

ENGLISH

**PLC-2760NVM
INSTRUCTION MANUAL**

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CAUTION

This Instruction Manual for the PLC-2760NVM only describes their differences from the standard models (PLC-2760V).

For safety-related information, carefully read and fully understand "Safety precautions" described in the Instruction Manual for the standard models before using your sewing machine.

1. Specifications

PLC-2760NVMA70BBZ

No.	Item	Application
1	Model	PLC-2760NVM
2	Model name	2-needle, post-bed, unison-feed, lockstitch machine with vertical-axis hook
3	Application	Medium- to heavy-weight materials, car seat, furniture
4	Sewing speed	Max. 2,500 sti/min (Refer to "10. SEWING SPEED TABLE" in the Instruction Manual for the standard model.)
5	Needle	Ferd. SCHMETZ 134 - 35 (Nm 100 to Nm 180) (Standard : Nm 140)
6	Applicable thread size for sewing	#30 to #5 (Europe 60 / 3-20 / 3)
7	Applicable thread size to be cut	#30 to #5 (Europe 60 / 3-20 / 3)
8	Stitch length	Max. 12 mm (forward/reverse feed) However, the machine is shipped with its stitch length restricted to 7 mm.
9	Presser foot lift	20 mm
10	Presser foot pressure control	Electric control (driven by a pulse motor)
11	Horizontal feed control	Electric control (driven by a pulse motor)
12	Alternate vertical feed control	Electric control (driven by a pulse motor)
13	Reverse stitch adjusting method	Pulse motor driving (with touch-back switch)
14	Number of patterns	Sewing pattern99 patterns (For the polygonal shape sewing, as many as 10 patterns can be registered.) Cycle sewing pattern 9 patterns Custom-pitch pattern20 patterns Condensation custom pattern9 patterns
15	Thread take-up	Link thread take-up
16	Needle bar stroke	40 mm
17	Amount of the alternate vertical movement	MAX. 9 mm However, the machine is shipped with its stitch length restricted to 6.5 mm.
18	Needle thread tension	Electric control (driven by a solenoid)
19	Hook	Vertical-axis 1.6-fold hook (Latch type)
20	Feed mechanism	Box feed
21	Drive system/Top and bottom vertical axis drive	Main shaft direct drive system/Timing belt
22	Lubrication	Automatic lubrication by semi-dry head plunger pump (with oil gauge)
23	Lubricating oil	JUKI New Defrix Oil No. 1 (equivalent to ISO standard VG7) or JUKI MACHINE OIL No. 7
24	Bed size	643 mm × 178 mm
25	Space under the arm	347 mm × 298 mm
26	Hand wheel size	Outer diameter : ø123 mm
27	Motor/Control box	DD motor : 800W AC servomotor Control box : SC-952
28	Machine head weight	88 kg
29	Rated power consumption	600 VA
30	Noise	- Equivalent continuous emission sound pressure level (L_{pA}) at the workstation: A-weighted value of 83.5 dB; (Includes $K_{pA} = 2.5$ dB); according to ISO 10821- C.6.2 - ISO 11204 GR2 at 2,500 sti/min. - Sound power level (L_{WA}); A-weighted value of 90.5 dB; (Includes $K_{WA} = 2.5$ dB); according to ISO 10821- C.6.2 - ISO 3744 GR2 at 2,500 sti/min.

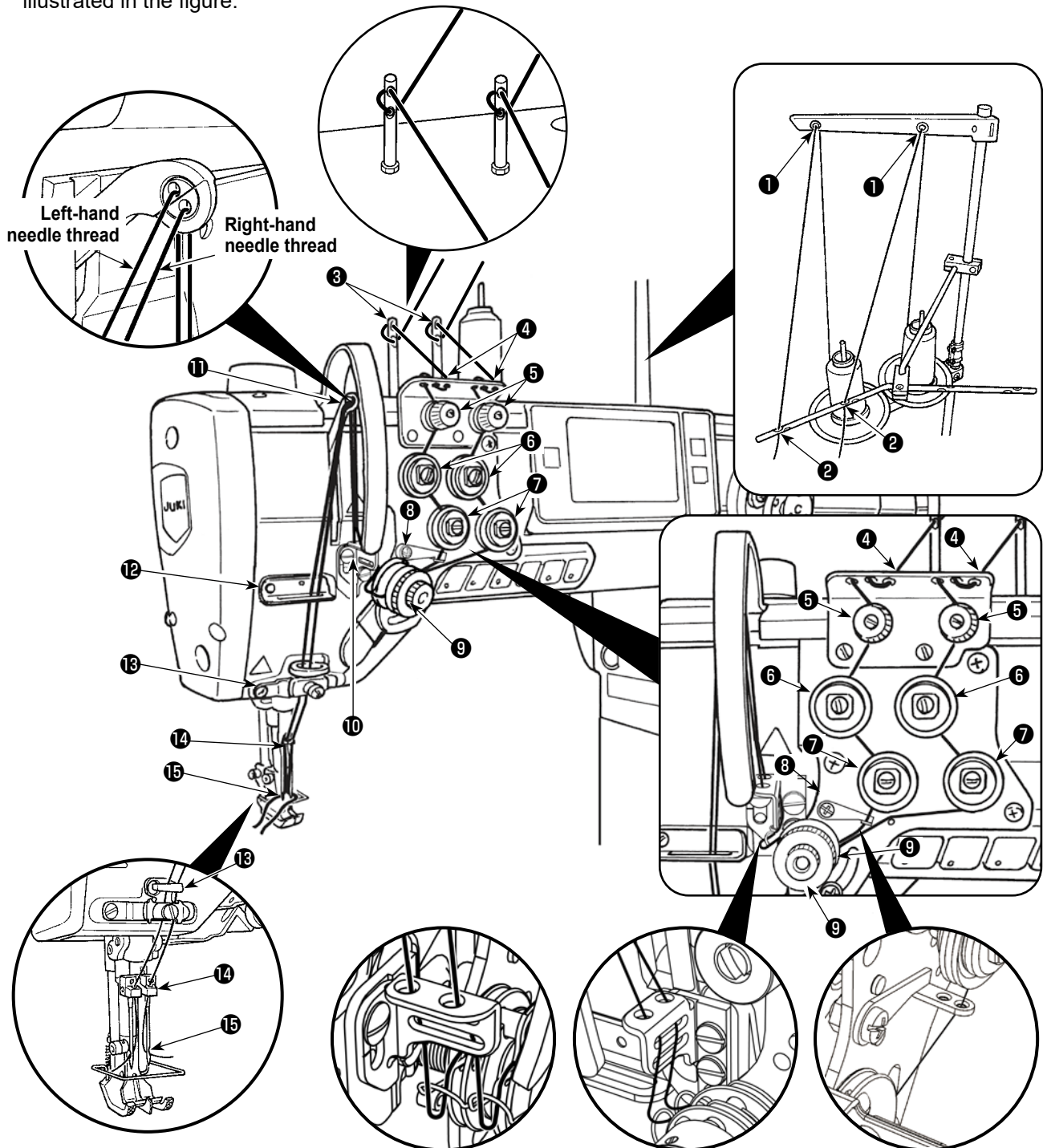
2. Threading the machine head



WARNING :

To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.

Thread the machine head following the order as illustrated in the figure.

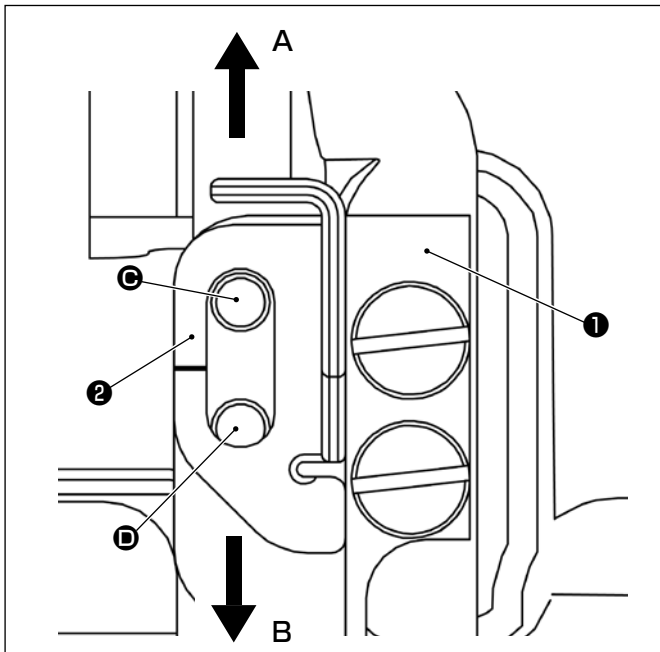


3. Take-up thread guide



WARNING :

To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.



If you want to change the feed amount of thread fed from the thread take-up lever, loosen the setscrew of take-up thread guide ② and move take-up thread guide ② appropriately.

Move the take-up thread guide in direction **A** to decrease the thread feed amount.

Move the take-up thread guide in direction **B** to increase the thread feed amount.

* Standard position of the take-up thread guide

The position where take-up thread guide ② is at its lower end while the setscrew is fitted in the upper tapped hole (Ⓒ) in the thread guide mounting plate ① (See the figure on the left.)

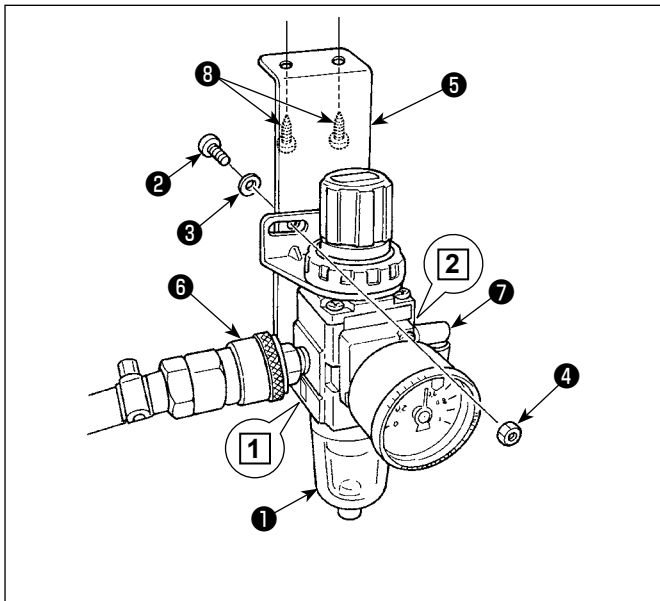
If you want to move the take-up thread guide in direction **B** from its standard position, insert the setscrew of take-up thread guide ② into the lower tapped hole (Ⓓ) in thread guide mounting plate ① .

4. Pneumatic components (when the pneumatic center guide is used)



WARNING :

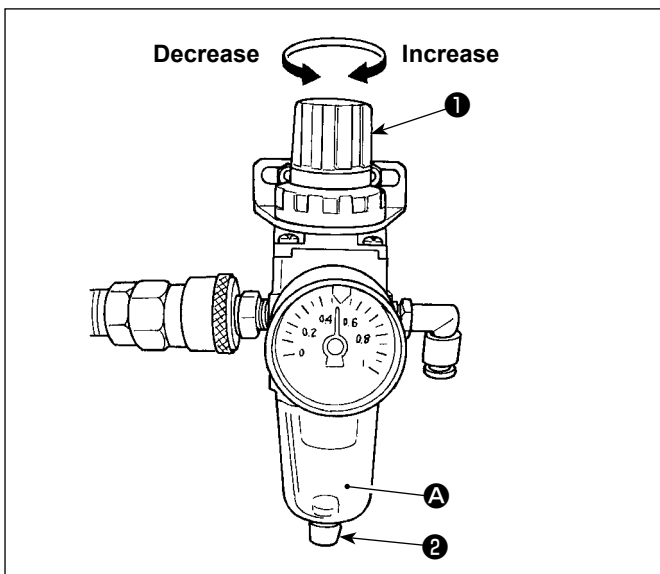
To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.



(1) Installing the regulator

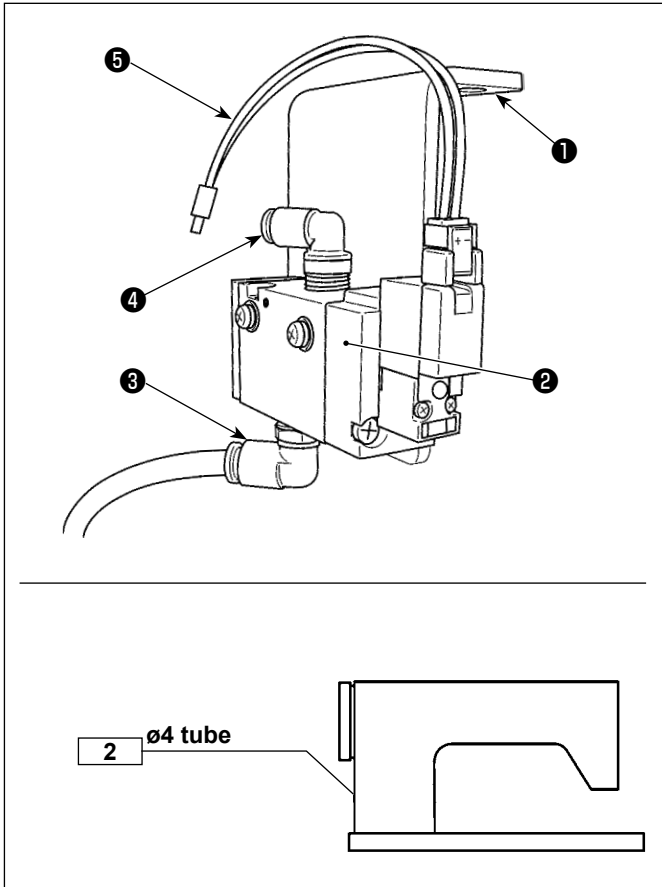
- 1) Install regulator (asm.) **1** on mounting plate **5** with screw **2**, spring washer **3** and nut **4** which are supplied with the unit.
- 2) Attach joint **6** to inlet **1**. Attach joint **7** to outlet **2**.
- 3) Attach mounting plate **5** on the undersurface of the table with accessory screws **8** supplied with the plate.
- 4) Connect the $\varnothing 6$ air tube to joint **7**.

* Screw **2** which is supplied with the unit:
Thread diameter M5; Length: 12 mm
(SM6051202TP)



(2) Adjusting the air pressure

- 1) The operating air pressure is 0.5 to 0.55 MPa. Adjust the air pressure using air pressure regulating knob **1** of the filter regulator.
- 2) In the case fluid accumulation is observed in **A** section of the filter regulator, turn drain cock **2** to drain the fluid.



