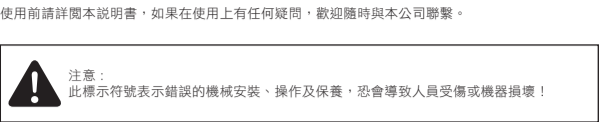
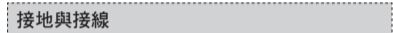


前言

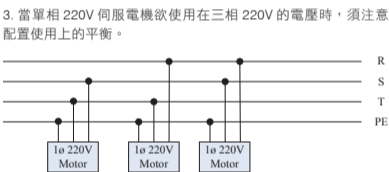
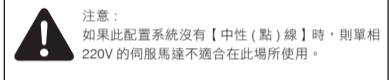


- ## 產品介紹

Technical drawing of the front view of a rectangular metal plate. The drawing shows a central rectangular area with a horizontal slot. The overall width is 228 mm, and the overall height is 65 mm. The central slot has a width of 198 mm and a height of 45 mm. The plate has four mounting holes, two on each long side, with a diameter of 4-φ10. The distance between the centers of the holes on each side is 4-4.5 mm. The distance from the center of the holes to the edge of the plate is 10 mm. The distance from the center of the holes to the center of the slot is 4-10 mm.



1. 單相電源接線方法



按鍵說明



參數調整模式之按鍵功能說明

參數設定模式說明

參數設定模式說明

- ### 功能鍵說明

故障排除

選針盒顯示錯誤碼	異常現象說明	解決措施
Err 1	過電流保護	1. 關閉電源。 2. 確認 IGBT 模組工作正常。 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。
Err 4	過電壓保護	1. 關閉電源。 2. 請檢查是否插錯供應電源或電壓過高。 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。 4. 控制器若仍有錯誤碼顯示，請更換控制器並通知廠商。
Err 7	堵轉檢知遮斷	1. 關閉電源。 2. 檢查馬達動力線插頭配線是否接觸不良。 3. 是否有異物纏繞機頭，其他機械結構干涉異常，或妨礙物是否過厚。 4. 確認切刀是否磨耗需更換。 5. 排除後重新送電，若仍無法正常運轉，請通知廠商。
Err 8	選針盒通訊介面異常	1. 關閉電源。 2. 檢查選針盒連接線是否脫落、鬆動、破損、插入方向錯誤。 3. 排除後重新送電，若仍無法正常運轉，請通知廠商。
Err 20	控制器過熱保護	1. 關閉電源，10 分鐘後重新送電。 2. 控制器若仍有故障燈顯示，請通知廠商。
Err 21	電機編碼板異常	1. 關閉電源。 2. 檢查電機編碼器連接線是否接觸不良或馬達編碼器是否故障。 3. 排除後重新送電，若仍無法正常運轉，請通知廠商。
Err 24	電磁閥異常	1. 關閉電源。 2. 檢查電磁閥接線線是否有錯誤或是短路。 3. 排除後重新送電，若仍無法正常運轉，請通知廠商。
Err 60	控速器異常	1. 關閉電源。 2. 檢查控速器接線線是否有錯誤或是短路。 3. 排除後重新送電，若仍無法正常運轉，請通知廠商。
SAFE	安全開關檢知遮斷	一般模式下，旋轉符號不轉動時： 1. 關閉電源，檢查縫紉機安全開關是否故障。 2. 排除後重新送電，若仍無法正常運轉，請通知廠商。

參數說明

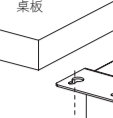
操作介面及安裝說明

控制箱安裝示意圖
安裝位置

控制箱
控制速度
主線

控制器安裝方式

桌板



20mm 木螺釘 x 4

控速器安裝方式

桌板

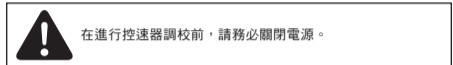
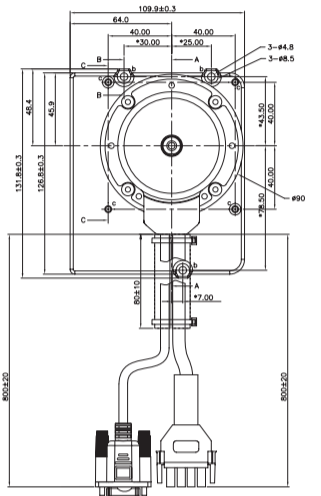
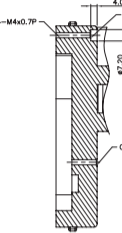
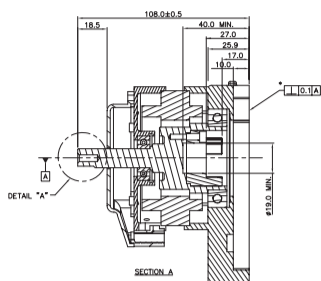
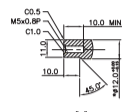
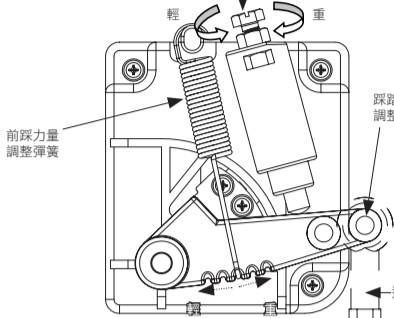
20mm 木螺釘 x 3

