![MCj03463170000[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. All power supplies must be turned off during the installation work, remember not to operate with power on.
3. All the instruction marked with sign ![MCj03463170000[1]]() 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 the power cord, it must be determined that the operating voltage conforms to the rated voltage value specified in the product identification.
6. Don＇t operate in direct sun light，outdoors area and where the room temperature is over 45°C or below 0°C.
7. Please avoid operating near the heater at dew area or at the humidity below 10% or above 90%.
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:

1. Connecting or disconnecting any connectors on the control box or motor.

2. Threading needle.

3. Raising the machine head.

4. Repairing or doing any mechanical adjustment.

5. Machines idling.

1. Repairs and high level maintenance work should only be carried out by electronic technicians with appropriate training.
2. All the spare parts for repair must be provided or approved by the manufacturer.
3. 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

\* 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 |
| Multi-segment sewing |  | If click, set to multi-segment sewing mode (switch to four-segment sewing, seven-segment sewing, eight-segment sewing, and fifteen-segment sewing in sequence). |
| Free sewing |  | If click, set to free sewing mode.Once the pedal is pressed forward, sew normally, and when the pedal returns to neutral, stop sewing immediately. When the pedal is pressed backwards, the thread trimming / thread sweeping and other actions are automatically completed. |
| Constant stitch sewing |  | If click, set to E-segment sewing mode. |
| Auto function |  | If click, set to use or cancel auto function. Trigger the foot pedal to automatically complete the set sewing process. |
| Consecutive reverse sewing |  | If click, set to consecutive reverse sewing mode. |
| Start back-tacking |  | If click, switch AB start back-tacking→ABAB start back-tacking→function off→B start back-tacking successively. |
| End back-tacking |  | If click, switch CD end back-tacking→CDCD end back-tacking→function off→C end back-tacking successively. |
| Presser foot lift function switch |  | If clicked, set to use or cancel half anti-side trample / anti-side trample foot lifting function. |
| Needle stop position selection |  | If click, the needle stop position after shift the sewing mode (up position / down position). |
| Automatic presser foot lifting setting |  | If click, switch function off→automatic presser foot lifting after trimming→automatic presser foot lifting after pause→full function successively. |
| Slow launch setting |  | 1. If click, set to use or cancel slow launch function.2. In the parameter setting interface, if long-press, save the current parameter value as factory parameter value. |
| Thread trimming |  | 1. If click, set to use or cancel trimming function.2. If long-press, enter counter interface. |
| Reset |  | Long-press can restore factory setting. |
| Function parameter edit |  | If click, enter or exit the user parameter setting interface. |
| 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 |  | If click, increase the parameter.If long-press, continuously increase the parameter. |
| Parameter decrease |  | If click, decrease the parameter.If long-press, continuously decrease the parameter. |
| Speed increase |  | If click, increase the sewing speed.If long-press, continuously increase the sewing speed. |
| Speed decrease |  | If click, decrease the sewing speed.If long-press, continuously decrease the sewing speed. |

**1.2 Manually adjust the positioning**

1. In the power-off state, press and hold the S key to turn it on, the item P-72 will be displayed, and press the S key to enter the parameter value interface.

2. Turn the handwheel by hand to the position where the needle tip is flush with the needle plate, and at the same time, the parameter value will change with the rotation of the handwheel.

3. Press the S key to save the current parameter value and exit to the general interface. The control box automatically calculates the up and down needle stop positions according to the current parameter value.

