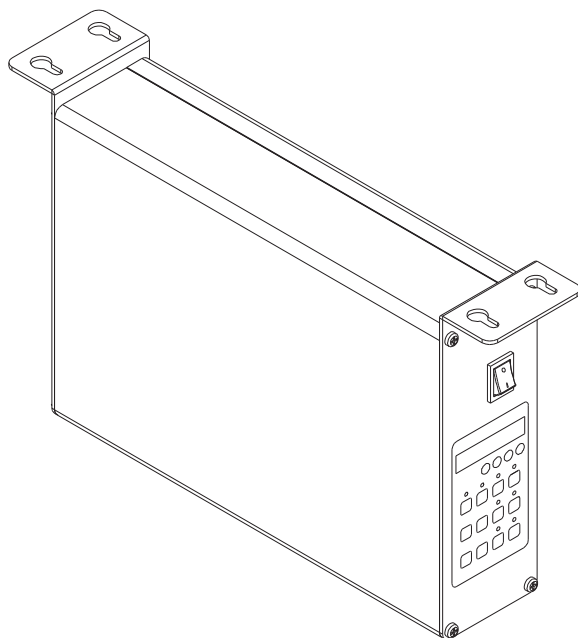


Interlock series Servo control system of industrial sewing machine

Instructions Manual



To safely use this product, please read this instruction carefully before using machine.

CONTENT

1、Precautions	1
1). Working environment	1
2). Installation Instructions	1
3). Safety precautions	1
2、Installation and adjustment	2
1). The control box Installation size	2
2). Machine installation schematic	2
3). Direct drive motor and handwheel installation	3
3、Power wiring	4
1). Single-phase 220V power supply wiring	4
2). Three-phase four wire system 380V power supply wiring	4
4、Terminal block function diagram	5
5、C-61-type operation panel schematic	6
1). Sewing mode Selection	6
2). Function selection	7
6、The parameter Setup Panel key use instructions	8
1). Key function definition	8
7、Description of various sewing types of settings	9
1). Free sewing style setting	9
2). Multiple segments sewing style setting	9
3). Speed setting	9
4). The position adjustment of up needle	9
5). How to enter user parameter and system parameter	10
6). How to restore factory settings	10
8、Seven-segment display font and actual value font comparison	11
Appendix I、function parameter table	12
1). User Parameter Area A	12
2). System Parameters Area B	13
Appendix II、System fault alarm code and solutions	16

1、 Safety precautions

Interlock Sewing Machine Servo controller is specially used in industrial sewing machine system, please use it under the guidance of Professional staff to avoid accidents, details please read the instructions carefully

1). Working environment:

- ▲use power voltage indicated on the same plate of the motor or control box in $\pm 10\%$ ranges.
- ▲Please keep away from the strong interference source to avoid the false operation.
- ▲Please use in the room with temperature $5^{\circ}\text{C}\sim 45^{\circ}\text{C}$ and the relative temperature not exceeding 80%.
- ▲Please keep away from flammable and explosive dangerous goods.

2). Installation

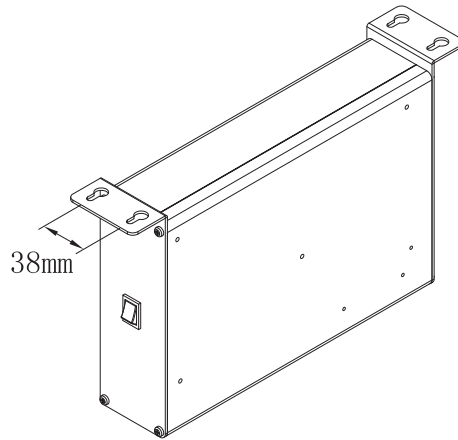
- ▲Motor and control box must be installed in accord with the correct instruction of the manual.
- ▲Turn off the power and unplug the cord before any installation or adjustment.
- ▲Avoid proximity to all moving bodies when binding wiring harness.
- ▲To avoid the static interference and current leakage, all grounding must be done.