(3) Attaching the solenoid valve

- 1) Attach solenoid valve asm. ② to the under-surface of the table with accessory screw ① (SK3452001SE).
- 2) Connect the ø6 tube described in step 4) in "(1) Installing the regulator" to joint ③ .
Cut the ø6 tube to an appropriate length before use.
- 3) Connect the ø4 air tube coming from the air type center guide to joint ④ .
- 4) Connect connector ⑤ to the CN59 on the electrical control box.

5. Setting the incidental device

5-1. Setting the ON/OFF status of the center guide



- 1) **M** ① held pressed for three second.
The "mode screen" is displayed.



- 2) Select "14. Incidental device setting".



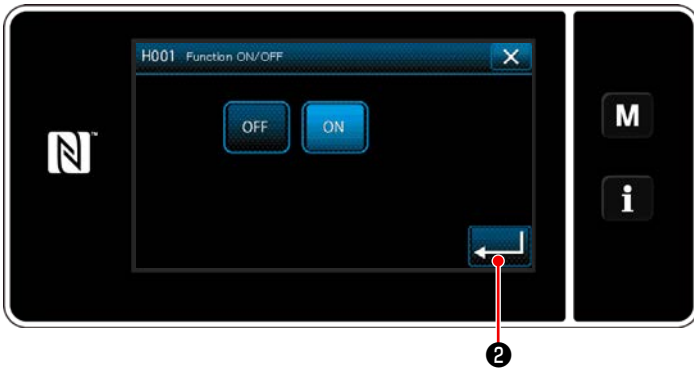
- 3) The "Incidental device setting screen" is displayed.
When the device setting of which is to be changed is selected, the setting screen for the selected device is displayed.
- 4) Select "1. Center guide" to display the "Center guide setting screen".

<Incidental device setting screen>




- 5) Select "H001 Function ON/OFF" to display the "Center guide function ON/OFF setting screen".


<Center guide setting screen>

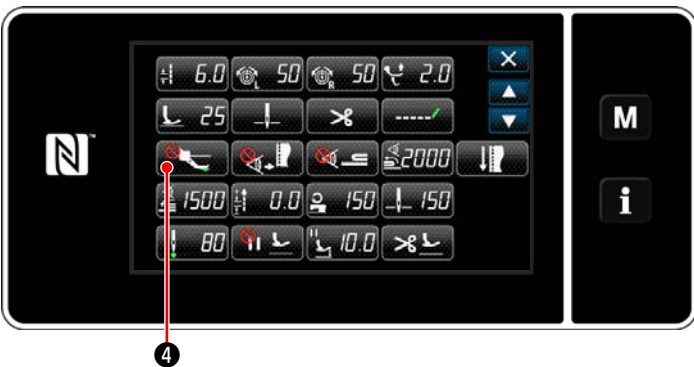



<Center guide ON/OFF setting screen>

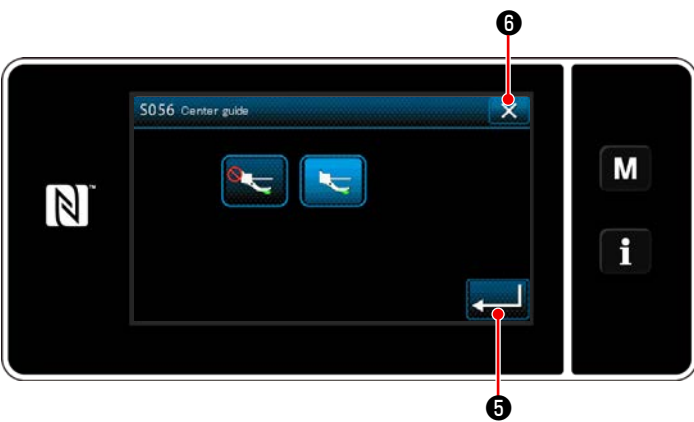
- 6) Select ON/OFF status of the function.
- 7) Press  ② to confirm the setting.






- 8) Press  ③ to display the sewing data edit screen.



- 9) Press  ④ to display the "S056 center guide".



- 10) Then, set the ON/OFF status of the center guide.
- 11) Press  ⑤ to confirm the value you have entered.
- 12) Press  ⑥ to display the sewing screen.

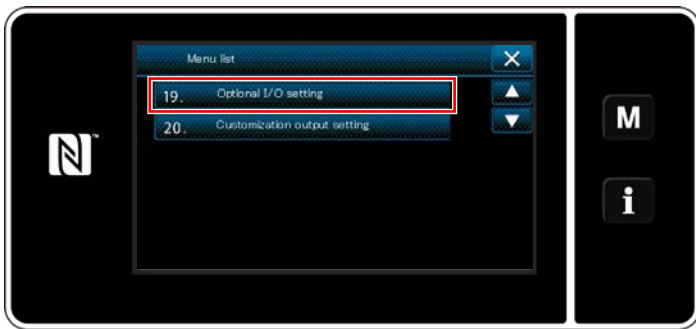
 If the pneumatic center guide does not function just by setting its ON/OFF status, set the optional input/output of the center guide as described in the next paragraph to enable the function of the pneumatic center guide.

5-2. Setting the optional input for the the center guide

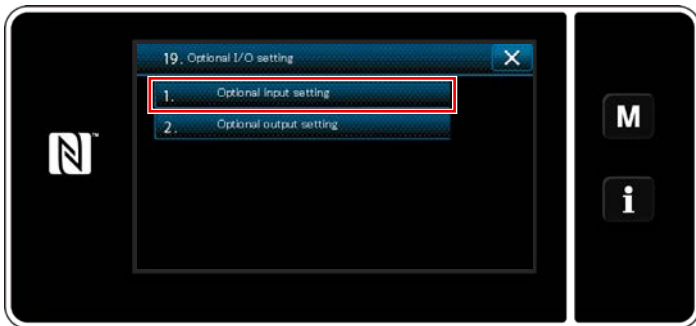
Assign the switching function of the center guide to the 6-gang switch.



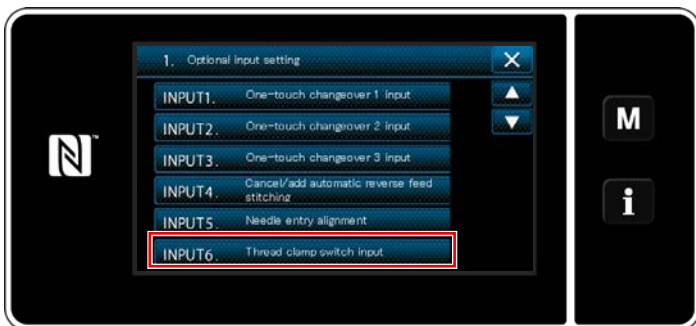
- 1) **M** **1** held pressed for three second.
The "mode screen" is displayed.



- 2) Select "19. Optional I/O setting".




- 3) Select "1. Optional input setting".

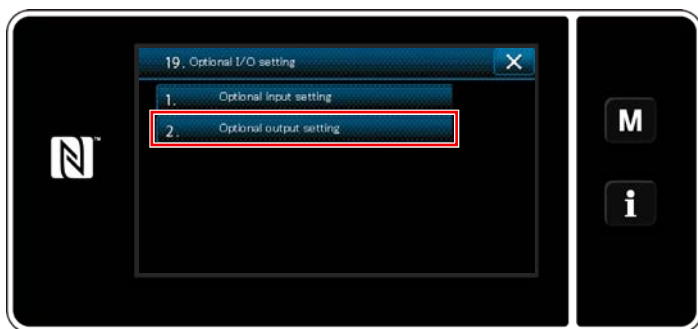


- 4) Select "INPUT6. Thread clamp switch input".

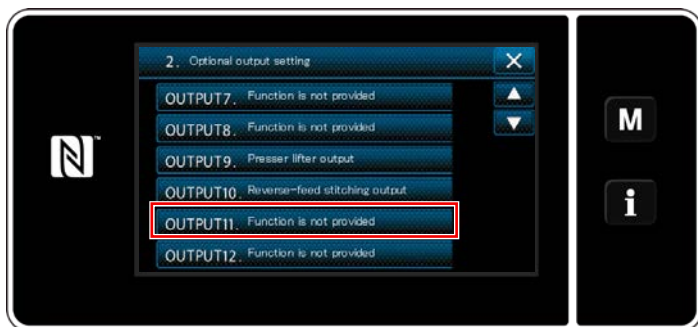


- 5) Select "i62. Center guide input".
- 6) Press  ② to confirm the selection.

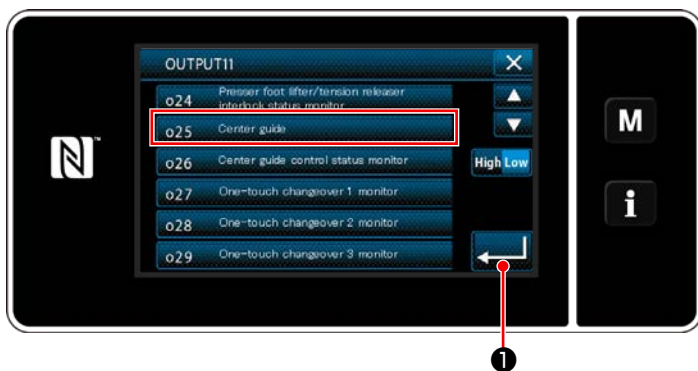
5-3. Setting the optional output for the center guide




- 1) Select "2. Optional output setting".



- 2) Select "OUTPUT11. Function is not provided".



- 3) Select "o25. Center guide".
- 4) Press  ① to confirm the selection.

6. Adjusting the hook needle guard

WARNING :

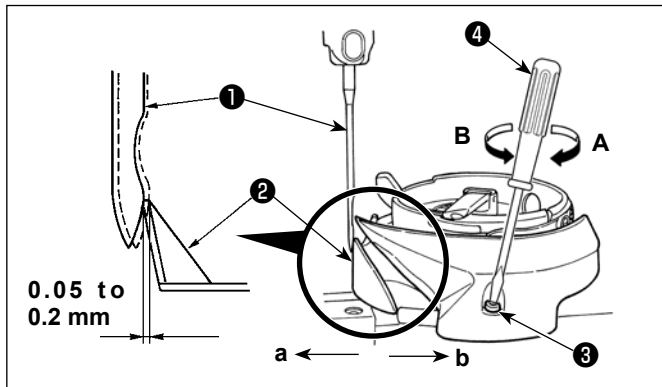
To protect against possible personal injury due to abrupt start of the sewing machine, be sure to change over the operation mode to the "hook timing adjustment mode".



The presser foot automatically goes up when changing over the operation mode to the "hook timing adjustment mode". In addition, the presser foot also comes down when the "hook timing adjustment mode" is finished and the power is turned OFF. Be sure carry out the operation while keeping your hands, etc. away from the presser foot.

For the sewing machine which is provided with the stitch skipping detecting device, the light emitted by the sensor LED may light into the eye to cause dazzling when adjusting the hook timing.

To avoid this, cover the LED before adjusting the hook timing.



When a hook has been replaced, be sure to check the position of the hook needle guard.

As the standard position of the hook needle guard, hook needle guard ② must push the side face of needle ① to lean the needle by 0.05 to 0.2 mm away from its straight position.

If the aforementioned standard state is not achieved, insert a screwdriver (small) ④ into needle guard adjustment screw ③ and adjust the position of the needle guard.

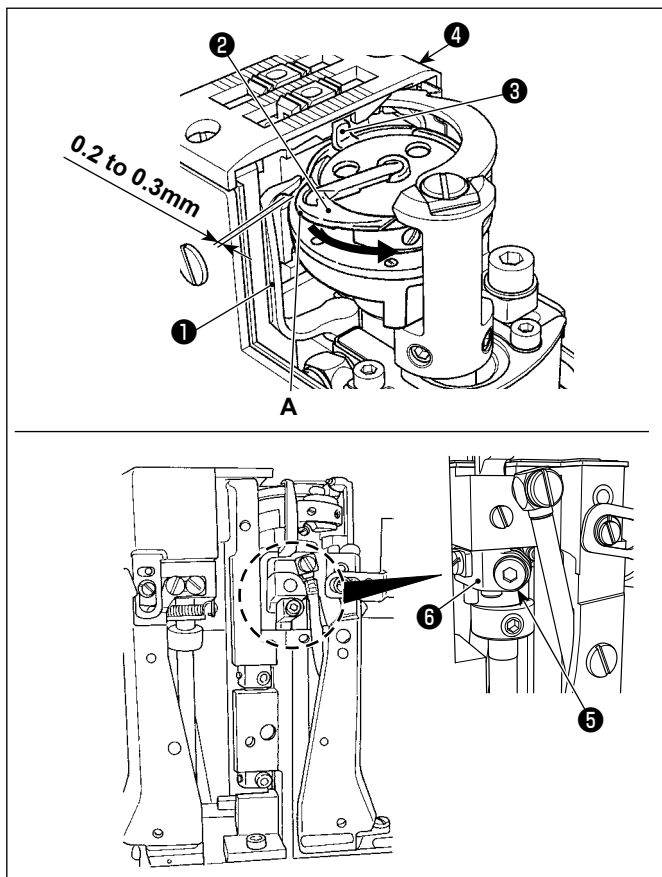
- 1) Place the machine in the hook timing adjustment mode.
- 2) To bend the hook needle guard in direction **a**, turn the needle guard adjusting screw in direction **A**.
- 3) To bend the hook needle guard in direction **b**, turn the needle guard adjusting screw in direction **B**.
- 4) At the final step of procedure, appropriately adjust the clearance provided between the needle and the hook.

7. Adjusting the bobbin case opening lever

WARNING :



To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.



- 1) Open the hook cover. (How to open : move the hook cover to the right or left after lifting it right above.)
- 2) Turn the handwheel in its normal rotational direction to bring bobbin case opening lever ① to its back end position.
- 3) Turn inner hook ② in the direction of the arrow until stopper ③ is pressed against the slits in throat plate ④ .
- 4) Loosen bobbin case opening lever crank setscrew ⑤ . Adjust the clearance between the bobbin case opening lever and protruding portion **A** of the bobbin case to 0.2 to 0.3 mm.
- 5) Tighten setscrew ⑤ while pressing down bobbin case opening lever crank ⑥ .
- 6) Move inner hook guide ① up and down to make sure that there is not play in the thrust direction.



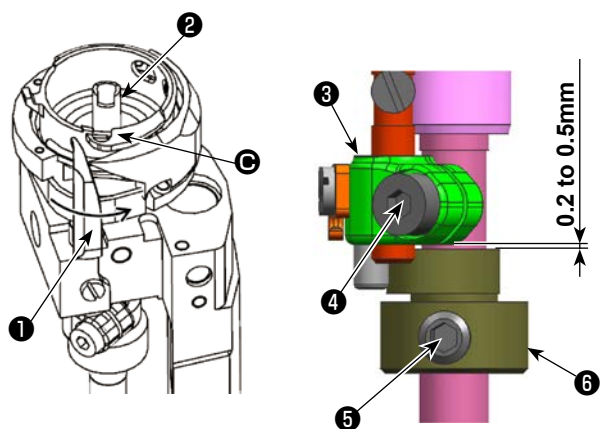
In case of 2-needle machine, perform the same adjustment to the right and left hooks.

