

***ENGLISH***

**PLC-2700 Series  
INSTRUCTION MANUAL**

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# 1. SPECIFICATIONS

No.	Item	Application	
1	Model	PLC-2710	PLC-2760
2	Model name	Post-bed, 1-needle, unison-feed, lockstitch machine with vertical-axis large Hook	Post-bed, 2-needle, unison-feed, lockstitch machine with vertical-axis large Hook
3	Application	Medium- to heavy-weight materials, car seat, furniture	
4	Sewing speed	Max. 2,500 sti/min (See "6. SEWING SPEED TABLE" p.43.)	
5	Needle	GROZ-BECKERT 135 x 17 (Nm 100 to Nm 180) (Standard : Nm 140)	
6	Applicable thread size for sewing	#30 to #5	
7	Applicable thread size to be cut		
8	Stitch length	Max. 12 mm (forward/reverse feed)	
9	Stitch length dial	1-pitch dial	
10	Presser foot lift	Hand lifter : 10 mm Knee lifter : 20 mm	
11	Stitch length adjusting mechanism	By dial	
12	Reverse stitch adjusting method	By lever	
13	Thread take-up	Link thread take-up	
14	Needle bar stroke	40 mm	
15	Amount of the alternate vertical movement	1 mm to 9 mm (Alternate vertical dial adjustment type)	
16	Hook	Vertical-axis 2-fold hook (Latch type)	
17	Feed mechanism	Box feed	
18	Top and bottom feed actuation mechanism	Timing belt	
19	Thread trimming method		
20	Lubrication	Automatic lubrication by oil tank (with oil gauge)	
21	Lubricating oil	JUKI New Defrix Oil No. 1 (equivalent to ISO standard VG7) or JUKI MACHINE OIL No. 7	
22	Bed size	643 mm × 178 mm	
23	Space under the arm	347 mm × 298 mm	
24	Hand wheel size	V-belt effective diameter : $\varnothing 76.0$ mm Outer diameter : $\varnothing 140$ mm	
25	Motor/Control box	M51N 750W / SC-922A	
26	Machine head weight	76 kg	79 kg
27	Noise	- Equivalent continuous emission sound pressure level ( $L_{pA}$ ) at the workstation: A-weighted value of 79.5 dB; (Includes $K_{pA} = 2.5$ dB); according to ISO 10821- C.6.2 - ISO 11204 GR2 at 2,500 sti/min.	- Equivalent continuous emission sound pressure level ( $L_{pA}$ ) at the workstation: A-weighted value of 84.0 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 86.0 dB; (Includes $K_{WA} = 2.5$ dB); according to ISO 10821- C.6.2 - ISO 3744 GR2 at 2,500 sti/min.

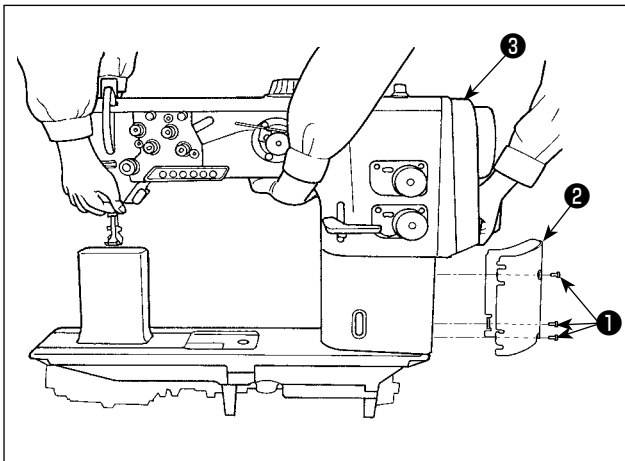
No.	Item	Application	
1	Model	PLC-2710-7	PLC-2760-7
2	Model name	Post-bed, 1-needle, unison-feed, lockstitch machine with vertical-axis large hook, with thread trimmer	Post-bed, 2-needle, unison-feed, lockstitch machine with vertical-axis large hook, with thread trimmer
3	Application	Medium- to heavy-weight materials, car seat, furniture	
4	Sewing speed	Max. 2,500 sti/min (See "6. SEWING SPEED TABLE" p.43.) *1	
5	Needle	GROZ-BECKERT 135 x 17 (Nm 100 to Nm 180) (Standard : Nm 140)	
6	Applicable thread size for sewing	#30 to #5	
7	Applicable thread size to be cut	#30 to #5	
8	Stitch length	Max. 12 mm (forward/reverse feed)	
9	Stitch length dial	2-pitch dial	
10	Presser foot lift	Hand lifter : 10 mm Automatic presser foot lifter : 20 mm	
11	Stitch length adjusting mechanism	By dial	
12	Reverse stitch adjusting method	Air cylinder type (with touch-back switch)	
13	Thread take-up	Link thread take-up	
14	Needle bar stroke	40 mm	
15	Amount of the alternate vertical movement	1 mm to 9 mm (Alternate vertical dial adjustment type)	
16	Hook	Vertical-axis 2-fold hook (Latch type)	
17	Feed mechanism	Box feed	
18	Top and bottom feed actuation mechanism	Timing belt	
19	Thread trimming method	Cam-driven scissors type	
20	Lubrication	Automatic lubrication by oil tank (with oil gauge)	
21	Lubricating oil	JUKI New Defrix Oil No. 1 (equivalent to ISO standard VG7) or JUKI MACHINE OIL No. 7	
22	Bed size	643 mm × 178 mm	
23	Space under the arm	347 mm × 298 mm	
24	Hand wheel size	Outer diameter : ø123 mm	
25	Motor/Control box	SC-922B	
26	Machine head weight	81 kg	84 kg
27	Rated power consumption	193VA	
28	Noise	- Equivalent continuous emission sound pressure level ( $L_{pA}$ ) at the workstation: A-weighted value of 79.5 dB; (Includes $K_{pA} = 2.5$ dB); according to ISO 10821- C.6.2 - ISO 11204 GR2 at 2,500 sti/min.	- Equivalent continuous emission sound pressure level ( $L_{pA}$ ) at the workstation: A-weighted value of 84.0 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 86.0 dB; (Includes $K_{WA} = 2.5$ dB); according to ISO 10821- C.6.2 - ISO 3744 GR2 at 2,500 sti/min.

\*1 The speed setting according to the amount of the alternating vertical movement of the walking foot and presser foot is automatically carried out.

No.	Item	Application	
1	Model	PLC-2760L	PLC-2765
2	Model name	Post-bed, 2-needle, unison-feed, lockstitch machine (for thick thread)	Post-bed, 2-needle, unison-feed, lockstitch machine with an organized split needle bar
3	Application	Heavy-weight materials, car seat, furniture	Medium-to heavy-weight materials, car seat, furniture
4	Sewing speed	Max. 2,000 sti/min (See "6. SEWING SPEED TABLE" p.43.)	Max. 2,500 sti/min (See "6. SEWING SPEED TABLE" p.43.)
5	Needle	GROZ-BECKERT 135 x 17 (Nm 140 to Nm 200) (Standard : Nm 200)	GROZ-BECKERT 135 x 17 (Nm 100 to Nm 180) (Standard : Nm 140)
6	Applicable thread size for sewing	#8 to #0	#30 to #5
7	Applicable thread size to be cut		
8	Stitch length	Max. 12 mm (forward/reverse feed)	
9	Stitch length dial	1-pitch dial	
10	Presser foot lift	Hand lifter : 10 mm Knee lifter : 20 mm	Hand lifter : 10 mm Knee lifter : 18 mm
11	Stitch length adjusting mechanism	By dial	
12	Reverse stitch adjusting method	By lever	
13	Thread take-up	Link thread take-up	
14	Needle bar stroke	40 mm	36 mm
15	Amount of the alternate vertical movement	1 mm to 9 mm (Alternate vertical dial adjustment type)	
16	Hook	Vertical-axis 2-fold hook (Latch type)	Vertical-axis 2-fold hook (Cap type)
17	Feed mechanism	Box feed	
18	Top and bottom feed actuation mechanism	Timing belt	
19	Thread trimming method		
20	Lubrication	Automatic lubrication by oil tank (with oil gauge)	
21	Lubricating oil	JUKI New Defrix Oil No. 1 (equivalent to ISO standard VG7) or JUKI MACHINE OIL No. 7	
22	Bed size	643 mm × 178 mm	
23	Space under the arm	347 mm × 298 mm	
24	Hand wheel size	V-belt effective diameter : $\phi$ 76.0 mm Outer diameter : $\phi$ 140 mm	
25	Motor/Control box	M51N 750W / SC-922A	
26	Machine head weight	79 kg	80 kg
27	Noise	<ul style="list-style-type: none"> <li>- Equivalent continuous emission sound pressure level (<math>L_{pA}</math>) at the workstation: A-weighted value of 88.0 dB; (Includes <math>K_{pA} = 2.5</math> dB); according to ISO 10821- C.6.2 - ISO 11204 GR2 at 2,000 sti/min.</li> <li>- Sound power level (<math>L_{WA}</math>); A-weighted value of 93.5 dB; (Includes <math>K_{WA} = 2.5</math> dB); according to ISO 10821- C.6.2 - ISO 3744 GR2 at 2,000 sti/min.</li> </ul>	<ul style="list-style-type: none"> <li>- Equivalent continuous emission sound pressure level (<math>L_{pA}</math>) at the workstation: A-weighted value of 90.0 dB; (Includes <math>K_{pA} = 2.5</math> dB); according to ISO 10821- C.6.2 - ISO 11204 GR2 at 2,000 sti/min.</li> <li>- Sound power level (<math>L_{WA}</math>); A-weighted value of 96.0 dB; (Includes <math>K_{WA} = 2.5</math> dB); according to ISO 10821- C.6.2 - ISO 3744 GR2 at 2,500 sti/min.</li> </ul>

## 2. INSTALLATION

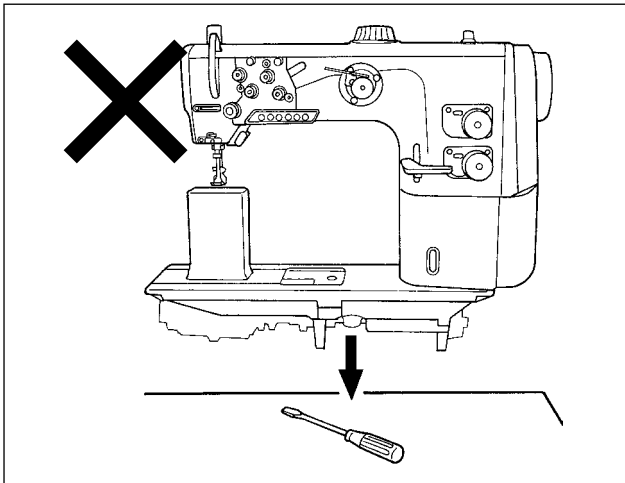
### 2-1. Installation of the sewing machine



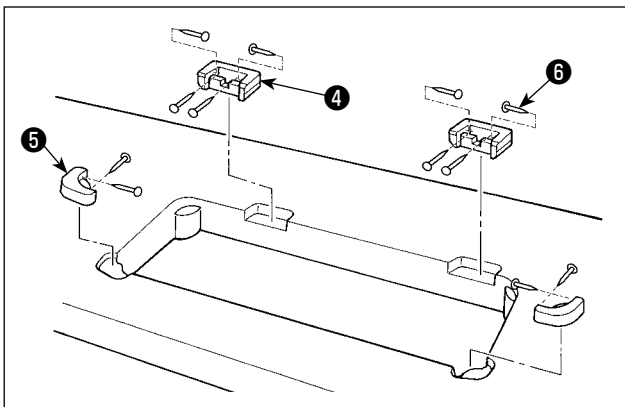
- 1) Carry the sewing machine with two persons. In the case of the sewing machine with a thread trimmer, loosen post cover mounting screws ❶ (three locations) to remove them. Remove post cover ❷. Then, carry the sewing machine by holding motor cover ❸.



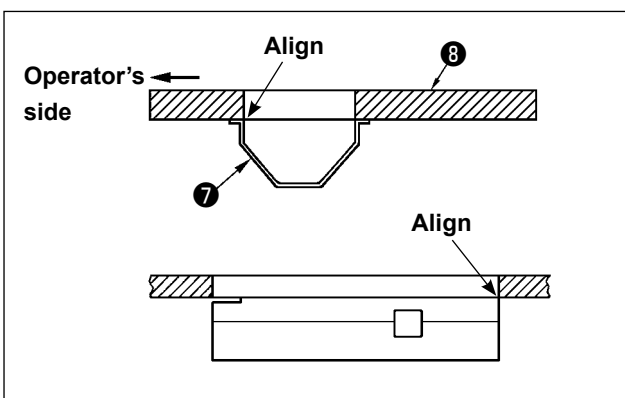
**Do not hold the handwheel.**



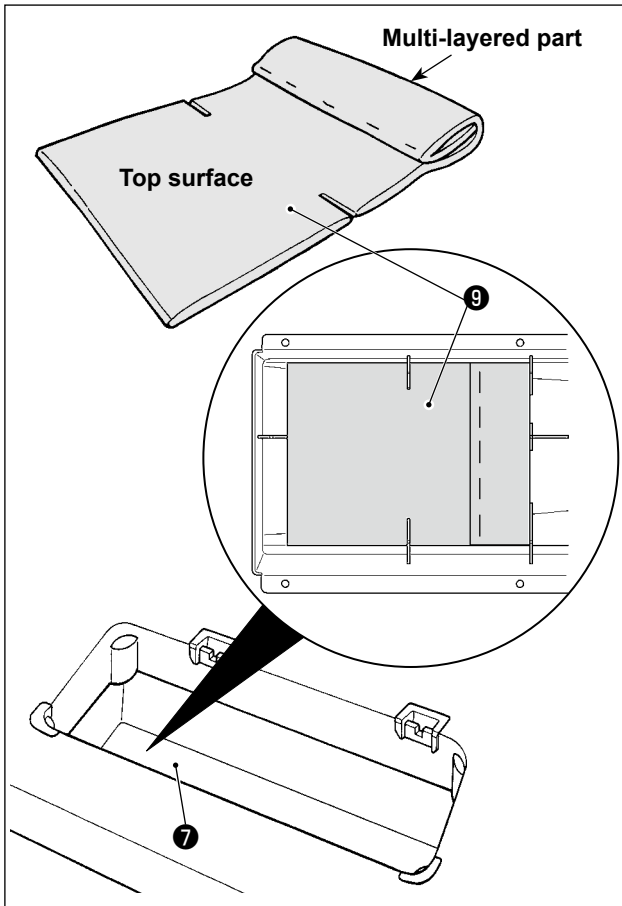
- 2) Do not put protruding articles such as the screwdriver and the like at the location where the sewing machine is placed.



