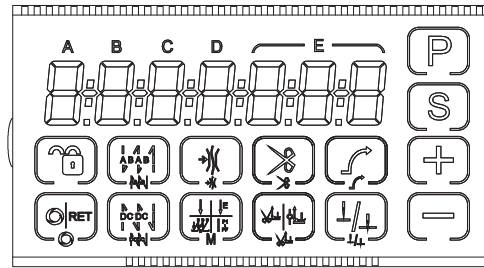


⚠ Safety Instruction

- Users are required to read the operation manual completely and carefully before installation or operation.
 - The product should be installed and pre-operated by well trained persons
 - All the instruction marked with sign ⚠, must be observed or executed; otherwise, bodily injuries might occur.
 - For perfect operation and safety, it is prohibited that using extension cable with multi-outlet for power connection.
 - When connecting power supply cords to power sources, it is necessary to make sure that the power voltage is lower than 250V AC and matches the rated voltage indicated on the motor's name plate.
⚠Attention: If the Control Box is AC 220V system, please don't connect the Control Box to AC 380V power outlet. Otherwise, the error will occur and motor will not work. If that happens, please turn off the power immediately and check the power voltage. Continue supply 380V power over 5 minutes might damage the fuse F2, burst the electrolytic capacitors and the power module U14 of the main board and even might endanger the person safety.
 - Please don't operate in direct sun light, outdoors area and where the room temperature is over 45°C or below 0°C.
 - Please avoid operating near the heater at dew area or at the humidity below 10% or above 95%.
 - Please don't operate in area with heavy dust, corrosive substance or volatile gas.
 - Avoid power cord being applied by heavy objects or excessive force, or over bend.
 - 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.
 - All the moving portions must be prevented to be exposed by the parts provided.
 - Tuning on the machine in the first time, operate the sewing machine at low speed and check the correct rotation direction.
 - Turn off the power before the following operation:
 - Connecting or disconnecting any connectors on the control box or motor.
 - Threading needle.
 - Raising the machine arm.
 - Repairing or doing any mechanical adjustment.
 - Machine is out of work.
 - Repairing and high level maintenance work should only be done by electronic technicians with appropriate training.
 - All the spare parts for repairing work must be provided or approved by the manufacturer.
 - Don't use any objects 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:
- 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.
 - Damage by fire, Earth quake, lightning, wind, flood, salt corrosive, moisture, abnormal power voltage and any other damage cause by the natural disaster or by the inappropriate environments.
 - 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 all a failsafe device. (Such as residual current breaker).

1. Button Display and Operating Instructions



1.1 Key Description

Name	Key	Indicate
Function Parameter Edit		Press this key to enter or exit function parameter edit mode.
Setting Parameter Check And Save		For the content of the selected parameters check and save; after select parameter press this key to check and modify operation, after modified parameter value press this key to exit and save the parameter.
Parameter Increase		Increase the parameter.
Parameter Decrease		Decrease the parameter.
Slow Launch Setting		If click, Set used or cancelled slow launch function.
Needle Stop Position Selection		Press this key, the needle stop position after shift the sewing mode (Up position / Down position)
Thread Trimming		If click, Set used or cancelled thread trimming function.
Automatic Presser Foot Lifting Setting		1. Automatic presser foot lifting after trimming function when icon is lighting. 2. Automatic presser foot lifting after pause function when icon is lighting. 3. Automatic presser foot lifting after pause function or trimming function when icon and icon are lighting. 4. Presser Foot is inactive when icon and icon are not lighting.
Clamp Function Setting		Set used or cancelled clamp function and loose line function.
Mode shift key		If click, shift to free sewing, constant stitch sewing, continuous back seam shortcuts and multi-section set needle shortcuts.

