AITU Ai10
INSTRUCTION MANUAL AND MAINTENANCE

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Ai10 Lockstitch Sewing Machine User Manual

Safety operation signs and their meanings

The safety signs used in this instruction manual and on the product are intended to ensure your correct and safe operation of the product and to prevent injury to yourself and others. The patterns and meanings of the signs are as follows:

⚠ 危险	Ignoring this label and operating incorrectly may result in serious injury or death to personnel.
⚠ 注意	Failure to heed this marking and improper operation may result in personal injury and equipment damage.
	This symbol indicates "Caution". The pictogram inside the triangle shows what must be paid attention to. (For example, the pictogram on the left means "Caution: Risk of injury".)
	This symbol indicates "Prohibition".
	This symbol indicates "Mandatory Action". The pictogram inside the circle indicates what must be done. (For example, the pictogram on the left means "Must be earthed".)

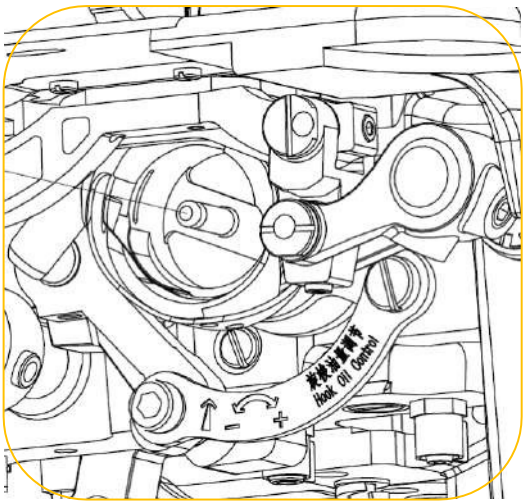
Safety Precautions

	Before opening the control box, you must first turn off the power switch, unplug the power cord from the socket, and wait at least 5 minutes before opening the control box cover. Touching high-voltage areas may cause personal injury.
Operating Environment	
	The sewing machine should not be used near strong electrical interference sources (such as high-frequency welders). Strong electrical interference may affect the normal operation of the sewing machine.
	The sewing machine must be used in an environment where the power supply voltage fluctuation is within ±20% of the rated voltage. Large voltage fluctuations will affect the normal operation of the sewing machine, and a **voltage stabilizer** is required.
	The sewing machine should be used within an ambient temperature range of 0℃ to 40℃. Low or high temperatures will affect the normal operation of the sewing machine.
	The sewing machine must be used in an environment where the relative humidity is within 30% to 85% and no condensation forms inside the equipment. Dry, humid or condensation environments will affect the proper operation of the sewing machine.
	The compressed air supply volume must be greater than the total air consumption required by the sewing machine. Insufficient compressed air supply will result in abnormal operation of the sewing machine.
	In case of a thunderstorm, turn off the power switch and unplug the power cord from the socket. Lightning may affect the proper operation of the sewing machine.
Installation	
	Only trained technicians are allowed to install the sewing machine. All spare parts for maintenance must be provided or approved by our

	company before use.
	Before installation is complete, do not connect the power supply. Accidentally pressing the start switch may cause the sewing machine to operate, resulting in injury.
	When tilting down or erecting the sewing machine head, please operate with both hands. Do not press the sewing machine forcibly. If the sewing machine loses balance and falls to the ground, it may cause personal injury or machine damage.
	Must be earthed. A loose ground connection may cause electric shock or malfunction.
	Before performing any maintenance or repair work, you must turn off the power and unplug the power cord. The control box contains high-voltage hazards; do not open it until at least five minutes after the power has been turned off.
	Points marked with the symbol ⚠ in this manual are safety precautions. They must be observed and strictly followed to avoid unnecessary damage.
Sewing	
	This sewing machine is only for use by personnel who have received safety operation training.
	This sewing machine must not be used for any purpose other than sewing.
	Wear goggles when operating the sewing machine. Failure to wear goggles may result in broken needle fragments flying into the eyes and causing injury.
	In the following situations, please disconnect the power immediately, otherwise injury may occur if the start switch is pressed by mistake. 1. When threading the needle 2. When replacing the needle 3. When the sewing machine is not in use or when leaving the machine
	During sewing, do not touch any moving parts or place objects against them, as this may cause personal injury or damage to the sewing machine.
	If the sewing machine malfunctions during operation, or if you hear abnormal noise or smell unusual odors, immediately disconnect the power supply. Then contact the store where you purchased it or a trained technician.
	If the sewing machine breaks down, please contact the store where you purchased it or a trained technician.
Maintenance and Inspection	
	Only trained technicians are allowed to perform repair, maintenance and inspection of the sewing machine.
	For electrical-related repair, maintenance and inspection, please promptly contact the professional personnel of the electric control manufacturer.
	Turn off the power and unplug the power cord in the following situations. Otherwise, injury may occur if the start switch is pressed by mistake. 1. Inspection, adjustment and maintenance 2. Replacement of wearing parts such as the fixed knife

	Before inspecting, adjusting or repairing any pneumatic equipment, first disconnect the air supply and wait until the pressure gauge pointer drops to 0.
	When adjustments must be made with the power switch and air supply switch connected, be extremely careful to observe all safety precautions.
	Damage to the sewing machine caused by unauthorized modification is not covered by the warranty.

目录



1. Product Introduction

- Please read this instruction manual before using the sewing machine. - Keep this instruction manual in a place where it can be easily accessed. - Use the sewing machine correctly under the guidance of safety operation instructions provided by trained or skilled personnel.

1.1 Product Specifications

Application	General fabric, thin fabric, medium-heavy fabric

Sewing Speed	Max. 5,000 rpm
Max. Stitch Length	5mm
Needle	Needle: DBx1 #9－#18, standard #11 at factory
Presser Foot Height (Automatic Lift)	Presser foot height: 9 mm (standard), 13 mm (max.)
Lubricating Oil	New Defrix Oil NO.10
Operating Space	306mm*127mm
Application	General fabrica,light-weight and mdeium-weight materials
Sewing speed	Max.5,000rpm
Max.Stitch length	5mm
Needle	DBx1 9~18#, Factory Setup11#
Presser foot lift	9mm（standard）;13mm（Max.）
Lubricating oil	New Defrix Oil NO.10
Operation space	306mm*127mm

1.2 Installation and Setup

Notes:

a. The sewing machine must be installed by trained technicians.

b. The sewing machine weighs about 46.5 kg, so installation must be carried out by at least two people.

c. Please entrust the electrical wiring to the store of purchase or a qualified electrician.

d. The power cord must be grounded (loose grounding may cause electric shock or malfunction).

e. Always turn off the power before unplugging the machine to avoid control box failure.

f. When tilting or laying down the sewing machine, use both hands and secure the worktable to prevent unintended movement.

g. Wear proper protection when applying or adding lubricating oil to prevent the fluid from getting into the mouth or eyes and causing irritation.

h. Do not allow any liquids other than grease and lubricating oil (such as water, drinks, etc.) to enter the sewing machine controller or head, as this may cause fire or electric shock. In case of accident, immediately turn off the power and unplug the machine, then contact the seller or relevant technicians.

1.3 Table Plate Drawing

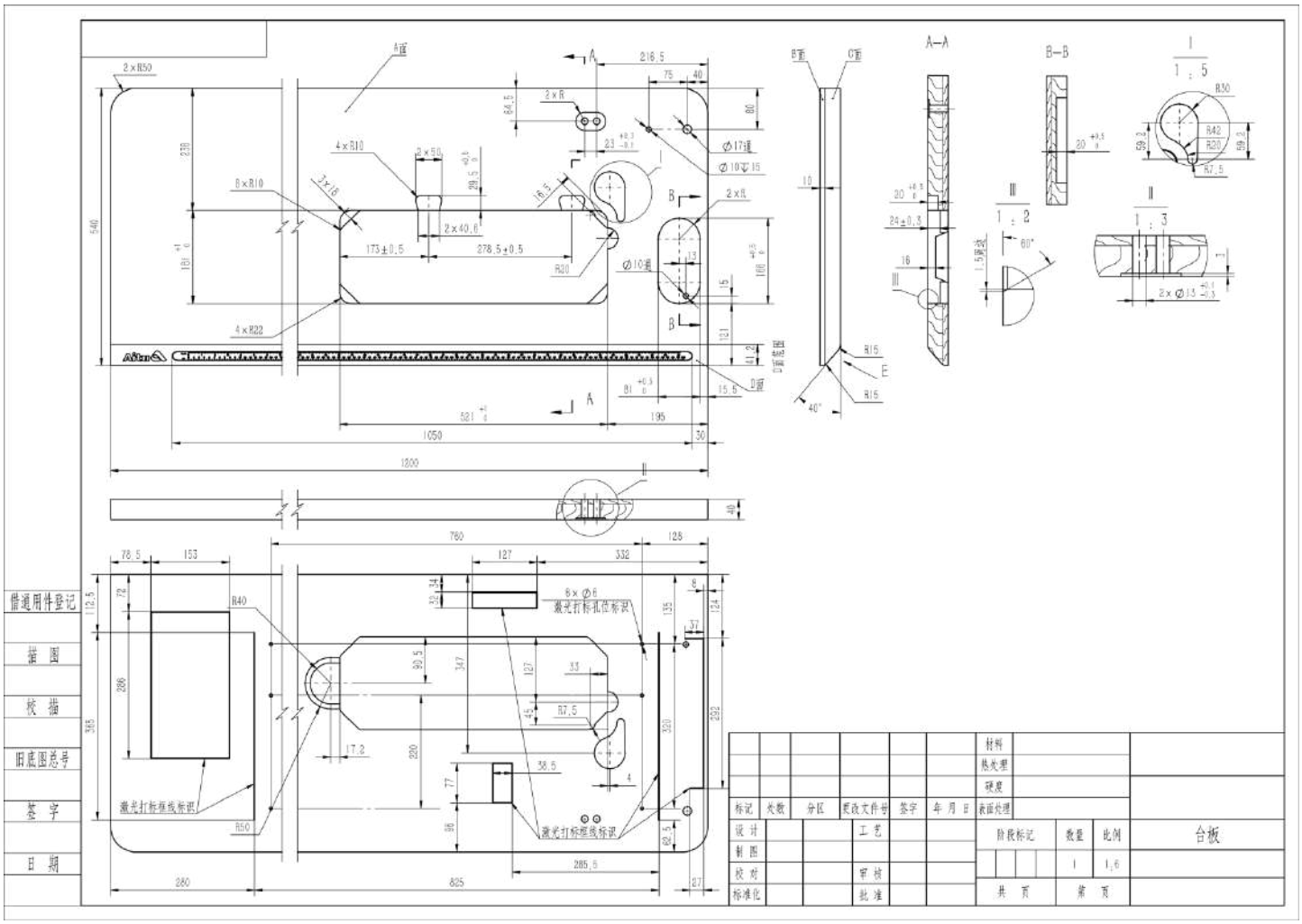


Figure 2.1

1.4Machine Handling

Carry the machine by hand or by holding points ① and ② as shown in the figure below, with point ③ as an auxiliary holding support point (Figure 2.2).

Figure 2.2

1.5 Placement and Installation of the Sewing Machine

1.5.1 Oil Pan Tray Installation

a. Attach the oil pan tray ① to the back of the table plate.
b. Install the oil pan cushions ① and the head connecting hook seats ③ onto the table plate as shown in the figure. During installation, place the four oil pan cushions ② at the four corners, ensuring they fit the rounded corners of the table plate. The three sides of each cushion ② must fit tightly against the table plate without misalignment or gaps, then secure them to the table plate with the head connecting hook seat screws. Insert the two head connecti hook seats ③ into the reserved slots on the table plate with the slotted end facing upward.
c. Snap the head connecting hooks ④ onto the shafts of the head connecting hook seats ③, then place the sewing head onto the table plate, making sure the reserved holes on the head base plate engage with the connecting hooks ④. Alternatively, you may install the head connecting hooks ④ into the mounting holes on the head base plate in advance, then place the head to couple naturally with the head connecting hook seats ③.