連桿

連桿螺帽組

馬達外觀尺寸圖

馬達外觀尺寸圖



調整項目	調整方式
踏板前踩力量調整	(1) 將調整彈簧往右移，前踩力量越「重」 (2) 將調整彈簧往左移，前踩力量越「輕」
踏板後踩力量調整	(1) 將調整螺栓順時針轉動，後踩力量越「重」 (2) 將調整螺栓逆時針轉動，後踩力量越「輕」
踏板行程調整	(1) 將連桿安裝於右側孔中，踏板行程較「長」 (2) 將連桿安裝於左側孔中，踏板行程較「短」

外部連接器連接說明

LED			
1	GND	2	12V LED

馬達電源線			馬達編碼器訊號線			控速器		燈計盒				
1	U	紅	1	A+	綠	1	12V	1	5V			
2	V	白	2	B+	白	2	ROR	2	GND			
3	W	黑	3	Z+	黃	3	GND	3	Tx			
4	PE	黃 / 綠	4	+5V	紅	4	FOOT					
			5	5VGND	黑	5				SPD	4	Rx
			6	U+	棕							
			7	W+	灰							
			8	V+	橙							

布料電眼				電磁閥 & 安全開關			
1	GND	7	B_SENSOR	1	E_24V_F	9	FABRIC
2	F_SENSOR	8	GND	2	FOOT_AIR	10	STOP_SINGAL_IN
3	USIF_5V	9	USIF_5V	3	E_24V_F	11	PROXIMITY_SWITCH_IN
4	IR_OUT1	10	IR_OUT3	4	LOOSE	12	GND
5	USIF_5V	11	M_SENSOR	5	E_24V_F	13	MICRO_SW_IN
6	IR_OUT2	12	GND	6	FAN	14	USIF_5V
				7	E_24V_F	15	CUT_INCH_IN
				8	E_24V_F	16	CUTTER

按鍵說明



參數調整模式之按鍵功能說明

參數設定模式說明

參數設定模式說明

- ### 功能鍵說明

故障排除

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Err 4	過電壓保護	1. 關閉電源。 2. 請檢查是否插錯供應電源或電壓過高。 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。 4. 控制器若仍有錯誤碼顯示，請更換控制器並通知廠商。
Err 7	堵轉檢知遮斷	1. 關閉電源。 2. 檢查馬達動力線插頭配線是否接觸不良。 3. 是否有異物纏繞機頭，其他機械結構干涉異常，或妨礙物是否過厚。 4. 確認切刀是否磨耗需更換。 5. 排除後重新送電，若仍無法正常運轉，請通知廠商。
Err 8	選針盒通訊介面異常	1. 關閉電源。 2. 檢查選針盒連接線是否脫落、鬆動、破損、插入方向錯誤。 3. 排除後重新送電，若仍無法正常運轉，請通知廠商。
Err 20	控制器過熱保護	1. 關閉電源，10 分鐘後重新送電。 2. 控制器若仍有故障燈顯示，請通知廠商。
Err 21	電機編碼板異常	1. 關閉電源。 2. 檢查電機編碼器連接線是否接觸不良或馬達編碼器是否故障。 3. 排除後重新送電，若仍無法正常運轉，請通知廠商。
Err 24	電磁閥異常	1. 關閉電源。 2. 檢查電磁閥接線線是否有錯誤或是短路。 3. 排除後重新送電，若仍無法正常運轉，請通知廠商。
Err 60	控速器異常	1. 關閉電源。 2. 檢查控速器接線線是否有錯誤或是短路。 3. 排除後重新送電，若仍無法正常運轉，請通知廠商。
SAFE	安全開關檢知遮斷	一般模式下，旋轉符號不轉動時： 1. 關閉電源，檢查縫紉機安全開關是否故障。 2. 排除後重新送電，若仍無法正常運轉，請通知廠商。

參數說明

序號	參數碼	參數功能	設定範圍	出廠值	單位	說明
1	H	速度選擇	200~7000	5600	rpm	本參數受“56.HL”最高速度限制管制
2	LMS	前慢速起縫功能開啟選擇	ON/OFF	OT/A: ON MA: OFF	//	ON: 開啟 OFF: 關閉
3	L	慢速起縫速度設定	200~6000	3000	rpm	車縫速度設定
4	LSS	慢速起縫針數設定	1~100	30	針	車縫針數設定
5	KMS	計數器模式選擇	NOP/UTS	NOP	//	NOP: 關閉 UTS: 開啟功能
6	KT	針數目標值設定	1~9999	99	次	針數次數設定
7	KV	針數值顯示	1~9999	//	次	即時顯示
8	SV	車頭運轉速度顯示	200~7000	//	rpm	即時顯示馬達實際運轉轉速。
9	TMD	機型選擇碼	NOP/D031/D032 D022/D021	DD31	//	NOP: 一般車 DD31: 氣動切刀 DD32: 電動切刀 DD22: 機械制刀 DD21: 機械平刀。另外，此參數不受按▲鍵重直出廠值影響。
10	MRM	馬達運轉模式設定	MA/OT/A	MA	//	MA: 半自動 OT: 一次觸發(踩踏板一下後，馬達立即運轉車縫到結束) A: 全自動
11	TCT	切刀手動/自動模式選擇	M/A	A	//	M: 手動，DD31/DD32 模式下車縫機能為一般車，手動切刀在馬達停止時可動作，當外部按鈕未被按下或參數值為 M 時，全後踩踏板切刀會動作一次。 A: 自動，切刀隨 DD31/DD32 機能動作 註：外部按鈕開關，按下狀態為自動模式，未按下狀態為手動模式
12	TFS	前切刀啟動針數設定	0~999	D031/D032: 7 DD22/DD21: 0	針	針數設定
13	TFT	前吸風持續時間針數設定	0~99	6	針	切刀動作後吸風長短針數設定
14	TSF	前切刀吸風時間	0~9000	0	ms	前切刀動作時同步吸風時間為“14.TSF”設定值。
15	TIN	車縫中吸風間隔針數設定	0~999	50	針	車縫中經過針數設定，做吸布屑吸風功能

