

***ENGLISH***

**PLC-2710NVM  
INSTRUCTION MANUAL**

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## CAUTION

This Instruction Manual for the PLC-2710NVM only describes their differences from the standard models (PLC-2710V).

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-2710NVM70BBZ

No.	Item	Application
1	Model	PLC-2710NVM
2	Model name	1-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 to 35 (Nm 100 to Nm 180) (Standard : Nm 140)
6	Applicable thread size for sewing	# 30 to # 5 (Europe 60 / 3 to 20 / 3)
7	Applicable thread size to be cut	# 30 to # 5 (Europe 60 / 3 to 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 pattern .....99 patterns (For the polygonal shape sewing, as many as 10 patterns can be registered.) Cycle sewing pattern ..... 9 patterns Custom-pitch pattern .....20 patterns Condensation custom pattern .....9 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	Full-rotary 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	85 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.

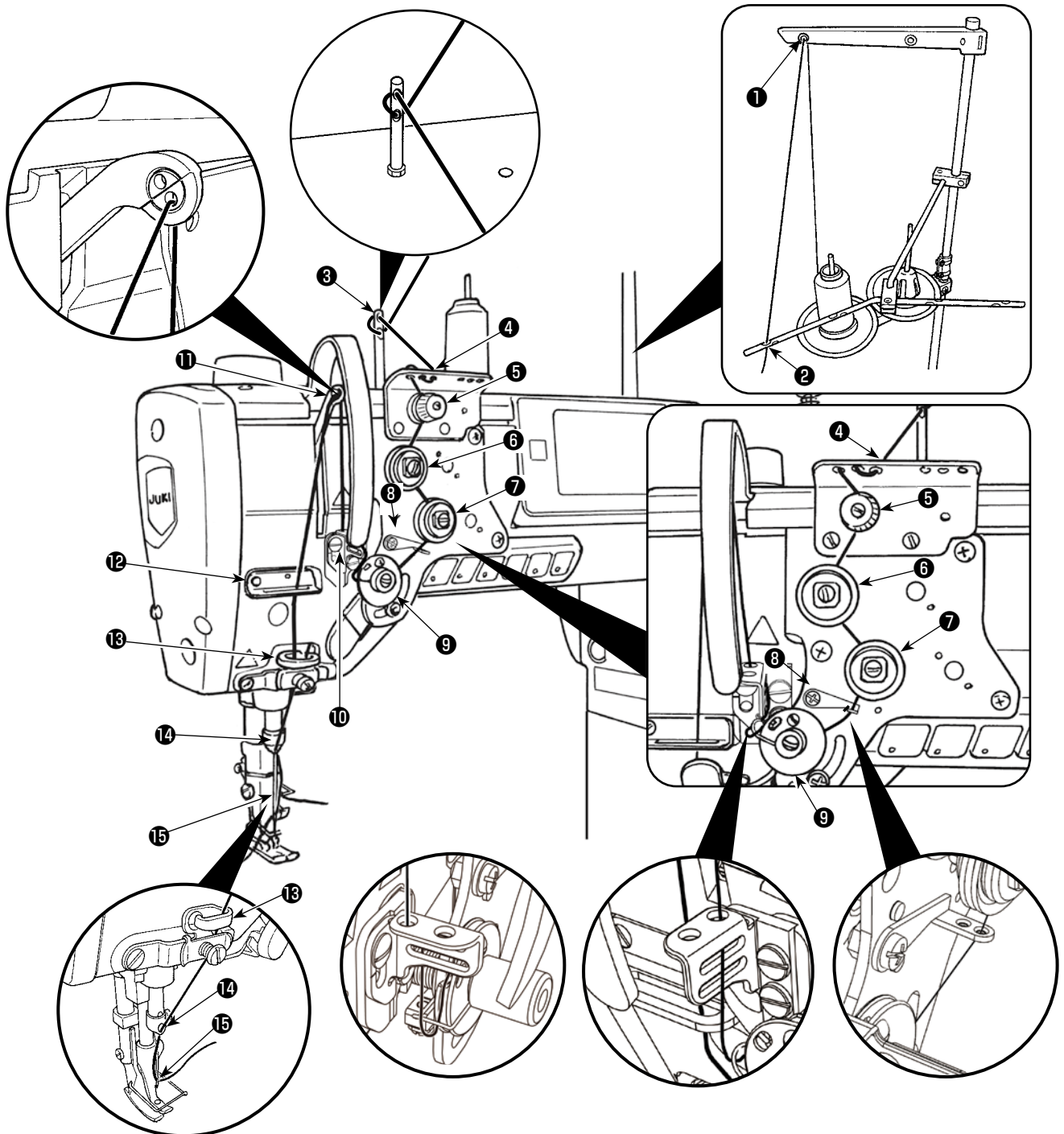
## 2. Threading the machine head



### 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.



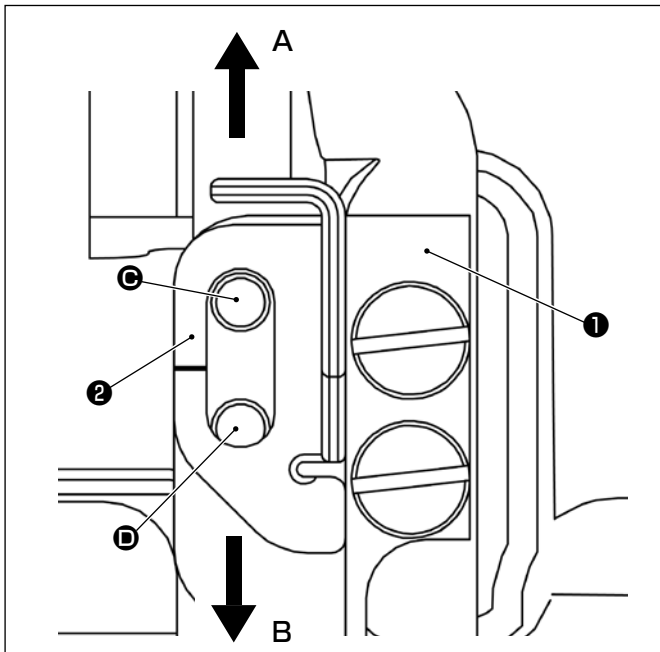
\* Pass thread through the right side of thread guide ⑬ .

### 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. Adjusting the hook needle guard

### WARNING :

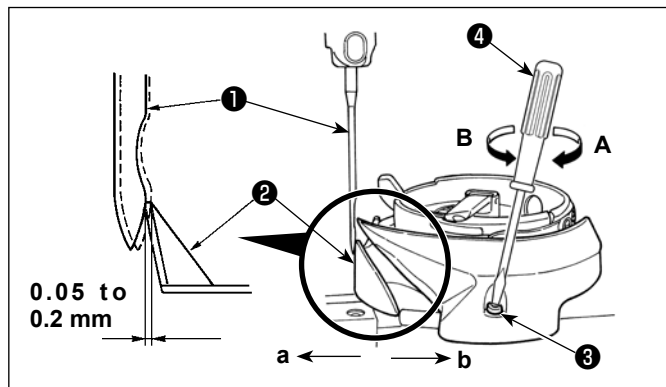
To protect against possible personal injury due to abrupt start of the sewing machine, be sure to change over the operation mode to the "hook timing adjustment mode".



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.

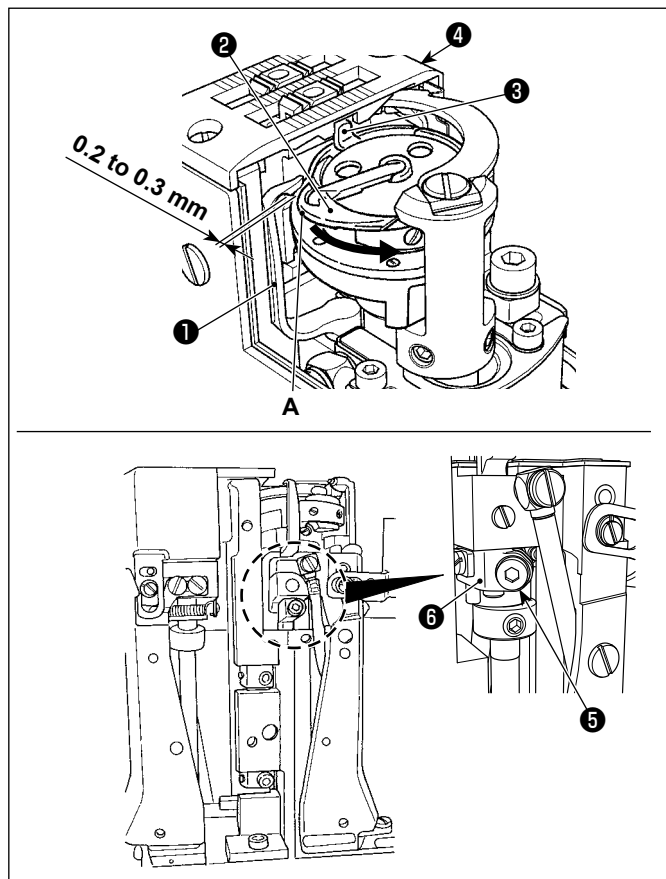
- 1) Place the machine in the hook timing adjustment mode.
- 2) To bend the hook needle guard in direction a, turn the needle guard adjusting screw in direction A.
- 3) To bend the hook needle guard in direction b, turn the needle guard adjusting screw in direction B.
- 4) At the final step of procedure,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

## 5. 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.

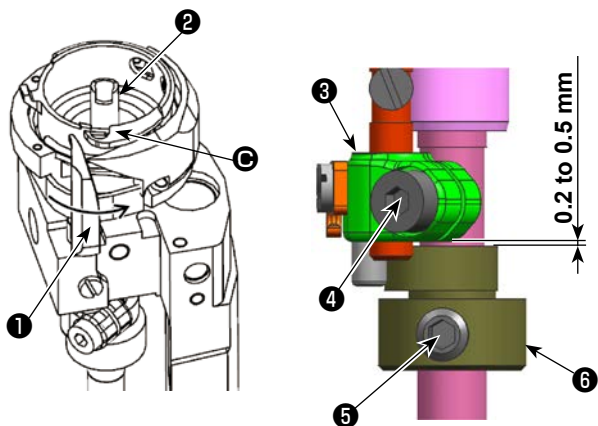
**Caution** In case of 2-needle machine, perform the same adjustment to the right and left hooks.

## 6. 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.

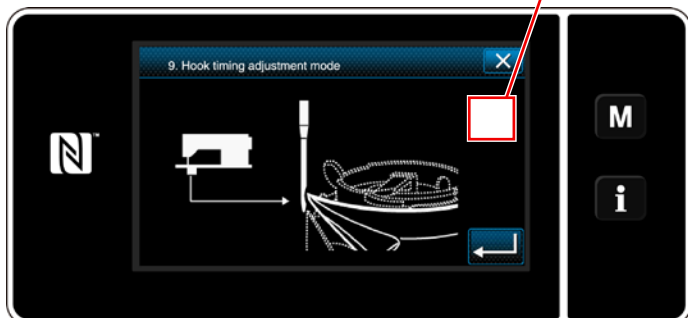



### [Conditions]

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.

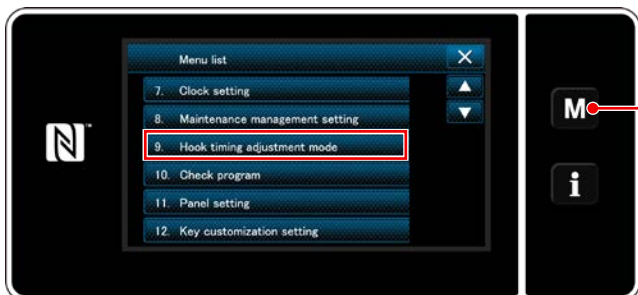


Carry out angle correction before starting adjustment of the opener timing to make sure that 0° is displayed when the needle bar is at its upper dead point.

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.

## 7. How to correct the main shaft reference angle

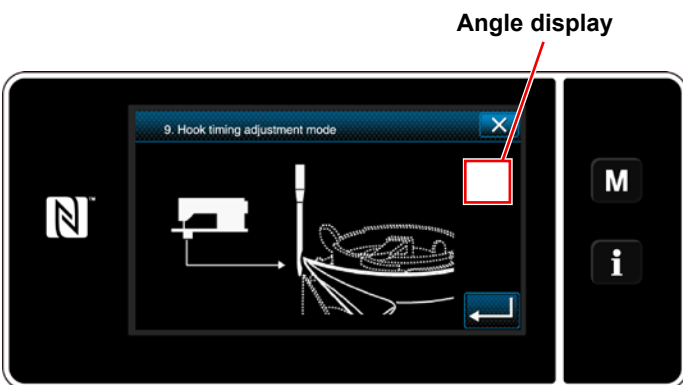
After you have adjusted the origins of the motors (main motor, feed motor, presser motor and alternating vertical movement motor), correct the reference angle of the main motor.



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

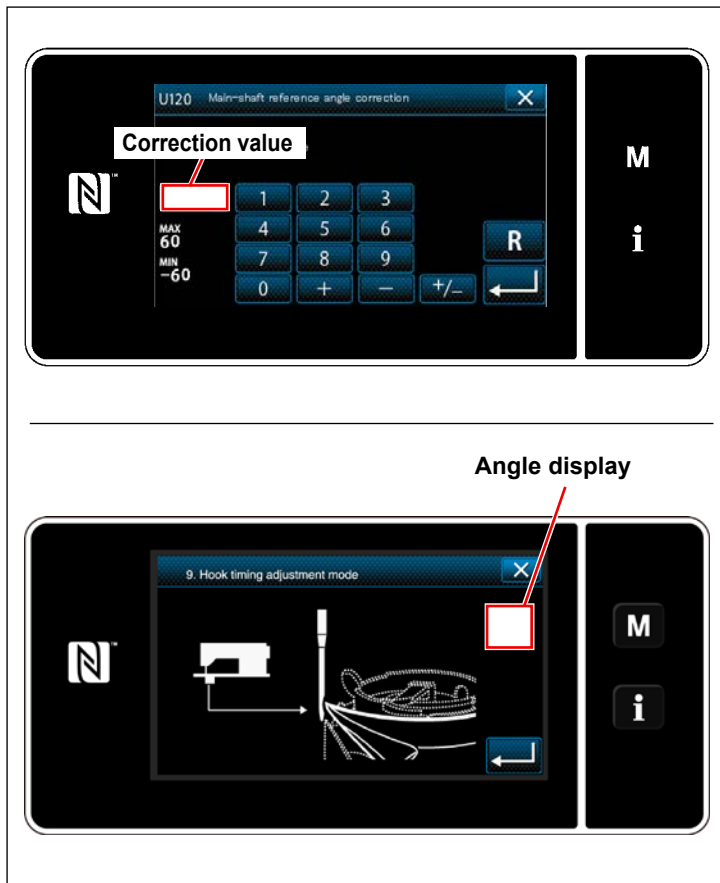



- 2) Placing the dial gauge against the needle clamp, turn the handwheel to bring the needle bar to its upper dead point.



- 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.





