

# PS-800-3830 INSTRUCTION MANUAL

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# **1. SPECIFICATIONS**

1	Sewing area (X,Y)(mm)	380×300			
2	Feed motion of feeding frame	Intermittent feed (2-shaft drive by stepping motor)			
3	Needle bar stroke	40mm			
4	Max. sewing speed	Sewing maximum number of revolution 2,800 sti/min (sewing pitch 2.8 mm or less) For other stitch pitches and numbers of revolutions, refer to Fig. 1.			
5	Settable stitch length	0.5 to 12.7 mm			
6	Needle	DB × 1 #8 (#7 to #14)			
7	Hook	Double-capacity full-rotary hook			
8	Intermediate presser stroke	4 mm (Standard)			
9	Lift of intermediate presser	20mm			
10	Lift of disc presser	15mm			
11	Memory of pattern data	Max. 999 patterns			
12	Number of patterns that can be identified	Max. 999 patterns			
13	Program input method	USB			
14	Data format	SLW data is applied to sewing machine application DXF.AI.PLT.DST data editing software			
15	Main shaft servomotor power	550W			
16	Power consumption	500VA			
17	Input voltage	220V ± 10%			
18	Mass (gross mass)	Standard type : 280 kg			
19	Dimensions	1,200 mm (W) × 1,340 mm (L) × 1,440 mm (H)			
20	Operating temperature range	5 to 35 °C			
21	Operating humidity range	35 to 85 % (No dew condensation)			
22	Storage temperature range	-5 to 60 °C			
23	Storage humidity range	10 to 85 % (No dew condensation, 85 % applies to the case where the temperature is 40 $^\circ\text{C}$ or lower)			
24	Air pressure used	0.5 to 0.6 MPa			
25	Needle highest position stop facility	After the completion of sewing, the needle can be brought up to its highest position.			
26	Noise	<ul> <li>Equivalent continuous emission sound pressure level (L<sub>p</sub>A) at the workstation :</li> <li>A-weighted value of 78.0 dB ; (Includes K<sub>p</sub>A = 2.5 dB) ; according to ISO 10821- C.6.2 -ISO 11204 GR2 at 2,800 sti/min.</li> </ul>			
27	Lubricating oil	<ul> <li>#10 (Equivalent to JUKI NEW DEFRIX OIL No. 1)</li> <li>#32 (Equivalent to JUKI NEW DEFRIX OIL No. 2), Lithium based grease</li> <li>No. 2</li> <li>Grease information</li> <li>Manufacturer: WERATCHE</li> <li>Type and number: Lithium base 2# grease</li> </ul>			

Stitch pitch and the sewing speed						
Number Stitch pitch Sewing speed R						
1	2.8 mm	2,800 sti/min				
2	3.0 mm	2,500 sti/min				
3	4.0 mm	2,200 sti/min				
4	5.0 mm	1,800 sti/min				

Note: The sewing machine must not run at the maximum number of revolutions continuously for more than 15 minutes. The number of revolutions may vary even if the pitch is consistent due to the change in the needle and material.

# 2. CONFIGURATION



- Machine head
- 2 Table
- X-axis feed mechanism
- **4** Y-axis feed mechanism
- **G** Cassette tape device
- **6** Operation panel
- Air control box
- **B** Electrical control box
- **9** Power switch (also used as the emergency stop switch)
- Thread stand
- Bobbin winder device

# 3. INSTALLATION

# 3-1. Installing the operation panel



1) Remove 4 screws on the arm rear face cover.



2) Take out the operation panel and the fixing plate.





3) Fix the operation panel to the bottom of the plate using 2 short screws.



4) Connect the cable to the connector at the rear of the panel, and tighten the fixing screw.

## 3-2. Installing the air hose



#### WARNING :

Check to be sure that the air hose is fully inserted into the air cock before supplying the air to the machine so as to prevent the air from being blown directly to the human body. Then, carefully open the air cock.



- Connecting the air hose
   Connect the air hose to ①.
- 2) Adjustment of air pressure

Pull up air regulating knob ② . Then, turn it to adjust the air pressure to 0.5 - 0.6 MPa. Then, push down air regulator knob ② .

Pull up air regulating knob ③ . Then, turn it to adjust the air pressure to 0.15 MPa. Then, push down air regulator knob ③ .

- 2 : Adjustment of the air pressure of the entire sewing machine
- 3 : Adjustment of the air pressure of the disk presser

# 3-3. Installing the thread stand





2) Fix the thread stand device to the arm using the long screw which was removed in "3-1 Installing the operation panel".



- Place the thread stand thread guide ① in the thread stand bar lock block ②, push into the hole of the thread stand bar lock block ② using a thin driver, and tighten.
- 4) Adjust the position of the spool support (asm.) ③, the thread stand arm (asm.) ④, and the thread stand thread guide (asm.) ①.

1) Remove the thread stand device.

# 3-4. Cautions for the compressed air supply (source of supply air) facility

As large as 90 % of failures in pneumatic equipment (air cylinders, air solenoid valves) are caused by "contaminated air."

Compressed air contains lots of impurities such as moisture, dust, deteriorated oil and carbon particles. If such "contaminated air" is used without taking any measures, it can a cause of troubles, inviting reduction in productivity due to mechanical failures and reduced availability.

Be sure to install the standard air supply facility shown below whenever the machine provided with pneumatic equipment is used.



## Cautions for main piping

• Be sure to slope main piping by a falling gradient of 1 cm per 1 m in the direction of air flow.

- If the main piping is branched off, the outlet port of the compressed air should be provided at the top part of the piping using a tee in order to prevent drain settling inside the piping from flowing out.
  - Auto drains should be provided at all lower points or dead ends in order to prevent the drain from settling in those parts.

## 3-5. Installing the bobbin winder device



- 2) Pass the bobbin thread pulled out from the spool rested on the right side of the thread stand following the order as shown in the figure on the left. Then, wind clockwise the end of the bobbin thread on the bobbin several times. (In case of the aluminum bobbin, after winding clockwise the end of the bobbin thread, wind counterclockwise the thread coming from the bobbin thread tension several times to wind the bobbin thread with ease.)
- 3) Press the bobbin winder trip latch 2 in the direction of and start the sewing machine. The bobbin rotates in the direction of and the bobbin thread is wound up. The bobbin winder spindle automatically as soon as the winding is finished.
- 4) Remove the bobbin and cut the bobbin thread with the thread cut retainer (3).
- 5) When adjusting the winding amount of the bobbin thread, loosen setscrew (2) and move bobbin winding lever (2) to the direction of (2) or (3). Then tighten setscrew (4).

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To the direction of (2) : Decrease To the direction of (3) : Increase

- 6) When the bobbin is not evenly wound with thread, loosen nut **(5)** and adjust the height of bobbin winder tension disk **(6)**.
  - It is the standard that the center of the bobbin is as high as the center of thread tension disk  $m{0}$  .
  - Adjust the position of thread tension disk () to the direction of () when the winding amount of the bobbin thread on the lower part of the bobbin is excessive and to the direction () when the winding amount of the bobbin thread on the upper part of the bobbin is excessive.
    After the adjustment, tighten nut ().
- To adjust the tension of the bobbin winder, turn the thread tension nut •



1. When winding the bobbin thread, start the winding in the state that the thread between the bobbin and thread tension disk  $\mathbf{\Theta}$  is tense.

When winding the bobbin thread in the state that sewing is not performed, remove the needle thread from the thread path of thread take-up and remove the bobbin from the hook.
 There is the possibility that the thread pulled out from the thread stand is loosened due to the influence (direction) of the wind and may be entangled in the handwheel. Be careful of the direction of the wind.



 Before you wind a bobbin, remove the needle thread from the thread take-up lever and detach the bobbin case.



2020-11-04 15:06:58 出力1 出力6 0UT11 00 押礼 出力2 OUT7 0UT12 (物速度 1 糸切り 出力3 OUT8 LED 封書 所相志 ·普速度 ↓ 出力4 OUT9 Si M 东藏马 出力5 OUT10 暂停位置 押; Reset ( (+ E (7+ 手動法)



9) Press the "Next page" button on the main screen to call up the test mode screen.

10) Adjust the bobbin winding speed. Then, press the start button of the sewing machine to start winding the bobbin.

11) After the completion of winding of the bobbin, press the stop button to stop the sewing machine and restore the screen to the main screen.

# **3-6. Precautions for installation of the machine**



# 4. PREPARATION OF THE SEWING MACHINE

## 4-1. Lubricating method and check of the oil quantity

#### WARNING :

Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.



1) Detach hook maintenance cover ①.

2) Remove rubber plug **2** from the oil tank.

3) Fill the oil tank with the accessory oil (or the specified oil).

 The adequate oil amount is obtained when the oil surface stays between the oil tank indications "Min" and "Max".



of oil in advance.

# 4-2. Attaching the needle



WARNING : Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.



1) Loosen screw 1 to remove the needle.



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#### 2) Tighten screw 1.



# 4-3. Threading the machine head



WARNING : Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.



 Put sewing machine thread 1 on thread stand
 2.

 Pass the thread as illustrated in the figure.
 Lastly, draw out thread end through needle eyelet by 50 to 60 mm.



#### WARNING :

Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.







#### (1) Removing the bobbin case

- Open cover ① . Then, the bobbin can be changed.
- 2) Raise latch (2) of bobbin case (3), and remove the bobbin case (3) and the bobbin (2).



Check the position of your hands and the locations of goods before opening / closing cover **①** so as to prevent the goods from being caught under the cover and to prevent bodily injury. In addition, do not push cover **①** with your hands placed on it.

#### (2) Installing the bobbin

- Set the bobbin (2) into bobbin case (3) in the direction shown in the figure.
- Pass the thread through thread slit of bobbin case , and pull the thread as it is. By so doing, the thread will pass under the tension spring and be pulled out from thread hole .
- Pull out the thread by 50 mm from thread opening 

   .



If the bobbin ② is installed in the bobbin case orienting the reverse direction, the bobbin thread pulling out will result in an inconsistent state.

#### (3) Installing the bobbin case

- Place the bobbin case in the hook with its knob
   tilted and fully push it into the hook until you hear it click.
- 2) Close cover 1.



If it is not fully inserted, bobbin case **③** may slip off during sewing.

# 4-5. Adjusting the thread tension





#### (1) Adjusting the needle thread tension

Thread tension controller No. 1 1

When the tension disk of thread tension controller No. 2 ③ is loosened, such a small tension as to control the thread trimmer has to remain. The remaining tension is produced by tension controller ①. It is possible to determine the length of thread trailing from the needle after automatic thread trimming by adjusting nut ② of the thread tension controller. The length of thread trailing from the needle is reduced by turning nut ② clockwise (+). It is increased by turning nut ② counterclockwise (-).

#### Thread tension controller No. 2 3

The tension (applied to the thread coming from the needle) controlled with thread tension controller No. 2 ③ should be set as low as possible so that the needle thread and bobbin thread are interlaced together at the center of material thickness (Fig. A). If the thread tension is excessively high when sewing a light-weight material, the material may become wrinkled or thread may break.

