⚠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 is lower than 250 VAC 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.
6. Don′t operate in direct sun light，outdoors area and where the room temperature is over 45°C or below 5°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.
14. All the spare parts for repair must be provided or approved by the manufacturer.
15. 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:

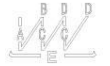
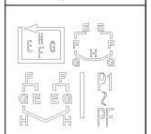
Any trouble found within warranty period under normal operation, it will be repaired free of charge. However, maintenance cost will be charged in the following cases even if within warranty period:

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 Button Displays and operating instructions

1.1 Key Description

Name	key	Indicate	Icons
Start /End Back-Tacking Selection		Execution starting back seam B segment or execution starting back seam (A, B segment) 1Execution starting back seam (A, B segment) 2 times	
		Execution terminates back seam C segment or execution terminates back seam (C, D segment) 1 Execution terminates back seam (C, D segment) 2 times	
Freedom sewing shortcuts		As the treadle is toed down, machine will start sewing. Once the treadle returns to neutral, machine will stop immediately. As the treadle is heeled back, machine will automatically start trimming cycle.	
Continuous back seam shortcuts		Once the treadle is toed down, all the seams of Bar-Tacking will be completed with D times, and then the thread will automatically be trimmed. Note: When the Bar-Tacking Sewing starts, will not stop until the trimming cycle finished, except for the treadle heeled back to cancel the action.	
Some fixed stitch shortcuts		As the treadle is toed down, Constant-Stitch Sewing E, F, G or H performs section by section. Once the treadle returns to neutral intermediately in any section, machine will stop immediately.	
Multi-set stitch shortcuts		When the treadle is toed down again, the balance stitches of E, F, G or H goes on. The key adjustable four, seven-segment, eight, and other multi-sew sewing patterns. When the display P1 ~ PF press [S] key to confirm the changes multistage sewing patterns P1 ~ PF is appropriate to modify the number of segment, the latter two is to modify the segment pin number。	
Enter and determine \ save button	S	Enter parameter values such items and their contents change after adjustment, need to press the [S] key to save the confirmation. Note: The parameters are saved directly by the [S] key.	
Mention needles / fill needle key		Continuous back seam except, any kind of sewing stop, click for lifting the needle or forward fill half needle. Any kind of sewn termination is not tangent, click for lifting the needle or forward fill half needle.	
Automatically trigger button		1． In Free sewing: One touch of this key makes beep sound without any function also LED does not light up. 2．In Constant-Stitch Sewing: One shot to the pedal, stitches number of E, F, G or H will be automatically performed. Toe down the pedal again and again to finish the rest sections until it finish pattern.	
Tangent line function keys		1．Set or cancel the use of the tangent function. 2．The corresponding icon is not lit, turn off the corresponding functions.	
Function key enter parameter area	P	Under normal mode, press the [P] key to enter the user parameter mode Press and hold the [P] key to boot into parameter mode Technician	
Set value increment / parameter increment key		1. A、B、C、D、E、F、G、H section, increase the number of setting stitch . 2．Increase the parameter in Parameter selection. 3．Increase the setting value in Parameter value.	
Set value decrement / decrement key parameters		1. A、B、C、D、E、F、G、H decrease the number of setting stitch 2．Decrease the parameter in Parameter selection. 3．Decrease the setting value in Parameter value.	
Needle stop up and down keys		1．LED ON indicate stopping machine at the upper stop needle position. 2．LED ON indicate stopping machine at lower stop needle position.	

Presser foot shortcuts		1. LED ON=Presser Foot automatically goes up after trimming. 2. LED ON=Presser Foot automatically goes up after motor stops. 3. Two icons are both LED ON= Presser Foot automatically goes up after trimming and motor stops. 4. Two icons are both LED OFF=Presser Foot is inactive.	
Slow play seam shortcuts		1. The corresponding icon lights, slow starting sewing open. 2. The corresponding icon is not lit, no slow-starting sewing function.	
Clamp function keys		1. The corresponding icon lights, thread nipper function is turned on. 2. The corresponding icon is not lit, no thread nipper function.	
Maximum speed setting key		Speed up key: the speed should not lower than the value set by technician	
		Slow down key: the minimum speed is 200r/m	

1.2 Manually adjust the positioning



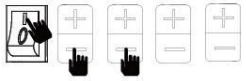
S

Press and hold the S key to boot into the needle position P72 term correction parameters

S

Enter the parameter content, the hand wheel adjustment supreme needle position (parameter will change with the hand wheel position), the S key to save the parameters (after saving, under the needle position will be automatically adjusted accordingly), the key P to exit without saving the parameters.

