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**

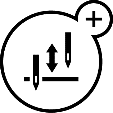
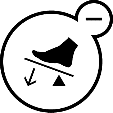
|  |  |  |
| --- | --- | --- |
| Name | key | Indicate |
| Function key |  | If click, enter or exit the user parameter setting interface.  If long press, switch to password input interface. Input correct password and press S to confirm, you can enter the advanced parameter setting interface. |
| Confirm key |  | View and save the content of the selected parameter number: press this key after selecting the parameter number to view and modify the operation; press this key after modifying the parameter value to exit and save the parameter.  In the main interface, if long-press, it will switch to the interface of debugging parameter item, and you can adjust P100 item, P92 item and P72 item. |
| Needle stop position |  | In the main interface, if click, switch upper or lower stop position.  In the parameter interface, if click, increase the value of thousands digit. |
| Pedal gear adjustment |  | In the main interface, if click, enter the P122 parameter value and changes the value by automatically adding 1.  In the parameter interface, if click, decrease the value of thousands digit. |
| Presser foot height increasing |  | In the main interface, if click, increase presser foot height.  In the parameter interface, if click, increase the value of hundreds digit. |
| Presser foot height decreasing |  | In the main interface, if click, decrease presser foot height.  In the parameter interface, if click, decrease the value of hundreds digit. |
| Cloth cutting main switch key |  | In the main interface, if click, set to use or cancel the front and back cloth cutting function and knee-control cloth cutting function.  In the parameter interface, if click, increase the value of tens digit. |
| Stitch numbers for front cloth cutting |  | In the main interface, if click, enter stitch numbers for front cloth cutting setting interface.  In the parameter interface, if click, decrease the value of tens digit. |
| Automatic cloth cutting |  | In the main interface, if click, set to use or cancel front and back cloth cutting function.  In the parameter interface, if click, increase the value of units digit. |
| Stitch numbers for back cloth cutting |  | In the main interface, if click, enter stitch numbers for back cloth cutting setting interface.  In the parameter interface, if click, decrease the value of units digit. |
| Electronic handwheel key |  | In the main interface, if click, set to use or cancel electronic handwheel function. |

**1.2 Auxiliary function**

**1.2.1 Debugging mode**

In the main interface, if long-press S key, it will switch to the interface of debugging parameter item, and you can adjust P92 item, P72 item and P100 item.

**1.2.2 Restore factory settings**

In the main interface, long-press “” and “” to restore factory settings.