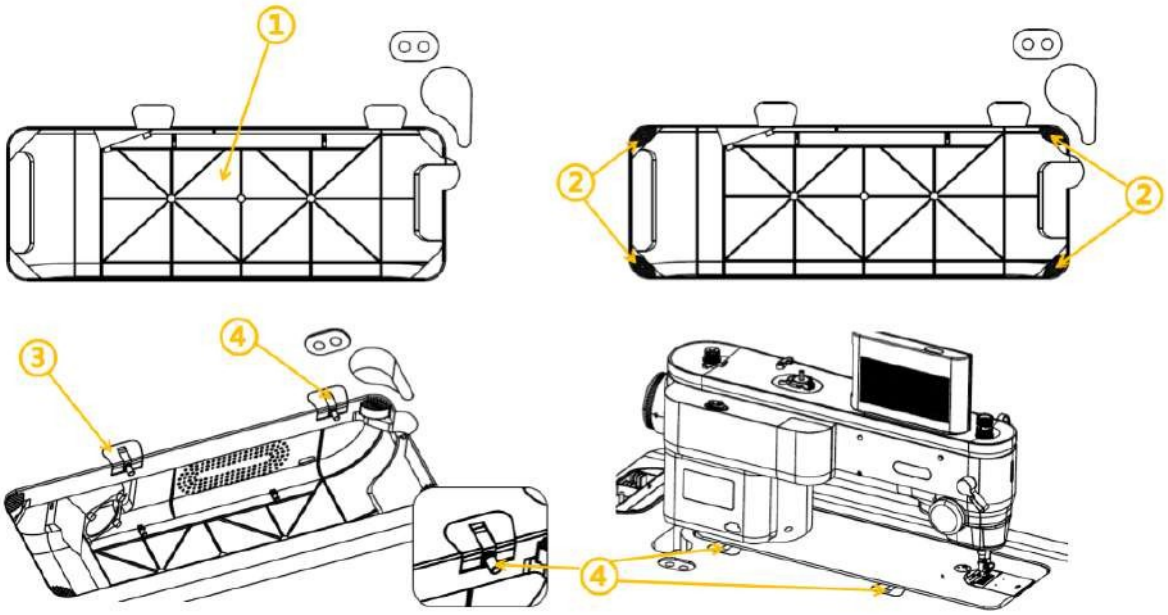
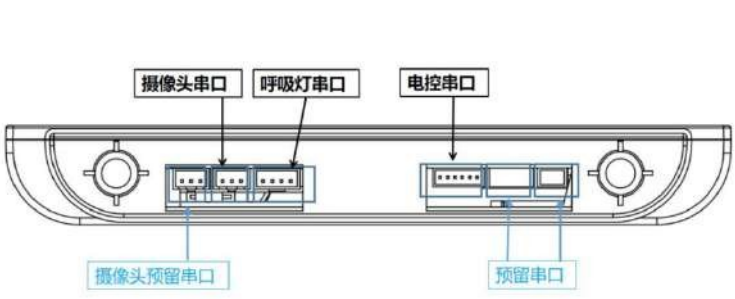


Figure 2.3

1.5.2 Screen Installation

a. Connect the wires on the top of the sewing head to the sockets on the bottom of the electronic screen according to the specifications.



b. Insert the two bracket pins of the electronic screen into the reserved holes on the top of the machine casing.

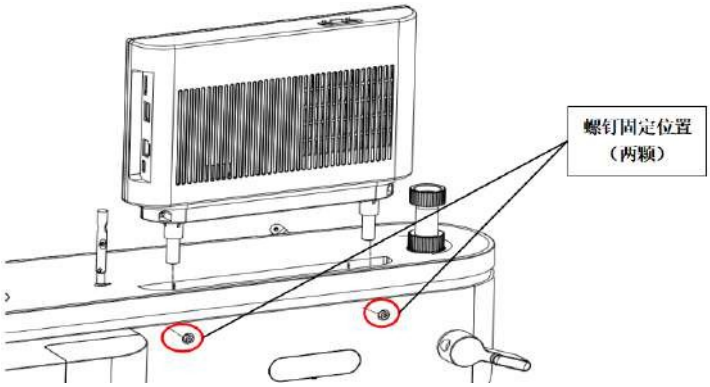
中文提取

- 摄像头串口

- 呼吸灯串口
- 电控串口
- 摄像头预留串口
- 预留串口

英文翻译

- Camera Serial Port
- Breathing Light Serial Port
- Electronic Control Serial Port
- Reserved Camera Serial Port
- Reserved Serial Port



中文提取

螺钉固定位置（两颗）

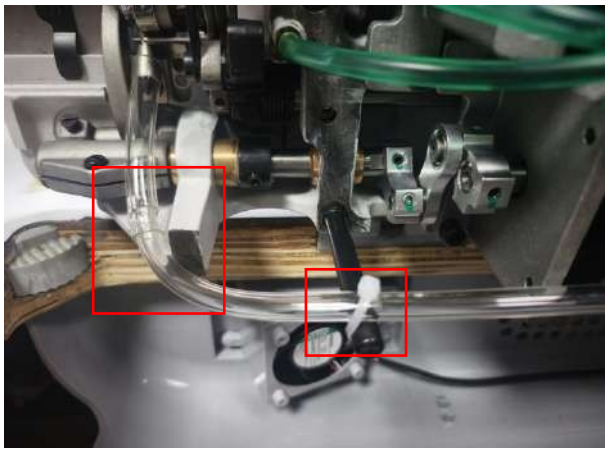
英文翻译

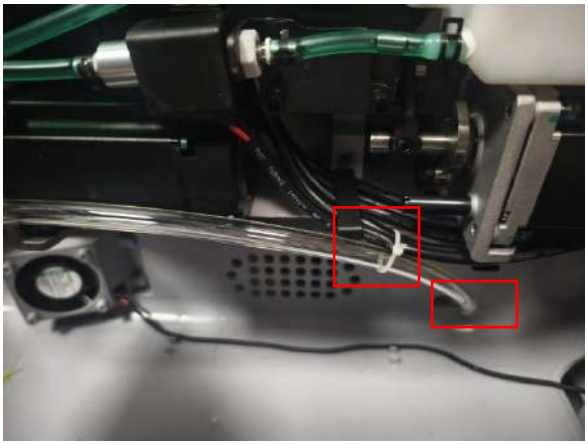
Screw fixing positions (two screws)

c. Tighten and fix with two M6 hexagon socket screws from the accessories on the side of the sewing head.

1.5.3 Installation of the Suction Belt and Air Pipe

a. Connect the suction air pipe and secure it with cable ties at the machine base; take care not to interfere with the knife holder.
b. Pass the air pipe through the hole at the rear of the tray and connect it to the suction device.





1.5.4 Assembly and Installation of the Thread Stand

a. As shown in Figure 2.4, identify the thread posts and upper/lower thread guides according to their shapes, assemble them in order from top to bottom (note that the threaded guide with

holes is at the upper end), and tighten the screws.

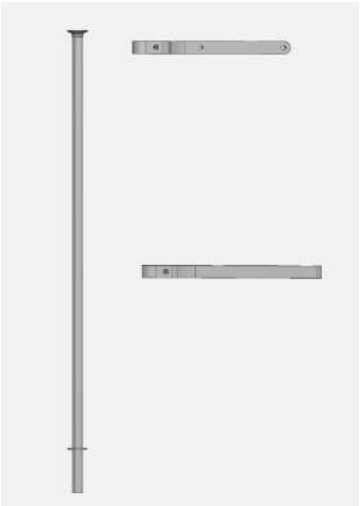


Figure 2.4

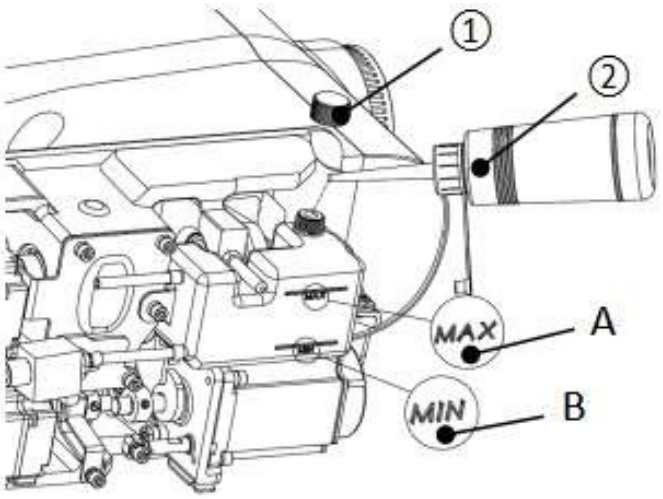
Figure 2.5

Figure 2.6

b. As shown in Figure 2.5, identify the thread holder rod, thread disc lock washer, thread disc pad, and thread disc according to their shapes, and assemble them in order from top to bottom (connect as shown in Figure 3).
c. As shown in Figure 2.6, identify the thread stand circular base assembly, washer, and star knob according to their shapes, and assemble them in sequence.

1.5.5 Lubrication Method

When using the sewing machine for the first time or after a long period of non-use, be sure to add or refill the original manufacturer's New Defrix No. 1 oil into the hook oil reservoir. Note: During oiling, protect your eyes, mouth and nose to prevent lubricating oil from entering and causing injury. Do not connect the power supply before oiling is completed. After oiling, store the oil can properly and keep it out of reach of children to avoid accidental ingestion, which may cause vomiting and diarrhea.



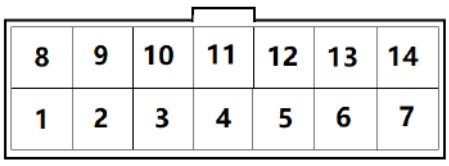
① Tilt the sewing head over, place it steadily against the head cushion, and ensure it is firmly positioned. ② Unscrew the oil box cover on the sewing head to expose the oil filling port. ③ Take out the oil can from the accessories and unscrew the nozzle cap. ④ Align the oil can nozzle with the oil filling port and add oil until the oil level reaches the A-MAX upper mark. When the oil level in the oil box falls below the B-MIN lower mark, you must add oil immediately. ◆ Note: Check the oil level regularly and always keep it above the MIN lower mark to ensure normal oil supply to the hook.