**2 User Parameter**

| No. | Items | Range | Default | Description |
| --- | --- | --- | --- | --- |
| P01 | Maximum sewing speed (rpm) | 100-3000 | 2500 | Maximum speed of machine sewing. |
| P02 | Set accelerated curve (%) | 10-120 | 80 | Set the acceleration slope. |
| P03 | Needle UP/ DOWN | UP/DN | DN | UP: Needle stops at up positionDN: Needle stops at down position |
| P04 | Start back-tacking speed (rpm) | 100-1000 | 1000 |  |
| P05 | End back-tacking speed (rpm ) | 100-1000 | 1000 |  |
| P06 | Bar-tacking speed (rpm) | 100-1000 | 1000 |  |
| P07 | Soft start speed (rpm ) | 100-1500 | 400 |  |
| P08 | Stitch numbers for soft start | 0-99 | 3 |  |
| P09 | Automatic constant-stitch sewing speed (rpm) | 100-3000 | 2000 | Speed adjustment for automatic constant-stitch sewing. |
| P10 | Automatic end back-tacking sewing after constant-stitch sewing (without darning stitch function) | ON/OFF | ON | ON: After executing the constant-stitch sewing, the back-tacking sewing will be executed automatically. In any sewing mode, mending stitch function cannot be used.OFF: After executing the last constant-stitch sewing, the back-tacking sewing function will not be automatically executed, and the front step or full back step must be performed again. |
| P11 | Manual back-tacking mode selection | J/B | J | J: It will execute back-tacking during sewing or when it stops halfwayB: It will execute back-tacking during sewing, and it will mend needle when it stops halfway |
| P12 | back-tacking running mode selection | 1-2 | 2 | 1: Automatic, touch the pedal to automatically perform back-tacking action. 2: Pause, decorative seam pattern. |
| P13 | Ending mode of startback-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 | OFF |  |
| P15 | Mending stitch mode | 0-4 | 2 | 0: half stitch;1: one stitch;2: continuous half stitch;3: continuous one stitch;4: continuous one stitch, quick stop. |
| P16 | Speed limit of manual back-tacking | 100-2500 | 1500 |  |
| P18 | Start back-tacking compensation 1 | 0-250 | 145 | Stitch compensation for start back-tacking A section, 0~200 action gradually delay; The large value, the longer of the A section last stitch, and the shorter of the B section first stitch. |
| P19 | Start back-tacking compensation 2 | 0-250 | 156 | Stitch compensation for start back-tacking A section, 0~200 action gradually delay; The large value, the longer of the B section last stitch. |
| P21 | The position of the pedal for accelerating | 30-1000 | 550 |  |
| P22 | The position of the pedal for the stop | 30-1000 | 450 |  |
| P23 | The position of the pedal for presser foot lifting | 30-1000 | 290 |  |
| P24 | The position of the pedal for thread trimming | 30-1000 | 150 |  |
| P25 | End back-tacking compensation 3 | 0-250 | 145 | Stitch compensation 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 | 0-250 | 156 | Stitch compensation 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-N04 | Language setting | 0-2 | 1 | 0: OFF1: Chinese2: English |
| P27-N05 | Voice broadcast selection | 0-3 | 2 | 0: OFF1: Start-up voice only2: Key tone only3: With start-up voice and key tone |
| P27-N06 | Thread trimming count | 0-50 | 1 |  |
| P27-N08 | Virtual and real speed function switch | 0-1 | 1 | 0: OFF1: ON |
| P27-N12 | Boot display counter interface selection | 0-1 | 0 | 0: OFF1: ON |
| P27-N13 | Thread trimming counter mode selection | 0-1 | 0 | 0: Incremental piecework mode1: Diminishing piecework mode |
| P29 | The strength of thread trimming stop | 1-45 | 30 | The larger the value is, the stronger the force will be. If the adjustment is too large, the motor may be abnormal. |
| P32 | Bar-tacking compensation 5 | 0-250 | 145 | Stitch compensation for bar-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 | 0-250 | 156 | Stitch compensation for bar-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 | A: Touch the foot pedal to automatically execute constant-stitch sewing action.M: Controlled by foot pedal, can be stopped and started at will. |