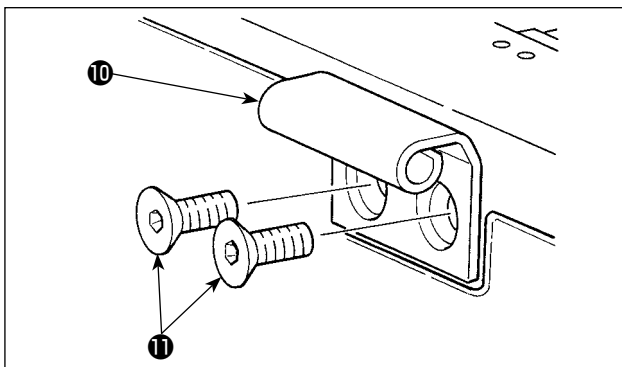
- 3) Attaching the hinge seats and the support rubbers of the machine head  
Fix hinge seat ❹ and machine head support rubber ❺ which are supplied with the unit on the table with nails ❻ as illustrated in the figure.



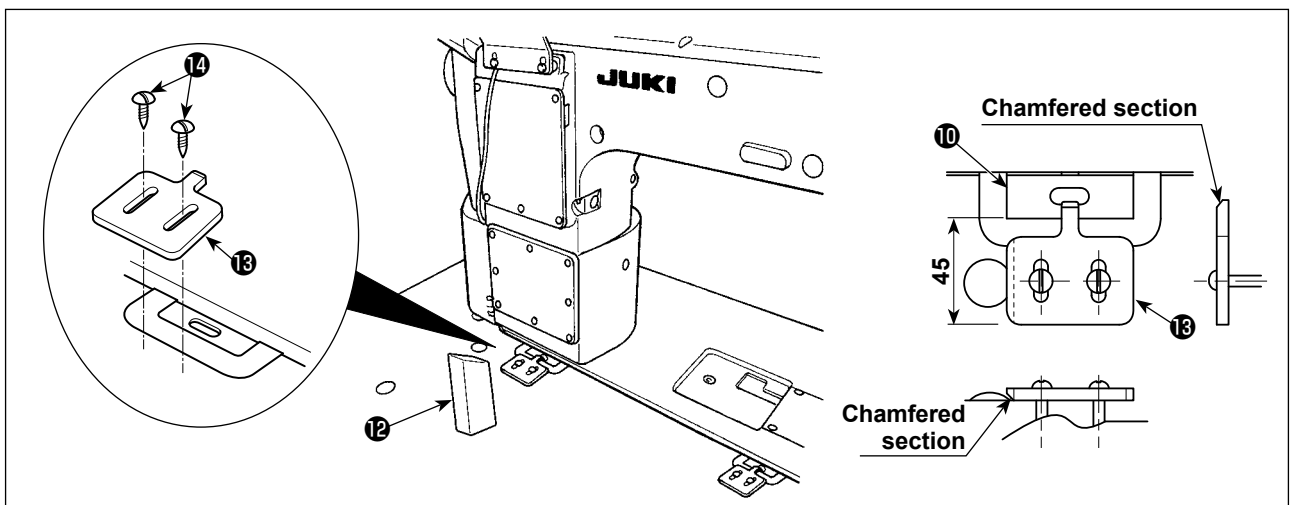
- 4) Attaching the oil pan  
Fix the oil pan ❷ supplied with the machine on the table ❸ by tightening eight wood screws.



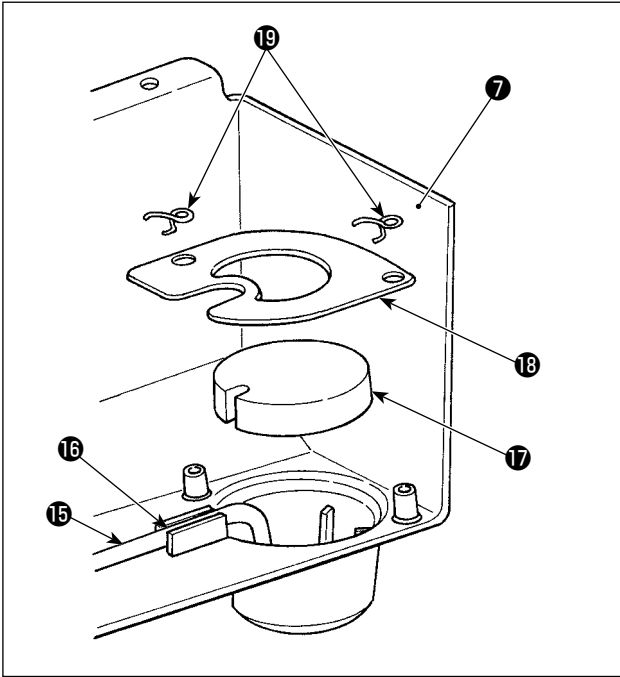
- 5) Attach a filter 9 to the oil pan 7 as shown in the figure.  
Install filter 9 so that its multi-layered part is brought to the right side as observed from you.



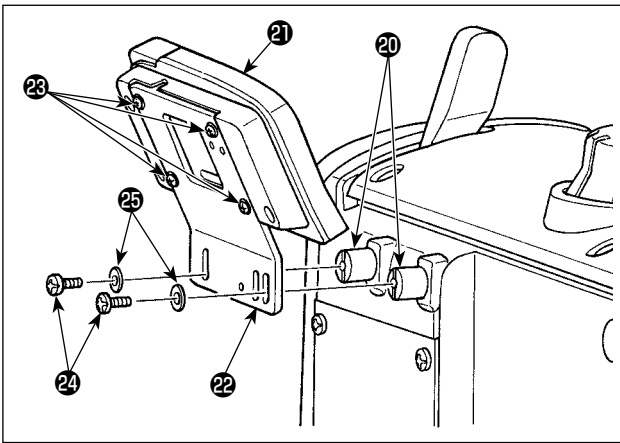
- 6) Install hinge 10 on the bed with screw 11. Engage the hinge with the rubber hinge of the table. Then, place the machine head on the machine head support rubber.



- 7) Securely attach head support rod 12 to the table until it goes no further.  
8) Fix hinge stopper 13 with screws 14. At this time, be sure to adjust so that the end face of hinge 10 is spaced 45 mm from the end face of hinge stopper 13.



- 9) Put reflux pipe 15 in the oil reservoir of oil pan 7. Secure the pipe in groove 16.
- 10) Fix filter 17 and filter clamp 18 with fitting 19.



- 11) Mount spacers 20 supplied with the machine head on the frame.
- 12) Install bracket 22 on CP panel 21 with screws 23 supplied with the panel.
- 13) Install bracket 22 on spacer 20 with screws 24 supplied with the machine head and washers 25 supplied with the panel.



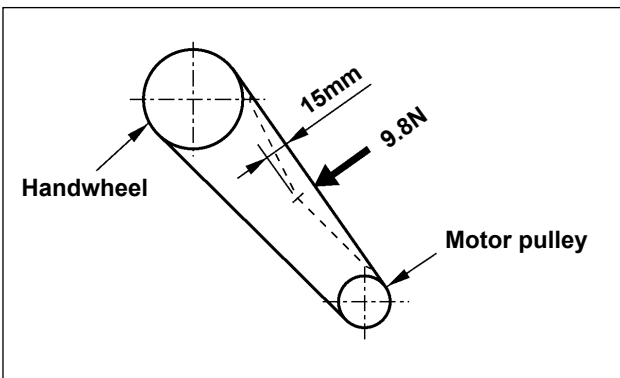
**Do not use the screws supplied the panel instead of screws 24 supplied with the machine head.**

## 2-2. Adjusting the belt tension (PLC-2710, 2760, 2760L, 2765)



### 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.



Adjust the belt tension with the height of the motor so that the belt sags 15 mm when the center of V belt is applied with a 9.8 N load.

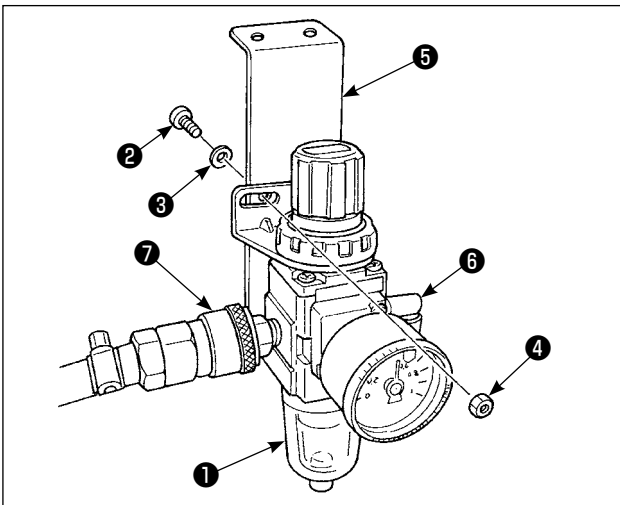


## 2-3. Pneumatic components



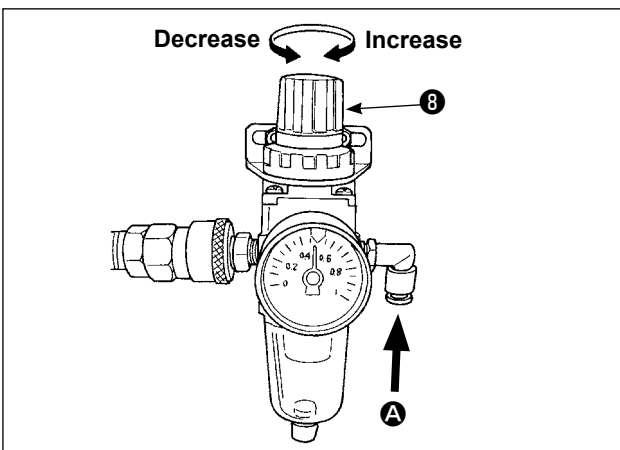
### WARNING :

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

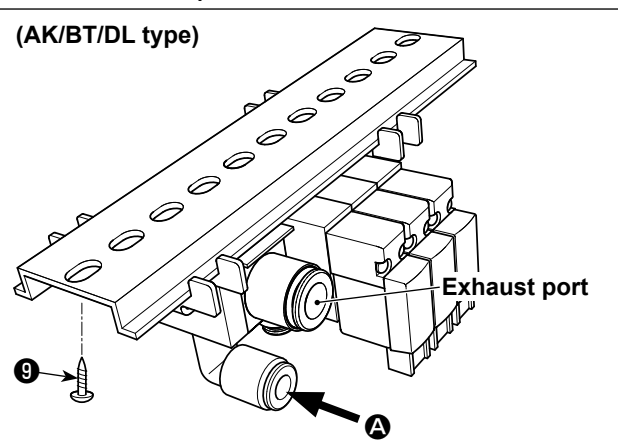
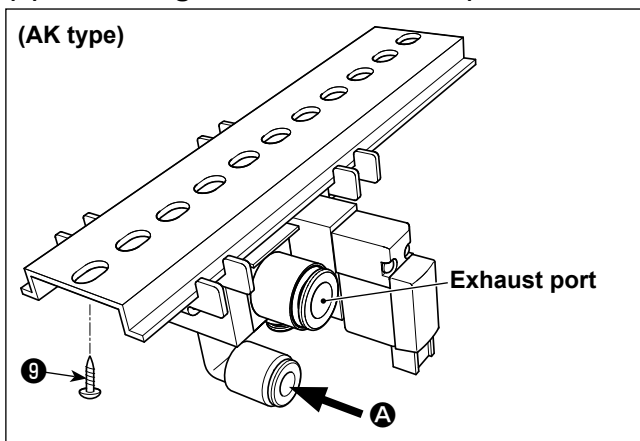
- 1) Install regulator (asm.) ① on mounting plate ⑤ with screw ②, spring washer ③ and nut ④ which are supplied with the unit.
- 2) Install couplings ⑥ and ⑦ on regulator ①.
- 3) Install mounting plate ⑤ on the underside of the table.
- 4) Connect  $\varnothing 6$  air tube coming from the sewing machine to coupling ⑥.



### (2) Adjusting the air pressure

The operating air pressure is 0.5 to 0.55 MPa. Adjust the air pressure using air pressure regulating knob ⑧ of the filter regulator.

### (3) Installing the solenoid valve (PLC-2710, 2760, 2760L, 2765)



Attach the solenoid valve (asm.) to the underside of the table with wood screws ⑨ supplied with the machine.

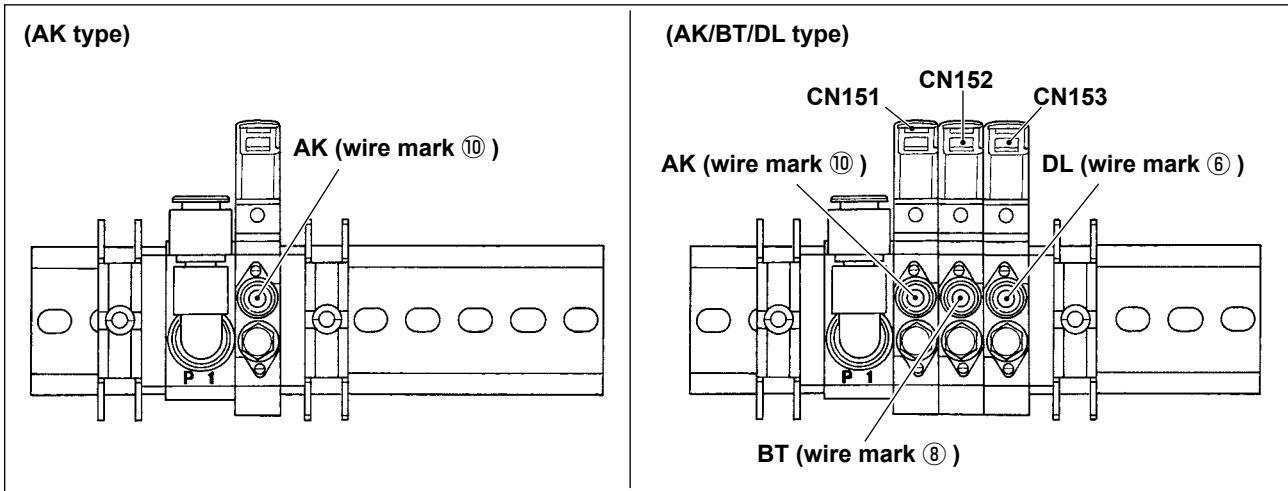
### (4) Piping of the solenoid valve (PLC-2710, 2760, 2760L, 2765 AK type and AK/BT/DL type)

Connect the regulator and the solenoid valve by means of an air hose. (A - A)

Connect exhaust tube ( $\varnothing 8$ ) to the exhaust port of the solenoid valve.

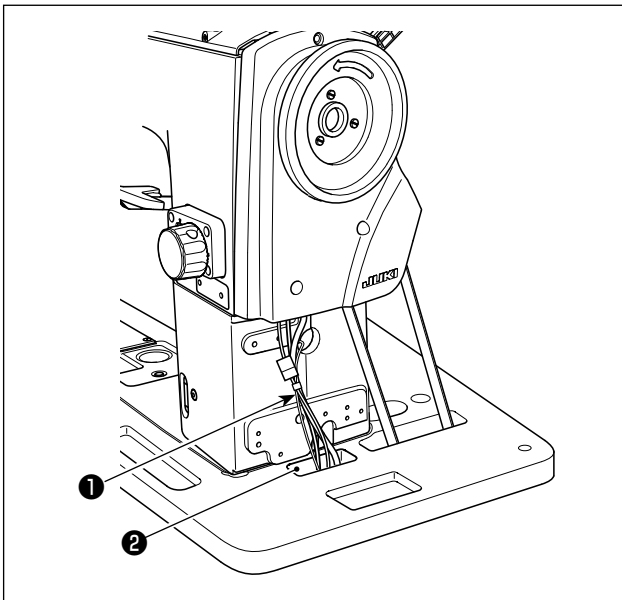
In the case of high humidity, water may come out from the connected tube.