1.3 Restore factory settings



Hold down the left two [-] key to boot

Double-click the [S] key to confirm it, shutdown restart

1.4 No magnet reference point the way for the motor encoder

Press the , Screen display【 P-92】, Save by S, ACcording to the , At this point the motor will automatically turn a circle to find the reference point of the encoder， After the motor stops， Save by S。

2 User Parameter &Technician Parameter

Parameter	Parameter Function	Range	Default	Description
P01	Maximum Sewing Speed（r/S）	100-3700	3700	Maximum speed of machine sewing
P02	Speed Curve Adjustment（%）	1-100	80	The Lager the value, the faster to increase speed
P03	Needle UP/ DOWN	UP/DN	DN	UP: Needle Stops at Up Position DN: Needle Stops at Down Position
P04	Start Back-Tacking Speed（r/S）	200-3200	1800	Start Back-Tacking Speed Adjustment
P05	End Back-Tacking Speed（r/S）	200-3200	1800	End Back-Tacking Speed Adjustment
P06	Bar-Tacking Speed（r/S）	200-3200	1800	Repeat Bar-Tacking Speed Adjustment
P07	Soft Start Speed（r/S）	200-1500	400	Soft Start Speed Adjustment
P08	Stitch Numbers for Soft Start	0-99	2	Soft Start Stitches Setting (one unit = half stitch)
P09	Automatic Constant-Stitch Sewing Speed（r/S）	200-4000	3700	Constant-Stitch sewing speed【034.SMP】 is set at A(or when one shot signal is active)
P10	Automatic End Back-Tacking Sewing(Can invalidate the stitch correction function)	ON/OFF	ON	The Stitch-Correction is valid in sewing stop. Note: Valid only when the【0.11.RVM】must set on B ON: Invalid (Constant-Stitch sewing, it can automatic continue action as CD function) OFF: Valid (Can't continue execute CD function)
P11	Back-Tacking Mode Selection	J/B	J	J：JUKI Mode (it will activate when machine is stopped or running B：BROTHER Mode (It will activate only the machine is running)
P12	Start Back-Tacking Mode Selection	A/M	A	A：One shot to pedal, it will automatic execute Start Back-Tacking. M：Pedal-controlled and motor can stop arbitrarily
P13	Mode Selection at the end of Start Back-Tacking	CON/STP	CON	CON：At the end of Start Back-Tacking, machine continues sewing if pedal pressed or START signal on (standing operation) STP：At the end of Start Back-Tacking, machine stops
P14	Soft Start	ON/OFF	ON	ON: Slow start feature is turned on. OFF: Slow start function off.
P15	Make up pin mode	0-2	0	0: Semi-pin；1: a pin
P18	Stitch Balance for Start Back-Tacking 1	0-200	131	0 → 200 Action gradually lag
P19	Stitch Balance for Start Back-Tacking 2	0-200	158	
P20	Mode Selection for End Back-Tacking	A/M	A	A：Pedal full heeling ,it will automatic execute end Back-Tacking M：Pedal-controlled and motor can stop arbitrarily
P24	Anti-pedaling pedals points; voltage	0-1000	110	
P25	Stitch Balance for End Back-Tacking 3	0-200	131	0 → 200 Action gradually lag
P26	Stitch Balance for End Back-Tacking 4	0-200	158	
P28	Mode Selection for Bar-Tacking	A/M	A	Bar-Tacking, reverse solenoid action: A：One shot to pedal, it will automatic execute Bar-Tacking. M：Pedal-controlled and motor can stop arbitrarily
P29	Tangent after braking force	1-50	20	
P30	Thick material afterburner	0-100	0	
P31	Shear line afterburner	0-100	20	
P32	Stitch Balance for Bar-Tacking 5	0-200	131	0 → 200 Action gradually lag
P33	Stitch Balance for Bar-Tacking 6		158	
P34	Mode Selection for Constant-Stitch Sewing	A/M	A	A：One shot to pedal, it will automatic execute Constant-Stitch M：Pedal-controlled and motor can stop arbitrarily