參數碼	參數功能	設定範圍	出廠值	單位	說明
16	TT 車縫中吸風時間設定	0~3000	0	ms	"16.TT" 值若設為 "0" 則關閉車縫中吸風功能
17	TBS 後切刀啟動針數設定	0~999	0	針	布經過後電眼後切刀動作針數設定
18	TSB 後切刀完延遲吸風時間	0~2000	100	ms	切刀完畢後延遲 "18.TSB" 時間後，執行吸風 "19.TST" 設定時間。
19	TST 後切刀動作後吸風時間	0~9000	50	ms	後切刀動作後吸風時間設定
20	TS2 後吸風啟動針數設定	0~999	0	針	DD22/DD21 模式下，吸風動作延遲 "20.TS2" 針數後，吸風持續時間 "21.TBT" 設定針數。
21	TBT 後吸風持續時間針數設定	0~999	36	針	參數 20 ~ 21 同時將值設為 "0" 時，吸風模式將改為馬達轉即吸風模式。
22	SWC 吸風動作模式選擇	1/2/3/4/5	4	針	1. 無吸風動作 2. 僅前吸風 3. 僅後吸風 4. 前後吸風 5. 機械吸風開啟 (手動模式有效)
23	TC 切刀動作模式選擇	1/2/3/4	4	//	1. 無切線動作 2. 僅前切線 3. 僅後切線 4. 前後切線
24	TN1 針上 / 針下定位功能選擇	U/D/U/D	U	//	U 為上停針，D 為下停針，UD 模式則為上下停針，但全後採執行提針抬壓腳。
25	BUZ 接到蜂鳴器開關	ON/OFF	ON	//	當壓腳保護 (30 秒) 或計數針到達時，蜂鳴器會發出嗶 嗶兩聲。
26	TT 切刀電磁鐵初始全額出力時間	0~300	40	ms	切刀電磁鐵通電時間設定
28	EYE DD22/DD21 後吸風完成後自動停車	ON/OFF	OT/A:ON MA:OFF	//	DD22/DD21 後吸風完成後自動停車。
29	預留功能	//	//	//	
30	預留功能	//	//	//	
31	IRT 預留功能	//	//	//	
32	TFD 動作功能檢查選擇	0~9	0	//	各數字代表：1. 抬壓腳氣動 (動作 2 秒) 2. 抬壓腳電動 (目前無功能) 3. 切刀 (動作 50ms) 4. 切刀吸風 (動作 2 秒) 5. 吸布肩 (動作 2 秒) 6. 控速器
33	FMS 自動抬壓腳提升器型式選擇	M/A	A	//	M：電動 A：氣動
34	FT 抬壓腳電磁鐵出力初始全額輸出時間	0~990	250	ms	
35	FD 抬壓腳電磁鐵出力動作過剩 %	10~50%	25	%	抬壓腳電磁鐵參數，請勿調整
36	PFM 抬壓腳電磁鐵動作時的保護功能開啟選擇	ON/OFF	ON	//	
37	FP 抬壓腳電磁鐵動作時的保護時間設定	1~300	電磁鐵：120 電磁鐵：30	秒	
38	FMM 抬壓腳動作模式選擇	ON/OFF	OT/A:ON MA:OFF	//	當抬壓腳抬起時且 "38.FMM" ON，前電眼偵測到布料後延遲 "39.FMS" 時間後，壓腳自動放下。
39	FMS 壓腳放下延遲時間設定	1~3000	OT/A:200 MA:50	ms	
40	HT 半後踩抬壓腳確認時間	0~990	100	ms	半後踩延遲時間設定
41	HFS 抬壓腳功能選擇	ON/OFF	OT/A:ON MA:OFF	//	"41.HFS" 設定為 ON 時，在 DD31/DD32 模式下後切刀吸風流程完畢後，自動將壓腳抬起；在 DD22/DD21 模式下後吸風流程完畢後，自動將抬壓腳抬起。"41.HFS" OFF 則關閉自動抬壓腳功能。
42	TTM 使用踏板型式	ON/OFF	ON	//	在 OT/A 模式下可選擇使用立式踏板或一般控速器；ON：控速器 OFF：立式踏板。
43	BTM 後切刀動作馬達連續停止	ON/OFF	OT/A:ON MA:OFF	//	ON 為開啟自動停車，OFF 為關閉自動停車。
44	FTM 後切刀動作馬達連續停止再啟動間隔時間	0~9990	50	ms	
45	ATF 氣動切線組功能開啟 / 關閉	ON/OFF	OFF	//	預留功能
46	AVT 電磁閥單次動作時間	1~300	50	ms	預留功能
47	ACC 氣動式切線機構動作次數	1~10	3	次	預留功能
48	FMD 馬達啟動時間延遲	50~500	OT/A:200 MA:50	ms	壓腳放下延遲時間 "48.FMD" 經過後，才允許馬達啟動。
49	SF 手動切刀保護	ON/OFF	ON	//	ON：當後電眼被遮住時切刀不動作；OFF：有動作
50	MSW 安全開關功能選擇	ON/OFF	ON	//	ON：開啟安全開關保護功能 (當接近開關被移開時，停止所有機能且馬達不轉動)，OFF：取消安全開關保護。
51	MUS 馬達緊急停止功能	ON/OFF	ON	//	ON：開啟；OFF：關閉。
53	SUA 針下停止角度	0~360	0	角度	勿調整
54	SUA 針上停止角度	0~360	220	角度	勿調整
55	ER 故障碼顯示	0~9		組	可記憶最近 10 組故障代碼
56	HL 車頭最高速度限制	200~7000	6000	rpm	最高速度限制 (最高優先權)，"56.HL" 設為 7000rpm 後參數 "01.H" 才能設定為最高轉速。
57	ACR 輔助切線馬達速度	200~5000	3000	rpm	
58	ACS 輔助切線運轉針數	1~99	20	針	DD22/DD21 模式下，在車縫機能完成後，按壓手動切刀開關可執行 "切刀吸風輔助功能"。
59	CS 踏板靈敏度調整	1~5 段	2	1	調整，"59.CS" 可設定 OT/A 模式時控速器 "踩一下" 之踩路深度判斷，作為馬達啟動訊號。段從淺大則深度越深。
60	NUF 前電自動提針	ON/OFF	ON	//	ON：開電後將自動提針至上停位位置 OFF：無此功能
61	LSH 側板安全開關	ON/OFF	OFF	//	ON：開啟 OFF：無此功能
62	HVR 最高電壓記錄顯示	//	//	//	
63	LVR 最低電壓記錄顯示	//	//	//	
64	PV 目前電壓顯示	//	即時顯示	//	"62.HVR" 及 "63.LVR" 可記錄控制盒 AC 入電最高與最低電壓有效值。
65	AOT 自動運轉測試全時間設定	1~1000	240	小時	自動運轉測試全時間設定
66	AO1 自動運轉啟動時間設定	1~20	2	s	自動運轉啟動時間設定
67	AO2 自動運轉停止時間設定	1~20	2	s	自動運轉停止時間設定
68	AOS 自動運轉功能	ON/OFF	OFF	//	ON：自動運轉測試開始；OFF：自動運轉關閉 (開電即恢復 OFF 狀態)
69	UIT 自動運轉時間顯示	1~1000	即時顯示	小時	運轉累積時數
70	VER 軟體版本顯示				顯示方式為 SXEXX。
71	AFS 前電眼偵測自動車縫功能	ON/OFF	OFF	//	自動起壓腳與壓腳放下自動車縫
72	FBS 前後電眼間隔針數設定	1~100	30	針	前後電眼之間檢測距離間隔針數
73	FN 前電眼 ON 防彈跳	0~3000	5	ms	
74	FF 前電眼 OFF 防彈跳	0~3000	5	ms	
75	BN 後電眼 ON 防彈跳	0~3000	5	ms	如功能描述，前後電眼之狀態需恆 ON