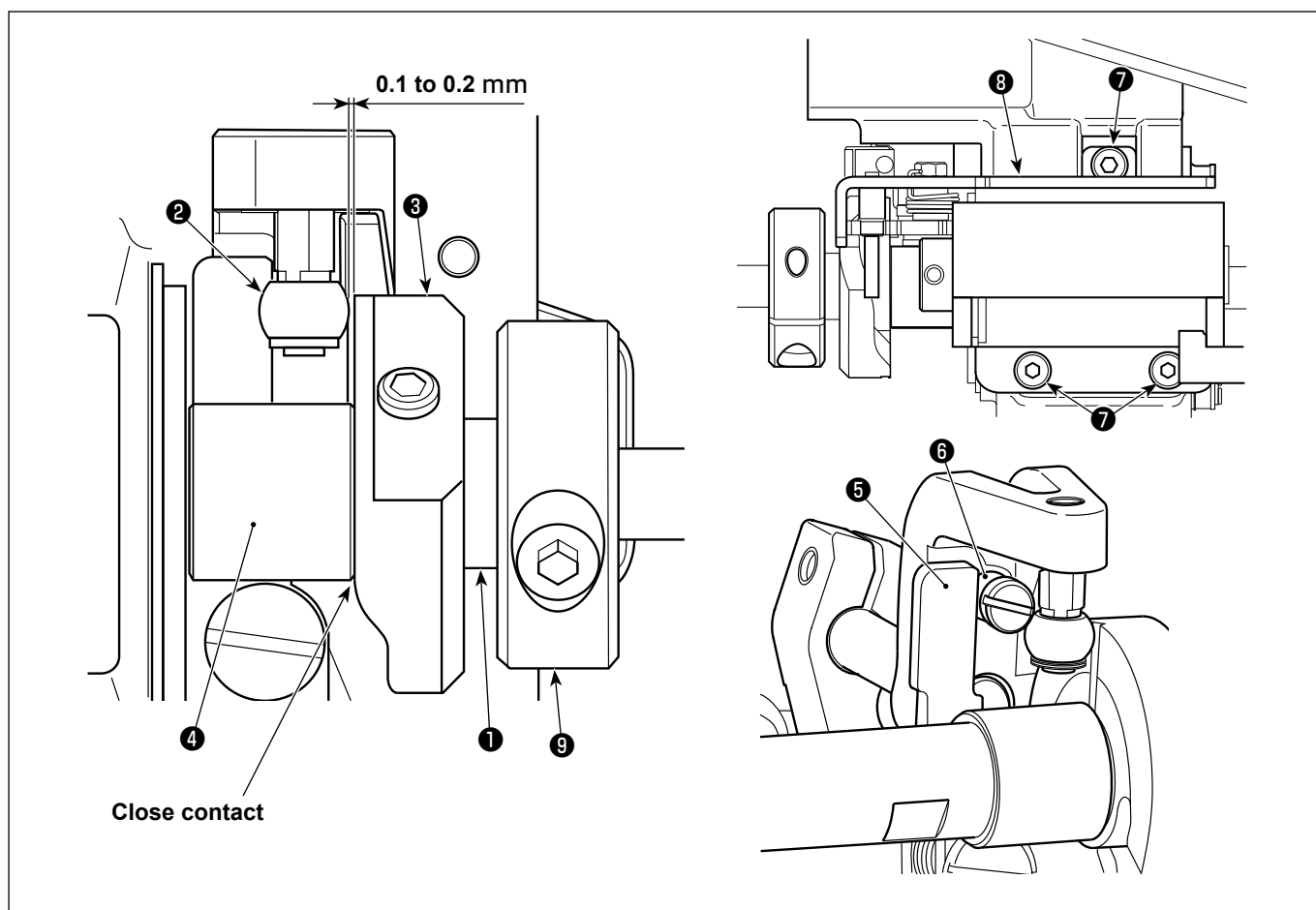
- 6) Enter a correction value on the operation panel so that the angle you have checked in Step 3 becomes "0" (zero) or "360".  
For example, enter "-5" if the angle you have checked in Step 3 is "5". Enter "8" if the angle you have checked is "352".
- 7) Press  to confirm the value you have entered.
- 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.

## 8. 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.



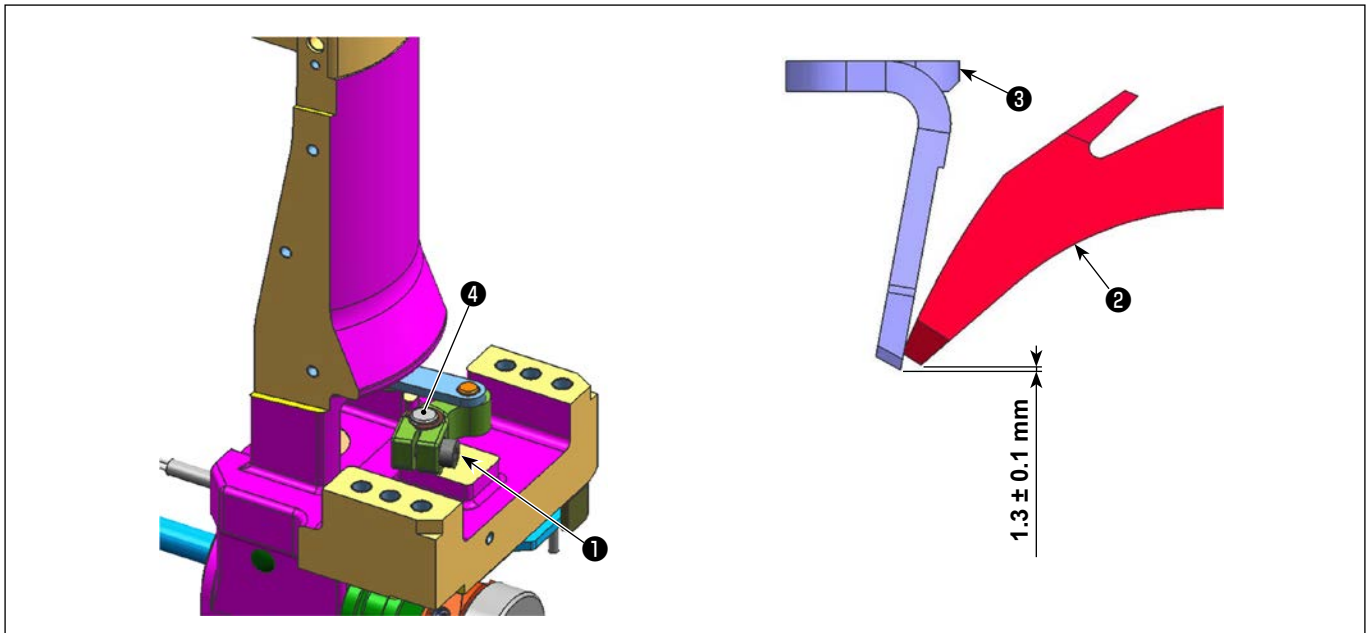
Check that the end face of thread trimmer cam **3** comes in close contact with the end face of collar **4**.  
 Fix the lower shaft set collar **9** in a position so that the end face of lower shaft set collar **9** is almost aligned with the end face of lower shaft **1**.

## 9. 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.



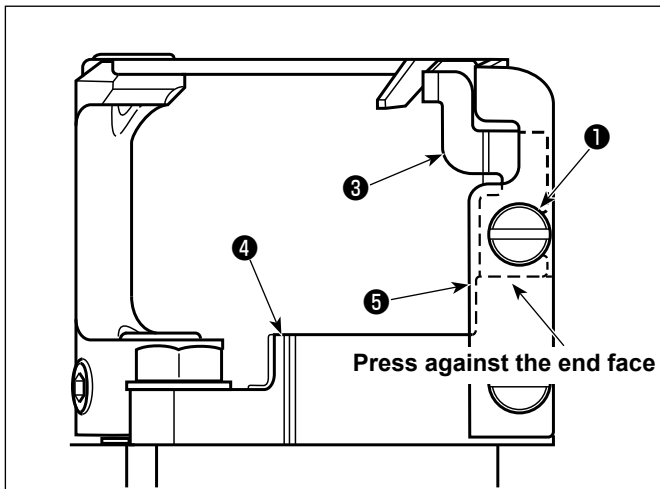
- 1) Loosen the bed cover setscrews (1-needle machine: Two pieces; 2-needle machine: Four pieces) to remove the bed cover.
- 2) Loosen clamping screw(s) ① (1-needle machine: One piece; 2-needle machine: Two pieces) of the moving knife shaft connecting arm A.
- 3) In the state where the flat surface of the thread trimming cam and the cam roller come in contact with each other, adjust the distance between the tip of counter knife ③ and the tip of moving knife ② to  $1.3 \pm 0.1$  mm.
- 4) Tighten clamping screw(s) ① (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 ④ .

## 10. Adjusting the position of the clamp spring

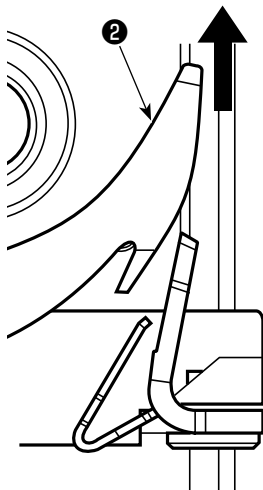


### WARNING :

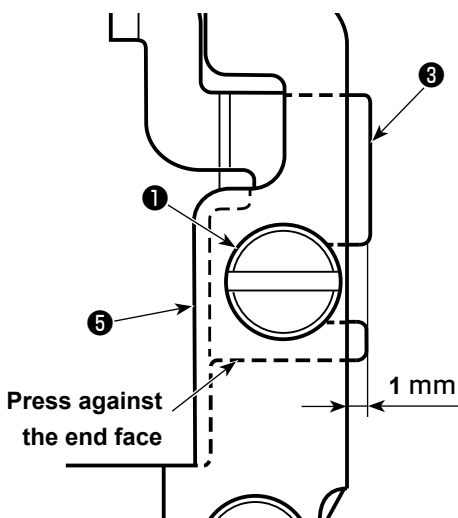
To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.



- 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** .

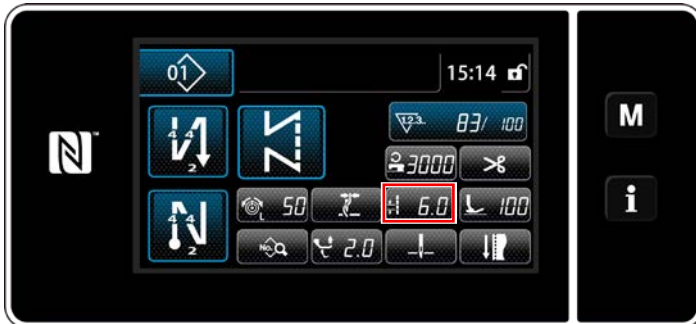
# 11. How to adjust the cam timing

## 11-1. Timing of the vertical feed cam



### WARNING :

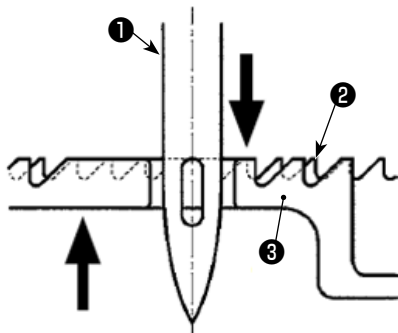
To protect against possible personal injury due to abrupt startup of the sewing machine, be sure to press the standby switch and confirm that the screen has changed over to the standby mode screen before starting work.



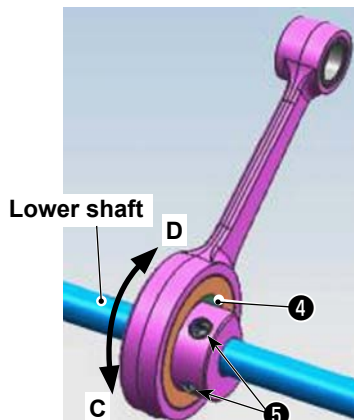
- 1) Adjust the vertical feed timing after you have adjusted the horizontal feed timing.
- 2) Set the stitch length to "6.0" on the stitch length screen.
- \* The PLC-2710V-7 and the PLC-2760V-7 have different displays.

### [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



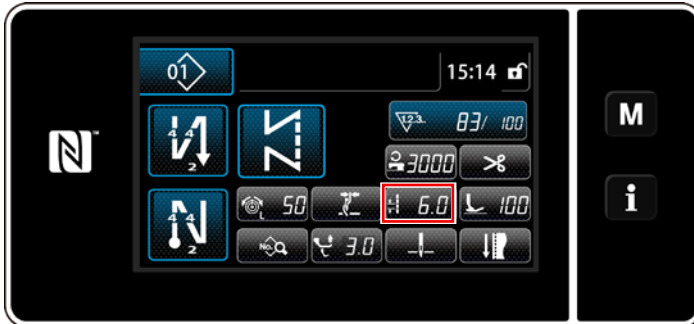
- 3) Press the standby switch. Then, tilt the machine head.
- 4) Loosen vertical feed cam setscrews ⑤ (two pieces).
- 5) Turn vertical feed cam ④ in such a way that needle ① , throat plate ② and feed dog ③ are positioned as shown in the figure on the left.
- 6) Tighten vertical feed cam setscrews ⑤ (two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

## 11-2. 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.



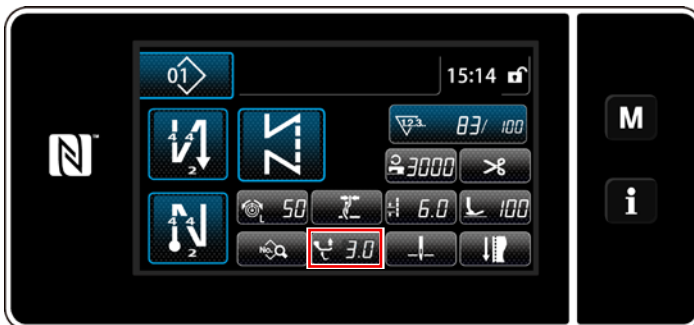
1) Set the stitch length to "6.0" on the stitch length screen.

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



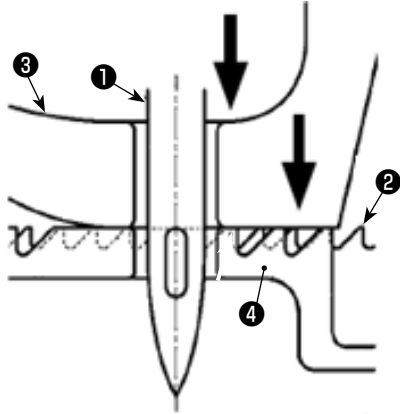
2) Set the amount of the alternating vertical movement of the walking foot and presser foot to "3.0" on the alternating vertical movement amount screen.