1.6 Function and Configuration Description

S/N	Functions and Configuration	Description
1	Fabric Sewing Program Library	One-touch saving and switching of sewing parameters
2	Presser Foot Lifting & Thread Trimming	Precise control by stepping motor
3	Multi-Trace Feeding System	Dual servo motor control for feed dog lifting and feeding
4	Less Bird Nesting	Short thread trimming by the knife head at the start of sewing to reduce bird nesting
5	Thin & Thick Material Detection	Real-time fabric thickness monitoring and parameter adjustment
6	Adjustable Thread Tension	Electronic visual adjustment of thread tension
7	Electronic Feed Dog Height Adjustment	Electronic adjustment buttons for settings
8	Electronic adjustment of presser foot lifting height	Electronic adjustment buttons for settings
9	Sewing Count	Count by stitch / Count by thread trimming
10	Needle Bar Top Dead Center Stop Function	After sewing, the needle bar can return to the top dead center / bottom dead center position.
11	Needle Type	DP×5 11#
12	Maximum Free Sewing Speed	5000 rpm (M-pattern)
13	Sewing Speed Limit	200～5000 rpm (50 rpm increment)
14	Stitch Length	0.1～5.0 mm (minimum resolution 0.1 mm)
15	Rated Power	550W
16	Recommended Operating Temperature Range	0℃~40℃
17	Recommended Operating Humidity Range	30%～85% (non-condensing)
18	Power Supply Voltage	AC 220V ± 20%;50/60Hz

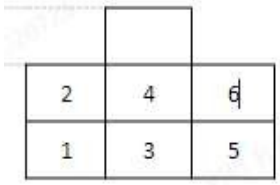
Product Implementation Standard: QCYXDK0004—2023 *Computer Control System for Industrial Sewing Machines*

1.7 14P and 8+6P Interface Definition



8	9	10	11	12	13	14
Solenoid Signal — Electronic Thread Clipper	Solenoid Power — Purchased Rear Roller Presser Foot Lifting Signal (Backup)	Sensor Input — Reverse Sewing Signal	Sensor Input — Needle Repair Signal (Backup)	Sensor Input — Electronic Wrench Signal	Solenoid Signal — Thread Tension Solenoid	Solenoid Signal — Thread Trimming Solenoid (Backup)
1	2	3	4	5	6	7
Solenoid Power — Electronic Thread Clipper	Solenoid Power — Purchased Rear Roller Presser Foot Lifting (Backup)	Analog Input — Material Thickness Detection	LED Ground — 0V	LED Power — 5V	Solenoid Power — Thread Tension Solenoid	Solenoid Power — Thread Trimming Solenoid (Backup)

Solenoid Power - Electronic Thread Clamp	Solenoid Power - Rear Puller Reverse Stitch - Backup	Solenoid Power - Backup	Electronic Thread Tension Output Signal 1

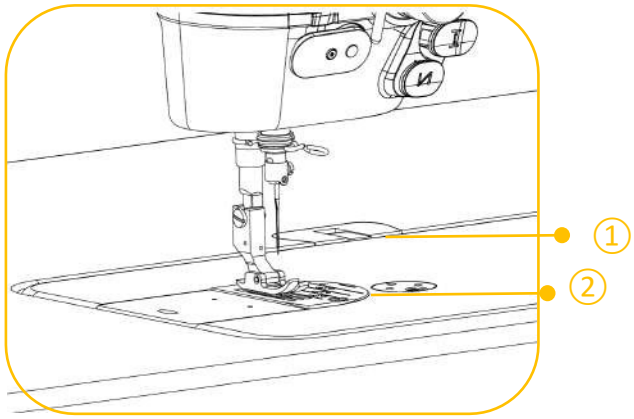


2	4	6
Backstitch Input Signal	Stitch Completion Input Signal	Electronic Wrench
1	3	5
Thickness Detection Input Signal	Power -GND	Power - 5V

2. Sewing Preparation & Setup

2. 1 Installing the Needle

Always disconnect the power supply before installing the needle. Accidentally pressing the foot controller may activate the sewing machine and cause personal injury.



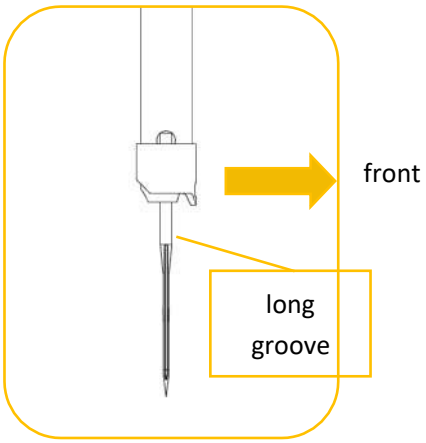


Figure 2.1 Process Task Interface Figure 2.2 Process Task Interface

a、 Turn the handwheel of the sewing machine to move the needle bar to the highest position.

b、 Loosen screw ①.

c、 Insert needle ② vertically into the needle bar hole (make sure it is fully inserted), conf that the long slot on the needle faces the left side of the machine, then tighten screw ①.(Note: Use an appropriate screwdriver for this operation.)

2.2 Installation and Insertion of the Bobbin Case

⚠ Always disconnect the power or turn off the machine before inserting or removing the bobbin case.

Accidentally pressing the foot controller may activate the sewing machine, resulting in personal injury.

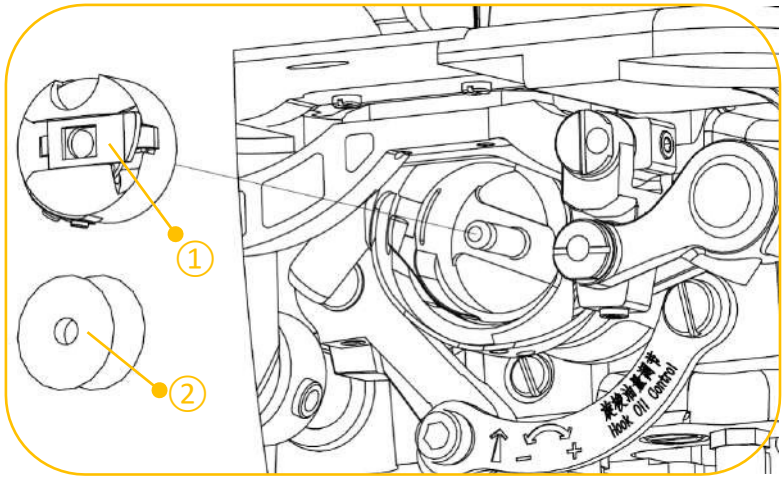


Figure2.3 Handling of the bobbin case

a. Rotate the handwheel to raise the needle until it is positioned above the needle plate.

b. Pull out the latch ① on the bobbin case with your finger, then remove and take out the bobbin case along the axial direction.

c. Release the latch ① and take out the bobbin ②.

When installing the bobbin case, ensure that latch ① is securely fastened onto the bobbin holder pin to guarantee proper installation.

2.3 Bobbin Threading Method

⚠ During bobbin thread winding, no objects shall be leaned against moving parts, nor any body parts come into contact with moving parts, to prevent personal injury or sewing machine damage caused by moving components.

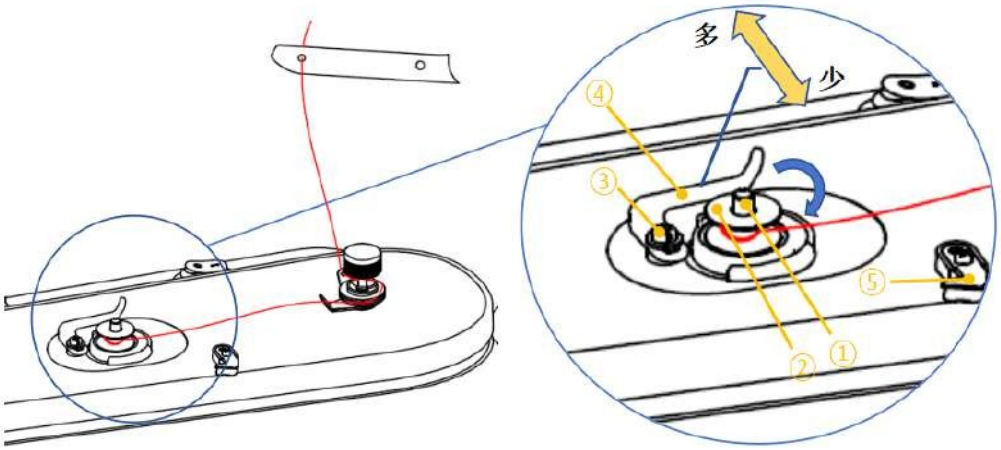


Figure 2.4 Bobbin thread Winding

A. Place the bobbin ② onto the bobbin winder shaft ① and press it down firmly.

B. Pass the selected bobbin thread through the thread stand hole and the bobbin thread tensione hole, then wind several turns of thread clockwise around the bobbin ②.

C. Push the bobbin winder presser plate ④ toward the bobbin ② until they are in close contact

D. Turn on the power switch, and raise the presser foot by lifting the presser bar lifter (this step can be omitted during sewing).

E. Depress the foot control to start the machine and wind the bobbin thread. 。

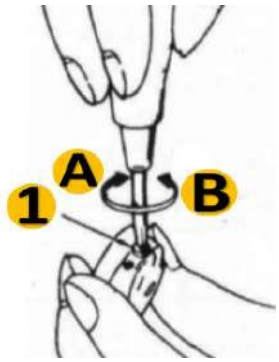
F. When bobbin winding is completed, the presser plate ④ will automatically return to its original position.

G. Remove the bobbin, and cut the thread with the thread cutter ⑤.

● Loosen the screw ③, then rotate and move the presser plate ④ to adjust the amount of bobbi thread wound on the bobbin.

● The appropriate amount of bobbin thread wound on the bobbin is 80% of its capacity.

2.4 Bobbin Thread Tension Adjustment



Bobbin Thread Tension Adjustment

a. Turn the tension screw ① **clockwise (direction A)** to **increase** the bobbin thread tension.b. Turn the tension screw ① **counterclockwise (direction B)** to **decrease** the bobbin thread tension.

Figure 2.5 Bobbin Thread Tension Adjustment

2.5 Upper Thread Threading Method

During threading, **turn off the power supply or shut down the machine .** Accidental depression of the foot control may activate the sewing machine, resulting in persona injury.

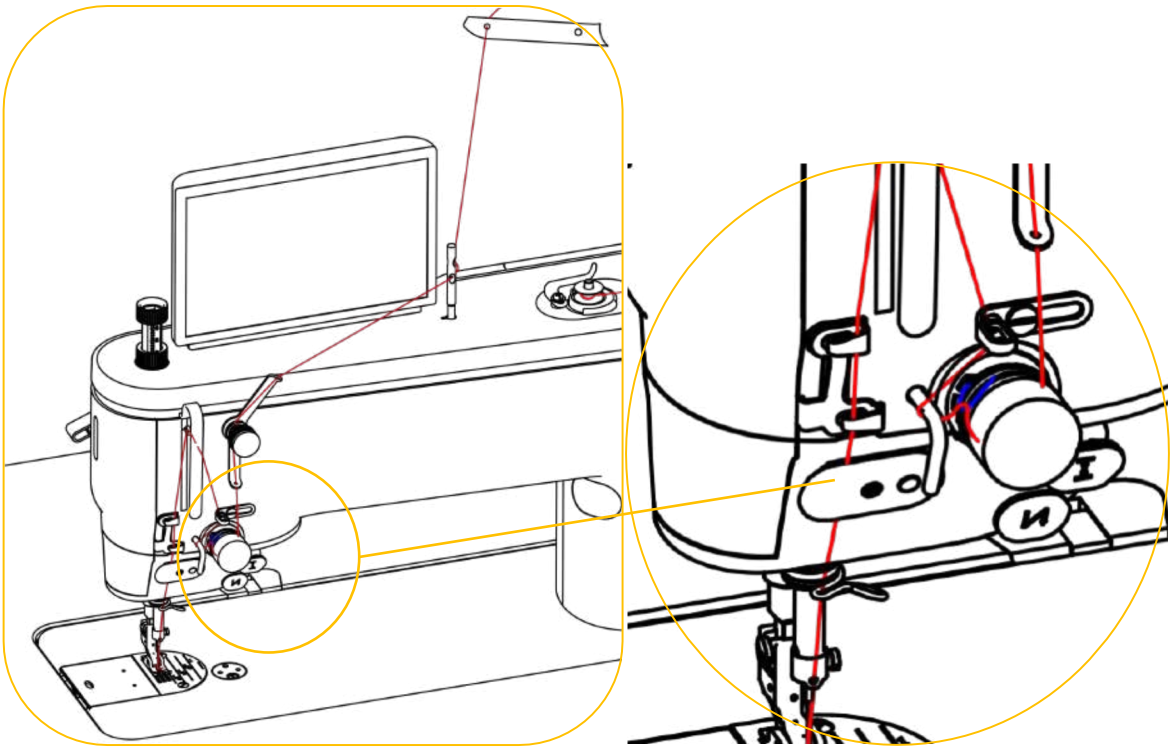


Figure 2.6 Bobbin Thread Tension Adjustment

As shown in Figure 2.6: Turn the handwheel to raise the thread take-up lever to its highest position. Following the sequence shown in the diagram, thread the needle thread through each hole and the thread clamp clearance from top-right to bottom-left in order. Leave a needle thread tail of approximately 30 mm extending from the needle eye.