3). Safety information

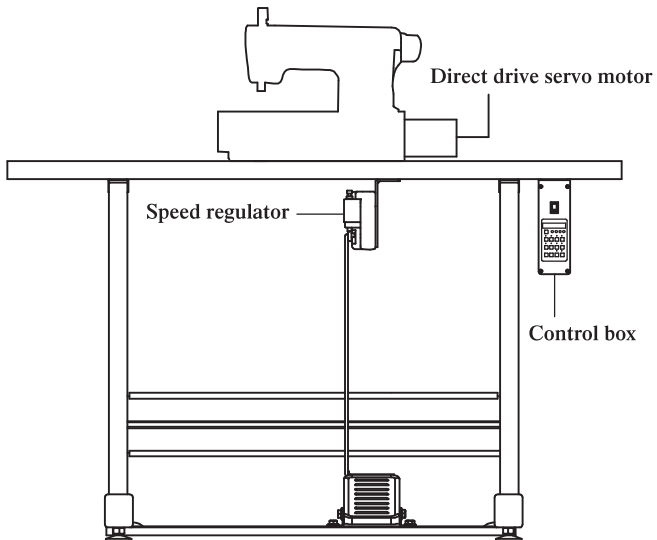
- ▲Turn off the power before any maintenance or repair.
- ▲Make sure the power off before turning over the machine head or changing the needle bobbin or threading.
- ▲High voltage inside the control box! After the machine is turned on, use low speed to operate first and check the correct rotation direction.
- ▲Do not touch the handwheel, needle and thread take-up lever during sewing
- ▲All moving parts must use the protective device to avoid the body contact and the objects insertion.
- ▲If water or other liquids, and corrosive substances come into contact with the control box or motor, stop immediately and turn off, then let the trained person solve it.
- ▲All connectors must not be hot-swappable.
- ▲plug moderate force moderate, plug should be inserted in place, the lock should be locked. Press and hold to unlock device when unplugging, pinch the connector for plugging. Do not shake the connector、strong cable.

2、 Machine installation and adjustment

1). Control box install size

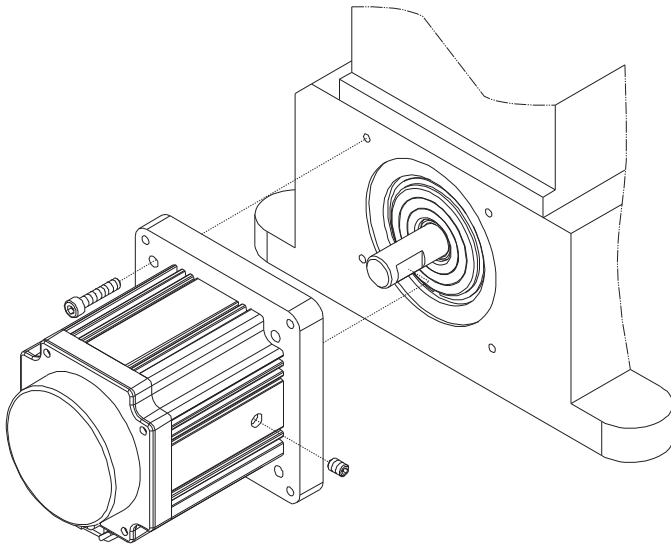


2). Installation diagram



3). Installation of direct drive motor and handwheel

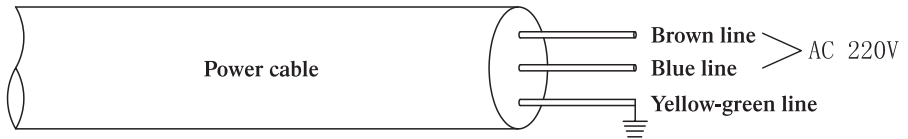
Motor installation, the first screw must be aligned to the machine spindle plane, and then tighten the screws (a total of 3 screws).