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

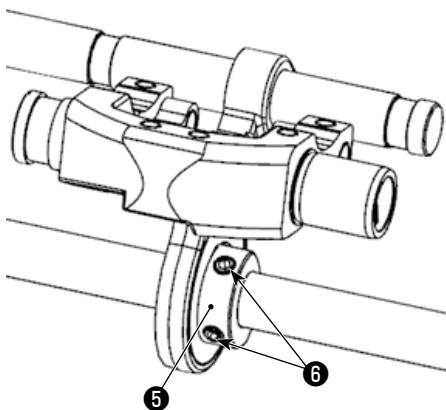
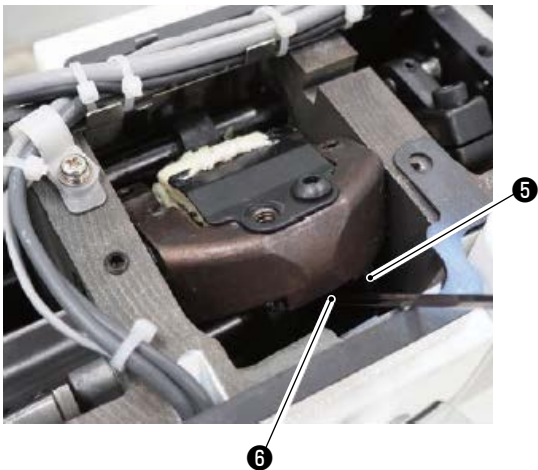
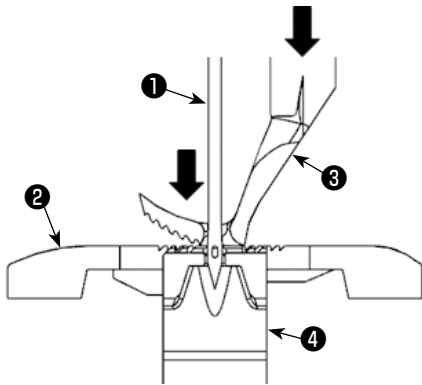


**[Conditions]**

- 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.



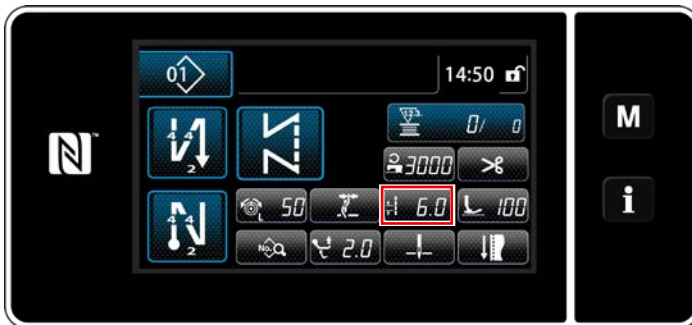
- 3) Press the standby switch.
- 4) Remove the top cover.
- 5) Loosen top feed cam setscrews ⑥ (two pieces).
- 6) On the condition that the amount of the alternating vertical movement of the walking foot and presser foot is uniform, turn top feed cam ⑤ in such a way that needle ① , throat plate ② , walking 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.

## 12. Needle sway (Adjusting the bottom feed amount)



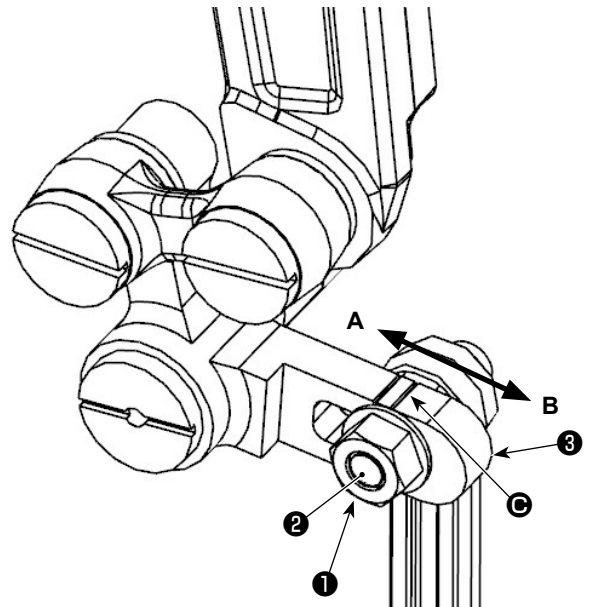
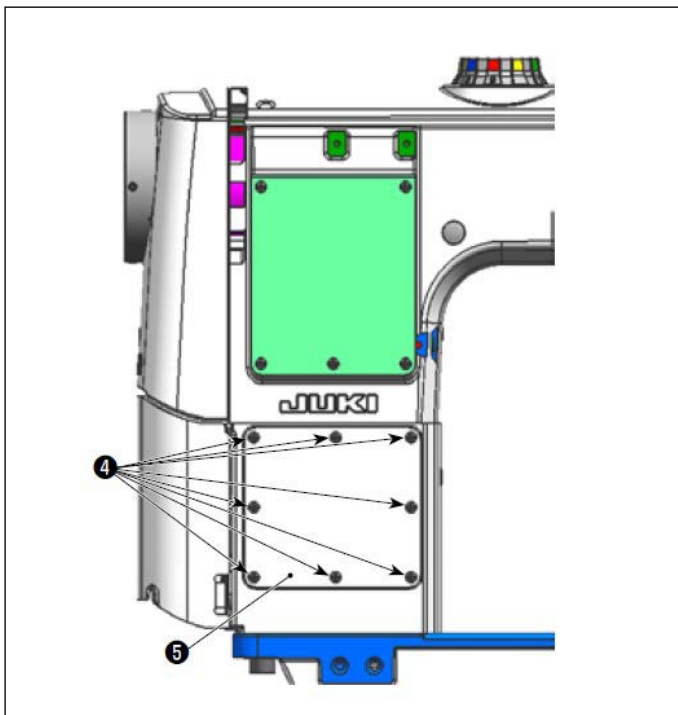
### WARNING :

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.

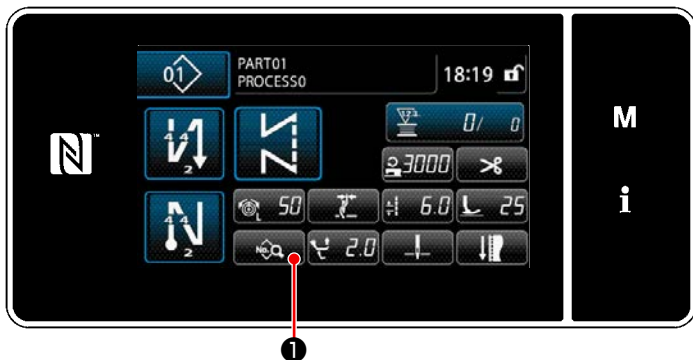
**(Standard) When Adjust the position of hinge screw nut ① of the horizontal feed rear arm in the direction of arrow A, the bottom feed amount is decreased. When Adjust the position of hinge screw nut ① of the horizontal feed rear arm in the direction of arrow B, the bottom feed amount is increased.**



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



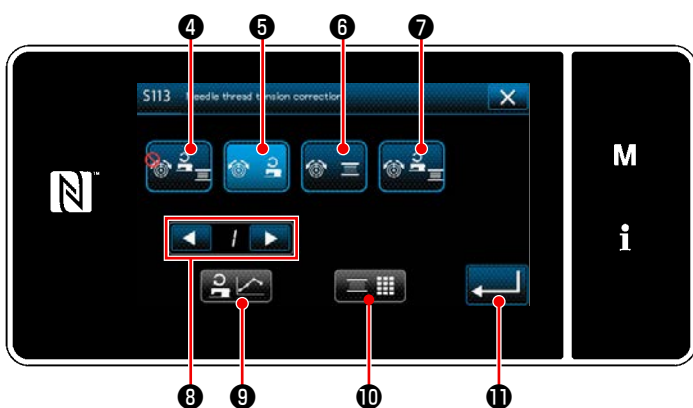
## 13. Tension correction




<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 "[13-1. Tension correction and sewing speed](#)" p.16 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.

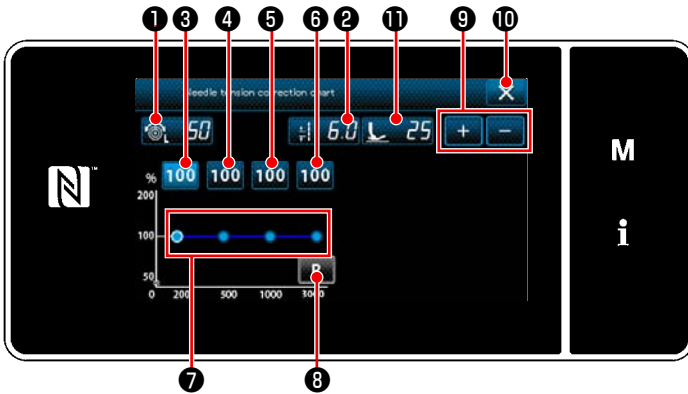
Refer to "[13-2. Tension correction and remaining amount of bobbin thread](#)" p.17 for the steps of procedure after the above.

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

### 13-1. 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.



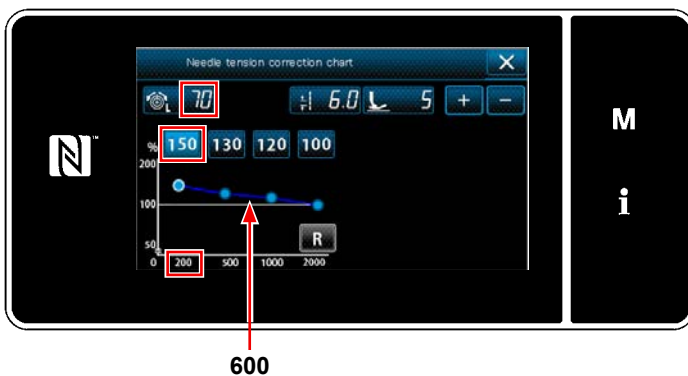
- 1) The values of needle thread tension ①, stitch length ② and presser foot pressure ③ can be increased/decreased with ④.
- \* The numeric value you change in this Step will be reflected in the setting of the sewing pattern data.

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 ④.
- 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 ③ 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)

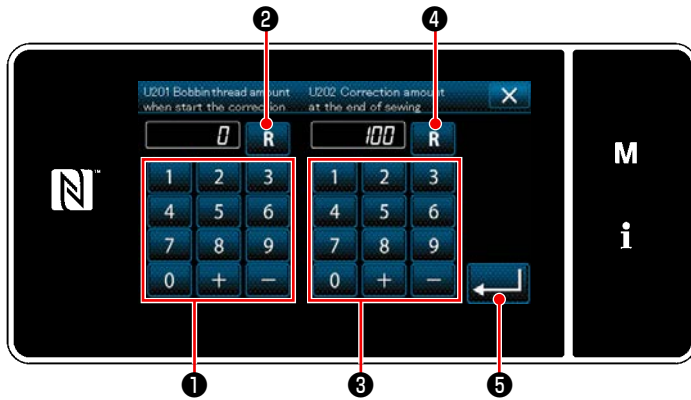


#### In the case the correction is made as shown in the figure

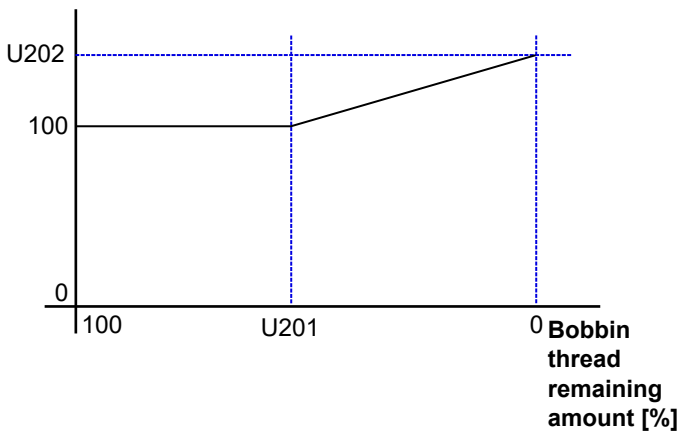
- If the sewing speed is "200 sti/min", the needle thread tension will be corrected by "150 %", from "70" to "105".
- For the sewing speed that is not shown on the scale, the correction along the inclination of the line chart will be applied. If the sewing speed is "600 sti/min", the needle thread tension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

## 13-2. 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 [%]

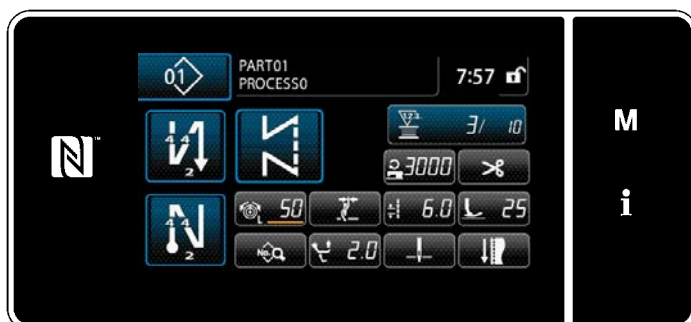


- 1) Set "U201 Bobbin thread remaining amount for starting correction" with numeric keypad **1**. Using the aforementioned set value, determine the remaining amount of bobbin thread indicated on the bobbin counter for starting the needle thread correction. For the setting method of the bobbin thread 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".



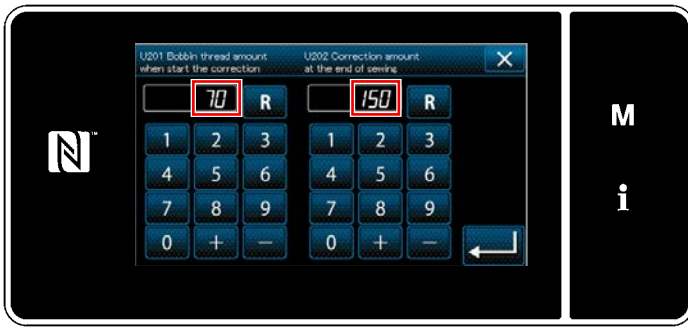
**The needle thread tension correction function is available only when the bobbin counter counts down the remaining amount of the bobbin thread. This correction function is disabled when the bobbin counter counts up the remaining amount of the bobbin thread.**

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



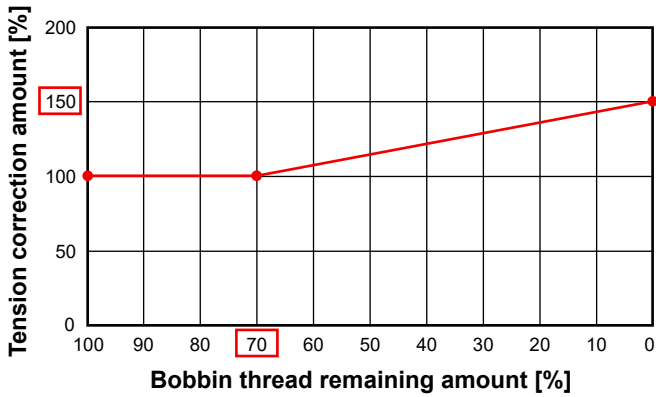
When you start to correct the needle tension in accordance with the remaining amount of the bobbin thread, a line appears below the set value of the thread tension setting button.