PREFACE



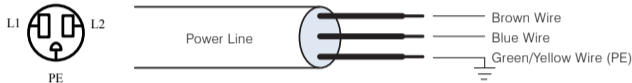
- For controller installation and maintenance, please contact with qualified technician for assistance.
- Do not expose the controller to wet, corrosive, and flammable environment. It may cause electrical shock or fire hazards.
- Ensure the controller applies to proper application and environment.
- 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.
- Please turn off the power prior to needs threading, mechanical adjustment or maintenance.
- Please ensure the switch is at "OFF" stage when plugging the power into the system.
- Please do not touch the controller heat sink during operation to avoid burn hazard.
- 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.
- All the replacement parts for repairing must be provide or approved by supplier.

SYSTEM SPECIFICATION

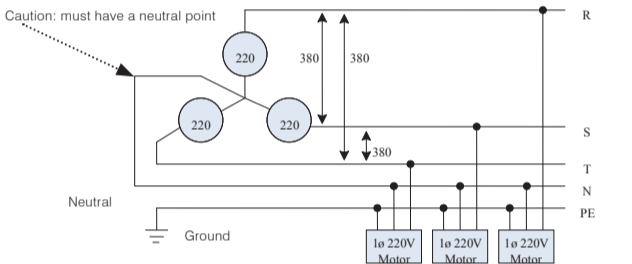
Motor Type	AC Servo Motor
Input Voltage Range	AC 176~286V 50/60 Hz
Rated Input Power	400W
Max Sewing Speed	200 ~ 7500 RPM
Rated Torque	0.509 N-m
Operating Temp	0-55degC
Insulation Voltage	AC 1500V / 1min
Insulation Resistance	DC 500V, over 100M ohm
Operation Box	Yes
Net Weight	Control Box 1.1 Kg / Motor 2.1 Kg Speed Controller 0.7Kg Operation Box 0.17Kg

POWER CONNECTION AND GROUNDING

1.Single Phase Connection

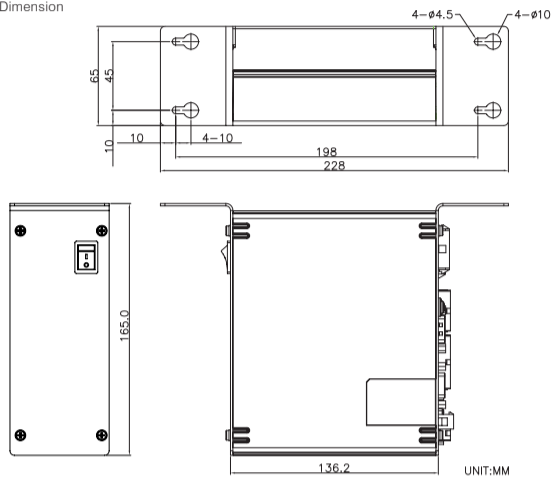


2.Connecting Single Phase / 220V Power from a 3 Phases / 380V Power Source



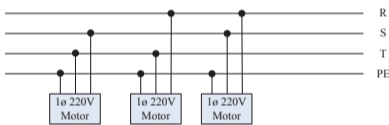
PRODUCT INTRODUCTION

Control Box
Outline Dimension



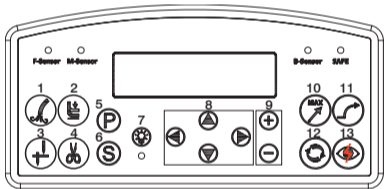
Caution :
If the power source does not have the neutral point, then this 1 Φ / 220 V servo motor is not suitable for this connection.

