


### Safety Instruction

1. Users are required to read the operation manual completely and carefully before installation or operation.
2. All the instruction marked with sign  must be observed or executed; otherwise, bodily injuries might occur.
3. The product should be installed and pre-operated by well-trained persons.
4. For perfect operation and safety, it is prohibited that using extension cable with multi-outlet for power connection.
5. When connecting power supply cords to power sources, it is necessary to make sure that the power voltage matches the rated voltage  $\pm 20\%$  indicated on the motor's name plate.
6. Don't operate in direct sun light, outdoors area and where the room temperature is over  $45^{\circ}\text{C}$  or below  $5^{\circ}\text{C}$ .
7. Please avoid operating near the heater at dew area or at the humidity below 30% or above 95%.
8. Don't operate in area with heavy dust, corrosive substance or volatile gas.
9. Avoid power cord being applied by heavy objects or excessive force, or over bend.
10. The earth wire of power cord must be connected to the system ground of the production plant by proper size of conductions and terminals. This connection should be fixed permanently.
11. All the moving portions must be prevented to be exposed by the parts provided.
12. Turing on the machine in the first time, operate the sewing machine at low speed and check the correct rotation direction.
13. Turn off the power before the following operation :
  - a) Connecting or disconnecting any connectors on the control box or motor.
  - b) Threading needle.
  - c) Raising the machine head.
  - d) Repairing or doing any mechanical adjustment.
  - e) Machines idling.
14. Repairs and high level maintenance work should only be carried out by electronic technicians with appropriate training.
15. All the spare parts for repair must be provided or approved by the manufacturer.
16. Don't use any objects or force to hit or ram the product.

#### Guarantee Time

Warranty period of this product is 1 year dated from purchasing, or within 2 years from ex-factory date.

#### Warranty Detail:

Any trouble found within warranty period under normal operation, it will be repaired free of charge. However, maintenance cost will be charged in the following cases even if within warranty period:

1. Inappropriate use, including: wrong connecting high voltage, wrong application, disassemble, repair, modification by incompetent personnel, or operation without the precaution, or operation out of its specification range, or inserting other objects or liquids into the product.
2. Damage by fire, Earth quake, lighting, wind, flood, salt corrosive, moisture, abnormal power voltage and any other damage cause by the natural disaster or by the inappropriate environments.
3. Dropping after purchasing or damage in transportation by customer himself or by customer's shipping agency












Note: We make our best effort to test and manufacture the product for assuring the quality.











However, it is possible that this product can be damaged due to external magnetic interference and electronic static or noise or unstable power source more than expected; therefore the grounding system of operate area must guarantee the good earth and it's also recommended to install a failsafe device. (Such as residual current breaker)

# 1. Interface and Operation Instructions

## 1.1 Main Interface Description




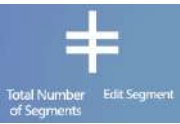



Name	Key	Indicate
Clamp function setting		If click, set used or cancelled clamp function. If long-press, switch to clamping setting interface
Constant stitch sewing switching key		In constant stitch sewing mode, if click, switch to stitch numbers and segments display interface.
Parameter increase		If click, it can increase parameters. If long-press, it can continuously increase parameters.
Parameter decrease		If click, it can decrease parameters. If long-press, it can continuously decrease parameters.
Set key		If click, enter the parameter setting interface.
Lock screen key		If you click, switch the lock screen and unlock.
Mode selection		If click, shift to free sewing, continuous back seam mode, constant stitch sewing and pattern seam mode.
Start back-tacking		If click, executions starting back seam B segment, execution starting back seam (A, B segment) 1 time or execution starting back seam (A, B segment) 2 times. If long-press, switch to back-tacking setting.
End back-tacking		If click, execution terminates back seam C segment, execution terminates back seam (C, D segment) 1time or execution terminates back seam (C, D segment) 2 times. If long-press, switch to back-tacking setting.
Thread trimming		If click, set used or cancelled trimming function. If long-press, switch to trimming function setting.
Needle stop position		If click, switch the needle stop position after sewing (up position / down position). If long-press, switch to up position quick adjustment interface.

