## Page 1

### ⚠️Safety Instruction

1) Users are required to read the operation manual completely and carefully before installation or operation.

2) The product should be installed and pre-operated by well trained persons.

3) All the instruction marked with sign ⚠️, must be observed or executed; otherwise, bodily injuries might occur.

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 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.

6) Please don't operate in direct sun light, outdoors area and where the room temperature is over 45℃or below 0℃.

7) Please avoid operating near the heater at dew area or at the humidity below 10% or above 90%.

8) Please 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：
   1. Connecting or disconnecting any connectors on the control box or motor.
   2. Threading needle.
   3. Raising the machine arm.
   4. Repairing or doing any mechanical adjustment.
   5. Machine is out of work.

14) Repairing and high level maintenance work should only be done by electronic technicians with appropriate training.

15) All the spare parts for repairing work must be provided or approved by the manufacturer.

16) 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:

1. Inappropriate use, including: wrong connecting high voltage, wrong application, disassemble, repair, modification by incompetent personnel, or operation without 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)

## Page 2

### 1. ButtonDisplays and operating instructions
### 1.1Key Description
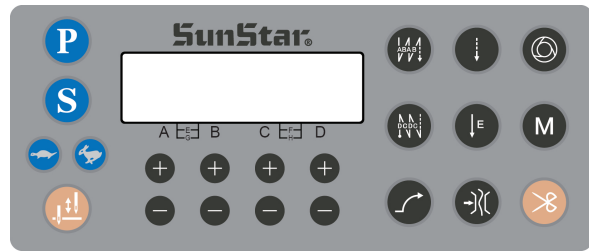


| Function | Key | Indicate |
|---|---|---|
| Enter parameter area function key | P | Under the normal mode, press the [P] key enter to the user parameter mode. Press and hold the [P] key to boot enter to the technician parameter mode. |
| Enter and determine \ save button | S | Enter parameter values such items their contents change after adjustment, need to press the [S] key to save the confirmation. |
| Speed decelerate key | 🐟 | Decelerate Key: Decrease sewing speed. |
| Speed accelerate key | 🐇 | Accelerate Key: Increase sewing speed. |
| Fill the needle button | | Short-press it can shift to up/down needle position; long-press it can continuous stitch compensation. |
| Set value increment / parameter increment key | ＋ | 1. Increase the parameter in Parameter selection. 2. Increase the setting value in Parameter value. |
| Set value decrement / decrement key parameters | － | 1. Decrease the parameter in Parameter selection. 2. Decrease the setting value in Parameter value. |
| Start Back-Tacking Selection | | Execution starting back seam B segment or execution starting back seam (A, B segment) 1   Execution starting back seam (A, B segment) 2 times. |
| End Back-Tacking Selection | | Execution terminates back seam C segment or execution terminates back seam (C, D segment) 1   Execution terminates back seam (C, D segment) 2 times. |

## Page 3

| 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. |
|---|---|---|
| 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. |
| Some fixed stitch shortcuts | | The implementation of paragraph E set needle function, when the display shows the icon, activate the E section of the needle 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. |
| 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. |
| Multi-set stitch shortcuts | M | As the treadle is toed down, Constant-Stitch Sewing E, F, G and H performs section by section. Once the treadle returns to neutral intermediately in any section, machine will stop immediately. When the treadle is toed down again, the balance stitches of E, F, G and 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。 |
| 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. |

### 1. 2. Comparison Table of LCD Display Fonts and Actual Fonts

Arabic Numerals:

| Actual | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|---|
| Display | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

English Alphabet

| Actual | A | B | C | D | E | F | G | H | I | J |
|---|---|---|---|---|---|---|---|---|---|---|
| Display | A | b | C | d | E | F | G | H | ı | J |
| Actual | K | L | M | N | O | P | Q | R | S | T |
| Display | t | L | n | n | o | P | q | r | S | Г |
| Actual | U | V | W | X | Y | Z | | | | |
| Display | U | u | ы | H | Y | Ξ | | | | |

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### 2  Operation

**2.1** Restore to factory setting

1.Under the shutdown state, hold on the left two【－】minus key to boot, then double-click the S key to confirm it, shutdown reboot.

**2.2** Adjust the user parameter mode

1.Under normal mode, press P enter to 【User parameter area】

2.Press S key to parameter content value, Changed the value through "plus""minus" key, and then press S key to save the value.

**2.3** Adjustment technical parameter mode

1.In the shutdown state, hold on P key to turn on machine and enter 【Technical parameter area】

2.Press S key to parameter content value, changed the value through "plus""minus" key, and then press S key to save the value.