3.Load Balance for 1 Phase / 220V Motor with 3 Phases / 200V Power System















OPERATION BOX SETTING

Figure and Description



Functions and Operations

Function	Key	Sewing Machine Operation
Suction Function		1. No trimming 2. Only the front trimming 3. Only the back trimming 4. Front and back trimming 5. Suction independent of code of machine type (it valid if parameter 11 set as M mode)
Presser Foot Function When Motor Stop		When setting "41.HFS" as ON, with the mode of DD31/DD32, the presser foot will rise after the trimming and suction is finished. Under the mode of DD22/DD21, after the suction is done, the presser foot will rise automatically. If "41.HFS" is OFF, the function of auto presser foot will be shut down.
Needle Position		U: The highest location D: The lowest location U: The lowest location, but when the fully pedaling, the presser foot will be risen.
Thread Trimming		1. No trimming 2. Only the front trimming 3. Only the back trimming 4. Front and back trimming
Motor Speed Setting		Motor Speed Adjustment
Soft Start Mode		Soft Start Function
Sewing Mode Selection		MA: semi-auto OT: one-shot (After pedaling once, the motor will immediately work until the sewing is finished.) A: automatic NOP: sergato, but it can active manual trimming during the sewing period. It is independent of electrical eye-sensor protection
Rear Eye-sensor Switch		Under MA/OT/NOP mode, if the front sensor detects no fabric, motor will stop.
Parameter Setting		In Normal Mode, press the key for few seconds to enter Parameter Selection Mode. After parameter adjustment, press the key back to Parameter Selection Mode.
Parameter Saving		After parameter adjustment, press the key to back to Normal Mode.
Parameter Increment Key		Parameter Increment Key
Parameter Decrement Key		Parameter Decrement Key
Bit Selection of Parameter Content Setting		Bit Selection of Parameter Content Setting
Increment Adjustment of Parameter Content		Increment Adjustment of Parameter Content
Decrement Adjustment of Parameter Content		decrement Adjustment of Parameter Content


Function Setting Key for Parameter Adjustment Mode

1	Suction Mode Selection	8	Parameter Function, Content and bit adjustment
2	Presser Foot Function	9	Value Increment / Decrement Key
3	Needle Position Selection	10	Motor Speed Setting
4	Thread Trimmer Function Selection	11	Soft Start Mode Selection
5	Parameter Setting	12	Sewing Mode Selection
6	Parameter Saving and Leave	13	Rear Eye-sensor ON/OFF
7	Lamination Switch		

Parameter Setting and Adjustment

1. In Normal Mode, press **(P)** Key to enter Parameter Selection Mode.
2. Use the increment key **(▲)** and decrement key **(▼)** to select parameter.
3. Press **(S)** Key to enter Parameter Adjustment Mode.
4. Use the key **(+)** and **(-)** to adjust the parameter.
5. Press **S** Key to go back to Normal Mode. Or press **P** Key to go back to Parameter Selection Mode.

Error Code & Trouble Shooting

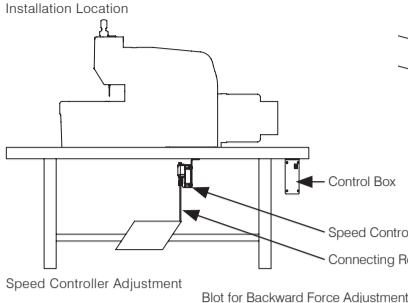
Operation Box Error Code	Cause of the Problem	Measurement and Solution
Err 1	Over Current Protection	1. Turn off the power. 2. Check if the IGBT module is normal. 3. Reboot the control box after 1 min. If the error code still happens, please exchange control box and contact with qualified technician.
Err 4	Over Voltage Protection	1. Turn off the power. 2. Check if the control box is applied to wrong power supply or the voltage is too high. 3. If the voltage is too high, please wait for reboot after power becomes normal. 4. Reboot the control box after 1 min. 4. If the error code still happens, please exchange control box and contact with qualified technician.
Err 7	Over Torque	1. Turn off the power. 2. Check the connection for motor power cable. 3. Check if any abnormal on machine head, other mechanism abnormal, or if the textile is too thick. 4. Check if the trimmer has been worn out and need replacement. 5. Reboot the control box after troubleshooting. If the error code is still there, please contact with qualified technician.
Err 8	Operation Box Communication Error	1. Turn off the power. 2. Check if the connector between operation box and control box has been loosened, broken or wrong plug in orientation. 3. Turn on the power again. If the machine still cannot operate normally, please contact with qualified technician.
Err 20	Control Box Over Heat Protection	1. Turn off the power. Reboot the control box after 10mins. 2. If the error code still happens, please exchange control box and contact with qualified technician.
Err 21	Motor Encoder Abnormal	1. Turn off the power. 2. Check the connector between motor encoder and control box or if any malfunction on motor encoder board. 3. Turn on the power again. If the machine still cannot operate normally, please contact with qualified technician.
Err 24	Electromagnetic Valve Abnormal	1. Turn off the power. 2. Check if there is connection error or short on Electromagnetic Valve. 3. Turn on the power again. If the machine still cannot operate normally, please contact with qualified technician.
Err 60	Speed controller Abnormal	1. Turn off the power. 2. Check if there is connection error or short on Speed controller. 3. Turn on the power again. If the machine still cannot operate normally, please contact with qualified technician.
 SAFE	Safety Switch Error	When the motor rotating symbol stops during Normal Mode: 1. Turn off the power and check the connection for safety switch. 2. Turn on the power again. If the machine still cannot operate normally, please contact with qualified technician.