Tight seam		If click, switch between function OFF, starting tight seam function ON, ending tight seam function ON and full function in turn. If long-press, switch to tight seam function setting.
Presser foot lifting		If click, switch between automatic presser foot lifting after pause, automatic presser foot lifting after trimming, full function and function off in turn.
Half anti-side trample foot lifting		If click, set used or cancelled half anti-side trample foot lifting function.
Auto function		In constant stitch sewing mode, If click, set used or cancelled auto function.
Back-tacking pattern		If click, set used or cancelled back-tacking pattern function.
Slow launch setting		If click, set used or cancelled slow launch function.
Advanced parameter settings		If double click, enter the advanced parameter setting interface.
Trimming count display		The trimming count value is displayed. If double click, the count is cleared.
Sewing speed display		The sewing speed of the current mode is displayed. If click, select this data, and you can adjust the data by parameter increase and decrease keys.
Sewing stitches length display		The stitch length of the current mode is displayed. If click, select this data, and you can adjust the data by parameter increase and decrease keys.

## 1.2 Pattern Seam Interface Description







No.	Items	Range	Default	Description
1	 Pattern No.	1-8	1	"3" stands for the number of the pattern. The figure represents the 3rd pattern.

2		1-10		"4" represents the total number of segments of the pattern. If you click, you can select the total number of segments. "3" represents the segment No. of the pattern. As shown in the figure, there are 4 patterns in the 3rd pattern. The figure is the data of the 3rd segment.
3		1-99	1	"1" represents the stitch numbers of the pattern. As shown in the figure, the number of stitches in the 3rd segment of the 3rd pattern is 1.
4		1-9	5	"1" represents the repeat times of the pattern. As shown in the figure, the repeat times for the 3rd segment of the 3rd pattern is 1.
5		0-5.0	4.8	"1.0" represents the stitches length of this pattern. As shown in the figure, the stitches length of the 3rd segment of the 3rd pattern is 1.0 mm.

### 1.3 Constant Stitch Sewing Interface Description



No.	Items	Range	Default	Description
1		1-15	4	"4" represents the number of constant stitch sewing mode. As shown in the figure, it represents 4th constant stitch sewing mode.
2		1-4		"4" represents the total number of segments of the constant stitch sewing mode. If clicked, the total number of segments can be selected. "1" represents the segment No. of constant stitch sewing. As shown in the figure, it represents the data of the 1st segment of the 4 segments.
3		0-99	12	"1" represents the number of stitches in this segment. As shown in the figure, the number of stitches in the 1st segment of the 4 segments is 1.

4		0-5.0	3.0	"1.0" represents the stitches length of the constant stitch sewing mode. As shown in the figure, the stitches length of the 1st segment of the 4 segments is 1.0mm.
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## 2 User parameter setting interface

If you press the setting key in other screen, the user settings interface is displayed.