P37	Wiper Function Selection or Thread Clamp Pressure Setting	0-11	8	0 : No Action 1: Wiper Action 2-11: Thread Clamp action and the pressure gradually increased）
P38	Trimmer Function Selection	ON/OFF	ON	ON：Trimmer Valid OFF: Trimmer Invalid
P39	Presser Foot UP / Down at intermediate stop	UP/DN	DN	UP：Presser foot goes up automatically DN：Presser foot keeps down （Controlled by heeling pedal）
P40	Presser Foot UP / Down after Trimming	UP/DN	DN	UP：Presser foot goes up automatically DN：Presser foot keeps down （Controlled by heeling pedal）
P41	Display the sewing finished quantity		0	Counting the finished-sewing quantity
P42	Information Display		N-01	NO1 Electrically controlled version serial numbers NO2 Selected needle cassette version NO3 Speed NO4 Pedals AD, NO5 Positioning angle (0--359), NO6 Under the positioning angle NO7 Bus voltage AD
P43	Setting Direction of Motor Rotation	CCW/CW	CCW	CW：Clockwise CCW： Counter Clockwise
P44	Brake force	0-31	16	Efforts to stop the machine when selecting
P45	Back-seam operation duty cycle (%)	10-90	30	Back-seam action to periodic power output
P46	Motor stops with a reverse angle after trimming	ON/OFF	OFF	ON：It will automatic as reverse function after trimming (angle adjustment according to the parameter【047.TR8】 OFF：No Function
P47	Adjustment of reverse angles after trimming	50-200	160	Adjusting at reverse direction after trimming
P48	Low (Positioning) Speed（r/S ）	100-500	210	Setting Positioning Speed
P49	Trimming Speed（r/S ）	100-500	250	Adjusting trimming speed
P50	The time of Foot lifting	10-990	250	Adjustment of foot lifting action
P51	Duty-Cycle Setting for Foot Lifter（%）	10-90	30	Adjustment for Duty-Cycle of Foot Lifter / Back-Tacking (Fine tuning can reduce the over-heating)
P52	The time of Foot down	10-990	120	Adjustment of foot down action
P53	Cancel Foot Lifting when Half-Heeling the Pedal	ON/OFF	OFF	ON：Pedal half heeling without foot lifting function. OFF：Pedal half heeling with foot lifting function
P54	Trimming Time（ms）	10-990	200	Trimming sequence time setting
P55	Setting Wiper Timing	10-990	380	Wiper sequence setting
P56	Needles Goes Up Automatically as Power turned on	0-2	1	0: always not to find a position 1：: always looking for positioning 2：If the motor is positioned on the no longer find location (only with magnet motor)
P57	Protection time for foot lifter（S）	1-120	10	It will automatic come down when foot lifter keep lift over the setting time.
P58	Up Position Adjustment	0-1440	40	Up Position Adjustment The needle will advance stop when the value decreased. The needle will delay stop when the value increased.
P59	Down Position Adjustment	0-1440	750	Down Position Adjustment The needle will advance stop when the value decreased. The needle will delay stop when the value increased.
P60	Testing Speed（r/S ）	100-3700	2000	Setting testing speed.
P61	Testing A		OFF	Option of Testing A, after setting press 【060. TV】to set the speed keep running.
P62	Testing B		OFF	Option of Testing B, after setting press 【060. TV】to set the speed execute the cycle of Start – Sewing –Stop - Trimming