### (5) Piping of the air (PLC-2710, 2760, 2760L, 2765)



Connect the air hose coming from the machine head to the position shown above while matching the number of the air hose and the number of the port.

### (6) Routing the air hose and cable (PLC-2710, 2760, 2760L, 2765)



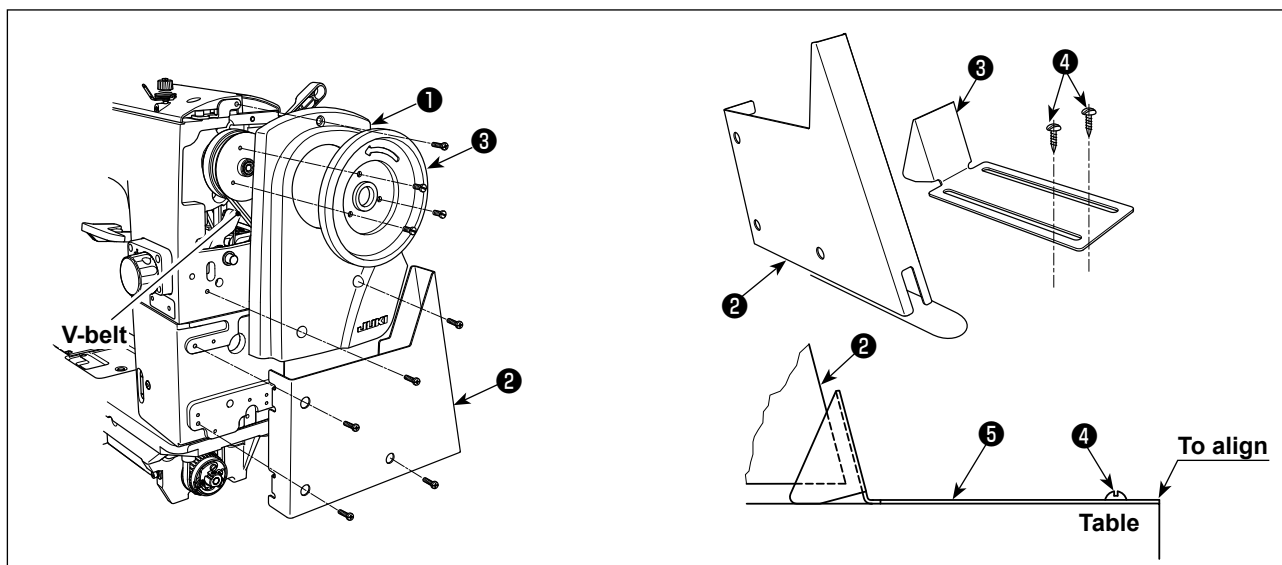
Pass the air hose and cable ① through air-cable hole ② to route them under the table.

## 2-4. Attaching the belt cover (PLC-2710, 2760, 2760L, 2765)



### 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) Put the V-belt on the sewing machine pulley.
- 2) Install the post cover ② on the machine arm.
- 3) Install the belt cover ① on the machine arm.
- 4) Mount the handle section ③ of the pulley with a screw.
- 5) Install the belt cover C ⑤ on the table. Install belt cover C ⑤ with wood screws ④ with its rear end aligned with the end face of the table.
- 6) To tilt the sewing machine, loosen wood screws ④ and shift belt cover C ⑤ so that post cover ② does not come in contact with belt cover C ⑤.



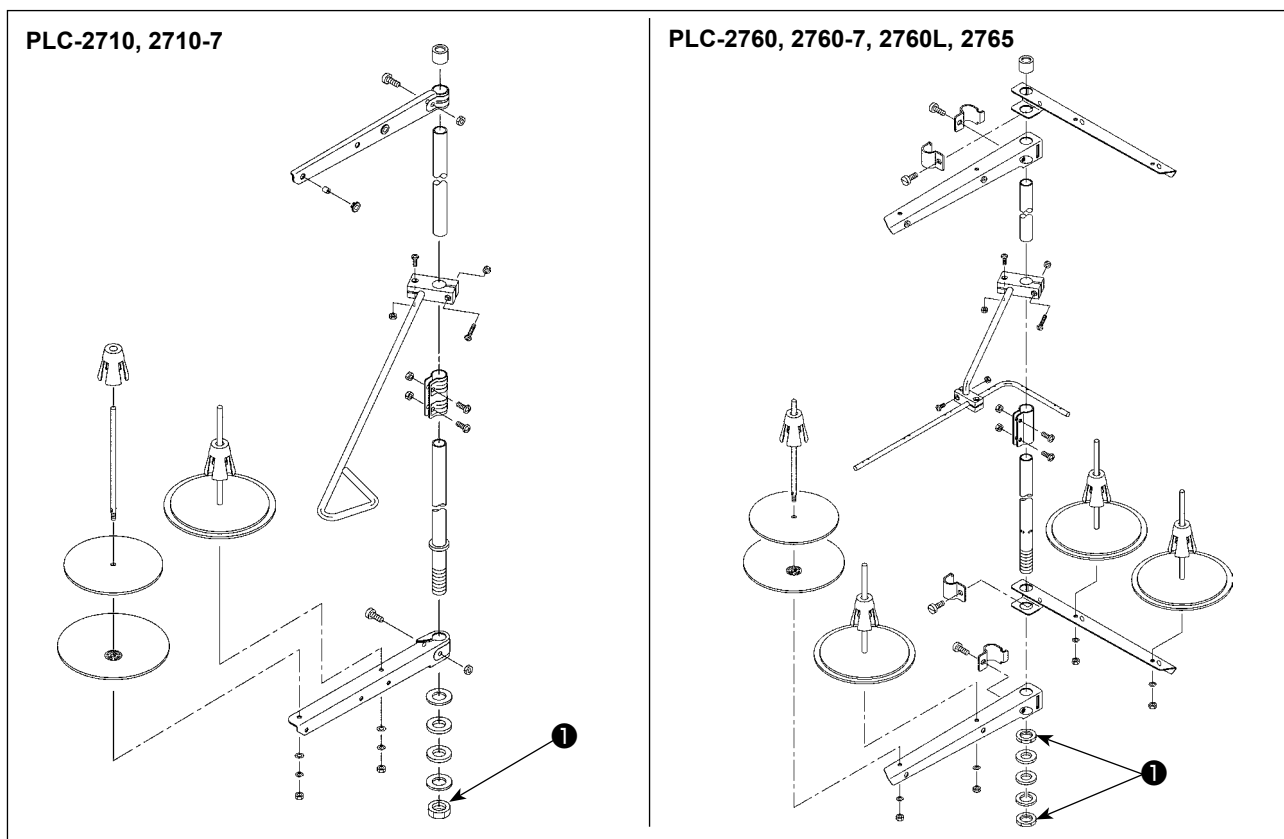
After attaching the belt cover, confirm whether or not the respective cords do not come in contact with the belt and the handwheel. Disconnection of the cords will result when they come in contact with one another.

## 2-5. Installing the thread stand



### WARNING :

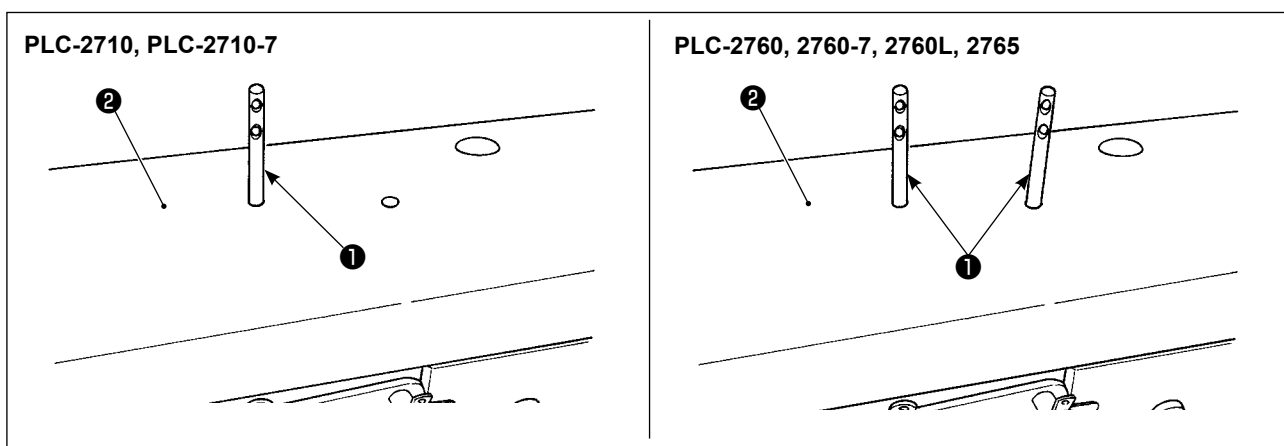
To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.



Assemble the thread stand, set it up on the machine table using the installation hole in the table and tighten nut ① gently.

## 2-6. Installing the thread guide pin

Insert needle thread guide pin ① into the corresponding hole in top cover ②.



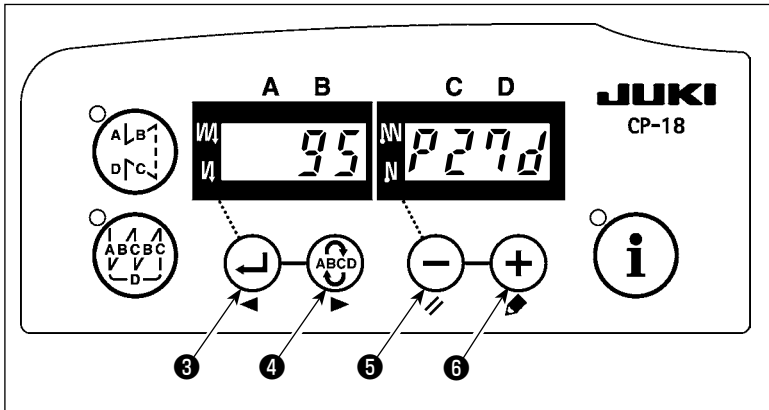
• PLC-2710, PLC-2710-7:  
One needle thread guide pin

• PLC-2760, PLC-2760-7, PLC-2760L, PLC-2765:  
Two needle thread guide pins

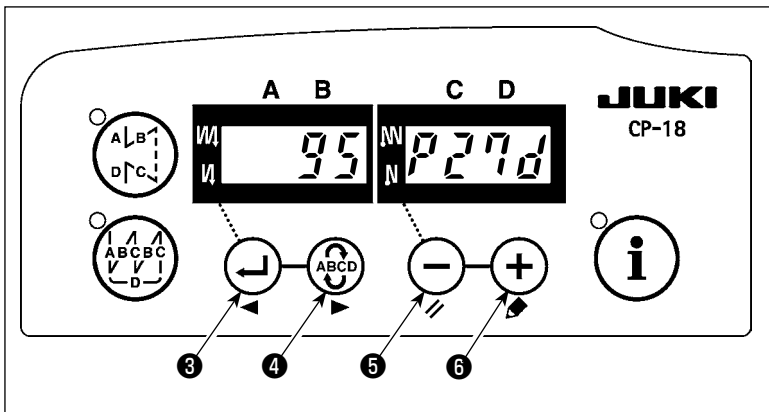
### 3. PREPARATION OF THE SEWING MACHINE

#### 3-1. How to set the model of the machine head

• CP-18

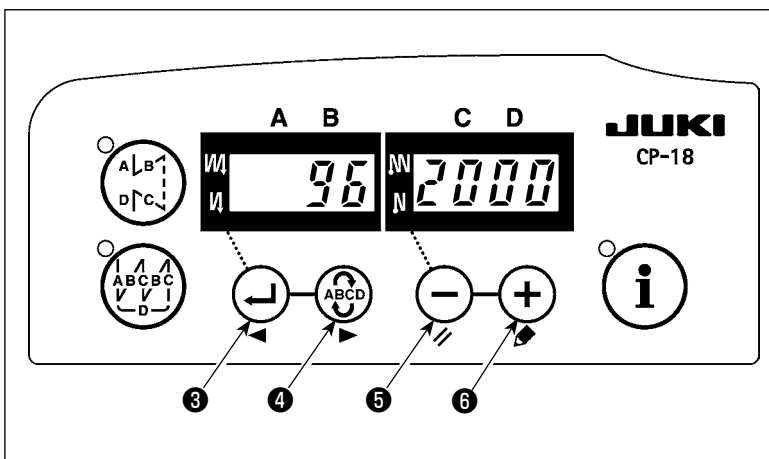


- 1) Call Function Setting No. 95 in reference to "III-6. Function Setting of SC-922" in the Instruction Manual for the SC-922.



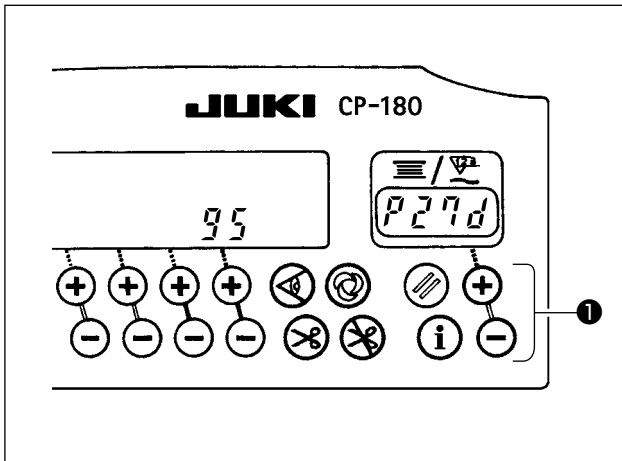
- 2) The type of machine head can be selected by pressing  $\ominus$  switch ⑤ ( $\oplus$  switch ⑥). Select the type of the machine head according to the table given below.

Type	Marking
PLC-2710-7, 2760-7	P27d
PLC-2710, 2760, 2765	PL27
PLC-2760L	PL2L



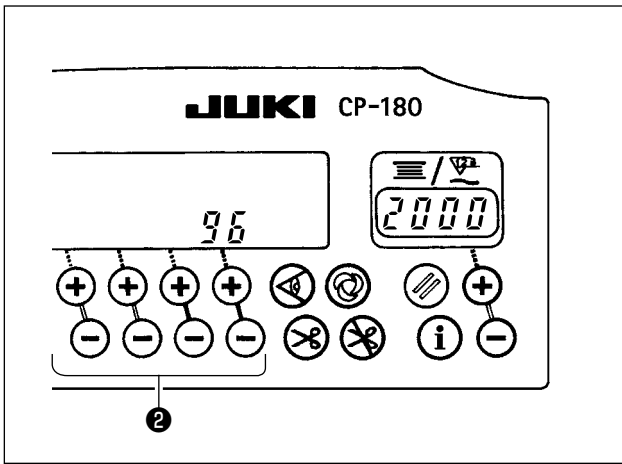
- 3) After selecting the type of machine head, by pressing  $\leftarrow$  switch ③ ( $\odot$  switch ④), the step proceeds to 94 or 96, and the display automatically changes to the contents of the setting corresponding with the type of machine head.

