F5 Control Box Manual Book

SAFETY INSTRUCTION

- Before using this product, please read the product manual and the mechanical manual of the matching sewing machine.
- This product must be installed or operated by professionally trained personnel.
- Please keep away from arc welding equipment as far as possible to avoid misoperation caused by electromagnetic wave interference with the controller.
- Please do not use it in places where the room temperature is above 45 ° or below 0 ° .
- Please do not use in places with humidity below 30% or above 95% or with dew&acid mist.
- When installing the control box and other components, please turn off the power and unplug the power plug first.
- In order to prevent interference or leakage accidents, please do a good job in grounding engineering. The grounding wire of the power line must be firmly and effectively connected with the earth.
- All spare parts for maintenance shall be provided or approved by the company before use.
- Before carrying out any maintenance action, the power supply must be turned off and the power plug must be unplugged. There is a danger of high voltage in the control box. You must turn off the power for five minutes before opening the control box.

1. Installation

1.1 Product specification

220V Control box specification

Power voltage	AC 220±20% V
Power frequency	50Hz/60Hz
Max output power	550W

110V Control box specification

Power voltage	AC 110±20% V
Power frequency	60Hz
Max output power	550W

1.2 Connection of interface plug

Insert the connecting plugs of the pedal and the head into the corresponding socket behind the control box. The name of each socket is shown in Figure 1-2. After connection, please check whether the plug is firmly inserted.

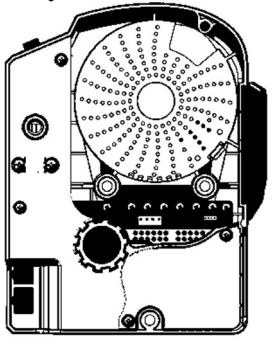
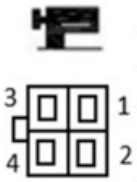
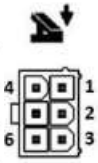


Figure 1-1 Control box diagram

①Machine head button socket；②Pedal&update socket



LED&Complementary stitch socket		
1	L5V	Head light power
2	BZ	Complementary stitch signal
3	DGND	Headlamp ground
4	DGND	Headlamp ground



Pedal&Update socket		
1	GND	5V Digital ground
2	-	-
3	VCC	+5V
4	RX	UART signal receiv
5	TX	UART signal send
6	Pedal	Pedal simulate signal

Figure 1-2 Definition of control box socket

Note: if it cannot be inserted with normal force, please check whether the plug matches the socket and whether the insertion direction or pin direction is correct!

1.3 Grounding and wiring

The grounding works of the system must be done well, and shall be constructed by qualified electrical engineers. Before the product is powered on and put into use, it must be ensured that the AC input end of the power socket has been safely and reliably grounded. The grounding wire of the system is yellow green wire, which must be reliably connected to the safety protection grounding of the power grid to ensure safe use and prevent abnormal conditions.

Note: all power lines, signal lines, grounding wires and other wiring shall not be pressed or excessively twisted by other objects to ensure safe use.

2. Display and operation interface

No.	Icon	Description	Explanation
1		Up	To quickly set the maximum speed and adjust parameters.
2		Down	To reset parameters, enter setting interface, quickly adjust the maximum speed, etc.

3. Standby interface

In the standby interface, the first digit of the digital tube displays "P", and the second digit of the digital tube displays the currently set needle stop positions. The

upper and lower needle stop positions are shown in Figure 3-1.

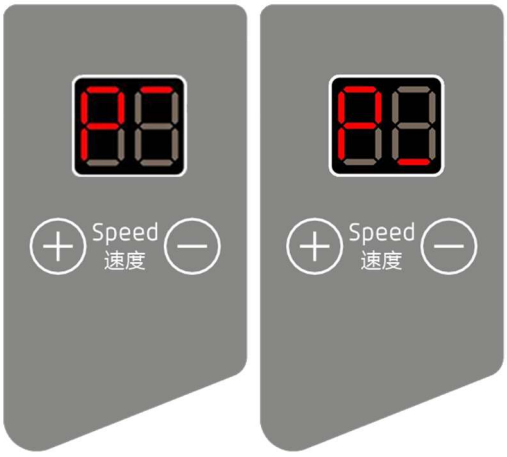


Figure 3-1 upper and lower needle position display interface

4. Quickly speed setting

在 In the standby interface, short press the⊕or⊖to set the speed. Short press the ⊕to increase the speed by 100RPM (value increases by 1), short press⊖to decrease the speed by 100RPM (value decreases by 1), long press⊕(⊖) to realize rapid increase (decrease), the setting parameters are saved automatically.

5. Needle stop positions setting

Long press⊕in the standby interface to set the needle stop positions, and the parameters will be saved automatically.