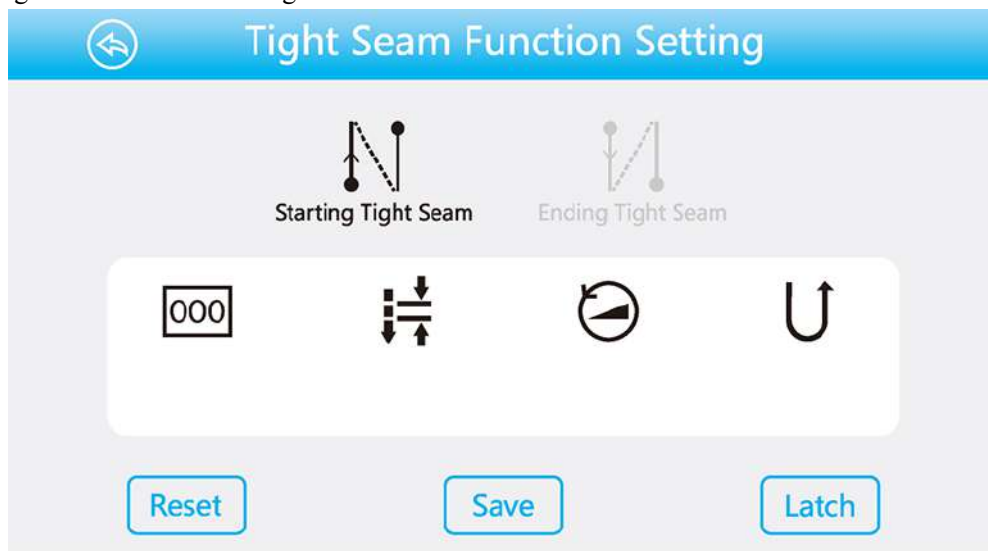
If you click on the corresponding column can enter the corresponding settings interface.

No.	Setting
1	Main shaft motor setting
2	Tight seam function setting
3	Back-tacking setting
4	Counter setting
5	Soft start setting
6	Machine switch setting
7	Clamp & tension setting
8	Interface display
9	Layer seam setting
10	Clamp function without any thrum


### 2.1 Main shaft motor setting




No.	Items	Range	Default	Description
2101	Needles goes up automatically as power turned on	OFF/ON	OFF	

### 2.2 Tight seam function setting







#### 2.2.1 Starting tight seam

No.	Items	Range	Default	Description
22011		0-5.0	1.0	Stitches length

22012		100-2000	900	Speed
22013		CW/CCW	CCW	CW: Clockwise CCW: Counterclockwise
22014		0-12	1	When the value is 0, the starting tight seam mode is turned off.

### 2.2.2 Ending tight seam

No.	Items	Range	Default	Description
22021		0-5.0	0.5	Stitches length
22022		100-2000	900	Speed
22023		CW/CCW	CCW	CW: Clockwise CCW: Counterclockwise
22024		0-12	1	When the value is 0, the ending tight seam mode is turned off.

### 2.3 Back-tacking setting

No.	Items	Range	Default	Description
2301	Start back-tacking speed	200-3200	2000	
2302	End back-tacking speed	200-3200	2000	
2303	Mode selection for bar-tacking	OFF/ON	ON	
2304	The constant-stitch whether can execute end back-tacking sewing function selection	OFF/ON	ON	
2305	Star back-tacking mode selection	OFF/ON	ON	
2306	Mode selection at the end of start back-tacking	OFF/ON	ON	

### 2.4 Counter setting

No.	Items	Range	Default	Description
2401	Counter selection	0-2	1	0: Counter does not count 1: Count up sewing counter (Each time the thread is cut, the count is increased by 1; the current value and the set value are the same, and the count screen is displayed.) 2: Count-down sewing counter (1 counts each time the thread is trimmed; the count screen is displayed after the current value becomes 0)
2402	Counter current value /setting value	0-9999	0/9999	The current value is the current actual value; the setting value is a reference value
2403	Sewing counter trimming time	0-50	1	

### 2.5 Soft start setting

No.	Items	Range	Default	Description
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2501	Soft start switch	ON/OFF	OFF	
2502	Soft start speed	200-1500	400	
2503	Stitch numbers for soft start	1-99	1	

## 2.6 Machine switch setting

No.	Items	Range	Default	Description
2601	Manual switch A setting	0-6	5	0: OFF 1: half stitch 2: one stitch 3: continuous half stitch 4: continuous one stitch 5: Back-tacking when machine stop or pause 6: Tight seam function
2602	Manual switch B setting	0-6	3	0: OFF 1: half stitch 2: one stitch 3: continuous half stitch 4: continuous one stitch 5: Back-tacking when machine stop or pause 6: Tight seam function
2603	Manual switch C setting	0-6	0	0: OFF 1: half stitch 2: one stitch 3: continuous half stitch 4: continuous one stitch 5: Back-tacking when machine stop or pause 6: Tight seam function
2604	Manual switch D setting	0-6	0	0: OFF 1: half stitch 2: one stitch 3: continuous half stitch 4: continuous one stitch 5: Back-tacking when machine stop or pause 6: Tight seam function