• CP-180



- 1) Refer to "18. FUNCTION SETTING SWITCH" in the Instruction Manual for the CP-180, and call the function setting No. 95.
- 2) The type of machine head can be selected by pressing switch ①. Select the type of the machine head according to the table given below.

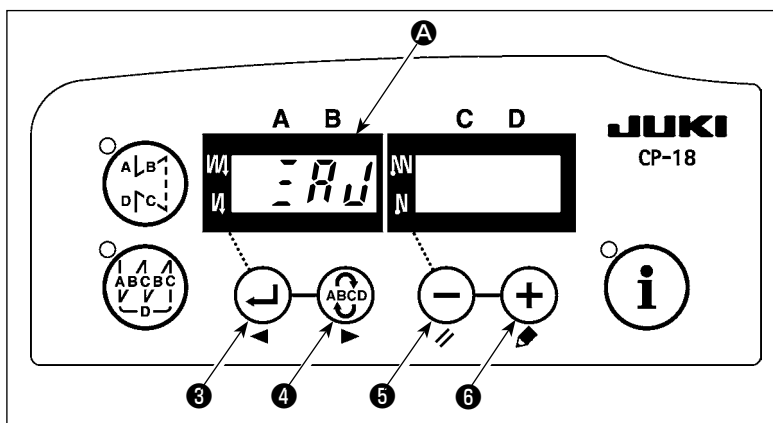
Type	Marking
PLC-2710-7, 2760-7	P27d
PLC-2710, 2760, 2765	PL27
PLC-2760L	PL2L



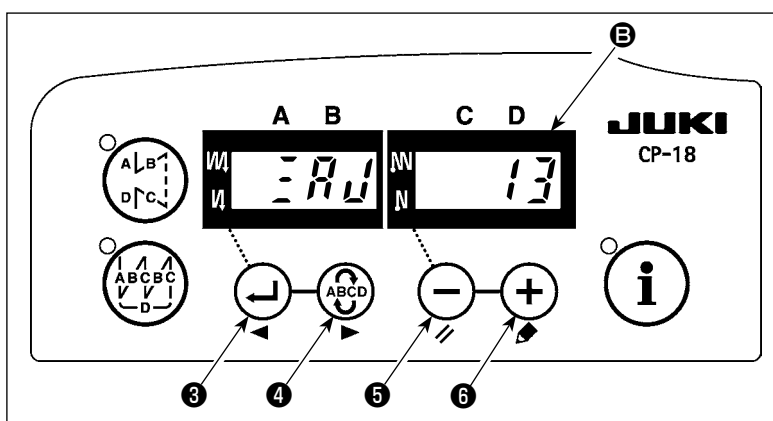
- 3) After selecting the type of machine head, by pressing switch ②, the step proceeds to 96 or 94, and the display automatically initializes to the contents of the setting corresponding with the type of machine head.

## 3-2. Adjusting the machine head (PLC-2710-7, 2760-7)

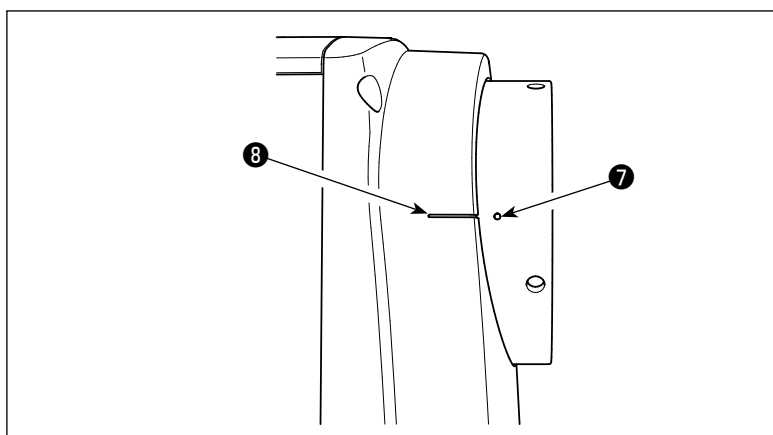
• CP-18



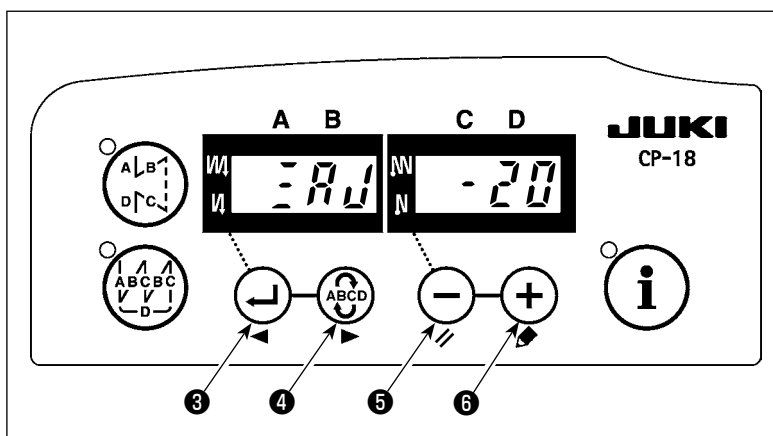
- 1) Simultaneously pressing switch and switch , turn ON the power switch.
- 2) is displayed in the indicator and the mode is changed over to the adjustment mode.



- 3) Turn the pulley of the machine head by hand until the main-shaft reference signal is detected. At this time, the degree of an angle from the main-shaft reference signal is displayed on the indicator . (The value is the reference value.)

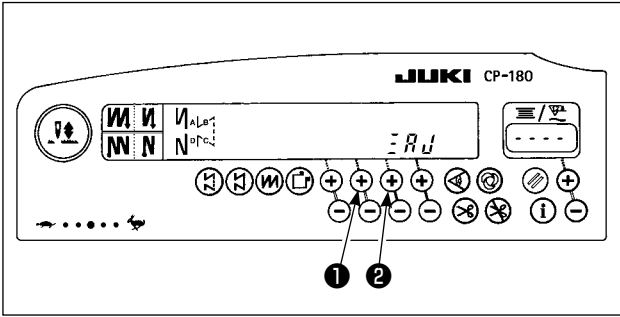


- 4) In this state, align one of the marker dots on the pulley with marker line on the pulley cover as shown in the figure.

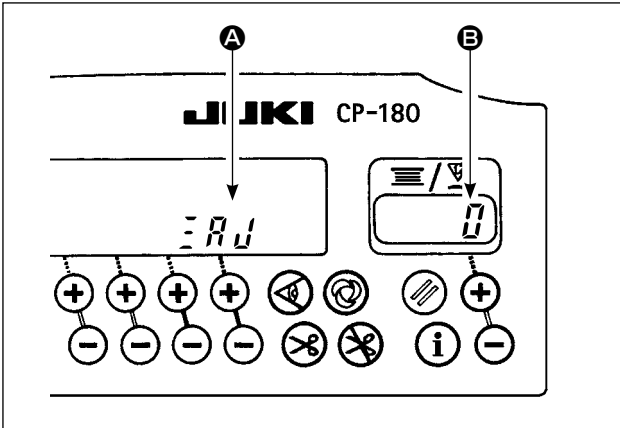


- 5) Press switch to finish the adjustment work. (The value is the reference value.)

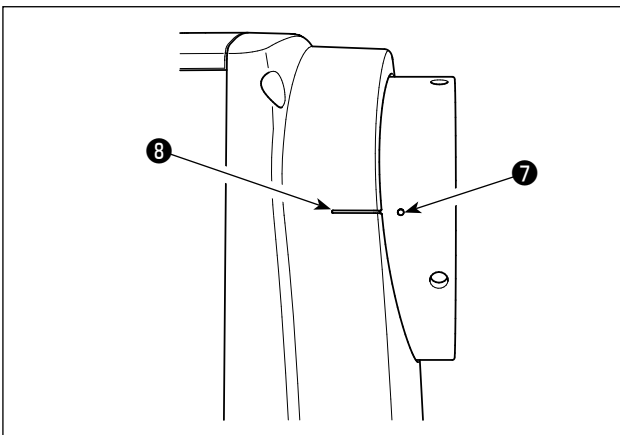
• CP-180



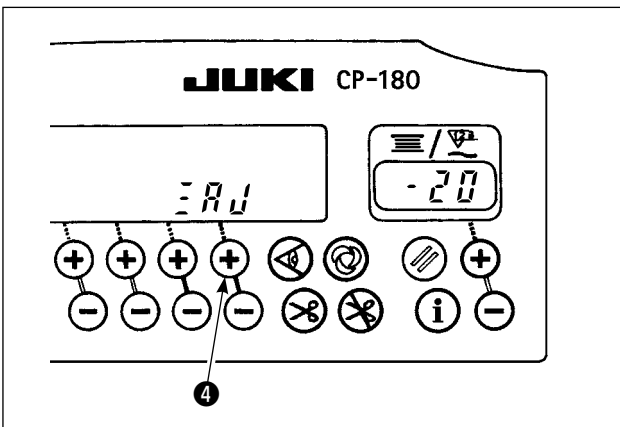
- 1) Simultaneously pressing switch ① and switch ②, turn ON the power switch.



- 2)  $\overline{R U}$  is displayed **A** in the indicator and the mode is changed over to the adjustment mode.
- 3) Turn the pulley of the machine head by hand until the main-shaft reference signal is detected. At this time, the degree of an angle from the main-shaft reference signal is displayed on the indicator **B**.  
(The value is the reference value.)



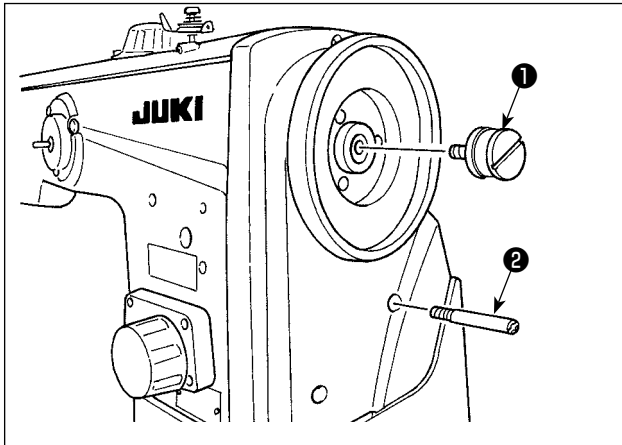
- 4) In this state, align one of the marker dots ⑦ on the pulley with marker line ⑧ on the pulley cover as shown in the figure.



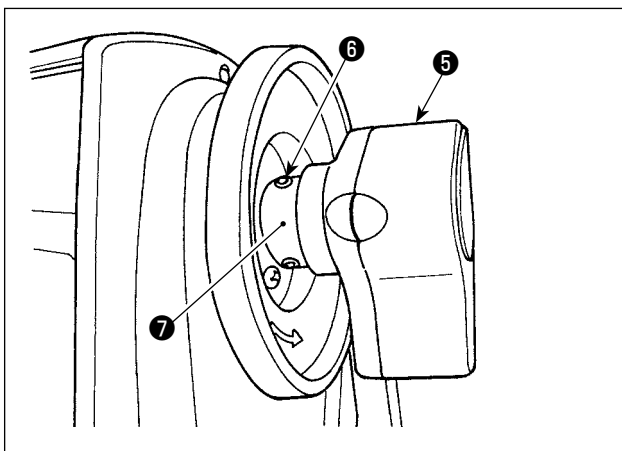
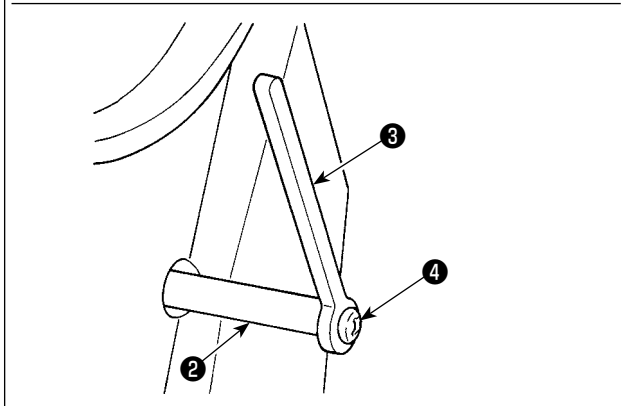
- 5) Press switch ④ to finish the adjustment work.  
(The value is the reference value.)