**(Example of use)**

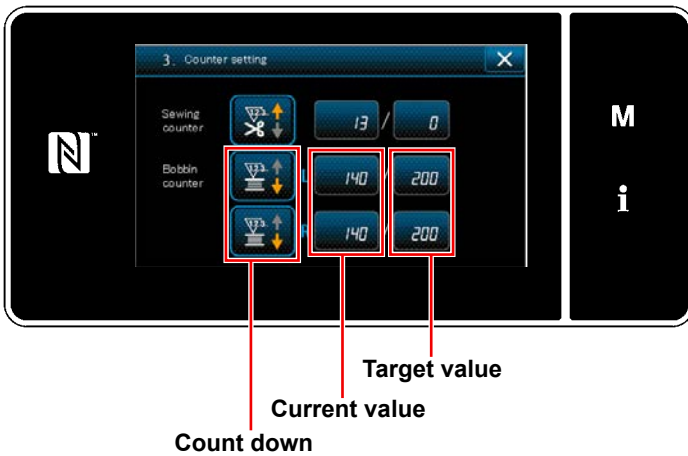


**In the case the correction is made as shown in the figure**

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 %" (U202) 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 %".



## 14. Thread clamp device

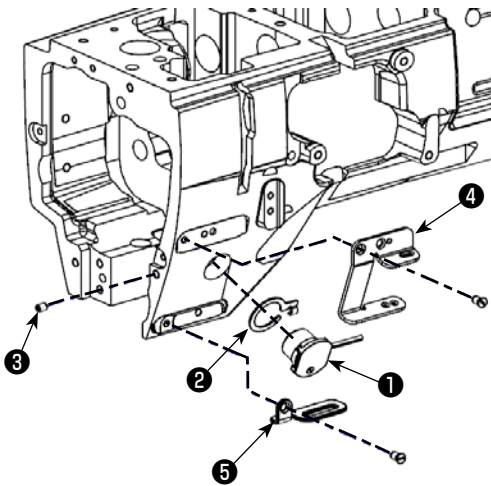
### 14-1. How to install the thread clamp device



#### 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.

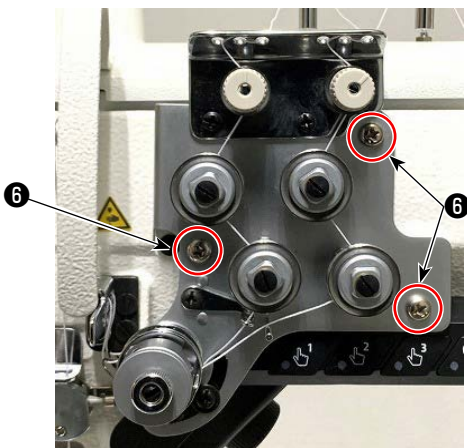


- 1) Remove the take-up thread guide, needle thread clamp (asm.) and rubber plug.
- 2) Attach thread clamp solenoid cable gland **2** to thread clamp solenoid **1**. Then, install them to the machine arm.
- 3) Put setscrew **3** from the frame side to secure thread clamp solenoid **1**.

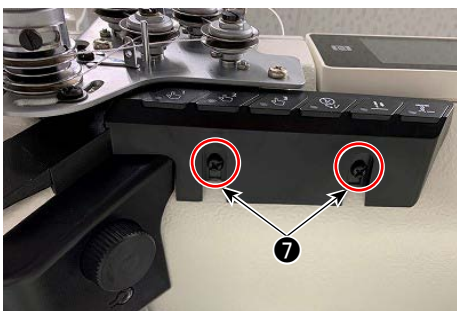


**Do not excessively tighten the setscrew to prevent the solenoid from being deformed.**

- 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.

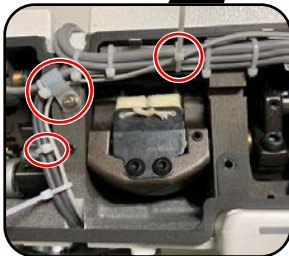
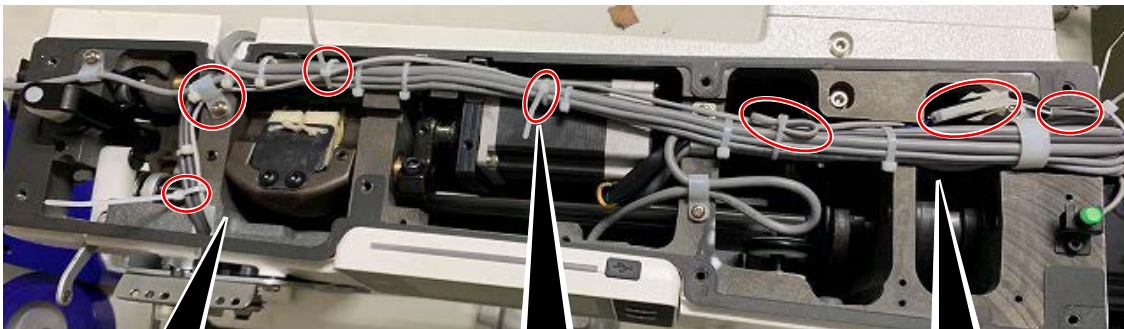
At this time, lightly pull the thread clamp solenoid cord to make sure that it can be moved.

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.

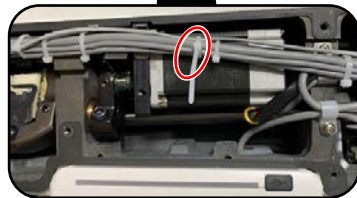


Notch in the machine arm

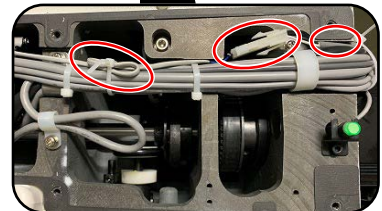
7) Route the cord to the right side while preventing it from being caught under the tension disk floating solenoid and pass it through the notch in the machine arm.



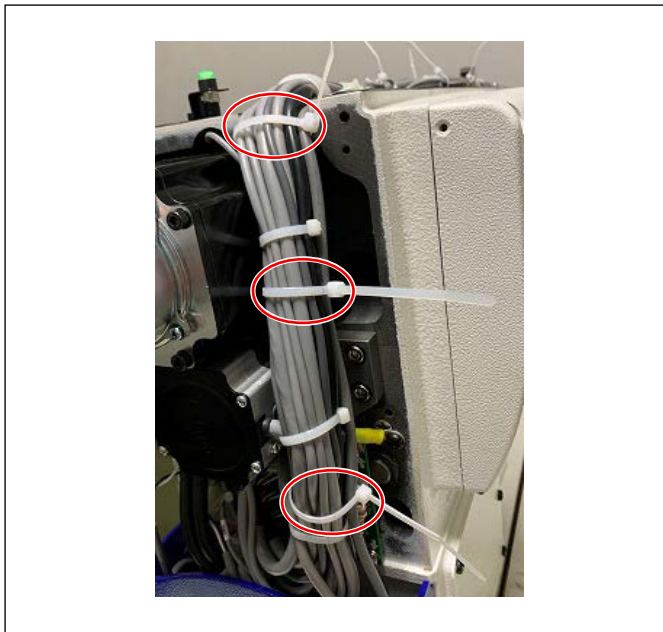
8) Remove the cable clip setscrews. Pass the thread clamp solenoid cord through the cable clips and re-secure the cable clips with the setscrews. Bundle the cords with a cable clip band (small).



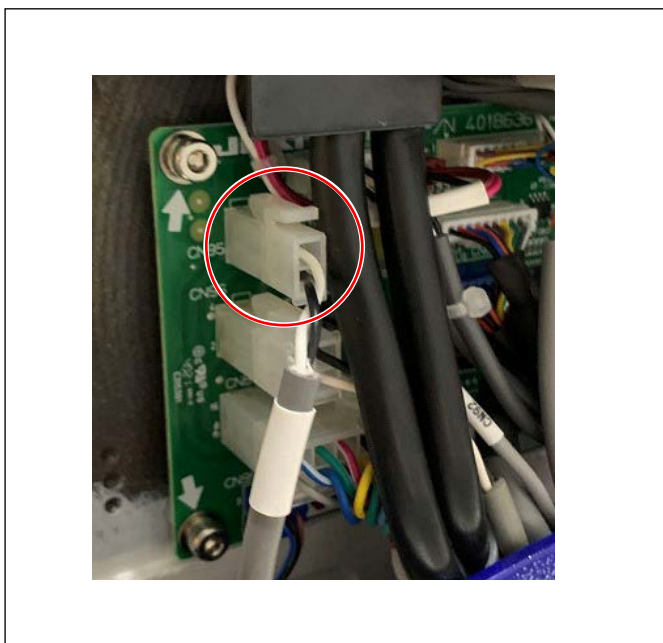
9) Bundle the cords with the cable clip band (small).



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.

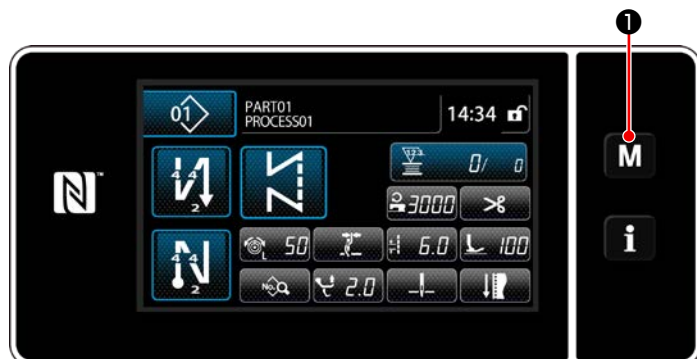
When installing the covers, take care to prevent the cords from being caught under the covers.

## 14-2. How to set up the thread clamp device

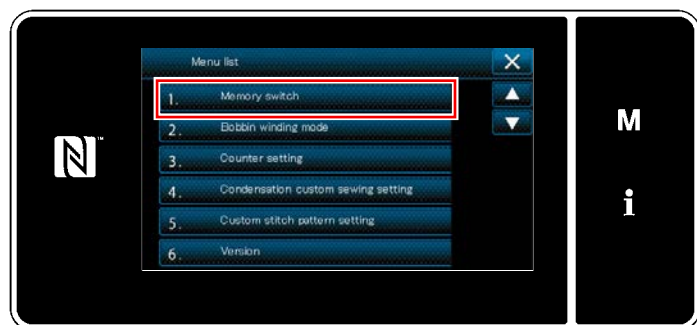
When you use the thread clamp device, make the following settings.

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".

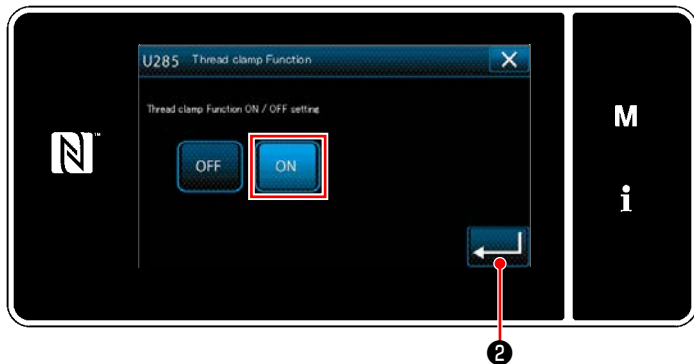


3) Select "2. Beginning of sewing".




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



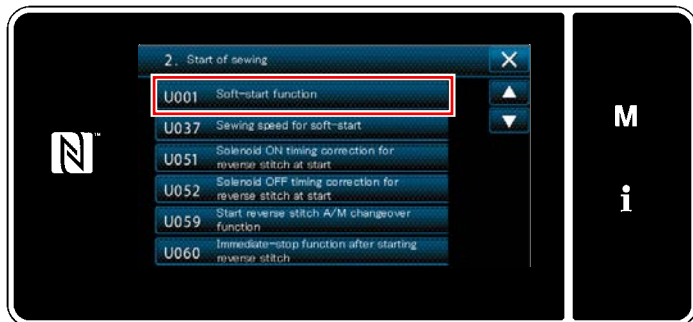
1) Press **M** ①.



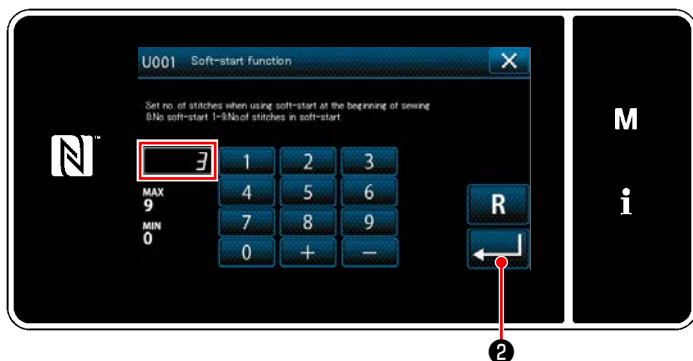
2) Select "1. Memory switch".



3) Select "2. Start of sewing".

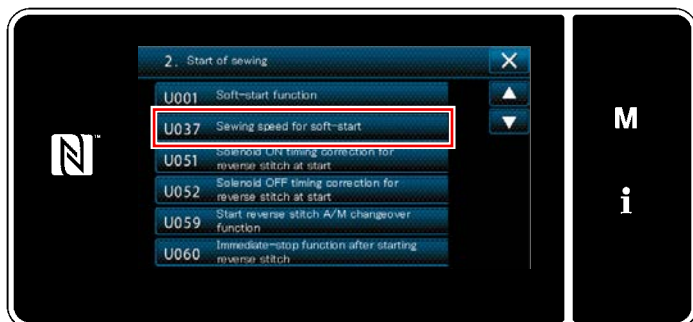


4) Select "U001 Soft-start function".

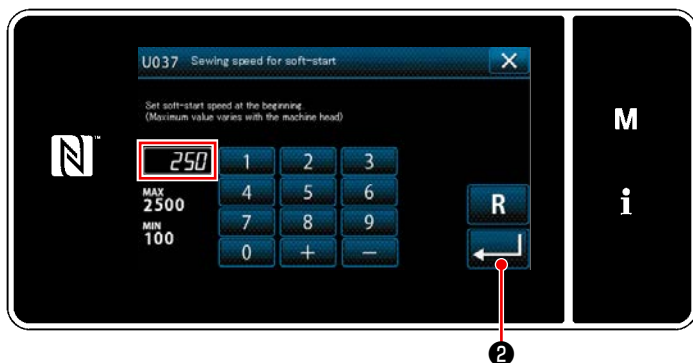


5) Change the numerical value to "3".

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.