## 2.7 Clamping & tension setting

No.	Items	Range	Default	Description	Parameter
2701	Tension strength setting	1-5	3		P103
2702	With or without tension while foot lifting action	ON/OFF	OFF		P35
2703	Wiping / clamping strength setting	0-11	6	0: OFF 1: Wiping function 2~11: Clamping function, the higher the value, the stronger the action.	P37
2704	Tension function switch	ON/OFF	ON		P36
2705	The foot lift height of thread tension release start action when knee-control foot lift	0-300	115		P25

## 2.8 Interface display

No.	Items	Range	Default	Description
2801	Brightness	5-100	80	The larger the value, the higher the brightness.



2802	Main interface locked automatically	0-900	60	
2803	Restore factory defaults			
2804	Language	Chinese / English	Chinese	

### 2.9 Layer seam setting

No.	Items	Range	Default	Description
2901	Layer seam mode switch	ON/OFF	OFF	

### 2.10 Clamp function without any thrum

No.	Items	Range	Default	Description
21001	Clamp function without any thrum switch	ON/OFF	OFF	

## 3 Advanced parameter setting interface

No.	Setting
1	Trimming function setting
2	Clamp function setting
3	Foot lifting setting
4	Tension setting
5	Pedal setting
6	Safety protection setting
7	Stitch length setting of stepping back-tacking
8	Testing mode
9	State information
10	Main shaft motor setting
11	Clamp function without any thrum
12	Layer seam setting
13	Other settings

### 3.1 Trimming function setting

No.	Items	Range	Default	Description
3101	Trimming step return speed	20-400	150	
3102	Trimming first section speed	20-400	200	
3103	Trimming second section speed	20-400	70	
3104	Trimming action times	10-990	200	
3105	The angle of trimming first infeed	0-359	259	
3106	The angle of trimming second infeed	0-359	359	
3107	First trimming distance	0-200	80	
3108	Second trimming distance	0-200	135	
3109	Trimming step return time	10-990	80	

### 3.2 Clamp function setting



No.	Items	Range	Default	Description
3201	Clamp start angle	10-359	100	
3202	Clamp end angle	10-359	270	
3203	Wiper thread action time	10-990	380	
3204	The delay time before wiper thread	5-990	5	

### 3.3 Presser foot setting

No.	Items	Range	Default	Description	Parameter
3301	Presser foot lay down time	10-990	150		P52
3302	Presser foot lift highness compensation when pedal return to intermediate step at sewing stop	0-160	80		P125
3303	The highest of presser foot lift highness	0-200	135		P136
3304	Presser foot speed	20-400	250		P146
3305	Zero correction of foot lifting motor	-100~100	0		P130
3306	Presser foot step motor steady current	1-8	6		P150
3307	Presser foot motor maximum current	1-12	10		P152
3308	Electronic knee-control device the lowest presser foot lift height	0-200	20		P135
3309	Electronic knee-control device the highest presser foot lift height	0-200	160		P126
3310	The highest of presser foot lift highness limit	0-300	150		P172

### 3.4 Tension setting

No.	Items	Range	Default	Description
3401	Tension starting angle	1-359	30	
3402	Tension ending angle	1-359	180	

### 3.5 Pedal setting

No.	Items	Range	Default	Description
3501	Speed curve adjustment (%)	10-100	80	
3502	The voltage of forward step pedal point	30-1000	520	
3503	The voltage of intermediate step pedal point	30-1000	420	
3504	The voltage of half heeling pedal point	30-1000	270	
3505	The voltage of heeling pedal point	30-1000	130	
3506	Delay time of half heeling pedal	10-900	100	