Parameter List

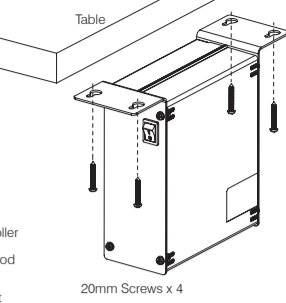
Item	Code	Function	Range	Default	Unit	Description
1	H	Speed Adjustment	200~7000	5600	rpm	This parameter is limited by the highest speed limit "56.HL."
2	LMS	Selection of slow start function	ON/OFF	OT/A: ON MA: OFF	//	ON: turn on OFF: turn off
3	L	Setting of slow start speed	200~6000	3000	rpm	Setting of sewing speed
4	LSS	Stitch setting of slow start	1~100	30	Stitch	Setting of stitches
5	KMS	Selection of stitch counter mode	NOP/UTS	NOP	//	NOP: deactivate UTS: activate
6	KT	Setting of stitch target value	1~9999	99	times	Setting of stitch numbers
7	KV	Stitch display	1~9999	//	times	Instantaneous display
8	SV	Machine rotary speed display	200~7000	//	rpm	Instantaneous display the motor exact rotary speed.
9	TMD	Code of Machine Type	NOP/DD31/DD32 DD2/OT/A	DD31	//	NOP: general DD31: pneumatic trimmer DD22: mechanical side trimmer DD21: mechanical flat knife Besides, the parameter won't be influenced by pressing the button of upward arrow.
10	MRM	Setting of motor rotary mode	MA/OT/A	MA	//	MA: semi-auto OT: one-shot (After pedaling once, the motor will immediate work until the sewing is finished.) A: automatic
11	TCT	Trimmer selection of manual / auto mode	M/A	A	//	M: Manual, under the mode of DD31/DD32, the sewing function is general type; the manual trimmer will work when the motor stops. A: Automatic, the trimmer works with the DD31/DD32.
12	TFS	Stitch Setting of starting the front trimmer	0~999	DD31/DD32 : 7 DD22/DD21 : 0	Stitch	Stitches setting
13	TFT	Stitch setting of the front suction duration	0~99	6	Stitch	Stitch setting after trimming and suction
14	TSF	The suction duration of the front trimmer	0~9000	0	ms	When the front trimmer works, the setting value of the synchronous suction duration is "14.TSF."
15	TIN	Stitch setting of suction interval during sewing	0~9999	50	Stitch	Performing the suction function by stitch setting during the sewing.

USER INTERFACE AND INSTALLATION

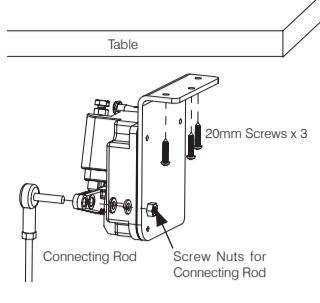
User Interface and Installation



Control Box Installation

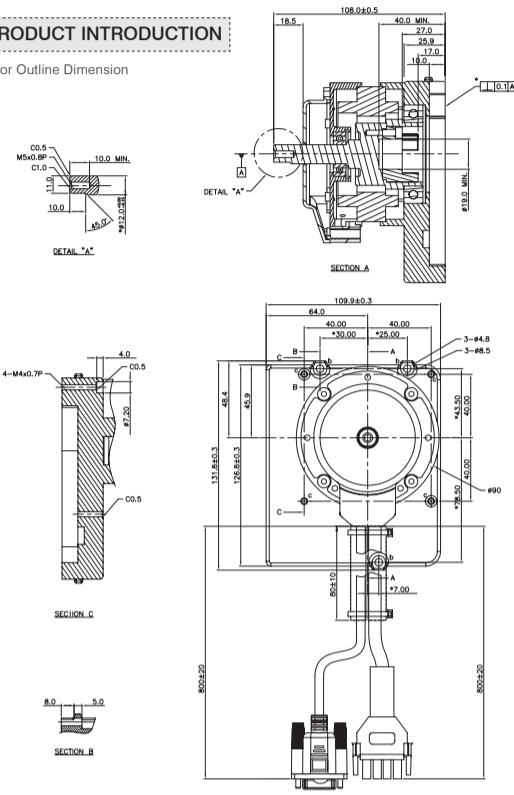


Speed Controller Installation



PRODUCT INTRODUCTION

Motor Outline Dimension



Turn off the power before the speed controller adjustment.

Adjustment Items	Adjustment Method
Forward Force Adjustment	(1) When spring moving to the right, the forward force increases. (2) When spring moving to the left, the forward force decreases.
Backward Force Adjustment	(1) When bolt turns clockwise, the backward force increases. (2) When bolt turns counterclockwise, the backward force decreases.
Connecting Rod Adjustment	(1) When the connecting rod secures at right hole, the stroke is longer. (2) When the connecting rod secures at left hole, the stroke is shorter.

