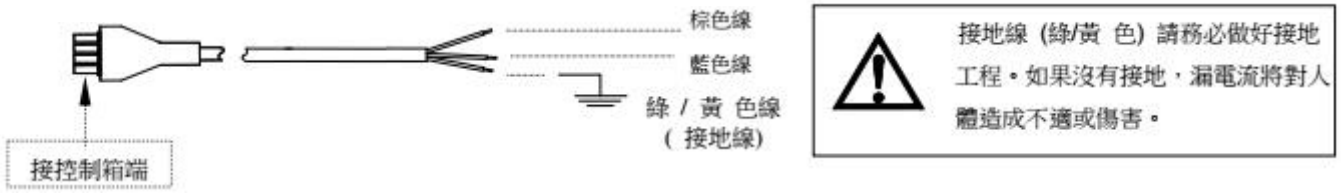
(1).馬達、控制箱 : 請遵照說明書正確裝好。
(2).附屬品
如要裝配其他選購配件或附屬品時，請先關閉電源並拔掉電源線插頭。
(3).電源線
a.請注意不要被外物壓住或過度扭曲電源線。
b.裝釘電源線時請不要靠近會轉動的皮帶輪及三角皮帶，最少要離開 3 公分以上。
c.當連接電源線到電源插座時，應確定此供應電壓必須符合標示在控制箱銘牌上的指定電壓 ±10 %內。

※注意 ： 控制箱電源系統為 AC 220V 時，請勿插接到 AC 380V 的電源插座上，否則將出現錯誤 碼，此時請立即關閉電源開關，重新

檢查電源。持續供應 380V 超過五分鐘以上，將會燒毀基板而危及人身安全。

(4).接地

a.為防止雜訊干擾或漏電事故，請做好接地工程。(包括縫紉機、馬達、控制箱、定位器)



b.電源線的接地線須以適當大小的導線和接頭連接到生產工廠的系統地線，此連接必須被永久固定。

（三）操作中的安全

(1).在第一次開電後，請先以低速操作縫紉機並檢查轉動方向是否正確。

(2).縫紉機運轉時，請不要去觸馬達手輪、天枰、針等會作動的部位。

(3).所有可作動的部份，必須以所提供的防護裝置加以隔離，防止身體接觸並請勿在裝置內塞入其他物品。

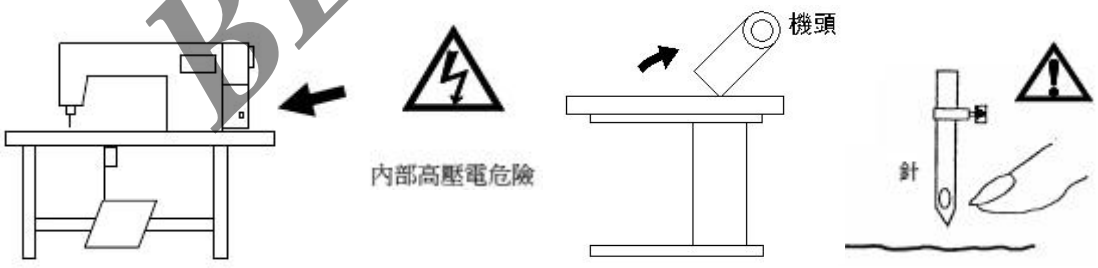
(4).請不要在拆下馬達護蓋及其他安全裝置的情形下操作。

（四）保養維修的安全

在操作以下動作前，請先關閉電源：

(1).要拆卸馬達或控制箱時或在控制箱上插或拔任何連接插頭時。

(2).控制箱裏面有危險高壓電，所以關閉電源後要等 10 分鐘以上方可打開控制箱蓋。



(3).翻抬車頭時，與更換車針或梭子或穿線時。(如上圖示)

(4).修理或作任何機械上的調整時。

(5).機器休息不用時。

（五）保養維修的規定

(1).修理及保養的作業，要請經過訓練的技術人員執行。

(2).馬達的通風口附近，請不要堆置雜物阻塞空氣流通，尤其馬達後風蓋上更不

可附著灰塵、紙屑、布屑等物，以免造成馬達發燙。
(3).請不要以不適當物體，如木槌、鐵槌等敲擊本產品裝置或馬達(電機)軸心。
(4).所有維修用的零件，須由本公司提供或認可，方可使用。

（六）危險標示、注意標示

這個標示符號表示機器安裝時，如有錯誤恐會傷害到人體或機器會受到損壞，所以機器方面有危險性的地方會有此標示。

這個標示符號表示有高壓電，電氣方面有危險性的地方會有此標示。

（七）保固期限規定

本裝置保證在正常工作情況且無人為失誤的操作下，保證出廠 12 個月內，無償的為客戶維修使能正常操作。

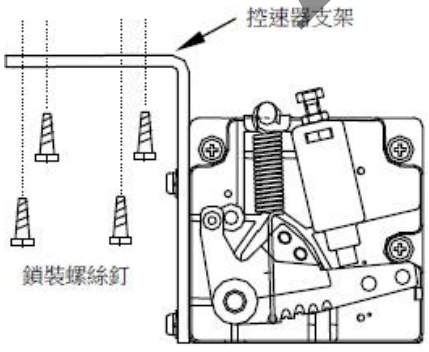
二、安裝與調整

（一）馬達的安裝

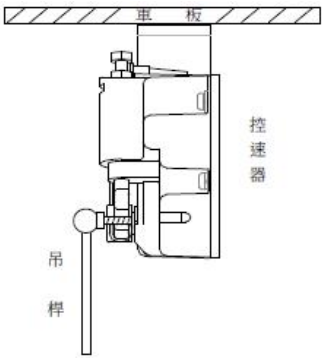
直驅型 ：(馬達與車頭結合或懸掛在一起的安裝方式) 請參閱各車頭製造廠之說明書。

（二）控速器的安裝

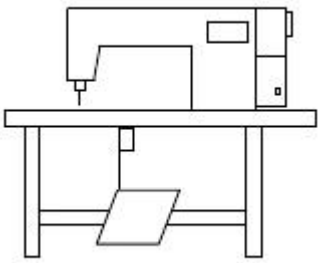
A.控速器與其支架座



B.將控速器連座鎖與車板下



C.安裝後示意圖



（三）控速器前、後踏力量的調整

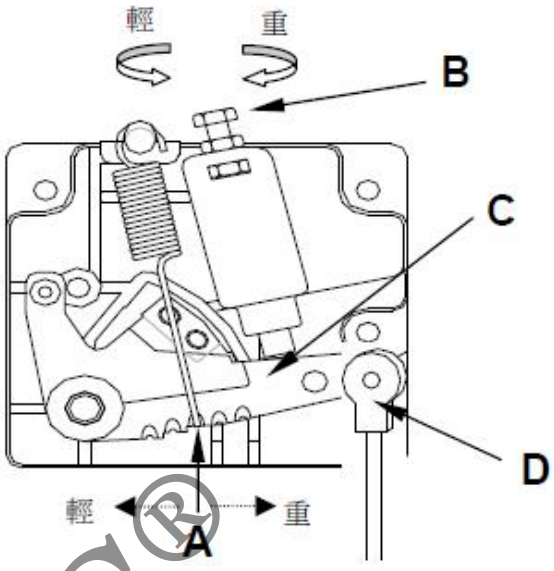
控速器各部位名稱 ： 如右圖示

A ： 前踏力量彈簧。

B ： 後踏力量的調整螺栓。

C ： 踏板旋臂。

D ： 腳踏板吊杆。

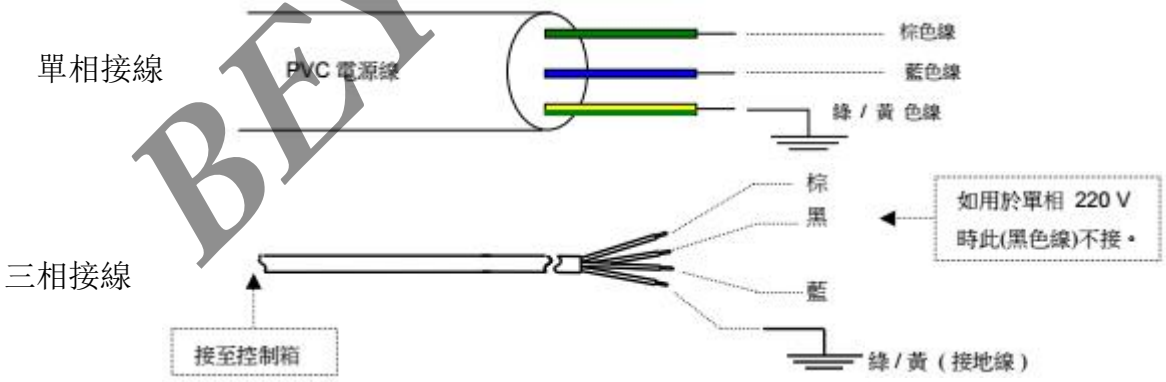


調整需求		調 整 結 果
1	踏板前踏力量的調整	當彈簧 A 愈向右側勾時，表示力量愈重。 當彈簧 A 愈向左側勾時，表示力量愈輕。
2	踏板後踏力量的調整	當螺栓 B 愈向上 ⇐ 時，則後踏力量愈輕。 當螺栓 B 愈向下 ⇒ 時，則後踏力量愈重。
3	踏板行程長短的調整	當吊桿 D 向右側孔鎖裝時，表示行程較長。 當吊桿 D 向左側孔鎖裝時，表示行程較短。