3. Operation Manual for Panel

3.1 Display and Button Description

The control panel of the Ai10 lockstitch machine adopts advanced touch operation technology widely used in the sewing industry. Its user-friendly interface and convenient operation bring an innovative experience to daily use. Users can perform corresponding operations by simply touching the screen with their fingers. （Notes on Using the Touch Panel： To prevent permanent damage to the touch panel, avoid touching the screen with sharp objects during operation. ）

3.1.1 Main Interface

According to the operating status of the system, the LCD module of the control panel (Figure 3.1) displays icons for the current sewing mode, front/rear tacking settings, feed dog height, thread tension, etc. Touch “More Functions” to enter the More Functions interface (Figure 3.2), which shows icons for presser foot lifting, needle stop position, thread trimming, etc. The description of the function icons on the control panel is shown below.

中文提取

- 计件
- 转速调节
- 针距调节
- 缝纫模式
- 牙齿高度调节
- 少鸟巢调节

英文翻译

- Piece Count
- Speed Adjustment
- Stitch Length Adjustment
- Sewing Mode
- Feed Dog Height Adjustment
- Less Bird Nesting

Figure 3.1 Touch Panel Main Interface 1 (Touch for More Functions)

Figure 3.2 More Functions Interface

中文提取

- 中途抬压脚高度
- 同步时序调节

英文翻译

- Mid-sewing Presser Foot Height
- Synchronization Timing Adjustment

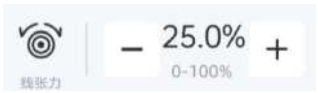
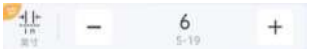
3.1.2 Button Functions

Common Buttons: The general operation buttons for all interfaces are listed below: :

Icon	Description	Function
	Main Interface	Touch the icon to return to the main interface from the current interface.
	Back	Touch the icon to return to the previous interface from the current interface.
	Off	Touch the icon to close the pop-up window.
	On	Indicates that this function is enabled.
	Off	Indicates that this function is disabled.
	Plus/Minus Keys	Press the Plus/Minus keys to adjust the value.
	Page Key	Press the left/right arrows to switch interfaces. (The current page is displayed on the left of the value, and the total pages on the right.)

Main Interface Button Function Description:

Description	Icon	Note
Sewing Sample		Click to enter the pattern package library interface.
Piece count		Click to enter the piece count setting interface.
Front tack key		Click to switch between forward needle backstitching once, front tack, or off. Long press to enter the adjustment interface for forward needle backstitching settings and forward double backstitching settings.
Back tack key		Click to switch between backstitching, back tack, or off. Long press to enter the adjustment interface for backstitching settings and back double backstitching settings.

Mode Switch		Click to switch sewing modes. From left to right: Free Sewing, Multi-Segment Sewing, W-Sewing, Pattern Sewing. Long press Multi-Segment Sewing, W-Sewing, or Pattern Sewing to enter the sewing mode setting interface.
Thread Tension		If + is pressed, the thread tension increases. If - is pressed, the thread tension decreases.
Electronic Thread clamp		Click to turn on or off.
Feed Dog Height Adjustment		If + is pressed, the feed dog height increases. If - is pressed, the feed dog height decreases.
Thickness Detection		If clicked, it will be turned on or off.
Speed Adjustment		If + is pressed, the speed increases. If - is pressed, the speed decreases. If held down, it changes continuously.
Stitch Length Adjustment		If + is pressed, the stitch length increases. If - is pressed, the stitch length decreases. If held down, it changes continuously.
Inch Mode		If + is pressed, the number of stitches per inch increases. If - is pressed, the number of stitches per inch decreases. If held down, the inch value changes continuously.
AMH Mode		Displays the current mode; cannot be clicked or changed.
Needle Position Key		If clicked, it switches the needle stop position after sewing(Down needle position /Up needle position).
Bird Nest Reduction		If clicked, the bird nest reduction function is toggled on or off.
Thread Trim Key		If clicked, the thread trimming function is toggled on or off.
Presser Foot Lift Height After Thread Trimming		If + is pressed, the presser foot height increases. If - is pressed, the presser foot height decreases. If held down, the value changes continuously.
Presser Foot Lift Height		If + is pressed, the presser foot height increases. If - is pressed, the presser foot height decreases. If held down, the value changes continuously.
Back-and-Forth Lockstitch		If clicked, it switches between off, front lock stitch, back lock stitch, and front & back lock stitch.

Synchronization Timing		• If + is pressed, the timing increases. • If - is pressed, the timing decreases. • If held down, the value changes continuously.
Presser Foot Lift		If clicked, the presser foot lift function is toggled on or off. If turned off, both lift presser foot after trimming and mid-stitch presser foot lift are disabled simultaneously.
Lift Presser Foot After Trimming		If clicked, the auto presser foot lift after thread trimming function is toggled on or off.
Mid-Stitch Presser Foot Lift		If clicked, the mid-stitch presser foot lift function is toggled on or off.
Help		If clicked, the interface for icon explanation, operation instructions, and feedback & suggestions will be displayed.
Settings		If clicked, the settings interface will be displayed, where you can set functions such as language, network, screen, etc.

3.2 General Screen Settings

3.2.1 Language Settings

Click the icon on the main interface (), then click the icon () to enter the **Language Settings** interface (Fig. 3.3). Select your language on the interface to switch the machine voice, and select the time zone in the lower-left corner.

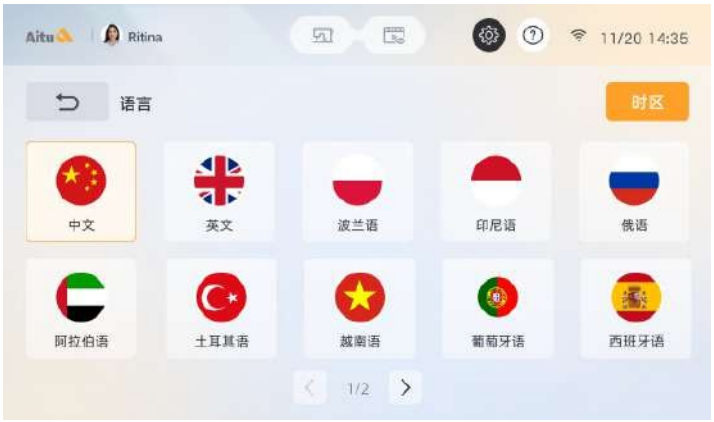


Figure 3.3 Language Selection

3.2.2 Screen Settings

Click **Screen** in the Basic Information interface （屏幕）, enter the Screen Settings interface (Fig. 3.4), Slide your finger（ ） to adjust the brightness and volume.

Click the icon （ ） to turn the lock screen function on or off. The lock screen time cannot be adjusted after auto-lock is disabled. Click the + / − buttons to adjust related parameters; settings are saved automatically.

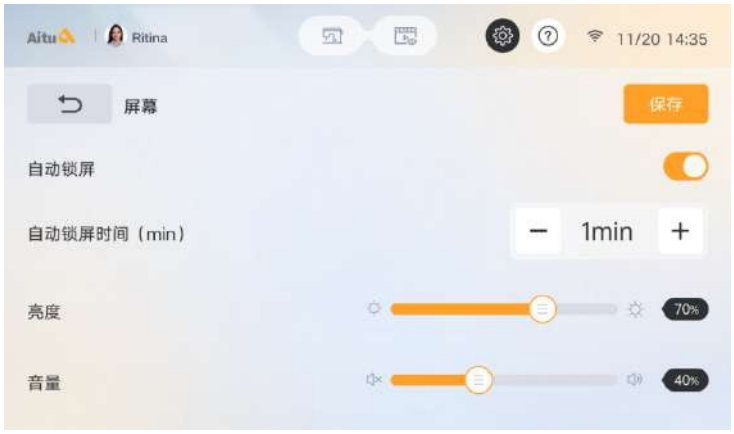


图 3.4 Screen Settings

3.2.3 WIFI Settings

①Click **Network** on the settings interface （网络）, then click **WIFI** （ WIFI ） to enter the WIFI settings interface (Fig. 3.5), Select the desired WIFI name and click it to enter the WIFI connection interface (Fig. 3.6).

②Click the **Enable WIFI** icon （ ） WIFI function on or off.

③You can add a hidden WIFI network by selecting **Add Network Manually** (Fig. 3.7).

Figure 3.5 WIFI settings

Figure 3.6 WIFI Connection

Figure 3.7 Add Network Manually

3.2.4 Server Settings

Click "Server" on the web interface. 服务器), Enter the Server Settings interface (Fig. 3.8), then click Settings.

Figure 3.8 Server Settings

3.2.5 Environmental Setup

Click "Environment Configuration" on the web interface. 环境配置), Enter the Environment Configuration interface (Fig. 3.9), select domestic or overseas, then click save to switch the connection node.

Fig. 3.9 Environmental Setup

3.2.6 Version Information

Click "Version" (ⓘ 版本), Enter the Version Information interface (Fig. 3.10) to view the system version number and other information.

Figure 3.10 Version Query

4. Function Introduction

4.1 Fabric & Garment Pattern Library

According to different garments and fabrics, users can customize, modify and save the corresponding parameters such as sewing trajectory, feed dog height, and timing as required. When the sewing fabric is changed during production, the corresponding parameter package can be switched with one click to quickly adapt to the newly replaced sewing material.
The usage of the package library is as follows:

1. Select the garment category on the main interface (

), tnter the Garment Category Library (Fig. 4.1), click the Fabric Library to switch to the fabric libra interface.

2. After selecting the garment category, enter the corresponding parameter library interface. For example, click Regular in the garment types. (
) 。According to the specific fabric characteristics selected, the system will automatically match and apply the data of thread tension, sewing mode, sewing timing, and feed dog height.

3. When the specific parameters are not applicable, you may click the image. (
) Then click "Add Custom". (
), Add garment categories and fabric characteristics (Fig. 4.2/4.3). Modify parameters as required, and click**Confirm Parameters** after completion.(

) Save the settings, and the system will associate and generate the corresponding fabric number (Fig. 4.5).

4. Click (

) Synchronize garment library and fabric settings from the web interface.

4. Click (更新服装库) to synchronize the clothing library and fabric library settings from the web version.

Figure 4.1 Clothing Category Library

Figure 4.2 Add Custom

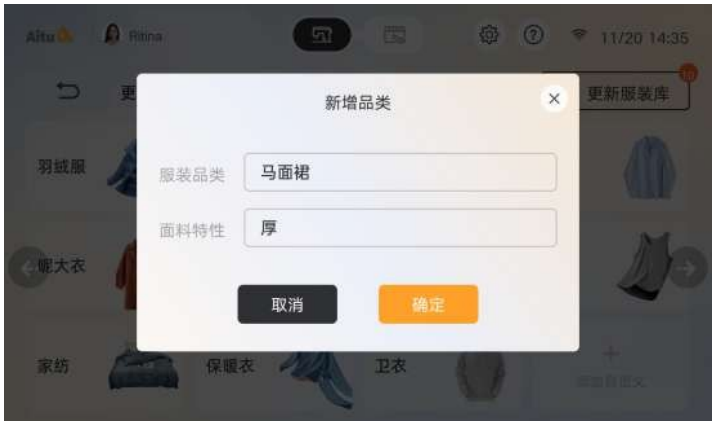


Figure 4.3 Preset Parameters

Figure 4.4 Custom Parameter Adding Interface

4.2 Thickness Detection

Thick Material Detection Settings：

1. *On the main interface, tap the Thickness Detection icon ( ) in More Functions to enable the fabric adaptive mode and enter the thickness detection interface. Use the "+" and "-" keys to adjust the thick material height setting, tooth height, and timing. You can select the thick material trajectory. Turn on the adaptive compensation switch and the adaptive thread tension switch.*

Figure 4.5 Thickness Detection

4.3 Figure 4.5 Thickness Detection

Electronic Wire Tension Setting：

Online Tension Adjustment: Press the “+” and “-” keys 

) to modify parameters. The increment is 0.5%. Parameters are automatically saved after modification.