8. Adjusting the timing of the opener



WARNING :

To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.

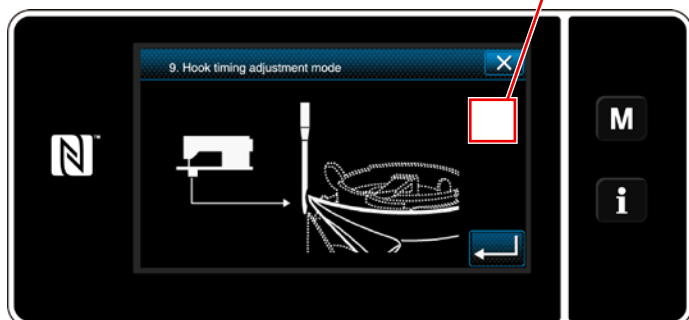



[Conditions]

The displayed angle should be 0° when the needle bar is at its upper dead point.

Right hook	195±5°
Left hook	165±5°

Angle display



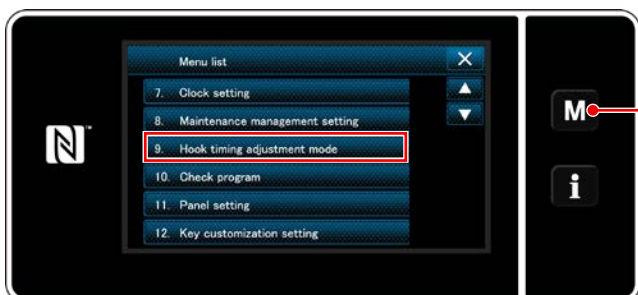
- 1) Place the machine in the hook timing adjustment mode.
- 2) For the right hook, loosen the setscrew in the side cover on the operator's side to remove the side cover. (For the left hook, remove the side cover on the opposite side of the operator.)
- 3) Loosen opener cam setscrew ⑤ .
- 4) While checking the angle displayed on the screen, turn the handwheel to bring the hook to the angle shown in the table. In this state, tighten setscrew ⑤ of opener cam at the position where opener ① starts to move from the position farthest from the protruding portion ② of inner hook ② .
At this time, tighten setscrew ⑤ of opener cam in such a way that a clearance of 0.2 to 0.5 mm is provided between the top surface of opener cam ⑥ and the undersurface of opener arm ③ .
- 5) Install the side cover with the side cover setscrew.
- 6) Press  button to exit from the hook timing adjustment mode.



Carry out angle correction before starting adjustment of the opener timing to make sure that 0° is displayed when the needle bar is at its upper dead point.
In the case of the 2-needle sewing machine, opener arm clamping screw ④ of the left hook is located on the opposite side of the operator.

9. How to correct the main shaft reference angle

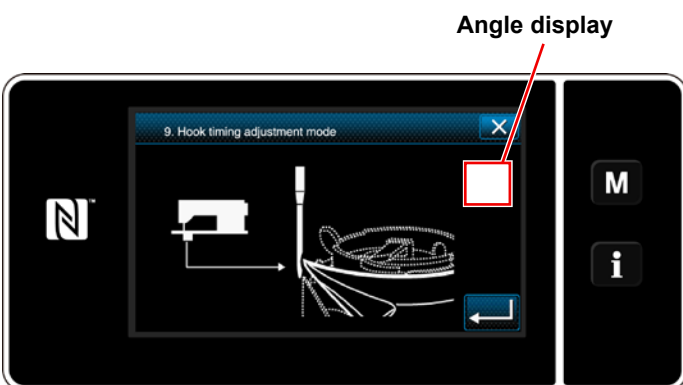
After you have adjusted the origins of the motors (main motor, feed motor, presser motor and alternating vertical movement motor), correct the reference angle of the main motor.



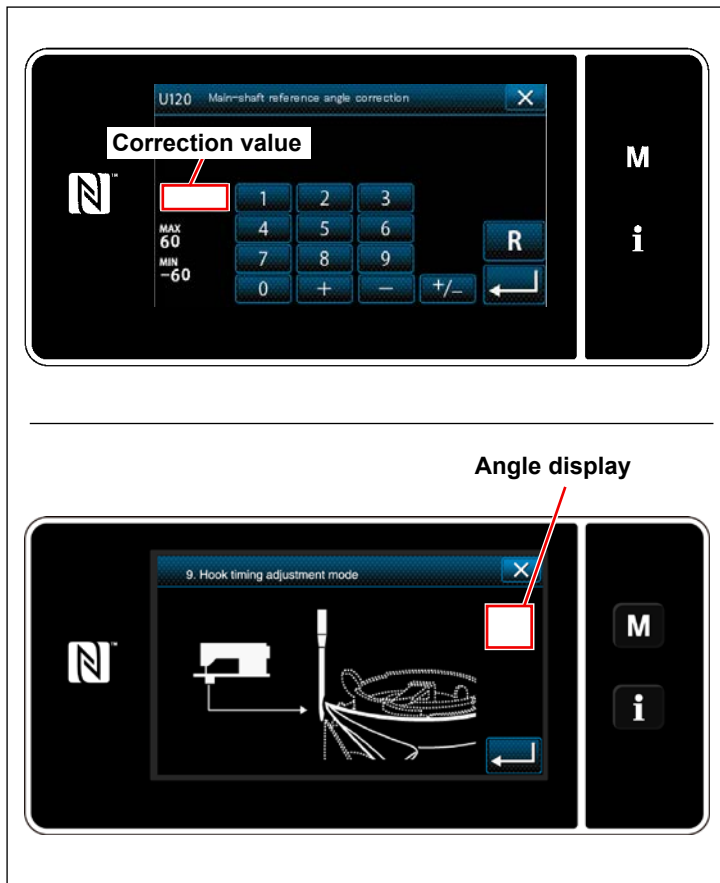
- 1) Press and hold down **M** **1** on the sewing screen and select "9. Hook timing adjustment mode".




- 2) Placing the dial gauge against the needle clamp, turn the handwheel to bring the needle bar to its upper dead point.



- 3) Check the angle displayed on the screen.
- 4) Press **X** to return the screen to the sewing screen.
- 5) Press **M** **1** on the sewing screen to select "1. Memory switch", "1. Display all" and "U120. Main shaft reference angle correction" in the written order.



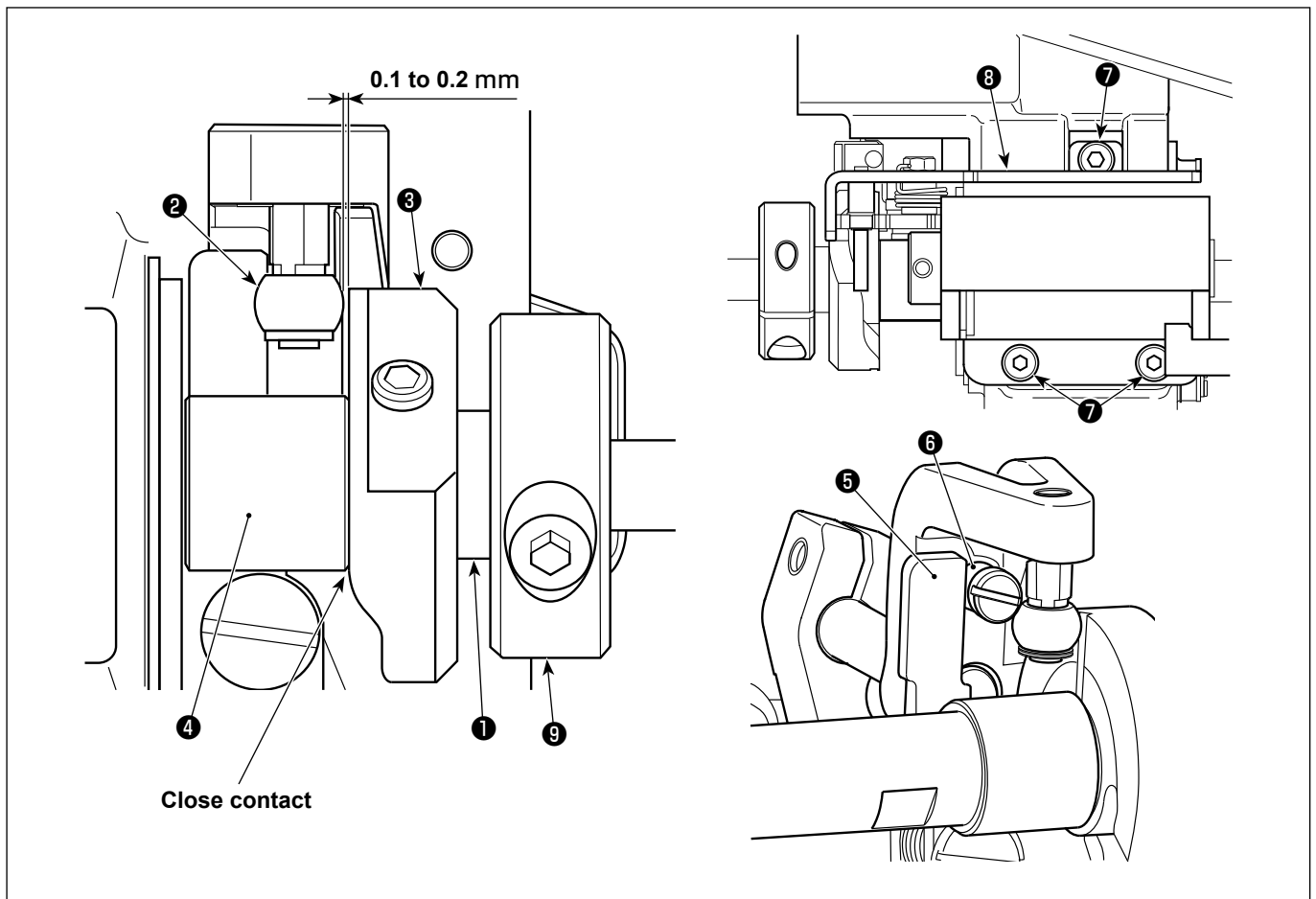
- 6) Enter a correction value on the operation panel so that the angle you have checked in Step 3 becomes "0" (zero) or "360".
For example, enter "-5" if the angle you have checked in Step 3 is "5". Enter "8" if the angle you have checked is "352".
- 7) Press  to confirm the value you have entered.
- 8) Enter the "Hook timing adjustment mode".
Check that the angle "0" (zero) is displayed when the needle bar is at its upper dead point.

10. Position of the thread trimmer cam



WARNING :

To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.



[Position of the thread trimmer cam]

- 1) Let the sewing machine fall down.
- 2) Set the thread trimmer solenoid to initial position.
- 3) Loosen three setscrews **7** of the thread trimmer solenoid mounting plate. Adjust the thread trimmer solenoid mounting plate **8** so that the clearance between the thread trimmer cam roller **2** and the dwell section of thread trimmer cam **3** is 0.1 to 0.2 mm in the state that the moving knife driving arm link **5** is in contact with the roller **6**. Then tighten three setscrews **7** of the thread trimmer solenoid mounting plate.
- 4) Raise the sewing machine.



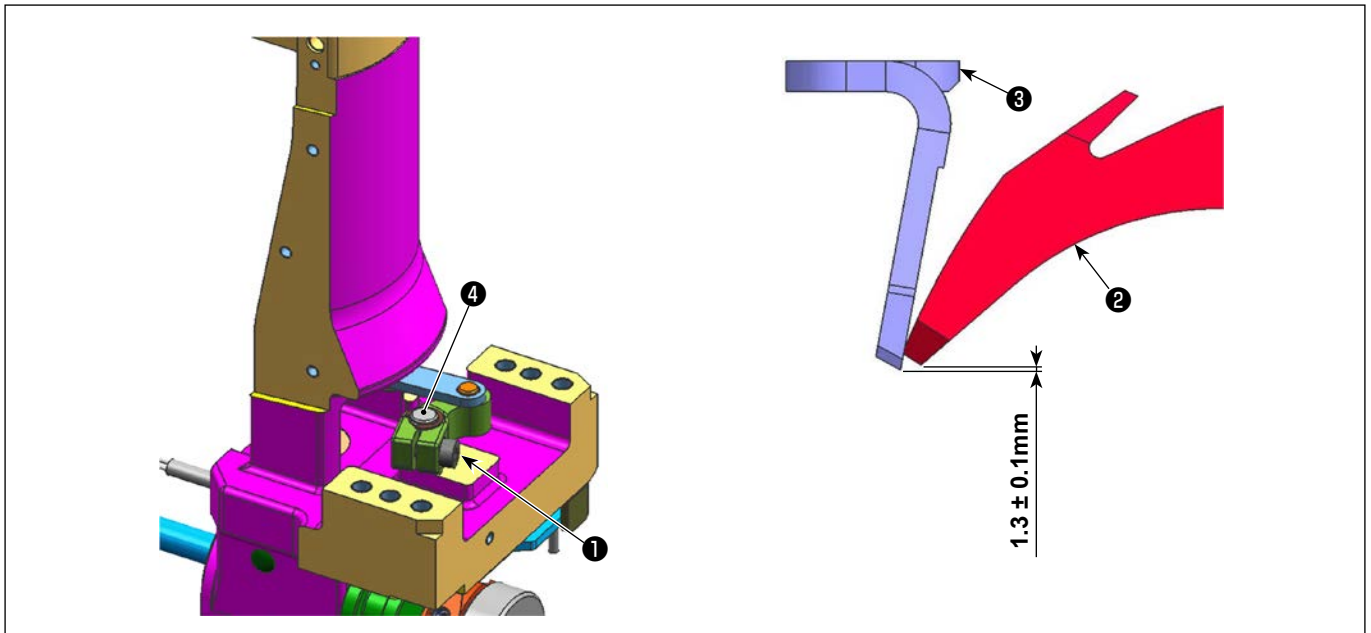
Check that the end face of thread trimmer cam **3** comes in close contact with the end face of collar **4**.
Fix the lower shaft set collar **9** in a position so that the end face of lower shaft set collar **9** is almost aligned with the end face of lower shaft **1**.

11. Adjusting the position of the moving knife



WARNING :

To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.