6. Parameters setting

Long press⊕and⊖(for around 3S) in the standby interfaceto enter the parameter setting interface. The first digit nixie tube displays "F" and the second digit nixie tube does not display (hereinafter referred to as "F interface", which is one of the setting interfaces), as shown in figure 6-1.

Figure 6-1 F interface

After entering the F interface, press to change the parameter number, press to show the corresponding parameter value, and then press to change the parameter value; If the parameter value is modified, press to save, shows "oK" (as shown in Figure 6-4), and return to the current serial number display interface. If the parameter value is not modified, directly return to the current serial number display interface. In the setting interface, the motor operation will exit to the standby interface.

6.1 Speed controller model modification

Taking speed controller model selection as an example, long press and (for around 3S) in the standby interface to enter the parameter setting F interface (as shown in Fig. 6-1), and then short press to change the serial number to B to display the default parameter value 0 (as shown in Fig. 6-2, corresponding to the flat sewing computer model). If you want to modify the parameters, you can press to change the parameter value to 1 (as shown in Fig. 6-3, corresponding to ZB simple type), and then short press to save. After "oK" is displayed, the parameters are modified successfully. Then return to the standby interface, power off and replace the governor. When the power on panel shows no error, the governor is replaced. If there is an error, please check whether the speed controller model matches or not.

Figure 6-2 b0

Figure 6-3 b1

F interface parameters number show as the following sheet

Parameter number	Definition	Setting range	Default value	Note
L	Max sewing speed	05 - 50	40	Increase/decrease by 500rpm
M	Needle position switch	0 - 1	1	0：Off 1：On
d	Complementary stitch function switch	0 - 2	1	0：Off 1：Half stitch 2：One stitch
G	Safety switch	0 - 1	1	0：Off 1：On
H	Dormancy time	0 - 6	3	Unit：10min 0: Off
C	Acceleration	0 - 9	5	The higher value, the faster acceleration
n	Point stitch	0 - 9	6	The larger value, the larger point stitch interval
V	Speed display enable	0 - 1	0	0：Off 1：On

R	Low voltage alarm value	0、10-15	0	220V control box 0：Off 10：100VAC 11：110VAC 12：120VAC 13：130VAC 14：140VAC 15：150VAC 110V control box 0：Off 10：50VAC 11：55VAC 12：60VAC 13：65VAC 14：70VAC 15：75VAC
Y	High voltage alarm value	0、26-31	29	220V control box 0：Off 26：264VAC 27：274VAC 28：284VAC 29：294VAC 30：304VAC 31：314VAC 110V control box 0：Off 26：132VAC 27：137VAC 28：142VAC 29：147VAC 30：152VAC 31：157VAC
A	Ridge crossing assistance	0 - 1	1	0：Off 1：On
b	Speed controller model selection	0 - 1	0	0：Computerized type 1：ZB simple type
U	Upper position after start up	0 - 1	1	0：Off 1：On

Figure 6-4 oK

7. Factory reset

Long press for 3S in standby interface, all parameters will be restored to the factory settings, and the digital tube will display "oK".

8. Description of monitoring mode parameters

Long press for 3S in the F interface to enter the monitoring mode. The first

digital tube displays "J", and the second digital tube does not display (hereinafter referred to as the monitoring interface). Short press ⊕ to change parameter number in the monitoring interface, and press ⊖ to display the corresponding monitoring value. Press ⊖ again in the J5 interface to switch and display the historical fault code. Short press ⊕ to return to the current serial number display interface, and short press ⊖ in J interface to return to P interface. In J9 interface, press ⊖ to switch and display the middle value of current pedal standby position state, and then press ⊖ to have further change the parameter value; If the parameter value is modified, press ⊕ save to display "oK" and return to the monitoring interface. If the parameter value is not modified, then it will directly return to the monitoring interface. In addition to J0, J1 and J2 entering the display interface of pedal voltage, speed and power, the real-time pedal voltage, power and speed will be displayed during operation. In other monitoring interfaces, the motor will exit the j interface and return to the P interface. The parameter number of the monitoring interface show as following sheet:

No.	Definition	Description
J0	Pedal voltage monitoring	Display the pedal voltage value in standby and running states, and the displayed number / 10 = the actual pedal voltage value
J1	Speed	Display the real-time speed in standby and running mode, and the displayed number * 100 = actual speed
J2	Power	Display the real-time power in standby and running states, and the displayed number *10 = actual power
J3	Voltage	Display the input voltage in standby mode, and the displayed number * 10 = actual voltage
J4	Historical maximum voltage	Display the highest input voltage in history, and the displayed number * 10 = actual voltage
J5	Historical error code	Display historical error codes (dumping error E7 is not recorded, only the latest 5 are displayed, and 00 is displayed when there is no error record). Automatically return to the standby interface if no any further operation within 8S
J6	Cumulative running time of control box	Display the cumulative operation time of electric control, and the displayed number * 100 = actual time (hour)
J7	Aging monitoring	For manufacture test
J8	Model code	1/FF：F5； 2：20U； 3：8558G/8560G
J9	Speed controller standby range adjustment	Display the middle value of voltage under current pedal standby state, display number/10=actual voltage. Revise the parameter, the speed controller standby range will change according to the revise of middle value of voltage timely.