### 14-3. 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.

## 15. How to replace the hook cover



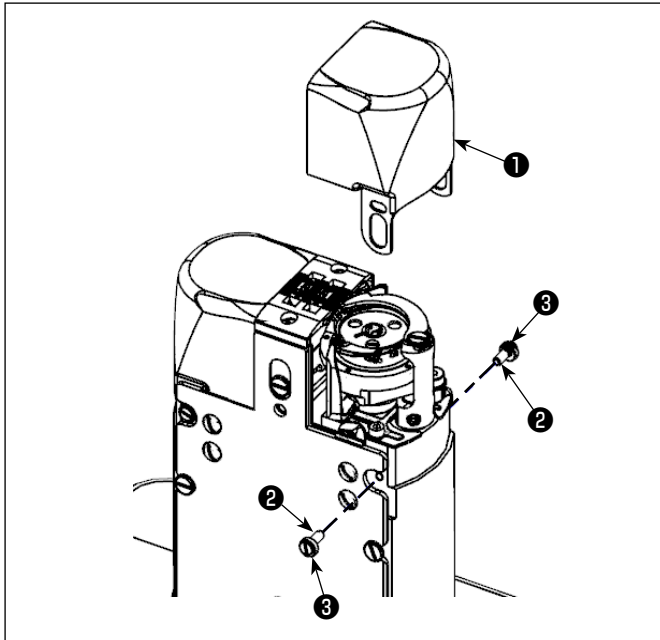
### WARNING :

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.

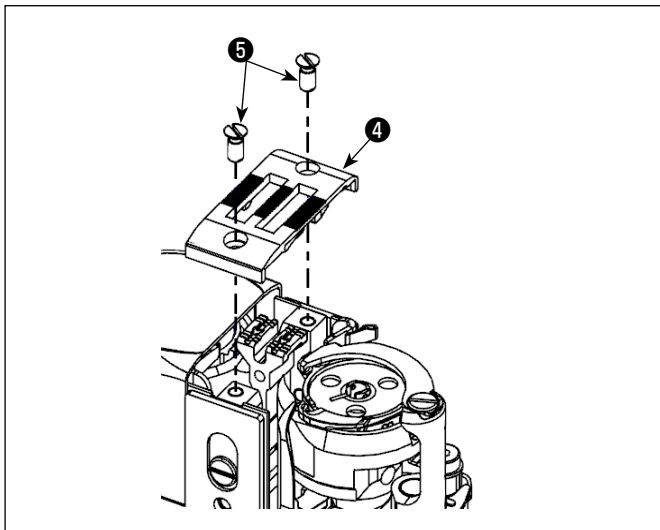


Handling of the material on the sewing machine can be improved by changing the standard hook cover with the hook cover for the sewing machine without thread trimmer.

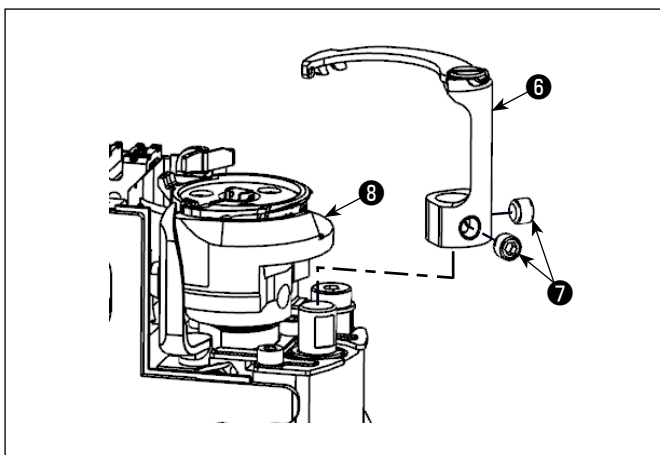
\* Thread trimming function will be disabled.



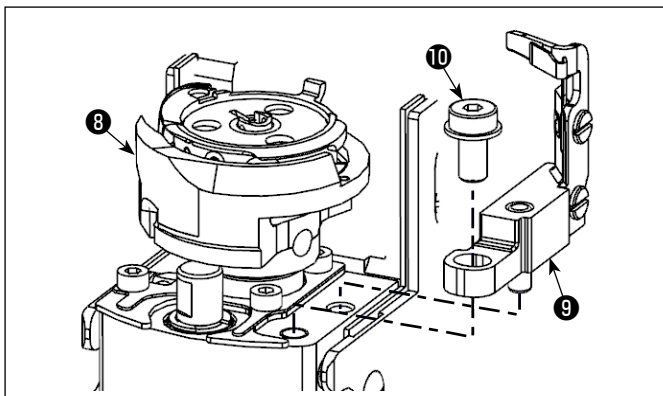
- 1) Remove hook cover screws ② and eccentric rollers ③ to remove hook cover ① .



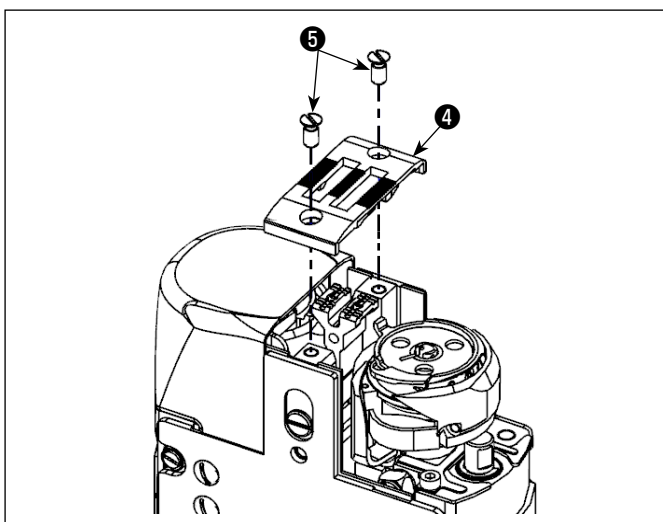
- 2) Remove throat plate setscrews ⑤ to remove throat plate ④ .



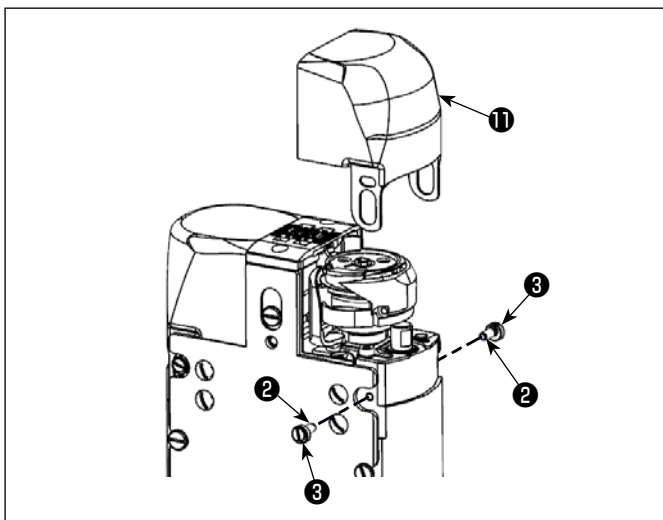
- 3) Loosen moving knife base setscrews ⑦ to remove moving knife base ⑥ .  
When removing moving knife base ⑥ , turn the handwheel to bring hook ⑧ to the position shown in the figure beforehand.



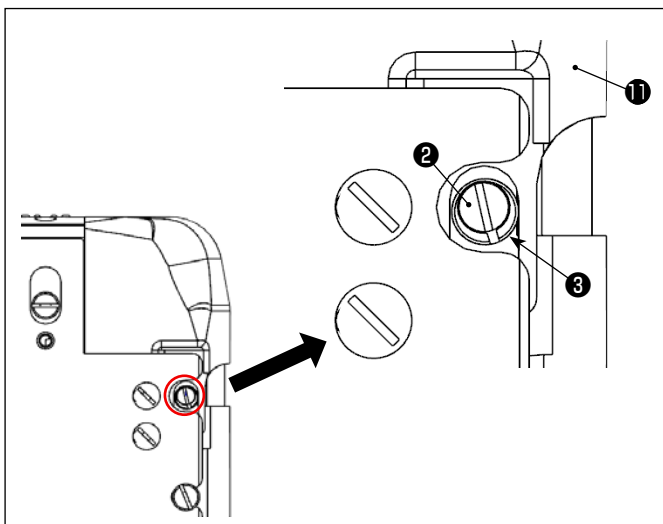
- 4) Loosen counter knife base setscrew **10** to remove counter knife base **9** .  
When removing counter knife base **9** , turn the handwheel to bring hook **8** to the position shown in the figure beforehand.



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

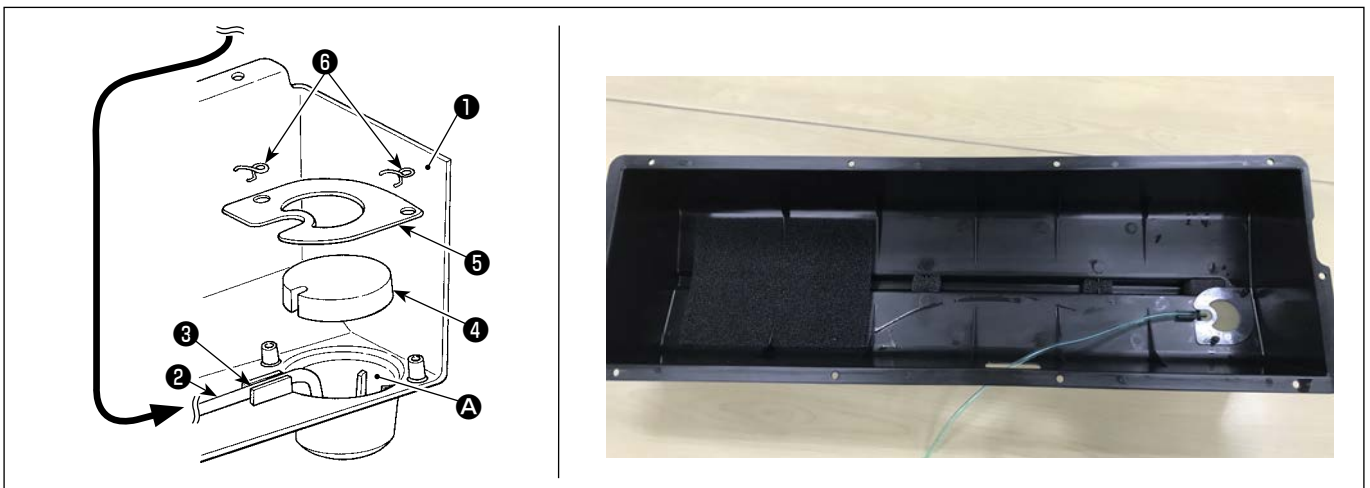
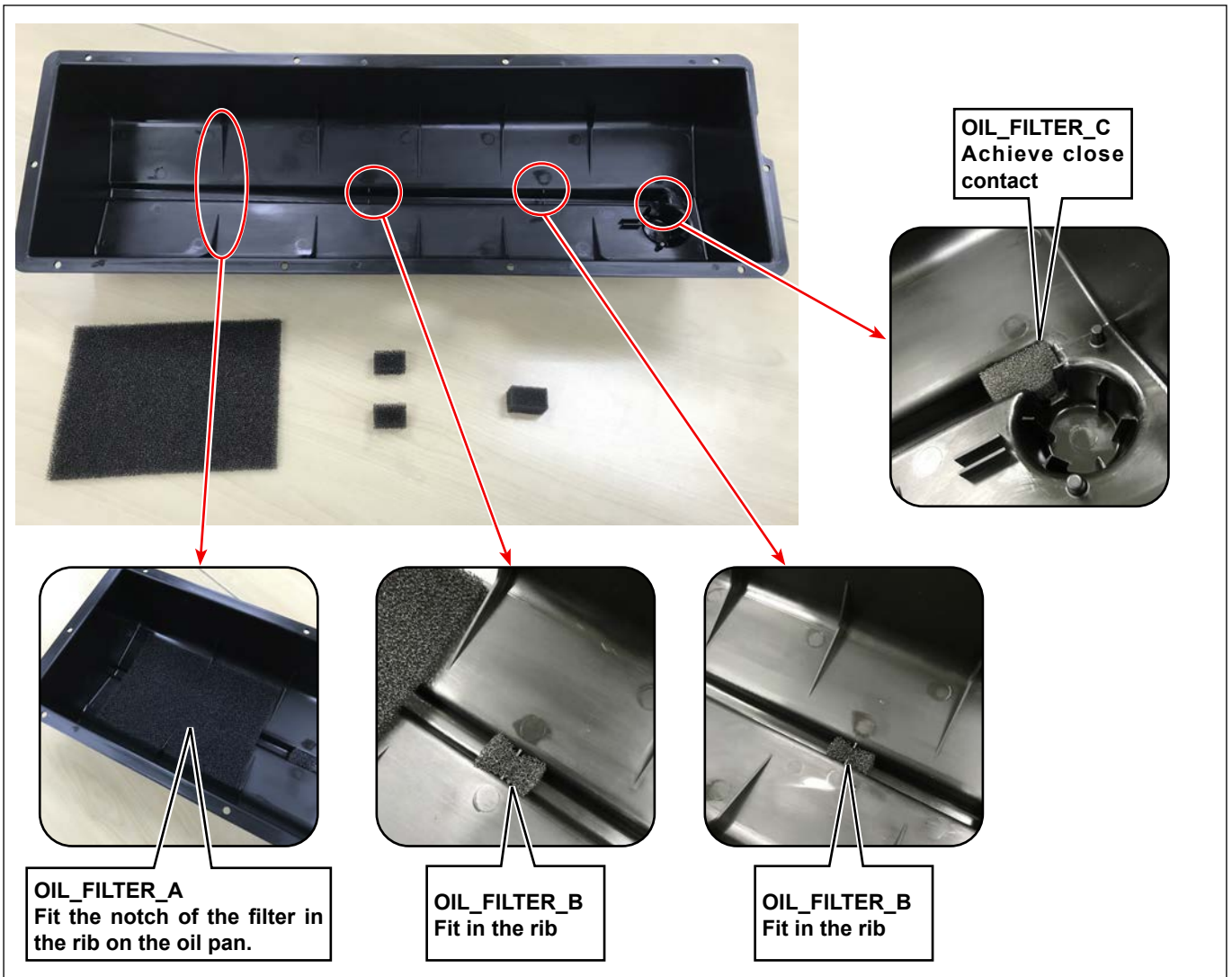


- 6) Install hook cover for the sewing machine without thread trimmer **11** and temporarily fix hook cover screws **2** and eccentric rollers **3** .



- 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.

## 16. How to install the oil filter



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



Secure reflux pipe ② as shown in the figure.

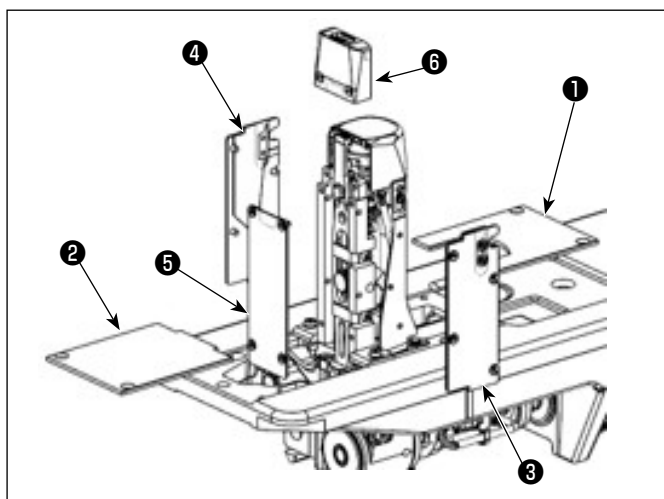
- 2) Secure filter ④ and filter holder ⑤ with metal fittings ⑥ .