Start Back-Tacking Sewing		Execution starting back seam B segment or execution starting back seam (A, B segment) 1 Execution starting back seam (A, B segment) 2 times. If long press, can increase screen backlighting brightness.
End Back-Tacking Sewing		Execution terminates back seam C segment or execution terminates back seam (C, D segment) 1 Execution terminates back seam (C, D segment) 2 times. If long press, can decrease screen backlighting brightness.
Auto Function / Reset		1. Under the free sewing mode press this key no function. 2. Under the Constant-Stitch Sewing mode press this key. As the treadle is tooed down, it will automatic performs E,F or G,H section by section, after finished section stitches, it will stop automatically. When the treadle is tooed down again, it will automatically execute next section stitches of setting till finished trimming, wipe and so on action. The LED OFF indicate the corresponding function is turn off. 3. If long press, can restore factory setting.
Locking Screen Function		If click, set used or cancelled locking screen function.

2 User Parameter

No.	Items	Range	Default	Description
P01	Maximum Sewing Speed (rpm)	100-3500	3500	Maximum speed of machine sewing
P02	Set accelerated curve (%)	10-100	80	Set the acceleration slope
P03	Needle UP/ DOWN	UP/DN	DN	UP: Needle Stops at Up Position DN: Needle Stops at Down Position
P04	Start Back-Tacking Speed (rpm)	200-3200	2000	Set Start Back-Tacking Speed
P05	End Back-Tacking Speed (rpm)	200-3200	2000	Set End Back-Tacking Speed
P06	Bar-Tacking Speed (rpm)	200-3200	2000	Set Repeat Bar-Tacking Speed
P07	Soft Start Speed (rpm)	200-1500	400	Set Soft Start Speed
P08	Stitch Numbers for Soft Start	0-99	2	Soft Start Stitches Setting
P09	Automatic Constant-Stitch Sewing Speed (rpm)	200-4000	3500	Speed adjustment for automatic constant-stitch sewing
P10	Automatic End Back-Tacking Sewing	ON/OFF	ON	ON: After last seam of constant stitch sewing, it will automatic execute the End Back-Tacking sewing function. When turn on, the Stitch-Correction is invalid. OFF: Automatic End Back-Tacking will not execute after last seam, but can be done by pedal manually.
P11	Back-Tacking Mode Selection	J/B	J	JUKI Mode (Press TB switch will activate reverse solenoid when other machine is stopped or running). B-BROTHER Mode (Press TB switch will activate reverse solenoid only when machine is running).
P12	Start Back-Tacking running mode selection	0-3	1	0: Could be arbitrarily stop and start 1: Automatically perform actions 2: Pause mode
P13	Ending mode of Start Back-Tacking	CON/STP	CON	CON: Start Back-Tacking is completed automatically continued for next action. STP: After the number of stitches is completed, stop automatically.
P14	Slow start function selection	ON/OFF	ON	0: half stitch; 1: one stitch; 2: continuous half stitch; 3: continuous one stitch; 4: continuous one stitch, quick stop.
P15	Mending stitch mode	0-4	2	When the parameter is 0, the speed limit function is OFF. 0: P41 item counter increment count automatically. 1: P41 item counter not count automatically.
P16	Back-Tacking speed limit	0-3200	3000	When the parameter is 0, the speed limit function is OFF.
P17	Auto count selection	0-1	1	0: P41 item counter increment count automatically. 1: P41 item counter not count automatically.
P18	Start Back-Tacking compensation 1	0-200	101	Compensation for A part of Start Back-Tacking.
P19	Start Back-Tacking compensation 2	0-200	155	Compensation for B part of Start Back-Tacking.
P20	End Back-Tacking running mode selection	0-3	1	1: Automatically perform actions 2: Pause mode