The tension applied to the thread coming from the needle is increased by turning nut **4** clockwise (+).

It is decreased by turning nut **4** counterclockwise (-).

- Fig. A: Threads are interlaced together accurately at the center of material thickness.
- Fig. B: Needle thread tension is too low or bobbin thread tension is too high.
- Fig. C: Needle thread tension is too high or bobbin thread tension is too low.

#### (2) Adjusting the bobbin thread tension

Turn tension adjusting screw G clockwise (in direction A) to increase or counterclockwise (in direction G) to reduce the bobbin thread tension. Recommended value: Approximately 25 g
The bobbin case will come down slowly by its dead weight by holding it as illustrated in the figure.

# 4-6. Adjusting the thread take-up spring and the thread breakage detector plate



1) Adjusting the stroke

Loosen setscrew ② . Turn thread tension controller ③ . Turning it clockwise will increase the stroke of the thread take-up spring ① and the thread drawing amount will increase.

- 2) Adjusting the pressure
  To change the pressure of the thread takeup spring ①, insert a thin screwdriver into the
  slot of thread tension post ④ while screw ② is
  tightened, and turn it. Turning it clockwise will increase the pressure of the thread take-up spring
  ①. Turning it counterclockwise will decrease the
  pressure.
- 3) Adjusting the thread breakage detector plate Loosen setscrew (). Adjust the position of thread breakage detection plate () so that the contact depth between thread breakage detection plate () and thread take-up spring () becomes 0 to 0.2 mm.



Adjust so that thread breakage detector plate **③** does not touch any adjacent metallic parts other than thread take-up spring **①**. If the thread breakage detection plate comes in contact with any other metal part, a maloperation can occur.

# 4-7. Adjusting the thread take-up stroke



- When sewing heavy-weight materials, move thread guide ① to the left (in direction ④) to increase the length of thread pulled out by the thread take-up.
- When sewing light-weight materials, move thread guide ① to the right (in direction ③) to decrease the length of thread pulled out by the thread take-up.
- Normally, thread guide is positioned in a way that the center of elongated hole is aligned with the center of the screw.

# 4-8. Needle-to-hook relationship



#### WARNING :

Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.

#### (1) Needle and hook, and angle setting





(2) Position of the needle and the inner hook holder



- 2) When observing from the front face of the sewing machine, the blade point of hook seems to overlap with the center of needle.
- 3) When observing from the side face of the sewing machine, the clearance provided between the blade point of hook and the scarf of needle is 0.05 to 0.2 mm.



If thread breakage occurs, the thread can be tangled in the hook. In such a case, remove the thread being tangled in | the hook carefully. Then, re-start sewing.

 As shown in the figure, the electrical shaft angle setting QEP value displayed on the operation panel becomes 570 to 575.





Lateral position of the inner hook holder and needle: The rightmost end of projection of inner hook holder is aligned with the right side of needle.

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#### (3) Adjusting the hook timing

The timing gauge is supplied for the machine as an accessory.



Put the accessory timing gauge in such a way that the surface with the S engraved mark is faced upward as shown in the figure given on the left. Then, adjust the hook timing.



 Put the timing gauge on the resin cover. Then, adjust the lower dead point of the needle bar first.

Loosen needle bar connection setscrew. Adjust the height of the needle bar.

2) Then, turn the timing gauge by 180 degrees of an angle longitudinally. Adjust the hook timing position.



When adjusting the hook timing, it is necessary to put the jig on the left side of the needle to prevent the jig from coming in contact with the needle bar thread guide. ۱

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# WARNING :

Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.





The moving knife is in

knife base

parallel with the moving





- (1) Adjusting the position of the thread trimming cam
- Turn pulley ① to engage needle bearing ③ of the thread trimmer connecting rod with groove ② in the thread trimming cam.

The specified QEP value of the electrical shaft angle setting parameter has been factory-adjusted to 290 at the time of shipment. Finely adjust the parameter according to the difference in material.

- (2) Adjusting the position of the moving knife and counter knife
- Attach the moving knife to the moving knife base. Push the moving knife to the right to make the tail of the moving knife in parallel with the moving knife base. At this time, the blade point of moving knife is aligned with the needle. Tighten moving knife clamping screw ①.





2) Attaching the counter knife

The tail portion of the counter knife has a hole. Inserting 2.5 hexagonal wrench key **2** into that hole, tighten the fixation screw of the counter knife while aligning the tail portion of the counter knife with the hexagonal wrench key.

 Mark the 5-mm position of the moving knife blade with a black marker pen. Adjust the counter knife pressure with counter knife pressure adjustment screw 3.

After you have completed adjustment, push down the moving knife to re-adjust the moving knife pressure in repetition until both sides, with black markers, of the moving knife are simultaneously rubbed by the counter knife without fail. In addition, the friction force between the moving knife and the counter knife can be minimized by trimming three used machine-sewing threads.

# 4-10. How to check the amount of oil in the hook



#### WARNING :

Be extremely careful about the operation of the machine since the amount of oil has to be checked by turning the hook at a high speed.

#### (1) How to confirm the amount of oil (oil splashes)



When carrying out the procedure described below, confirm the state that the needle thread from the thread take-up lever to the needle and the bobbin thread are removed, the presser foot is lifted and the slide plate is removed. At this time, take extreme caution not to allow your fingers to come in contact with the hook.

- 1) Check to make sure that the oil quantity is adequate referring to "4-1. Lubricating method and check of the oil quantity" p.10.
- 2) If the machine has not been sufficiently warmed up for operation, make the machine run idle for approximately fifteen minutes.
- 3) Place the amount of oil (oil splashes) confirmation paper under the hook while the sewing machine is in operation.
- 4) Confirmation of the amount of oil (oil splashes) should be completed in ten seconds.

#### (2) Sample showing the appropriate amount of oil (oil splashes)



- 1) The state given in the figure above shows the appropriate amount of oil (oil splashes).
- 2) Check the oil amount (oil splashes) three times (on the three sheets of paper), and adjust so that it should not change.



# 4-11. Adjusting the amount of oil in the hook



WARNING : Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.



- 1) Detach the hook maintenance cover.
- The oil amount is increased by turning screw in the direction of arrow ④, or decreased by turning it in the direction of arrow ⑤.
- 3) After you have adjusted the amount of oil in the hook, attach the hook maintenance cover.

- 1. After the adjustment, check the oil quantity by running the sewing machine idle for approximately 30 seconds, as well as by checking it in comparison with the sample showing the adequate oil quantity. (Refer to 20 0 0 0 0 4-10. How to check the amount of oil in the hook 0.)
- 2. In the case of adjusting the hook oil quantity, firstly adjust the oil quantity by turning oil quantity adjustment screw in the direction of arrow (2) to increase it. Then, adjust the hook oil quantity by turning the adjustment screw in the direction of arrow (3) to decrease it.
- 3. The hook oil quantity has been factory-adjusted at the time of shipment, based on the maximum sewing speed of sewing machine. When the customer always operate the sewing machine at a low speed, the hook oil quantity may run short causing a sewing machine failure. To prevent such a failure, adjustment of the hook oil quantity is required when the customer runs the sewing machine at a low speed at all times.

# 4-12. Adjusting the needle hole in the throat plate and the needle



#### WARNING : Turn OFF the n

Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.



In the case the needle does not come down to the center of needle hole in The throat plate, the position of the throat plate can be adjusted with screw ①.

- 1) Remove the throat plate.
- Loosen two needle hole adjustment eccentric screws ② of the throat plate. Adjust the position of the throat plate so that the needle is aligned with the center of needle hole in the throat plate by moving the throat plate.
- 3) Tighten needle hole adjustment eccentric screws2) of the throat plate.

# 4-13. Setting the mechanical origin











- Slightly tighten screw ② on the lower shaft side. Then, turn the pulley to position screw ① on the main shaft motor so that it is levelled and faces upward.
- Holding the pulley, press on the main screen of the electrical box.
- When you press the "Machine setting parameter", 
  is displayed. When you enter password "11111111", screen 
  is displayed.
- 4) On the screen that is displayed by pressing the "Axial angle setting", set the QEP value to 245, tighten screw ① on the main shaft motor side, and loosen screw ② on the lower shaft side. Then, turn the pulley to bring the needle bar to its upper dead point.
- 5) Holding the pulley (not to allow the needle bar to move), click the "QEP value" of the "Axial setting parameter" on the screen. Adjust the QEP value to 0 (zero). Then, tighten screw ② on the lower shaft side.
- 6) At this point, the origin adjustment has been completed. Now, turn the pulley again to check that the QEP value of the needle bar at its upper dead point is 0 (zero). As long as the aforementioned QEP value is 0 (zero), the mechanical origin has been adjusted properly.



# 4-14. Adjusting the disk presser pressure



 Adjust the disk presser air cylinder pressure regulation valve ①. Pull up nut ②. Then, turn the nut clockwise to increase the disk presser pressure or turn it counterclockwise to decrease it. The air pressure has been factory-set to 0.15 MPa at the time of shipment. Adjust it appropriately while checking the actual sewing state.

- Changing the disk presser
   Check the actual sewing operation. Use the disk presser or the plastic disk presser according to the condition of actual sewing operation.
  - Disk presser (factory-attached at the time of shipment)
  - B Resin disk presser

When changing the disk presser with the plastic disk presser or vice versa, try to position the disk presser so that its bottom surface is in parallel with the hook cover. Adjust the height of the disk presser according to the actual material thickness (i.e., height) while taking care not to allow the disk pressers to come in contact with the intermediate presser.



It is possible to set the needle thread end position at the beginning of sewing to top side ① or underside ② of material.

Change over the setting of the wiper function between ON and OFF in accordance with these two conditions of the needle thread end position.

To put the needle thread end on the top of material

Place the wiper function in OFF.

 To put the needle thread end on the underside of material
 Place the wiper function in ON.

# 4-16. Adjusting the intermediate presser stroke



It is necessary to adjust the intermediate presser stroke ((2)) appropriately since there would be the need for preventing stitch skipping depending on thickness or type of the material.

- Press on the main screen of electrical box.
- 2) When you press the "Machine setting parameter", 2 is displayed.
  When you enter the password "11111111", screen
  3 is displayed.
- On the screen that is displayed by pressing the "Presser follow-up setting", set the parameter (the follow-up height of presser foot has been factory-adjusted to 2 mm at the time of shipment).

# 4-17. Adjusting the needle thread air blower



Blow-up pipe ① blows air to blow up the thread end trailing from the needle to bring it under disk presser ② at the beginning of sewing by controlling the sole-noid valve of the electrical system.

Thread end is pushed by air between the disk presser and the pattern at the beginning of sewing. In the case the thread end cannot be pushed due to the location and direction of slits on the pattern, adjust the blowing direction of the air to allow the thread end to be pushed by air.



Launch the pattern creation software to operate and process the pattern to be sewn.