4.4 AMH Sewing Mode

Mode Switch & Description
Match the mode according to the selected fabric;
the corresponding mode can also be selected in Custom Add.
Mode M: Suitable for most ordinary fabrics
Mode A: Suitable for elastic fabrics
Mode H: Suitable for thick fabrics

4.5 Precise Oil Supply

Precise Oil Supply Mode Adjustment：

In the parameter setting interface, press "Precise Oil Supply Settings" (精准供油设置) to enter the precise oil supply setting interface (Figure 4.6). Press the icon to switch modes (Figure 4.7). Four modes are available: No Oil, Light Oil, Full Lubrication, and Custom. In Custom mode, press the "+" and "-" keys to adjust related parameters. Parameters are automatically saved after modification.

Figure 4 .6 Precise Oil Supply Settings

Figure 4 .7 Oil Supply Standard

4.6 Less Bird Nest

Less Bird Nest Adjustment：

In the main interface, press the ( ) button to enable the Less Bird Nest function, and press it again to disable it (Figure 4.8). This function must be enabled together with the electronic thread tensioner ( ).

Note: Enable the Less Bird Nest function at the start of sewing together with the front lockstitch function ( ) to control the thread tail within 6 mm for a more beautiful stitch.

Figure 4 .8 Less Bird Nest

4.7 Needle Up Position Setting

①Users can set the needle up position according to their own needs. Press the menu button (⚙) on the main interface to enter the menu interface.

②Select "Parameter Settings", turn to the second page, then press "Needle Up Position Setting" (Figure 4.9). Rotate the handwheel to adjust the needle up position, then press "Save" to complete the setting.

Figure 4 .9 Needle Up Position Setting Interface

5. Common Parameter Settings

5.1 Piece Count Setting

Short press the piece count icon (2900 / 5800) on the main interface to enter the piece count parameter setting interface (Figure 5.1). Set the target quantity and select thread trimming or stitch count as required.

Figure 5 .1 Piece Count Parameter Settings

5.2 Forward Backstitch Setting and Forward Double Backstitch Setting

①On the main interface, tap the forward backstitch icon ( ) to switch to the forward double backstitch function. Long press the forward double backstitch icon ( ) to enter the forward double backstitch setting interface (Figure 5.2). Adjust the relevant parameters using the keys. The parameters will be automatically saved after modification.

②On the main interface, tap the forward double backstitch icon ( ). Function off ( ).

③On the main interface, tap the forward backstitch icon ( ) to switch to the forward backstitch function. Long press the forward backstitch icon ( ) to enter the forward backstitch setting interface (Figure 5.3). Adjust the relevant parameters using the keys. The parameters will be automatically saved after modification.

Figure 5 .2 Forward Double Backstitch Setting

Figure 5 .3 Forward Backstitch Setting

5.3 Rear Backstitch Setting and Rear Double Backstitch Setting

①On the main interface, tap the rear backstitch icon ( ) to switch to the rear double backstitch function. Long press the rear double backstitch icon ( ) to enter the rear double backstitch setting interface (Figure 5.4). Adjust the relevant parameters using the keys. The parameters will be automatically saved after modification.

②On the main interface, tap the rear double backstitch icon ( ).Function off ( ).

③On the main interface, tap the rear backstitch icon ( ) to switch to the rear backstitch function. Long press the rear backstitch icon ( ) to enter the rear backstitch setting interface (Figure 5.5). Adjust the relevant parameters using the keys. The parameters will be automatically saved after modification.

Figure 5 .4 Rear Double Backstitch Setting

Figure 5 .5 Rear Backstitch Setting

5.4 Front and Rear Tight Stitch Setting

①On the main interface, tap the lock stitch icon ( ). The function switches in sequence:

front tight stitch ( ), rear tight stitch ( ), front and rear tight stitch ( ).

②To change parameters such as stitch count and distance for front and rear tight stitches, tap ( ) to enter the menu bar (Figure 5.6), then tap Parameter Settings (参数设置) to enter the Front/Rear Lock Stitch Settings in (Figure 5.7) and set the relevant parameters.

Figure 5 .6 Menu Bar

Figure 5 .7 Front/Rear Lock Stitch Settings

5.5 Mode Switch / Pattern Sewing Mode Jump

①On the main interface, tap the free sewing icon ( ) to switch to multi-segment sewing mode. Long press the multi-segment sewing icon ( ) to enter the multi-segment sewing setting interface (Figure 5.8). Tap the "+" and "-" keys to adjust the relevant parameters. The parameters will be automatically saved after modification.

②On the main interface, tap the multi-segment sewing icon ( ) to switch to W sewing mode instead of multi-segment sewing mode. Long press the W sewing icon ( ) to enter the W sewing setting interface (Figure 5.9). Ta ( ) and ( ) to adjust the relevant parameters. The parameters will be automatically saved after modification.

③ On the main interface, tap the W sewing icon ( ) to switch to pattern sewing mode. Long press the pattern sewing icon ( ) to enter the pattern sewing setting interface (Figure 5.10). Tap the "+" and "-" keys to adjust the relevant parameters. The parameters will be automatically saved after modification.

④ On the pattern sewing main interface, long press the pattern sewing icon ( ) to enter the pattern selection interface (Figure 5.11). Tap the "▲" and "▼" keys to turn pages. Tap the pattern icon ( ) to enter the pattern sewing setting interface. Tap the "+" and "-" keys to adjust the relevant parameters. The parameters will be automatically saved after modification.

Figure 5 .8 Multi-segment Sewing Setting

Figure 5 .9 W Sewing Speed Setting

Figure 5 .10 Pattern Sewing Speed Setting

Figure 5 .11 Pattern Sewing Style Selection

5.6 Feed Dog Height

In Feed Dog Height ( ), tap the "+" and "-" keys to modify parameters. Modified parameters are saved automatically.

5.7 Presser Foot Height After Thread Trimming / Mid-thread Lifting

In Presser Foot Height After Thread Trimming ( ), tap the "+" and "-" keys to modify parameters. Modified parameters are saved automatically.

In Mid-operation Presser Foot Height ( ), tap the "+" and "-" keys to modify parameters. Modified parameters are saved automatically.

5.8 Synchronous Timing Setting

For fabrics of different thicknesses and materials, sewing requirements can be met by adjusting the timing parameters. Previously, the machine required adjusting the locking screw of the feed cam to change the feed timing. This machine allows direct electronic adjustment, saving time on removing the rear cover. The default value of this parameter is 60, and it can be adjusted within the range of 0 - 100. Adjusting the timing changes the speed of the material feed relative to the main shaft, making the feed advance or retard. Increasing the parameter retards the feed trajectory, suitable for thin fabrics. Decreasing the parameter advances the feed trajectory, suitable for thick fabrics. Tap the "+" and "-" keys of Synchronous Timing ( ) to modify parameters. Modified parameters are saved automatically.

6. Menu Bar Interface Description

6.1 Menu Bar Interface

Currently, all interfaces in the menu bar do not match voice announcements, only key feedba is provided. Tap the menu key ( ) on the main interface to enter the menu bar interface (Figure 6.1). Tap the corresponding option to enter the parameter setting interface of that function module.

Figure 6 .1 Menu Bar

6.2 Parameter Settings

Tap "Parameter Settings" (参数设置) on the menu bar interface to enter the parameter settings interface (Figure 6.2 and Figure 6.3), which has two pages in total.

Figure 6 .2 Parameter Settings I

Figure 6 .3 Parameter Settings II

6.2.1 Foot Pedal

Tap "Foot Pedal" (踏板) on the parameter settings interface to enter the pedal settings interface (Figure 6.4 and Figure 6.5), which has two pages in total. On the pedal settings interface, tap the "+" and "-" keys to adjust relevant parameters, or select the parameter value and enter the value directly. Modified parameters are saved automatically.

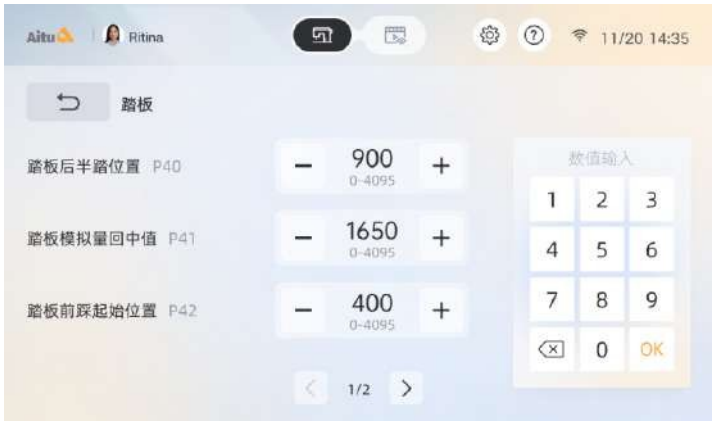


Figure 6 .4 Foot Pedal Parameter Settings I

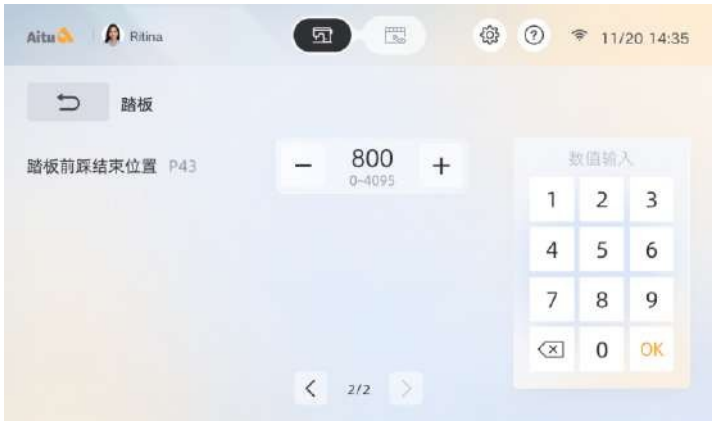


Figure 6 .5 Foot Pedal Parameter Settings II

6.2.2 Reverse Stitch Setting After Thread Trimming

On the parameter setting interface, click Reverse Stitch Setting After Thread Trimming to enter the corresponding setting screen (Figure 6.6). Click the icon to enable or disable the reverse stitch function after thread trimming. When the reverse stitch function after thread trimming is turned on, turn the handwheel to adjust the spindle angle, and press the Start key to save the adjusted parameter values.

Figure 6.6 Setting for Needle Up Reverse After Thread Cutting

6.2.3 Electronic Thread Clamp Settings

In the Parameter Settings interface, tap **“Electronic Thread Clamp Settings”** to enter the electronic thread clamp setting screens (Figures 6.7 / 6.8 / 6.9 / 6.10), totaling four pages.
In this interface, tap the “+” or “–” buttons to adjust parameters.
All modified parameters are saved automatically.