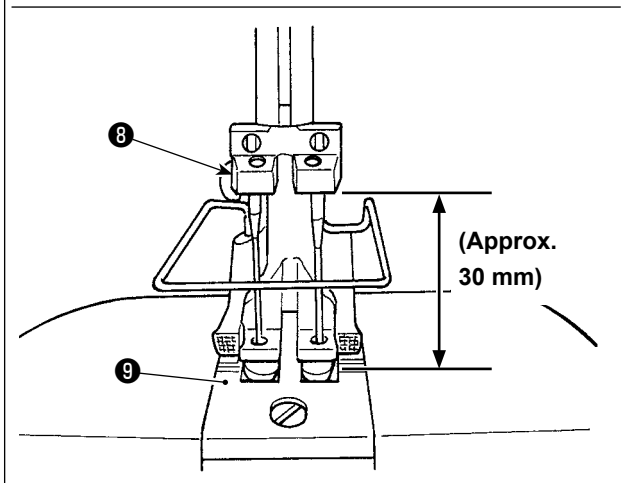
### 3-3. Installing the detector (PLC-2710, 2760, 2760L, 2765; when the option kit is used)



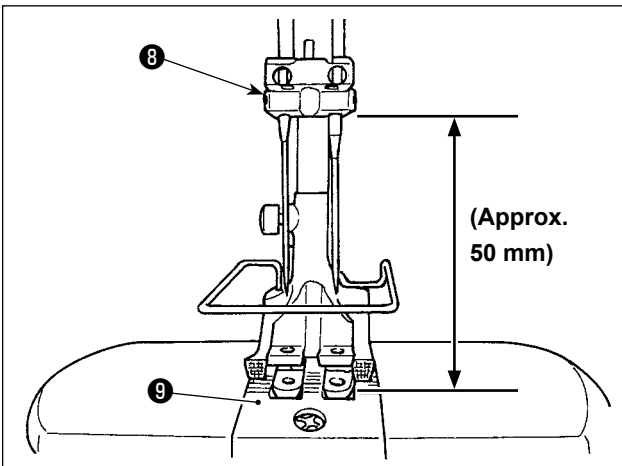
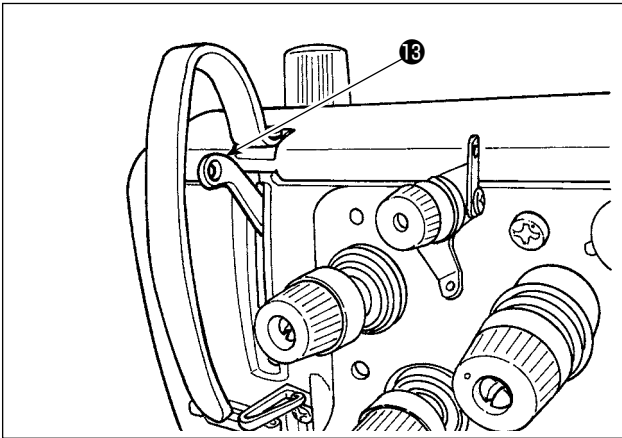
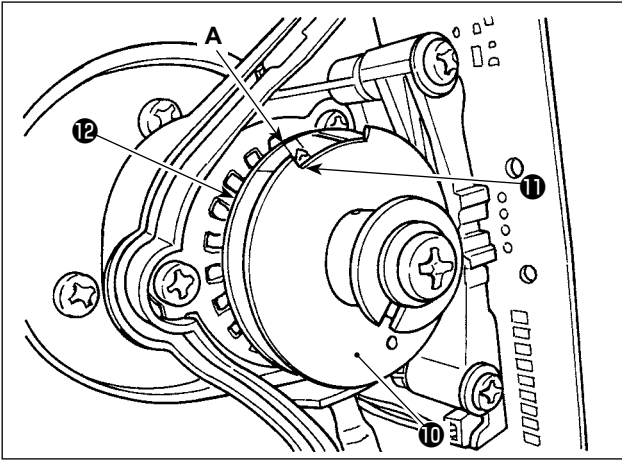
- 1) Installing the detector mounting base  
Install detector mounting base **1** on the main shaft of the sewing machine.
- 2) Installing the detector support  
Remove the belt cover mounting screw. Install detector support shaft **2**.  
Install detector support bar **3** on detector support shaft **2** with screw **4**.



- 3) Installing the detector  
Temporarily fix detector **5** with setscrew **6**.
- 4) Adjusting the stopping position
  - Adjusting the lower stopping position  
Adjust the lower stopping position of the sewing machine by turning joint **7** of the detector **5** so that the sewing machine stops at a position where the machine does not come in contact with needle clamp **8** when the presser is lifted.
 When the sewing machine stops in its correct lower stopping position, as a guide, the lower end of needle clamp **8** is approximately 30 mm above the top surface of throat plate **9** while moving down needle clamp **8** from its upper position.



**Caution** Be sure to turn the power OFF before turning joint **7** of detector **5**.



Adjusting the upper stopping position

Remove the cover of detector ⑤. Turn upper position detecting plate ⑩ to adjust the upper stopping position of the sewing machine so that the machine stops when thread take-up lever ⑯ reaches its upper dead point.

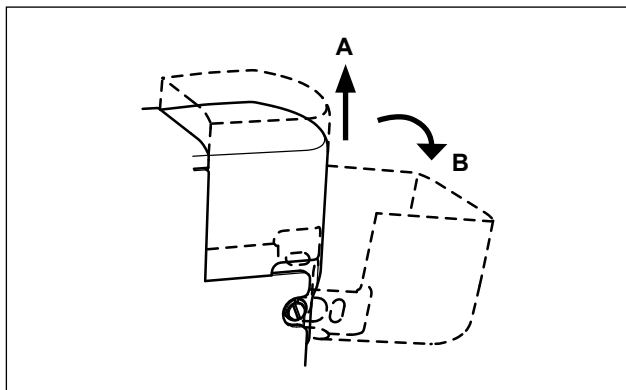
After the adjustment, install the cover of detector ⑤.

To stop the sewing machine in its upper position, specify the upper position of the needle using the compensation switch or the stopping position setting function of the sewing machine controller. When the sewing machine stops in its correct upper stopping position, as a guide, the lower end of needle clamp ⑧ is approximately 50 mm above the top surface of throat plate ⑨.

When the detector SY-2 is used, the position where notch ⑪ of upper position detecting plate ⑩ is aligned with marker A on lower position detecting plate ⑫ should be used as a guide for adjustment.

**Caution** Be sure to turn the power OFF before turning upper position detecting plate ⑩ of detector ⑤.

### 3-4. Opening/closing the hook cover



Move in the direction of **B** and open the hook cover after lifting it in the direction of **A** once. In case of 2-needle machine, the same opening procedure is taken for both left and right hooks.

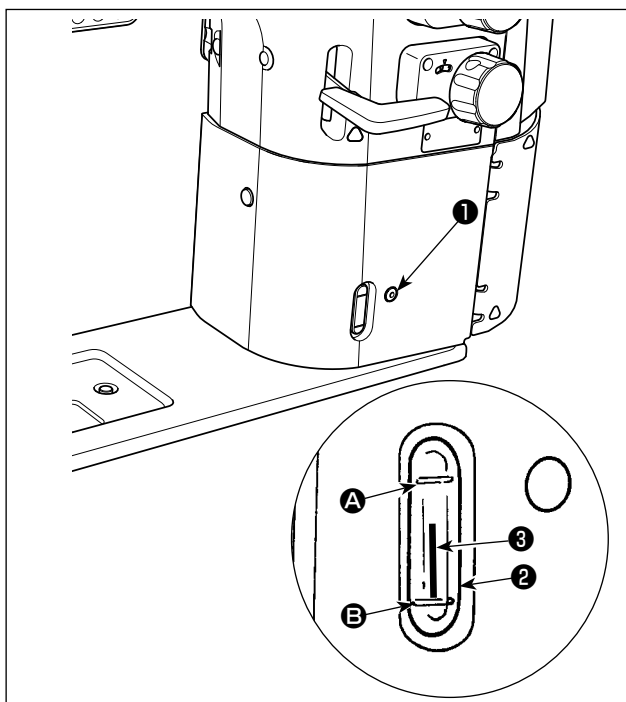
### 3-5. Lubrication

#### WARNING :



1. Do not connect the power plug until the lubrication has been completed so as to prevent accidents due to abrupt start of the sewing machine.
2. To prevent the occurrence of an inflammation or rash, immediately wash the related portions if oil adheres to your eyes or other parts of your body.
3. If oil is mistakenly swallowed, diarrhea or vomiting may occur. Put oil in a place where children cannot reach.

#### (1) Lubrication procedure



Fill the oil tank with oil for hook lubrication before operating the sewing machine.

- 1) Fill the oil tank with JUKI NEW DEFRIX OIL No.1 (Part No. : MDFRX1600C0) or JUKI MACHINE OIL No.7 (Part No. : MML007600CA) using the oiler supplied with the machine from section ①.
- 2) Fill the oil tank with the oil until the top end of oil amount indicating rod ③ comes between the upper engraved marker line **A** and the lower engraved marker line **B** of oil amount indicating window ②.

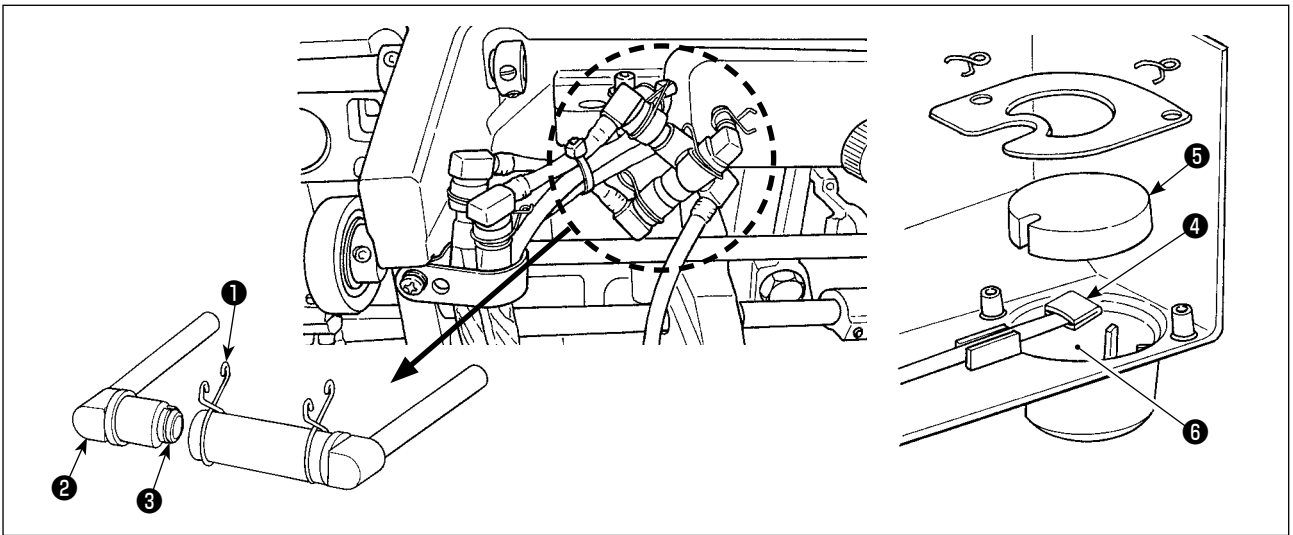
If the oil is filled excessively, it will leak from the air vent hole in the oil tank or proper lubrication will be not performed. In addition, when the oil is vigorously filled, it may overflow from the oil hole. So, be careful.

- 3) When you operate the sewing machine, refill oil if the top end of oil amount indicating rod ③ comes down to the lower engraved marker line **B** of oil amount indicating window ②.



1. When you use a new sewing machine or a sewing machine after an extended period of disuse, use the sewing machine after performing break-in at 1,000 sti/min or less.
2. For the oil for hook lubrication, purchase JUKI NEW DEFRIX OIL No. 1 (Part No. : MDFRX1600C0) or JUKI MACHINE OIL No.7 (Part No. : MML007600CA).
3. Be sure to lubricate clean oil.

## (2) Cleaning the oil filter

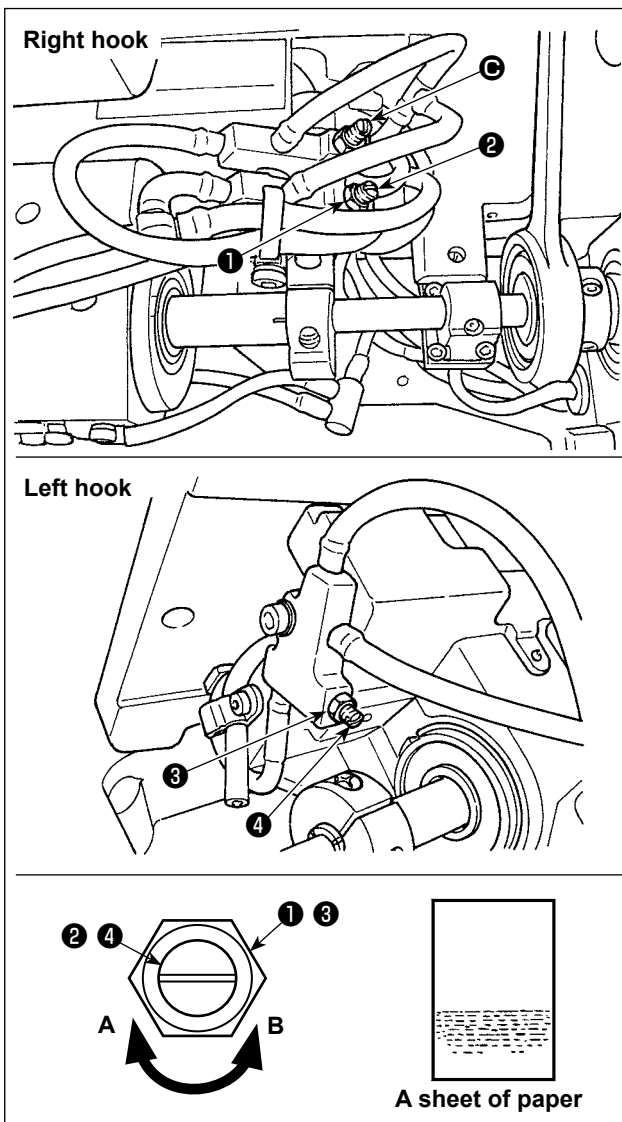


- 1) Loosen fastening plate ① on the back-flow side. Remove oil filter joint (asm.) ② on the back-flow side.
- 2) Clean up filters ③, ④ and ⑤ and oil reservoir ⑥ of the oil pan.



**Be sure to clean up the oil reservoir of the oil pan and the filter case approximately once a month. If the filter is clogged with soil, lubrication fails resulting in trouble.**

## (3) Adjusting the oil quantity in the hook



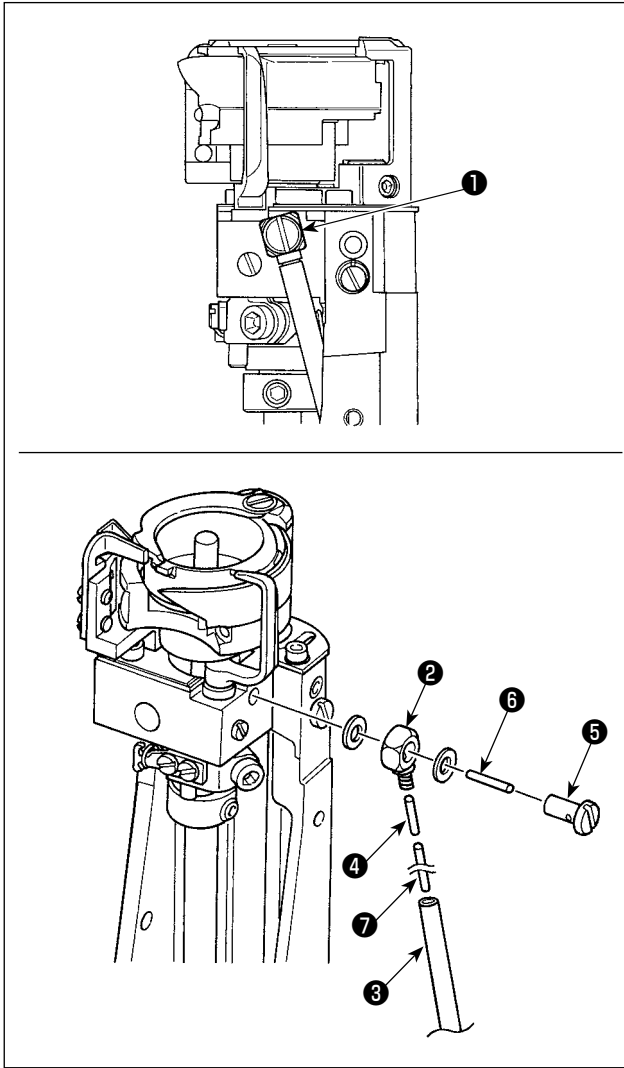
- 1) Loosen nut ① and turn oil amount adjustment screw ② to adjust the amount of oil in the right hook.  
Turning the screw clockwise **A** will decrease the amount of oil in the hook or counterclockwise **B** will increase it.