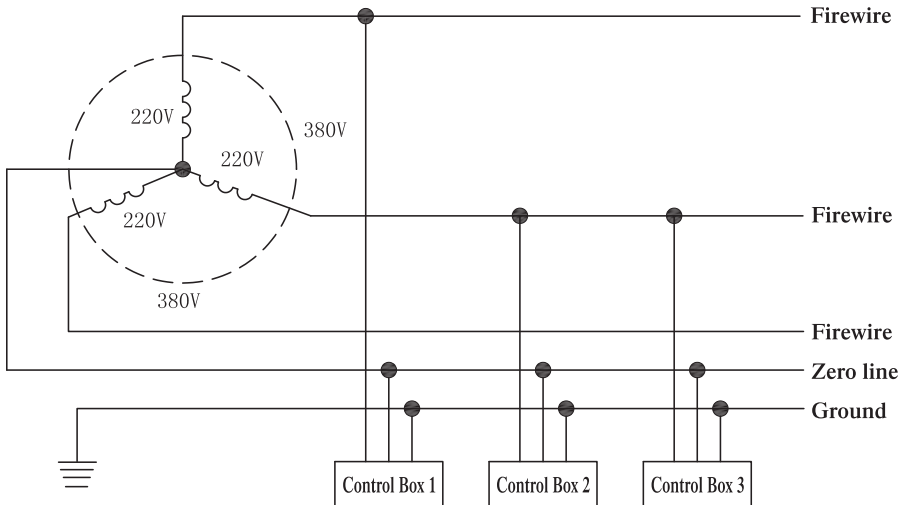
3. Power wiring

1). Single-phase 220V power wiring

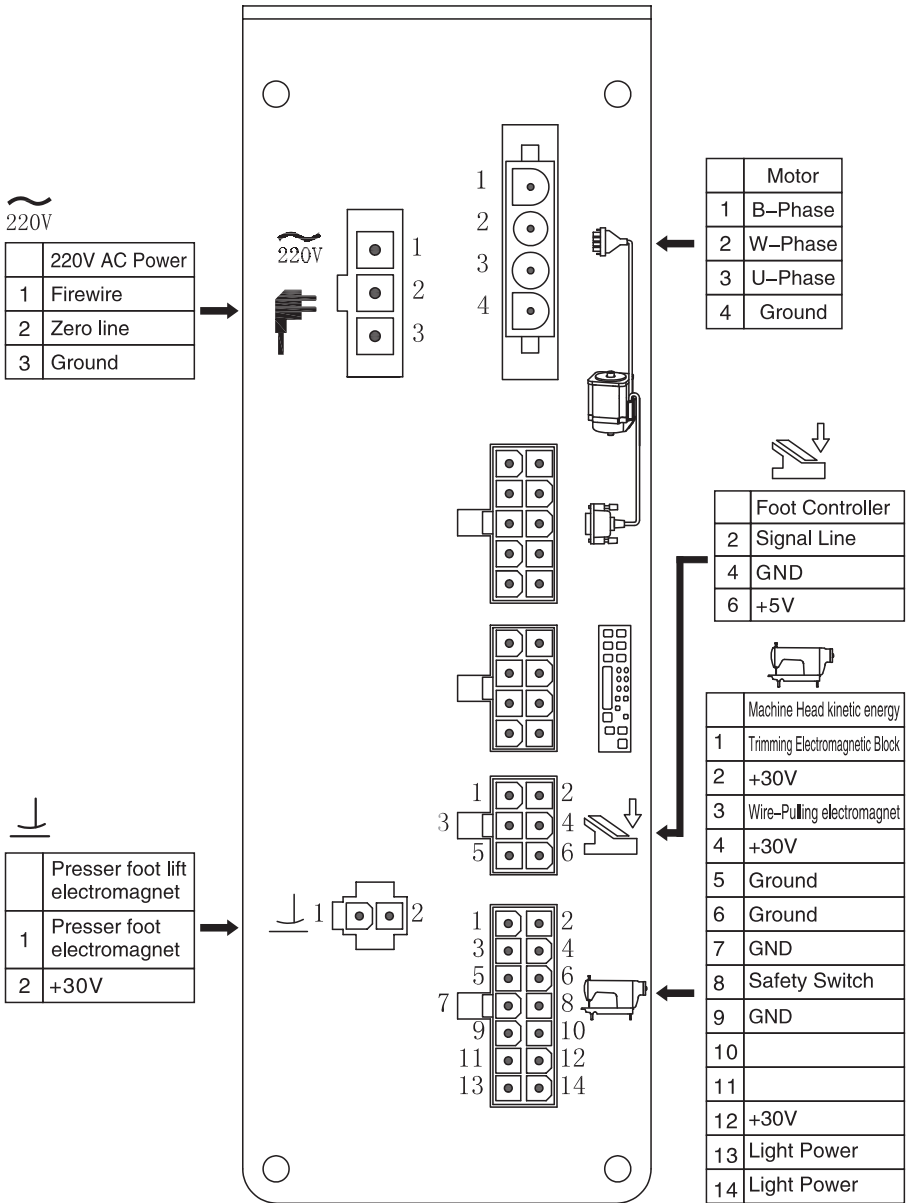
Yellow-green line for the ground line, be sure to ensure reliable grounding.