P21	The position of the pedal for running	30-1000	520	
P22	The position of the pedal for the stop	30-1000	420	
P23	The position of the pedal for lifting presser foot	30-1000	270	
P24	The position of the pedal for thread trimming	30-500	130	
P25	End Back-Tacking compensation 3	0-200	101	Stitch Balance for end back-tacking C section, 0-200 action gradually delay; the large value, the shorter of the C section first stitch.
P26	End Back-Tacking compensation 4	0-200	155	Stitch Balance for end back-tacking D section, 0-200 action gradually delay; the large value, the longer of the C section last stitch, and the shorter of the D section first stitch.
P27	Auxiliary function setting			N06 Counter trimming times N12 start machine display counter interface selection (0: OFF 1: ON) N13 Counter mode selection (0: addend sewing counter 1: subtrahend sewing counter)
P28	Bar-Tacking running mode selection	0-3	1	0: Could be arbitrarily stop and start 1: Automatically perform actions 2: Pause mode
P29	The rate of thread trimming stop	1-45	20	
P30	The strength of the motor torque when sewing	0-100	0	The larger the value the greater the intensity, the adjustment is too large may cause the motor abnormalities.
P31	The strength of the motor torque when thread trimming	0-100	40	The larger the value the greater the intensity, the adjustment is too large may cause the motor abnormalities.
P32	Bar-Tacking compensation 5	0-200	95	Stitch Balance for start back-tacking A (C) section, 0-200 action gradually delay; the large value, the longer of the A (C) section last stitch, the shorter of the B (D) section first stitch.
P33	Bar-Tacking compensation 6	0-200	155	Stitch Balance for start back-tacking B (D) section, 0-200 action gradually delay; the large value, the longer of the B (D) section last stitch, the shorter of the C section first stitch.
P34	Constant-Stitch Sewing running mode selection	A/M	A	M: Could be arbitrarily stop and start
P36	Thread slacking function selection	0-11	5	0: OFF 1-11: The strength of thread slacking
P37	Automatic thread wiping function / Automatic thread clamping function selection	0-11	8	0: OFF 1: Automatic thread wiping Function 2-11: Automatic thread clamping Function and the strength of automatic thread clamping.
P38	Automatic thread trimming function selection	ON/OFF	ON	ON: ON OFF: OFF
P39	Automatic presser foot lifting when pause function selection	UP/DN	DN	UP: ON DN: OFF
P40	Automatic presser foot lifting after trimming function selection	UP/DN	DN	UP: ON DN: OFF
P41	Counter display	0-9999		Display the quantity of finished sewing piece
P42	Information Display			N01 The control system version number N02 The panel version number N03 Speed N04 The pedal AD N05 The mechanical angle(up position) N06 The mechanical angle(down position) N07 Busbar voltage AD N12 Kneeling device position sensor AD
P43	Direction of Motor Rotation	CCW/CW	CCW	CW: Clockwise CCW: Counter Clockwise
P44	The rate of normal stop	1-45	16	
P45	Back-tacking operation duty cycle (%)	1-50	30	Back-tacking operate in duty cycle to save electricity and protect the electromagnet from over-heat
P46	Motor stop with a reverse angle after trimming function	ON/OFF	OFF	ON: ON OFF: OFF
P47	Adjust the reverse angle when motor stop after trimming	50-200	160	Adjusting at reverse direction after trimming.
P48	The minimum speed Limit (rpm)	100-500	210	Adjust the minimum speed
P49	Thread trimming speed (rpm)	100-500	240	Adjust thread trimming speed
P50	Foot lifter operation time to full output (ms)	10-990	150	