## 17. How to replace the right hook with the left hook for the 1-needle sewing machine

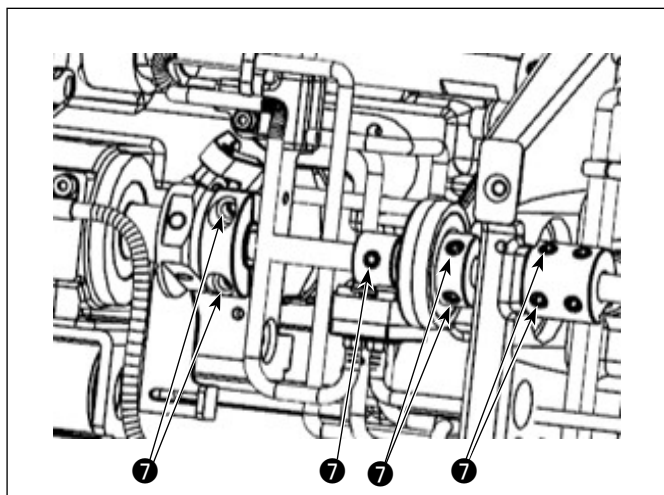


### WARNING :

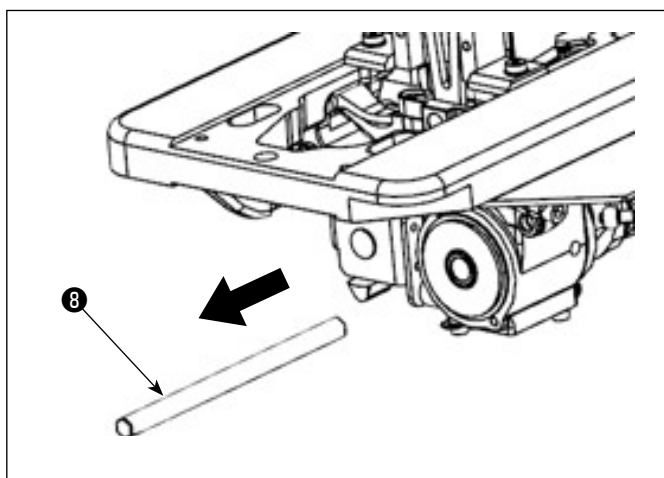
To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.



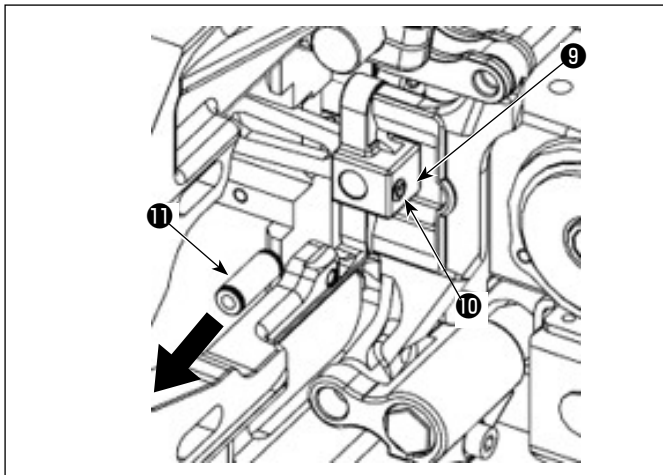
- 1) Remove bed cover A **1** , bed cover B **2** , side cover A **3** , side cover F **4** , feed lever base cover **5** and throat plate **6** .



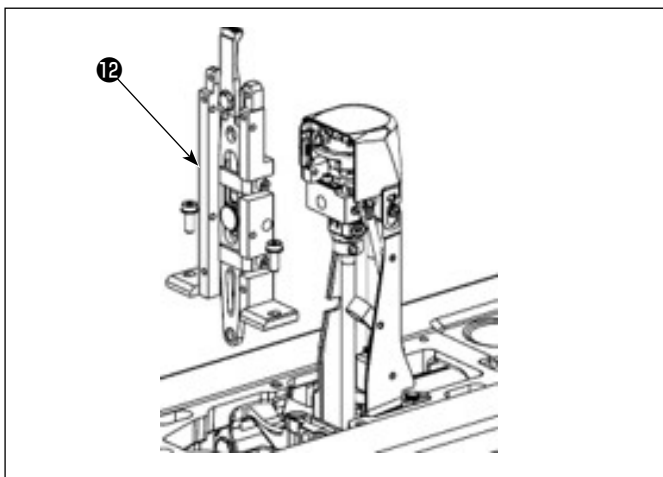
- 2) Loosen setscrews **7** of the lower shaft connecting bushing, vertical feed rod, lower shaft set collar and plunger eccentric cam (at seven locations).



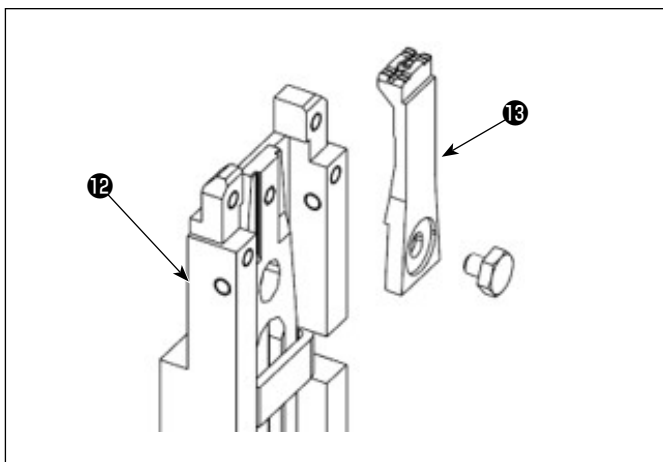
- 3) Pull out lower shaft B **8** .



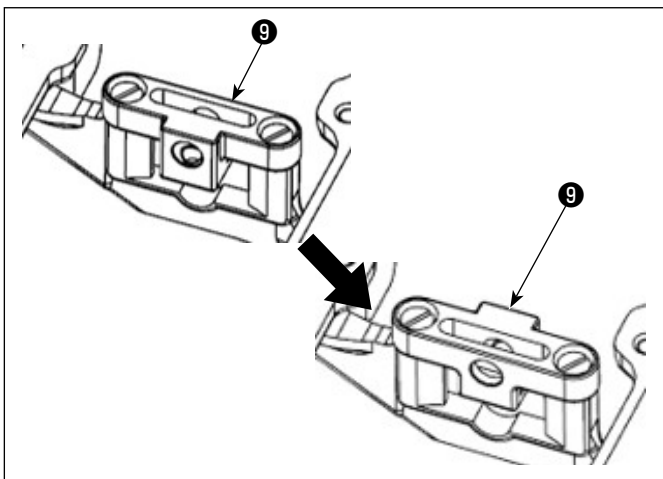
- 4) Loosen shaft setscrew **10** located on the lower side of feed lever support **9** to pull out connecting link pin A **11** .



- 5) Remove feed lever base **12** .

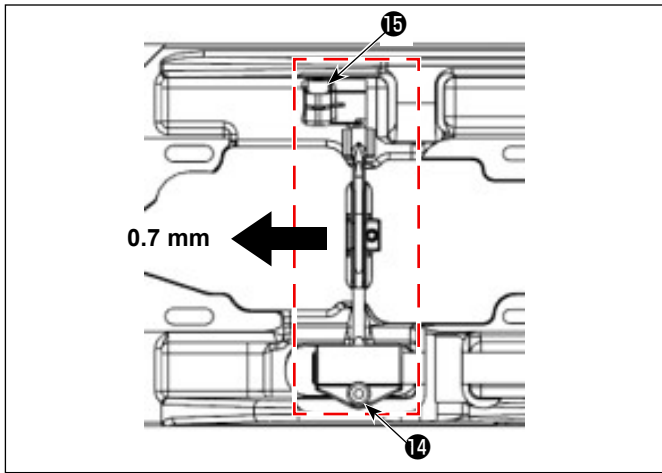


- 6) Replace feed dog of feed lever base **12** with feed dog **13** for the left hook.

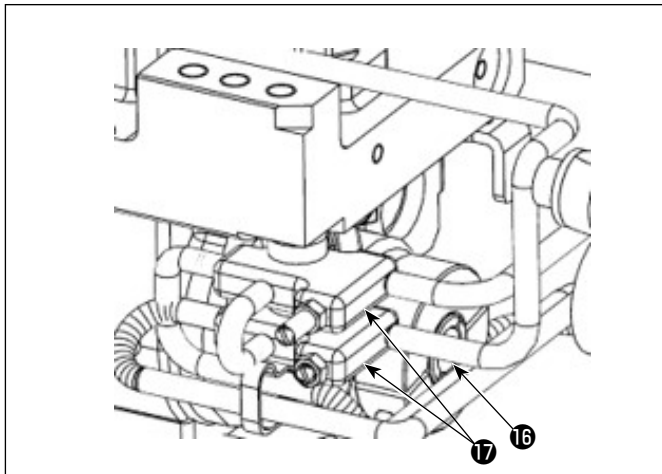


- 7) Invert feed lever support **9** and fix it to the feed base.

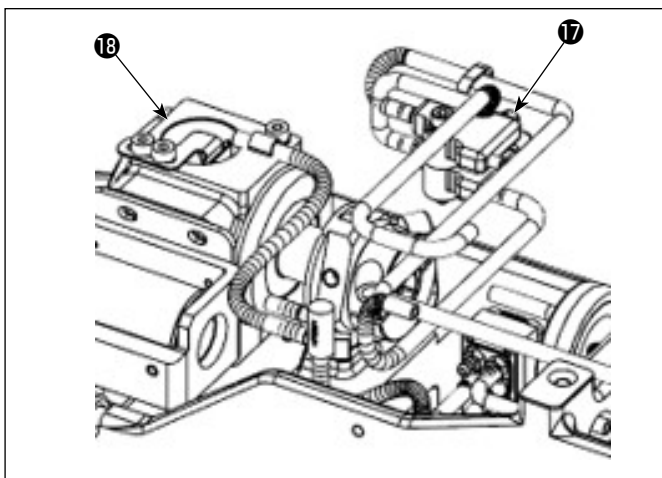




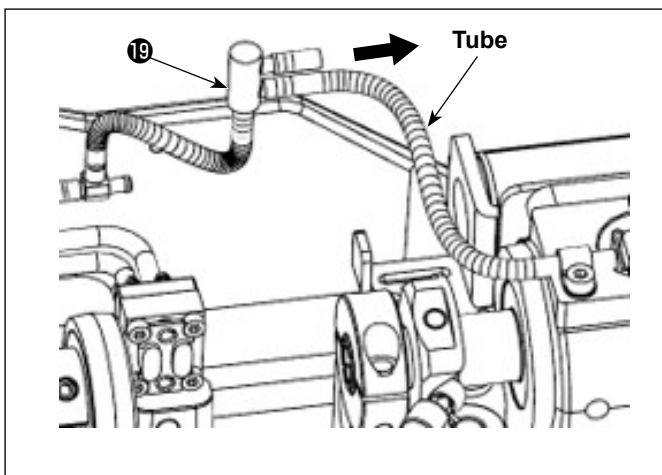
- 8) Loosen clamping screw 14 of the feed base arm and clamping screw 15 of the vertical feed front arm. Then, move the feed base toward the frame side by 0.7 mm. Temporarily tighten clamping screw 14 of the feed base arm and clamping screw 15 of the vertical feed front arm.



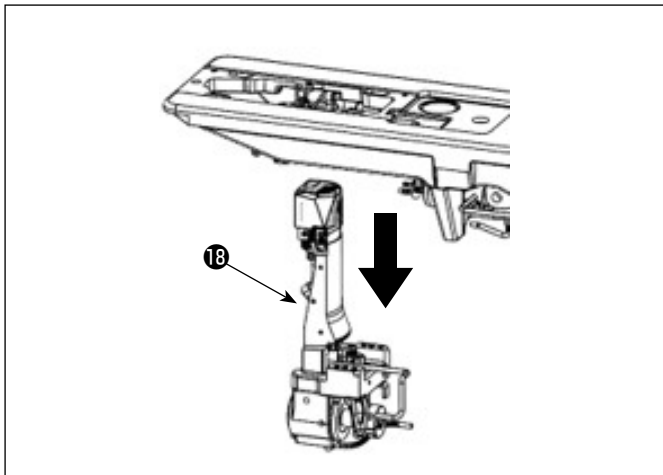
- 9) Detach tube 16 that supplies oil to the hook shaft from distributor 17.



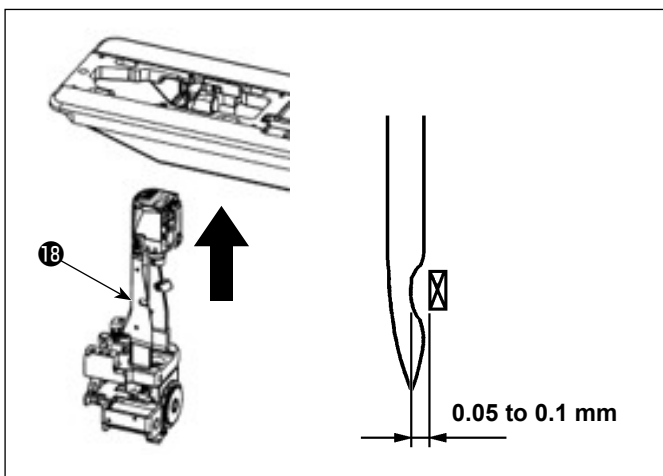
- 10) Detach distributor 17 from hook shaft base 18.



- 11) Detach the tube from distributor A 19.

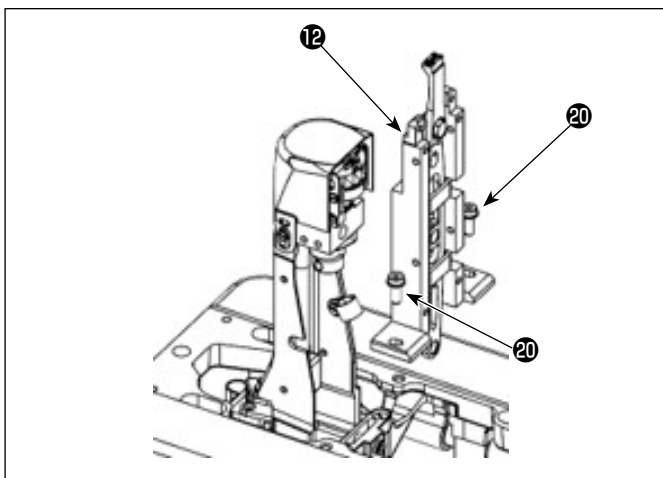


12) Detach hook shaft base 18 from the bed.