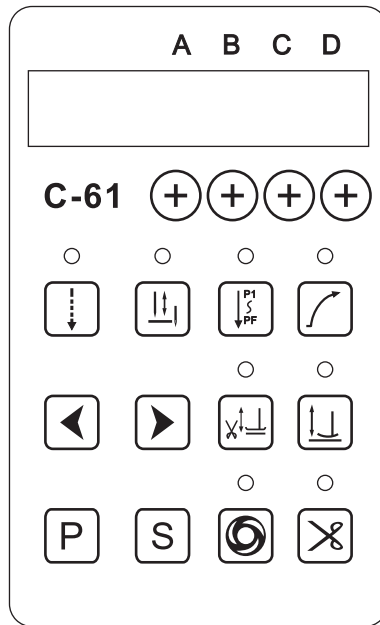
2). Three phase 4 wire 380V power connection



4、Terminal block diagram



5、 C-61 Type Operation panel sketch









1). Sewing mode selection

Function	Key	Sewing action instructions
Free sewing		<ol style="list-style-type: none"> 1. As the treadle is toed down, machine will start sewing. Once the treadle returns to neutral, machine will stop immediately. 2. As the treadle heeled back, the trimming cycle will be finished automatically.
Multiple Bar tacking		The light is on means in Multi-segment seam status, maximum can be set to 15 segments.

2). Function setting

Sewing function setting selection: Automatic, trimming, Stop stitch position, slow start, halfway press foot lifter, Press foot lifter at trimming








Function	Key	Sewing action instructions
AUTO		<ol style="list-style-type: none"> 1. In the process of free sewing, press this button buzzer will only sound, no function, LED is not bright. 2. In the process of setting multiple segments, press this key. <ol style="list-style-type: none"> 1). When stepping forward pedal, automatic execution the set number of stitches of 1, 2 or 14, 15 segments, and stop when the stitches finished. 2). And then step forward pedal, automatic execution of the next segment set number of stitches, Known as the automatic completion of trimming action.
Trimmer switch		Set the trimming function. LED light means to use trimming function, LED off means to close this function.
Needle up / down when motor stop		Needle stop setting LED ON= Stop at UP position LED OFF=Stop at DOWN position
Soft start setting button		Soft start setting button, LED Light on means function on, LED light off means function off.
Presser foot up/down when motor stop		Presser foot action when motor stop LED ON=Motor stop, presser foot goes up automatically. LED OFF=Presser Foot not active when motor stop.
Presser foot up/down after trimming cycle		Presser Foot action after trimming LED ON= Automatic lift the presser foot after trimming LED OFF=Presser foot not active after trimming..

6、 The parameter Setup Panel instructions

The servo control system has several parameters that can be modified and arranged in a certain order. Specific parameters of the project content, Chinese name, range, initial value and set the content of the numerical description pls see appendix [system function parameter table]. The functional parameters are divided into user parameter A,(including number 1-45) and system parameter B (including number 46-79), and all parameter settings are implemented on the operator panel.

1). Key function definition


After enters the “parameter setting interface” , the key of the operation panel is redefined, which is different from the original meaning, the definition as shown in the following table:

Key value	Meaning	Notes
	To view or save the selected parameter number contents	Press this key after selecting the parameter number to view or modify the parameters. Press this key to exit and save after you modify the parameter
	Enter or Exit Function to edit parameter	Press this key for 2-3 seconds under general sewing interface to enter parameter edit status. Press this key for 2-3seconds in parameter edit state to exit to general sewing interface.
	Increase and minus keys, modify parameter content values	The corresponding key modification multiples are 1 The corresponding key modification multiples are 1 The corresponding key modification multiples are 1 The corresponding key modification multiples are 1
 	Speed key	 Reduce speed
		 Improve speed

7、 All sewing style setting


1、 free sewing style setting:

1). How to set free sewing:

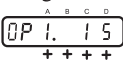


After powering the button in the standby mode, press  digital tube light on, that is free sewing state, then slight forward the pedal, free sewing style automatic performed. when the pedal is in neutral position means stop sewing, forward the pedal the machine will trimming and sweeping thread automatically.