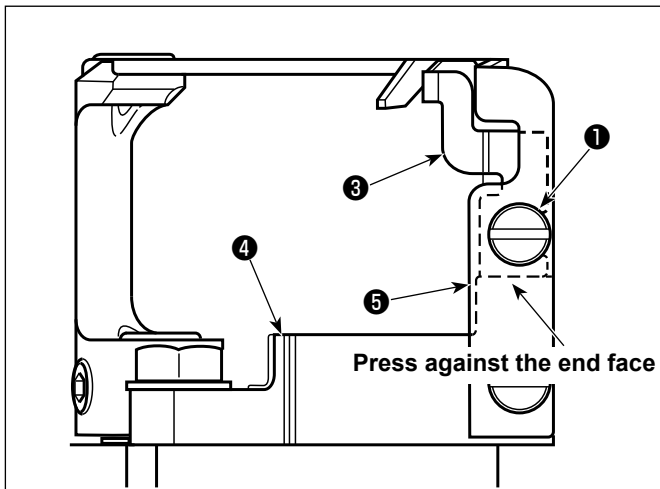
- 1) Loosen the bed cover setscrews (1-needle machine: Two pieces; 2-needle machine: Four pieces) to remove the bed cover.
- 2) Loosen clamping screw(s) ❶ (1-needle machine: One piece; 2-needle machine: Two pieces) of the moving knife shaft connecting arm A.
- 3) In the state where the flat surface of the thread trimming cam and the cam roller come in contact with each other, adjust the distance between the tip of counter knife ❸ and the tip of moving knife ❷ to $1.3 \pm 0.1\text{mm}$.
- 4) Tighten clamping screw(s) ❶ (1-needle machine: One piece; 2-needle machine: Two pieces) of the moving knife shaft connecting arm A in such a way that there is no thrust play in moving knife driving shaft ❹ .

12. Adjusting the position of the clamp spring

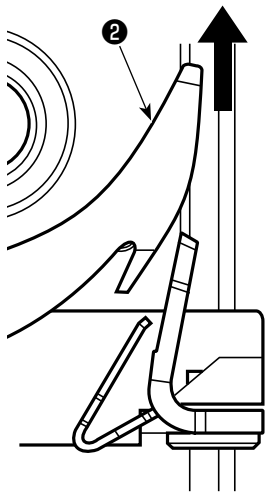


WARNING :

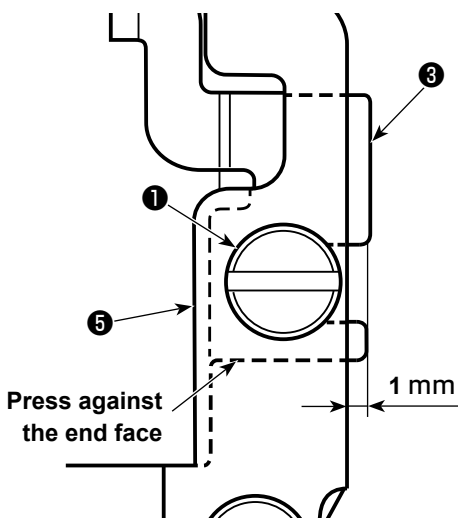
To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.



- 1) Loosen clamp spring setscrew **1** .



- 2) Move moving knife **2** to the position where it does not come in contact with clamp spring **3** .



- 3) Slide clamp spring **3** while keeping it pressed against the end face of counter knife base **4** .
- 4) Adjust clamp spring **3** so that it protrudes 1 mm from the end face of counter knife **5** .
- 5) Tighten clamp spring setscrew **1** .
- 6) Return moving knife **2** to its initial position. Then, check that it comes in light contact with clamp spring **3** .

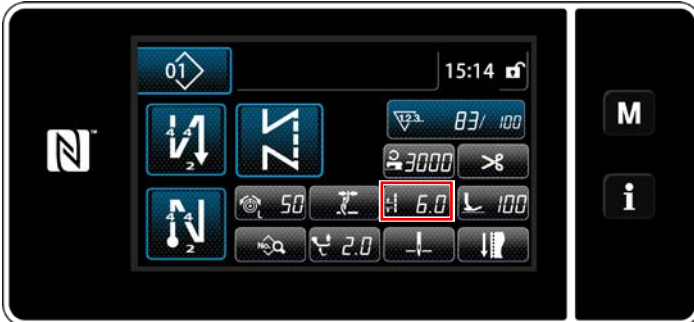
13. How to adjust the cam timing

13-1. Timing of the vertical feed cam



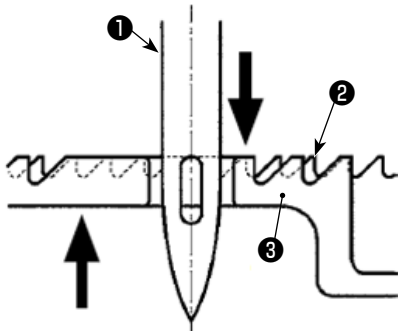
WARNING :

To protect against possible personal injury due to abrupt startup of the sewing machine, be sure to press the standby switch and confirm that the screen has changed over to the standby mode screen before starting work.

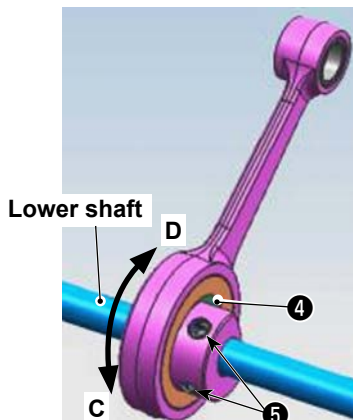


[Conditions]

- Amount of feed: 6 mm
- Alternating vertical movement amount: 3 mm
- When the needle comes down and the feed dog goes up



Top end of the eyelet of needle ①, top surface of throat plate ② and top surface of feed dog ③ are aligned



- 1) Adjust the vertical feed timing after you have adjusted the horizontal feed timing.
 - 2) Set the stitch length to "6.0" on the stitch length screen.
- * The PLC-2710V-7 and the PLC-2760V-7 have different displays.

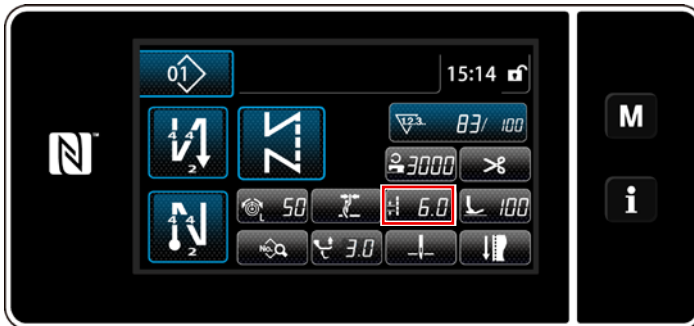
- 3) Press the standby switch. Then, tilt the machine head.
- 4) Loosen vertical feed cam setscrews ⑤ (two pieces).
- 5) Turn vertical feed cam ④ in such a way that needle ①, throat plate ② and feed dog ③ are positioned as shown in the figure on the left.
- 6) Tighten vertical feed cam setscrews ⑤ (two pieces).

13-2. Top feed cam timing



WARNING :

To protect against possible personal injury due to abrupt startup of the sewing machine, be sure to press the standby switch and confirm that the screen has changed over to the standby mode screen before starting work.



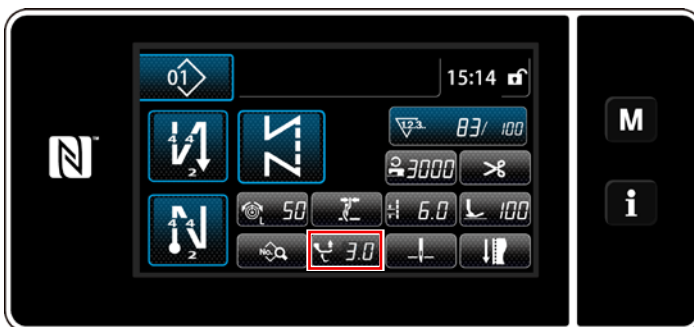
1) Set the stitch length to "6.0" on the stitch length screen.

* The PLC-2710V-7 and the PLC-2760V-7 have different displays.



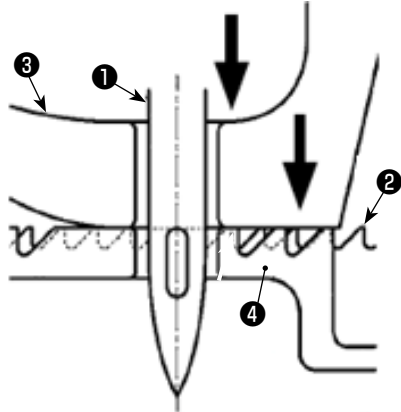
2) Set the amount of the alternating vertical movement of the walking foot and presser foot to "3.0" on the alternating vertical movement amount screen.

* The PLC-2710V-7 and the PLC-2760V-7 have different displays.

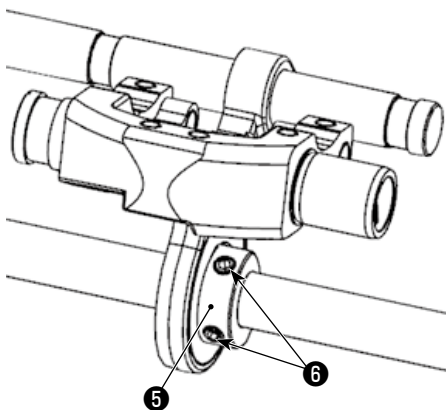
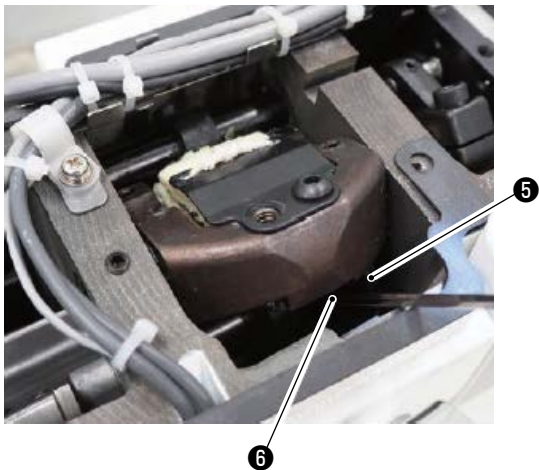
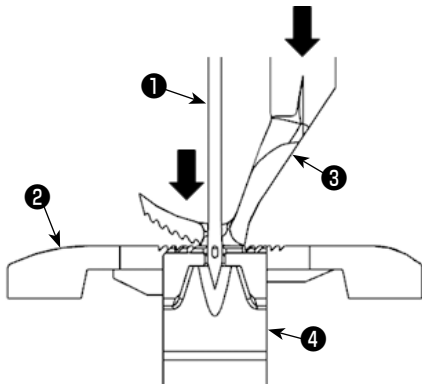


[Conditions]

- Amount of feed: 6 mm
- Alternating vertical movement amount: 3 mm
- When the needle and the walking foot come down



Top end of the eyelet of needle ①, top surface of throat plate ②, undersurface of walking foot ③ and top surface of feed dog ④ are aligned.



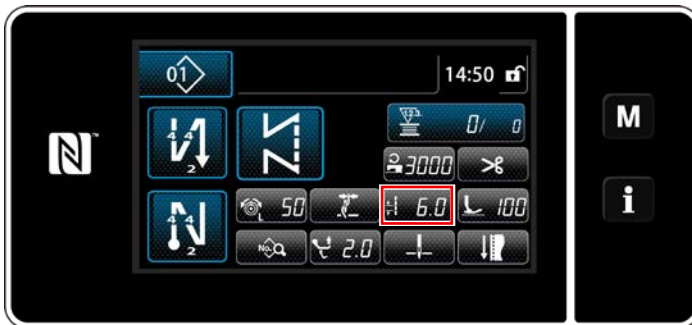
- 3) Press the standby switch.
- 4) Remove the top cover.
- 5) Loosen top feed cam setscrews ⑥ (two pieces).
- 6) On the condition that the amount of the alternating vertical movement of the walking foot and presser foot is uniform, turn top feed cam ⑤ in such a way that needle ①, throat plate ②, walking foot ③ and feed dog ④ are positioned as shown in the figure on the left.
- 7) Tighten top feed cam setscrews ⑥ (two pieces).
- 8) Attach the top cover in place.

14. Needle sway (Adjusting the bottom feed amount)



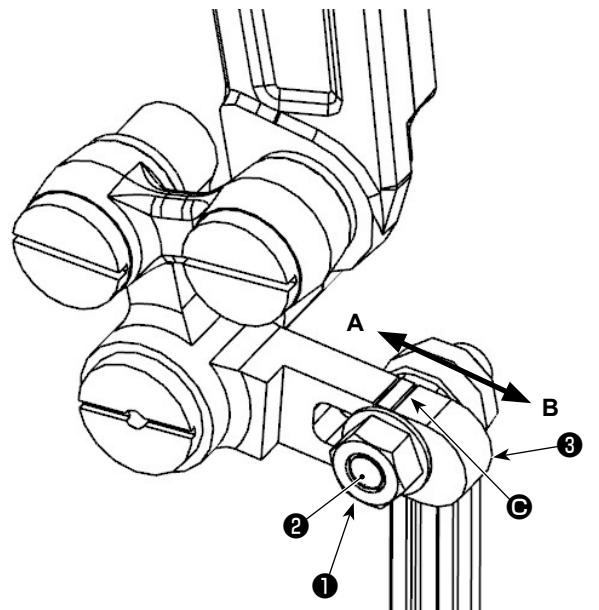
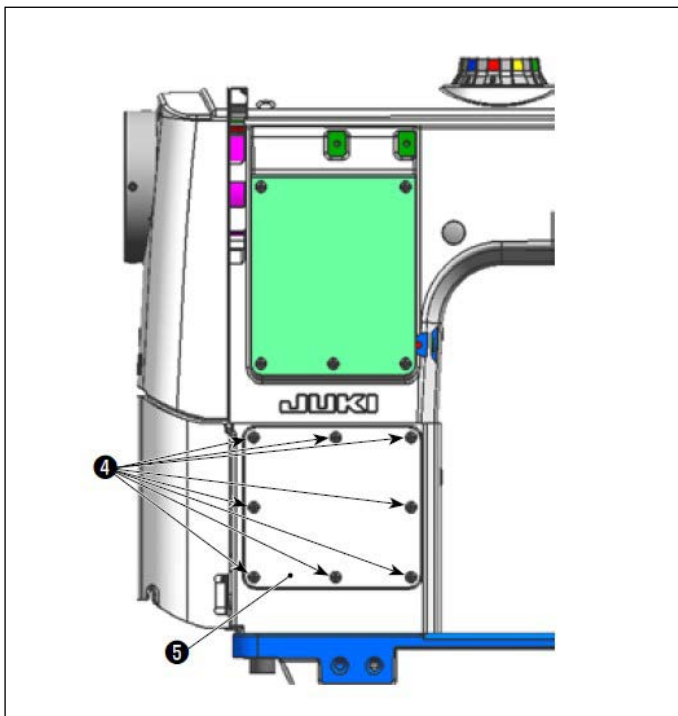
WARNING :

To protect against possible personal injury due to abrupt startup of the sewing machine, be sure to press the standby switch and confirm that the screen has changed over to the standby mode screen before starting work.