**2 Parameter list**

| No. | Items | Range | Default | Description |
| --- | --- | --- | --- | --- |
| P01 | Maximum speed (rpm) | 100-9000 | 3200 | Maximum speed of machine sewing. |
| P02 | Set accelerated curve (%) | 10-100 | 80 | Set the acceleration slope.  The greater the slope value, the steeper the speed; the smaller the slope value, the slower the speed. |
| P03 | Needle UP/ DOWN | UP/DN | UP | UP: Upper needle stop position  DN: Lower needle stop position |
| P07 | Soft start speed (rpm) | 200-1500 | 1000 |  |
| P08 | Stitch numbers for soft start | 0-99 | 2 |  |
| P09 | Electronic handwheel switch | ON/OFF | OFF |  |
| P14 | Soft start | ON/OFF | OFF |  |
| P15 | Front cloth cutting | ON/OFF | ON |  |
| P16 | Stitch numbers for front cloth cutting | 0-100 | 8 |  |
| P17 | Back cloth cutting switch | ON/OFF | ON |  |
| P18 | Stitch numbers for back cloth cutting | 0-100 | 8 |  |
| P19 | Sensor detection switch | 0-2 | 1 | 0: No detection  1: Detecting zero signal  2: Detecting positive signal |
| P20 | Broken thread detection switch | 0-2 | 1 | 0: No detection  1: Detecting zero signal  2: Detecting positive signal |
| P21 | The position of the pedal for accelerating | 30-1000 | 500 |  |
| P22 | The position of the pedal for stopping | 30-1000 | 420 |  |
| P23 | The position of the pedal for presser foot lifting | 30-1000 | 280 |  |
| P24 | The position of the pedal for thread trimming | 30-1000 | 130 |  |
| P26 | Electronic knee-control cloth cutting switch | ON/OFF | ON |  |
| P29 | Stopping strength after thread trimming | 1-45 | 20 |  |
| P38 | Cloth cutting main switch | 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 | Counter display | 0 | 0 |  |
| 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(upper position) |  |  |  |
| P42-N06 | The mechanical angle(lower position) |  |  |  |
| P42-N07 | Bus bar voltage AD |  |  |  |
| P43 | Motor rotation direction setting | CCW/CW | CCW | CW: Clockwise  CCW: Counter clock wise |
| P44 | Normal stopping strength | 1-45 | 15 |  |
| P45 | Periodic signal of suction output (%) | 1-80 | 80 |  |
| P46 | Automatic triggering | ON/OFF | OFF |  |
| P47 | Electronic handwheel speed ratio | 1-5 | 1 |  |
| P48 | The minimum speed (positioning speed) (rpm) | 100-1000 | 500 | Adjust the minimum speed. |
| P50 | Front cloth cutting filtering | 2-10 | 3 |  |
| P51 | Back cloth cutting filtering | 2-10 | 6 |  |
| P52 | Delay the start of the motor to protect the lowering time of presser foot (ms) | 10-990 | 150 | Delay the start time, with automatic presser foot down. |
| P53 | Presser foot lifting function selection | 0-2 | 1 | 0: OFF  1: Back pedaling and half back pedaling with lifting presser foot  2: Half back pedaling without lifting presser foot, back pedaling with lifting presser foot |
| P56 | Power on and positioning | 0-1 | 0 | 0: Always do not find the upper positioning  1: Always find the upper positioning |
| P57 | Presser foot lifting protection time (s) | 1-60 | 10 | Forced closure after the presser foot lifting holding time has expired. |
| P58 | Upper positioning adjustment | 0-1439 |  | Upper positioning adjustment, the needle will advance stop when the value decreased, the needle will delay stop when the value increased. |
| P59 | Lower positioning adjustment | 0-1439 |  | Lower positioning adjustment, the needle will advance stop when the value decreased, the needle will delay stop when the value increased. |
| P60 | Testing speed (r/s) | 100-6000 | 4000 |  |
| 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 | Testing B and C conduction time | 1-250 | 50 |  |
| P65 | Testing B and C stopping time | 1-250 | 50 |  |
| P69 | Main shaft motor model selection | 0-50 | 0 |  |
| P70 | Model selection | 1-45 | 31 |  |
| P72 | Upper positioning quick adjustment | 0-2399 |  | Adjust upper needle stop position, the displayed value will change with the position of the handwheel, press "S" key to save the current position (value) as up needle position. |
| P73 | Lower positioning quick adjustment | 0-2399 |  | Adjust lower needle stop 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. |
| P76 | Cloth cutting blade stroke | 0-700 | 420 |  |
| P77 | Height of presser foot lifting stroke | 0-1300 | 900 |  |
| P78 | Cloth cutting engage acceleration | 1-30 | 5 |  |
| P79 | Cloth cutting retract acceleration | 1-40 | 15 |  |
| P80 | Presser foot lifting acceleration | 1-30 | 12 |  |
| P81 | Presser foot lowering acceleration | 1-30 | 12 |  |
| P82 | Presser foot height when needle not at upper position | 0-900 | 600 |  |
| P86 | Upper and lower positioning distance | 0-2399 | 1200 | Upper and lower positioning distance angle (1 degree for every 4 values). |
| P89 | AC overvoltage setting | 500-1023 | 880 |  |
| P92 | Correct the electrical angle of motor |  | 160 | 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 | Half back pedaling function onset time (ms) | 10-900 | 150 |  |
| P100 | Cloth cutting test | 0-800 | 0 | Tool setting mode, long press to save to P76. |
| P104 | Password setting | 0-9999 | 0 |  |
| P107 | Suction action time (s) | 0-60 | 0 | 0: long suction  1-60: Automatically stop after exceeding the set time, and re-timing each time you front pedaling. |
| P108 | Front suction function selection | ON/OFF | ON |  |
| P109 | Long suction function selection | ON/OFF | ON |  |
| P110 | Thread trimming / presser foot stepping motor zero point correction | -500~500 | 0 |  |
| P114 | Stitch numbers for front suction | 0-100 | 0 |  |
| P119 | Electromagnet overcurrent protection detection switch | 0-1 | 1 | 0: No alarm, shutdown output  1: Alarm and shutdown |
| P122 | Pedal gear adjustment | 1-4 | 4 | 0: Normal gear  1: Relatively slow gear  2: Slow gear  3: High speed gear |