2. Multi-segment seam setting:

1). How to enter the interface of multiple segments of the seam.

In standby state, when the key  light is more than the seam state.

2). How to set the number of stitches in multiple segments.




In the condition of multiple seam, display  , At this point A corresponds to the following number. Through  key to adjust the number of segments, from the P1-PF total 15, b,c,d corresponding number is the number of stitches. Through  key to adjust the stitch number, the maximum adjustable 200 stitches(Tip: No required number of segments after the number of pins should be adjusted to 0).

3. Speed setting:

1). How to set the speed:

Press and hold  key, reduce speed Press and hold  key, improve speed.

4. Up needle position adjustment

The system power on, (first close  key), step pedal forward, and then step back to cut, if the position is not the highest, Rotate the handwheel to the highest position, and then hold  And  , release after three second, the first digital tube has a "A" in the flashing, indicating that the needle bit has been determined successfully.




5. How to enter user parameters and system parameters:

Standby state after Pedal backward and trimming , press and hold the P key 2-3 seconds, you can enter the user parameter A area, you can modify the parameters of No. 001—045, press s key to confirm, save and hold the P key 2-3 seconds to exit.

In the shutdown state, press and hold the P key, system power on, immediately put off the P key, the display show 046DIR], you can enter the system parameter B, modified No. 046-079 parameters, press S key to confirm save and then press P key and hold 2-3 seconds to exit. The user parameter A area can also be modified when the parameter B of the system is entered.

Note: Enter the parameter area to find the parameter number need to be modified, then press S key to modify the interface, and then Modify the corresponding content, press s key to confirm and save then take effects.

6. How to Restore factory settings:

At the same time press the P and S key, the system power on,  find first - in the non-stop flashing, indicating that the factory has been successfully restored, (note: If no - in the flashing, indicating that the restoration of factory settings failed).

8. Segment display font and actual numeric font comparison

1). Digital Font part

Actual value	0	1	2	3	4	5	6	7	8	9
LCD display	0	1	2	3	4	5	6	7	8	9

2). English font part

English alphabet	A	B	C	D	E	F	G	H	I	J
LCD display	A	b	C	d	E	F	G	H	i	J
English alphabet	K	L	M	N	O	P	Q	R	S	T
LCD display	t	L	n	n	o	P	q	r	S	r
English alphabet	U	V	W	X	Y	Z				
LCD display	U	v	W	X	Y	Z				

Note: Appendix A function Parameter form

1. User parameter A area

Parameter Item contents	Name	Range	Initial value	Set Content Value Description
[001. H]	R/min max speed	150~4000	4000	Maximum speed setting for sewing machine, related to model
[002. PSL]	Acceleration curve speed Adjustment	1~100	80%	Acceleration Ramp setting of Controller
[003.NUD]	Needle Stop Location Selection	UP/DN	DN	Up stop position and down stop position
[007. S]	Slow start stitch speed	150~2800	400	Speed setting of soft start
[008.SLS]	slow start stitch number	0~99针	2	Stitch number setting for slow starting seam
[009. A]	Automatic stitching Speed	300~4000	3200	Press auto button on operation Panel box to set speed setting
[014.SBT]	Trimming Sensor switch	OFF/ON	ON	OFF: Turn off ON: Turn on
[028.PN5]	Piecework rate Set	0~100	1	0: Turn off This parameter set number means the trimming times, the piece value increases 1 pieces, the piecework display [044.PN]
[032.BAR]	Setting of multi back seam	0/1/2	0	0: Continuous back tack A、B-D (maximum 9 pins), defined as E、F、G、H and H、G、F、E operation, no P1-PF operation mode. 1: Continuous back tack AB、CD -F times (max 99 stitches), with P1-PF operation mode. 2: Continuous back tack A、B-F times +C、D (maximum9 pins), with P1-PF operation mode. Note: After this parameter is modified, will not take effect power off 10 seconds after the restart.