1) Set the stitch length to "6.0" on the stitch length screen.

* The PLC-2710V-7 and the PLC-2760V-7 have different displays.

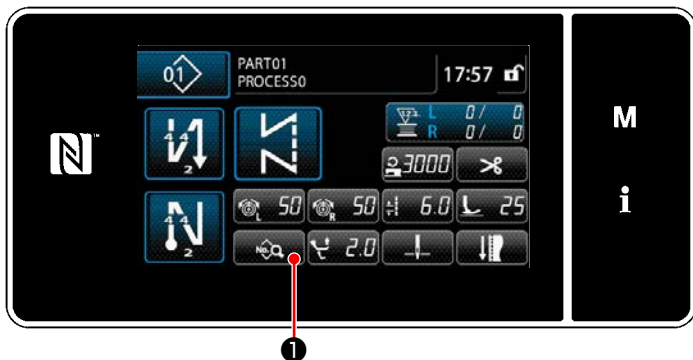


- 2) Remove the set screws ④ (8 pieces) of the post window plate ⑤ and press the standby switch.
 - 3) Loosen hinge screw nut ① of the horizontal feed rear arm.
 - 4) Tighten hinge screw nut ① of the horizontal feed rear arm at the position where the center line of hinge screw ② of the horizontal feed rear arm is aligned with the marker line ③ of bottom feed connecting triangle lever ③.
- (Standard) When Adjust the position of hinge screw nut ① of the horizontal feed rear arm in the direction of arrow A, the bottom feed amount is decreased. When Adjust the position of hinge screw nut ① of the horizontal feed rear arm in the direction of arrow B, the bottom feed amount is increased.**



When you change the bottom feed amount, re-adjust since a change in the longitudinal position of the needle entry.

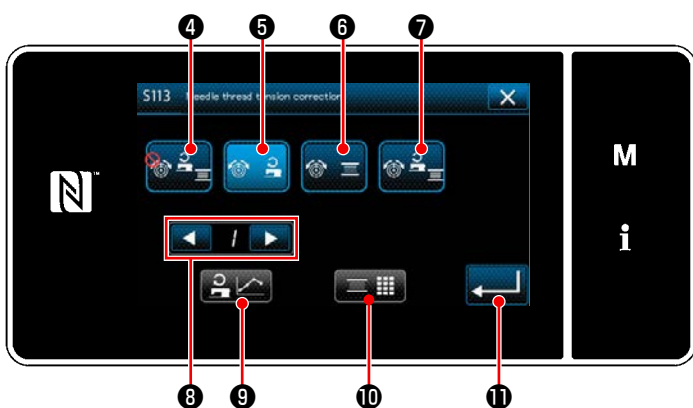
15. Tension correction



<Sewing screen (Maintenance personnel mode)>



<Sewing data edit screen>



<S113 Needle thread tension correction screen>

- 1) Press ① on the sewing screen under the maintenance personnel mode. The "sewing data edit screen" is displayed.

- 2) Press ② to proceed to the next page. Press ③. The "S113 Needle thread tension correction screen" is displayed.

- 3) Select the thread tension correction method you want to use from the four methods described below:

- ④ Not use
- ⑤ Sewing speed (initial setting)
- ⑥ Bobbin thread remaining amount
- ⑦ Both (the sewing speed and the bobbin thread remaining amount)

- 4) Select the type of the tension correction data.

- In case of correcting the tension in accordance with the sewing speed.

Select the chart number you want to save from among 1 to 4 with ⑧.

Then, press ⑨.

Refer to "[15-1. Tension correction and sewing speed](#)" p.22 for the steps of procedure after the above.

- Press ⑩ when you want to correct the thread tension in accordance with the remaining amount of bobbin thread.

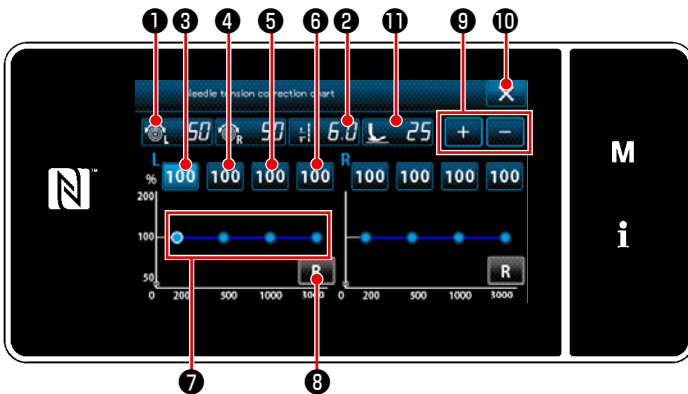
Refer to "[15-2. Tension correction and remaining amount of bobbin thread](#)" p.23 for the steps of procedure after the above.

- * Press ⑪ to confirm the data you have entered and return the screen to the "Sewing data edit screen".

15-1. Tension correction and sewing speed

The needle thread tension can be corrected according to the sewing speed.

The needle thread tension can also be set on the operation panel. The needle thread tension data is stored in memory.



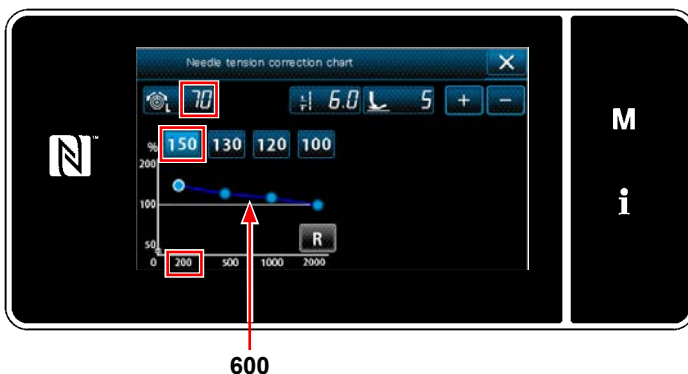
- 1) The values of needle thread tension ①, stitch length ② and presser foot pressure ⑪ can be increased/decreased with ⑨.
- * The numeric value you change in this Step will be reflected in the setting of the sewing pattern data.

For the alternating vertical movement amount, its setting cannot be changed on this screen.

The sewing machine operates with the alternating vertical movement amount that is set as the sewing pattern data.

- 2) Correction value [%] to be employed when the sewing machine runs at 150 sti/min can be set by pressing ③. This value can be increased / decreased with ⑨.
- When you have selected ③, the sewing machine is able to perform sewing at the maximum sewing speed of 200 sti/min with needle thread tension ①, stitch length ② and presser foot pressure ⑪ you have set.
- 3) Correction value [%] to be employed when the sewing machine runs at 1000 sti/min can be set by pressing ④.
- As in the case of 2), the sewing machine is able to perform sewing at the maximum sewing speed of 1000 sti/min.
- 4) When ⑤ is selected, the correction value [%] to be employed when the sewing machine runs at 2000 sti/min can be set.
- As in the case of 2), the sewing machine is able to perform sewing at the maximum sewing speed of 2000 sti/min.
- 5) If you select ⑥, as with Step 2), the sewing machine will be able to perform sewing at the maximum sewing speed you have set with the U096 "Maximum sewing speed".
- * ⑥ is fixed at 100 % and cannot be changed.
- 6) The aforementioned result of settings can be checked on thread tension chart ⑦.
 - 7) Set values ③ to ⑥ can be reset to the initial value of 100 by pressing ⑧.
 - 8) ⑩ is disabled during sewing. After the completion of thread trimming, it becomes enabled and can be pressed to return the screen to the "113 Needle thread tension correction screen".

(Example of use)

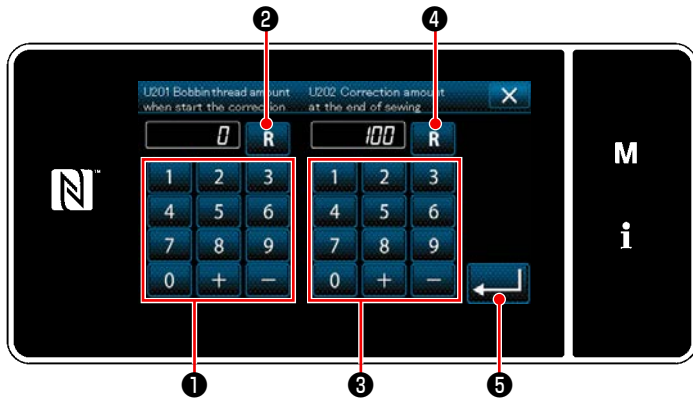


In the case the correction is made as shown in the figure

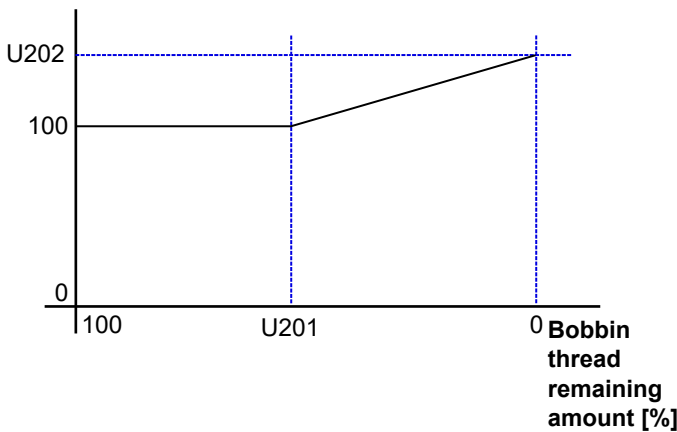
- If the sewing speed is "200 sti/min", the needle thread tension will be corrected by "150 %", from "70" to "105".
 - For the sewing speed that is not shown on the scale, the correction along the inclination of the line chart will be applied.
- If the sewing speed is "600 sti/min", the needle thread tension will be corrected by "128 %", from "70" to "89".

15-2. Tension correction and remaining amount of bobbin thread

The needle thread tension can be corrected according to the bobbin thread remaining amount. The needle thread tension can also be set on the operation panel. The needle thread tension data is stored in memory.



Tension correction amount [%]

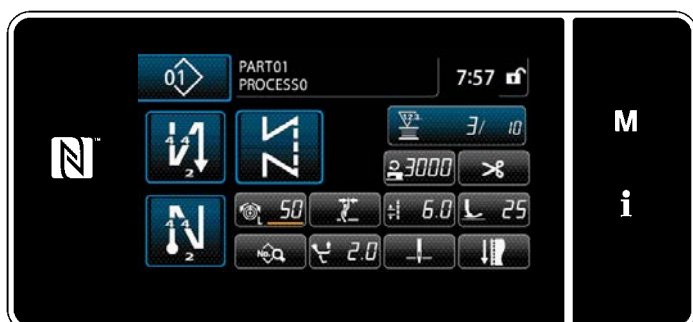


- 1) Set "U201 Bobbin thread remaining amount for starting correction" with numeric keypad **1**. Using the aforementioned set value, determine the remaining amount of bobbin thread indicated on the bobbin counter for starting the needle thread correction. For the setting method of the bobbin thread counter, refer to "**6-3. Counter function p.75**" of the main body manual. The set value can be reset to the initial value of 0 by pressing **R** **2**.
- 2) Set "U202 Final correction amount" with the numeric keypad **3**. Using the aforementioned set value, determine the correction ratio of the needle thread tension. The set value can be reset to the initial value of 100 by pressing **R** **4**.
- 3) When **←** **5** is pressed, the entered value is confirmed and the screen is returned to the "S113 Needle thread tension correction screen".



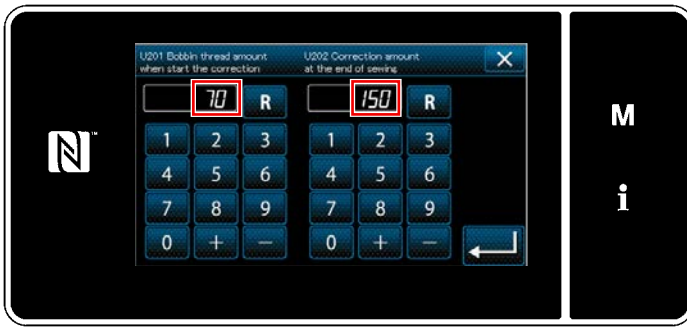
The needle thread tension correction function is available only when the bobbin counter counts down the remaining amount of the bobbin thread. This correction function is disabled when the bobbin counter counts up the remaining amount of the bobbin thread.

- ※ Refer to the figure on the left for the relation between "U201 Bobbin thread remaining amount for starting correction" and "U202 Final correction amount".



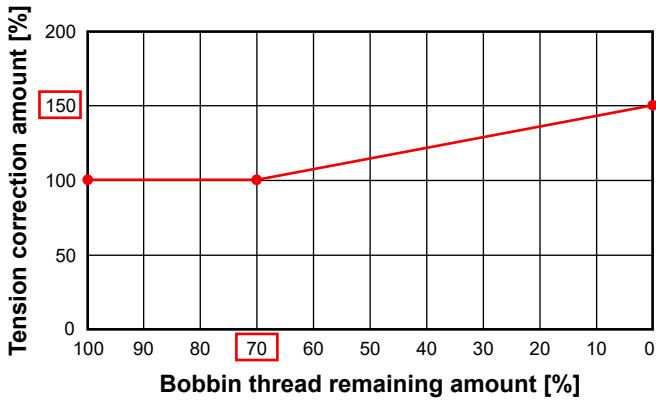
When you start to correct the needle tension in accordance with the remaining amount of the bobbin thread, a line appears below the set value of the thread tension setting button.

(Example of use)

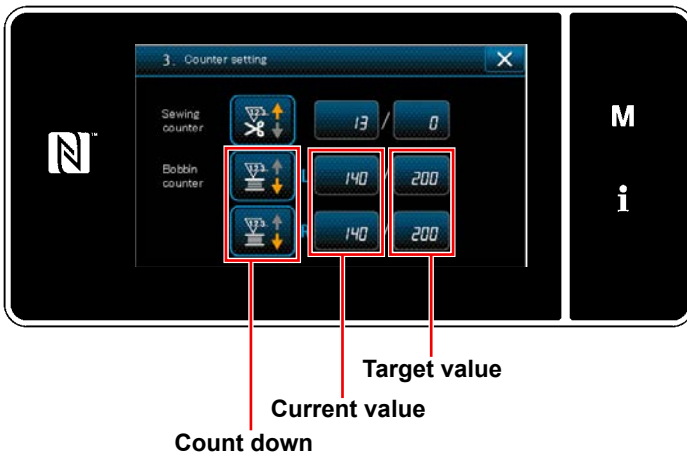


In the case the correction is made as shown in the figure

The needle thread tension correction starts when the bobbin-thread remaining amount shown on the bobbin counter reaches "70 % (U201)", and the final correction amount "150 % (J202)" is reached when the bobbin counter reaches "0" (zero). For the section from 70 % to 0 %, the correction along the inclination of the line chart is applied.