**Oil quantity adjusting screw ③ is fixed. Do not adjust it.**

- 2) Loosen nut ③ and turn oil amount adjustment screw ④ to adjust the amount of oil in the left hook.  
Turning the screw clockwise **A** will decrease the amount of oil in the hook or counterclockwise **B** will increase it.
- 3) The appropriate amount of oil, when a sheet of paper is placed near the periphery of the hook, is to such an extent that splashes of oil from the hook appear in approximately five seconds as shown in the figure on the left.

#### (4) Cleaning the hook lubrication filter (oil wick)



- 1) Loosen lubrication connecting screw **1** to remove it.
- 2) Pull out pipe **3** of lubrication connection joint **2**.
- 3) Take out filter **4** from lubrication connection joint **2**.
- 4) Remove stains from filter **4** or replace it with a new one.
- 5) Take out oil wicks **6** and **7** from lubrication connection screw **5** and pipe **3**.
- 6) Remove stains from oil wicks **6** and **7** or replace them with new ones.

**Filter **4** and oil wicks **6** and **7** should be cleaned when the oil quantity in the hook has decreased or periodically about once a month.**



**If it has stained heavily, change the oil wick with a new one.**

**If the filter is clogged, the hook cannot be oil adequately, resulting in a machine failure.**

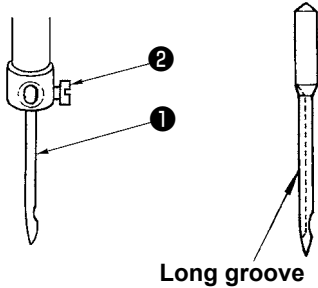
### 3-6. Attaching the needle



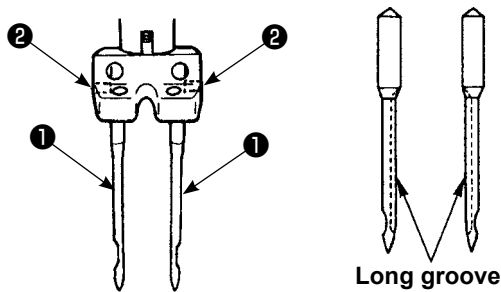
#### WARNING :

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.

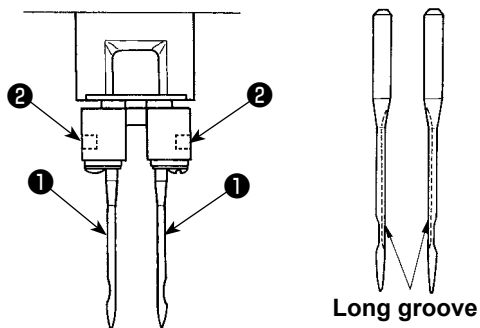
PLC-2710, 2710-7



PLC-2760, 2760-7, 2760L



PLC-2765



Switch "OFF" the motor.

Use 135x17 needles.

- 1) Turn the handwheel to bring the needle bar to the highest position of its stroke.
- 2) Loosen needle clamp screw ②. Hold the needle so that the long groove on needle ① faces directly to the right for the PLC-2710 and -2710-7, and so that the long groove on each the two needles faces inward for the PLC-2760, -2760-7, -2760L, and -2765.
- 3) Push needle ① deep into the needle clamp hole until it will go no further.
- 4) Tighten needle clamp screw ② firmly.



When replacing the needle, check the clearance provided between the needle and the blade point of hook. (Refer to "4-4. Needle-to-hook relation" p.30 and "4-5. Adjusting the hook needle guard" p.31.) If there is no clearance, the needle and the hook will be damaged.

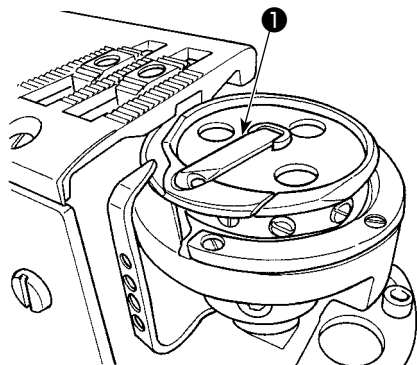
### 3-7. Attaching and removing the bobbin



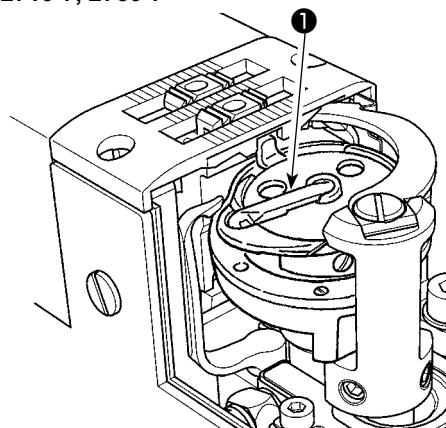
#### WARNING :

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.

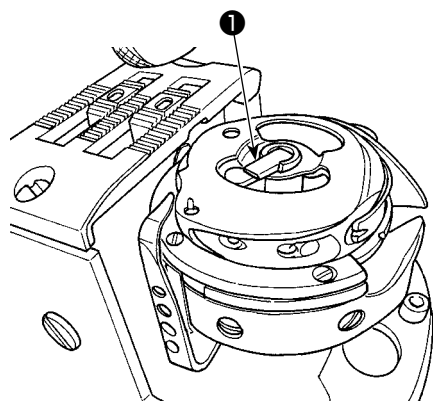
PLC-2710, 2760, 2760L



PLC-2710-7, 2760-7



PLC-2765



- 1) Lift latch ❶ of hook, and take out the bobbin.
- 2) Put the bobbin into the shaft in the hook correctly and release the latch ❶.

1. Do not make the machine run idle with the bobbin (bobbin thread). The bobbin thread is caught in the hook. As a result, the hook may be damaged.



2. Be careful so as not to get hurt with the top end of the counter knife.

3. In case of 2-needle machine, the same procedure is taken for both left and right hooks.

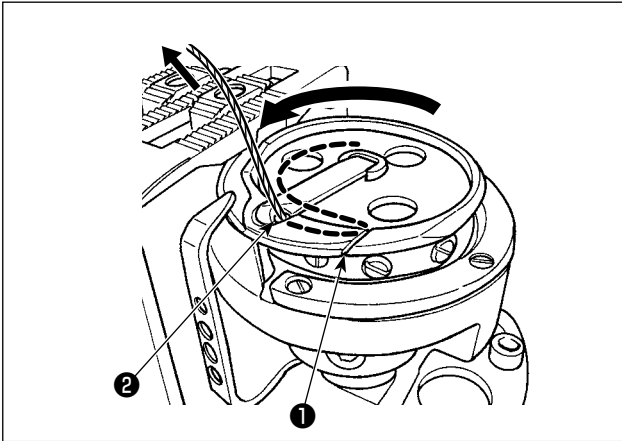
### 3-8. Threading the hook



#### WARNING :

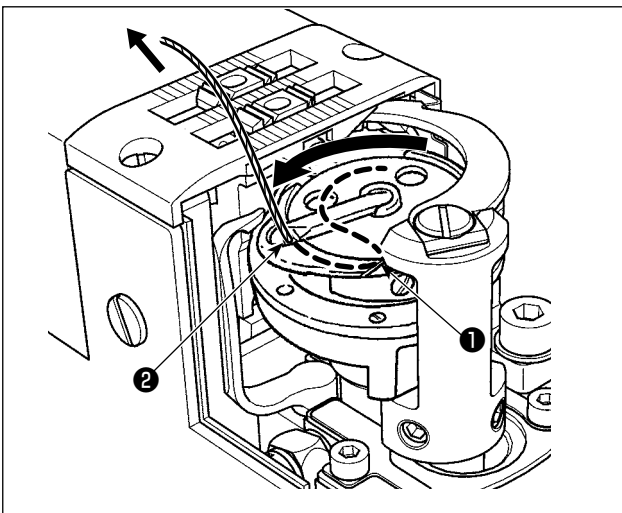
To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.

[PLC-2710, 2760, 2760L]



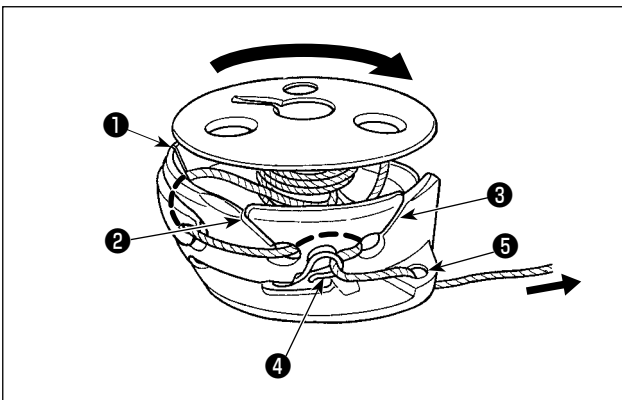
- 1) Pass the thread through thread path **1** in the inner hook and between **2** the opener and inner hook, and slowly draw the thread. Now, the thread passes under the tension spring.
- 2) Make sure that the bobbin revolves in the reverse direction of the rotating direction of the hook when you draw the bobbin thread.

[PLC-2710-7, 2760-7]



- 1) Pass the thread through thread path **1** in the inner hook and thread hole **2** in the lever, and slowly draw the thread. Now, the thread passes under the tension spring.
- 2) Make sure that the bobbin revolves in the reverse direction of the rotating direction of the hook when you draw the bobbin thread.

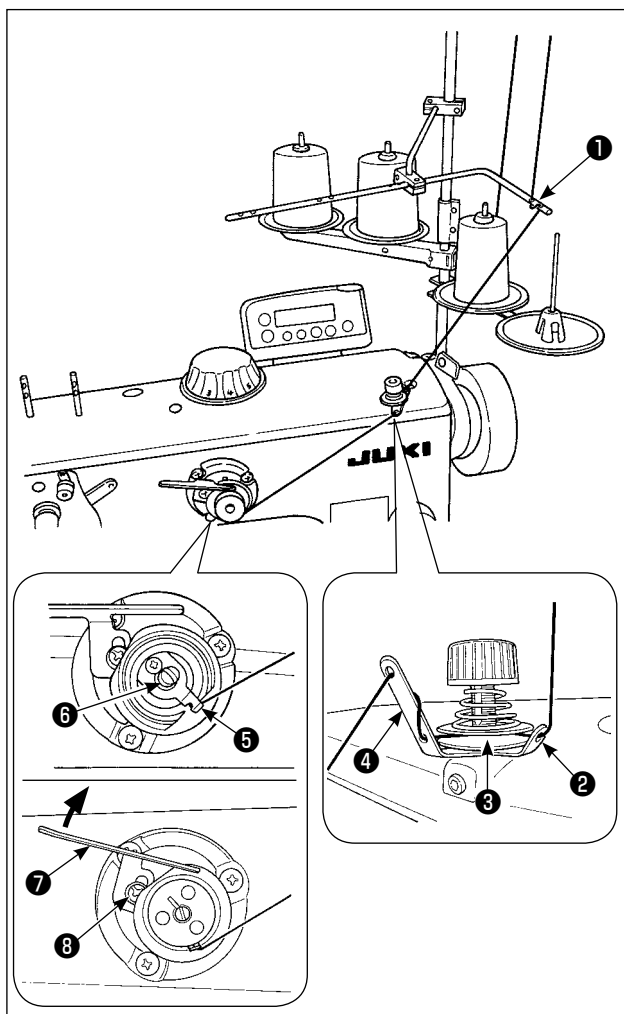
[PLC-2765]



- 1) Place the bobbin in the bobbin case in such a manner that the thread winds clockwise.
- 2) Pass the thread in threading slit **1** on the bobbin case. Then, pull the thread through the slit to route it under the tension spring, and pull it further.
- 3) Pass the thread through threading slit **2**. Then, pass the thread through threading slit **3** from inside.
- 4) Put the thread on bobbin thread slack prevention spring **4**.
- 5) Pass the thread through hole **5** in the bobbin case.
- 6) Pull the bobbin thread to check to be sure that the bobbin turns in the opposite direction from the direction of rotation of the hook.



### 3-9. Winding a bobbin



- 1) Pass the thread through sections ❶ to ❹ in the numerical order.
- 2) Insert the thread from the rear side of looper thread clamp ❺ and trim the thread. (The thread end is retained under the looper thread clamp.)
- 3) Load a bobbin on bobbin winder shaft ❻.
- 4) Lift bobbin winder lever ❼ in the direction of the arrow.
- 5) When you start the sewing machine, the bobbin rotates to automatically wind the thread on itself.
- 6) When the bobbin is filled up, the bobbin winder lever automatically releases the bobbin and the bobbin winder stops running.

1. The bobbin thread winding amount is adjusted by loosening setscrew ❸. The bobbin thread winding amount is increased by moving bobbin winder lever ❼ upward.



2. If the thread comes off the thread tension controller, wind the thread on the intermediate thread guide by one turn.

1. This is the one-touch type bobbin winder. When the bobbin is fully wound with thread, bobbin thread clamp ❺ automatically returns to the initial position.



2. To stop bobbin winding before the bobbin is fully wound with thread, turn the handwheel with threading lever ❼ held lightly depressed to return bobbin thread clamp ❺ to the initial position.