P51	Presser foot lifter operation duty cycle (%)	1-50	20	Presser foot lifter operate in duty cycle to save electricity and protect the electromagnet from over-heat.
P52	Motor starting delay time (ms)	10-990	120	Delay the start time, with automatic presser foot down.
P53	Half back pedaling lifting presser foot function to cancel	ON/OFF	OFF	ON: Function to cancel OFF: Half back pedaling lifting presser foot
P54	Thread trimming action time (ms)	10-990	200	Completion of the thread trimming action required time.
P55	Thread wiping action time (ms)	10-990	30	Completion of the thread wiping action required time.
P56	Power on and positioning	0-2	0	0: always not to find the up needle position 1: always to find the up needle position 2: If the motor is not into the up needle position, it will find the up needle position
P57	Hold time of presser foot lifter (s)	1-120	10	Forced shut-down after hold time.
P58	Up needle position adjustment	0-1439	1120	Up position adjustment, the needle will advance stop when the value decreased, the needle will delay stop when the value increased.
P59	Down needle position adjustment	0-1439	360	Down position adjustment, the needle will advance stop when the value decreased, the needle will delay stop when the value increased.
P60	Testing Speed (rpm)	100-3500	3500	Setting testing speed.
P61	Testing A	ON/OFF	OFF	Continuous running testing.
P62	Testing B	ON/OFF	OFF	Start and stop testing with all functions.
P63	Testing C	ON/OFF	OFF	Start and stop testing without all function.
P64	Running Time of Testing B and C	1-250	30	
P65	Stop Time of Testing B and C	1-250	10	
P66	Machine protection switch selection	0-2	1	0: Disable 1: Testing zero signal 2: Testing positive signal
P67	Thread trimming protection switch selection	ON/OFF	OFF	OFF: Disable ON: Enable
P71	Presser foot release operation duty cycle (%)	0-50	2	The buffer force of presser foot release operation.
P72	Up needle position adjustment	0-1439		Hand rotation manual to the appropriate position, press S key to save.
P73	Down needle position adjustment	0-1439		Hand rotation manual to the appropriate position, press S key to save.
P76	Back-tacking operation time to full output (ms)	10-990	250	Back tacking start action, full output action times.
P78	The start angle of thread clamping	5-359	100	
P79	The stop angle of thread clamping	5-359	270	
P80	The start angle of thread trimming	5-359	18	Shear line infeed sl angle setting(under defined as 0°)
P81	The angle of the motor start to increase torque when thread trimming	5-359	140	Torque angle of thread trimming setting(Down position as 0°, the value need greater than the P80 parameter item)
P82	The stop angle of thread trimming	5-359	180	Feeder back angle of thread trimming setting Down position as 0°, the value need greater than the P80 parameter item)
P84	The angle of the motor start to increase torque when sewing	0-359	9	
P85	The angle of the motor stop to	0-359	57	
P92	Correct the electrical angle of motor		160	Review the user manual 1.5 Reading the initial Angle of encoder, the factory default was set, please do not change the values (parameter value cannot be changed manually, random change it will result the control box and motor abnormal or damaged).
P93	The delay time of the half back pedaling function	10-990	200	

P99	End Back-Tacking compensation C1	0-250	120	Prevent taking off the thread after thread trimming mode, compensation for C part of End Back-Tacking.
P100	End Back-Tacking compensation D1	0-250	175	Prevent taking off the thread after thread trimming mode, compensation for D part of End Back-Tacking.
P101	The start angle of thread slacking	1-359	30	Song line start angle (defined as 0° under calculation)
P102	The stop angle of thread slacking	1-359	160	Loose wire end angle (defined as 0° under calculation)
P117	The delay time of the presser foot release damping force (ms)	0-990	12	
P119	Electromagnet overcurrent protection selection	0-1	0	0: OFF 1: ON
P120	The oil level alarm switch selection	0-1	1	0: OFF 1: ON
P121	Thread trimming mode selection	0-3	2	0: Normal mode 1: Small thread end mode 2: Prevent taking off the thread after thread trimming mode 3: Small thread end mode and prevent taking off the thread after thread trimming mode
P122	Prevent taking off the thread after thread trimming mode, timing of back-tacking operation before thread trimming	0-1439	830	The greater the value, the greater the one stitch before thread trimming.
P123	Small thread end mode, timing of back-tacking operation when thread trimming	0-100	0	
P124	Kneeling presser foot release buffer operation duty cycle 1	0-50	1	The greater the value the greater the resistance.
P125	Kneeling device position sensor AD 1	0-1023	5	Affect the presser foot lift effect.
P126	Kneeling device position sensor AD 2	0-1023	960	Affect the presser foot release effect.
P127	Presser foot lifter power assisting operation duty cycle 2	0-50	30	As the knee-press position sensor testing AD value is greater than P126 item that setting AD value as 2 output assistance. Close the power assisting function when the parameter value is 0. The greater the value the greater the power.
P139	Thread slacking when start sewing function selection	0-1	1	0: OFF 1: ON
P141	The start angle of function that thread slacking when start sewing	1-359	1	The start angle of function that thread slacking when start sewing (as upper needle position angle)
P142	The stop angle of function that thread slacking when start sewing	1-359	270	The stop angle of function that thread slacking when start sewing (as upper needle position angle, value need bigger than P141 item value).
P146	Protect nest-type stitch mode, the delay time of thread wiping	0-990	150	
P147	Protect nest-type stitch mode, the duration time of thread wiping	0-990	120	
P148	Protect nest-type stitch mode, the back tracking time of thread wiping	0-990	30	
P151	Thread hooking function selection	0-1	1	0: OFF 1: ON
P152	The delay time of thread hooking	0-990	10	
P153	The duration time of thread hooking	0-990	150	
P154	The back tracking time of thread hooking	0-990	30	