The bobbin counter starts counting down from the target value "200". When it reaches "140", the needle thread tension correction starts. When the counter reaches "0" (zero), the needle thread tension is corrected by "150 %".



16. Thread clamp device

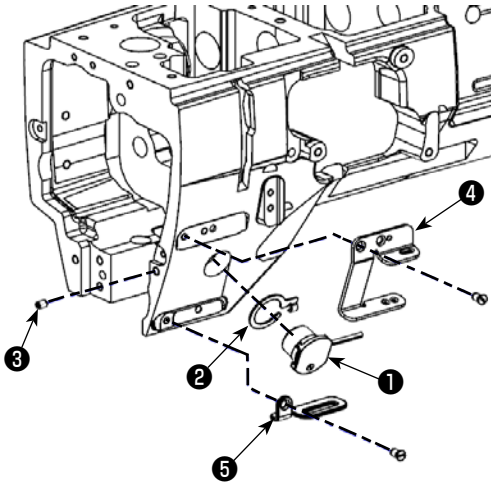
16-1. How to install the thread clamp device



WARNING :

To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.

Remove the top cover, face plate, handwheel and motor cover.



- 1) Remove the take-up thread guide, needle thread clamp (asm.) and rubber plug.
- 2) Attach thread clamp solenoid cable gland **2** to thread clamp solenoid **1**. Then, install them to the machine arm.
- 3) Put setscrew **3** from the frame side to secure thread clamp solenoid **1**.

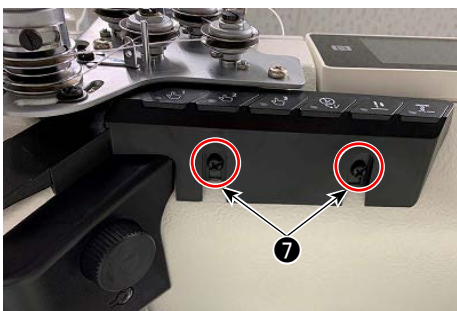
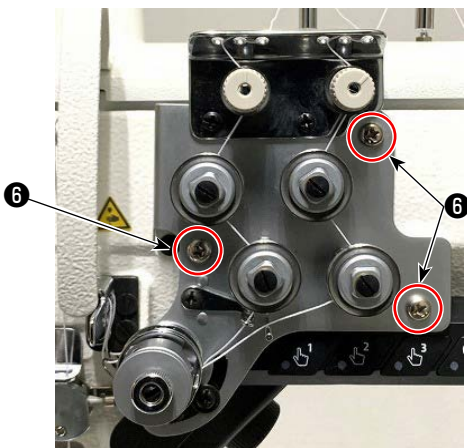


Do not excessively tighten the setscrew to prevent the solenoid from being deformed.

- 4) Install nipper thread guide **4** and take-up thread guide B **5** to the machine arm.



- 5) Remove setscrews **6** (at three locations) of the thread tension controller (asm.) and setscrews **7** (at two locations) of the 6-gang switch.





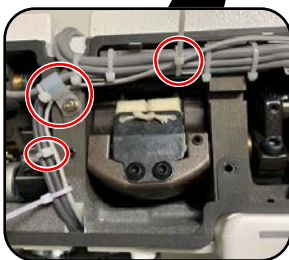
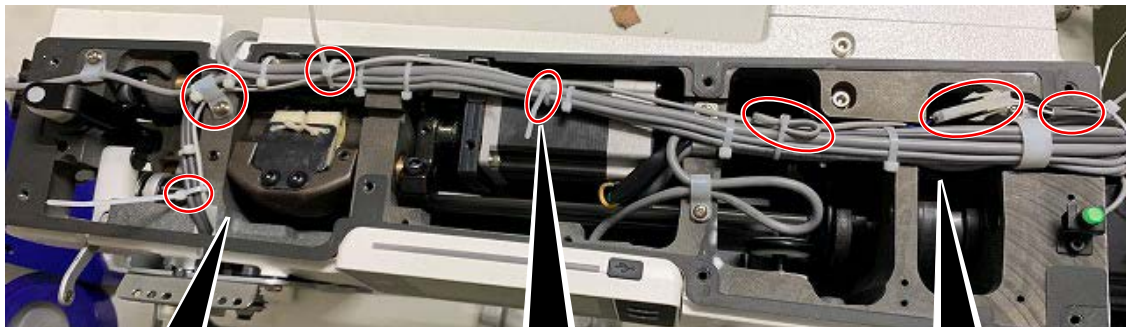
6) Pull the 6-gang switch toward you. Place the thread clamp solenoid cord on the step part. Then, put the 6-gang switch back into place and secure with the setscrews.

At this time, lightly pull the thread clamp solenoid cord to make sure that it can be moved.

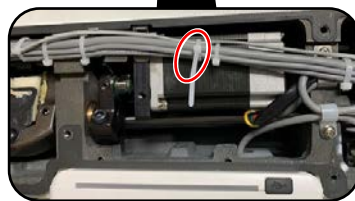
If the cord cannot be moved, it may have been caught under the 6-gang switch. In such a case, remove the 6-gang switch and cord once and re-install them correctly.



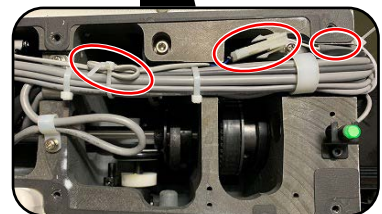
7) Route the cord to the right side while preventing it from being caught under the tension disk floating solenoid and pass it through the notch in the machine arm.



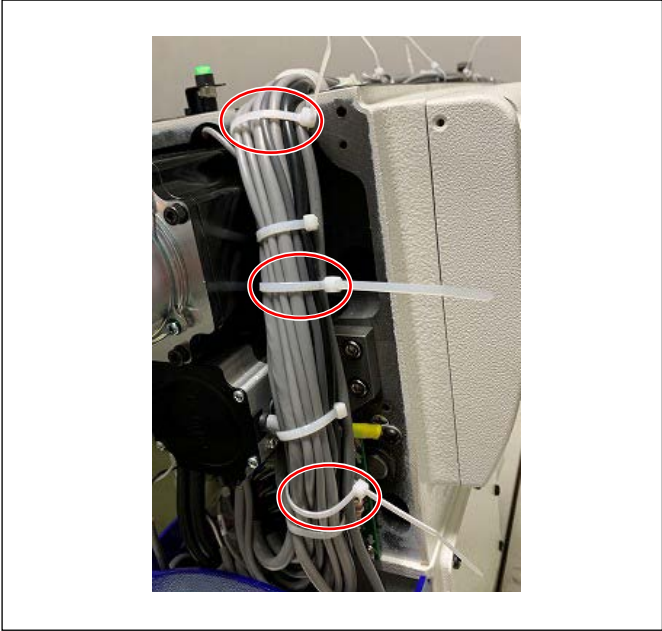
8) Remove the cable clip setscrews. Pass the thread clamp solenoid cord through the cable clips and re-secure the cable clips with the setscrews. Bundle the cords with a cable clip band (small).



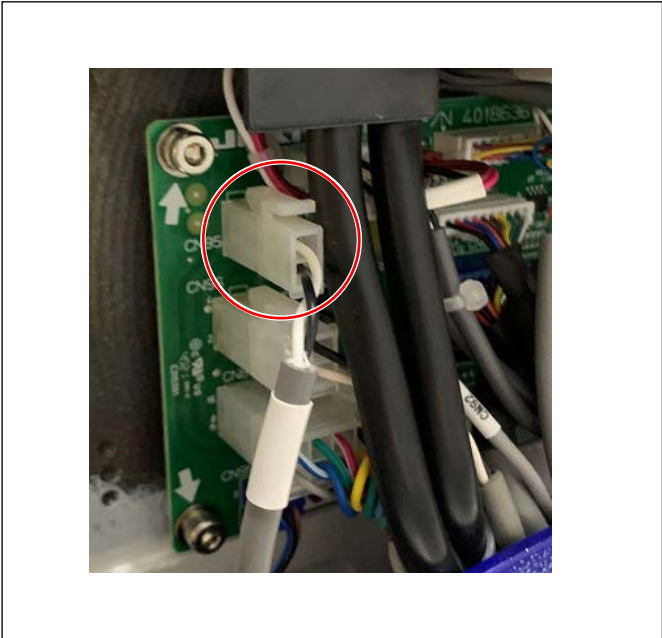
9) Bundle the cords with the cable clip band (small).



10) Connect the thread clamp solenoid cord to the thread clamp solenoid junction cable (asm.) and route it as shown in the figure. Bundle the excess length of the thread clamp solenoid cord together with a cable clip band (small). Fit the thread clamp solenoid junction cable (asm.) in the concave portion of the machine arm.



11) Bundle the thread clamp solenoid junction cable (asm.) with cable clip bands (large) (at three locations) together with other cords.



12) Connect the connector of the thread clamp solenoid junction cable (asm.) to the PCB.

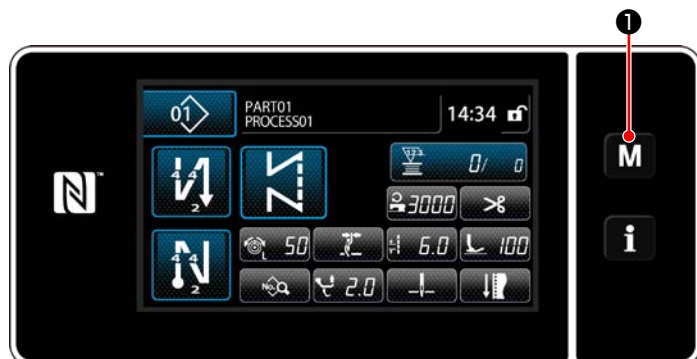
Install the top cover, face plate, handwheel and motor cover in place.
When installing the covers, take care to prevent the cords from being caught under the covers.

16-2. How to set up the thread clamp device

When you use the thread clamp device, make the following settings.

If the thread clamp device is placed in ON, the sewing machine will carry out condensation stitch at the beginning of sewing.

(1) Setting the items related to the thread clamp



1) Press **M** **1**.



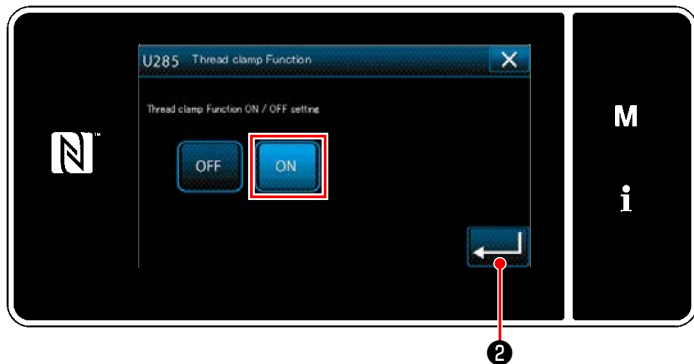
2) Select "1. Memory switch".




3) Select "2. Beginning of sewing".



4) Select "U285. Thread clamp function".



5) Select "ON".

Press  ② to confirm the setting.

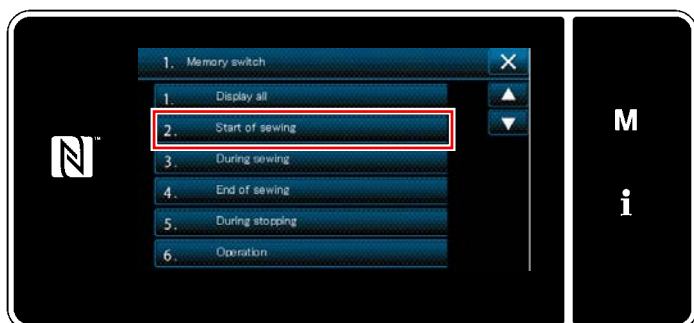
(2) Setting the items that are related to the beginning of sewing



1) Press **M** ①.



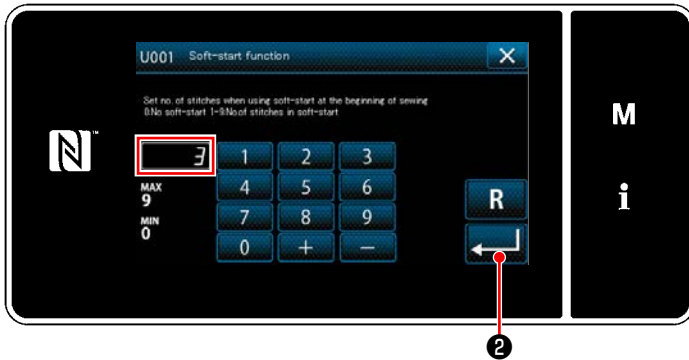
2) Select "1. Memory switch".




3) Select "2. Beginning of sewing".



4) Select "U001 Soft-start function".

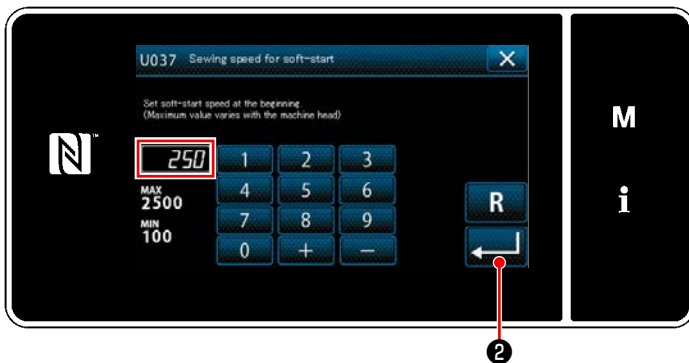


5) Change the numerical value to "3".


Press  ② to confirm the numerical value.



6) Select "U037 Sewing speed for soft-start".



7) Change the numeric value to "250".

Press  ② to confirm the numerical value.

If the thread clamp function is placed in ON in order to entwine the threads at the beginning of sewing without fail, the sewing machine will carry out condensation stitch at the beginning of sewing.

The presser foot is lifted only for a moment so as to pull in the needle thread to the reverse side of the fabric at the beginning of sewing.



At that time, the needle thread may be caught in the hook if the needle penetrates the first stitch. It is, therefore, necessary to support the fabric near the presser foot with your hand to prevent stitches from overlapping at the beginning of sewing.

The direction of feed for the condensation stitches at the beginning of sewing is reverse feed in order to prevent slip-off of the thread.

At that time, the needle thread may be caught in the hook if the needle penetrates the needle thread on the top of the fabric. It is, therefore, necessary to pull the needle thread toward you at the beginning of sewing.