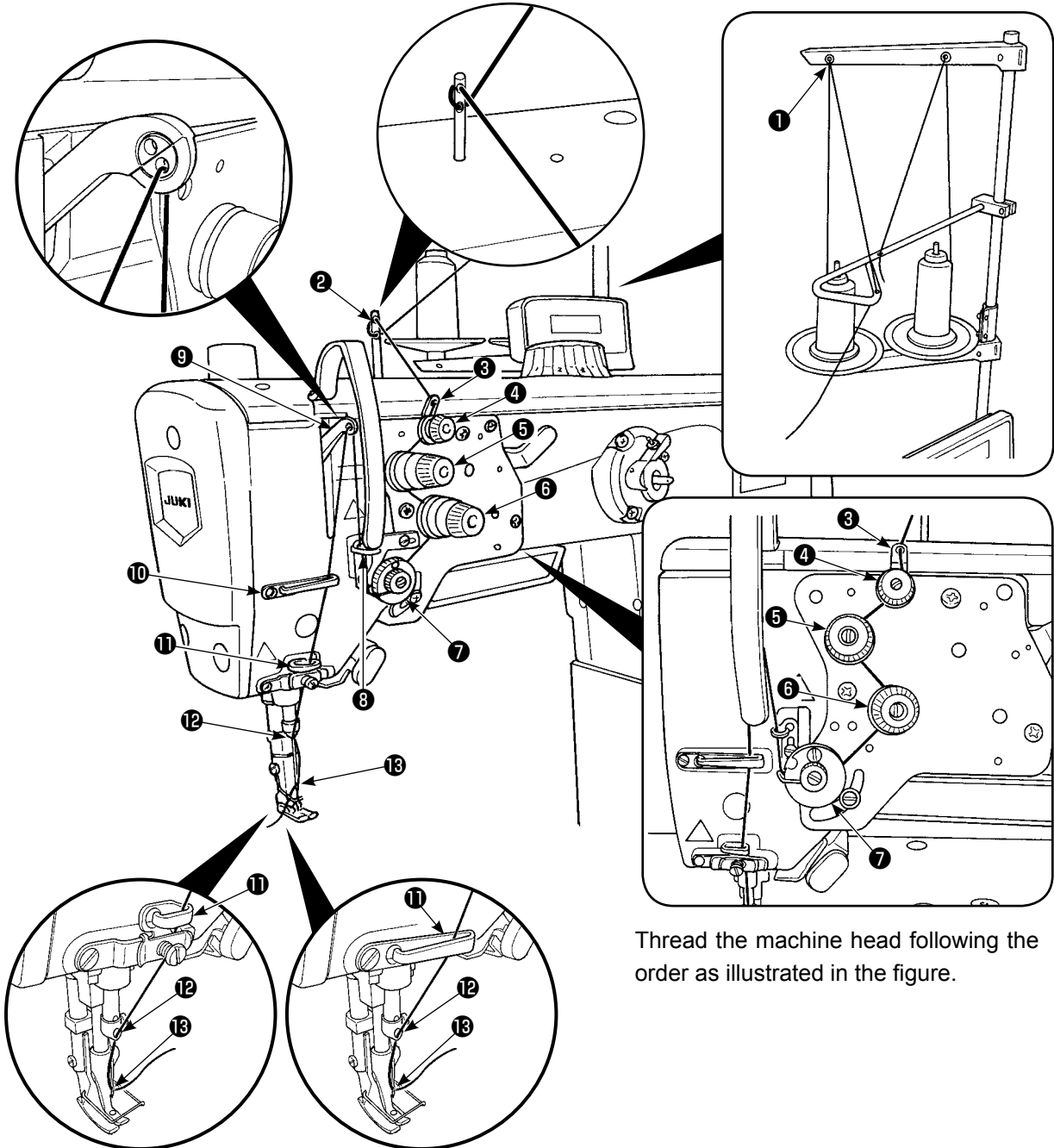
### 3-10. Threading the machine head

[PLC-2710, 2710-7]



#### 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.

PLC-2710-7

PLC-2710

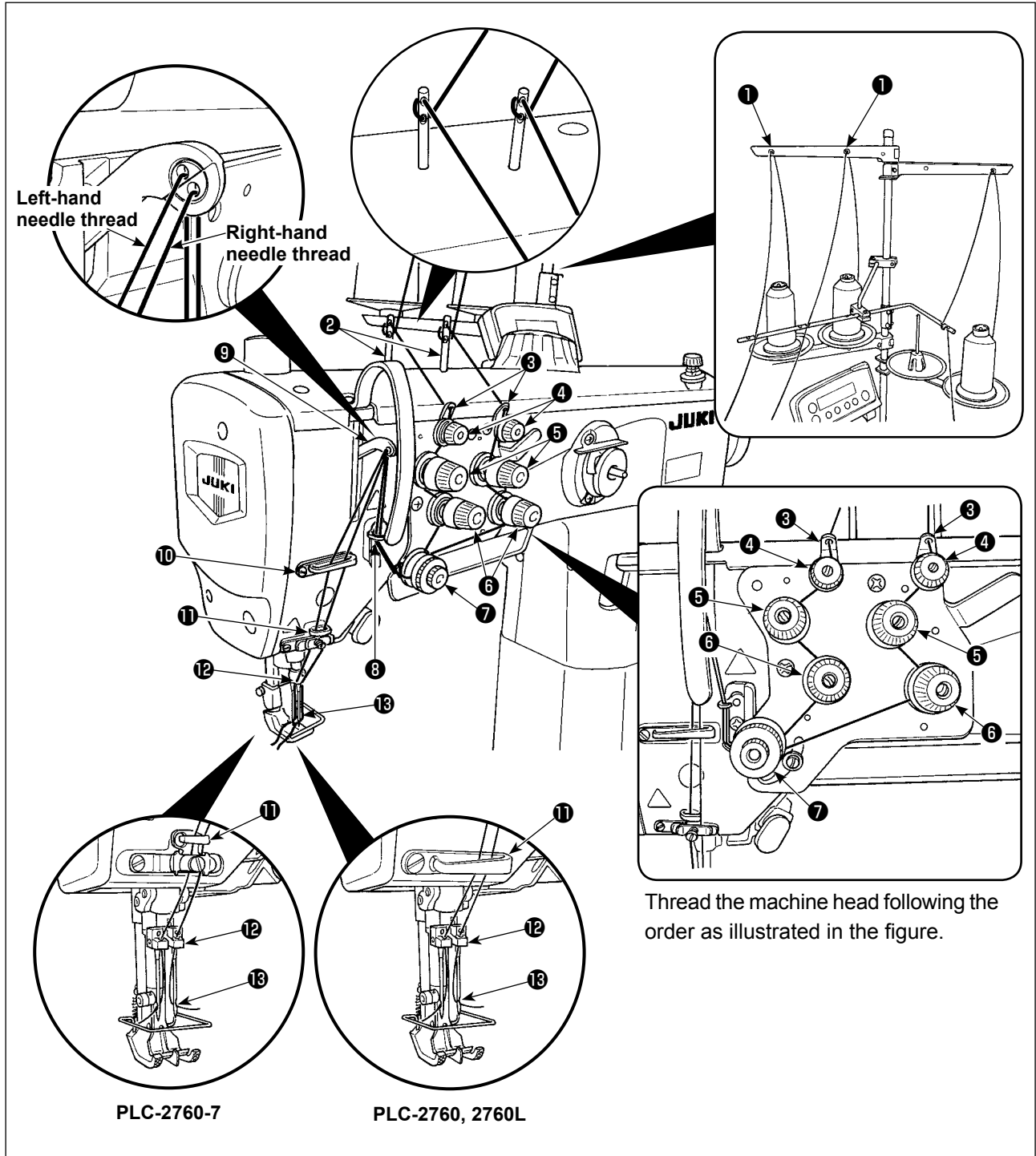
\* Pass thread through the right side of thread guide ①.

[PLC-2760, 2760-7, 2760L]



**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.

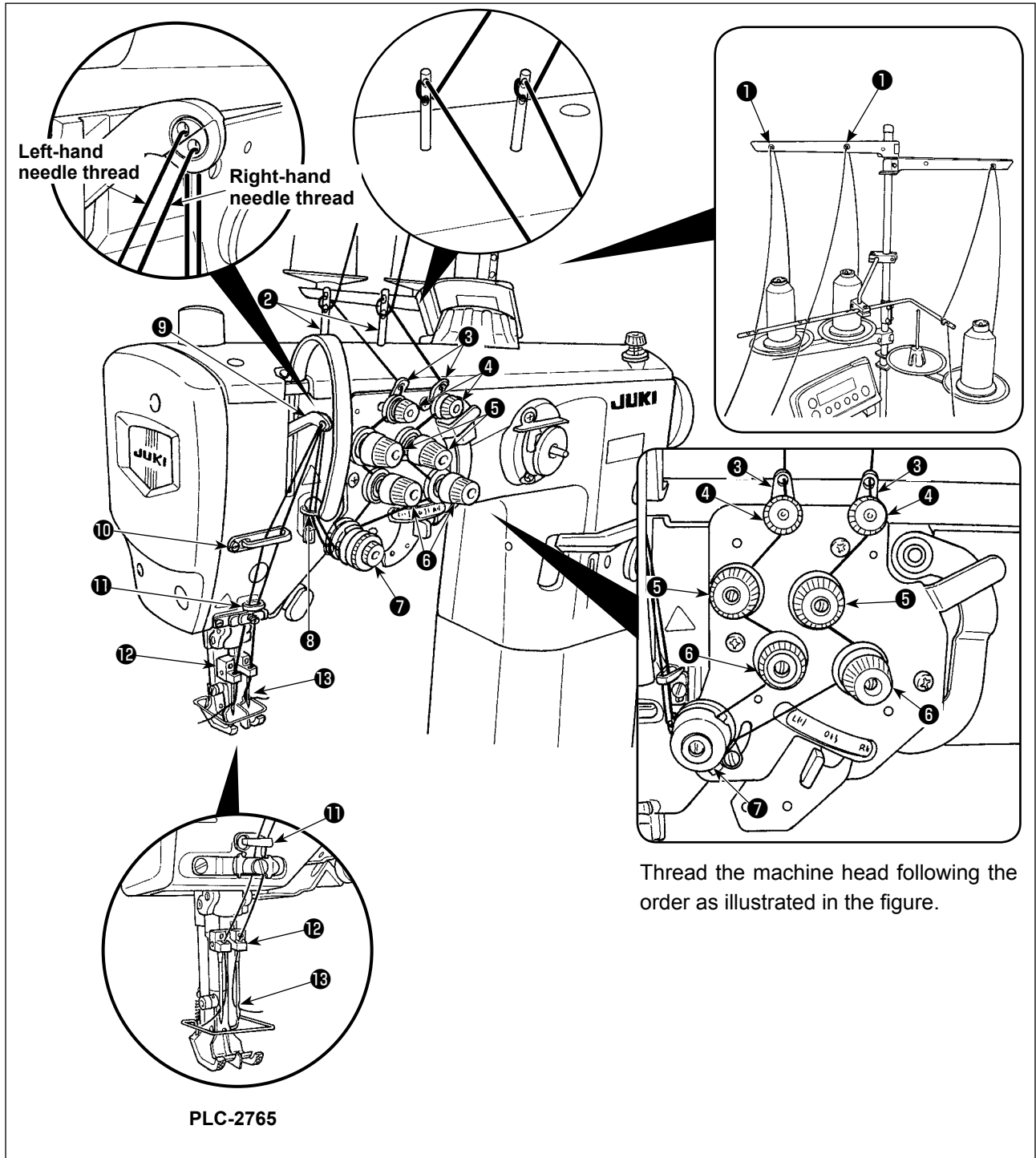


[PLC-2765]



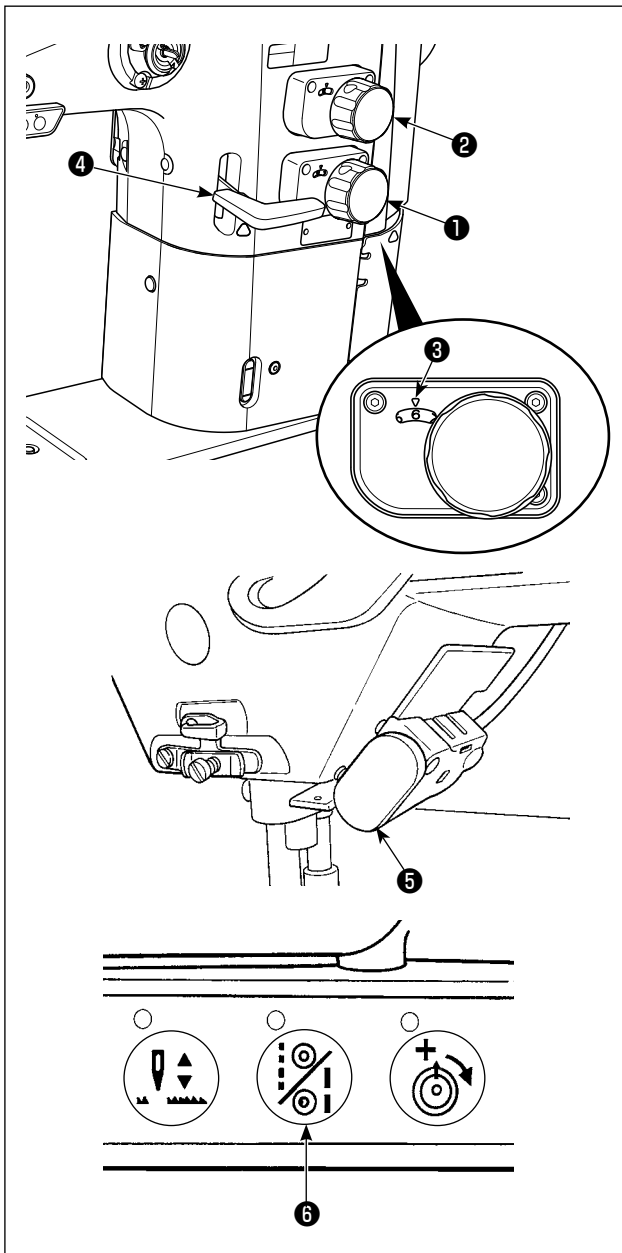
**WARNING :**

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.



## 4. ADJUSTING THE SEWING MACHINE

### 4-1. Adjusting the stitch length



Turn standard feed adjusting dial ❶ and 2P feed adjusting dial ❷ to align the desired number with marker dot ❸ on the machine dial.

#### (1) Reverse feed stitching

- 1) Press down reverse feed control lever ❹ .
- 2) Reverse feed stitches are made as long as you keep pressing the lever down.
- 3) Release the lever, and the machine will run in the normal feed direction.

#### (2) Manual one-touch reverse feed stitching

- 1) Press touch-back switch ❺ .
- 2) Reverse feed stitches are made as long as you keep pressing the lever down.
- 3) Release the switch, and the machine will run in the normal feed direction.

#### (3) Changing over the stitching pitch (PLC-2710-7, PLC-2760-7)

- 1) Press stitching pitch changeover switch ❻ to change over the stitch length to the one corresponding to the scale mark on the 2P feed adjusting dial. (The LED on the switch lights up.)

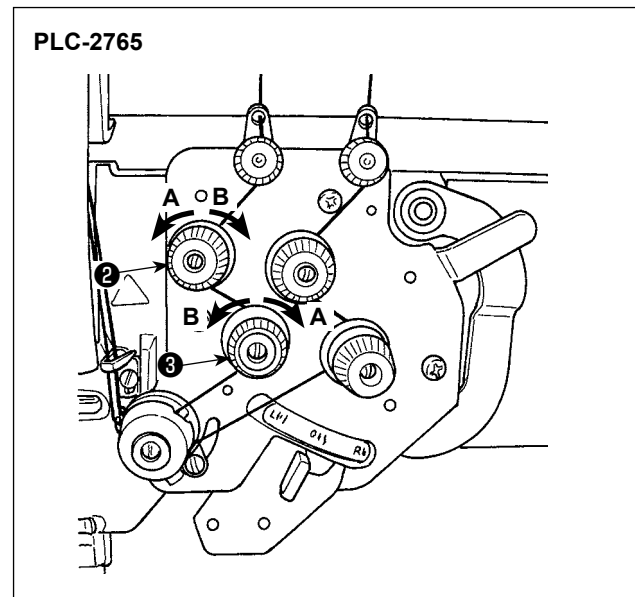
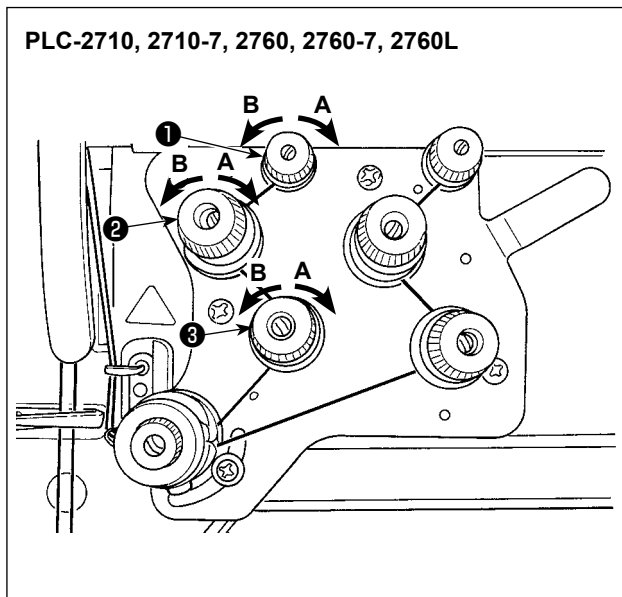
1. Set 2P feed adjusting dial ❷ at a value smaller than the value set by standard feed adjusting dial ❶ .
2. Adjust the 2P feed adjusting dial when the stitching pitch changeover switch is placed in OFF.
3. In the case the stitch pitch is reduced by adjusting standard stitch dial ❶ , move feed lever ❹ up and down several times before operating the sewing machine.