Figure 6.7 Electronic Thread Clamp Setting 1

Figure 6.8 Electronic Thread Clamp Setting 2

Figure 6.9 Electronic Thread Clamp Setting 3

Figure 6.10 Electronic Thread Clamp Setting 4

6.2.4 Start Sewing Speed Settings

In the Parameter Settings interface, tap **“Start Sewing Speed Settings”** to enter the start speed setting screen (Figure 6.11).
Tap the “+” or “–” buttons to adjust parameters.
Changes are saved automatically.

Figure 6.11 Setting the Initial Sewing Speed

6.2.5 Electronic Knee Lifter Settings

The electronic knee lifter is ergonomically designed to significantly reduce operator fatigue during operation. In the Parameter Settings interface, tap **“Electronic Knee Lifter Settings”** to enter the micro presser foot lift setting interface (Figures 6.12 / 6.13 / 6.14), totaling two pages. Tap the “+” or “–” buttons to adjust parameters.Changes are saved automatically.

Figure 6.12 Electronic Knee Lifter Setting 1

Figure 6.13 Electronic Knee Lifter Setting 2

Figure 6.14 Electronic Knee Lifter Setting 3

6.2.6 Thread Trimming Settings

In the Parameter Settings interface, tap "Thread Trimming Settings" to enter the thread trimming setting screens (Figures 6.15 and 6.16).

Tap "+" or "-" to adjust parameters.

You may also directly input values using the numeric keypad.

Press OK to save. All parameters are saved automatically after modification.

Figure 6.15 Thread Trimming Setting 1

Figure 6.16 Thread Trimming Setting 2

6.2.7 Anti-Bird's Nest Suction Settings

In the Parameter Settings interface, tap **“Anti-Bird’s Nest Suction Settings”** to enter the suction settings screen.
Tap the icon to turn the anti-bird’s nest suction function ON or OFF.

Figure 6.17 Reduced Suction for Bird’s Nest Prevention

6.2.8 Stitch Length Lock

In the Parameter Settings interface, tap **“Panel Stitch Length Lock”** to enter the stitch lock screen (Figure 6.18)

2. Tap the icon to enable or disable the stitch length lock function.

Note:

This function only locks the stitch length on the main interface.

Stitch length settings in the garment library are not locked.

Figure 6.18 Stitch Length Lock Setting

6.2.9 Upper Stop Needle Position Setting

From the main interface, tap the Menu button to enter the menu screen.

1. Select “Parameter Settings”, turn to the second page, and tap “Upper Stop Needle Position Setting” (Figure 6.19). Manually rotate the handwheel to adjust the needle stop position. Tap **“Save”** to complete the setting.

Figure 6.19 Stitch Length Lock

6.2.10 Front Backstitch Settings

In the Parameter Settings interface, tap **“Front Backstitch Settings”** to enter the front backstitch setting screen (Figure 6.20).

Figure 6.20 Front Backtack Setting

6.2.11 Rear Backstitch Settings

In the Parameter Settings interface, tap **“Rear Backstitch Settings”** to enter the rear backstitch setting screen (Figure 6.21). Tap “+” or “－” to adjust parameters. Changes are saved automatically. Four adjustable parameters: Number of stitches, Total distance, Sewing speed, Sewing direction (forward or backward).

Figure 6.21 Rear Backtack Setting (Updated Interface)

6.2.12 Safety and Maintenance Settings

In the Parameter Settings interface, tap **"Safety and Maintenance Settings"** to enter the corresponding screen (Figure 6.22). Tap the icons to enable or disable:Low oil level alarm,Machine tilt safety protection.

Figure 6.22 Safety and Maintenance

6.2.13 Thick/Thin Material Detection

1. In the Parameter Settings interface, tap **"Thick/Thin Detection"** to enter the setting screen (Figure 6.23). Set thick material height,Feed dog height,Timing parameters.
2. Select thick material trajectory. Tap the icon to enable/disable:Adaptive stitch length compensation,Adaptive thread tension(Figure 6.24).

Figure 6.23 Thickness Detection 1

Figure 6.24 Thickness Detection 2

3.Set high-density anti-thread-throw function (Figure 6.25): Enable/disable:High-density anti-throw switch, Anti-material-push switch.Adjust:High-density anti-throw speed threshold,Engagement angle.

Figure 6.25 High-Density Anti Thread-Throw Function

6.2.14 Precision Oil Supply

In the Parameter Settings interface, tap **“Precision Oil Supply Settings”** to enter the precision oiling screen (Figure 6.26). Tap the icon to switch between four modes (Figure 6.27): No oil,Micro oil,Full lubrication,Custom. In Custom mode:Tap “+” or “-” to adjust parameters.Changes are saved automatically.

Figure 6.26 Precision Oil Supply Setting

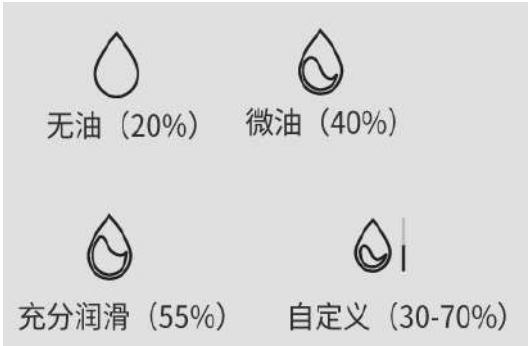


Figure 6.27 Oil Supply Standard

6.2.15 Rotary Hook Oil Volume Adjustment

⚠ Turn off the power before adjusting the screw.

Accidental pedal operation may cause injury.

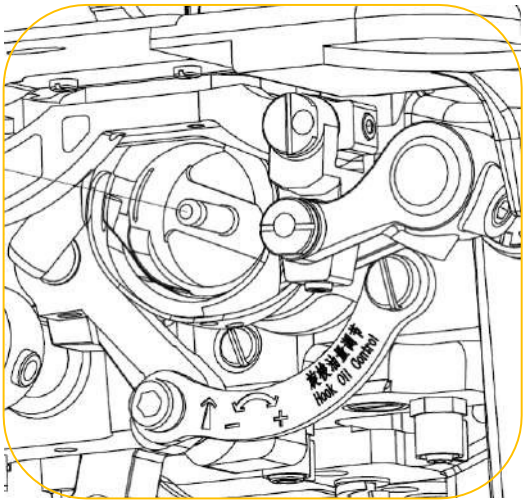


Figure 6.28 Hook Oil Volume Adjustment

Adjusting Oil Volume
Turn oil adjustment screw ① counterclockwise (recommended 90° - 180° per adjustment) → Oil volume decreases.)
Turn screw clockwise (recommended 90° - 180° per adjustment) → Oil volume increases) .
Oil Volume Testing
After adjustment:Enter the oil volume test interface (Figure 6.29). Tap **Start** to run the program. During oil confirmation stage, hold test paper under oil outlet for 15 seconds. Check oil pattern on the paper. Refer to Figure 6.30:Line-shaped oil mark, Dot-shaped oil mark. Oil flow quantity is not directly related to oil supply amount. Replace oil after the first month of use. Afterward, replace oil every six months.

Figure 6.29 Rotary Hook Oil Volume Adjustment Diagram

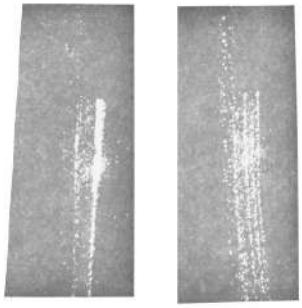


Figure 6.30 Left: Linear Oil; Right: Dot Oil

6.2.16 Electronic Wrench

In the Parameter Settings interface, tap**"Electronic Wrench Settings"** to enter the setting screen (Figure 6.31). Select the electronic wrench function mode using the button.

Figure 6.31

After selecting the electronic wrench function mode, click the button ( ) to select the stitch length gear and the supplementary stitch length as required.

6.3 Monitoring Mode and Monitoring Parameter Table (M Parameters)

Tap **“Monitoring Mode”** to enter the monitoring interface (Figure 6.32).
The monitoring mode includes all monitoring parameters.
Use the page buttons to scroll.

Figure 6.32 Monitoring Mode

Parameter	Definition	Parameter	Definition
M1	Main shaft speed feedback value	M2	Pedal AD value

M3	Stepper motor zero position	M4	Bus AC voltage
M5	Main shaft encoder error codes -1	M6	Main shaft encoder error codes -2
M7	Main shaft encoder error codes -3	M8	Main shaft encoder error codes -4
M9	Encoder CRC error count	M10	Encoder fault count
M15	Main shaft encoder value (0 - 2880)	M16	Tilt switch IO value
M17	Reverse switch IO value	M18	Half-stitch switch IO value
M19	Stitch compensation switch IO value	M20	Servo motor overcurrent detection port
M21	Stepper motor overcurrent detection port	M23	Initial electrical angle of main shaft motor
M24	Mechanical angle value	M26	Tilt switch value
M27	Thick/thin detection value	M28	Electronic knee lifter value
M29	Pedal status value	M30	Historical error data 1
M31	Historical error data 2	M32	Historical error data 3
M33	Historical error data 4	M34	Historical error data 5
M35	Historical error data 6	M36	Historical error data 7
M37	Historical error data 8	M39	Feed motor zero position
M40	Lift feed motor zero position	M41	Main control version number
M42	Main control sub-version	M43	Slave main version
M44	Slave sub-version	M46	Host APP version (year/month)
M47	Host APP version (day/hour)	M48	Slave APP version (year/month)
M49	Slave APP version (day/hour)	M51	Main shaft historical max current
M53	Stepper motor historical max current	M66	Lift feed motor historical max current
M67	Lift feed motor current max current	M72	Feed motor historical max current
M73	Feed motor current max current	M83	Anti-bird’s nest action current
M84	Thread trimming action current	M85	Presser foot lifting action current

7. Process Analysis

7.1 Process Selection (System Analysis)

Workers can select processes independently, and the system will conduct an analysis for the selected process (Figure 7.1).

Figure 7.1 Process Analysis Interface

7.1.1 Login

① Enter the background version employee ID on the video library interface to log in (Figure 7.2).

② Tap **QR Code Login** to enter the QR code login interface, and scan the employee QR code to log in (Figure 7.3).

Figure 7.2 Login Interface

Figure 7.3 QR Code Scanning Interface

7.1.2 Process Tasks

① After successful login, the worker will enter the process task interface (Figure 7.4).

② Tap the selection button, select the production order being processed (Figure 7.5), and then select the corresponding process for the production order (Figure 7.6).

Figure 7.4 Process Task Interface

Figure 7.5 Production Order Interface

Figure 7.6 Process Selection Interface

8. Alarm Function Introduction

8.1 Prompt Interface and Alarm Parameter Table (A Parameters)

For example, a tip-over alarm prompt will pop up on the interface when the sewing machine tips over with the safety tip-over switch activated (Figure 8.1).

Figure 8.1 Alarm Interface

Alarm Parameter Table

Alarm Code	Description
A01	If the sewing machine tips over with the safety tip-over switch turned on, the tip-over alarm interface will pop up and the sewing machine will stop running.
A02	Alarm for full stitch count
A03	Alarm for full piece count
A04	Head button short circuit
A05	Low oil level alarm
A06	Foot pedal insertion alarm (detected at startup, not displayed if unplugged during operation)
A07	Electronic control shutdown
A08	Base plate fan abnormality

8.2 Error Interface and Error Parameter Table (E Parameters)

The screen will jump to the error interface when the machine malfunctions (Figure 8.2). The user must resolve the issue according to the corrective measures to close the interface and restore normal machine operation.