三、 接線與接地

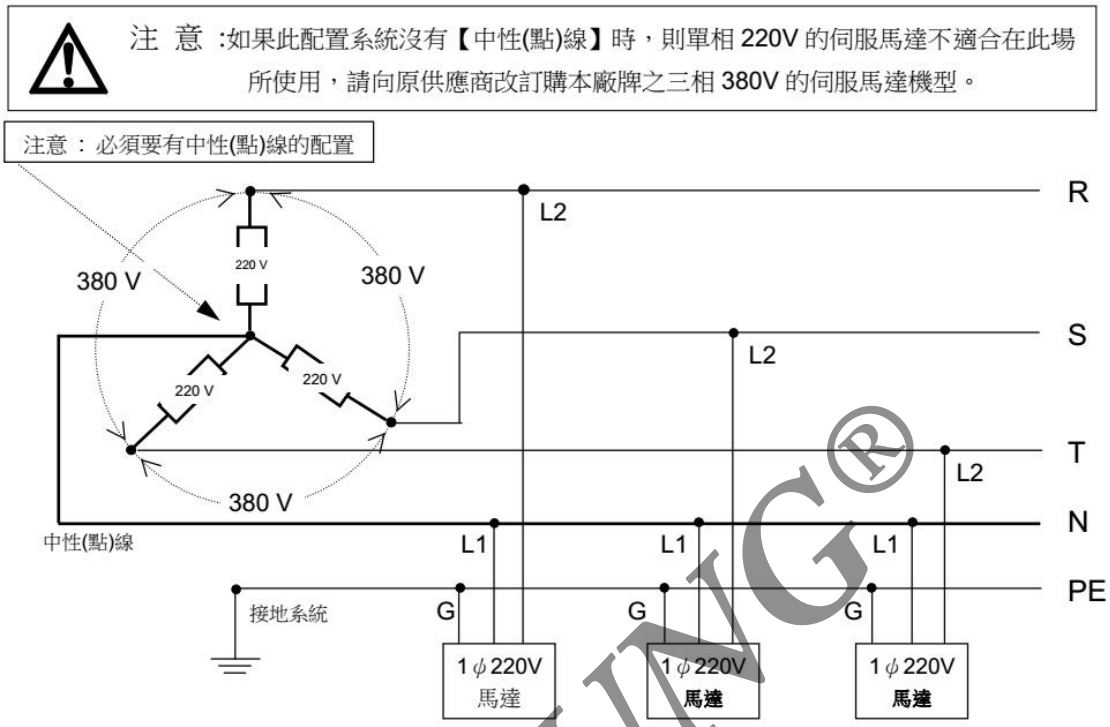
（一）單相與三相電源線的接法

綠/黃色電線為接地線，一定要做好系統的接地工程，請讓合格的電氣工程人員予以施工。



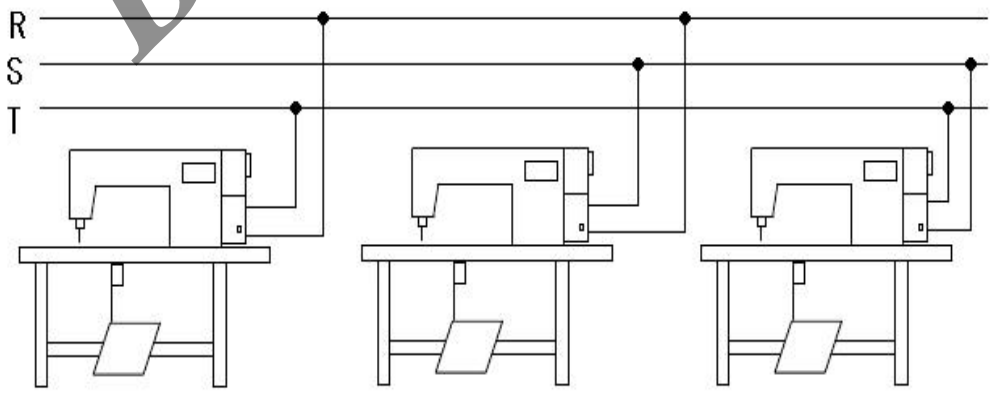
1. 當三相 220 V 的伺服馬達機型，如要接於單相 200 ~ 240 V 的電壓使用時，只要接 棕色線 和 藍色線即可，但黑色線請用絕緣膠帶確實包好，以免產生漏電現象。
2. 綠/黃色電線為接地線，一定要做好系統的接地工程。

（二）當電源系統配置為三相四線式 380V 時，欲使用單相 220V 供應本電機的接線方式。



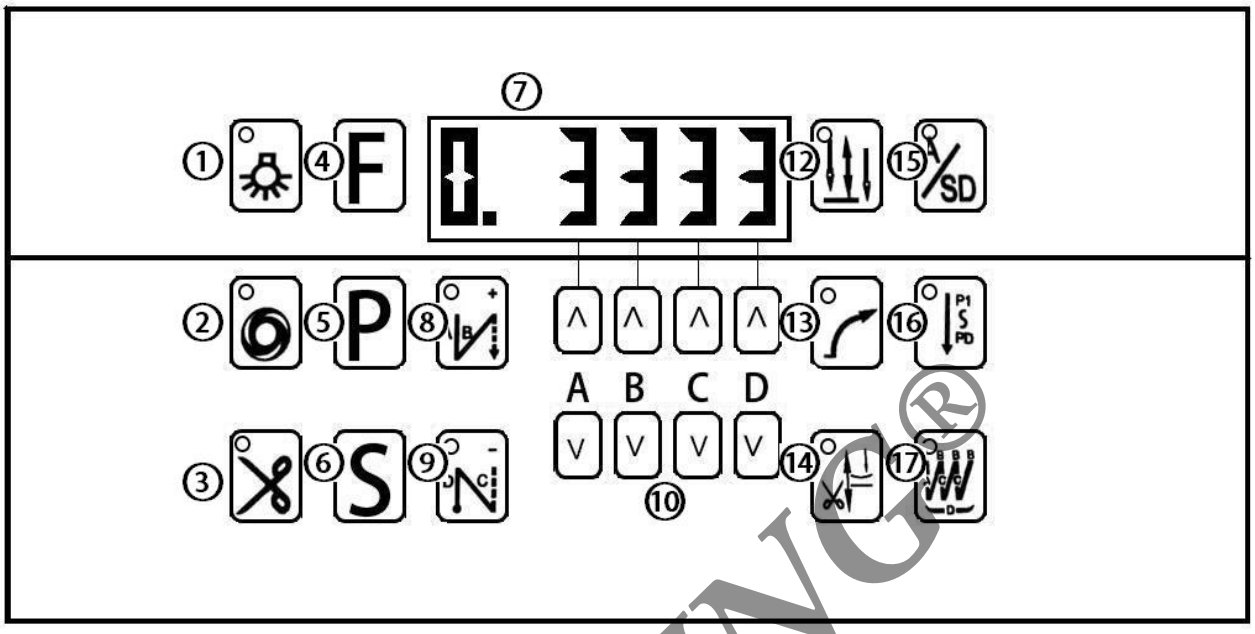
（三）當單相 220V 伺服馬達欲使用在三相 220V 的電壓時，須注意配置使用上的負載平衡

連接相當多數量縫紉機配置使用時，需考慮三相中 R、S、T 各相的平衡，如下圖示 ：



四、選針盒的操作方式

（一）按鍵功能介紹



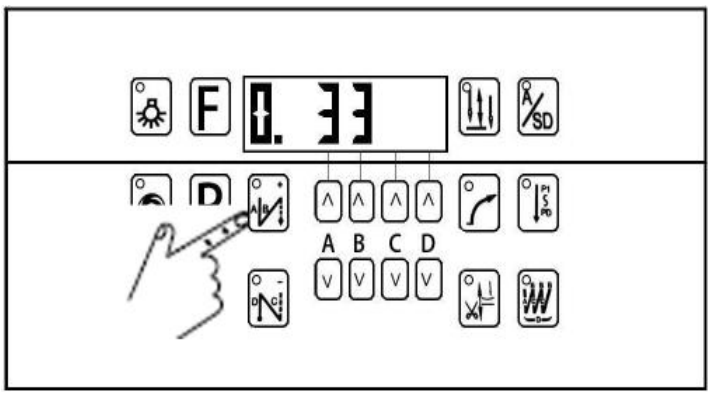
	功能	按鍵	功能說明
1	機頭燈		機頭燈開啟與關閉
2	觸發自動		觸發後自動執行定寸縫的設定針數
3	剪刀		剪刀開啟與關閉
4	多功能用鍵	F	功能 1：同時按F+鍵，進入 P21-P72 參數。 功能 2：同時按F+鍵，進入維修檢測介面參數。 功能 3：同時按F+S鍵，進行自動測試功能(前提 P72 項需要開啟)

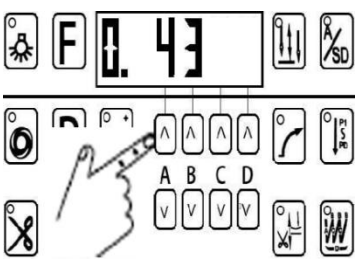
5	進入 P 參數（P1-P10）	P	進入 P1-P10 參數
6	進入參數內容區/儲存/退出	S	進入參數內容區/儲存鍵和退出鍵
7	LED 顯示幕	0. 3333	參數功能顯示幕
8	起始回縫		功能 1：起始回縫開啟和關閉 功能 2：當進入 P 參數後。可做 P 參數遞增鍵。
9	終止回縫		功能 1：終止回縫開啟和關閉 功能 2：當進入 P 參數後。可做 P 參數遞減鍵。
10	A、B、C、D 數值調整	^ v	^參數數值遞增 v參數數值遞減
11	上下停車位鍵		針杆上下停車位設置
12	慢啟動		以平緩加速方式啟動馬達（配合 P8、P9 使用）
13	抬壓腳		抬壓腳開啟與關閉
14	加固縫模式切換	A/SD	加固縫高低速模式切換
15	多段定寸縫		多段定寸縫開啟與關閉
16	連續回縫		連續回縫開啟與關閉

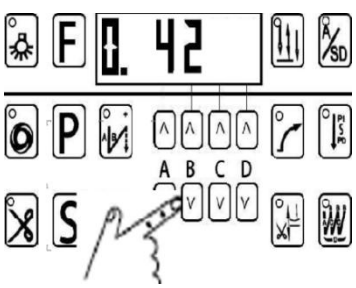
（二）面板按鍵功能設定

A）起始回縫

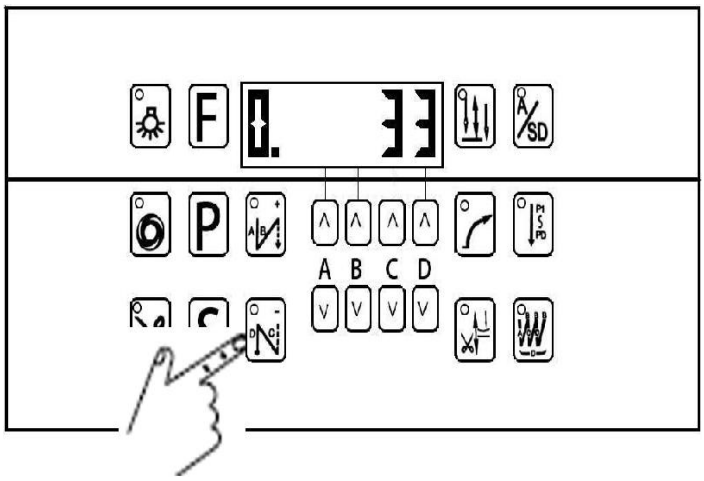
利用 ^=+1 及 v= -1 來調整起始/ 終止回縫的 A、B、C、D 段的針數。各段最大 15 針。（注）