Caution

On the screen that is displayed by clicking "Operation processing" ③, click ④ ("Enter I/O") and change the "I/O" to 5.

Change the "Level" to "high" ("low" refers to "turning OFF"). Click **(**"Delay"). Change the "Delay (msec)" to 225.

The needle thread air blower and the wiper cannot be used simultaneously.

The wiper provides the function for bringing the needle thread above the presser foot.
 The needle thread air blower provides the function for bringing the needle thread under the disk presser.

## 4-18. Making a template

#### (1) Machining a template

3830 type template of dimensions of the maximum sewing range

- Material of template: PVC plate
- Template thickness: 2 mm thick PVC plate
- Adjust the template size according to the cloths and/or pattern to be sewn. The size must not exceed the maximum dimensions of the relevant specifications.
- Check complexity of the pattern to be sewn. Then, select the sewing slits from the range of 6 mm to 8 mm according to the complexity of the pattern.
- Locus of sewing slits on the template should be designed according to the pattern to be sewn or intended machining.
- Select the suitable pattern carving machine. The template must be machined by the qualified engineers who have successfully finished the on-the-job training.
- After the completion of machining upper and lower templates, deburr the templates and the top surface of the template mounting plate.



#### (2) Attaching the templates



Machine the upper and lower templates based on the design.

Affix exclusive template tape (36 mm wide) to portions **①**, **②**, **③** and **④** as illustrated in the figure.

2) To produce more beautiful seams, it is recommended to firmly secure the material at the correct position by affixing sand tape, double-sided adhesive tape, etc. on the slits of the upper and lower templates or put positioning pins at appropriate locations in order to prevent the material slippage.

# 4-19. Preparation for sewing



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- Turning ON the main power switch.
   Press button ① to turn ON the main power switch.
- 2) Turning ON the main air source switch Move main air valve ② to the right to open the main air source.

3) Resetting the equipment

When the equipment is reset by pressing Reset

 the needle stops at its upper stop position, and the disk presser and intermediate presser go up.

 Read the pattern data to be sewn, or directly edit the pattern data on the operation panel.
 Refer to the Instruction Manual for the computer-control system for details.



5) Attaching a pattern
Moving an empty pattern (with no material), fit positioning hole (a) on the pattern positioning plate on the positioning pin. Fit other two auxiliary positioning holes (a) on the positioning sleeves and fully push them until they will go no further.

- 6) Reading the sewing pattern data
  - 1. In the case an IC tag is attached to the pattern, the electrical system will automatically identify the sewing pattern program that matches the pattern from among those stored on the IC tag.
  - 2. In the case no IC tag is attached to the pattern, manually select the sewing pattern data that matches the relevant pattern on the operation screen.
- \* Refer to "4-22. Configuration of the operation panel" p.35 for how to use the IC tag.



7) Selecting the reference

In order to align the locus of sewing pattern with the sewing slits of the pattern, it is necessary to set a reference. Specifically, set the reference referring to the Instruction Manual for the electrical system scanner.

After the completion of establishment of a reference, display the operation screen. When you keep button **③** held pressed, the pattern locus simulation sewing starts.

Operate the sewing machine once to check whether or not the sewing pattern locus is aligned with the pattern slits. If they are not aligned, re-adjust the reference.

To stop the operation while the simulation operation is being carried out, press button **1** to stop it.

\* Refer to **"4-20. Precautions for selecting a reference" p.32** for the precautions for selecting the reference.

8) Placing the material to be sewn

1. Detaching the pattern

When you move the pattern to the reset position and press clamp button ④ on the operation panel, two air cylinders on the X-direction linear module release the pattern. Take out the pattern.

2. Placing the material

Place the material to be sewn on the pattern. Then, check that the material is neatly arranged horizontally. In addition, secure the material with the holding method that matches the pattern to prevent the material from moving out of position. If the material has an infill of feather or cotton, squeeze the material to push out air as far as possible.

- 9) Setting the reset, pattern on which the material is placed, and the reference
- \* Carry out resetting following the step of procedure 3).
- \* Handling of the pattern on which the material is placed is described in the step of procedure 5).
- \* Reference setting is carried out following the step of procedure 7).
- 10) Starting

Press the start button (6) on the operation panel to start sewing. Then, the sewing machine enters the automatic sewing mode.

11) Temporary stop

If any accident occurs during sewing, press the temporary stop button **7** on the operation panel. Then, the sewing machine immediately stops operation.

12) Re-starting

Once the aforementioned accident is eliminated, turn temporary stop button **⑦**. Then, the button pops up and the emergency stop mode is reset. Then, press start button **⑥** to re-start automatic sewing.

# 4-20. Precautions for selecting a reference

While the movable range of the sewing machine X axis is up to 475 mm, X axis sewing range is up to 380 mm only.

Movable range beyond 380 mm is provided as an area for changing the fabric.

(In the figure below, the blue area is the X feed moving area, and the green area is the actual sewing area.)



When making a pattern, setting range will change depending on the position of the reference point.

To be more specific, when the reference point is on the left side of the pattern, X axis of the reference point can be set within 380 mm.

However, when the reference point is on the right side of the pattern, X axis of the reference point can be set only within the range of 380 mm minus X axis length.



When the reference point is on the right side but the sewing pattern is exceeding 380 mm, the needle may penetrate the template. Be careful as the needle hitting the template may cause a dangerous situation such as a broken needle.



# 4-21. RFID (How to use the IC tag)





# 2021-07-29 12:52:43 18:50 10:308-8015-DL 15:00 10:308-8015-DL 16:00 10:308-8015-DL <

#### 1. Attaching the IC tag

Attach IC tag **①** onto the pattern with double-sided adhesive tape or the like.

- 2. Writing sewing pattern data
- Place IC tag 

   on black dot 

   on the sewing machine table.

2) Press "Menu" (3) on the initial screen.







4) Select sewing pattern data you want to write on the IC tag on the memory file screen.
After you have made a selection, press "RFID"
6 to write the sewing pattern data on the IC tag.



- 3. Loading sewing pattern data
- On the initial screen, press the "Self-lock" 

   button.
- 2) Place the IC tag with the sewing pattern data written on it on the black dot on the table.
- 3) The sewing pattern data written in the IC tag is read.

# 4-22. Configuration of the operation panel



	LCD portion of the touch panel					
₿	PAUSE key Used to temporarily stop sewing					
▣	OPEN key	DPEN key Move the cylinder lifting plate up and down.				
D	PRESS key	ESS key Used to move up/down the cassette holder				
θ	START key	Used to start sewing				
G	USB port					



e	Reset button	Used to re-start the operation panel
	COM port	RS232C

\* This product is not provided with the Wi-Fi function.



	Buttons / display	Description
0	Lock key	Used to lock the sewing pattern
0	Threading key	Used to thread the machine head
6	Main shaft speed change key	Used to change the sewing machine main shaft speed
4	Bobbin thread usage key	Used to display the amount of use of the bobbin thread and to move the screen to the setting screen <b>*1</b>
6	Sewing count key	Used to display the sewing count and to move the screen to the set- ting screen <b>*1</b>
6	Menu	Used to move the screen to the menu screen *1
0	Ready key	Used to return the sewing machine to its origin
8	Reference setting key	Used to move the screen to the reference setting screen *1
9	Cassette holder key	Used to move the cassette holder
0	Presser foot key	Used to operate the presser foot
0	Presser foot setting key	Used to move the screen to the presser foot setting screen *1
Ð	Page move key	Used to move the screen to the test mode screen *1
ß	Test key	Used to operate the sewing pattern by jumping
Ø	Line segment return key	Used to return the sewing machine to the starting position of the pre- vious continuous sewing by jumping
Ð	Line segment feed key	Used to feed the sewing machine to the starting position of the next continuous sewing by jumping
ſ	Single stitch return key	Used to return the sewing machine to the previous stitch. If this key is held pressed, fast-backward mode starts
Ð	Single stitch feed key	Used to feed the sewing machine to the next stitch. If this key is held pressed, fast-forward mode starts
₿	File key	Used to move the screen to the sewing pattern selection screen
₿	Sewing pattern selection	Select the sewing pattern to be used by touching it

\*1. Refer to the Instruction Manual for the operation panel for details.

## 4-23. Maintenance mode

The maintenance mode is the mode under which the notice telling that the duration of use of the sewing machine has reached the time requiring maintenance is provided in order to extend the product life of the sewing machine. Under this mode, the maintenance screen is displayed on the operation panel. When the maintenance staff enters the user password, the maintenance screen is erased.

212-2	The second se	2011		2000-	02-04	06:39	:07
セルフロック	X间P=3.0		X:30	0.0 Y:200.	0 0	1;315	
112×27					o	2:X切	P=2.0
422					0	8:X间	P=3.0
					C	94:Y切	向P=2.0
1800			- 4		C	)5:Y向	P=2.0
<u></u> +						D6:Y向	P=3.0
<u>ه</u> 0 ۱۱۱۱ 5	₹ <b>⊼</b> }		612 0	+ >		177	1.0
F	リセット	基準	枠を押す	押入足	押え設定	足	次の頁







 The maintenance screen is displayed when the time at which the sewing machine requires maintenance has come. (Approximately once every three months)

When cancel button (2) is pressed, the maintenance screen returns to the sewing screen. However, the maintenance screen is re-displayed one hour later.

- 2) When enter button (3) is pressed, the user password input screen is displayed provided that the user password has been set up in prior.
- Add grease referring to "5. MAINTENANCE OF SAWING MACHINE" p.55.
- 4) Enter the user password. Then, the maintenance screen returns to the sewing screen.