**2.4** Adjustment senior technical parameter mode

1. As power off, press forward stitch correction key turn on the machine enter to 【Senior technical parameter are】

2.Press S key to parameter content value, changed the value through "plus" "minus" key to change the contents value, press S key to save.

### 3   Auxiliary Function

**3.1** Number of statistical function

Under the Normal mode, press P enter to the user parameter area, the parameter item to the P41, press S key to enter parameter, screen display piece number of process, each end of sewing cycle, it will add 1. also can through pressing right plus key or minus key to plus or minus manually. Long press the right minus key can counter reset.

Noted: P17 parameter item can automatic count selection.

### 4.Parameter table

| Parameter | Parameter Function | Range | Default | Description |
|---|---|---|---|---|
| P01 | Maximum Sewing Speed（rpm） | 100-2000 | 2000 | Maximum speed of machine sewing |
| P02 | Speed Curve Adjustment（%） | 10-100 | 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（rpm） | 200-2000 | 800 | Start Back-Tacking Speed Adjustment |
| P05 | End Back-Tacking Speed（rpm） | 200-2000 | 800 | End Back-Tacking Speed Adjustment |
| P06 | Bar-Tacking Speed（rpm） | 200-2000 | 800 | Bar-Tacking Speed Adjustment |
| P07 | Soft Start Speed（rpm） | 200-1500 | 400 | Soft Start Speed Adjustment |
| P08 | Soft Start Stitches Setting | 0-99 | 2 | Soft Start Stitches Setting |
| P09 | Automatic Constant-Stitch Sewing Speed（rpm） | 200-2500 | 2000 | Constant-Stitch sewing speed adjustment when one shot signal us achieve. |
| P10 | Automatic End Back-Tacking Sewing(Can invalidate the stitch correction function) | ON/OFF | ON | ON: After finished the last seam of Stitch-Correction, it can automatic execute end back-tacking actction. Under the any of sewing mode, the end back-tacking can't as the stitches correction function. OFF: After finished the last seam of Stitch-Correction, it can't automatic execute end back-tacking function, it must stop or full heeling action again than can execute end back-tacking or stitch-correction function. |
| P11 | Back-Tacking Mode Selection | J/B | J | Press Back-Tacking switch by hand: J: JUKI Mode (it will activate when machine is stopped or running) B: BROTHER mode (It will active the reverse solenoid when machine is running, and it will active stitch-correction action when machine is stopped) |
| P12 | Start Back-Tacking  Mode Selection | 0-3 | 1 | 0: Manual, Pedal- control can stop and start. 1: Automatic, One shot to pedal, it can automatic excute back-tacking action. 2: Pause |

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| 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 at START signal on（standing operation） STP: At the end of Start Back-Tacking, machine stops |
|---|---|---|---|---|
| P14 | Soft Start | ON/OFF | ON | ON: Soft start function is turn on. OFF: Soft start function is turn off. |
| P16 | Automatic searching the pulley rate | | | When P70 item is belt pulley type enter to this parameter long press forward stitch correction key can automatic searching the pulley rate |
| P17 | Automatic count mode selection | 0-9 | 0 | 0: P41 parameter value increase auto-count 1: P41 parameter disable auto-count. |
| P18 | Stitch Balance for Start Back-Tacking 1 | 0-200 | 170 | Stitch Balance for start back-tacking A section, 0~200 action gradually delay; the large value, the longer of A section last seam, and the short of B section first seam |
| P19 | Stitch Balance for Start Back-Tacking 2 | | 180 | Stitch Balance for Start back-tacking B section, 0~200 action gradually delay; the large value, the longer of B section last seam |
| P20 | Mode Selection for End Back-Tacking | 1-3 | 1 | 1: Automatic, one shot to pedal, it can automatic execute back-tacking action. 2: Pause |
| P21 | Step voltage before pedal | 30-1000 | 520 | |
| P22 | Foot pedal without foot point voltage | 30-1000 | 418 | |
| P23 | Half step voltage of foot pedal | 30-1000 | 248 | |
| P24 | The voltage of foot heeling pedal point | 30-500 | 120 | the foot heeling pedal point point adjustment |
| P25 | Stitch Balance for End Back-Tacking 3 | 0-200 | 170 | Stitch Balance for end back-tacking C section, 0~200 action gradually delay; the large value, the short of C section first seam |
| P26 | Stitch Balance for End Back-Tacking 4 | | 180 | Stitch Balance for end back-tacking D section,0~200 action gradually delay; the large value, the longer of C section last seam, and the short of D section first seam |
| P27 | Piecework plus minus: if click, it can stitch compensation function. | 0-1 | 0 | 0:minus 1:plus |
| P28 | Mode Selection for Bar-Tacking | 0-3 | | 0: Manual, Pedal- control can stop and start. 1: Automatic, One shot to pedal, it can automatic excute bar-tacking action. 2: Pause |
| P29 | After trimming braking output | 1-45 | 20 | The large value the more strength, if adjust more value maybe will caused motor abnormal. |
| P30 | Thick materialforce | 0-100 | 10 | The large value the more strength, if adjust more value maybe will caused motor abnormal. |
| P31 | Trimming force | 0-100 | 60 | The large value the more strength, if adjust more value maybe will caused motor abnormal. |
| P32 | Stitch Balance for Bar-Tacking 5 | 0-200 | 170 | Stitch Balance for bar-tacking A (C) section, 0~200 action gradually delay; the large value, the longer of A (C) section last seam, and the short of B (D) section first seam |
| P33 | Stitch Balance for Bar-Tacking 6 | | 180 | Stitch Balance for bar-tacking B (D) section, 0~200 action gradually delay; the large value, the longer of B (D) section last seam, and the short of C section first seam |
| P34 | Mode Selection for Constant-Stitch Sewing | A/M | A | A: One shot to pedal, it will automatic execute Constant-Stitch M: Pedal-controll and motor can stop and start arbitrarily |
| P36 | Thread tension release output function setting (tension release device pressure setting) | 0-11 | 8 | 0: No tension release action 1-11: tension release strength gradually large |
| P37 | Wiper, Clamp function Selection (Pressure setting of the Thread Clamp Device) | 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） |