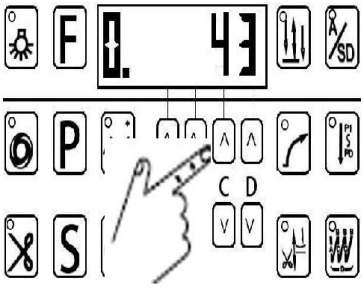


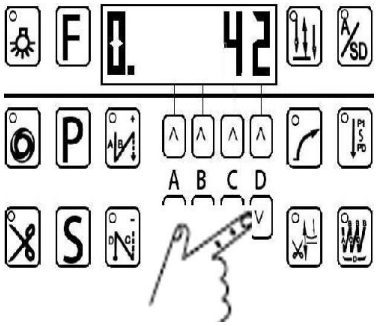




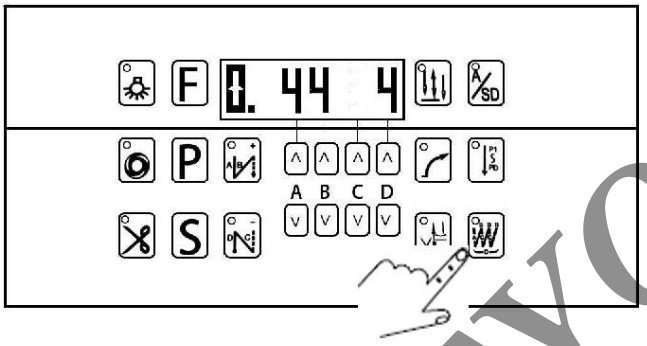
B）終止回縫





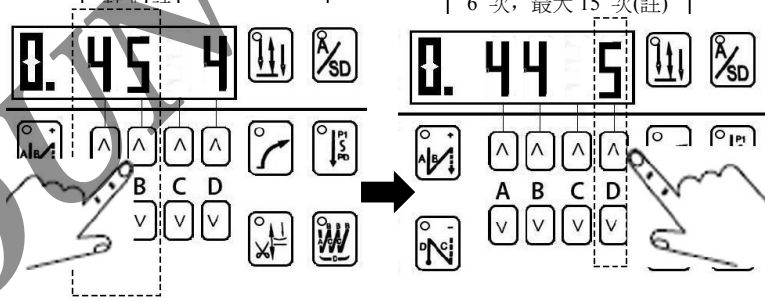


C）連續回縫



連續回縫的 A、B 各段的針數，各段最大 15 針。(註)

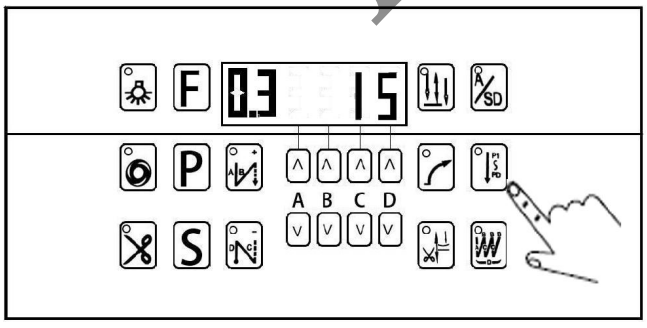
執行連續回縫的數。D=6 則執行連續回縫 6 次，最大 15 次(註)

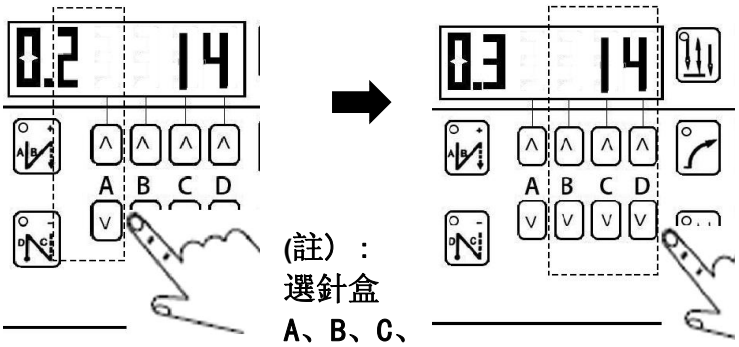


D）多段定寸縫

A 區下方 ∧ ∨ 鍵為多段定寸縫的段數選擇(P1~PF)

B、C、D 區下方 ∧ ∨ 鍵為定寸縫各段的針數的調整，最大 13 段(註 P1~PF)，每段最大 250 針。





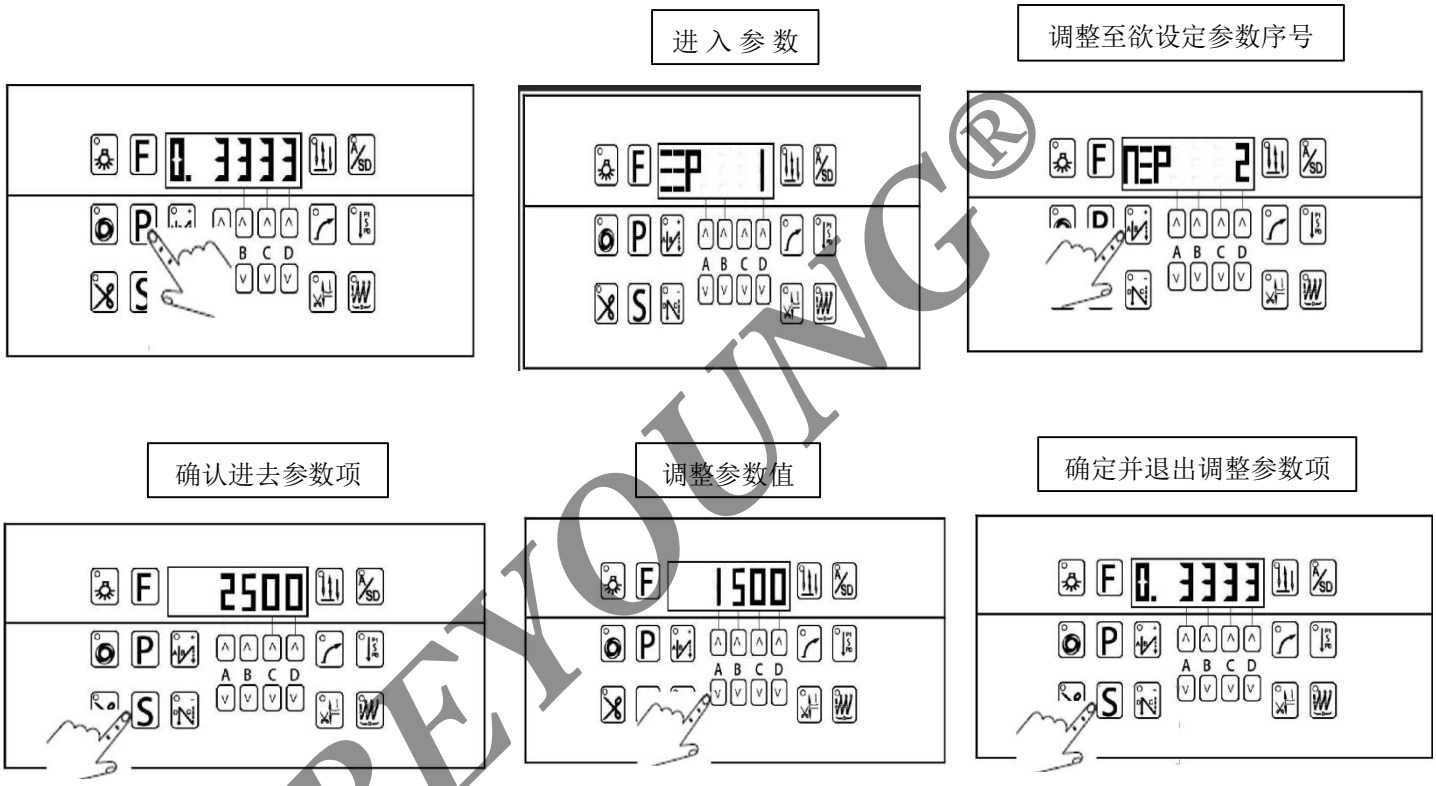
(註)：選針盒 A、B、C、D 區的設定值內英文字母所代表的數值。(針數 / 段數 / 次數)A=10、B=11、C=12、D=13、E=14、F=15。

五、參數調整說明

（一）如何進入參數內容並調整內容

步驟一：依下述各階之操作步驟，進入欲設定參數模式的第一個參數畫面，再以 或 鍵找出欲設定的參數序號，按 S 鍵確認進入參數。

步驟二：進入欲設定參數模式參數內容畫面，再以^或v鍵找出欲設定的參數值，按S鍵確認參數並退出。



參數模式	操作方式	出現畫面	可選參數範圍
P1-10	在一般模式畫面區下，直接按下P，並保持 2 秒。		001 - 010
P21- P72	在一般模式畫面區下，直接按下P+ 鍵，並保持 2 秒。		021 - 072

（二）抬壓腳設定

1.壓腳的工作狀態設置。參數（P10）

1： 停車後踏抬壓腳

2：剪線與停車後自動抬壓腳

3：剪線後自動抬壓腳

4：停車後自動抬壓腳

2.抬壓腳維持時間。參數（P23）

默認值是 20 秒，當壓腳抬起後，20 秒內無操作則壓腳自動放下。其參數可調整範圍 5 - 60 秒。

3.抬壓腳電流全開時間，參數（P24）

默認值是 120ms，此參數小與 60 則壓腳抬不起。其參數可調整範圍 20 - 200ms。

4.抬壓腳全開脈衝占空比，參數（P25）

默認值是 1200，其參數可調整範圍 20 - 1900。如設定不當時，可能導致押腳提升器無力或發燙等現象。

5.放壓腳模式，參數（P27）

0： 慢速模式

1： 快速模式

6.放壓腳延時，參數（P28） 配合 P27 使用。

（三）安全開關設定

安全開關模式，（參數模式 P59）

0： 安全開關未使能

1： 安全開關常閉有效

2： 安全開關常開有效

默認值 0，即關閉該功能。當安全開關設定不當，常開或者長臂混淆使用時，可能導致電機不工作。此時把 P59 改為 0 關閉即可。當有可能安全開關出問題時，可通過進入檢測模式 SFS 進行檢查。

六、功能參數表

序號	內容說明	面板顯示	設定範圍	初始值	備註
P1	設置起縫速度	SSP	100-1000	250	
P2	設置最高轉速	MSP	100-4500	2000	
P3	設置剪線轉速	CSP	100-450	200	
P4	設置起始回針轉速	SRF	200-2000	1200	
P5	設置結束回針轉速	ERF	200-2000	1200	
P6	設置曲折縫轉速	WSP	200-2000	1200	
P7	設置商標縫轉速	LSS	200-2000	1200	
P8	設置慢起縫轉速	LSP	100-1000	500	
P9	設置慢起縫針數	LSN		2	
P10	設置抬壓腳工作狀態 1：停車後踏抬壓腳 2：剪線與停車後自動抬壓腳				