16-3. How to set the thread clamp operation while the presser foot is in its upper position

When you want to use the thread clamp function, set the "Thread clamp function while the presser foot is in its upper position" to ON.



1) Press and hold **M** ①.



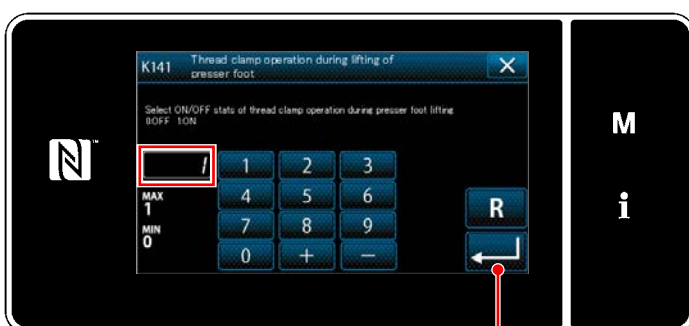
2) Select "1. Memory switch".



3) Press "5. During stopping".



4) Press "K141 Thread clamp operation while the presser foot is in its upper position".



5) Enter "1".
Press **R** ② to confirm the setting.

17. How to replace the hook cover



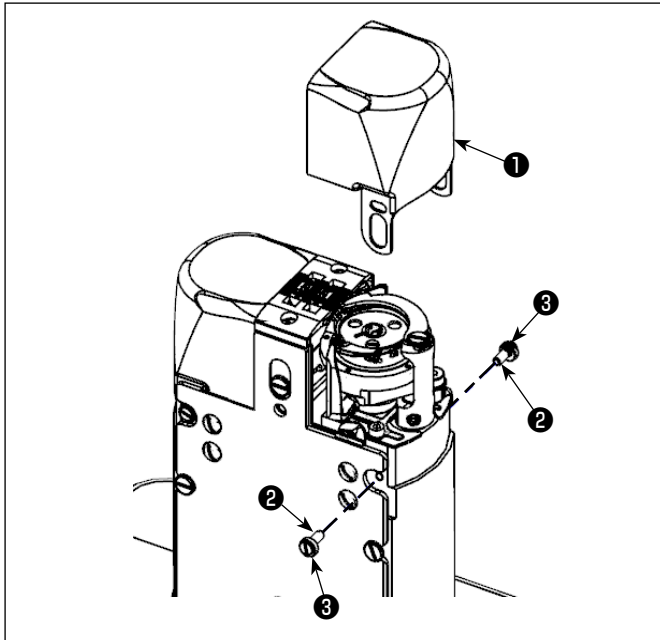
WARNING :

To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.

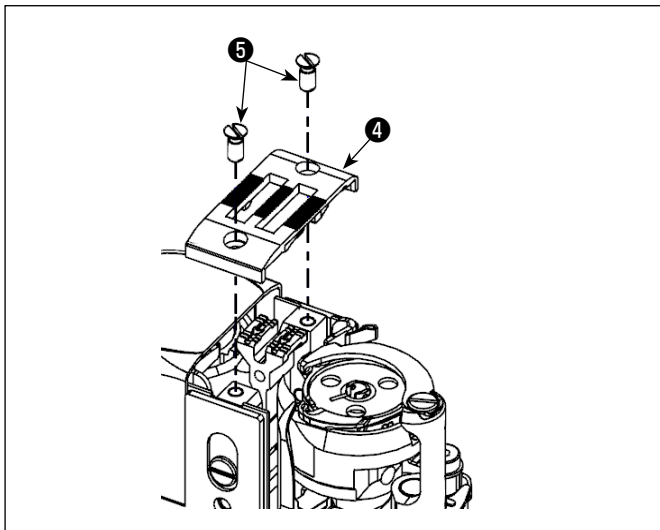


Handling of the material on the sewing machine can be improved by changing the standard hook cover with the hook cover for the sewing machine without thread trimmer.

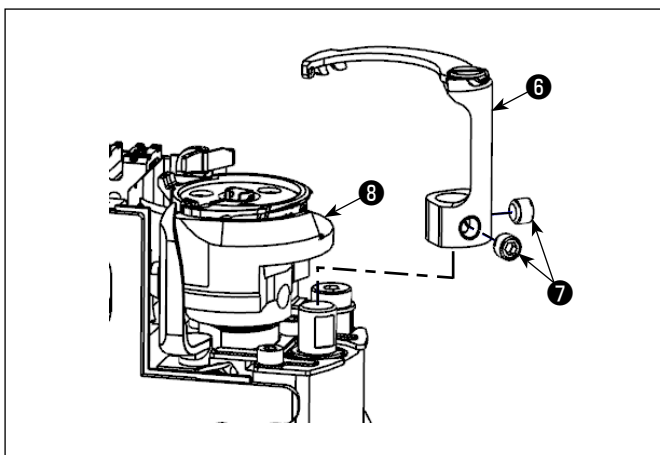
* Thread trimming function will be disabled.



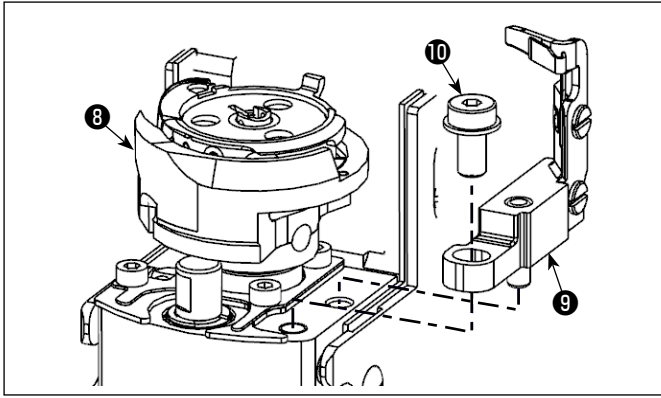
- 1) Remove hook cover screws **2** and eccentric rollers **3** to remove hook cover **1**.



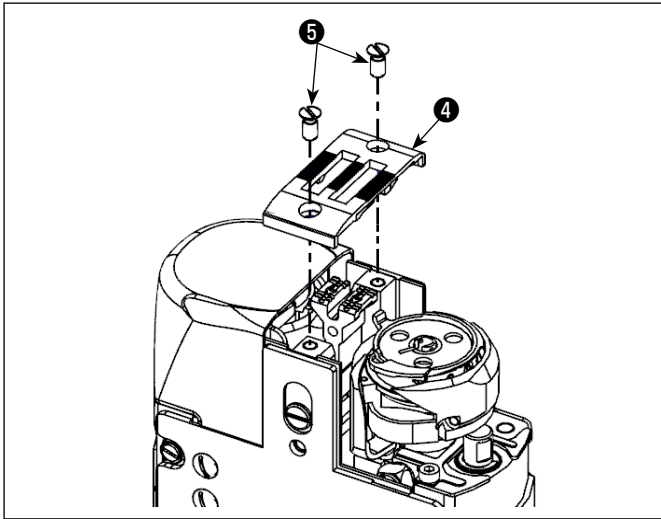
- 2) Remove throat plate setscrews **5** to remove throat plate **4**.



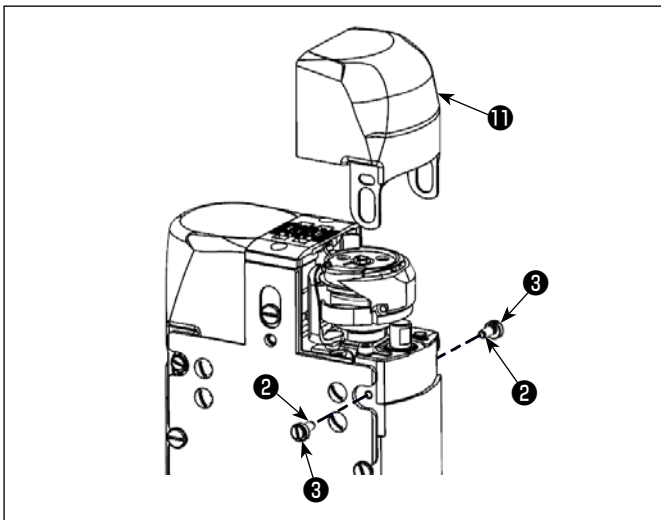
- 3) Loosen moving knife base setscrews **7** to remove moving knife base **6**.
When removing moving knife base **6**, turn the handwheel to bring hook **8** to the position shown in the figure beforehand.



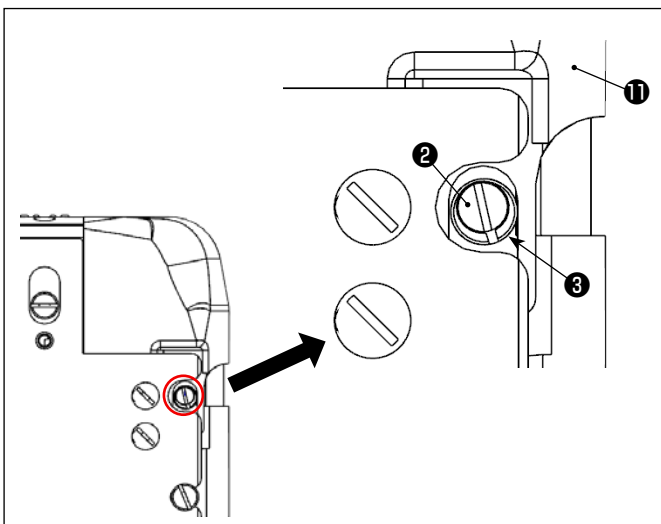
- 4) Loosen counter knife base setscrew **10** to remove counter knife base **9** .
When removing counter knife base **9** , turn the handwheel to bring hook **8** to the position shown in the figure beforehand.



- 5) Attach throat plate **4** in place. Tighten throat plate setscrews **5** .



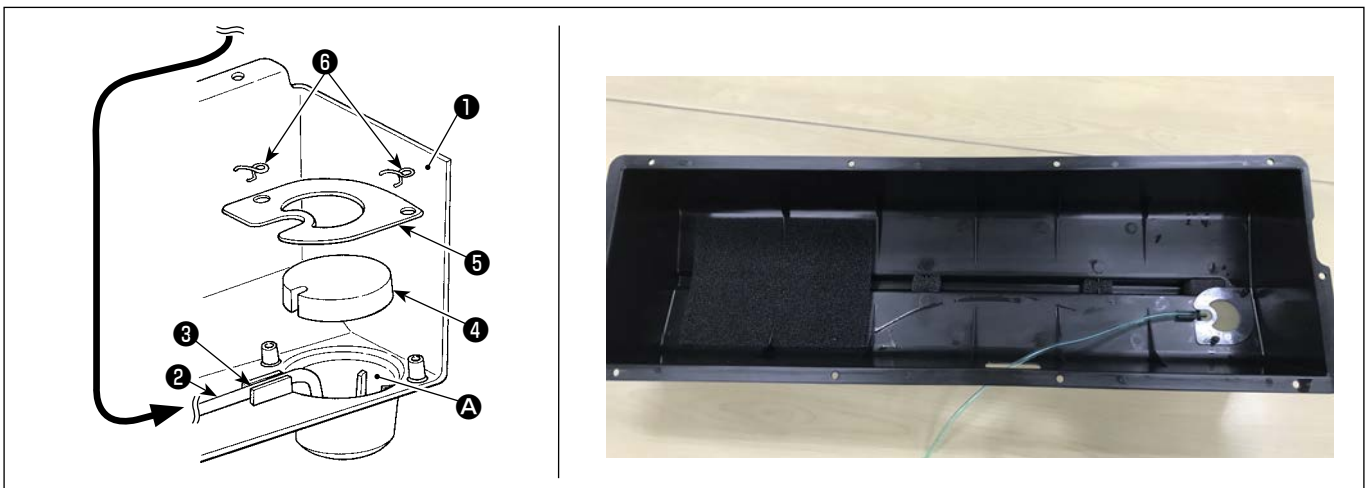
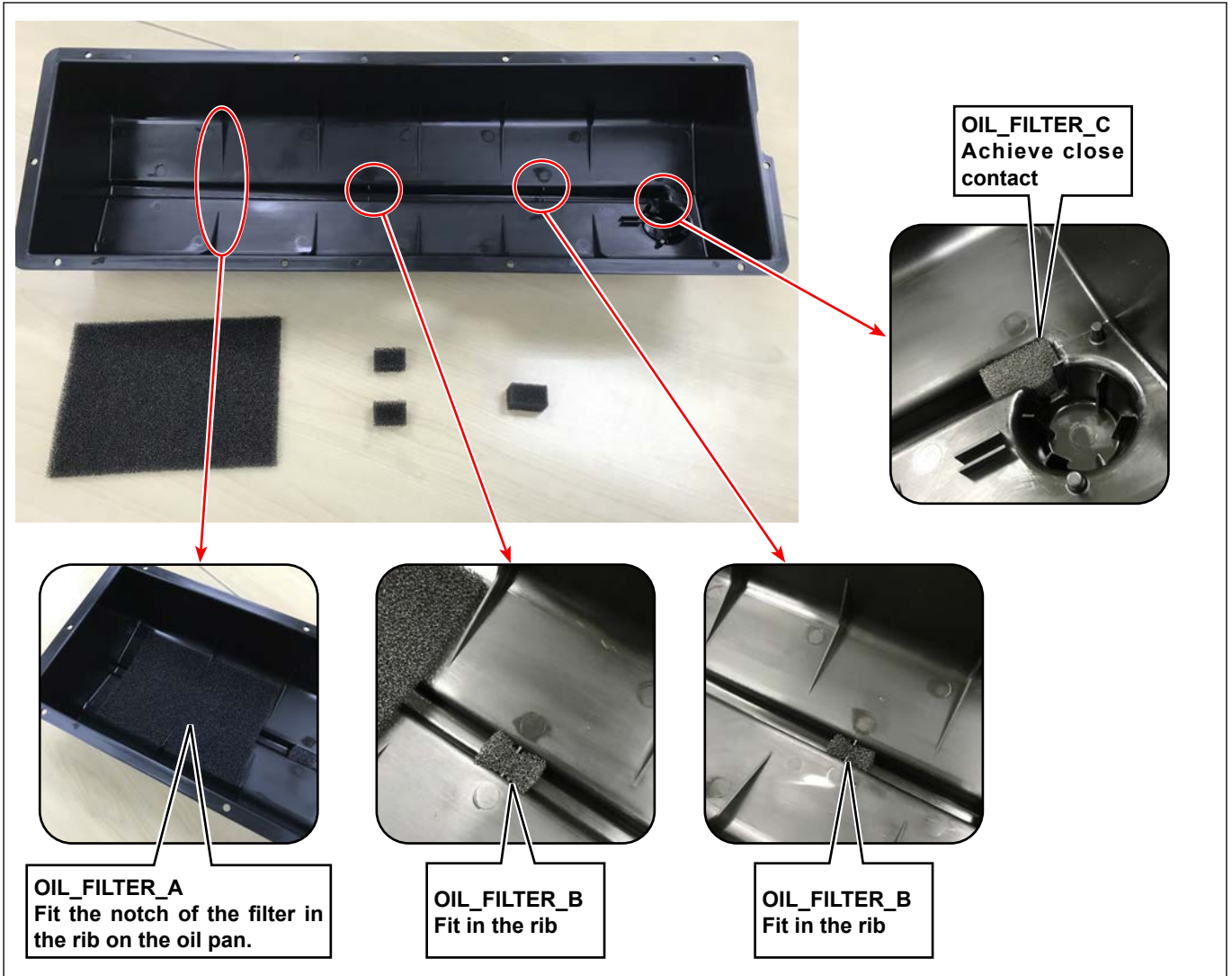
- 6) Install hook cover for the sewing machine without thread trimmer **11** and temporarily fix hook cover screws **2** and eccentric rollers **3** .