P155	Thread hooking operation duty cycle (%)	0-100	90	
P156	Presser foot lifter operation duty cycle when start sewing	0-100	0	Close the function when the parameter value is 0.
P157	The start angle of function that presser foot lifting when start sewing	1-359	1	The start angle of function that presser foot lifting when start sewing (as upper needle position angle).
P158	The stop angle of function that presser foot lifting when start sewing	1-359	300	The stop angle of function that presser foot lifting when start sewing (as upper needle position angle, value need bigger than P157 item value).
P159	Suction switch selection	0-1	1	0: OFF 1: ON
P160	Suction time (ms)	5-5000	500	

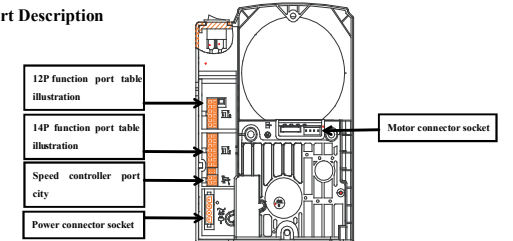
3 Error Code List

Error Code	Problem description	Measure
E01	Over-voltage	Turn off the machine, check the power supply voltage (Or whether exceed the rated voltage of use). If there are still errors, please replace the control box and call for customer service.
E02	Low-voltage	Turn off the machine, check the power supply voltage (Or whether under the rated voltage of use). If there are still errors, please replace the control box and call for customer service.
E03	CPU communication error	Turn off the machine, please check if the operation panel 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.
E05	Pedal connection error	Turn off the machine, please check if the pedal 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.
E07	Motor locked-rotor error	Turn the machine hand/wheel, check if it is stuck. If it is stuck, you have to rule out the mechanical failure. If turn normal, check if the encoder and motor in bad connection or is too loose. If yes, please correct. If connection well, check if the power supply voltage is abnormal or sewing speed is too high. If yes, please adjust. If there are still errors, please replace the control box and call for customer service.
E08	Manual reverse feeding operation more than 15 seconds	Back-Tacking electromagnet response time is too long, you have only to restart the machine. If there are still errors E-08 after restart the machine, check if the manual reverse feeding switch is damaged.
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	Turn off the machine, please check the related circuit is shorted or damaged.
E14	Encoder 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.
E15	Power supply module abnormal over-current	Turn off the machine, then turn on again. If there are still errors, please replace the control box and call for customer service.
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.

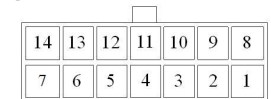
E20	Motor failed to start (Electrical angle error)	Turn off the machine, please check if the encoder and motor in bad connection or is too loose. To get it right and turn on. If there are still errors, please replace the control box and call for customer service.
oil	Low oil	Turn off the machine, check if the oil is too little. To fill it up and turn on. If there are still errors, please replace the control box and call for customer service.

4 Port Diagram

4.1 Port Description

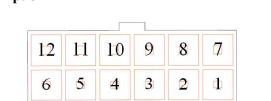


4.2 14P function port description



- Thread trimming electromagnet: 1, 8 (+32V)
- Thread wiping/thread clamping electromagnet: 2, 9 (+32V)
- Thread slacking electromagnet: 3, 10 (+32V)
- LED Light: 4 (DGND), 11 (+5V)
- Reverse stitch key: 5 (signal)
- Back-tacking electromagnet: 6, 13 (+32V)
- Mending stitch key: 7 (signal)
- Fan: 12 (DGND), 14 (+5V)

4.3 12P function port description



- Suction: 1, 7(+32V)
- Hook thread: 2, 8(+32V)
- Oil level sensor: 9 (+5V), 10 (DGND), 4 (signal)
- Presser foot position sensor: 3 (+5V), 11 (DGND), 5 (signal)
- Presser foot electromagnet: 6, 12 (+32V)