| P36 | Thread tension releasing function selection | 0-11 | 7 | 0: OFF1-11: The strength of thread tension releasing gradually increases |
| P37 | Thread wiping function / Thread clamping function selection | 0-11 | 0 | 0 : OFF1: Thread wiping function.2-11: Thread clamping Function, the larger the value, the stronger the strength of automatic thread clamping. |
| P38 | Automatic thread trimming function selection | ON/OFF | ON |  |
| P39 | Automatic presser foot lifting when pause function selection | UP/DN | DN |  |
| P40 | Automatic presser foot lifting after trimming function selection | UP/DN | DN |  |
| P41 | Thread trimming counter display | 0-9999 |  | Display the quantity of finished sewing piece. Long-press “-” key to clear the count. |
| P42-N01 | The control system version number |  |  |  |
| P42-N02 | The panel version number |  |  |  |
| P42-N03 | Speed |  |  |  |
| P42-N04 | The pedal AD |  |  |  |
| P42-N05 | The mechanical angle(up position) |  |  |  |
| P42-N06 | The mechanical angle(down position) |  |  |  |
| P42-N07 | Bus bar voltage AD |  |  |  |
| P43 | Motor rotation direction setting (forward and reverse) | CCW/CW | CCW | CW: clockwiseCCW: counter clock wise |
| P44 | Brake strength during stopover | 1-45 | 22 |  |
| P45 | Back-tacking operation duty cycle (%) | 1-70 | 60 | 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 | The angle is determined by the adjustment of [P47.TR8]. |
| P47 | Adjust the reverse angle when motor stop after trimming | 50-200 | 160 | Start from the upper needle position and adjust the angle of the needle lift in reverse operation after trimming. |
| P48 | The minimum speed (positioning speed) (rpm ) | 100-500 | 250 |  |
| P49 | Thread trimming speed (rpm) | 100-500 | 250 |  |
| P50 | Presser foot operation time to full output (ms) | 10-990 | 150 |  |
| P51 | Presser foot operation duty cycle (%) | 1-50 | 25 | Presser foot lifter operate in duty cycle to save electricity and protect the electromagnet from over-heat. |
| P52 | Presser foot lowering time (ms) | 10-990 | 150 |  |
| P53 | Half back pedaling lifting presser foot function to cancel | 0-2 | 1 | 0: OFF1: Back pedaling and half back pedaling with lifting presser foot2: Half back pedaling without lifting presser foot, back pedaling with lifting presser foot |
| P54 | Thread trimming action time (ms) | 10-990 | 200 |  |
| P55 | Thread wiping / thread sweeping action time (ms) | 10-990 | 270 |  |
| P56 | Power on and positioning | 0-2 | 0 | 0: Always not to find the up needle position1: Always to find the up needle position2: If the motor is already in the up needle position, no longer find the up needle position |
| P57 | Presser foot solenoid protection time (s) | 1-120 | 10 | Forced shutdown after hold time to prevent the electromagnet from being hot for a long time. |
| P58 | Up needle position adjustment | 0-1439 | 330 | 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 | 570 | 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) | 100-3000 | 2000 | Setting testing speed. |
| P61 | Testing A |  | OFF | Item A test option, after setting, it will continue to run at the speed set by [P60.]. |
| P62 | Testing B  |  | OFF | Item B test option, after setting, the cycle of start-sewing-stop-thread trimming will be executed at the speed set by [P60.]. |
| P63 | Testing C |  | OFF | Item B test option, after setting, the cycle of start-sewing-stop without positioning function will be executed at the speed set by [P60.]. |
| P64 | Running time of testing B and testing C | 1-250 | 30 | Setting running time of testing B and C. |
| P65 | Stop time of testing B and testing C | 1-250 | 20 | Setting stop time of testing B and C. |
| P66 | Machine protection switch selection | 0-2 | 1 | 0: Disable1: Testing zero signal2: Testing positive signal |
| P70 | Ex-factory model selection |  | 10 |  |
| P71 | Presser foot lift release buffer (%) | 0-50 | 1 | Adjustment of the force when the presser foot is lowered. |