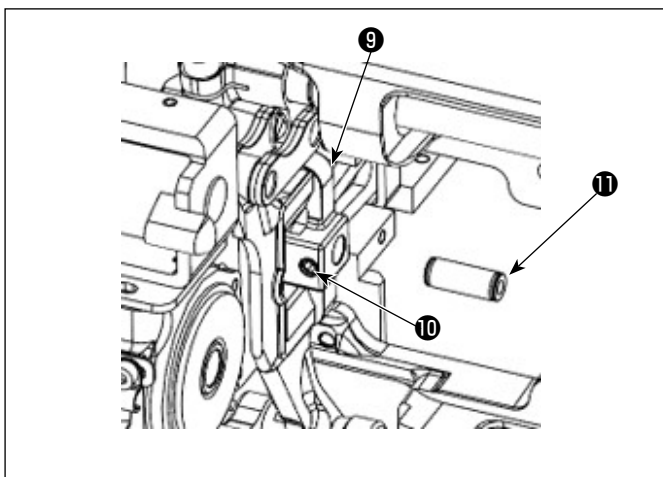


13) Attach hook shaft base 18 to the left side of the bed and temporarily secure it.

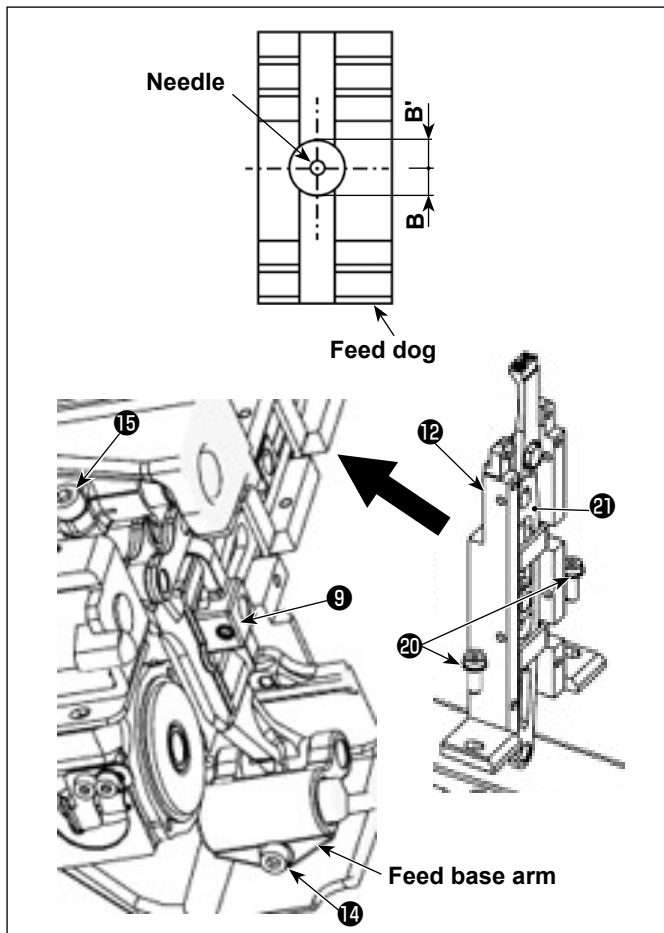
Adjust the position of the hook shaft base 18 so that a clearance of 0.05 to 0.1 mm is provided between the blade point of the hook and the needle. Then, secure hook shaft base 18.



14) Attach feed lever base 12 in place and temporarily tighten setscrew 20.



15) Insert connecting link pin A 11 into the hole in the shaft and tighten shaft setscrew 10 located on the lower side of feed lever support 9.



- 16) Adjust so that the needle is aligned with the center of the needle hole in the feed dog.  
Adjust so that the needle enters the center of the needle hole in the feed dog. ( $B=B'$ )  
Condition: Needle bar is at its lower dead point;  
the feed amount is 0 mm

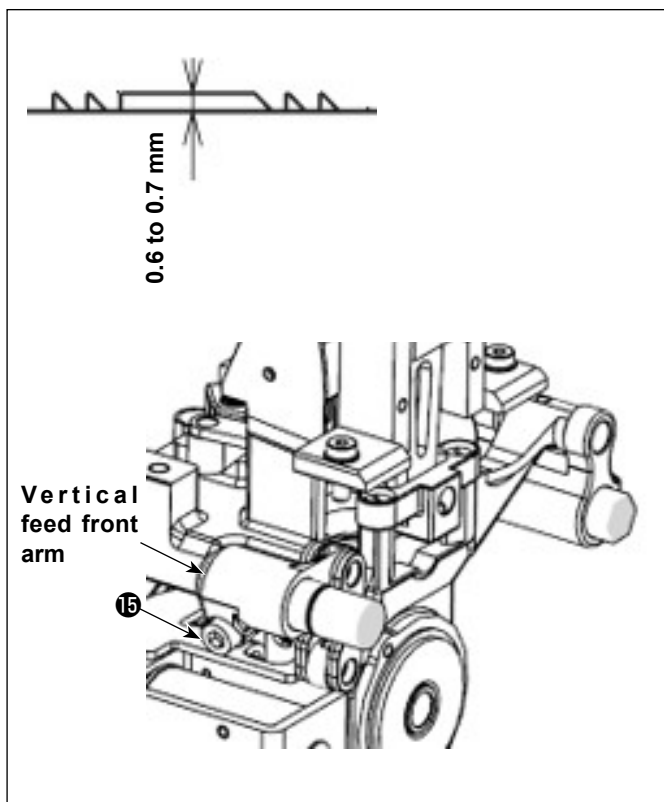
**[Lateral position]**

Move feed lever base 12 to adjust its lateral position. Then, tighten feed lever base setscrew 20 .  
Where necessary, loosen clamping screw 14 of the feed base arm and clamping screw 15 of the vertical feed front arm to adjust the lateral position of the feed base.

At this time, check to make sure that feed lever 21 does not come in contact with feed lever support 9 .

**[Longitudinal position]**

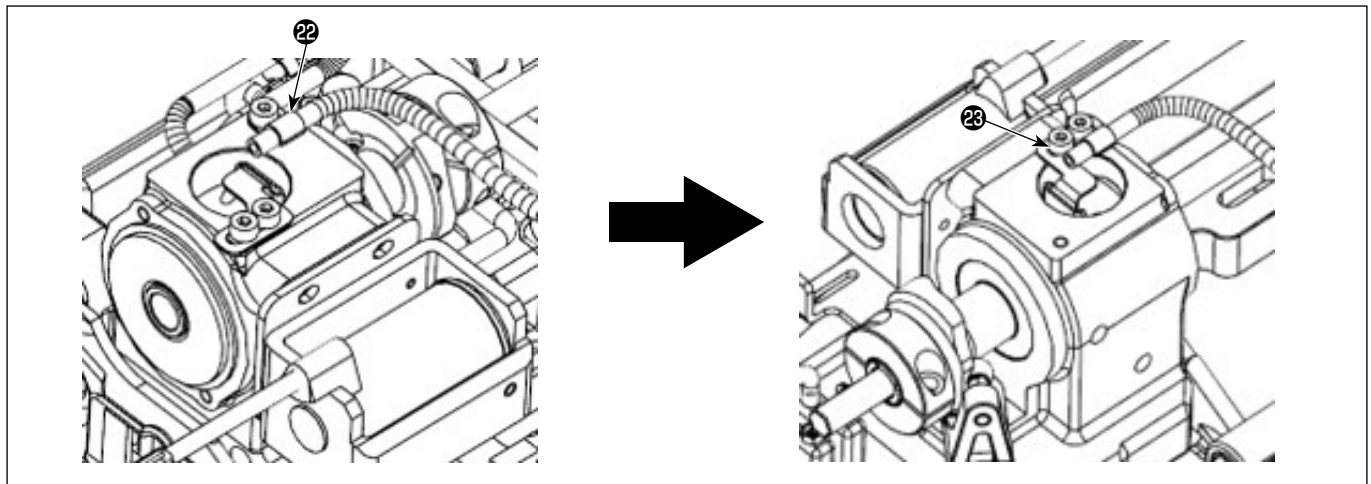
Move the feed base arm to adjust its longitudinal position. Then, tighten the clamping screw 14 of the feed base arm.



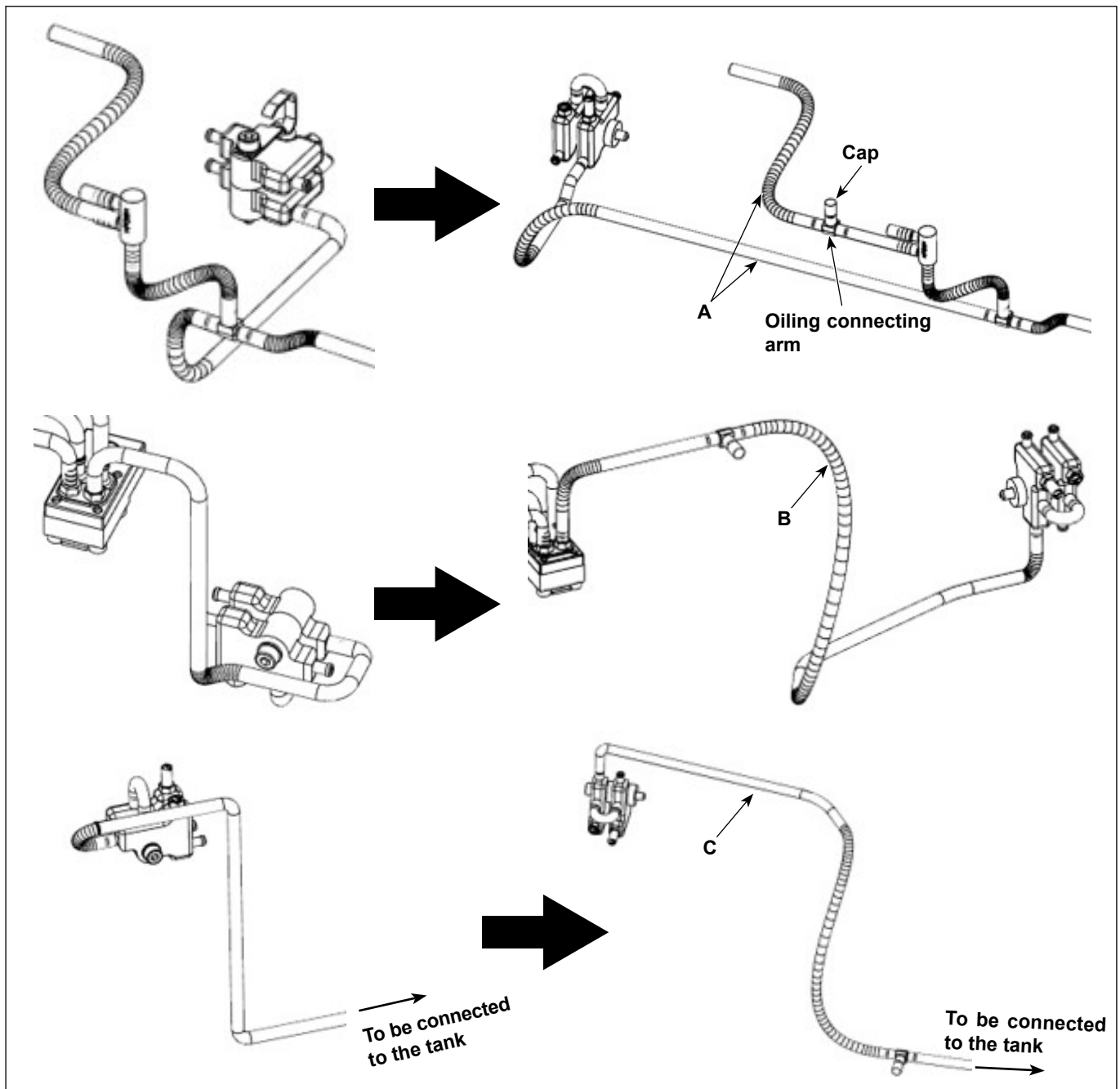
- 17) Adjusting the height of the feed dog  
Condition: Feed dog is at its highest position;  
the feed amount is 0 mm.

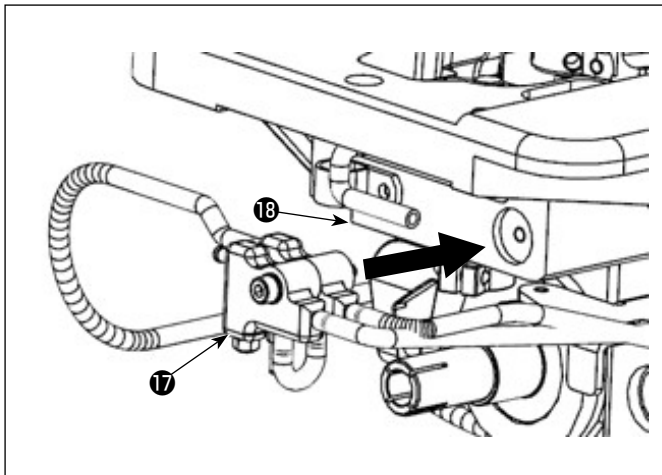
Turn the handwheel to bring the feed dog to its highest position.  
Loosen clamping screw 15 of the vertical feed front arm.  
Turn the vertical feed front arm to adjust the feed dog height to 0.6 to 0.7 mm above the top surface of the throat plate. Then, tighten clamping screw 15 .

18) Detach tube holder 22 of the tube that supplies oil to the bevel gear and tighten it together with setscrew 23 of the Vilene holder.

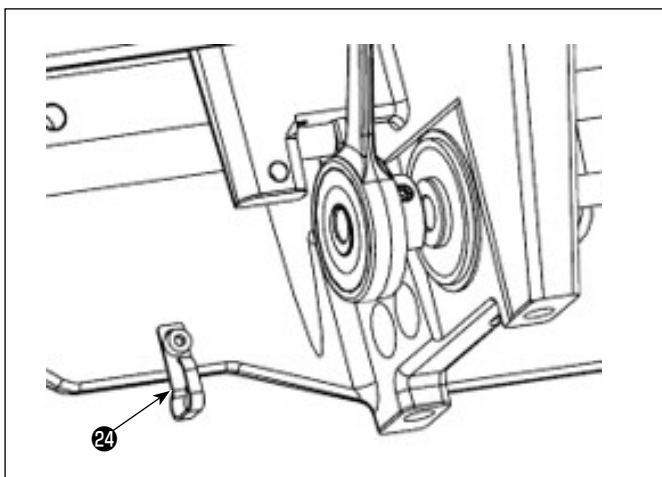


19) Change or extend the tubes connected to the distributor (ABC).  
To extend the tubes, use the oiling connecting arms and caps.