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 | CPU communication abnormal | 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 E03, if it still alarms E03, replace the control box and notify the after-sales service. |
| E05 | Pedal signal abnormal | 1. Check whether the pedal connector is loose or fall off, and restart the system after returning it to normal.  2. If it still does not work normally, please replace the control box or speed controller and notify the after-sales service. |
| 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. |
| E10 | Electromagnet overcurrent | 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. |
| E09  E11 | 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. |
| E16 | Abnormal thread trimming position | 1. Turn off the power of the system and check whether the thread trimming mechanism will return to the correct position.  2. Check if the setting of thread trimming protection switch detection is correct.  3. Check if the setting of thread trimming is correct.  4. 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. |
| E92 | Thread trimming (presser foot) stepping motor overcurrent | 1. Turn off the system power and observe whether thread trimming (presser foot) stepping motor is stuck. If it is stuck, remove the mechanical failure of the machine first. If it is normal, check whether connector of thread trimming (presser foot) stepping motor is loose or fall off, restore it to normal and restart the system.  2. If it still does not work normally, please replace the control box or thread trimming (presser foot) stepping motor and notify the after-sales service. |
| E94 | The positioning signal of thread trimming (presser foot) stepping motor encoder is abnormal | 1. Turn off the system power and observe whether thread trimming (presser foot) stepping motor is stuck. If it is stuck, remove the mechanical failure of the machine first. If it is normal, check whether the encoder connector of thread trimming (presser foot) stepping motor is loose or fall off, and restart the system after returning it to normal.  2. Check if there is oil on the grating code plate, if so, please clean it up, and restart the system after restoration.  3. If it still does not work normally, please replace the control box or thread trimming (presser foot) stepping motor and notify the after-sales service. |
| E95 | Thread trimming (presser foot) stepping motor encoder signal is abnormal | 1. Turn off the power of the system, check whether the encoder connector of thread trimming (presser foot) stepping motor is loose or fall off, restore it to normal and restart the system.  2. If it still does not work normally, please replace the control box or thread trimming (presser foot) stepping motor and notify the after-sales service. |
| E96 | Thread trimming (presser foot) stepping motor failed to start | 1. Turn off the system power, check whether thread trimming (presser foot) stepping motor power cord connector and encoder connector are loose or fall off, restore them to normal and restart the system.  2. If it still does not work normally, please replace the control box or thread trimming (presser foot) stepping motor and notify the after-sales service. |
| E97 | Stepping motor blocked when thread trimming | 1. Turn off the system power and observe whether thread trimming (presser foot) stepping motor is stuck. If it is stuck, remove the mechanical failure of the machine first. If it is normal, check whether thread trimming (presser foot) stepping motor power cord connector and encoder connector are loose or fall off, and restart the system after returning it to normal.  2. If it still does not work normally, please replace the control box or thread trimming (presser foot) stepping motor and notify the after-sales service. |
| E98 | Stepping motor blocked when presser foot lifting | 1. Turn off the system power and observe whether thread trimming (presser foot) stepping motor is stuck. If it is stuck, remove the mechanical failure of the machine first. If it is normal, check whether thread trimming (presser foot) stepping motor power cord connector and encoder connector are loose or fall off, and restart the system after returning it to normal.  2. If it still does not work normally, please replace the control box or thread trimming (presser foot) stepping motor and notify the after-sales service. |
| E99 | Stepping motor overcurrent when presser foot lifting | 1. Turn off the system power and observe whether thread trimming (presser foot) stepping motor is stuck. If it is stuck, remove the mechanical failure of the machine first. If it is normal, check whether connector of thread trimming (presser foot) stepping motor is loose or fall off, restore it to normal and restart the system.  2. If it still does not work normally, please replace the control box or thread trimming (presser foot) stepping motor and notify the after-sales service. |

**4 Port diagram**

**14P function port description**



1. Front suction solenoid valve: 1 (signal), 8 (+32V)

2. Long suction: 2 (signal), 9 (+32V)

3. LED light: 4 (DGND), 11 (+5V)

4. Broken thread protection: 6 (signal), 7 (DGND), 14 (+15V)

**6P function port description**



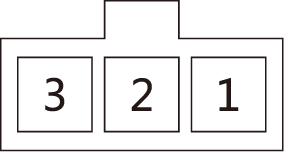
Pedal interface: 1 (DGND), 3 (+5V), 6 (signal)

**4P function port description**



Signal inputs: 1 (+15V), 2 (knee-control switch signal), 3 (DGND), 4 (sensor detection signal)

**220V AC port description**



1: Live wire, 2: null, 3: Naught wire