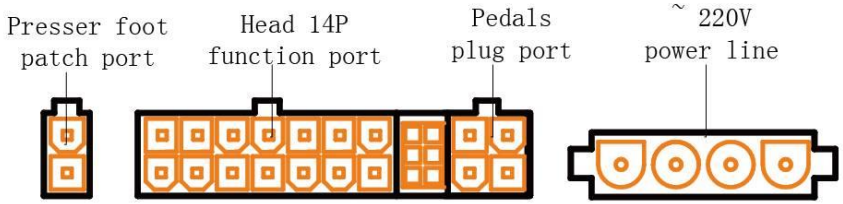
P63	Testing C		OFF	Option of Testing C, after setting press【060. TV】to set the speed execute the cycle of Start – Sewing –Stop without positioning function
P64	Running Time of Testing B and C	1-250	20	Setting running time of testing B and C
P65	Stop Time of Testing B and C	1-250	20	Setting stop time of testing B and C
P66	Machine Protection Switch Testing	0-2	1	0：Disable， 1：Testing zero signal， 2：Testing positive signal
P67	Trimming Protection Switch Testing	ON/OFF	OFF	OFF：Disable ON：Enable
P70	The factory Type Selection			
P71	Presser foot release buffer duty cycle (%)	0-50	2	Efforts to ease foot pressure release time
P72	The needle position correction	0-1439	0	Hand rotation manual to the appropriate position, press S key to save
P73	Under needle position correction	0-1439	0	Hand rotation manual to the appropriate position, press S key to save
P76	Backstitch output of full time (ms)	250-990	250	
P77	Freedom sew back seam even terminate pause time (ms)	20-200	75	
P78	The Thread Clamp release angle	1-990	100	The positioning angle of starting clamp
P79	Clamp start action angle	1-990	270	The positioning angle of release
P80	Shear line infeed is angle	0-359	18	Shear line infeed is angle setting (under defined as 0 °)
P81	Afterburner Shear line angle	1-990	140	Afterburner Shear line angle setting (under defined as 0 °)
P82	Retract angle Shear line	1-990	172	Retract Shear line angle setting (under defined as 0 °)
P84	Thick start angle	0-330	9	
P85	The thick end angle	0-330	57	
P92	Encoder start angle		160	View manual 1.4 chapter

3 Error Code List

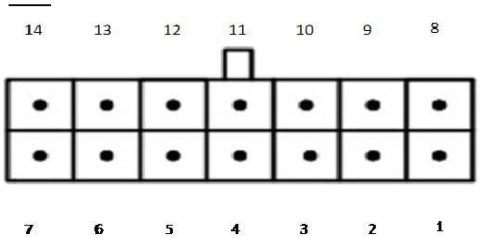
Error Code	Problem	Strategies
E1	Power Module is faulty. Abnormal over current or voltage. Resistor is damaged or F1 fuse is blown.	System will be shut down until the power resets on. Please check the power board in detail.
E2	1）When power on, detected main voltage too low 2）Connect the wrong voltage, too low.	Moto and machine will be shutting down. Please check the AC power. (Too low) Please check the main pc board.
E3	Operation Box linked to CPU interface had communication error.	Motor and machine will be shutting down. Please check the operation box.
E5	The connection of the Foot Pedal error	Motor and machine will be shutting down. Please check the connection of the Foot Pedal or the problem of it
E7	a) Bad connection at the motor connector. b) Machine locked or object stuck in the motor pulley. c) Sewing material is too thick. d Module output is abnormal.	Head rotation motor handwheel see if stuck. As the first rule nose stuck mechanical failure. As normal rotation, check the motor and motor encoder connector power cord connector is loose. Please correct if loose. As good contact, check the power supply voltage is abnormal or speed is set too high. If yes, please adjust. As normal, replace the control box and inform the manufacturer.
E8	Manual Back-Tacking lasts for 15 sec.	Reverse stitching solenoid pull too long, you can restart the product. If the product or reported after the restart E-08, check the manual back tack switch is damaged.
E09 E11	Positioning signal error	Power off the system, check the motor encoder interface is loose or fall off, it was back to normal after restarting the system. If it still does not work, replace the motor and inform the manufacturer
E14	Encoder signal error	Power off the system, check the motor encoder interface is loose or fall off, it was back to normal after restarting the system. If it still does not work, replace the motor and inform the manufacturer.
E15	Power module abnormal over-current protection	Power off the system, then on again. If it still does not work, replace the control box and inform the manufacturer.
E17	Head protection switch is not in the correct position	Power off the system and check whether the nose open, ball switch control box whether displaced or damaged.
E20	Power motor failed to start	Power off the system, check the motor encoder interface and motor power connector is loose or fall off, it was back to normal after restarting the system. If it still does not work, replace the control box and inform the manufacturer.

4 Port Outline Diagram

4.1 The Name of each port



4.2: 14P Function Port Table



①Trimming Solenoid：1、8
②Clamp, dial line solenoid：2、9
③Clothing lights：4（Signal ground）、11（+5v）
④Backstitch manually switch：5（Sensor signal）、12（Signal ground）
⑤Backstitch solenoid：6、13
⑥Complement Needle switch：7（Sensor signal）、14（Signal ground）

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Collier Equipment
The home of CEDAR Special &
CEDAR Systems Automated Sewing Devices
100 Mill Creek Circle/Po Box 175
Lexington, Alabama 35648 USA
Phone: (256)229-6595 Fax: (256)229-6779