# 4-24. List of parameters

Classifica- tion of pa- rameters	No.	Parameter name	Range	Standard value	Meaning of parameter and comment
Automatic machining	P1	Clamp is opened after the completion of auto- matic machining	Yes/No	Yes	Cassette clamp is lifted every time the continuous sewing cycle is completed
	P2	Number of stitches to be sewn at the begin- ning and end of sewing with the intermediate presser lowered	0 to 8	2	Number of stitches during which the intermediate presser presses the material at the beginning and end of sewing
	P3	Thread trimming after the completion of auto- matic machining	Yes/No	Yes	Thread trimming is carried out every time the continuous sewing cycle is completed.
	P4	Position to which the needle is returned	Origin / secondary origin	Secondary origin	"Origin" is the origin of absolute coor- dinates.
		automatic machining			"Secondary origin" is the secondary origin (offset point) added to the pattern.
	P5	Whether or not the thread tension is re- quired to be lowered	Yes/No	Yes	Whether or not the tension on the thread is loosened during jump
	P173	The presser foot fails to go up even when the shaft is moved.	Yes/No	No	The clamp foot is retained while a reference is being set. On the "Main screen", keep the clamp foot held at its current position while moving the shaft. (Lifted or lowered) The "Main screen" is displayed after the operation panel is started up.
	P259	Automatic operation of the clamp	Yes/No	Yes	Whether the cassette clamp is turned ON at the beginning of sewing
	P240	Clamp operation in pri- or to the manual feed	Yes/No	No	Whether the cassette clamp is turned ON before the manual feed is carried out
	P6	Number of stitches to be sewn with over- lapped at the begin- ning of sewing	OFF / 1 / 2	OFF	In the case of set value "1" or "2", sewing is carried out once or twice in repetition at the first needle entry position before proceeding to the next needle entry position at the time of starting the sewing machine. Setting of the number of reverse feed stitches at the beginning of sewing
					In the case of "OFF", the sewing ma- chine does not repeat sewing
	P7	Number of stitches to be sewn at the begin- ning of sewing without the thread tension release mechanism	0 to 255	1.2	The thread tension release mecha- nism is turned OFF while the sewing machine sews the set number of stitches at the beginning of sewing
	P147	Height of the interme- diate presser when it is lowered at the begin- ning of sewing	0 to 4	0.5	Intermediate presser height at the beginning of sewing
	P148	Height of the interme- diate presser when it is lowered at the end of sewing	0 to 4	0.5	Intermediate presser height at the end of sewing
	P161	Set presser foot oscil- lating range	Normal/Cut by half/ Expand	Normal	

Classifica- tion of pa- rameters	No.	Parameter name	Range	Standard value	Meaning of parameter and comment
Automatic machining	P171	Thread trimming motor is reset after the completion of operation	Yes/No	No	
	P172	Reset the feeding frame after comple- tion of work.	Yes/No	Yes	The middle presser foot motor is reset at the end of sewing.
	P248	Necessity of moving before setting stand- ards	Yes/No	Yes	
	P252	Clamp release error at reference setting	Yes/No	No	
	P794	IO1 of termination work	None/OUT1 to OUT12	None	
	P796		High level/Low level	Low level	
	P795	IO2 of termination work	None/OUT1 to OUT12	None	
	P797		High level/Low level	Low level	
Sewing start speed	P8	Starting speed of first hand (sti/min)	100 to 3000	300	Speed of the first needle
	P9	Second Hand Start Speed (sti/min)	100 to 3000	600	Speed of the second needle
	P10	Third Hand Start Speed (sti/min)	100 to 3000	900	Speed of the third needle
	P11	Starting speed of 4th hand (sti/min)	100 to 3000	1500	Speed of the 4th needle
	P12	5th Hand Start Speed (sti/min)	100 to 3000	2000	Speed of the fifth needle
	P170	Reverse sewing speed (sti/min)	100 to 3000	1500	Speed of sewing back
	P13	Need for sostoat	Yes/No	Yes	Low speed start
	P162	Start sewing 2-needle low speed required/ not required	Yes/No	No	Whether the second stitch is sewn at a low speed
	P163	Sewing finish 2 needle low speed required/not required	Yes/No	No	Last 2 stitches slower
Speed Parame- ter	P14	Maximum spindle speed (sti/min)	100 to 3000	3000	Max. spindle speed
	P15	Empty feed speed (mm/ min)	100 to 40000	40000	Speed of empty feed
	P16	Inching speed (mm/ min)	100 to 20000	5000	Movement speed when modifying and creating patterns
	P160	Test sewing speed (mm/ min)	100 to 60000	5000	Trial sewing speed
	P17	Button speed 1 (mm/min)	100 to 20000	500	When manually moving a box or col- lecting a file, use the corresponding eight directional keys.
					Operating speed with icon

Classifica- tion of pa- rameters	No.	Parameter name	Range	Standard value	Meaning of parameter and comment
Speed Parame-	P18	Button speed 2 (mm/min)	100 to 20000	4000	8 Correspond to the two direction keys
lei					▶▶Operating speed with icon
	P19	Button speed 3 (mm/min)	100 to 20000	8000	8 Correspond to the two direction keys
					Operating speed with icon
	P217	Graphic edit speed (mm/min)	0-100000	Yes	
	P174	Head 2 Speed (mm/s)	0 to 2000	40	Velocity of XY shaft when using a laser scalpel
	P175	Head 3 Speed (mm/s)	0 to 2000	40	Velocity of XY shaft when using a laser scalpel
	P178	Continuous inching speed	Reduce/Minimum/ Normal	Reduce	Movement speed when creating a pattern
	P773	Reverse speed (sti/ min)	0 to 3000	0	Speed of sewing back
	P20	Absence of thread spreading air wiper output IO	None/OUT1 to OUT8	None	
	P774	Number of stitches for sewing end speed limit	0 to 30	0	At the end of the figure, the speed is limited from the number of hands from the end.
	P775	Speed of sewing end speed limit	100 to 1800	100	This parameter is used in conjunc- tion with P774 to obtain a particular velocity limit.
Clamp setting	P22	Prohibition of sewing when the fixture is raised	Yes/No	Yes	When the cassette clamp is raised, sewing prohibited.
	P781	Whether or not the clamp is required during travel	Yes/No	Yes	
	P863	Main shaft remains the same even when moving the shaft	Yes/No	No	
	P743	Double Clamp Open Delay (ms)	0 to 5000	0	
	P744	Double Clamp Down Delay (ms)	0 to 5000	0	
	P114	Thread clamp type	Thread clamp/ Tension disk re- lease	Thread clamp	
	P23	Sequential order of the pedal operation	Normal/Special	Normal	
	P24	Pedal operation mode	1STA/1STB/ 1STC/2ST/3ST	2ST	
	P25	Sewing start thread gripping start angle	1 to 990	120	Thread grip ON at the start of sewing
	P26	Sewing start thread gripping end angle	1 to 990	230	Thread grip OFF at the start of sew- ing
	P27	Thread trimmer thread grip start angle	1 to 990	5	Grip start angle at thread trimming
	P28	Thread trimmer thread grip end angle	1 to 990	180	Grip end angle at thread trimming
Speed ratio	P32	High speed ratio (%)	1 to 100	100	

Classifica- tion of pa- rameters	No.	Parameter name	Range	Standard value	Meaning of parameter and comment
Speed ratio	P33	Medium high speed ratio (%)	1 to 100	100	
	P34	Medium low speed ratio (%)	1 to 100	100	
	P35	Low speed ratio (%)	1 to 100	100	
Bobbin	P29	Bobbin winding state	Permit/Prohibit	Permis-	Bobbin winder 🥯 允许
winder				sion	Default state
(limited to the 6045	P30	Bobbin winder speed (sti/ min)	100 to 4500	2500	Bobbin winding speed setting
model)	P31	Thread winding time setting (s)	1 to 63000	200	Setting the time of the spool
Reset setting	P36	Clamp at the time of resetting	Yes/No	Yes	Cassette clamp lowers when return- ing to origin
	P264	Clamp is opened after manual resetting	Yes/No	Yes	Press the return button to raise the cassette clamp when returning to the origin
	P38	Origin return method	XY simultaneous / X priority/Y priority	XY con- currency	"Simultaneous XY " means that origin resetting starts at the same time, and "X preferred" means that x axis re- sets the origin first and Y axis resets the origin.
	P39	Home return velocity (mm/ min)	100 to 60000	18000	X and Y shaft speed at home return
	P303	Extended axis reset operating speed (mm/ s)	1 to 2000	50	
	P741	XY axes 0 position cushion when reset- ting	No/X axis/Y axis/ XY axes	No	
	P756- P761	Output IO setting prior to resetting	OUT1 to OUT6/	No	Setting of pre-recovery IO
	P762- P767		High level/Low level	High level	
	P823	Output IO for reset- ting captured graph- ics is enabled.	Yes/No	No	
	P649	Alarm at reset error	Yes/No	No	
	P216	Reset output IO ena- ble	None/OUT1 to OUT8	None	
	P782- P787	Output IO setting after resetting	OUT1 to OUT15/	No	Setting of pre-recovery IO
	P788- P793		High level/Low level	Low level	
Provi- sional in- terruption setting	P44	Clamp release at pause	Yes/No	Yes	
	P45	Interval switch type	Self lock/Normal	Self lock	In the case of the "Self lock", the lock will not be able to automatically bounce when the key is pressed. In the case of the "Normal", the lock will be able to automatically bounce when the key is pressed.
	P799	Presser foot lift at stop	Yes/No	No	

Classifica- tion of pa- rameters	No.	Parameter name	Range	Standard value	Meaning of parameter and comment
Provi- sional in- terruption	P876	Restore the last work- ing position in the graphic	Yes/No	No	
setting	P204	Ignore the pins at start after pause	Yes/No	No	
Statistical setting	P49	Bottom thread clear when power is applied	Yes/No	No	Whether to set the remaining bobbin thread to 0 when the power is turned on
	P50	Work stops after the bobbin thread is used up.	Yes/No	Yes	"Yes" stops after the bobbin thread length reaches the full length.
	P51	Bobbin thread counter setting enabled	Yes/No	Yes	"Yes" automatically statistics the length of bobbin thread used when working
	P46	Counter clear when energized	Yes/No	Yes	Is the sewing counter set to 0 when the power is turned on?
	P47	Continue work after achieving the counter	Yes/No	Yes	Does the sewing counter continue after reaching the set value?
	P48	Counter setting ena- bled	Yes/No	Yes	Enable the sewing counter
	P52	Work time counter	Yes/No	Yes	"Yes" enables machining-time statis- tics function
	P779	Bobbin thread count mode	IN1 to IN4/ default	Default	Bobbin thread quantity statistics mode
	P780	Adjustable bobbin thread reserve (mm)	0 to 600000	0	Adjusting the remaining bobbin thread length
	P893	The bobbin counts the allowance length.	0 to 10000	0	
Thread clamp setting	P54	Thread clamp position at the beginning of sewing	0 to 200	0	Thread clamp position at the begin- ning of sewing
	P53	Thread trimmer thread clamp position	0 to 200	0	
	P212	Conversion point of graphics that are not for sewing	Yes/No	Yes	
	P627	First pin clamp IO starting	None/OUT1 to OUT12	OUT8	
	P477	Screw clamp IO after sewing	None/OUT1 to OUT12	OUT8	
	P824	First stitch starting output IO	None/OUT1 to OUT12	None	
	P825	Output IO ON angle	0 to 10000	0	
	P826	Output IO OFF angle	0 to 10000	0	
Thread breakage detection	P55	Automatic thread breakage detection	Yes/No	Yes	"Yes" displays errors by stopping the operation after detecting thread breakage. Tread breakage detection function
	P57	Ignore the number of sewing hour hands.	1 to 255	5	The first set stitch count is not detect- ed.
	P58	Detection of number of effective stitches at thread breakage	1 to 255	15	If the thread breakage of the set num- ber of stitches is detected continuous- ly, it is considered that the thread is broken securely.
	P59	Delay in processing when breakage is detected	0.01 to 255	5	
	P929	Number of return	0 to 20	0	
	P237	Thread breakage IO	None /OUT1 to OUT12	None	