	3：剪線後自動抬壓腳 4：停車後自動抬壓腳	FOM	1-4	1	
P21	加速斜率	SAS	10-100	50	
P22	降速斜率	EAS	20-400	200	
P23	抬壓腳維持時間	FHT	5-60	20 秒(S)	
P24	抬壓腳電流全開時間	FAT	20-200	120 毫秒（ms）	
P25	抬壓腳全開脈衝占空比	FAC	20-1900	1200	
P26	抬壓腳維持脈衝占空比	FHC	50-1500	100	
P27	放壓腳模式 0：慢速模式 1：快速模式	FDM	0-1	0	
P28	放壓腳延時	FDD	10-200	60 毫秒（ms）	
P29	放壓腳信號檢測延時	FUD	10-100	80 毫秒（ms）	
P30	剪線電磁鐵打開角度	COA	30-240	70 度（° ）	
P31	剪線電磁鐵關閉角度	CCA	240-358	350 度（° ）	
P32	剪線電磁鐵全開時間	CAT	10-200	80 毫秒（ms）	
P33	剪線電磁鐵全開占空比	CAC	200-1900	1400	
P34	剪線電磁鐵維持占空比	CHC	100-1500	300	
P35	松線電磁鐵打開角度	ROA	30-300	270 度（° ）	
P36	松線電磁鐵關閉角度	RCA	240-358	350 度（° ）	
P37	松線電磁鐵全開時間	RAT	10-100	80 毫秒（ms）	
P38	松線電磁鐵全開占空比	RAC	100-1900	500	
P39	松線電磁鐵維持占空比	RHC	100-1500	200	
P40	倒縫電磁鐵全電流時間	BAT	10-100	100 毫秒（ms）	
P41	倒縫電磁鐵全開占空比	BAC	100-1900	1500	
P42	倒縫電磁鐵維持占空比	BHC	100-1500	300	
P43	起始回縫 A 補償	SRA	1-100	20 毫秒(ms)	
P44	起始回縫 B 補償	SRB	1-100	20 毫秒(ms)	
P45	結束回縫 A 補償	ERA	1-100	5 毫秒(ms)	
P46	結束回縫 B 補償	ERB	1-100	20 毫秒(ms)	
P47	曲折縫 A 段補償	WCA	1-100	20 毫秒(ms)	
P48	曲折縫 B 段補償	WCB	1-100	20 毫秒(ms)	
P49	底線倍率	DLM	0-20	0	
P50	底線初值	DLI	200-4000	1600	

P51	計件倍率	CNM	0-20	1	
P52	裝飾固縫功能 0：裝飾固縫關閉 1：裝飾固縫打開	DES	0-1	0	
P53	裝飾固縫延時時間	DED	0-100	100 毫秒(ms)	
P54	下停車位設定	DSA	30-220	70 度（°）	
P55	上停車位設定	USA	2-358	330 度（°）	
P56	反轉電機功能是否開啟 0：閉停車反轉功能 1：打開停車反轉功能	RMS	0-1	0	
P57	電機反轉角度設置	RMA	0-90	45 度（°）	
P58	輪比設定	WHL	800-1200	1000	
P59	安全開關模式 0：安全開關未使能 1：安全開關常閉有效 2：安全開關常開有效	SSM	0-2	0	
P60	上定位使用光柵或磁鐵切換 0：上定位採用光柵片參考定位 1：上定位採用手輪磁鐵參考定位	UPC	0-1	0	
P61	找上定位模式 0：開機找上定位 1：開機不找上定位	FPM	0-1	0	
P62	加速度延時	ASD	1-300	100 毫秒(ms)	
P63	腳踏剪線信號點	CFS	1-1000	350	
P64	腳踏抬壓腳信號點	FUS	1-1500	650	
P65	腳踏下壓腳信號點	FDS	1-2000	1100	
P66	腳踏板停車信號點	MSS	1-2000	1550	
P67	腳踏中間複位信號點	FRS	1-2500	1750	
P68	腳踏低速行程	FLS	1-4000	2200	
P69	倒縫停頓延時	RFD	1-100	5 毫秒(ms)	
P70	鎖定電機時間	LMT	100-500	200 毫秒(ms)	

P71	暫停時使能找上針位 0：暫停時電機不回上針位 1：暫停時電機回上針位	HUE	0-1	0	
P72	自動運行模式 0：自動運行關閉 1：自動運行使能	ARE	0-1	0	

七、錯誤代碼顯示

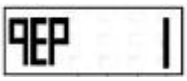
錯誤代碼	錯誤說明	檢測維修	備註
ERR-01	電機堵轉	檢測電機是否卡住，電機編碼器 QEP 信號是否正常	
ERR-02	電機控制硬體檢測到過流	檢測電機信號線插頭與驅動線插頭是否良好	
ERR-03	電機控制軟體檢測到過流	檢測電機信號線插頭與驅動線插頭是否良好	
ERR-04	開關檢測到腳踏板未連接	檢測腳踏板是否連接，或開機時是否壓下腳踏板	
ERR-05	電機霍爾信號丟失	檢測電機霍爾相位是否正常	
ERR-06	電機上針位信號丟失	檢測電機上針位信號是否正常	

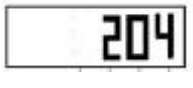
檢測序號	面板顯示	功能描述	檢測值	備註
C1	QEP	正交編碼器輸出檢測	0-359	
C2	CDO	光柵原點檢測	0-1	
C3	HAO	上針位霍爾檢測	0-1	
C4	FTS	腳踏板信號檢測	0-4096	
C5	UCS	電機 U 相霍爾電流採樣值	正常時顯示 1600 上下浮動 100	
C6	WCS	電機 W 相霍爾電流採樣值	正常時顯示 1600 上下浮動 100	
C7	SFS	安全開關狀態	0-1	檢測按下與鬆開狀態
C8	BB1	倒縫按紐 1 狀態	0-1	檢測按下與鬆開狀態
C9	BB2	倒縫按紐 2 狀態	0-1	檢測按下與鬆開狀態
C10	HLB	暫停鍵狀態	0-1	檢測按下與鬆開狀態

八、檢測維修

（一）編碼器檢測

當故障出現 E1 時，可以通過檢測查看是否編碼器出現問題。

步驟：①同時按下  ，此時介面顯示 

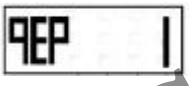
②按[S]進入第一項參數，此時介面顯示  ，204 是電機隨機位置的一個點，這個範圍是 0 到 359 之間的值。

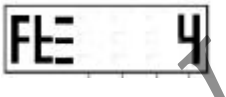
③逆時針慢慢旋轉針車手輪，此時顯示幕上的數值增加，直到滿 359 後自動變 0。

④按[S]退出檢測。

如果轉動手輪數值不變，再次檢查端子介面連接，如果一切連接正常則判斷為編碼器或電控箱出現故障。

（二）腳踏板檢測

步驟：①同時按下[F][ ]，此時介面顯示 

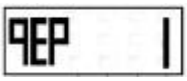
②按[ ]或[ ]調整，直到顯示 

③按[S]確認進入參數，此時顯示  跳動值。

不踩腳踏板，顯示幕顯示值為 1400±20.
正踏腳踏板到底顯示值變為 4095±20.
反踏腳踏板到底顯示值變為 40±20.
如果以上三組參數變化正常，則判斷腳踏板功能正常。

（三）機頭多功能鍵檢測

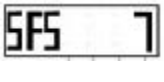
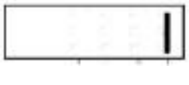
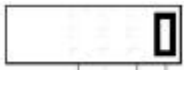
查看安全開關，機頭倒縫 1，機頭倒縫 2，暫停，半補針鍵的好壞。

①同時按下[F]和[ ]此時介面顯示 

②按[ ]或[ ]調整序號。

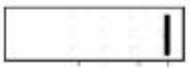
③以下 A）、B）、C)、 D)、E）分別檢測安全開關、倒縫 1、倒縫 2、暫停、半補針按鈕的好壞。

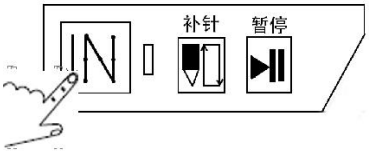
1. 安全開關檢測

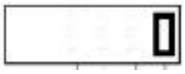
調整至  項，按[S]進入參數。介面顯示  接著手動短路安全開關，介面顯示  。

則表示安全開關正常。檢測完成後按[S]退出，回到主介面。

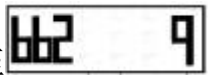
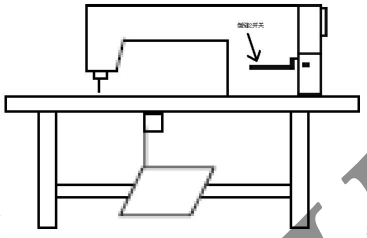
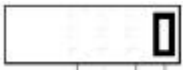
2. 倒縫 1 開關檢測

調整至  項，按  進入參數。介面顯示 

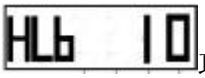
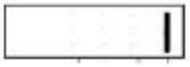


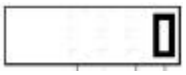
接著按機頭上的倒縫 1 鍵，此時顯示幕顯示  。則表示倒縫 1 正常。檢測完成後按  退出，回到主介面。

3. 倒縫 2 開關檢測

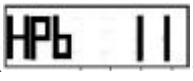
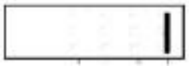
調整至  項，按  進入參數。介面顯示  ，接著按機頭上的倒縫 2 鍵  ，此時顯示幕顯示  。則表示倒縫 2 正常。檢測完成後按  退出，回到主介面。

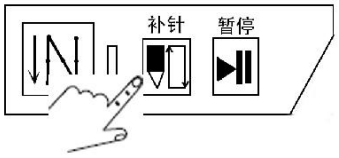
4. 暫停開關檢測

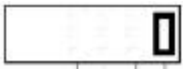
調整至  項，按  進入參數。介面顯示 

接著按機頭上的暫停鍵，此時顯示幕顯示  。則表示暫停鍵正常。檢測完成後按  退出，回到主介面。

5. 補針按鈕檢測

調整至  項，按  進入參數。介面顯示 



接著按機頭上的半補針鍵，此時顯示幕顯示  。則表示半補針鍵正常。檢測完成後按  退出，回到主介面。

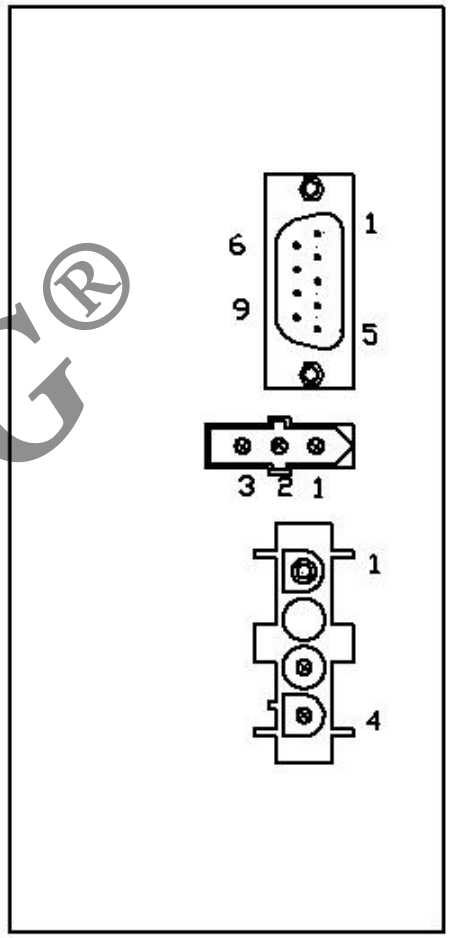
九、機頭線路連接圖

控制器端口接線示意圖

DB9腳踏板輸出	
1	0V
2	空
3	空
4	空
5	空
6	空
7	空
8	+12V
9	NetD13-3

電源輸入AC220V	
1	零線
2	空
3	火線
4	地線

安全開關輸入	
1	0V
2	空
3	DI



控制器接线示意图如下：

J1	電源線座
1	L 火線 棕色
2	空
3	N 零線 藍色

J2	電源接地端

P4	編碼器座
1	+5V
2	0V
3	BOT
4	TOP
5	PB
6	PA
7	HC
8	HB
9	HA

P5	顯示屏座
1	0V
2	232-TXD
3	232-RST
4	+5V
5	+12V()