Outside Connector Diagram

The diagram shows the rear panel of the SBC-3000 with the following connectors and pinouts:

- AC INPUT 250VAC 60Hz:** A 3-pin AC power connector.
- 5VDC:** A 2-pin DC power input connector.
- SERIAL:** A 9-pin D-sub connector.
- 4 PE:** A 4-pin connector for PE (Protective Earth).

LED Status Indicators:

LED			
1	GND	2	12V LED

Motor Power and Encoder Connector Pinouts:

Motor Power Connector		Motor Encoder Connector		S
1	U Red	1	A+ Green	1
2	V White	2	B+ White	2
3	W Black	3	Z+ Yellow	3
4	PE Yellow/Green	4	+5V Red	4
		5	5V GND Black	
		6	U+ Brown	5
		7	W+ Gray	
		8	V+ Orange	

Electrical Eye-Sensor				Electromagnetic Valve and Safety Switch			
1	GND	7	B_SENSOR	1	E_24V_F	9	FABRIC
2	F_SENSOR	8	GND	2	FOOT_AIR	10	STOP_SINGAL_IN
3	USIF_5V	9	USIF_5V	3	E_24V_F	11	PROXIMITY_SWITCH_IN
4	IR_OUT1	10	IR_OUT3	4	LOOSE	12	GND
5	USIF_5V	11	M_SENSOR	5	E_24V_F	13	MICRO_SW_IN
6	IR_OUT2	12	GND	6	FAN	14	USIF_5V
				7	E_24V_F	15	CUT_INCH_IN
				8	E_24V_F	16	CUTTER