- 7) Tighten hook cover screws **2** at the position where the hook cover for the sewing machine without thread trimmer **11** does not rattle when you turn eccentric rollers **3** .

* Adjust eccentric rollers **3** on both the front and back sides.

18. How to install the oil filter



- 1) Put reflux pipe ② in the oil reservoir ④ of oil pan ① and secure it in groove ③ .



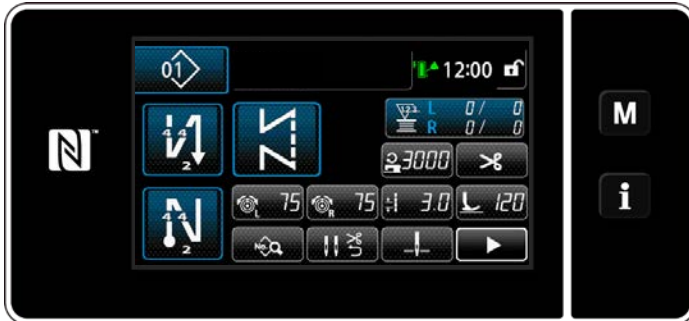
Secure reflux pipe ② as shown in the figure.

- 2) Secure filter ④ and filter holder ⑤ with metal fittings ⑥ .

19. Counter function







This function counts sewing in the predetermined unit and gives a visible alarm on the screen when the pre-set value is reached.

19-1. Displaying the sewing screen under the counter display mode



Four different types of counters are available; bobbin thread counter (left), bobbin thread counter (right), sewing counter, pitch time counter.

19-2. Types of the counter

	<p>Bobbin thread counter (left)</p> <p>The bobbin thread counter adds one to its current value every time the sewing machine sews 10 stitches.</p> <p>When the preset value is reached, the count-completion screen is displayed.</p> <p>* Refer to "6-3-4. How to reset the count-completion state" p.81 in the Instruction Manual for the standard model.</p>
	<p>Bobbin thread counter (right)</p> <p>The bobbin thread counter adds one to its current value every time the sewing machine sews 10 stitches.</p> <p>When the preset value is reached, the count-completion screen is displayed.</p> <p>* Refer to "6-3-4. How to reset the count-completion state" p.81 in the Instruction Manual for the standard model.</p>
	<p>Sewing counter</p> <p>The sewing counter adds one to its current value every time one stitch shape is sewn.</p> <p>When the preset value is reached, the count-completion screen is displayed.</p> <p>* Refer to "6-3-4. How to reset the count-completion state" p.81 in the Instruction Manual for the standard model.</p>
	<p>Pitch time counter</p> <p>The pitch time counter adds one to its current value every time one stitch shape is sewn.</p> <p>When the type of counter is set to the pitch time counter,  is displayed on the counter setting screen (Refer to "6-3-3. How to set the counter" p.78 in the Instruction Manual for the standard model.)</p> <p>When the period of time set with  is reached, the counter adds "1 (one)" to the target value (unit: sec).</p>

19-3. How to set the counter

① Selecting the counter setting



1) Display the mode screen by pressing **M** ①.

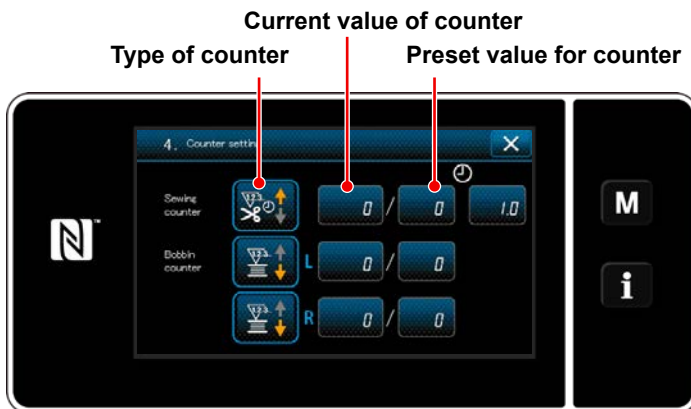


2) Select the "4. Counter setting".

<Mode screen>

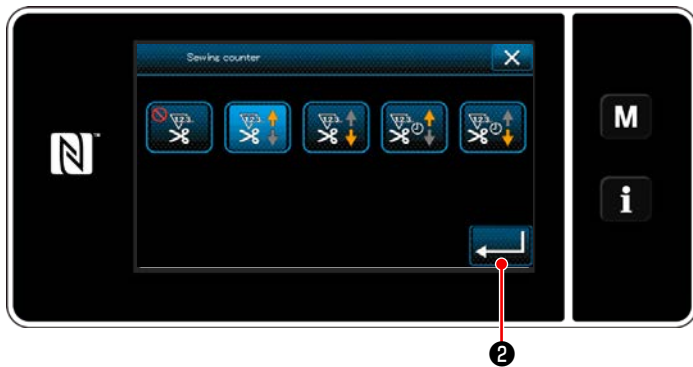
② Setting the type of counter, current value of counter and preset value for counter

The sewing counter and the bobbin counter should be set following the same procedure.




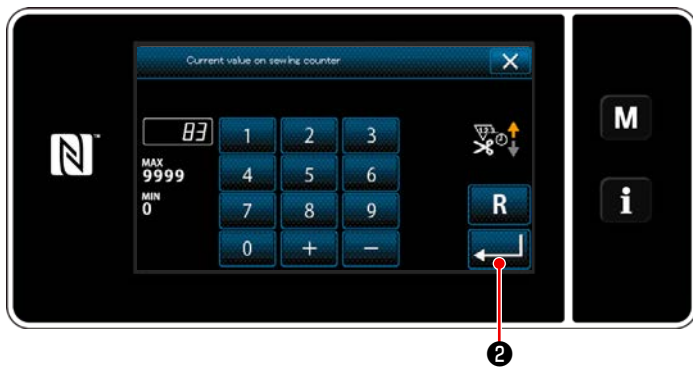
- 1) The counter setting screen is displayed to enable setting.
- 2) Press the button of the desired item. Then, the change screen corresponding to that item is displayed.

<Counter setting screen>




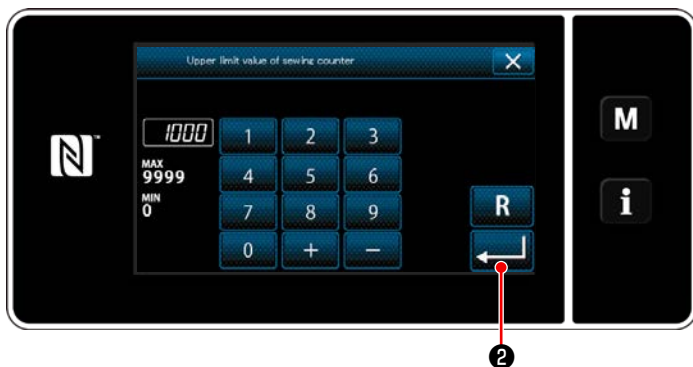
<Counter type screen>

- 1) Select the desired type of counter.
- 2) Press  ② to confirm the type of counter you have selected.




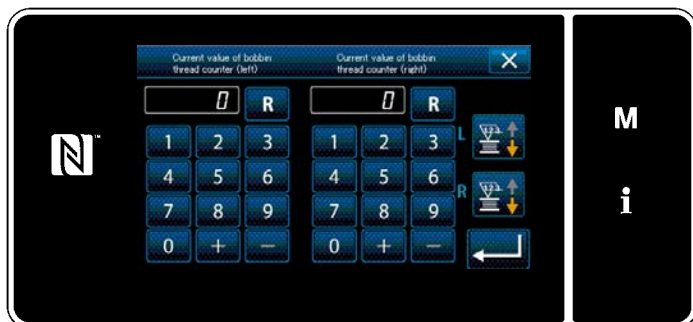
<Current counter value screen>

- 1) Select the current counter value.
- 2) Enter with the numeric keypad.
- 3) Press  ② to confirm the type of counter you have selected.



<Counter set value screen>

- 1) Select the counter set value.
- 2) Enter with the numeric keypad.
- 3) Press  ② to confirm the type of counter you have selected.



<Bobbin thread counter current value screen>

The bobbin thread counter can be set separately for the left and right needles.

Bobbin thread counter (left) • (right)



UP counter (adding method):

The bobbin thread counter adds one to its current value every time the sewing machine sews 10 stitches. When the current value reaches the preset value, the count-completion screen is displayed.



DOWN counter (subtracting method):

The bobbin thread counter subtracts one from its current value every time the sewing machine sews 10 stitches. When the current value becomes 0 (zero), the count-completion screen is displayed.

—

Disuse of counter:

The bobbin thread counter counts nothing even when the sewing machine performs sewing. The count-completion screen is, therefore, not displayed.

Sewing counter



UP counter (adding method):

The counter adds one to its current value every time the sewing machine sews one stitch shape. When the current value reaches the preset value, the count-completion screen is displayed.



DOWN counter (subtracting method):

The counter subtracts one from its current value every time the sewing machine sews one stitch shape. When the current value becomes 0 (zero), the count-completion screen is displayed.

—

Disuse of counter:

The sewing counter counts nothing even when the sewing machine performs sewing. The count-completion screen is, therefore, not displayed.

Pitch time counter



UP counter (adding method):

The counter adds one to its current value every time the sewing machine sews one stitch shape.



DOWN counter (subtracting method):

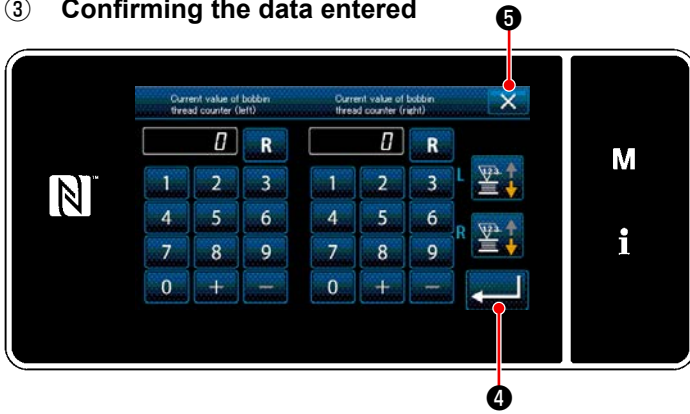
The counter subtracts one from its current value every time the sewing machine sews one stitch shape.

—




Disuse of counter:

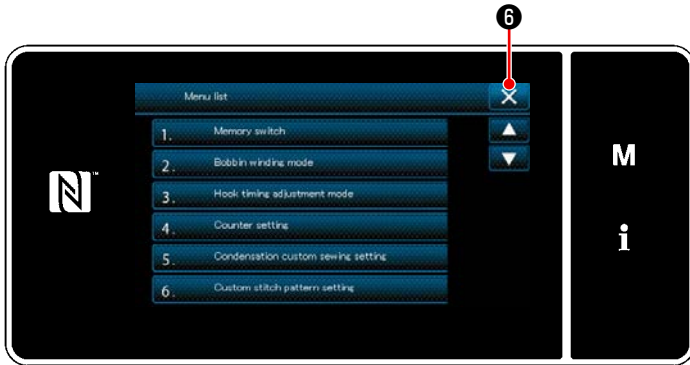
The sewing counter counts nothing even when the sewing machine performs sewing. The count-completion screen is, therefore, not displayed.

③ Confirming the data entered




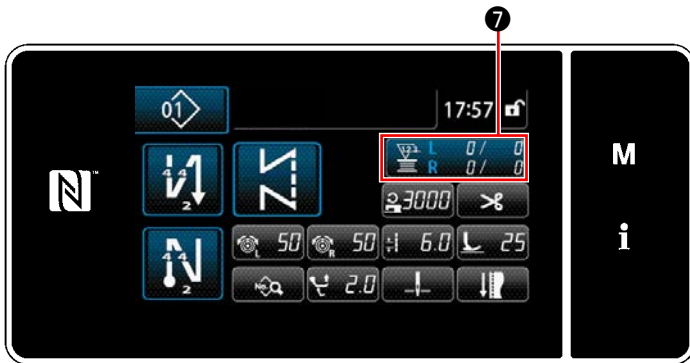
<Bobbin thread counter current value screen>

Confirm the counter content. Then, press  ④ (or  ⑤ if  ④ is not displayed) to return the screen to the mode screen.





<Mode screen>


When close button  ⑥ is pressed on the mode screen, the screen returns to the sewing screen.



<Sewing screen>

When the screen returns to the sewing screen, the content of the counter you have selected is displayed on customize button  ⑦.

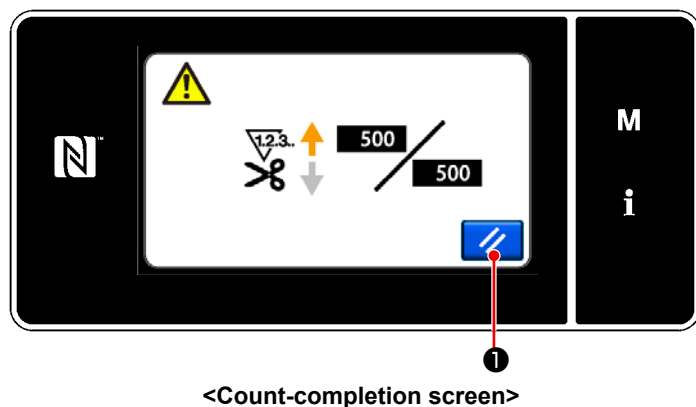
If you want to use both the sewing counter and the bobbin thread counter, press  ⑦ to change over the counter display.

If you press and hold down  ⑦, the counter current value screen will be displayed.




<Current counter value screen>

19-4. How to reset the count-completion state



When the predetermined conditions are satisfied during sewing, the count-completion screen is displayed.

The counter is reset by pressing  ①. Then, the mode is returned to the sewing mode. In this mode, the counter starts counting again.