P1	電機輸出座
1	外殼地
2	U
3	V
4	W

M

P2	腳踏板內置線座
1	+12V
2	空
3	MetD13-3
4	0V

P6	多功能開關座
1	+5V
2	0V
3	KB-DF
4	H-P
5	HOLD
6	LED

倒縫
補針
暫停
暫停燈

P8	剎車電阻
1	+310V
2	netp8-2

剎車電阻R

P7	機頭電磁鐵
1	LAAMP+
2	+37V
3	+37V
4	+37V
5	+37V
6	+37V
7	0V
8	FOOT
9	BACK
10	CUT
11	空
12	SWEEP

5V燈 壓腳 剪線 倒縫 松線

MT MP MR ML

P9	安全開關及倒縫
1	0V
2	BACK
3	0V
4	DI

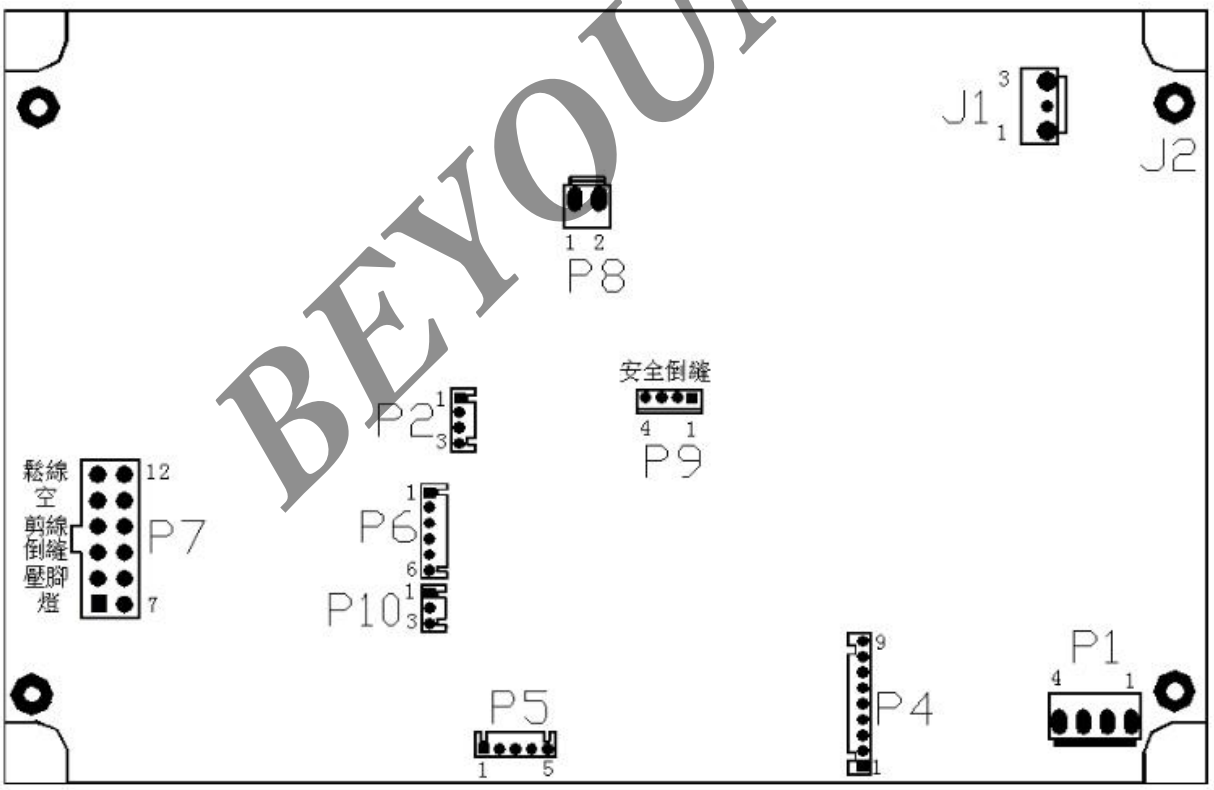
倒縫

安全開關

P10	機頭燈座
1	LED2
2	LED1
3	LED +5V

5V燈2

5V燈1



十、液晶显示字体与实际字体对照表：

数值	0	1	2	3	4	5	6	7	8	9
										

英文字母	A	B	C	D	E	F	G	H	I	J
液晶显示										
英文字母	K	L	M	N	O	P	Q	R	S	T
液晶显示										
英文字母	U	V	W	X	Y	Z				
液晶显示										

Ac Servo Control System Operation Manual

Safety instruction

User are asked to read this operation manual completely and carefully before installation or operation

When install and operate L10 control box, precaution must be taken as the following.

This product is designed for specify sewing machines and must not be used for other purposes.

Work Environment :

(1)Power voltage

Only use Power Voltage indicated on the name plate of the Feeder in ±10 % ranges.

(2) Electromagnetic pulse interference

To avoid the false operate, please keep the product away from the high electromagnetic machinery or electro pulse generator.

(3)Temperature:
a.Please don’t operate in room temperature is above 45°C or under 5°C
b.Avoid operating in direct sun light or outdoors area.
c.Avoid operating near the heater.
d.Avoid operating in the area which humidity is 30 % or less and 95% or more, also keep away dew area.

(4).Atmosphere:
a.Avoid operating in dusty area, and stay away from corrosive material.
b.Avoid operating in evaporate or combustible gas area.

Safety In Installation :

(1).Control box: Follow the instruction in this manual for correct installation.

(2).Accessories: Turn off the power and unplug the cord before mounting any accessories.

(3).Power line

a.Please don't be pressed or twisted things over power line

b.Please don't close to turn the binding power line pulley and V-belt, leaving at least 3 cm or more

c.When connect the power cord into the wall socket should determine the supply voltage must comply with the label in the control box on the nameplate specified voltage of + / - 10%

Control box power supply system for AC 220V, please do not insert the received AC 380V power supply socket, otherwise there will be error code. At this time, please turn off the power switch immediately, re check the power. Last 380V supply more than five minutes or more, will be burned substrate and endanger the personal safety.

(4).Ground

a. In order to prevent noise interference or leakage accident, please do the grounding engineering. (including sewing machine, motor, control box, locator)

Ground Wire (Green/Yellow)

must be grounding.

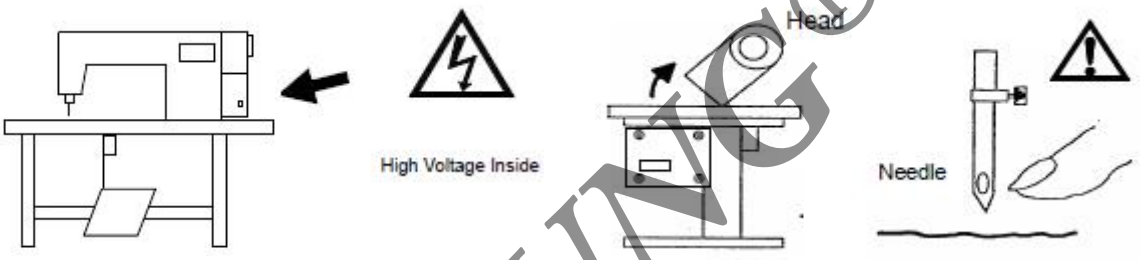
b. The grounding wire of the power cable shall be connected to the system ground wire of the production plant with the appropriate size of the wires and connectors. This connection must be permanently fixed.

Maintenance of safety

Before operating the following action, please turn off the power supply

(1).To remove the motor or control box or insert or pull any connection plug on the control box.

(2).Control box where there is a risk of high voltage power, so the power supply to wait for more than 10 minutes before the party can open the control box cover.



(3).Turn up front, and needle replacement or shuttle or wire (as shown).

(4).Repair or make any mechanical adjustment

(5)When the machine is not in use.

Maintenance requirements

(1).Repair and maintenance of the operation, to please the training of technical personnel to perform

(2).Around the vents of the motor, please don't, piled debris blocking air circulation, especially motor wind cover but can not adhesion of dust and scraps of paper, cloth scraps, so as to avoid burning motor

(3).Please do not use inappropriate objects, such as hammer percussion mallet, the device or motor axis

(4).All parts for repairs shall be provided or approved by the company, and may be used by the company.

Danger and Caution Signs

Risks that may cause personal injury or risk to the machine are marked with this symbol in the instruction manual.

This symbol indicates electrical risks and warnings.

The warranty period stipulated

This device to ensure the normal operation of the situation and no one for the mistakes of the operation, to ensure that the factory within 12 months, free of charge for the maintenance of customers so that the normal operation.

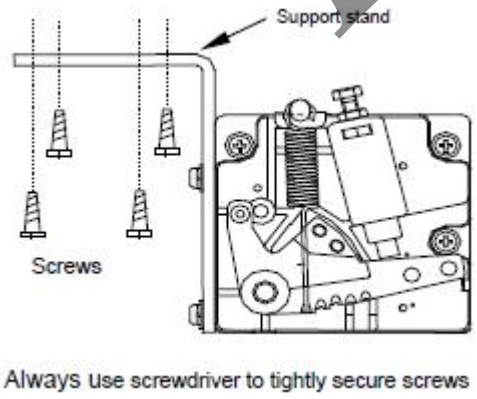
Installation and adjustment

1.Motor installation

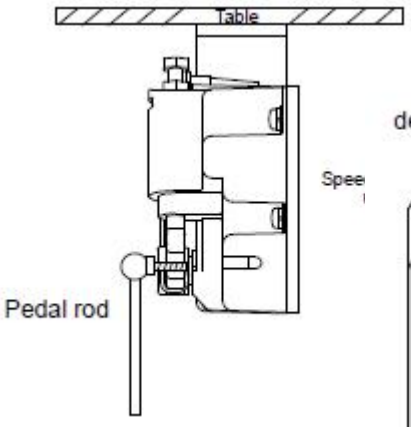
Direct drive type: (motor and front combined with the installation of the way) please refer to the manufacturer's instructions.