| P72 | Upper needle stop position correction |  |  | 1. In the power-off state, press and hold the S key to turn it on, the item P-72 is displayed, and press the S key to enter the parameter value interface.2. Rotate the handwheel by hand to the position where the needle tip is flush with the needle plate, and the parameter value will change with the rotation of the handwheel.3. Press the S key to save the current parameter value and exit to the general interface. The control box automatically calculates the up and down needle stop positions according to the current parameter value. |
| P73 | Down needle stop position correction |  |  | Adjust down needle position, the displayed value will change with the position of the handwheel, press "S" key to save the current position (value) as down needle position. |
| P74 | Encoding function 1 | 0-FFFF | 0 |  |
| P75 | Encoding function 2 | 0-FFFF | 0 |  |
| P76 | Back-tacking operation time to full output（ms） | 10-990 | 250 | Back tacking start action, full output action times. |
| P77 | Pause time for free sewing and end back-tacking (ms) | 20-350 | 250 |  |
| P78 | The start angle of thread clamping | 5-359 | 100 |  |
| P79 | The stop angle of thread clamping | 5-359 | 270 |  |
| P80 | Trimming engage angle | 0-359 | 40 | Trimming engage angle setting (up position defined as 0°) |
| P82 | Trimming retract angle | 5-359 | 340 | Trimming retract angle setting (up position defined as 0°) |
| P83 | Stopping strength after trimming | 10-120 | 30 |  |
| P86 | Up and down needle position distance | 100-2300 | 400 | Up and down positioning distance angle (1 degree for every 4 values) |
| P87 | Thread wiping / thread sweeping return delay time | 10-990 | 50 | Make sure the wiper / sweeper returns to its original position |
| P89 | AC overvoltage setting | 500-1023 | 880 |  |
| P92 | Correct the electrical angle of motor |  |  | 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 (ms) | 10-900 | 150 |  |
| P101 | The start angle of thread tension releasing | 1-359 | 300 | Thread tension releasing start angle (defined as 0°under calculation) |
| P102 | The stop angle of thread tension releasing | 1-359 | 340 | Thread tension releasing end angle (defined as 0°under calculation, must be greater than P101 parameter value) |
| P104 | Decorative seam pause time (ms) | 5-990 | 60 |  |
| P109 | The delay time before thread wiping / thread sweeping | 5-990 | 5 | The interval time of thread wiping / sweeping action after finding up needle stop position. |
| P110 | Trimming back delay time (ms) | 60-990 | 60 | Make sure the thread trimming mechanism is back in place. |
| P113 | Presser foot operation duty cycle to full output (%) | 0-100 | 85 |  |
| P117 | Press foot release buffer delay time (ms) | 0-990 | 0 | Adjustment delay time of presser foot lift release buffering. |
| P118 | In the pause mode, adjustment of the stop position for reverse sewing to forward sewing | 0-720 | 250 | The down position is calculated as 0°. |
| P119 | Electromagnet overcurrent protection selection | 0-1 | 1 | 0: OFF1: ON |
| P123 | In the pause mode, adjustment of the stop position for forward sewing to reverse sewing | 0-720 | 250 |  |
| P134 | Soft start second stitch speed | 100-1500 | 600 |  |
| P135 | Soft start third stitch and subsequent stitches speed | 100-1500 | 600 |  |
| P139 | Thread tension releasing function switch when start sewing | 0-1 | 0 | 0: OFF1: ON |
| P141 | The start angle of thread tension releasing when start sewing | 1-359 | 1 | The start angle of thread tension releasing when start sewing (relative to the upper needle position angle). |
| P142 | The stop angle of thread tension releasing when start sewing | 1-359 | 15 | The stop angle of thread tension releasing when start sewing (relative to the upper needle position angle, it must be greater than the parameter value of P141). |
| P143 | Thread trimmer linkage action start angle | 0-359 | 0 |  |
| P144 | Thread trimmer linkage action stop angle | 0-359 | 0 |  |