### 3.6 Safety protection setting

No.	Items	Range	Default	Description
3601	Machine protection switch testing	0-2	1	0: Disable 1: Testing zero signal 2: Testing positive signal
3602	Oil level lower protection testing	OFF/ON	OFF	
3603	Setting high voltage protection value	850-1023	880	When the external input AC voltage is converted into DC voltage and the value exceeds the set value, the system will alarm E01 and stop working.
3604	Tension electromagnet protection time	1-60	2	Electromagnet working protection time (S)
3605	Trimming protection switch	OFF/ON	OFF	

### 3.7 Stitch length setting of stepping back-tacking

No.	Items	Range	Default	Description
3701	Back-tacking motor zero-point correction	-100~100	50	
3702	Normal stitch length	0-5.0	3.0	
3703	Stitch length reference value setting			
3704	Tacking stitch length compensation	0-100	50	
3705	Back-tacking stitch length compensation	0-100	58	
3706	Back-tacking stitch compensation	0-200	167	
3707	Back-tacking step motor steady current	1-12	6	
3708	Back-tacking step motor maximum current	1-12	12	
3709	Manual close stitches distance	0-5.0	2.0	
3710	Correction stitches distance of manual button A	0-5.0	3.0	
3711	Correction stitches distance of manual button B	0-5.0	3.0	
3712	Correction stitches distance of manual button C	0-5.0	3.0	
3713	Correction stitches distance of manual button D	0-5.0	3.0	
3714	Maximum stitch length limit	0-8.0	5.0	

#### 3.7.3 Stitch length adjustment

Forward	Stitch length	Backward	Stitch length
1mm		1mm	
2mm		2mm	
3mm		3mm	
4mm		4mm	
5mm		5mm	
6mm		6mm	
7mm		7mm	
8mm		8mm	

### 3.8 Testing mode

No.	Items	Range	Default	Description
3801	Testing mode switch	ON-OFF	OFF	(Perform the cycle of start-sewing-stop-thread trimming at the test speed)
3802	Output function single testing			
3803	Testing mode setting			

#### 3.8.2 Output function single testing

Trimming
Presser foot

Note: Click Trimming or presser foot, and the step motor will move by one stroke.

#### 3.8.3 Autorun test mode

Period	Testing Speed (When the test speed is 0, the current cycle is not executed)	Running Time (0.1s)	Stop Time (0.1s)	Motor Running Direction	Periodic Time (m) (No limit at time 0)
1	3500	30	10	CCW	0
2	0	0	0	CCW	0
3	0	0	0	CCW	0
4	0	0	0	CCW	0
5	0	0	0	CCW	0

### 3.9 State information

No.	Items	Range	Default	Description
22901	Version number			
22902	Motor speed display			Display current motor speed
22903	Needle position angle value			Display the current motor angle of the machine
22904	Pedal AD value			Display the current AD value of the pedal
22905	Busbar voltage AD value			
22906	Oil level sensor AD value			
22907	Knee moving position sensor AD value			
22908	Trimming position sensor AD value			
22909	Presser foot lift highness sensor AD value			
22910	Grating signal			