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| P41 | Display the sewing finished quantity | | 0 | Valid for enter sewing pieces display interface, automatic save; long press minus key to reset the counter. |
|---|---|---|---|---|
| P42 | Information Display | | N-01 | Press S key to enter, press P key to exit NO1  Control box version serial number NO2  Operation panel version number. NO3  Sewing Speed NO4  Pedal AD value NO5  Up positioning angle NO6  Down positioning angle NO7  Busbar voltage AD value NO8  Solenoid testing mode |
| P43 | Setting Direction of Motor Rotation （CCW/CW） | CCW/CW | CCW | CW：Clockwise   CCW：Counter Clockwise |
| P44 | The force of intermediate stop | 1-50 | 16 | The strengthselection at the sewing intermediate stop |
| P45 | Duty-Cycle setting of Back tacking output duty-cycle（%） | 1-50 | 30 | Adjustment for duty-cycle of back tacking. Fine tuning reduce the over- heating. |
| 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 【P47/TR8】 OFF：No Function |
| P47 | Adjustment of reverse angles after trimming | 50-200 | 160 | Adjusting at reverse direction after trimming |
| P48 | Low (Positioning) Speed（spm） | 100-500 | 210 | Setting Positioning Speed |
| P49 | Trimming Speed（spm） | 100-500 | 300 | Adjusting trimming duty-cycle motor speed. |
| P50 | The time of Foot lifting（ms） | 10-990 | 250 | Foot lifting sequence time |
| P51 | Duty-Cycle Setting for Foot Lifter（%） | 1-50 | 20 | Adjustment for Duty-Cycle of Foot Lifter (Fine tuning can reduce the over-heating) |
| P52 | Foot lift lay down time（ms） | 10-990 | 120 | Foot lift lay down sequence time |
| P53 | Cancel Foot Lifting when Half-Heeling the Pedal | ON/OFF | ON | 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 | Thread wiping/Thread sweeping time | 10-990 | 30 | Thread wiping/Thread sweeping sequence time |
| P56 | Needles Goes Up Automatically as Power turned on | 0-2 | 1 | 0: No Function. 1：Power turned on, needle goes up position automatically 2: If needle at the up position,no functionIf the motor at the up position, so no longer to find up position. |
| P57 | The presser foot protection time（s） | 1-60 | 10 | The presser foot lift exceeds the set value automatically disconnect protection time |
| P58 | Up Position Adjustment | 0-1439 | 290 | 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 | 0-1439 | 870 | 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） | 100-2000 | 2000 | Setting testing speed |
| P61 | Testing A | | OFF | Option of Testing A, after setting press【P60.】to set the speed keep running. |
| P62 | Testing B | | OFF | Option of Testing B, after setting press【P60.】to set the speed execute the cycle of Start - Sewing -Stop - Trimming |
| P63 | Testing C | | OFF | Option of Testing C, after setting press【P60.】to set the speed execute the cycle of Start - Sewing -Stop without continuing function |
| P64 | Running Time of Testing B and C | 1-250 | 20 | Setting running time of testing B and C |