Figure 8.2 Error Interface

Error Parameter Table

Fault Code	Code Meaning	Corrective Measures
Error-02	Spindle motor hardware overcurrent	● Restart the system; contact the local service provider if the fault persists.
Error-03	System undervoltage	● Check if the controller is connected to a voltage source below AC 130VConnect to a rated working voltage source and restart ● Contact the local service provider if the fault persists after troubleshooting.
Error-04	System overvoltage	● Check if the controller is connected to a voltage source exceeding AC 275VConnect to a rated working voltage source and restart ● Contact the local service provider if the fault persists after troubleshooting.
Error-05	Spindle motor position abnormality	● Check if the spindle motor rotation torque is abnormal ● Contact the local service provider if the fault persists after troubleshooting.
Error-08	Spindle motor stalling	● Check if the spindle motor rotation torque is abnormal ● Contact the local service provider if the fault persists after troubleshooting.
Error-11	Spindle motor origin finding failure	● Check if the spindle power cable is properly connected ● Contact the local service provider if the fault persists after troubleshooting.
Error-13	Spindle motor software overcurrent	● Restart the system; contact the local service provider if the fault persists.
Error-15	Spindle motor speed abnormality	● Restart the system; contact the local service provider if the fault persists.
Error-16	Spindle motor current detection circuit abnormality	● Restart the system; contact the local service provider if the fault persists.
Error-17	Spindle encoder communication abnormality	● Check if the spindle encoder cable is properly connected ● Contact the local service provider if the fault persists after troubleshooting.
Error-18	Spindle motor encoder calibration failure	● Check if the spindle encoder cable is properly connected or if the encoder is damaged ● Contact the local service provider if the fault persists after troubleshooting.
Error-19	Spindle motor power cable disconnected	● Check if the spindle motor rotation torque is abnormal ● Contact the local service provider if the fault persists after troubleshooting.
Error-23	Spindle motor overspeed	● Check if the spindle encoder has been moved or replaced without calibration ● Contact the local service provider if the fault persists after

Fault Code	Code Meaning	Corrective Measures
		troubleshooting.
Error-24	Electronic control memory abnormality	● Restart the system; contact the local service provider if the fault persists.
Error-27	Spindle motor startup failure	● Check if the spindle power cable is properly connected ● Contact the local service provider if the fault persists after troubleshooting.
Error-32	Stepper motor hardware overcurrent	● Restart the system; contact the local service provider if the fault persists.
Error-35	Stepper motor position abnormality	● Check if the thread trimming mechanism and presser foot lifting mechanism are jammed abnormally ● Contact the local service provider if the fault persists after troubleshooting.
Error-38	Stepper motor stalling	● Check if the thread trimming mechanism and presser foot lifting mechanism are jammed abnormally ● Contact the local service provider if the fault persists after troubleshooting.
Error-41	Stepper motor origin finding failure	● Check if the thread trimming mechanism and presser foot lifting mechanism are jammed abnormally ● Contact the local service provider if the fault persists after troubleshooting.
Error-46	Stepper motor current detection circuit abnormality	● Restart the system; contact the local service provider if the fault persists.
Error-49	Stepper motor power cable disconnected	● Check if the stepper motor power cable is properly connected ● Contact the local service provider if the fault persists after troubleshooting.
Error-51	Stepper motor stalling at startup	● Check if the thread trimming mechanism and presser foot lifting mechanism are jammed abnormally ● Contact the local service provider if the fault persists after troubleshooting.
Error-53	Stepper motor overspeed	● Restart the system; contact the local service provider if the fault persists.
Error-56	Stepper motor action timeout	● Check if the relevant action parameters of thread trimming and presser foot lifting are set abnormally; try restoring factory parameters ● Contact the local service provider if the fault persists after troubleshooting.
Error-62	Needle bar lifter motor hardware overcurrent	● Restart the system; contact the local service provider if the fault persists.

Fault Code	Code Meaning	Corrective Measures
Error-64	System overvoltage	● Check if the controller is connected to a voltage source exceeding AC 275VConnect to a rated working voltage source and restart ● Contact the local service provider if the fault persists after troubleshooting.
Error-65	Needle bar lifter motor position abnormality	● Check if the needle bar lifter crank assembly, swing shaft and feed dog bracket are jammed abnormally ● Contact the local service provider if the fault persists after troubleshooting.
Error-68	Needle bar lifter motor stalling	● Check if the needle bar lifter crank assembly, swing shaft and feed dog bracket are jammed abnormally ● Contact the local service provider if the fault persists after troubleshooting.
Error-71	Needle bar lifter motor origin finding failure	● Check if the needle bar lifter crank assembly, swing shaft and feed dog bracket are jammed abnormally ● Contact the local service provider if the fault persists after troubleshooting.
Error-75	Needle bar lifter motor speed abnormality	● Restart the system; contact the local service provider if the fault persists.
Error-76	Needle bar lifter motor current detection circuit abnormality	● Restart the system; contact the local service provider if the fault persists.
Error-79	Needle bar lifter motor power cable disconnected	● Check if the needle bar lifter motor power cable is properly connected ● Contact the local service provider if the fault persists after troubleshooting.
Error-80	Needle bar lifter motor encoder disconnected	● Check if the needle bar lifter motor power cable is properly connected ● Contact the local service provider if the fault persists after troubleshooting.
Error-81	Needle bar lifter motor stalling at startup	● Check if the needle bar lifter crank assembly, swing shaft and feed dog bracket are jammed abnormally ● Contact the local service provider if the fault persists after troubleshooting.
Error-83	Needle bar lifter motor overspeed	● Restart the system; contact the local service provider if the fault persists.
Error-92	Feed motor hardware overcurrent	● Restart the system; contact the local service provider if the fault persists.
Error-95	Feed motor position abnormality	● Check if the feed crank assembly, swing shaft and feed dog bracket are jammed abnormally ● Contact the local service provider if the fault persists after

Fault Code	Code Meaning	Corrective Measures
		troubleshooting.
Error-98	Feed motor stalling	● Check if the feed crank assembly, swing shaft and feed dog bracket are jammed abnormally ● Contact the local service provider if the fault persists after troubleshooting.
Error-101	Feed motor origin finding failure	● Check if the feed crank assembly, swing shaft and feed dog bracket are jammed abnormally ● Contact the local service provider if the fault persists after troubleshooting.
Error-105	Feed motor speed abnormality	● Restart the system; contact the local service provider if the fault persists.
Error-106	Feed motor current detection circuit abnormality	● Restart the system; contact the local service provider if the fault persists.
Error-109	Feed motor power cable disconnected	● Check if the feed motor power cable is properly connected ● Contact the local service provider if the fault persists after troubleshooting.
Error-110	Feed motor encoder disconnected	● Check if the feed motor encoder cable is properly connected ● Contact the local service provider if the fault persists after troubleshooting.
Error-111	Feed motor stalling at startup	● Check if the feed crank assembly, swing shaft and feed dog bracket are jammed abnormally ● Contact the local service provider if the fault persists after troubleshooting.
Error-113	Feed motor overspeed	● Restart the system; contact the local service provider if the fault persists.
Error-401	Communication abnormality	● Check if the communication cable between the controller and the panel is properly connected ● Contact the local service provider if the fault persists after troubleshooting.

9. User Parameter List (P Parameters)

Parameter Item	Range	Default Value	Parameter Definition
P01	200-5000	3800	Free sewing speed
P03	0~1	1	Needle stop position selection: 0 = upper stop, 1 = lower stop
P04	200~3000	1800	Front reinforcement sewing speed

Parameter Item	Range	Default Value	Parameter Definition
P05	200~3000	1800	Rear reinforcement sewing speed
P06	200~3000	1800	W-sew maximum speed
P07	200~4000	3800	Multi-segment sewing maximum speed
P09	0~1	0	Slow start sewing switch
P10	1~9	2	Slow start sewing stitch count
P11	100~800	400	Slow start sewing speed
P12	(-8~8)	2	1.2 multi-function button
P13	200~4000	3200	Reverse sewing maximum speed
P14	200~800	200	Stitch compensation speed
P15	0~3	1	Stitch compensation mode: 0 = Off, 1 = Time-controlled, 2 = Half-stitch compensation, 3 = Single-stitch compensation
P16	0~4095	3200	Thickness detection zero value
P17	0~4095	2700	Thickness detection thick material trajectory threshold
P18	0~50	5	Seam allowance stitch count
P19	200~4000	3000	Thickness detection thick material maximum speed
P20	(-50~50)	5	Seam allowance stitch length compensation value
P21	0~50	0	Thickness detection sensitivity
P22	1~4	4	Thickness detection thick material trajectory
P23	0~4095	1100	Foot pedal thread trimming position analog value (automatic presser foot lifting off)
P24	0~4095	350	Foot pedal thread trimming position analog value (automatic presser foot lifting on)
P28	0~359	130	Thread clamping start angle (front reinforcement sewing & W-sew on)
P29	0~359	320	Thread clamping end angle (front reinforcement sewing & W-sew on)
P30	0~359	130	Thread clamping start angle (front dense sewing on)
P31	0~359	340	Thread clamping end angle (front dense sewing on)
P33	0~80	40	Thread clamping electromagnet holding phase duty cycle
P35	0~3000	800	1st stitch speed of sewing start
P36	0~3000	1500	2nd stitch speed of sewing start
P37	0~3000	0	3rd stitch speed of sewing start

Parameter Item	Range	Default Value	Parameter Definition
P38	0~4000	1000	1st stitch speed limit (reinforcement sewing on)
P39	0~4000	0	2nd stitch speed limit (reinforcement sewing on)
P40	0~4095	900	Foot pedal rear press (presser foot lifting) position
P41	0~4095	1650	Foot pedal neutral position
P42	0~4095	400	Foot pedal front press low-speed operation start position (relative to neutral)
P43	0~4095	800	Foot pedal front press low-speed operation end position (relative to neutral)
P44	0~4095	4000	Foot pedal analog maximum value
P46	0~1	0	Thread pull-back switch after thread trimming
P47	200~360	359	Thread pull-back angle for thread trimming
P49	100~500	250	Thread trimming speed
P53	0~1	1	Presser foot lifting switch
P54	0~255	5	Automatic test operation time
P55	0~255	3	Automatic test stop time
P57	1~60	10	Presser foot lifting holding time
P58	0~359	275	Upper needle stop mechanical angle
P59	0~359	160	Lower needle stop angle
P60	200~5000	3800	Automatic test operation speed
P61	0~1	0	Spindle encoder zero calibration flag
P62	0~15	0	Special operation mode selection: 0 = Normal sewing mode, 1 = Simple sewing, 2 = THETA0 test, 3 = Automatic test
P63	0~1	0	Start dense sewing switch
P64	0~1	0	Stop dense sewing switch
P66	0~1	1	Safety switch enable
P70	0~3	0	Call parameter
P73	0~99	0	IoT channel selection
P74	200~2500	1000	Start dense sewing speed
P75	0~12	2	Start dense sewing stitch count
P76	200~2500	1800	Stop dense sewing speed
P77	0~12	2	Stop dense sewing stitch count

Parameter Item	Range	Default Value	Parameter Definition
P78	10~359	130	Thread clamping start angle
P79	0~359	320	Thread clamping end angle
P80	0~359	130	Thread clamping start angle (bird's nest prevention on)
P81	0~359	320	Thread clamping end angle (bird's nest prevention on)
P84	200~3000	2000	Pattern sewing maximum speed
P85	0~1	0	Pattern multi-segment sewing switch
P86	0~50	8	Start dense sewing stitch length
P87	0~1	0	Start dense sewing direction: 1 = Forward sewing, 0 = Reverse sewing
P88	0~50	5	Stop dense sewing stitch length
P89	0~1	1	Stop dense sewing direction: 1 = Forward sewing, 0 = Reverse sewing
P90	0~1	0	Lock stitch length switch
P91	0~50	50	Maximum stitch length
P92	-99~99	0	W-sew first segment reduction
P93	-99~99	0	W-sew last segment reduction
P102	0-1	1	Extra forward stitch after front reinforcement sewing
P103	100~250	250	Anti-nest prevention 1st stitch maximum speed
P104	0~9999	0	Current stitch count value
P105	0~9999	0	Current piece count value
P106	1~50	1	Stitch count unit
P107	0~9999	9999	Total stitch count
P108	0~6	0	Stitch count mode
P109	1~50	1	Piece count unit
P110	0~9999	9999	Total piece count
P111	0~6	0	Piece count mode
P112	80~120	100	M-trajectory forward sewing stitch length compensation
P113	80~120	100	M-trajectory reverse sewing stitch length compensation
P114	80~120	100	Reserved trajectory forward sewing stitch length compensation
P115	80~120	100	Reserved trajectory reverse sewing stitch length compensation