Classifica- tion of pa- rameters	No.	Parameter name	Range	Standard value	Meaning of parameter and comment
Thread breakage	P935	Broken thread detec- tion mode	mode 1/mode 2	Mode 1	
detection	P207	Return to zero when thread breaks	Yes/No	No	
	P697	QEP2 is opened as the detection of bob- bin thread	Yes/No	No	
Thread trimming	P60	Thread trimmer spin- dle speed (r/min)	10 to 500	200	Spindle speed of thread trimmer
setting	P61	Thread trimming start delay (s)	0.01 to 6.55	0.01	Delay time at thread trimming start
	P62	Thread separation duration (s)	0.01 to 6.55	0.15	Wiper operation time
	P63	Delay of lifting the thread take-up press- er foot (s)	0.01 to 6.55	0.25	Wiper OFF delay
	P64	Delay in starting the thread tension release (s)	0 to 6.55	0	
	P65	Whether or not the thread is trimmed during jump after sew- ing	Yes/No	Yes	Whether thread is trimmed at the time of jump
	P66	Whether or not the wiper is used	Yes/No	Yes	Whether the wiper is used
	P67	Motor thread trimming mode	To-and-fro/Single time	To-and-fro	
	P68	Motor thread trimming stroke	1 to 100	23	
	P69	Delay of flat knife thread clamp	1 to 350	1	
	P164	Knife return speed ratio	10 to 100	100	
	P169	Starting mode for thread loosening	Angle / delay	Delay	Start-up timing method of the thread grip OFF
	P168	Thread loosening angle	0 to 999	730	Thread grip OFF angle
	P720	Policy - Clip	Yes/No	No	
	P721	First step projecting length of knife	0□100	0	
	P937	Second step project- ing length of knife	0□100	0	
	P722	First step projecting speed of knife (mm/s)	0□500	10	
	P723	Second step project- ing speed of knife (mm/s)	0□300	10	
	P936	Third step projecting speed of knife (mm/s)	0□300	10	
Ener- gizing setting	P70	Return the hour hand to the upper stop position.	Yes/No	No	When the power is turned on, the position of the needle bar is up.
	P71	Automatically returns to the fixture home position when ener- gized	Yes/No	No	Automatically returns to the original position at power-on

Classifica- tion of pa- rameters	No.	Parameter name	Range	Standard value	Meaning of parameter and comment
Ener- gizing	P72	Motor lock when energized	Yes/No	No	
setting	P73	Presser foot is lifted when energized	Yes/No	No	The feeding frame moves up when the power is turned on.
Other settings	P74 Air pressure detection required/not required		Yes/No	No	If the detected atmospheric pressure is too low when "Yes" is activated, it stops and alarms.
	P75	Repeated operation required/not required	Yes/No	No	Yes starts cyclic processing of the same file after startup
	P76	Repeated machining time (min)	1 to 65535	1440	Stop circulation process after the total time and time of circulation ma- chining.
	P77	Repeated process interval (s)	0 to 20	2	Interval between completion of machining and restart of machining during circulation machining
	P78	Work end position	End position/Ori- gin/Right/Sewing starting position	Origin	End position: End of point sewing where all XY axes coordinates are 0 (zero), restoration point
					Right: Rightmost point of the pro- cessing range
					Sewing starting position: First sewing point of a processing file
					Origin: Stop upon completion of pro- cessing
	P395	Template recognition method	Barcode/Electron- ic label	Electronic label	File sequence number: Bar code identification mode
					File name distinction: Electronic label recognition mode
	P81	Interface style	Classic/Simple	Classic	Classic: Virtual body button style
					Simple: Flat button style
	P685	Activate the pre-mo- tion mode	XY simultaneous / X priority/Y priority	XY con- currency	
	P755	Work Hollow Feed Mode	X Priority /Y Priori- ty/XY	XY con- currency	Movement mode of idle feed
	P241	Connect to Extended Screen	Yes/No	No	Yes allows you to view working files and other data on the display on an external extended display
	P79	Spindle needle stop back	0 to 160	0	
	P242	Voice prompt	High/Medium/ Low/Off	OFF	"High", "Medium" and "Low" indicate the volume level of each sound
	P21	Enable power failure memory	Yes/No	No	After turning on the power again, the progress of sewing before turning off the power will continue sewing.
	P194	File valid when leav- ing electronic label	Yes/No	No	

Classifica- tion of pa- rameters	No.	Parameter name	Range	Standard value	Meaning of parameter and comment
Auxiliary	P215	Start sewing	Yes/No	No	
functions	P214	Air blow at the end of sewing	Yes/No	No	
	P213	Continuous air blow- ing time	0	5000	
	P729	Imported graphic is not arranged at the center of the graphic	Yes/No	No	
	P206	Open output IO trans- fer	None/OUT1 to OUT12	None	
	P236	Laser output IO	None/OUT1 to OUT12	None	
	P205	Normal laser washing time	0 to 63000000	0	

# 4-25. エラーコード一覧

Error code	Title	Details	Return method
E001	Initialization is not yet executed	<ul> <li>Initialization is not executed when turning the power ON</li> </ul>	Press the "Reset" key.
E002	X axis sensor detec- tion error	• X axis positioning sensor fault	<ul> <li>Check the X axis sensor signal.</li> <li>Check to make sure that the cord is not broken.</li> <li>Check the X axis sensor connector for looseness or disconnection.</li> </ul>
E003	Y axis sensor detec- tion error	• Y axis positioning sensor fault	<ul> <li>Check the Y axis sensor signal.</li> <li>Check to make sure that the cord is not broken.</li> <li>Check the Y axis sensor connector for looseness or disconnection.</li> </ul>
E004	Intermediate presser shaft sensor detection error	<ul> <li>Intermediate presser shaft positioning sensor fault</li> </ul>	<ul> <li>Check the intermediate presser shaft sensor signal.</li> <li>Check to make sure that the cord is not broken.</li> <li>Check the intermediate presser shaft sensor connector for looseness or disconnection.</li> </ul>
E006	Moving knife shaft sensor detection error	<ul> <li>Moving knife shaft positioning sensor fault</li> </ul>	<ul> <li>Check the sensor signal.</li> <li>Check to make sure that the cord is not broken.</li> <li>Check the sensor connector for looseness or disconnection.</li> </ul>
E007	Main shaft motor en- coder error	<ul> <li>The main shaft motor encoder signal cannot be detected.</li> </ul>	<ul> <li>Check to make sure that the cord is not broken.</li> <li>Check the main shaft motor encoder con- nector for looseness or disconnection.</li> </ul>
E020	X axis motor overvolt- age	<ul> <li>A voltage that is equal to or higher than the guaranteed voltage is ap- plied.</li> <li>Application of an overvoltage has damaged the internal circuit.</li> </ul>	<ul> <li>Check to make sure that the supply voltage of 92 V or higher is not applied.</li> <li>Check to make sure that there is nothing wrong with the power PCB.</li> </ul>
E021	X axis motor low volt- age	<ul> <li>A voltage that is equal to or lower than the guaranteed voltage is ap- plied.</li> </ul>	<ul> <li>Check to make sure that the supply voltage of 80 V or lower is not applied.</li> <li>Check to make sure that there is nothing wrong with the power PCB.</li> </ul>
E022	X axis motor overcur- rent (software)	<ul> <li>A current that is equal to or higher than the guaranteed current is ap- plied.</li> <li>Motor is short-circuited by the over- current.</li> </ul>	<ul> <li>Check to make sure that there is nothing wrong with the X axis motor.</li> <li>Check to make sure that there is nothing wrong with the power PCB.</li> </ul>
E023	X Shaft motor overcur- rent (software)	<ul> <li>A current that is equal to or higher than the guaranteed current is ap- plied.</li> </ul>	<ul> <li>Check to make sure that there is nothing wrong with the X axis motor.</li> <li>Check to make sure that there is nothing wrong with the power PCB.</li> </ul>
E024	X axis motor encoder error	• The X axis motor encoder signal can- not be detected.	<ul> <li>Check to make sure that the cord is not broken.</li> <li>Check the X axis motor encoder connector for looseness or disconnection.</li> </ul>
E025	Disconnection of the X axis motor output connector	<ul> <li>The connector of the X axis motor has slipped off.</li> <li>The motor current detection circuit is damaged.</li> <li>There is no feed back of the current.</li> </ul>	<ul> <li>Check the X axis motor output connector for looseness or disconnection.</li> </ul>

Error code	Title	Details	Return method
E026	X axis motor overload	<ul> <li>The X axis motor fails to rotate.</li> <li>The X axis motor or the driver is damaged.</li> </ul>	<ul> <li>Check the X axis motor output connector for looseness or disconnection.</li> <li>Check to make sure that the cassette hold- er moves smoothly.</li> </ul>
E028	X axis motor A/D con- version error	<ul> <li>A/D conversion of the X axis fails to complete.</li> </ul>	<ul> <li>Re-turn the power ON.</li> <li>Check to make sure that there is nothing wrong with the MAIN PCB.</li> </ul>
E030	Y axis motor overcur- rent	<ul> <li>A voltage that is equal to or higher than the guaranteed voltage is ap- plied.</li> <li>Application of an overvoltage has damaged the internal circuit.</li> </ul>	<ul><li>Check to make sure that the supply voltage of 92 V or higher is not applied.</li><li>Check to make sure that there is nothing wrong with the power PCB.</li></ul>
E031	Y axis motor low volt- age	<ul> <li>A voltage that is equal to or lower than the guaranteed voltage is ap- plied.</li> </ul>	<ul> <li>Check to make sure that the supply voltage of 80 V or lower is not applied.</li> <li>Check to make sure that there is nothing wrong with the power PCB.</li> </ul>
E032	Y axis motor overcur- rent (hardware)	<ul> <li>A current that is equal to or higher than the guaranteed current is ap- plied.</li> <li>Motor is short-circuited by the over- current.</li> </ul>	<ul> <li>Check to make sure that there is nothing wrong with the Y axis motor.</li> <li>Check to make sure that there is nothing wrong with the power PCB.</li> </ul>
E033	Y axis motor overcur- rent (software)	<ul> <li>A current that is equal to or higher than the guaranteed current is ap- plied.</li> </ul>	<ul> <li>Check to make sure that there is nothing wrong with the Y axis motor.</li> <li>Check to make sure that there is nothing wrong with the power PCB.</li> </ul>
E034	Y axis motor encoder error	<ul> <li>The Y axis motor encoder signal can- not be detected.</li> </ul>	<ul> <li>Check to make sure that the cord is not broken.</li> <li>Check the Y axis motor encoder connector for looseness or disconnection.</li> </ul>
E035	Disconnection of the Y axis motor output connector	<ul> <li>The connector of the Y axis motor has slipped off.</li> <li>The motor current detection circuit is damaged.</li> <li>Check the Y axis motor output con- nector for looseness or disconnec- tion.</li> </ul>	• There is no feed back of the current.
E036	Y axis motor overload	<ul> <li>The Y axis motor fails to rotate.</li> <li>The Y axis motor or the driver is damaged.</li> </ul>	<ul> <li>Check the Y axis motor output connector for looseness or disconnection.</li> <li>Check to make sure that the linear module moves smoothly.</li> </ul>
E038	Y axis motor A/D con- version error	<ul> <li>A/D conversion of the Y axis fails to complete.</li> </ul>	<ul> <li>Re-turn the power ON.</li> <li>Check to make sure that there is nothing wrong with the MAIN PCB.</li> </ul>
E040	Intermediate presser shaft motor overvolt- age	<ul> <li>A voltage that is equal to or higher than the guaranteed voltage is ap- plied.</li> <li>Application of an overvoltage has damaged the internal circuit.</li> </ul>	<ul> <li>Check to make sure that the supply voltage of 92 V or higher is not applied.</li> <li>Check to make sure that there is nothing wrong with the power PCB.</li> </ul>
E041	Intermediate presser shaft motor low volt- age	<ul> <li>A voltage that is equal to or lower than the guaranteed voltage is ap- plied.</li> </ul>	<ul> <li>Check to make sure that the supply voltage of 80 V or lower is not applied.</li> <li>Check to make sure that there is nothing wrong with the power PCB.</li> </ul>
E042	Intermediate presser shaft motor overcur- rent (hardware)	<ul> <li>A current that is equal to or higher than the guaranteed current is ap- plied.</li> <li>Motor is short-circuited by the over- current.</li> </ul>	<ul> <li>Check to make sure that there is nothing wrong with the intermediate presser shaft motor.</li> <li>Check to make sure that there is nothing wrong with the power PCB.</li> </ul>