2. Installation of speed control device

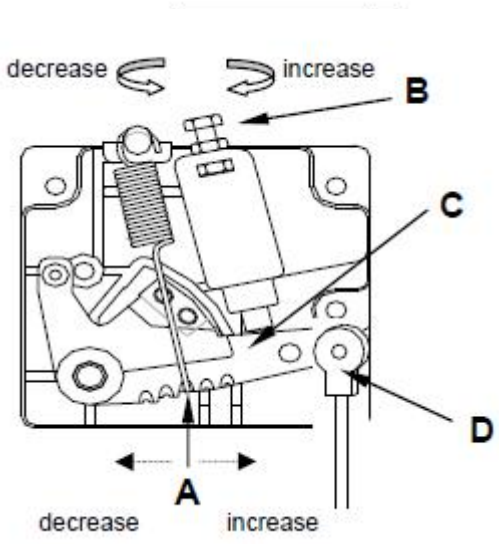
a). Speed Control Unit



b). Keep rod in vertical, secure the unit under the table



c).Installation layout



Adjust the Speed Control Unit

Components of the speed control unit: see figure

A： Spring for toeing forward force adjustment

B： Bolt for heeling backward force adjustment

C： Treadle / Pedal arm

D： Pitman Rod for Treadle / Pedal

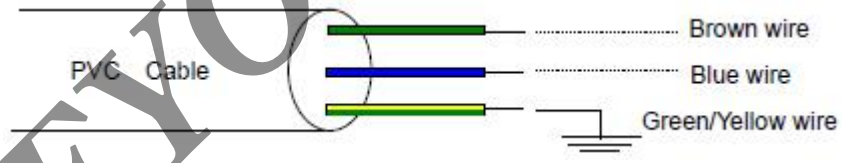
Term of adjustment		Adjustment result
1	Toeing forward force adjustment	Spring A move to right = force increased Spring A move to left = force decreased
2	Heeling backward force adjustment	Bolt B turn ⟲ = force decreased Bolt B turn ⟳ = force increased
3	Treadle stroke adjustment	Rod D secure at right = stroke is longer Rod D secure at left = stroke is shorter

Power Connection and Grounding:

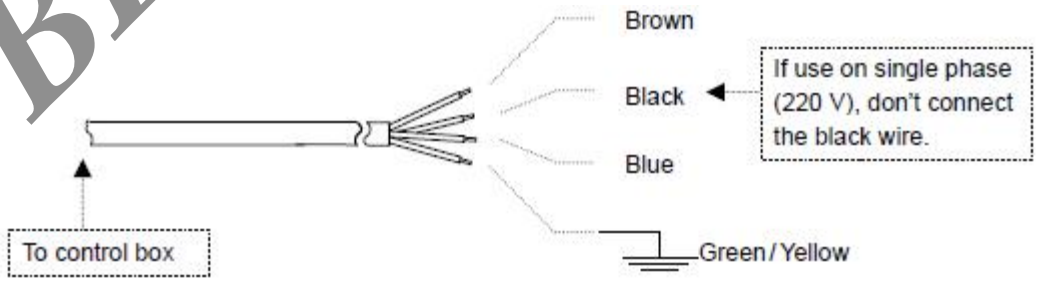
(1). Single phase and three phase connection:

Green/yellow wire is the ground wire.

Single Phase



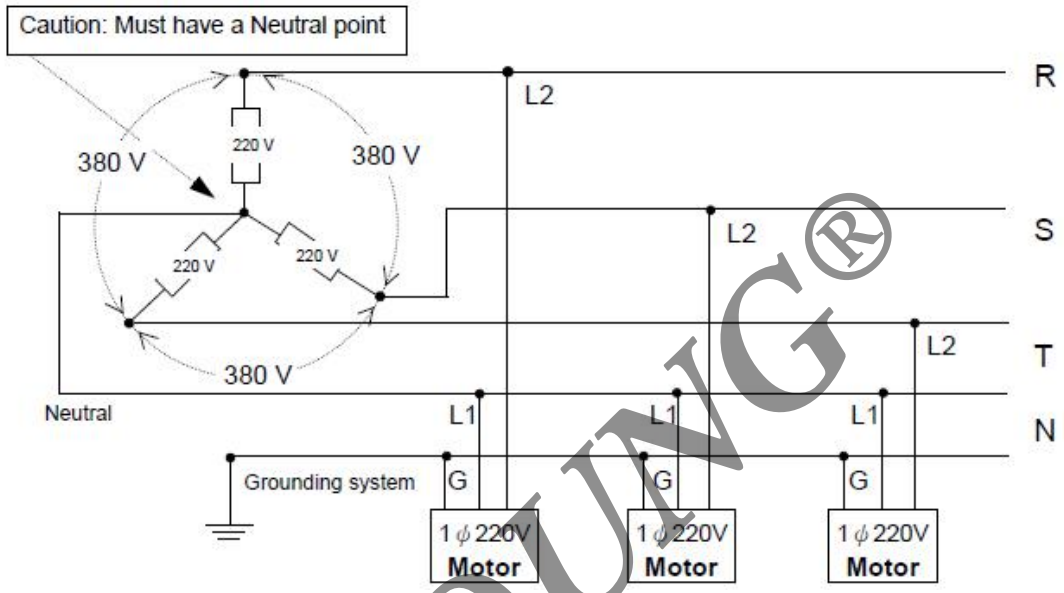
Three Phase



1. When a three phase 220 V servo motor used on single phase 200 ~ 240 V power, only connect brown and blue wires. Use insulating tape to wrap up the black wire, in order to prevent the current leakage.
2. Green / Yellow wire must do the grounding.

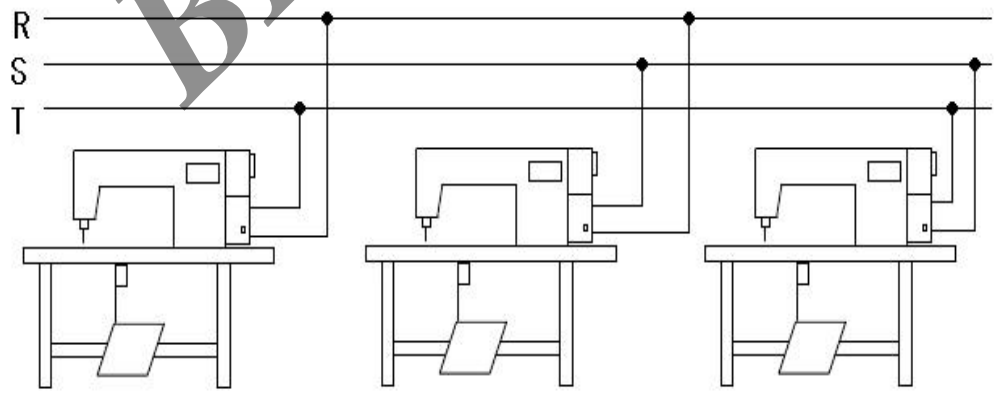
How to connect a 1Φ / 220 V power from a 3 Φ / 380 V power source

> Caution： If the power source does not have the neutral point, then this 1Φ / 220 V servo motor is not suitable for this connection. Please ask supplier to offer our 3Φ / 380 V servo motor.



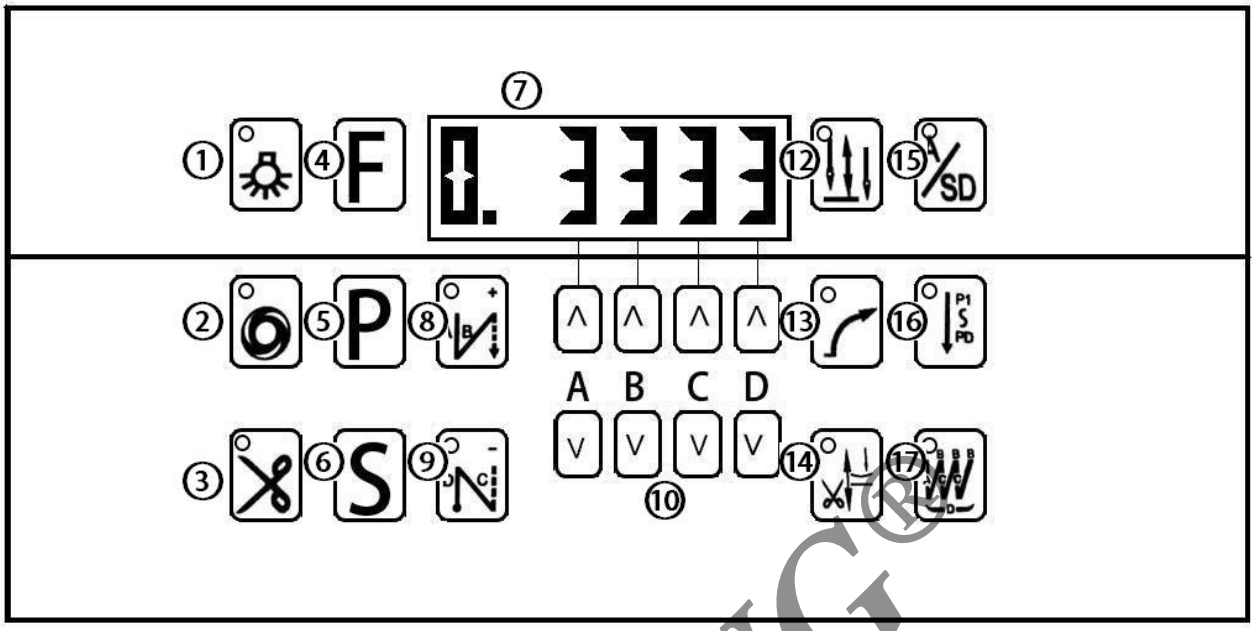
The load balance when use a 1Φ / 220 V motor used on a 3 Φ / 220 V power source.

See the following figure for the load balance.



Function description at standby

1.Introduction to key functions



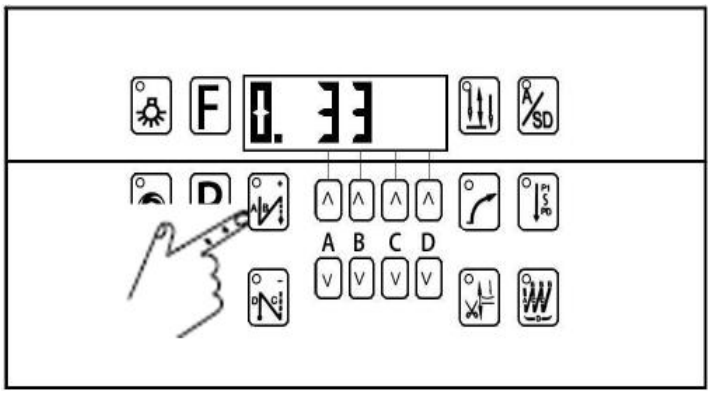
	Function	Key	Function description
1	Head lamp		Head lamp on and off
2	Auto trigger		The number of setting needle for setting up the seam of the fixed position after triggering
3	scissor		Scissors opening and closing
4	Multi function key		At the same time by F + Enter the P21-P72parameter. At the same time by F + Enter maintenance test interface parameters.