Parameter Item	Range	Default Value	Parameter Definition
P116	80~120	100	A-trajectory forward sewing stitch length compensation
P117	80~120	100	A-trajectory reverse sewing stitch length compensation
P118	80~120	100	H-trajectory forward sewing stitch length compensation
P119	80~120	100	H-trajectory reverse sewing stitch length compensation
P120	1~180	100	Half-stitch compensation delay judgment time
P121	150~250	200	Single-stitch compensation delay judgment time
P122	100~800	200	Start sewing speed
P127	1~200	4	Thread clamping electromagnet full output time
P129	1~500	500	Thread clamping electromagnet protection time
P130	0~1	0	Safety switch logic
P131	1~500	300	Safety switch alarm confirmation time
P132	1~200	50	Safety switch alarm recovery time
P134	0~1	0	Power feed switch
P136	0~3	0	Foot pedal speed control curve mode
P137	0~1	0	Power law speed control curve auxiliary parameter
P138	0~1	0	Extra reverse stitch switch after front reinforcement sewing
P139	0~1	0	Reinforcement sewing switch after mid-process thread trimming in fixed-stitch sewing
P148	1~500	150	Foot pedal presser foot lifting confirmation time
P149	0~4000	1500	Two-segment slope: interrupt turning point speed
P150	0~4095	2700	Two-segment slope: middle foot pedal analog value
P152	0~1	1	Thread loosening switch
P153	0~359	0	Thread loosening start angle
P154	0~359	196	Thread loosening end angle
P155	1~60	10	Thread loosening electromagnet protection time
P156	1~200	120	Thread loosening electromagnet full output time
P157	0~200	60	Thread loosening electromagnet duty cycle
P158	0~359	150	Thread loosening end angle at sewing start
P161	0~100	60	Thread loosening electromagnet calibration value

Parameter Item	Range	Default Value	Parameter Definition
P164	0~9999	0	Machine lock password
P174	0~1	0	Multi-segment sewing operation mode selection: 1 = Automatic thread trimming + reinforcement sewing for each segment
P175	0~9999	0	Current operating hours of machine lock function
P176	0~60	0	Reserved
P177	0~9999	0	Machine lock countdown
P185	0~4000	2000	Fan startup speed
P192	0~255	127	IoT event upload

10. Sewing Machine Maintenance

WARNING: Cut off the power supply before performing any cleaning and maintenance work.Accidental depression of the foot pedal may cause the sewing machine to act and result in personal injury.

DANGER: Always wear protective goggles and gloves when using lubricating oil and grease to prevent oil from getting into eyes or mouth, which may cause inflammation and allergic reactions. Keep oil out of the reach of children.

WARNING: Secure the workbench when the sewing machine head is tipped over to prevent accidental movement.Use both hands when tipping the sewing machine head down or lifting it up.

10.1 Daily Cleaning and Maintenance

WARNING: Cut off the power supply before performing any cleaning and maintenance work.Perform daily cleaning and maintenance to maintain the sewing machine's performance and extend its service life.

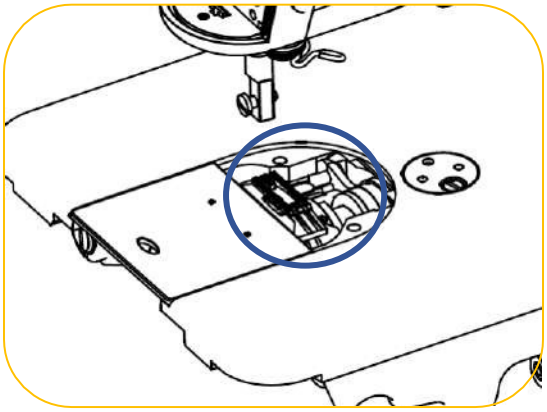


Figure 10.1 Cleaning the feed dog area

Clean Lint and Dust from the Feed Dog Area (Figure 10.1)

1. Remove the needle plate and presser foot.
2. Use a soft-bristled brush to clear lint and dust from the feed dog, knife rest and blade (marked areas).
3. Refit the needle plate and presser foot.

11. Sewing Machine Standard Inspection

11.1 Adjustment of the Clearance Between the Hook and the Needle

Matching Relationship Between the Needle and the Hook

The matching relationship between the needle and the hook shall comply with the following requirements:

1. Turn the handwheel to lower the needle bar to its lowest position, then loosen the set screw of the needle bar connecting column.**Note**: Confirmation of the needle bar height.
2. Pull the needle bar; when viewed horizontally through the inner edge of the inner hook, **1/2 of the needle eye shall be exposed at the bottom** (the needle must be installed in place). Align the needle's thread groove to the left, then tighten the set screw of the needle bar connecting column.**Note**: Confirmation of the hook position.
3. First turn the hook so that the hook point faces upward, then turn the handwheel to raise

Clean Lint and Dust from the Hook Area (Figure 10.2)

1. Remove the bobbin case.
2. Use a soft-bristled brush to clear lint and dust from the bobbin, bobbin case and hook (marked areas).
3. Refit the needle plate and presser foot.

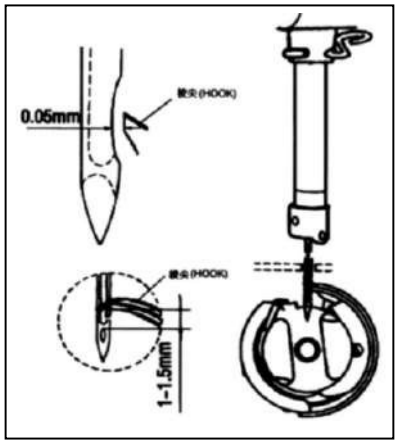


Figure: Clearance between hook point and needle (0.05mm)

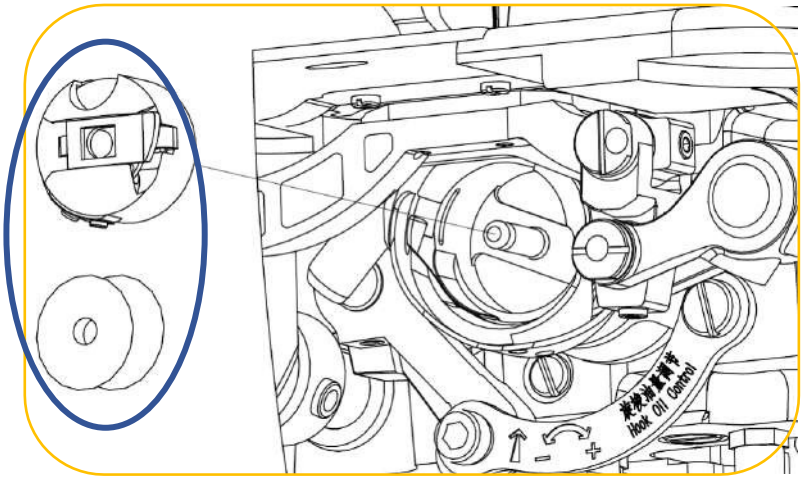
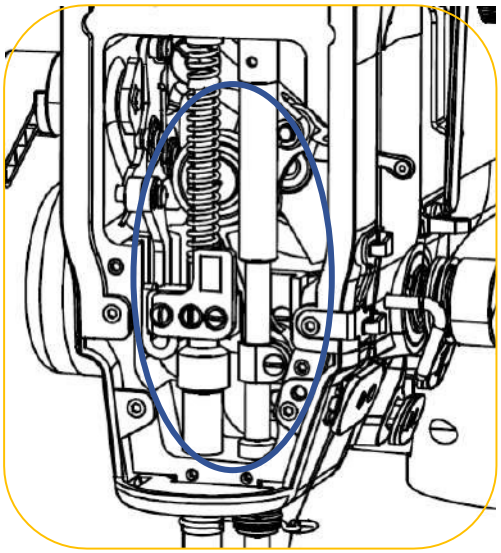


Figure 10.2 Cleaning the hook area



Clean Lint and Dust from the Panel Inner Cavity (Figure 10.3)

1. Remove the panel.
2. Use a soft-bristled brush to clear lint and dust from the thread take-up lever, needle bar connecting rod, slider guide rail and other components inside the panel cavity (marked areas).
3. Refit the panel.

Figure 10.3 Cleaning the panel inner cavity

10.2 Grease Refilling and Coating Maintenance

WARNING: Cut off the power supply before performing any maintenance work.Refill and coat with grease (use the original No.5 grease only) every 6 months to maintain the sewing machine's performance and extend its service life.

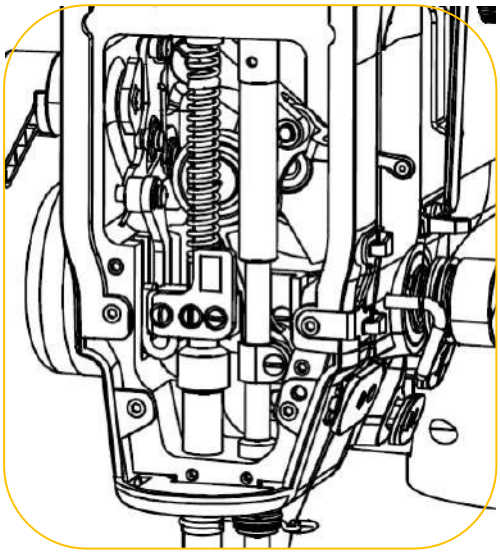


Figure 10.4 Grease coating for the panel inner cavity

Grease Coating for the Panel Inner Cavity

1. Remove the machine head panel.
2. Lift the presser foot lifting lever ① to raise the presser foot bar ③; turn the handwheel to raise the needle bar ④ to its uppermost position.
3. Apply grease to the exposed parts of the presser foot bar ③ and the needle bar ④ with a brush.
4. Apply grease to both sides of the slider guide rail groove ⑤ with a brush.
5. Apply grease to the joint of the front lever assembly ② with a brush.
6. Refit the machine head panel.

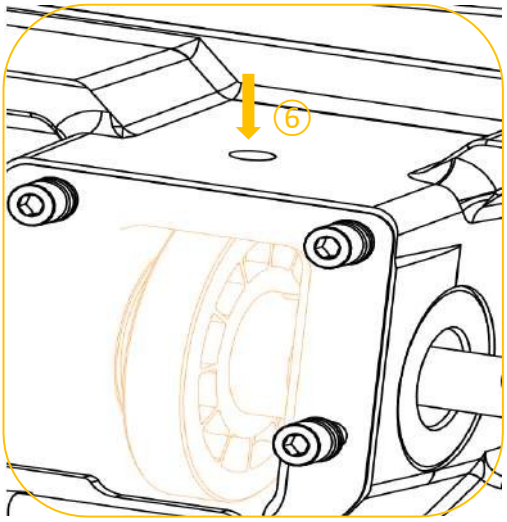


Figure 10.5 Grease refilling for the gear box

Grease Refilling for the Gear Box

1. Remove the gear box hole plug.
2. Inject more than 10ML of grease into the grease filling port ⑥ with a syringe; turn the handwheel while injecting to ensure uniform coating around the gears.
3. Refit the gear box hole plug.

Note: It is recommended to refill with the original No.5 grease every 3 months when the machine is used frequently.