Error code	Title	Details	Return method
E043	Intermediate presser shaft motor overcur- rent (software)	• A current that is equal to or higher than the guaranteed current is detected.	<ul> <li>Check to make sure that there is nothing wrong with the intermediate presser shaft motor.</li> <li>Check to make sure that there is nothing wrong with the power PCB.</li> </ul>
E044	Intermediate presser shaft motor encoder error	The intermediate presser shaft motor encoder signal cannot be detected.	<ul> <li>Check to make sure that the cord is not broken.</li> <li>Check the intermediate presser shaft motor encoder connector for looseness or dis- connection.</li> </ul>
E045	Disconnection of the intermediate presser shaft motor connector	<ul> <li>The connector of the intermediate presser shaft motor has slipped off.</li> <li>The motor current detection circuit is damaged.</li> <li>Check the intermediate presser shaft motor output connector for looseness or disconnection.</li> </ul>	• There is no feed back of the current.
E046	Intermediate presser shaft motor overload	<ul> <li>The intermediate presser shaft motor fails to rotate.</li> <li>The intermediate presser shaft motor or the driver is damaged.</li> </ul>	<ul> <li>Check the intermediate presser shaft motor output connector for looseness or discon- nection.</li> <li>Check to make sure that the intermediate presser moves smoothly.</li> </ul>
E048	Intermediate presser shaft A/D conversion error	<ul> <li>A/D conversion of the intermediate presser shaft fails to complete.</li> </ul>	<ul> <li>Re-turn the power ON.</li> <li>Check to make sure that there is nothing wrong with the MAIN PCB.</li> </ul>
E060	Main shaft motor over- voltage	<ul> <li>A voltage that is equal to or higher than the guaranteed voltage is ap- plied.</li> <li>Application of an overvoltage has damaged the internal circuit.</li> </ul>	<ul> <li>Check to make that the supply voltage of 400 V or higher is not applied.</li> <li>Check to make sure that there is nothing wrong with the power PCB.</li> </ul>
E061	Main shaft motor low voltage	<ul> <li>A voltage that is equal to or lower than the guaranteed voltage is ap- plied.</li> </ul>	<ul> <li>Check to make sure that the supply voltage of 180 V or lower is not applied.</li> <li>Check to make sure that there is nothing wrong with the power PCB.</li> </ul>
E062	Main shaft motor over- current (hardware)	<ul> <li>A current that is equal to or higher than the guaranteed current is ap- plied.</li> <li>Motor is short-circuited by the over- current.</li> </ul>	<ul> <li>Check to make sure that there is nothing wrong with the main shaft motor.</li> <li>Check to make sure that there is nothing wrong with the power PCB.</li> </ul>
E063	Main shaft motor over- current (software)	<ul> <li>A current that is equal to or higher than the guaranteed current is ap- plied.</li> </ul>	<ul> <li>Check to make sure that there is nothing wrong with the main shaft motor.</li> <li>Check to make sure that there is nothing wrong with the power PCB.</li> </ul>
E064	Main shaft motor en- coder error	The main shaft motor encoder signal cannot be detected.	<ul> <li>Check to make sure that the cord is not broken.</li> <li>Check the main shaft motor encoder con- nector for looseness or disconnection.</li> </ul>
E065	Main shaft motor rota- tion failure (machine lock)	<ul> <li>The main shaft motor fails to rotate.</li> <li>The main shaft motor or the driver is damaged.</li> </ul>	<ul> <li>Check the main shaft motor output connector for looseness or disconnection.</li> <li>Check to make sure that the pulley can be manually turned without a hitch.</li> </ul>
E066	Main shaft motor rota- tion failure	<ul> <li>The main shaft motor fails to rotate.</li> <li>The main shaft motor or the driver is damaged.</li> </ul>	<ul> <li>Check the main shaft motor output connector for looseness or disconnection.</li> <li>Check to make sure that the pulley can be manually turned without a hitch.</li> </ul>

Error code	Title	Details	Return method
E067	Y axis motor overcur- rent protection	• A current that is equal to or higher than the guaranteed current is detected.	<ul> <li>Check to make sure that there is nothing wrong with the Y axis motor.</li> <li>Check to make sure that there is nothing wrong with the power PCB.</li> </ul>
E068	Y axis motor overcur- rent (hardware)	<ul> <li>A current that is equal to or higher than the guaranteed current is ap- plied.</li> <li>Motor is short-circuited by the over- current.</li> </ul>	<ul> <li>Check to make sure that there is nothing wrong with the Y axis motor.</li> <li>Check to make sure that there is nothing wrong with the power PCB.</li> </ul>
E069	Y axis motor A/D con- version error	<ul> <li>A/D conversion of the Y axis fails to complete.</li> </ul>	<ul> <li>Re-turn the power ON.</li> <li>Check to make sure that there is nothing wrong with the servo PCB.</li> </ul>
E070	Y axis driver parame- ter error (hardware)	• The parameter set value of the Y axis driver is wrong.	Check the parameter of the Y axis driver.
E071	Y axis driver parame- ter error (software)	• The parameter set value of the Y axis driver is wrong.	• Check the parameter of the Y axis driver.
E072	Y axis motor A/D con- version error	<ul> <li>A/D conversion of the Y axis fails to complete.</li> </ul>	<ul> <li>Re-turn the power ON.</li> <li>Check to make sure that there is nothing wrong with the servo PCB.</li> </ul>
E073	Disconnection of the Y axis motor encoder connector	<ul> <li>The Y axis motor encoder signal can- not be detected.</li> </ul>	<ul> <li>Check to make sure that the cord is not broken.</li> <li>Check the Y axis motor encoder connector for looseness or disconnection.</li> </ul>
E075	Y axis motor encoder error (Z phase)	The Y axis motor encoder (Z phase) cannot be detected.	<ul> <li>Check to make sure that the cord is not broken.</li> <li>Check the Y axis motor encoder connector for looseness or disconnection.</li> </ul>
E079	Y axis motor overload	<ul> <li>The Y axis motor fails to rotate.</li> <li>The Y axis motor or the driver is damaged.</li> </ul>	<ul> <li>Check the Y axis motor output connector for looseness or disconnection.</li> <li>Check to make sure that the linear module moves smoothly.</li> </ul>
E080	Y axis motor driver overload	• An overload on the Y axis driver is detected.	<ul> <li>Check the Y axis motor output connector for looseness or disconnection.</li> <li>Check to make sure that the linear module moves smoothly.</li> </ul>
E085	Y axis motor deviation error	• The position deviation of the Y axis motor has exceeded the detection level.	Check to make sure that the linear module moves smoothly.
E088	Y axis motor overcur- rent error (hardware)	<ul> <li>A current that is equal to or higher than the guaranteed current is ap- plied.</li> </ul>	<ul> <li>Check to make sure that there is nothing wrong with the Y axis motor.</li> <li>Check to make sure that there is nothing wrong with the power PCB.</li> </ul>
E110	Y axis motor electronic gear ratio setting error	<ul> <li>Setting of the electronic gear ratio of the Y axis motor is wrong.</li> </ul>	• Change the Y axis motor.
E112	Main shaft motor short-circuit signal detection	<ul> <li>A short-circuit signal of the main shaft motor is detected.</li> </ul>	<ul> <li>Check to make sure that the main shaft is not short-circuited.</li> <li>Check to make sure that there is nothing wrong with the power PCB.</li> </ul>
E113	Main shaft motor en- coder connector fault	<ul> <li>The main shaft motor encoder signal cannot be detected.</li> </ul>	<ul> <li>Check to make sure that the cord is not broken.</li> <li>Check the main shaft motor encoder con- nector for looseness or disconnection.</li> </ul>
E120	Main shaft motor over- load	<ul> <li>The main shaft motor fails to rotate.</li> <li>The main shaft motor or the driver is damaged.</li> </ul>	<ul> <li>Check the main shaft motor output connector for looseness or disconnection.</li> <li>Check to make sure that the pulley can be manually turned without a hitch.</li> </ul>