Note: some versions have no J8 monitoring items

9. One key to clear the error

Press ⊕ to clear the error. When the system reports an error and displays an error alarm, press ⊕ to re detect whether the error exists. If it does not exist, the error alarm will be released, and if it exists, the alarm will continue (this function is only limited to E4, E5 and shutdown reminder of); When the system reports error E5 (abnormal locator signal) or E7 (head safety switch alarm), long press ⊖ to close the needle stop

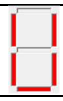
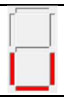
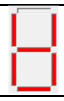
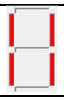
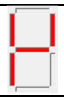
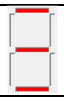
function or safety switch alarm function and release the alarm; If the alarm is not released, the alarm number will be displayed until the fault is eliminated. See the error code description table for the detailed error code sheet.

10.Digital tube display description

Numbers：

Actual Value	0	1	2	3	4	5	6	7	8	9
Digital tube content										

Letters：

Actual Letter	A	B	C	D	E	F	G	H	I	J
Digital tube content										
Actual Letter	K	L	M	N	O	P	Q	R	S	T
Actual Letter										
Actual Letter	U	V	W	X	Y	Z				
Digital tube content										

11.Error code sheet

Error code	Content	Advice
OF	The machine has not been running for about 30 minutes and enters the sleep state The supply voltage is too low	Press or key to wake up the machine; If the alarm cannot be eliminated, please check whether the power supply voltage is normal;
E1	Motor stuck	Please rotate the hand wheel to check whether the machine head is stuck or dry, and it is difficult to rotate; Check whether the motor plug-in is loose or falls off; Check whether the materials are too thick and the motor cannot penetrate due to insufficient torque.
E2	Controller exception	Please turn off and power on again. If the alarm cannot be eliminated, please check: If the motor load is too large, please reduce the load and restart the motor; Whether the sewing material is too thick; Whether the machine lacks lubrication;

		If the above problems cannot be solved, please contact the maintenance personnel.
E4	Abnormal motor Hall signal	Please check whether the motor encoder plug connection is reliable, whether the encoder signal wire is broken, and whether the pin exits or deforms.
E5	Abnormal locator signal	Please turn the hand wheel. If the alarm cannot be eliminated, turn off the power and power on again. If the alarm cannot be eliminated, please check whether the encoder / positioner plug connection is reliable; Abnormal Hall of motor positioner; (if the positioner is damaged or the positioning function is not required, when E5 is reported, press for 3S to close the needle stop function).
E6	Abnormal speed controller	If E6 alarm is flashing, please check if the speed controller's type is match with the b parameter (default matching with the computerized lockstitch machine type),and adjust the b parameter to match with the current speed controller. If E6 alarm is always on, please check whether the speed controller is inserted and whether the plug-in / pin is loose or falls off; If the alarm cannot be eliminated, replace the governor; If the alarm still cannot be eliminated, the signal of the control box speed controller may be abnormal. Please contact the maintenance personnel.
E7	Head safety switch alarm	When the head safety switch is turned on, this alarm will appear when the machine head dumps; Turn off the safety switch or restore the head position. If the alarm cannot be eliminated, please contact the maintenance personnel
EA	Software over current	Please turn off the power and power on again. If the alarm cannot be eliminated, please contact the maintenance personnel.
Eb	System overvoltage	Turn off the power supply immediately and check whether the power supply voltage exceeds 294v (220V control box) / 147v (110V control box). If so, please adjust the power supply voltage to the rated voltage before starting the machine (220V control box rated voltage: 220V, 110V control box rated voltage: 110V).
EC	System undervoltage	Immediately cut off the power supply and check whether the power supply voltage is lower than 110V (220V control box) / 55v (110V control box). If so, please adjust the power supply voltage to the rated voltage before starting the machine (220V control box rated voltage: 220V, 110V control box rated voltage: 110V).
EJ	Current detection circuit fault	Please check whether the circuit board is clean; Please check whether the power supply voltage is normal; Please wait for the power to be turned on / reset again (please carefully check the functions of the power board).
EZ	Complementary stitch button failure	Please check whether the complementary stitch button of the machine head can be turn on and off normally. If it keep in off, please replace the button of the machine head. (the alarm will automatically turn off the complementary stitch function, but will not affect the motor operation. The alarm will be cleared automatically after 30s or by pressing)

Note: if the error alarm cannot be removed according to the advice, please contact the manufacturer in time.