Item	Code	Function	Range	Default	Unit	Description
16	TIT	The suction duration setting when sewing	0~3000	0	ms	If set the value "16.TIT" as "0", the suction function will be shut down during sewing.
17	TBS	Stitch Setting of starting the rear trimmer	0-999	0	Stitch	Stitch setting after the fabric passes the electronic eye and trimming
18	TSd	Delay the suction timing after the rear trimmer	0~2000	100	ms	After trimming, delay for "18.TSD", and then perform suction for the setting time of "19.TST"
19	TST	The suction timing after the trimmer	0~9000	50	ms	The suction timing after the trimmer
20	TS2	Stitch setting when start the rear suction	0~999	0	Stitch	With the DD22/DD21 mode, after the suction delays "20.TS2" stitches set the stitches in suction duration "21.TBT."
21	TBT	Stitch setting of the rear suction duration	0~999	36	Stitch	
22	SWC	Select the mode of suction	1/2/3/4/5	4		1.No suction 2. Only the front suction 3. Only the back suction 4. The front and back suction
23	TC	Select the mode the trimming	1/2/3/4	4	//	1.No trimming 2. Only the front trimming 3. Only the back trimming 4. Front and back trimming
24	TN1	Function selection of the needle up/down location	U/D/UD	U		U: The highest location D: The lowest location UD: The lowest location, but when the fully pedaling, the presser foot will be risen.
25	BUZ	Switch of buzzer	ON/OFF	ON	//	When reaching the presser protection (30sec) or the counter-stitches value, the buzzer will beep twice.
26	TT	The initial full output time of the trimmer electromagnet	0~300	40	ms	Time setting of powering the trimming electromagnet
28	EYE	After DD22/DD21 back suction finished, it will stop automatically.	ON/OFF	OT/A:ON MA:OFF	//	After DD22/DD21 back suction finished, it will stop automatically.
29		Spare function	//	//	//	
30		Spare function	//	//	//	
31	IRT	Spare function	//	//	//	
32	TFD	Selection to check the functions of the solenoid motion	0~9	0	//	Number: 1. Pneumatic presser foot lift (perform for 2 sec) 2. Electronic presser foot lift (No function so far) 3.The trimmer (perform for 50ms) 4. Trimming and suction (perform for 2sec) 5.Suction (perform for 2 sec)
33	FMS	Select the type of auto presser foot lift	M/A	A	//	M: electric A: pneumatic
34	FT	The initial full output time of presser electromagnet	0~990	250	ms	
35	FD	The initial full output time of presser electromagnet	10~50%	25	%	DO NOT ADJUST the parameter of presser foot electromagnet.
36	PPM	Select to turn on the protecting function when the presser foot electromagnet performs.	ON/OFF	ON	//	
37	FP	Set the protection time when the presser foot electromagnet performs	1~300	Solenoid valve 120 Electromagnets 30	sec	
38	FMM	Select the mode of the presser foot	ON/OFF	OT/A:ON MA:OFF	//	When the presser foot is risen and the "38.FMM" is on, the front electronic eye detects the fabric and delays for "39.FMS". The presser foot descends automatically.
39	FMS	Set the delay time when the presser foot descends.	1~3000	OT/A:200 MA:50	ms	
40	HT	Confirm the time of half pedaling the presser foot	0~9990	100	ms	Set the time of delaying as pedaling half.
41	HFS	Function selection of the presser foot	ON/OFF	OT/A:ON MA:OFF	//	When setting "41.HFS" as ON, with the mode of DD31/DD32, the presser foot will rise after the trimming and suction is finished. Under the mode of DD22/DD21, after the suction is done, the presser foot will rise automatically. If "41.HFS" is OFF, the function of auto presser foot will be shut down.
42	TTM	Type of pedal	ON/OFF	ON	//	Under the mode of OT/A, the pedal or the speed controller are both available. ON: the speed controller OFF: the pedal
43	BTM	After the trimming, the motor stops	ON/OFF	OT/A:ON MA:OFF	//	ON is to activate the auto stop; OFF is to deactivate the auto stop.
44	FTM	After the trimming, the motor stops, and then activate the interval time.	0~9990	50	ms	
45	ATF	The function of the pneumatic trimming components	ON/OFF	OFF	//	Spare function
46	AVT	The time of the solenoid single movement	1~300	50	ms	Spare function
47	ACC	The motion times of the pneumatic trimming mechanism	1~10	3	times	Spare function
48	FMD	Delay the time of activating the motor.	50~500	OT/A:200 MA:50	ms	Descend the presser foot and after delaying for "48.FMD," the motor will activate.
49	SF	Manual trimmer protection	ON/OFF	ON	//	ON: When the electronic eye is obstructed, the trimmer is deactivated. OFF: Activate.
50	MSW	Function selection of safety switch	ON/OFF	ON	//	ON: Activate the protection function from the safety switch (When removing the photoelectric switch, stop the entire device and the motor) OFF: Deactivate the protection.
51	MUS	Motor emergency stop	ON/OFF	ON	//	ON: Turn on OFF: Turn off.
53	SDA	The stop angle as the needle descending	0-360	0	Angle	DO NOT adjustment
54	SUA	The stop angle as the needle rising	0-360	220	Angle	DO NOT adjustment
55	ER	Fault code display	0~9		Set	The recent 10 sets of fault code can be memorized.
56	HL	The highest speed limit of the machine head	200~7000	6000	rpm	The highest speed limit (the highest priority): set "56.HL" as "7000rpm", and the parameter "51.H" can be set as the highest rotary speed.
57	ACR	The motor speed of assistant trimming	200-5000	3000	rpm	With the mode of DD22/DD21, after sewing, the function of "trimming and assistant suction" can be activated by pressing the button of manually trimming.
58	ACS	The rotary stitches of assistant trimming	1-99	20	Stitch	Adjust "59.CS" to set the OT/A mode and decide the depth of pedaling by stepping the speed controller for the motor start signal. The bigger section, the greater depth.
59	CS	Adjust the sensor's sensitivity	1-5 part	2	1	ON: The needle rises automatically to the highest position after turning on. OFF: None function
60	NUF	Needle auto-rising after turning on	ON/OFF	ON	//	ON: Turn on OFF: None function
61	LSH	Safety switch of side plate	ON/OFF	OFF	//	
62	HVR	The highest voltage record display	//	//	//	"62HVR" and "63LVR" can record the highest and the lowest current effective value of the control box AC.
63	LVR	The lowest voltage record display	//	//	//	
64	PV	Present voltage record display	//	Instantaneous display	//	
65	AOT	Time setting of auto rotary test throughout	1~1000	240	hr	Time setting of auto rotary test throughout
66	AO1	Time setting of activating the auto performance	1~20	2	s	Time setting of activating the auto performance
67	AO2	Time setting of deactivating the auto performance	1~20	2	s	Time setting of deactivating the auto performance
68	AOS	Function of auto rotation	ON/OFF	OFF	//	ON: Start the auto rotation test OFF: Deactivate the auto rotation (Shutting down restores to the OFF state.)
69	UTS	Time display of auto rotation	1~1000	Instantaneous display	hr	Accumulate times by rotation
70	VER	Display the software version				The display manner is SXEXX.
71	AFS	The front-sensor-detecting automatic sewing function	ON/OFF	OFF	//	
72	FBS	Stitches between front and back sensor	1~100	30	Stitch	
73	FN	Prevent rebound by the front electric eye ON	0~3000	5	ms	
74	FF	Prevent rebound by the front electric eye OFF	0~3000	5	ms	As the function description, the state of the front back sensor should be the continuous setting value time, eternal ON or eternal OFF; the state should be read for avoiding the errors from the sensor.
75	BN	Prevent rebound by the rear electric eye ON	0~3000	5	ms	
76	BF	Prevent rebound by the rear electric eye OFF	0~3000	Normal fabric:5 Mesh type fabric:100	ms	
78	PS	Password	//	OFF	//	Set the lock function as ON, all the parameters of the operation box cannot be changes. The unlock password: 168
79	FED	The front sensor rotation lock without fabric	ON/OFF	ON	//	Under the OT/A mode, if the front sensor detects no fabric, the motor will stop.
80	BKL	LCD Backlight	0~5	2	//	
81	LAN	LCD panel language selection	//	English	//	English/ Traditional Chinese/ Simplified Chinese
82	FOO	Speed controller voltage	0~4096	Instantaneous display	//	
83	ESS	Fabric Selection	ON/OFF	OFF	//	ON: Mesh type fabric OFF: Normal fabric
84	BOS	Front Sensor Debounce	1~99	5	Stitch	This parameter adjustment takes effect only when parameter 83 is ON.
85	FDS	Back Sensor Debounce	1~99	5	Stitch	This parameter adjustment takes effect only when parameter 83 is ON.
86	LOO	Motor stop delay	0~99	5	Stitch	Spare function
87	LSE	Loose Line Time	0~9999	1200	ms	Spare function
88	CST	Suction Time 1	0~9999	1200	ms	Spare function
89	MSD	Start Loose Stitch	0~200	1	Stitch	Spare function
90	MSC	Suction Time 2	0~200	15	Stitch	Spare function
91	LDL	Up/down ramp	200-250-300-350	200	//	