[034.BPN]	Pedal step forward slow zone, response sensitivity setting	20~200	100	20: Fastest front Step response speed 200: Slowest front step response speed
[040.WON]	Top trimming switch	0/1	1	0: Turn off 1: Turn on
[042.PSM]	When the sewing stops, the presser foot output option	OFF/ON	OFF	OFF: Indicates cancel presser foot lift function
[043.FTM]	When trimming stops, press foot output option	OFF/ON	OFF	OFF: Indicates cancel presser foot lift function
[044. PN]	Display number of sewing finished number	0~9999	0	According to[028.PN5]Piecework ratio parameter set, show automatic cumulative number of completed pieces
[045. SSS]	Slow start sewing function selection	OFF/ON	OFF	OFF: Cancel slow start function

2、System Parameters Area B

Parameter Item contents	Name	Range	Initial value	Set Content Value Description
[046.DIR]	Motor rotation direction set(forward and backward)	CW/CCW	CCW	CCW:Counterclockwise direction CW:Clockwise direction
[048.SYM]	Synchronizer Model setting	0~3	3	0:H-type Synchronizer, compatible with HOHSING3 S-type Synchronizer, only 0-point signal, the lower needle position, the top needle position required [076. DRU]. [078. Uru] Set needle position angle (based on 0 points)
[052. PA]	Response sensitivity setting of pedal step forward sewing speed	50~800	150	50: Slowest follow pedal response speed 800: Fastest follow pedal response speed Can be set according to the operator proficiency level
[054. BK]	Stop sewing and lock function when motor stops	OFF/ON	OFF	ON: Stop sewing and lock the machine head when the motor stops OFF: No action
[055.TOT]	Utd=on, the motor total limited running time	1~800Hrs	8	Up to 33 days (800 hours)

[056.TM1]	UTD=ON, Motor Running time	1~60s	3	Free seam working time during automatic test
[057.TM2]	UTD=ON, Motor Stop Time	1~60s	1	Interval of time between automated test runs
[058.UTD]	Automatic Running test function	OFF/ON	OFF	This parameter is set to ON, the automatic running test begins, and run the sewing mode set by the selection needle box
[060. L]	R/min Low Speed	120~400	250	Low speed adjustment
[061. FO]	The action time of the full initial output of the presser foot and the back seam	0~990	250	The full output time of presser foot and the back seam starts the movement
[062. FC]	Periodic signal of presser foot and back seam action	10~90	30	To avoid getting presser foot hot, to periodically save electricity output during presser foot, and back seam acting.
[063. FD]	Delay motor start, protect presser foot drop time	0~990	50	Delay start time when stepping down, match the confirmation of down the presser foot
[064.HHC]	Half behind step cancel lifting presser foot function, direct quick trimming function	OFF/ON	ON	ON: Half behind step, no pressure on presser feet, and direct quick cut line action OFF: the half behind step, with pressure on the presser feet, do not cut the line(whole behind step to cut line)
[066.LJM]	Up-position trimming function turn on	0/3	3	0: Turn off 3: Must turn on while interlock sewing
[067. T1]	Delayed trimming time adjustment of the upper needle position	0~990	100	The larger the number, the longer cutting time waits
[068. T2]	The full initial output time of trimming	0~990	80	The larger the number, the longer it takes
[069. M]	Midway Stop Speed Setting	150~800	600	Speed setting of no cutting halfway stop

[071. WI]	Time adjustment of delayed upper trimming	0~990	170	He larger the number, the longer upper cutting time waits
[072. W2]	The full initial output time of the upper trimming	0~990	60	The larger the number, the longer it takes
[073. WF]	Delay time before presser foot action ms	0~990	50	The spacing time before the timing of the presser foot after the dial/ sweep is done.
[074.FHT]	Automatic presser foot rise and maintenance time when sewing stop	1~200	30	The maintenance time of the rising of the automatic presser foot
[075.UEG]	Position adjustment when top stop needle stops	0~250	50	Adjust the position of the position stop at the fixed point (the center value is 40), When the number decreases, the needle is stopped in advance, and the value increases when the pin is delayed.
[076.DRU]	Reverse rotation from the lower needle position, Reach the angle of the upper needle position	1~360	180	[048. SYM]Set to 3, from the bottom of the needle, to achieve the reverse angle of the needle position to set the virtual position of the next stitch
[077.ANU]	Automatically find the position after power up	OFF/ON	ON	ON: After the power is turned on, automatically locates the position signal and stops OFF: No effect
[078.URU]	Angle of reverse rotation to 0 from top needle	1~360	5	[048. SYM]Set 3, from 0 points to achieve the reverse angle of the upper needle position to set the virtual bottom needle
[079.ERR]	Error code for last failure	0~999	0	0—No failure occurred

Appendix II system fault Alarm code and fault solution

The control system of high speed sewing machine has automatic alarming function. In the event of a failure, the controller emits a "drop" beep and a corresponding error code is displayed on the operator panel. The controller automatically starts the protection program and stops all sewing functions to avoid accidents.