#### 3.9.1 Version number

No.	Items	Range	Default	Description
39101	Control box version number			

39102	Control box vice version number			
39103	Display board version number			
39104	Step drive version number			

### 3.10 Main shaft motor setting

No.	Items	Range	Default	Description
31001	Main shaft motor maximum speed limit	0-5000	3700	
31002	Main shaft motor zero-point correction			
31003	Up position quick adjustment			
31004	Down position quick adjustment			
31005	Speed limit of manual back-tacking	0-3200	0	
31006	Reverse angle function selection after trimming	ON/OFF	OFF	
31007	Adjustment of reverse angle after trimming	10-50	40	
31008	Up position value	0-359	100	
31009	Down position value	0-359	275	
31010	Low (positioning) speed	100-500	210	
31011	Stopping strength as half-way	1-45	16	
31012	Stopping strength after trimming	1-50	20	
31013	Up / down needle position distance value	15-359	175	In the quick setting interface of the needle position for the upper and lower stops, when the upper positioning value is saved, the lower positioning value will be automatically calculated based on the upper and lower positioning distance values.
31014	Main shaft motor rotation direct setting	CCW/CW	CCW	CW: Clockwise CCW: Counterclockwise
31015	Main shaft motor maximum current (A)	0-20	10	
31016	Main shaft motor locked rotor current (A)	0-20	10	
31017	Main shaft motor normal current (A)	0-20	16	
31018	Main shaft motor encoder type selection	No magnetic ring / With magnetic ring	No magnetic ring	

### 3.11 Clamp function without any thrum

No.	Items	Range	Default	Description
31101	The delay time before hook thread with clamp function without any	0-990	100	

	thrum			
31102	The hook thread action time with clamp function without any thrum	0-990	30	
31103	The return back time of hook thread with clamp function without any thrum	0-990	30	
31104	Duty cycle for hook thread with clamp function without any thrum	0-100	0	
31105	The suction time for clamp function without any thrum	0-5000	1000	
31106	Duty cycle for pull thread with clamp function without any thrum	0-100	80	

### 3.12 Layer seam setting

No.	Items	Range	Default	Description
31201	Layer seam mode rotation speed over thick	200-3700	2000	
31202	Fabric thickness sensor AD value	0-1023	530	
31203	Layer seam proportion	1-100	10	
31204	Layer seam stitch length limit	0-5.0	4.0	

### 3.13 Other setting

No.	Items	Range	Default	Description	Parameter
31301	Type selection	1-50	37		P70

## 4 Error Code List

Error Code	Problem	Measure
E01	Over-voltage	Turn off the system power and check whether the power supply voltage is correct. (Or whether it exceeds the specified rated voltage).
E02	Low-voltage	Turn off the system power and check whether the power supply voltage is correct. (Or whether it is lower than the specified rated voltage).
E03	Abnormal communication between the main CPU and the driver CPU	Turn off the power and check whether the connector is connected to the operation panel and the cable condition.
E05	Speed control unit connection is abnormal	Please turn off the power and check whether the connector is connected to the speed controller and the cable condition.

E07	Main shaft motor rotating abnormally	Please rotate handwheel to check if the spindle motor is locked. Check if the encoder cable of the motor and the power cable of the motor are connected to the connector. Check if the power supply voltage is normal and whether the sewing speed is too high.
E08-0	Communication abnormal	Turn off the machine, check if motor is stuck. If it is stuck, you have to rule out the mechanical failure. If turn normal, please check if the motor in bad connection or is too loose. To get it right and turn on.
E08-2	Back-tacking step motor over current	
E08-4	Back-tacking step start can't find original point	
E08-16	Trimming step motor over current	
E08-32	Trimming step motor can't find original point	
E09 E11	Positioning signal error	Turn off the machine, please check if the encoder in bad connection or is too loose. To get it right and turn on. If there are still errors, please replace the control box and call for customer service.
E10	Solenoid over-current protection	Turn off the system power supply, please check the solenoid (solenoid valve) connector or solenoid (solenoid valve) is broken or not.
E14	Encoder signal error.	Turn off the system power supply, please check motor encoder connector if loose or fall off, renew to normal then restart system.
E15	Main shaft motor overcurrent error	Turn off the power, and then turn it on again.
E16	Trimming step motor abnormal	Turn off the system power supply, please check the trimming mechanism is whether back to correct position; Please check the trimming setting is right or not.
E17	Machine protection switch is not in the correct position	Turn off the machine, check if the machine is turn over, or the mercury switch is shifted or damaged.
E20	Motor failed to start (Electrical angle error)	Turn off the machine, please check if the encoder and motor in bad connection or is too loose. To get it right and turn on.