Error code	Title	Details	Return method
E121	Main shaft motor driv- er overload	• An overload on the main shaft motor is detected.	<ul> <li>Check the main shaft motor output connector for looseness or disconnection.</li> <li>Check to make sure that the pulley can be manually turned without a hitch.</li> </ul>
E125	Main shaft motor pow- er low voltage	• A voltage that is equal to or lower than the guaranteed voltage is ap- plied to the main power supply of the main shaft motor.	<ul> <li>Check to make sure that the supply voltage of 180 V or lower is not applied.</li> <li>Check to make sure that there is nothing wrong with the power PCB.</li> </ul>
E140	1 Main shaft motor short-circuit signal detection	A short-circuit signal of the main shaft motor is detected.	<ul> <li>Check to make sure that the main shaft is not short-circuited.</li> <li>Check to make sure that there is nothing wrong with the power PCB.</li> </ul>
E142	1 Main shaft motor A/ D conversion error	<ul> <li>A/D conversion of the main shaft fails to complete.</li> </ul>	<ul> <li>Re-turn the power ON.</li> <li>Check to make sure that there is nothing wrong with the servo PCB.</li> </ul>
E144	Parameter fault detec- tion (software driver)	Setting parameter is defective.	
E146	1 Main shaft motor encoder connector fault	• The main shaft motor encoder signal cannot be detected.	<ul> <li>Check to make sure that the cord is not broken.</li> <li>Check the main shaft motor encoder con- nector for looseness or disconnection.</li> </ul>
E149	1 Main shaft motor power low voltage	• A voltage that is equal to or lower than the guaranteed voltage is ap- plied to the main power supply of the main shaft motor.	<ul> <li>Check to make sure that the supply voltage of 180 V or lower is not applied.</li> <li>Check to make sure that there is nothing wrong with the power PCB.</li> </ul>
E203	Main shaft motor mal- function	The main shaft motor fails to operate properly.	<ul> <li>Check to make sure that the version of the driver is the latest one.</li> <li>Turn the pulley to check to make sure that the main shaft motor runs without a hitch.</li> <li>Check to make sure that the main haft motor encoder connector is properly connected.</li> <li>Check to make sure that the main shaft motor output connector is connected correctly.</li> </ul>
E204	Main shaft motor re- verse rotation	<ul> <li>The main shaft motor rotates in the direction opposite to the specified direction.</li> </ul>	<ul> <li>Check the main shaft motor encoder connector for looseness or disconnection.</li> <li>Check to make sure that the main shaft motor output connector is connected correctly.</li> </ul>
E205	Cassette holder lifting	The cassette holder is in its upper position.	Lower the cassette holder.
E206	I/O PCB failure	• The I/O PCB has failed.	<ul> <li>Check the connector that connects the I/ O PCB and MAIN PCB for looseness or disconnection.</li> <li>Change the I/O PCB.</li> </ul>
E207	I/O signal timeout	• There is a timeout for the signal from the I/O PCB.	<ul> <li>Carry out an "output test" to check the signal.</li> <li>Check the no-signal connector for looseness or disconnection.</li> </ul>
E208	Drop in air pressure	• The air presser has dropped.	<ul> <li>Check the air pressure.</li> <li>Check the air presser sensor connector for looseness or disconnection.</li> </ul>
E210	Intermediate presser misalignment error	• The origin position of the intermediate presser is wrong.	Check the origin adjustment of the interme- diate presser.

Error code	Title	Details	Return method
E213	Thread breakage de- tection error	Thread breakage is detected.	• Turn the power OFF. Check to make sure that the thread take-up spring moves smoothly.
E214	Sewing counter reach- ing the set value	• The sewing counter has reached the set value.	Reset the sewing counter.
E215	Bobbin thread counter reaching the set value	<ul> <li>The bobbin thread counter has reached the set value.</li> </ul>	Reset the bobbin thread counter.
E216	Number of stitches limit error	• The number of stitches has exceeded the limit value.	• Re-examine the pattern data.
E217	Pattern data read failure	<ul><li>Pattern data that is not supported is used.</li><li>The pattern data is corrupted.</li></ul>	• Examine the pattern data.
E218	Pattern data read timeout	<ul> <li>There is a timeout during reading of the pattern data.</li> </ul>	• Re-examine the pattern data.
E219	MAIN PCB error (ex- ceptional condition)	• A defect has occurred in the MAIN PCB.	Change the MAIN PCB.
E220	Incompatible update file	<ul><li> The update file that is not supported is used.</li><li> The update file is corrupted.</li></ul>	Check the update file.
E221	Update execution error	<ul><li> The update file that is not supported is used.</li><li> The update file is corrupted.</li></ul>	Check the update file.
E222	Updating not yet exe- cuted	Updating has not been executed.	• Execute updating.
E224	Abnormal communica- tion between the I/O PCB and MAIN PCB	• The I/O PCB fails to communicate with the MAIN PCB.	<ul> <li>Check to make sure that the cord is not broken.</li> <li>Check the connectors of the MAIN PCB and I/O PCB for looseness or disconnection.</li> </ul>
E225	Abnormal communi- cation between the operation panel and MAIN PCB	• The operation panel fails to communi- cate with the MAIN PCB.	<ul> <li>Check to make sure that the cord is not broken.</li> <li>Check the connectors of the MAIN PCB and operation panel for looseness or dis- connection.</li> </ul>
E226	Update file corruption	The update file is corrupted.	Check the update file.
E227	Abnormal communi- cation between the operation panel and MAIN PCB (during file transfer)	<ul> <li>The operation panel fails to com- municate with the MAIN PCB when transferring a file.</li> </ul>	<ul> <li>Check to make sure that the cord is not broken.</li> <li>Check the connectors of the MAIN PCB and operation panel for looseness or dis- connection.</li> </ul>
E228	Pattern data size is too large	• You have attempted to create pattern data that exceeds the the number of stitches and data volume the equipment can handle.	• Re-examine the pattern data.
E229	Too large angle be- tween stitches	• The angle between stitches is too large.	• Re-examine the pattern data.
E230	Pattern data reading	• Pattern data is being read.	• Wait for a while. (This is not an error.)
E231	Intermediate presser shaft motor overload	<ul> <li>The intermediate presser motor fails to rotate.</li> <li>The intermediate presser motor or the driver is damaged.</li> </ul>	<ul> <li>Check the intermediate presser shaft motor output connector for looseness or discon- nection.</li> <li>Check to make sure that the intermediate presser moves smoothly.</li> </ul>
E232	No insertion of exter- nal medium	• No medium is inserted.	<ul> <li>Check to make sure that the medium is inserted correctly.</li> </ul>

Error code	Title	Details	Return method
E233	Read & write error (external medium con- nection)	<ul> <li>Data cannot be read from the medium.</li> <li>Data cannot be written on the medium.</li> </ul>	<ul> <li>Check the data in the medium.</li> <li>Check to make sure that the medium is data-writable.</li> </ul>
E234	Sewing area exceed- ed	The sewing data has exceeded the possible range of sewing.	• Re-examine the pattern data.
E235	File compatibility error	• The file is not compatible.	Check the file type.
E236	MAIN PCB memory corruption	<ul> <li>Memory error on the power PCB is detected.</li> </ul>	Change the MAIN PCB.
E237	Password not yet set	• A password is not yet set.	• Set a password.
E238	Unsupported editing	<ul> <li>Unsupported operation is contained in the pattern data.</li> </ul>	• Re-examine the pattern data.
E240	Abnormal communi- cation between the operation panel and MAIN PCB	• The operation panel fails to communi- cate with the MAIN PCB.	<ul> <li>Check to make sure that the cord is not broken.</li> <li>Check the connectors of the MAIN PCB and operation panel for looseness or dis- connection.</li> </ul>
E241	Timing setting error	Setting of the timing is wrong.	• Re-examine the timing setting.
E242	Workable input I/O error	<ul> <li>Inoperable input/output settings are turned on.</li> </ul>	<ul> <li>Select "Workable Input IO" and turn off unnecessary input/outputs</li> </ul>
E243	Work enable input I/O error	<ul> <li>Inoperable input/output setting is placed in ON.</li> </ul>	<ul> <li>Select "Work enable input IO" and place unnecessary input/output in OFF.</li> </ul>
E244	I/O signal timeout	<ul> <li>There is a timeout during waiting for the I/O signal execution.</li> </ul>	<ul> <li>Carry out an "output test" to check the signal.</li> <li>Check the no-signal connector for looseness or disconnection.</li> </ul>
E245	Pattern execution timeout	<ul> <li>There is a timeout during waiting for the pattern data execution.</li> </ul>	• Re-examine the pattern data.
E246	File name character limit error	The file name has a large number of characters.	• Re-examine the file name.
E247	Intermediate presser lifting	The intermediate presser is in its upper position.	Lower the intermediate presser.
E248	Cassette holder lifting	• The cassette holder is in its upper position.	Lower the cassette holder.
E249	Cloth cutting knife lifting	<ul> <li>The cloth cutting knife is in its upper position.</li> </ul>	Lower the cloth cutting knife.
E250	Punching material running out		
E251	Return-to-origin error	• The origin position cannot be reached.	<ul> <li>Check to make sure that the X axis origin is correctly adjusted.</li> <li>Check to make sure that the Y axis origin is correctly adjusted.</li> <li>Check to make sure that the intermediate presser shaft origin is correctly adjusted.</li> </ul>
E252	Cloth cutting knife motor overload	<ul> <li>The cloth cutting knife motor fails to rotate.</li> <li>The cloth cutting knife motor or the driver is damaged.</li> </ul>	<ul> <li>Check the cloth cutting knife connector for looseness or disconnection.</li> <li>Check to make sure that the cloth cutting knife moves smoothly.</li> </ul>
E400	Abnormal communica- tion between the driver and MAIN PCB	The driver fails to communicate with the MAIN PCB.	

Error code	Title	Details	Return method
E401	Overcurrent protection detection (driver)	<ul> <li>A current that is equal to or higher than the guaranteed current is de- tected.</li> </ul>	<ul> <li>Check to make sure that there is nothing wrong with the motor.</li> <li>Check to make sure that there is nothing wrong with the power PCB.</li> </ul>
E404	Parameter fault detec- tion (hardware driver)	Setting parameter is defective.	
E405	Parameter fault detec- tion (software driver)	Setting parameter is defective.	
E406	A/D conversion error detection (driver)	• A/D conversion fails to complete.	<ul> <li>Re-turn the power ON.</li> <li>Check to make sure that there is nothing wrong with the driver.</li> </ul>
E407	Encoder connector fault detection (driver)	• The encoder signal cannot be detect- ed.	<ul> <li>Check to make sure that the cord is not broken.</li> <li>Check the motor encoder connector for looseness or disconnection.</li> </ul>
E408	Encoder error signal detection (AB phase driver)	• The encoder (A and B phases) can- not be detected.	<ul> <li>Check to make sure that the cord is not broken.</li> <li>Check the motor encoder connector for looseness or disconnection.</li> </ul>
E410	Power supply part low voltage detection (driv- er)	<ul> <li>A voltage that is equal to or lower than the guaranteed voltage is ap- plied.</li> </ul>	<ul> <li>Check to make sure that the supply voltage of 92 V or higher is not applied.</li> <li>Check to make sure that there is nothing wrong with the power PCB.</li> </ul>
E411	Power supply part overvoltage detection (driver)	<ul> <li>A current that is equal to or higher than the guaranteed current is ap- plied.</li> <li>Motor is short-circuited by the over- current.</li> </ul>	<ul> <li>Check to make sure that the supply voltage of 180 V% or lower is not applied.</li> <li>Check to make sure that there is nothing wrong with the power PCB.</li> </ul>
E413	Motor overload detec- tion (driver)	<ul><li> The motor fails to rotate.</li><li> The motor or the driver is damaged.</li></ul>	<ul> <li>Check the motor output connector for looseness or disconnection.</li> <li>Check to make sure that the cassette hold- er moves smoothly.</li> </ul>
E414	Driver overload detec- tion (driver)	• An overload on the driver is detected.	
E418	Motor overspeed de- tection (driver)	The number of revolutions of the mo- tor has exceeded the detection level.	<ul> <li>Check to make sure that the cord is not broken.</li> <li>Check the motor output connector for looseness or disconnection.</li> <li>Check the motor encoder connector for looseness or disconnection.</li> </ul>
E419	Motor position devi- ation error detection (driver)	<ul> <li>The position deviation of the motor has exceeded the detection level.</li> </ul>	<ul> <li>Check to make sure that the motor runs without a hitch.</li> </ul>
E427	Detection of system mismatch between the motor and the driver(driver)		
E428	Return-to-origin error detection (driver)	• The motor fails to return to its origin.	
E429	Power supply fault detection (driver)		
E444	Motor electronic gear ratio is out of range (driver)	• The setting of the motor electronic gear ratio is wrong.	• Change the motor.