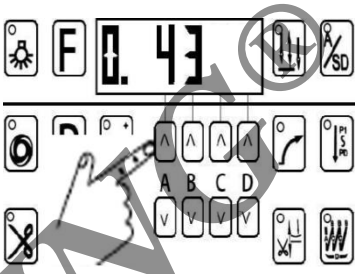
			At the same time by F + S Perform automatic test function (premise P72 item needs to be turned on).
5	(P1-P10) Enter the P parameter		Enter the P1-P10 parameter
6	Enter parameter content area / store / exit		Enter the parameter content area / storage key and exit key
7	LED display		Parameter function display screen
8	Start back-tacking		Function 1: start back stitch on and off Function 2: when entering the P parameters, the P parameters can be used to increase the key.
9	Start back-tacking		Function 1: the end of the seam to open and close Function 2: when entering the P parameters, can be used to do the P parameter decrease key.
10	numerical adjustment		 Numerical increase  Numerical reduction
11	Needle Up and down key		Setting up and down position of the needle
12	Slow start		Starting motor with gentle acceleration mode (with P8, P9 use)
13	Lifting foot		Lift foot opening and closing
14	Reinforced seam mode switching		High speed and low speed mode switching
15	Multi segment fixed seam		Opening and closing of multi section fixed position seam
16	Bar-tacking		Continuous seam opening and closing

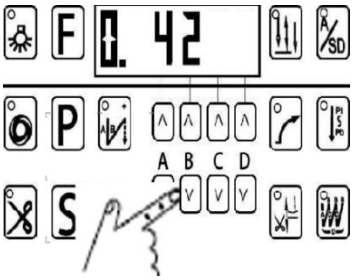
Panel button function setting

A)Start back-tacking

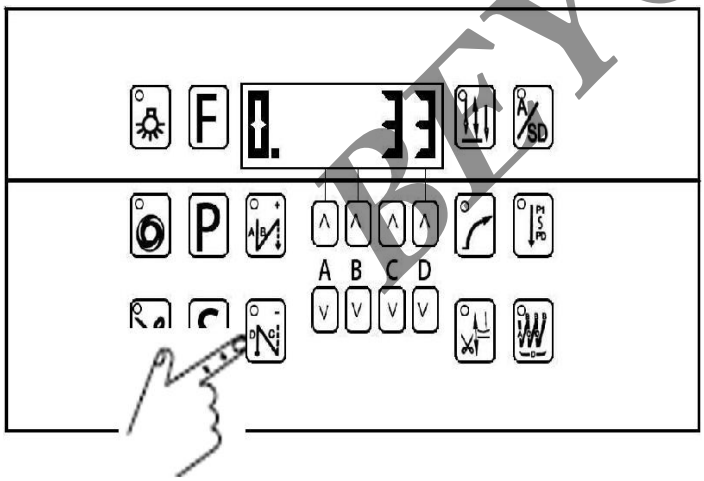
Use ^=+1 and v= -1to adjust the stitches of A、B、C、D section in

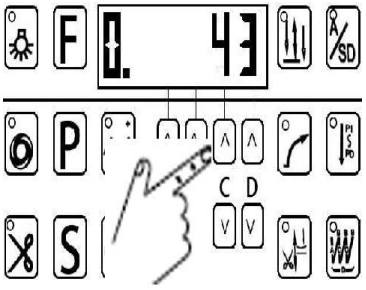


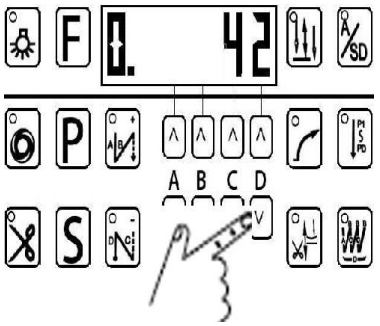




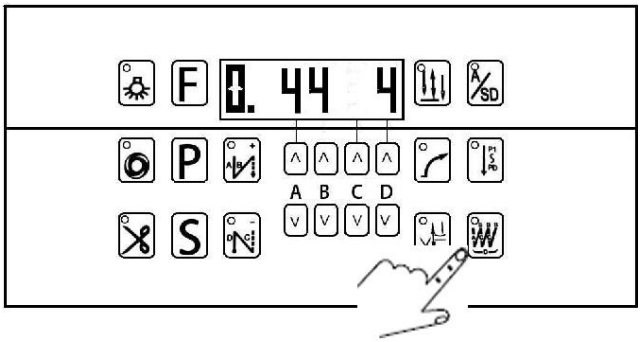
B)End return





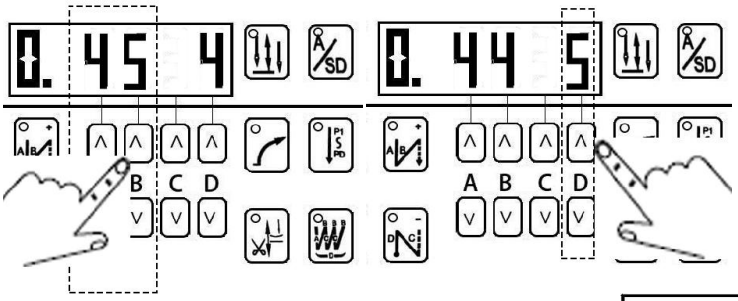


C）Continuous seam

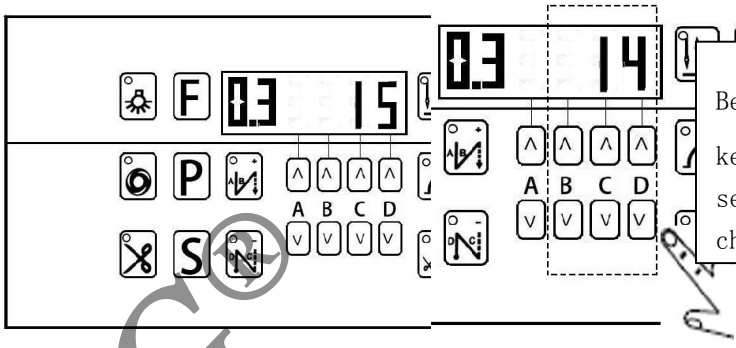


Bar-tacking stitches for A、B section, 15 stitches max. for each section.(note)

Bar-tacking turns D=6,
Perform bar-tacking 6 turns, 15 turns max.



D） Multi segment fixed seam



(Note) : Stitches setting of A、B、C、D sections correspond to the alphabet. (stitches / sections / turns)A=10、B=11、C=12、D=13、E=14、F=15

Parameter adjustment instructions

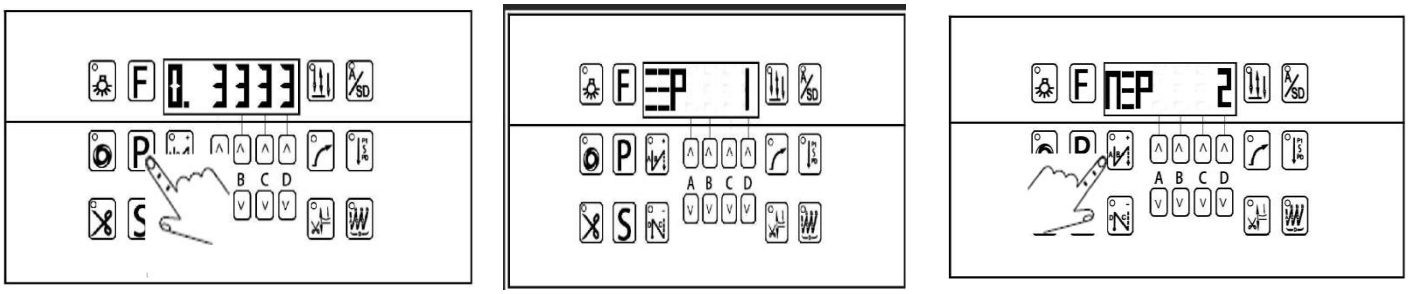
1.How to get into the content and adjust the content

According to the following the order of steps into you want to set the first parameter of the model parameters screen, to OR find you want to set the parameter number, the key is S confirmed into the parameter

2.Enter to set parameters model content, again with ^ or v button to set the values of the parameters are found, and press S confirm parameters and exit.

Enter the parameters

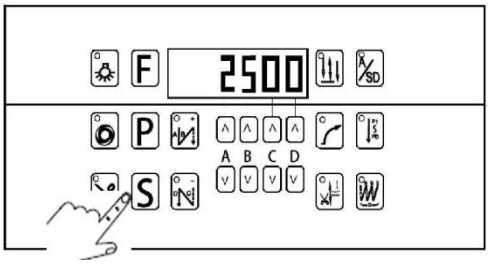
Adjust to the serial number to set parameters

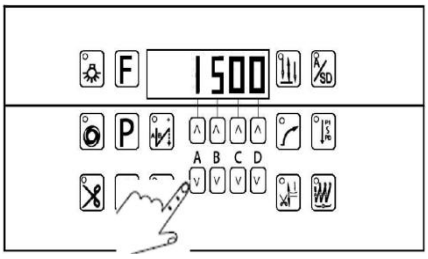


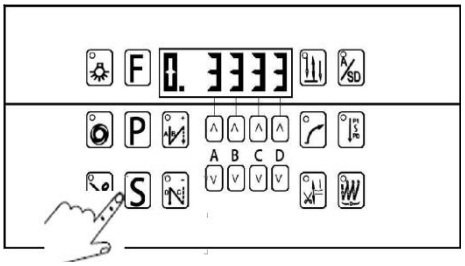
Enter the parameters

Adjustment parameter

Confirm and exit







Parameter model	Operation mode	Appear picture	Optional parameter range
P1-10	The general pattern of picture area, press P, and hold for 2 seconds.		001 - 010
P21- P72	The general pattern of picture area, P+ directly press the key, and keep 2 seconds		021 - 072

Lifting foot setting

1. The working state of the pressing foot is set. (P10)
   1: Foot lift after parking
   2: Shear line and automatic lifting and pressing foot
   3: Automatic lifting and pressing foot after cutting line
   4: Automatic lifting and pressing foot after parking
2. Holding time of the lifting foot. (P23)
   The default value is 20 seconds. When the pressure is raised, the foot is not operated in 20 seconds. The parameters can be adjusted in the range of 60 - 5 seconds.
3. Current fully open time, parameter (P24)
   The default value is 120ms, this parameter is small with 60 of the pressure foot lift. The parameters can be adjusted range 20 - 200ms.
4. Fully fully open pulse duty ratio, parameter (P25)
   The default value is 1200. The parameters can be adjusting range

of 20 - 1900. Such as setting is not at that time, may be lead to charge foot lifter weakness or burning phenomenon.