The meaning of the fault code and the possible problems and solutions are as follows:

Error code	Code meaning	Possible problems	Solution	
Critical Error	ERR-00	Self-test error of transmission signal	<ol style="list-style-type: none"> 1. Pedal speed control circuit problems or self-test found that pedal has been in the front, after the state, can not return to neutral position; 2. DC bus voltage is low; 3. Drive module fault signal is abnormal 	<ol style="list-style-type: none"> 1. Release the pedals and return to the neutral position. 2. Check if the signal cable on the pedal is connected.
	ERR-01	Abnormal signal Feedback from machine head	<ol style="list-style-type: none"> 1. Synchronizer error, unable to detect top needle position 2. Sensor Magnet Shedding 	
	PWROFF	Power offer	<ol style="list-style-type: none"> 1. 30V fuse failure 2. System Power off 	Power off, check each fuse, and power up again
	ERR-03	Machine head is running abnormally	<ol style="list-style-type: none"> 1. Synchronizer error, unable to detect bottom needle position 2. Sensor Magnet Shedding 	
	ERR-04	Over-current Overpressure Over-temperature Undervoltage	<ol style="list-style-type: none"> 1. Motor Power Drive module failure 2. Instantaneous interference 	
	ERR-05	DC Bus voltage Overpressure	<ol style="list-style-type: none"> 1. The brake resistance is bad or the brake fuse is burnt 2. Instantaneous interference 	Power down the system and check
	ERR-06	Electromagnet power supply Overcurrent	<ol style="list-style-type: none"> 1. The electromagnetic iron load is too large or short circuit 2. Drive circuit failure 3. Instantaneous interference 	Power down the system and check
Trimmer not reset		The trimmer electromagnet is not back in position	Check the mechanical stuck	

	ERR-07	Plugging	<ol style="list-style-type: none"> 1. Mechanically stuck; 2. Problem with the trimming mechanism; 3. Encoder signal is abnormal; 4. Motor Output Hall signal is abnormal; 	Turn off system power Check to see if mechanical characteristic of sewing machine is normal
General warning	9	DC Bus Low voltage	<ol style="list-style-type: none"> 1. The AC voltage of the transmission is too low; 2. Internal failure 	Check the power supply voltage
	A	Positioning stop errors	<ol style="list-style-type: none"> 1. MPD and SPD parameter setting is not correct; 2. Overload 3. Encoder signal is abnormal; 4. Synchronizer signal instability; 5. Motor failure, insufficient driving force 	Power off, inspect the front and the motor is normal
	B	Exceeding the specified maximum speed	<ol style="list-style-type: none"> 1. Exceeding the maximum speed in the same direction; 2. Exceeding the opposite direction 300r/min; 3. Encoder signal is abnormal; 4. Motor output hall signal is not normal; 5. Motor failure(e.g. Demagnetization). 	<ol style="list-style-type: none"> 1. Check the drive line between the control box and the motor U/V/W connected well or not 2. Check the system grounded reliably or not
	C	Synchronizer self-test Error	Synchronizer is not plugged in	<ol style="list-style-type: none"> 1. Power off, plug in the Synchronizer, then power up. 2. Replace Synchronizer
	D	EEPROM read/write Data error	Problem with the EEPROM storing the parameters	Replace EEPROM
	E	Set parameter Error in EEPROM	Incorrect setting parameter in EEPROM	Power up reboot.
	F	Error in output signal of motor encoder	If "F", continuous alarm, indicating the problem of the motor built-in encoder	Check whether the motor output signal line is disconnected or bad contact

After the failure, first shut down the system power, check the control system grounding is good. 30 Seconds later to reboot the power supply and observation system is working properly. If the failure does not clear, please try a few more times, still not clear, please contact the Supplier.