Error code	Title	Details	Return method
E448	Motor overload (driver)	<ul> <li>The motor fails to rotate.</li> <li>The motor or the driver is damaged.</li> </ul>	<ul> <li>Check the motor output connector for looseness or disconnection.</li> <li>Check to make sure that the cassette hold- er moves smoothly.</li> </ul>
E449	Driver overload signal detection (driver)	<ul><li> The motor fails to rotate.</li><li> The motor or the driver is damaged.</li></ul>	<ul> <li>Check the motor output connector for looseness or disconnection.</li> <li>Check to make sure that the cassette hold- er moves smoothly.</li> </ul>
E450	Motor position devi- ation error detection (driver)	The position deviation of the motor has exceeded the detection level.	<ul> <li>Check to make sure that the motor runs without a hitch.</li> </ul>
E452	Positive-direction movement limit detec- tion (driver)	• The movement amount of the motor in the positive direction has exceed- ed the limit.	<ul> <li>Return the cassette holder to its home position.</li> </ul>
E453	Negative-direction movement limit detec- tion (driver)	• The movement amount of the motor in the negative direction has exceed- ed the limit.	Return the cassette holder to its home position.
E478	Motor A/D conversion error (driver)		

#### Instruction file error list

Error code	Description of error	Solution
W001	The top plate cover is opened.	Put the cover on the top plate.
W002	The table cover is opened.	Put the cover on the table.
W003	The safety cover is opened.	Put the safety cover in place.
W005	Lubricate	Add grease. The number of days to be elapsed before the warning is given is set in the parameter file con- taining the grease-related data. So, if addition of grease is not necessary, press the "OK".

# **5. MAINTENANCE OF SAWING MACHINE**



#### WARNING :

Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine. In addition, attach the covers which have been removed before operation back in place.

No.	Re	gion	Explanation	Operating time
1	The area under the t surrounding the hoo and its inner portion, area, needle bar are outside of the presse the electronic contro inlet and outlet, and thread waste, thread stains are likely to re	throat plate, area k, bobbin case , thread trimming ea, areas inside and er foot, openings of box such as air the regions in which d end and other emain.	Clean up the surface of equipment with a tool such as an air gun. In particular, clean up the regions in which the aforementioned thread waste, thread end and other stains are likely to remain.	Eight hours
2		upper and lower le bar.	<ol> <li>Loosen screw ① of the face plate. Remove the face plate.</li> <li>Loosen and remove screw ② of the needle bar upper bushing and screw ③ of the needle bar lower bushing.</li> <li>Aligning the grease hole of grease gun with the tapped hole in the needle bar upper and lower bushings, add grease. (See Figs. 1 and 2.)</li> <li>The grease amount to be added must exceed 0.5 cm<sup>3</sup>.</li> <li>After the completion of oiling, tighten the screws of the needle bar upper and lower bushings and return the face plate in po- sition. Tighten the screw of the face plate.</li> <li>Use the lithium based lubricat- ing grease No. 2. Do not use it with mixed with other type of lubricating grease.</li> </ol>	Operation for 720 hours
	Fig 1	Fig 2		

No.	Region		Explanation	Operating time
3	Lubricate the hook oil tank.	<ol> <li>1.</li> <li>2.</li> <li>3.</li> <li>4.</li> <li>5.</li> </ol>	Detach cover ①. Remove rubber plug ② of the oil tank. Pour accessory (or specified) oil to the oil tank through the rubber plug hole. When the oil amount in the oil tank reaches the upper scale mark, stop pouring oil. Return the rubber plug to and return the cover to their original positions.	If the oil level in the oil tank drops below the lower scale mark- er, replenish the oil tank with the acces- sory (or specified) oil.
4	Adding the lubricating oil to the gear box.	1. 2. 3.	Remove screw ① . Detach hook cover ② . Remove screw ③ . Detach gear box cover ④ and gasket. Lubricate the gear box with white oil No. 32 little by little. When the oil amount reaches the half of diameter of master wheel, stop lubrication. Return the cover of the gear box, gasket, cover and hook cover to their original positions and tighten screws.	

# 5-1. Troubles and corrective measures (Sewing conditions)

Trouble	Cause	Corrective measures
1. The needle thread slips off at the start of bar-tacking.	<ol> <li>Stitches are slipped at the start.</li> <li>The needle thread remaining on the needle after thread trimming is too short.</li> <li>The bobbin thread is too short.</li> </ol>	<ul> <li>Adjust the clearance provided between the needle and the hook.</li> <li>Set soft-start sewing at the beginning of sewing.</li> <li>Decrease the tension of the thread tension controller No. 1.</li> <li>Increase the tension of the thread take-up spring.</li> <li>Decrease the bobbin thread tension.</li> <li>Increase the clearance between the needle and the counter knife.</li> <li>Decrease the needle thread tension at 1st stitch</li> </ul>
	<ol> <li>Needle thread tension at 1st stitch is too high.</li> <li>Stitching pitch at 1st stitch is too small.</li> </ol>	<ul> <li>and extend the duration of the AT operation at the beginning of sewing.</li> <li>Make the stitching pitch at 1st stitch longer.</li> <li>Decrease the needle thread tension at 1st stitch.</li> </ul>
2. Thread offen breaks		
or synthetic fiber thread splits finely.	<ul> <li>() The nook of the inner hook holder has scratches.</li> <li>(2) The needle hole guide has scratches.</li> </ul>	<ul> <li>Remove the nook and grind nook or the inner hook holder with a fine grind stone or buff them.</li> <li>Buff the needle hole guide or replace it with a new one.</li> </ul>
	<ol> <li>Thread enters the groove in the hook.</li> <li>The needle thread tension is too high.</li> <li>The tension of the thread take-up spring is too high.</li> <li>The synthetic fiber thread melts due to heat generated on the needle.</li> </ol>	<ul> <li>Detach the hook to remove the thread.</li> <li>Decrease the needle thread tension.</li> <li>Decrease the tension of the thread take-up spring.</li> <li>Use the optional needle cooler.</li> </ul>
	⑦ When taking up the thread, the needle tip penetrates the thread.	<ul> <li>Check the rough state of needle tip.</li> <li>Use the ball-pointed needle.</li> </ul>
3. The needle often breaks.	<ol> <li>The needle is bent.</li> <li>The needle comes in contact with the intermediate presser.</li> </ol>	<ul> <li>Replace the bent needle.</li> <li>Adjust the position of the intermediate presser.</li> </ul>
	<ul> <li>(3) The needle is too thin for the material.</li> <li>(4) Clearance between the needle and the hook is too small.</li> </ul>	<ul> <li>Replace it with a thicker needle according to the material.</li> <li>Adjust the clearance between the needle and the hook.</li> </ul>
4. Threads are not trimmed.	<ol> <li>The counter knife is dull.</li> <li>Knife pressure of the counter knife is low.</li> <li>The counter knife has been improperly.</li> </ol>	<ul> <li>Replace the counter knife.</li> <li>Adjust the knife pressure of the counter knife.</li> <li>Correct the position of the counter knife.</li> </ul>
(Bobbin thread only)	<ul><li>positioned.</li><li>(4) The last stitch is skipped.</li></ul>	<ul> <li>Correct the timing between the needle and the back</li> </ul>
	<ul><li>(5) Bobbin thread tension is too low.</li><li>(6) Flopping of cloth</li></ul>	<ul> <li>Increase the bobbin thread tension.</li> <li>Lower the intermediate presser height.</li> </ul>
5. Stitch skipping often occurs.	<ol> <li>Clearance provided between the needle and the hook is not correct.</li> <li>Position of the inner hook holder against the needle is not correct.</li> <li>The needle is bent.</li> <li>The needle thread after thread trimming is too long.</li> </ol>	<ul> <li>Adjust the clearance between the needle and the hook.</li> <li>Adjust the position of the inner hook holder against the needle.</li> <li>Replace the bent needle.</li> <li>Decrease the tension of the thread take-up spring.</li> <li>Increase the tension of the thread tension controller No. 1.</li> </ul>
6. The needle thread comes out on the wrong side of the material.	<ol> <li>The needle thread tension is not high enough.</li> <li>The needle thread after thread trimming is too long.</li> </ol>	<ul> <li>Increase the needle thread tension.</li> <li>Increase the tension of the thread tension controller No. 1.</li> </ul>
7. Threads break at time of thread trim- ming.	<ol> <li>The knife has been improperly position.</li> </ol>	○ Correct the position of the knife.

Trouble	Cause	Corrective measures
8. Thread end of the 1st stitch comes out	① Stitch skipping at the 1st stitch.	<ul> <li>Increase the length of needle thread remaining at the needle after thread trimming.</li> </ul>
on the right side of the material.	② Needle used and thread used are thick in terms of the inner diameter of the intermediate presser.	<ul> <li>Change the current intermediate presser with another one which has a larger inner diameter.</li> </ul>
	③ Intermediate presser is not properly positioned in terms of the needle.	<ul> <li>Adjust the eccentricity between intermediate presser and needle so that needle enters in the center of intermediate presser.</li> </ul>
	④ The direction of air blower is incorrect. As a result, needle thread at the tip of needle cannot be clamped with the disc presser.	<ul> <li>Adjust the air-blowing direction of the air blow- er according to the direction of sewing so that the needle thread at the tip of needle can be clamped with the disc presser.</li> </ul>
9. The needle thread is entangled in the inner hook holder.	<ol> <li>The clearance provided between the inner hook holder and the inner hook is too small.</li> </ol>	<ul> <li>Adjust the clearance provided between the inner hook holder and the inner hook appropriately according to the thickness of needle thread to be used.</li> </ul>
10. The knotting section of bobbin thread at 2nd stitch at the sewing start appears on the right side.	<ol> <li>The bobbin runs idle excessively.</li> <li>Bobbin thread tension is too low.</li> <li>The needle thread tension at 1st stitch is too high.</li> </ol>	<ul> <li>Adjust the height of idling prevention spring of the bobbin case appropriately.</li> <li>Increase the bobbin thread tension.</li> <li>Decrease the needle thread tension at 1st stitch.</li> </ul>

## 5-2. Disposal of batteries



The operation panel has a built-in battery in order to operate the clock even when the power is turned OFF. Be sure to dispose of the battery following the local laws and regulations.

#### How to remove the battery



 Release lock ① of the door at the back or side face of the sewing machine to open the door.



- Remove cover setscrews ② of electrical box ③ that is located inside the door. Then, detach the front cover of the electrical box.
- 3) Slide stopper (a) of battery (a) in the direction of the arrow to detach battery (a).



# 5-3. Draining waste oil



When polyethylene oiler ① becomes filled with oil, remove polyethylene oiler ① and drain the oil.