5.Release pin mode, parameter (P27)

0: slow mode

1: Fast mode

6.Put pressure foot delay, parameter (P28) with the use of P27

Safety switch settings

Safety switch mode (parameter mode P59)

0: afety switch not enabled

1: Safety switch is normally closed.

2: Safety switches are always effective.

The default value of 0, i.e., closed the function. When the safety switch is set incorrectly, normally open or long arm confusing to use, may lead to the motor does not work. At this point the P59 changed to 0 can be closed. When it is possible to safety switch can be checked by entering the detection mode of SFS.

Function parameter table

NO.	Content description	Panel display	Setting range	initial value	remark
P1	Set start speed	SSP	100-1000	250	
P2	Set maximum speed	MSP	100-4500	2000	
P3	Set shear line speed	CSP	100-450	200	
P4	Set back-tacking speed	SRF	200-2000	1200	
P5	Set end-tacking speed	ERF	200-2000	1200	
P6	Zigzag speed setting	WSP	200-2000	1200	
P7	Set Multistage constant inch seam speed	LSS	200-2000	1200	
P8	Set slow start speed	LSP	100-1000	500	
P9	Set up the number of stitches slow	LSN		2	
P10	Set up working condition 1: after parking step on the foot	FOM	1-4	1	

	2: cut the line and automatic lifting of the foot after parking 3: automatic lifting of the foot after cutting line 4: automatic lifting of the foot after parking				
P21	Acceleration slope	SAS	10-100	50	
P22	Down slope	EAS	20-400	200	
P23	Hold up time	FHT	5-60	20 秒(S)	
P24	Lift pin current	FAT	20-200	120 毫秒（ms）	
P25	Full open pulse duty cycle	FAC	20-1900	1200	
P26	Raise the foot to maintain the pulse duty cycle	FHC	50-1500	100	
P27	Release pin mode 0: slow mode 1: fast mode	FDM	0-1	0	
P28	Put pressure foot delay	FDD	10-200	60 毫秒（ms）	
P29	Signal detection delay	FUD	10-100	80 毫秒（ms）	
P30	Trimming electromagnet open angle	COA	30-240	70 度（°）	
P31	Angle of Trimming electromagnet	CCA	240-358	350 度（°）	
P32	Trimming electromagnet open time	CAT	10-200	80 毫秒（ms）	
P33	Fully open full duty cycle	CAC	200-1900	1400	
P34	The duty cycle of the trimming electromagnet is maintained.	CHC	100-1500	300	
P35	Loose wire electromagnet open	ROA	30-300	270 度（°）	

	angle				
P36	Loose wire electromagnet closing angle	RCA	240-358	350 度（°）	
P37	Loose wire electromagnet fully open time	RAT	10-100	80 毫秒（ms）	
P38	比Loose wire electromagnet fully open duty cycle	RAC	100-1900	500	
P39	Loose wire electromagnet to maintain the duty cycle	RHC	100-1500	200	
P40	Total current time of the reverse slot electromagnet	BAT	10-100	100 毫秒（ms）	
P41	Fully open duty cycle	BAC	100-1900	1500	
P42	Inverted slot electromagnet to maintain the duty cycle	BHC	100-1500	300	
P43	Initial back stitch A compensation	SRA	1-100	20 毫秒(ms)	
P44	Initial back stitch B compensation	SRB	1-100	20 毫秒(ms)	
P45	End back stitch A compensation	ERA	1-100	5 毫秒(ms)	
P46	End back stitch B compensation	ERB	1-100	20 毫秒(ms)	
P47	A segment compensation	WCA	1-100	20 毫秒(ms)	
P48	B segment compensation	WCB	1-100	20 毫秒(ms)	
P49	Bottom line rate	DLM	0-20	0	
P50	Bottom line initial value	DLI	200-4000	1600	
P51	Piece rate	CNM	0-20	1	
P52	Decorative stitching function 0: decorative seam closure	DES	0-1	0	

	1: decorative seam open				
P53	Decorative seam delay time	DED	0-100	100 毫秒(ms)	
P54	Lower parking space setting	DSA	30-220	70 度（°）	
P55	Upper parking space setting	USA	2-358	330 度（°）	
P56	Turn motor function is turned on 0: closed parking reverse function 1: turn on the parking reverse feature	RMS	0-1	0	
P57	Motor reverse angle setting	RMA	0-90	45 度（°）	
P58	Wheel ratio setting	WHL	800-1200	1000	
P59	Safe switch mode 0: security switch not enabled 1: safety switch is normally closed. 2: safety switch is normally open and effective.	SSM	0-2	0	
P60	Switch on location using raster or magnet Positioning of 0: on the use of grating reference positioning 1: positioning using a hand wheel magnet reference positioning	UPC	0-1	0	
P61	Find location mode 0: boot locate 1: boot does not find the location	FPM	0-1	0	
P62	Acceleration delay	ASD	1-300	100 毫秒(ms)	

P63	Pedal shear line signal point	CFS	1-1000	350	
P64	Foot signal point	FUS	1-1500	650	
P65	Foot signal point	FDS	1-2000	1100	
P66	Pedal stop signal point	MSS	1-2000	1550	
P67	Pedal intermediate reset signal point	FRS	1-2500	1750	
P68	Low speed pedal stroke	FLS	1-4000	2200	
P69	Back stop delay	RFD	1-100	5 毫秒(ms)	
P70	Locked motor time	LMT	100-500	200 毫秒(ms)	
P71	Enable to find the needle position when suspended 0: the motor does not return to the needle on the needle 1: motor back to the needle when the needle is suspended	HUE	0-1	0	
P72	Automatic operation mode 0: automatic shutdown 1: automatic operation enable	ARE	0-1	0	

Point code & error code

Error code	Description	Inspection and maintenance	Remark
ERR-01	Motor Locked Rotor	Detect whether the motor is stuck, the motor encoder QEP signal is normal	
ERR-02	Motor control hardware detects over current	Detecting whether the motor signal line plug and the drive wire are good	
ERR-03	Motor control software detects over current	Detecting whether the motor signal line plug and the drive wire are good	

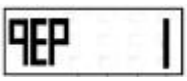
ERR-04	The switch detects that the foot pedal is not connected	To detect whether the foot pedal connection, or whether the boot when the foot pedal	
ERR-05	Motor Holzer signal loss	Detection of motor Holzer phase is normal	
ERR-06	Pin signal loss on motor	It is normal to detect the position signal of the motor on the motor.	

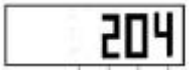
Test number	Panel display	Function description	Detection value	備註 remark
C1	QEP	Quadrature encoder output detection	0-359	
C2	CDO	Grating origin detection	0-1	
C3	HAO	Upper pin Holzer detection	0-1	
C4	FTS	Pedal signal detection	0-4096	
C5	UCS	Motor U phase Holzer current sampling value	100Normal display 1600 up and down 100	
C6	WCS	Motor W phase Holzer current sampling value	100Normal display 1600 up and down 100	
C7	SFS	Safe switch status	0-1	Detecting press and release status
C8	BB1	Backstitch button 1	0-1	Detecting press and release status
C9	BB2	Backstitch button 2	0-1	Detecting press and release status
C10	HLB	Pause key state	0-1	Detecting press and release status

Inspection and maintenance

Encoder detection

When the fault occurs E1, you can check to see if the encoder is a problem.

①The press  , the interface display 

②Into  the first parameter, according to the  . This

interface display , 204 is a point in a random location of motor. The range is 0 to 359 between value.
③Slowly rotate the hand wheel clockwise, at this time, the number of the display screen is increased, until the full automatic change after 359
④According to  exit detection.

If the rotation of the hand wheel value is constant, again check the terminal interface connection, if all the connection is normal to judge for the encoder or electric control box failure.

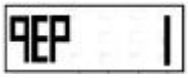
Pedal test

①At the same time  , the interface display 
②Adjusted by  or  , until the 
③According to  enter parameters, the display  runout.

1.Do not step on the foot pedal, display screen display value of 1400 ±20
2.The display value of the foot pedal is changed into4095±20
3.Back foot pedal in the end the display value changed to 40±20
4.If the above three groups of parameters change, then determine the normal function of the foot pedal

Multi function key detection

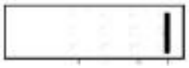
Check the safety switch, head down 1, head down 2, pause, and the good or bad of the half fill pin key.

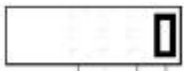
①At the same time  or  at  display interface.

②According to the  or  adjust the number.

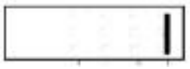
③Following A), B), C), E), D, respectively, to detect the safety switch, the reverse stitch 1, the inverted seam 2, pause, and the good or bad.

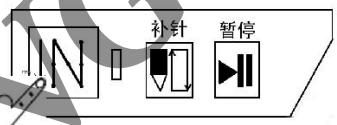
Safety switch detection

To  , According  to the parameters into the interface display  then manual safety switch circuit, display .

Said the safety switch is normal. After test by  exit, return to the main interface.

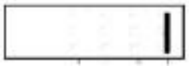
Back seam 1 switch detection

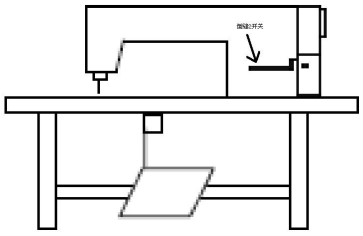
Adjusted to  , according to the  parameters into the interface display  .

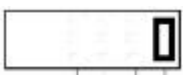


Followed by head reverse stitching 1 key , show right now screen display  . said reverse stitching 1 normal. Detection after the completion of the press  exit, back to the main interface.

Back seam 2 switch detection

Adjusted to  item, enter the parameters according to the  . Interface display  , followed by head reverse stitching



2 key , show right now screen display  . said reverse stitching normal 2. Detection after the completion of the press  exit, back to the main interface.

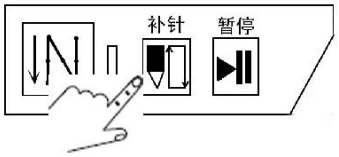
Pause switch detection

Adjusted to HL6 10, according to the S parameters into the interface display 1.

Followed by the head of the pause button 1, show right now screen display 0. said pause button normal. Detection after the completion of the press S exit, back to the main interface

Patch button detection

Adjusted to HP6 11, according to the S parameters into the interface display 1.



Followed by a press head semi fill needle key ,

here display screen display 0. said half fill needle keys to normal. Detection after the completion of the press S exit, back to the main interface.