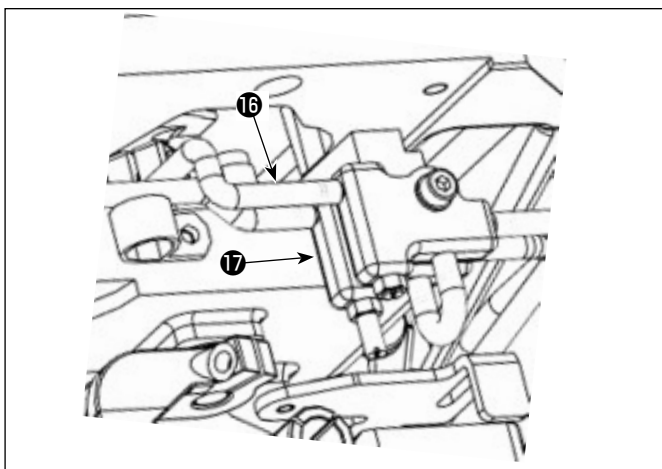




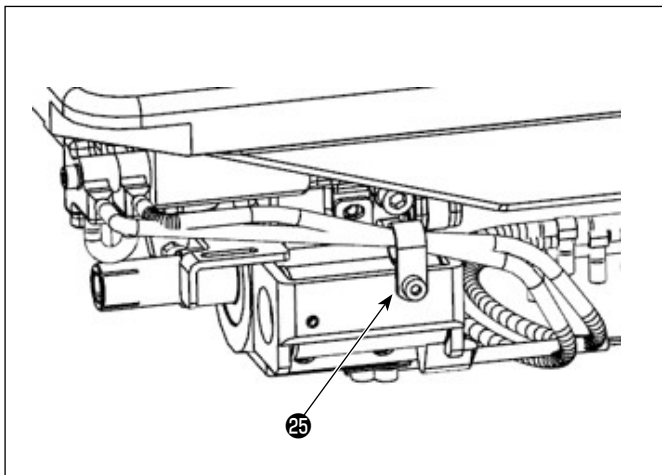
20) Secure distributor 17 to the hook shaft base 18 .



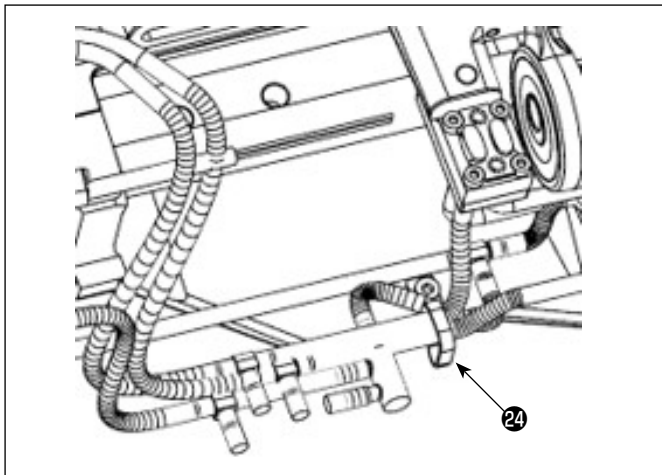
21) Attach cord holder 24 that has been attached to distributor 17 to the bed.



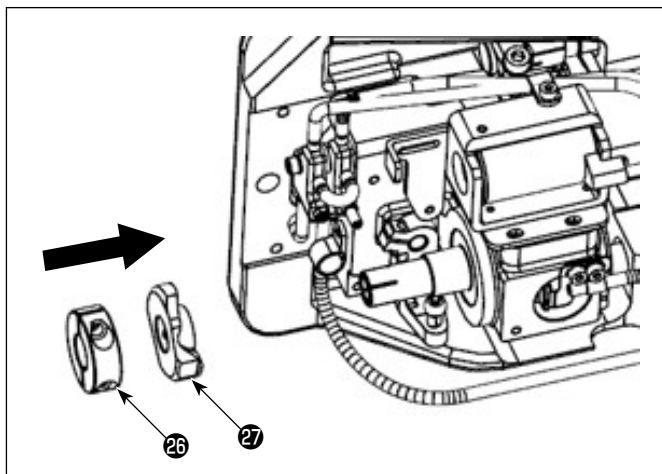
22) Connect tube 16 that supplies oil to the hook shaft 17 to distributor 17 .



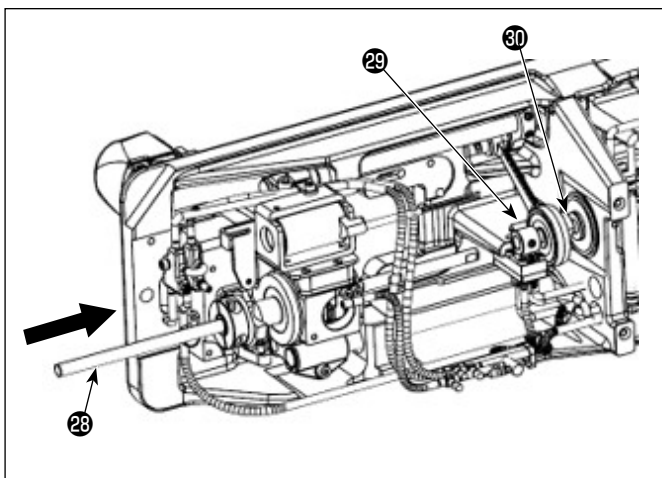
23) Attach cord clamp 25 to the thread trimming solenoid to secure the tubes.



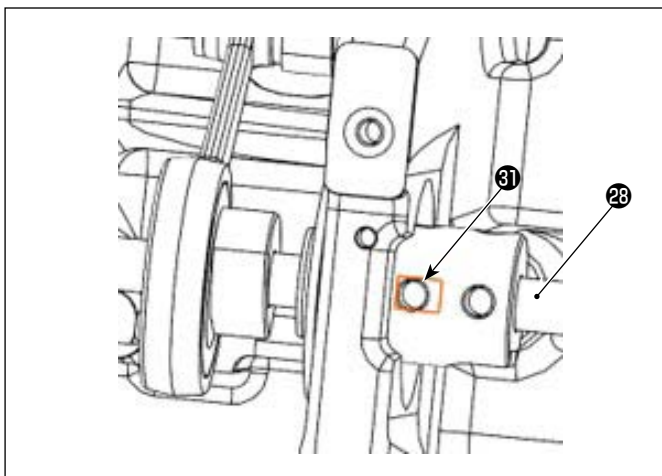
- 24) Bundle the tubes with cord holder 24 mounted to the bed. Secure the tubes to the thread trimming solenoid cord with a cable clip band where necessary.



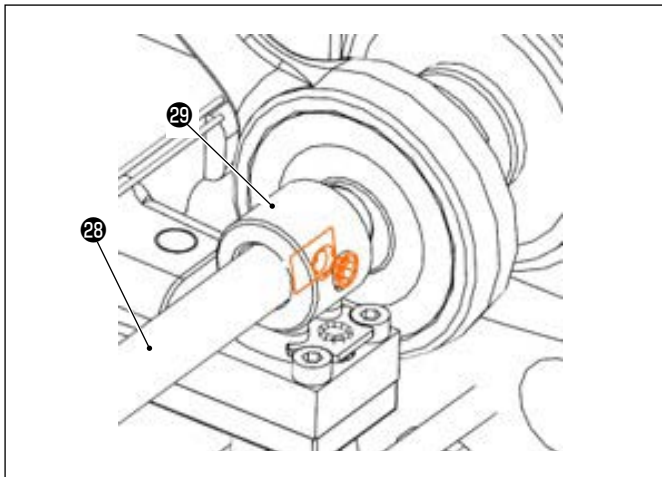
- 25) Detach the lower shaft set collar and the thread trimming cam (right). Replace the thread trimming cam (right) with the thread trimming cam (left). Attach lower shaft set collar 26 and thread trimming cam (left) 27 in place.



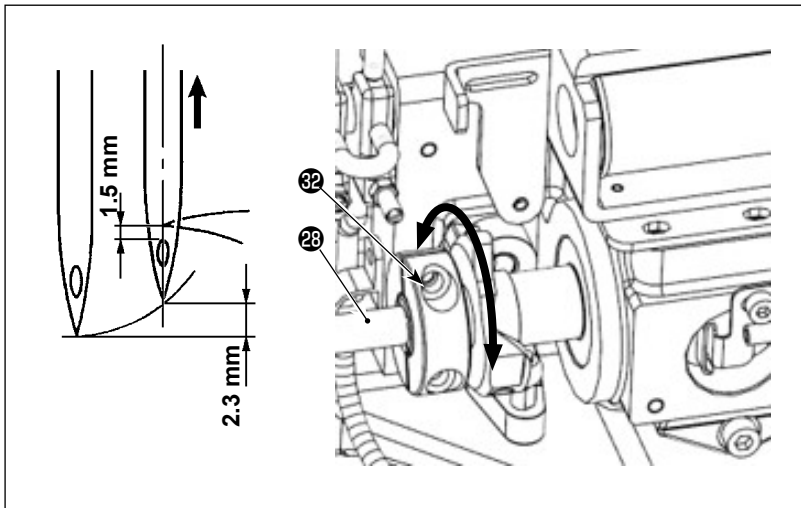
- 26) Replace lower shaft B 8 with lower shaft C 28 and attach the latter in place. When you attach the lower shaft C, also pass lower shaft C 28 through holes in plunger eccentric cam 29 and vertical feed rod cam 30 .



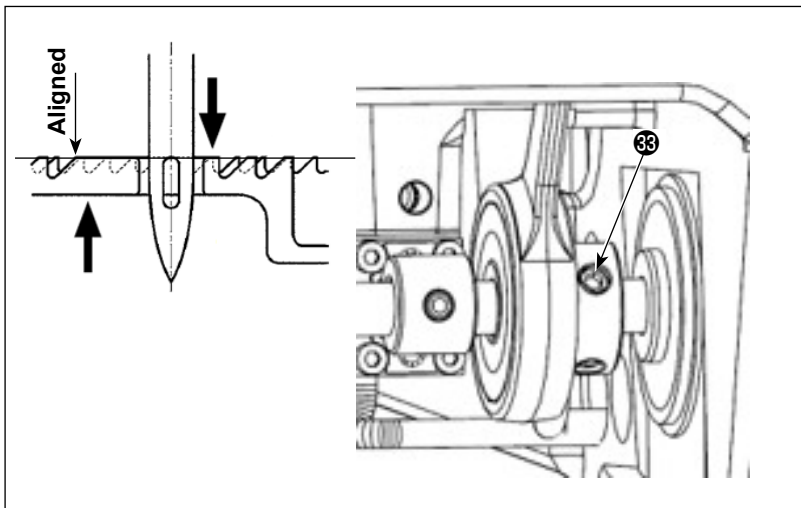
- 27) Tighten the screw No. 1 while aligning the flat part of lower shaft C 28 with screw No. 1 31 of the lower shaft connecting bushing. Then, tighten the screw No. 2.



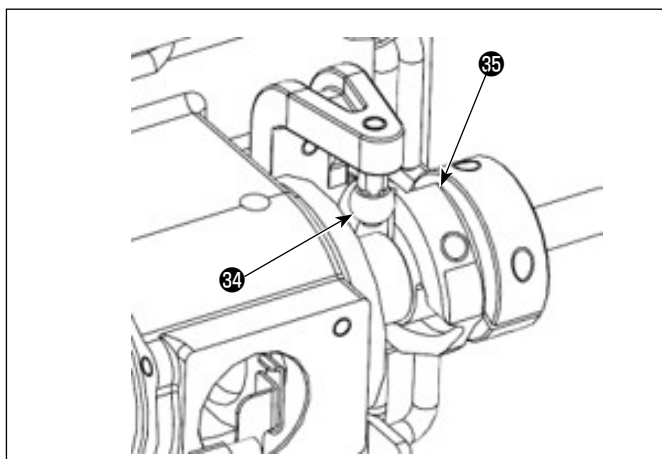
28) Secure plunger eccentric cam 29 with aligned with the flat part of lower shaft C 28 .



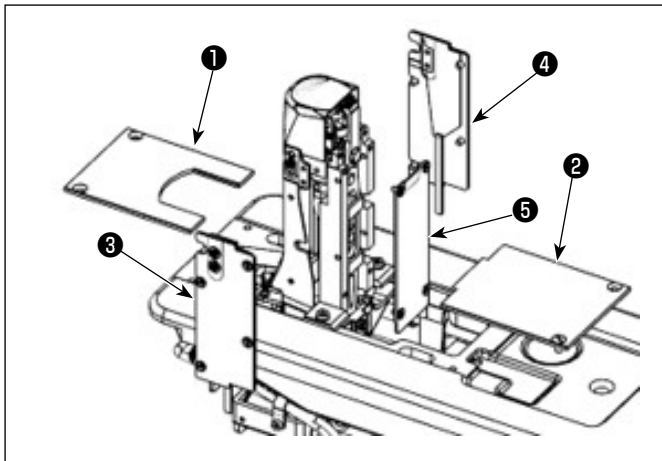
29) Turn lower shaft C 28 (hollow) to adjust so that the blade point of the hook is aligned with the center of the needle when the needle bar goes up from its lower dead point by 2.3 mm. Then, tighten lower shaft set collar screws 32 (two locations).



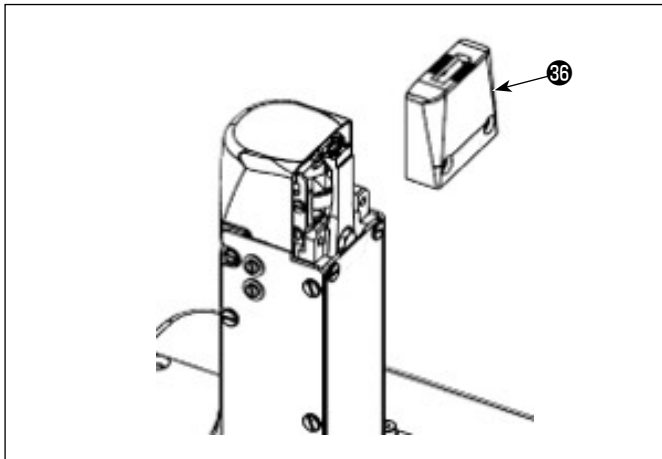
30) At the timing when the top end of the eyelet in the descending needle is aligned with the top surface of the throat plate and also the top surface of the ascending feed dog is aligned with the top surface of the throat plate, tighten screws 33 (two locations) of the vertical feed rod.



31) At the timing when thread trimming cam roller 34 is aligned with the marker line on thread trimming cam 35 with the needle bar at its lower dead point, tighten the thread trimming cam screw.



32) Attach bed cover A ① , bed cover B ② , side cover A ③ , side cover F ④ and feed lever base cover ⑤ in place.



33) Replace the current throat plate with throat plate for left hook ③⑥ and attach the latter in place.

Part number	Part name	Quantity
40271636	Gauge set for the left hook	1
40271621	Throat plate (left hook)	(1)
40271622	Feed dog (left hook)	(1)
40250798	Walking foot (asm.)	(1)
40017286	Presser foot (asm.)	(1)
40237089	Float case cap	3
13765607	Oiling connecting arm	3
23630007	Tube	0.04m
23630007	Tube	0.35m
23630007	Tube	0.35m
23630007	Tube	0.35m
EA9500B0100	Cable clip band	5
HX00150000D	Cable clip	1
SM6040602TP	Hexagon socket head cap screw	1

Part number	Part name	Quantity
40271639	12-mm pitch gauge set for the left hook	1
40271634	Throat plate (left hook) P12	(1)
40271622	Feed dog (left hook)	(1)
40250798	Walking foot (asm.)	(1)
40017286	Presser foot (asm.)	(1)

Part number	Part name	Quantity
40271637	Small-curve gauge set for the left hook	1
40271623	Throat plate (left hook) ST	(1)
40271624	Feed dog (left hook) ST	(1)
40277897	Walking foot ST (asm.)	(1)
40161454	Presser foot (left-hand presser ) asm.	(1)