Note: the initial value of parameters is for reference only, and the actual value of parameters is subject to the real object.

**3 Error code list**

|  |  |  |
| --- | --- | --- |
| Error Code | Problem description  | Solutions |
| E01 | High voltage | 1. Whether the grid voltage is higher than AC260V.2. If it is self-generated power supply, please reduce the generator power.3. If it still does not work normally, please replace the control box and notify the after-sales service. |
| E02 | Low voltage | 1. Whether to connect to low voltage.2. Reset.3. If it still does not work normally, please replace the control box and notify the after-sales service. |
| E03 | Abnormal communication between main CPU and panel CPU | 1. Turn off the system power and check whether the connection of the display screen is loose or disconnected, restart the system after returning it to normal.2. Turn off the system power, remove the control box and only plug in the power cord to power on, whether alarm E05, if it still alarms E03, replace the control box and notify the after-sales service. |
| E05 | Pedal signal abnormal | Turn off the system power, check whether the speed controller connector is loose or fall off, restore it to normal and restart the system. |
| E07 | Main shaft motor locked-rotor | 1. Turn off the power and check whether the handwheel can be turned smoothly (turn the handwheel by hand), if it cannot be turned, please check the machine;2. Turn off the power, check whether the motor power connector is loose, plug it in and restart it.3. Check whether the upper needle stop position is correct, if not, please adjust the upper positioning position.4. If it still does not work normally, please replace the control box or spindle motor and notify the after-sales service. |
| E08 | Manual back-tacking action time exceeds 30 seconds | If back-tacking electromagnet takes too long, please restart.If E-08 is still reported after restart, please check whether the manual back-tacking switch is damaged. |
| E10 | Electromagnet overcurrent protection | 1. Unplug the solenoid connector, if alarm E10, replace the control box and notify the after-sales service.2. If there is no alarm after removing the solenoid connector, please plug it back in.1) Step on the front pedal to let the sewing machine perform thread clamping and back-tacking. If alarms, please turn off start back-tacking and end back-tacking, restart the control box, and then step forward. If alarms, please turn off the thread clamping function and restart the electronic control, and step forward again. If there is no alarm, replace the clamper.2) Step on the front pedal to let the sewing machine perform thread clamping, back-tacking and half anti-side trample foot lifting. If there is no alarm, please back pedaling thread trimming, if it alarms, please replace thread tension releasing solenoid. |
| E09E11 | The positioning signal of main shaft motor encoder is abnormal | 1. Turn off the system power, check whether main shaft motor encoder connector is loose or fall off, restore it to normal and restart the system.2. Check whether the motor zero point correction setting is correct; Reset the motor zero point correction; Whether there is oil on the encoder code plate, please clean it if there is any.3. If it still does not work normally, please replace the control box or main shaft motor and notify the after-sales service. |
| E14 | Main shaft motor encoder signal is abnormal | 1. Turn off the system power, check whether the main shaft motor encoder connector is loose or fall off, restore it to normal and restart the system.2. Check whether the grating is installed correctly (whether the grating screws are tightened and whether the grating is in the center of the encoder).3. Check whether there is oil on the encoder code plate, if there is, please clean it up, and restart the system after recovery.4. If it still does not work normally, please replace the control box or main shaft motor and notify the after-sales service. |
| E15 | Main shaft motor drive overcurrent | 1. Please check whether the motor power cord has bad contact;2. Please check whether the motor power cord is crushed.3. Please replace the control box or main shaft motor and notify the after-sales service. |
| E17 | Machine overturned | 1. Turn off the system power and check if the machine is overturned.2. Check whether the machine protection switch detection setting is correct.3. If it still does not work normally, please replace the control box or panel and notify the after-sales service. |
| E20 | Main shaft motor failed to start | 1. Turn off the system power, check whether main shaft motor power cord connector and encoder connector are loose or fall off, restore them to normal and restart the system.2. Check whether the motor zero point correction setting is correct, reset the motor zero point correction.3. If it still does not work normally, please replace the control box or main shaft motor and notify the after-sales service. |
| E42E43E44E46 | The main chip is working abnormally | 1. Reboot after factory reset.2. If it still does not work normally, please replace the control box and notify the after-sales service. |

**4 Port diagram**

**Port name**

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**12P function port description**



1. Down back-tacking electromagnet: 1, 7

2. Presser foot electromagnet: 2, 8

3. Needle bar electromagnet: 3, 9

4. Upper back-tacking electromagnet: 4, 10

5. Thread tension releasing electromagnet: 5, 11

6. Thread trimming electromagnet: 6, 12

**2P function port description**



1. LED light: 1 (DGND), 2 (+5V)

**6P (small) function port description**



1. Manual Presser foot signal: 1 (+5V), 3 (DGND), 6

2. Manual darning stitch signal: 5

3. Manual back-tacking signal: 4