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| 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 |
| P70 | Factory type selection | 1-45 | 42 | |
| P71 | Foot lift release buffering(%) | 0-50 | 0 | Adjustment output when foot lift lay down |
| P72 | Upper needle stop position correction | | | Adjustment up needle stop postion, the value will changed according to the hand-wheel position, press S key to save current position(value) as up needle stop position. |
| P73 | Down needle stop Position Adjustment | | | Adjustment down needle stop postion, the value will changed according to the hand-wheel position, press S key to save current position(value) as down needle stop position. |
| P74 | The machine number 1 | | | |
| P75 | The machine number 2 | | | |
| P76 | Back tacking fully output time (ms) | 10-990 | 250 | Back tacking start action, fully output action time. |
| P77 | Freedom sew back seam even terminate pause time(ms) | 20-350 | 160 | |
| P78 | Clamp start action angle | 5-359 | 100 | |
| P79 | Clamp end angle | 5-359 | 270 | |
| P80 | The angle of trimming infeed | 5-359 | 18 | The angle of trimming infeed setting! Down needle stop position as 0 °） |
| P81 | Trimming start angle | 5-359 | 140 | Trimming start angle setting （Down needle stop position as 0 °） |
| P82 | Trimming end angle | 5-359 | 172 | Trimming end angle setting （Down needle stop position as 0 °） |
| P83 | Brake force after trimming | 10-100 | 20 | Adjustment of brake force after trimming |
| P84 | Torque increase initial angle of over thick material | 0-330 | 9 | |
| P85 | Torque increase final angle of over thick material | 0-330 | 57 | |
| P87 | The thread wiping/ sweep back delay times | 10-990 | 50 | Ensure Thread wiping/Thread sweeping in situ |
| P89 | Alternatingcurrent(ac) overvoltage value set | 500-1023 | 880 | |
| P93 | Half step delay times(ms) | 10-990 | 300 | The valid time of half step relative function |
| P101 | Thread tension release start angel | 1-359 | 30 | Start angel of thread tension release (Down needle stop position as 0 °） |
| P102 | Thread tension release end angel | 1-359 | 180 | End angel of thread tension release (Down needle stop position as 0°, the value should bigger than P101) |
| P109 | The delay time before thread wiping/ sweep (ms) | 5-990 | 5 | The interval time of thread wiping/ sweep action after finding up needle position |
| P110 | Trimming back delay time (ms) | 60-990 | 60 | Ensure trimming in situ |
| P111 | Motor type selection | 0-1 | 1 | 0: without magnetic ring；1:with magnetic ring |
| P117 | Presser Foot UP release buffering delay time (ms) | 0-990 | 55 | Adjustment delay time of presser foot lift release buffering |
| P119 | Solenoid over-current protection function switch | 0-1 | 1 | 0：OFF；1：ON |

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### 5  Error Code List

| Error Code | Problem | Strategies |
|---|---|---|
| E01 | 1) When power ON, detected main voltage too high 2) When the supply voltage is too high | Turn off the system power supply, and detect whether the supply voltage is correct. (Or exceed the rated voltage.) If correct, please replace the control box and inform the factory |
| E02 | 1) When power ON, detected main voltage too low 2) When the supply voltage is too low. | Turn off the system power supply, and detect whether the supply voltage is correct. (Or exceed the rated voltage.) If correct, please replace the control box and inform the factory |
| E03 | Operation panel and CPU transmission communication exception | Turn off the system power, check the operation panel interface is loose If contact is good, please change the operation panel. If it is not operated, the control box is damaged; please change |
| E05 | Speed control unit connection is abnormal | Turn off the system power supply, please check the speed control unit connector if loose or fall off; Will resume normal after the restart system If you still can not work normally, please replace the speed control unit and notify the manufacturer |
| E07 | 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. | Please check the machine head to see if objects stuck in the motor pulley. If stuck it is not the machine head machinery fault. If normal running, please check the encoder connector and moni power cord connector if loose. If proper tight connection. If connection well, please check supply voltage whether abnormal or setting speed too high. If have please modify. If normal, please replace the control box and notify the manufacturer. |
| E08 | Continuous manual pour over 15 seconds | Backsewing electromagnet time is too long, can restart |
| 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. |
| E09 E11 | Synchronizer signal error. | Turn off the system power supply, please check motor encoder connector if loose or fall off; renew to normal then restart system. If still not work, please replace the motor and notify the manufacturer. |
| 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. If still not work, please replace the motor and notify the manufacturer. |
| E15 | Abnormal over current protection for Power Module. | Turn off the system power supply, please check motor encoder connector if loose or fall off; renew to normal then restart system. If still not work, please replace the motor and notify the manufacturer. |
| E17 | The sewing table safety switch is not in the correct position | Please check sewing table is open or not, the sewing table safety switch is damage or not, the socket is abnormal or not. |
| E20 | Power motor failed to start | Turn 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. |

### 6  Port Outline Diagram



Sewing the back panel

Port Outline Diagram