Refer to "5-5. Operation switches (PLC-2710-7, 2760-7)" p.37 for the details of the 2P device.

## 4-2. Thread tension

### (1) Adjusting the needle thread tension



- 1) Turn thread tension nut No. 1 ❶ clockwise **A** to shorten the length of thread remaining on the top of needle after thread trimming. Turn the nut counterclockwise **B** to lengthen it. (PLC-2710-7, 2760-7)
- 2) In the case of using the single tension system  
Turn thread tension nut No. 2 ❷ clockwise **A** to increase the needle thread tension, or counterclockwise **B** to decrease it.
- 3) In the case of using the double tension system  
Turn thread tension nuts No. 2 ❷ and ❸ clockwise **A** to increase the needle thread tension, or counterclockwise **B** to decrease it.



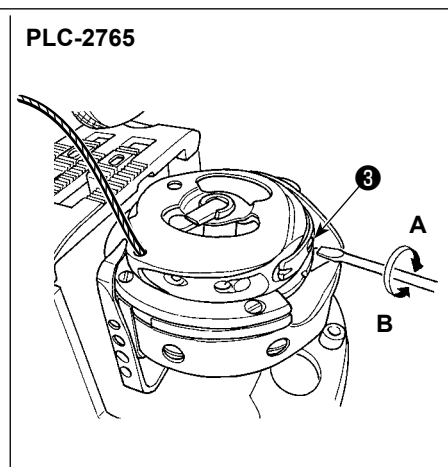
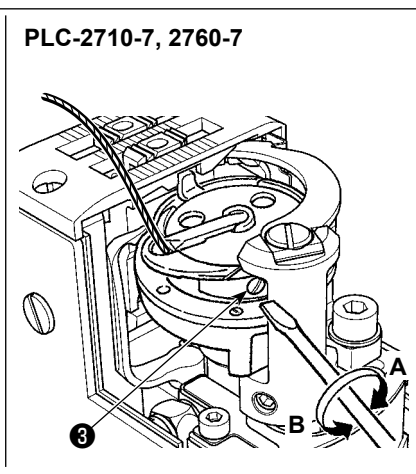
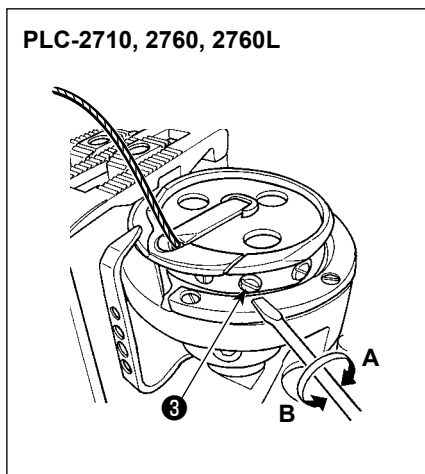
Adjust so that tensions controlled by the tension regulating nuts No. 2 ❷ and ❸ are same.



#### 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.

### (2) Adjusting the bobbin thread tension



Turn tension adjustment screw ❸ clockwise **A** to increase the bobbin thread tension, or counterclockwise **B** to decrease it.

### 4-3. Thread take-up spring

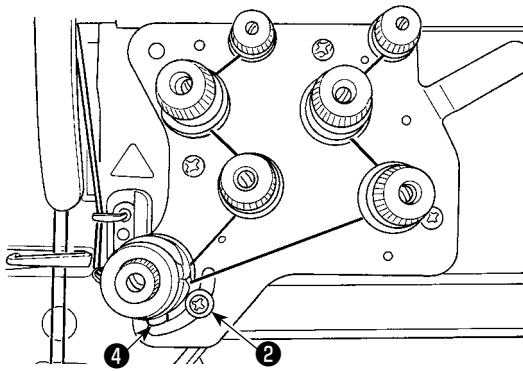


#### WARNING :

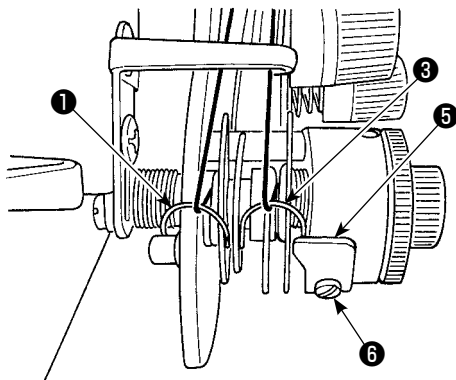
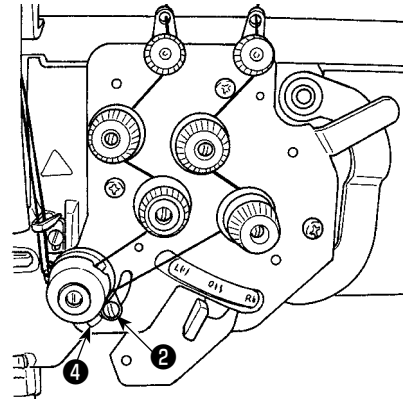
To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.

#### (1) When you want to change the stroke of the thread take-up spring

PLC-2710, 2710-7, 2760, 2760-7, 2760L



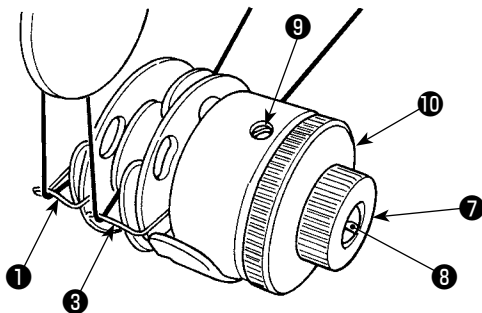
PLC-2765



- 1) Loosen screw ② . Adjust thread take-up spring ① by moving it in the slot.
- 2) Loosen screw ④ . Adjust thread take-up spring ③ by moving thread take-up spring adjusting plate ⑤ along thread take-up spring base ⑥ .

\* The PLC-2710 and -2710-7 do not have thread take-up spring ③ .

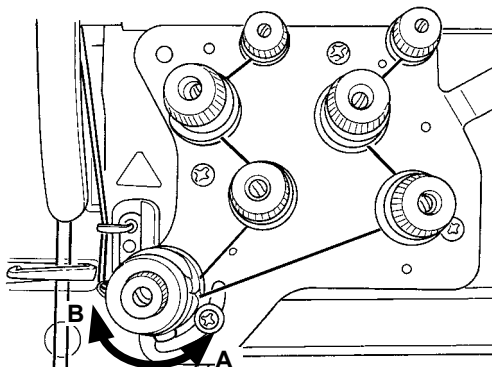
#### (2) When you want to change the tension of the thread take-up spring



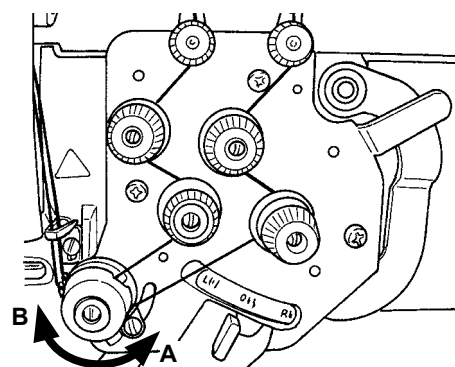
- 1) To adjust the tension of thread take-up spring ① , loosen nut ⑦ first. Turn spring shaft ⑧ counterclockwise A to increase the tension or clockwise B to decrease it. After the adjustment, fix the stud by tightening nut ⑦ .
- 2) To change the tension of thread take-up spring ③ , loosen screw ⑨ first. Turn nut ⑩ counterclockwise A to increase the tension or clockwise B to decrease it. After the adjustment, fix nut by tightening screw ⑨ .

\* The PLC-2710 and -2710-7 do not have thread take-up spring ③ .

PLC-2710, 2710-7, 2760, 2760-7, 2760L



PLC-2765

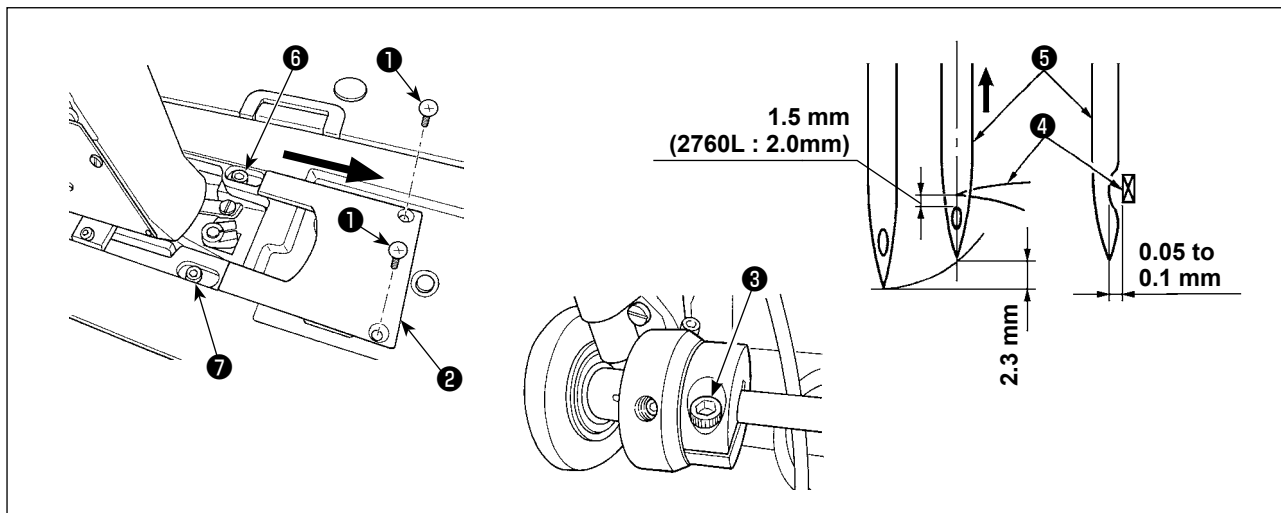


## 4-4. Needle-to-hook relation



### 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 bed cover setscrews ① to remove bed cover ② .
- 2) Adjust the standard feed adjusting dial to "0".
- 3) Loosen hook driving shaft set collar clamping screw ③ , and turn the handwheel counterclockwise to make the needle bar ascend by 2.3 mm from the lowest position of its stroke.

#### • For the PLC-2710, -2710-7, -2760, -2760-7 and -2765

- 4) In the state described in 3), align blade point ④ of the hook with the center of needle ⑤ , and tighten hook driving shaft set collar clamping screw ③ . At this time, a clearance of 1.5 mm is provided between the blade point of the hook and the top end of the needle eyelet.

#### • For the PLC-2760L

- 4) In the state described in 3), align blade point ④ of the hook with the center of needle ⑤ , and tighten hook driving shaft set collar clamping screw ③ . At this time, a clearance of 2.0 mm is provided between the blade point of the hook and the top end of the needle eyelet.
- 5) Loosen setscrews ⑥ and ⑦ of the hook driving shaft saddle on the top face of the bed. Adjust the clearance between the blade point of the hook and the needle to 0.05 to 0.1 mm by moving the hook driving shaft saddle to the right or left to change its position. Then, tighten setscrews ⑥ and ⑦ .
- 6) Align the largest scale mark of the standard feed adjusting dial with the marker dot on the machine arm. Check to be sure that the blade point of the hook does not come in contact with the needle.



The operation panel could come in contact with the thread stand when tilting the machine head.

To protect the relevant parts from contact, shift the thread stand to a position at which the thread stand does not interfere with the control panel.

[Only for the PLC-2710-7 and PLC-2760-7]

To check the needle bar position as described in the aforementioned 3) [i.e., "...the needle bar ascend by 2.3 mm from the lowest position of its stroke"], you may use the display of the main shaft rotation angle under the "machine head adjustment mode" of the SC-922.



The needle bar goes up by 2.3 mm by advancing the angle of rotation of the main shaft by 25 ° (upper shaft angle = 205 °) from the value displayed when the needle bar is in its lower end under the "machine head adjustment mode". (When the needle bar ascends by 2.3 mm from its lowest position of its stroke, the main shaft rotation angle is 25 degrees of an angle.)

\* In the case of adjusting the needle-to-hook relation under the "machine head adjustment mode", do not press ⊕ switch.

Refer to "3-2. Adjusting the machine head (PLC-2710-7, 2760-7)" p.13.

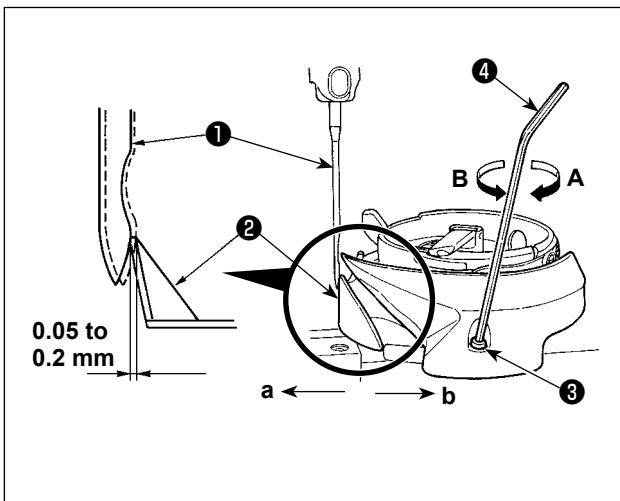


## 4-5. Adjusting the hook needle guard



### 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.



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 state of the hook is not as shown above, fit hexagon wrench ④ into ③ of needle guard adjusting screw and adjust as follows:

- 1) To bend the hook needle guard in direction a, turn the needle guard adjusting screw in direction A.
- 2) To bend the hook needle guard in direction b, turn the needle guard adjusting screw in direction B.

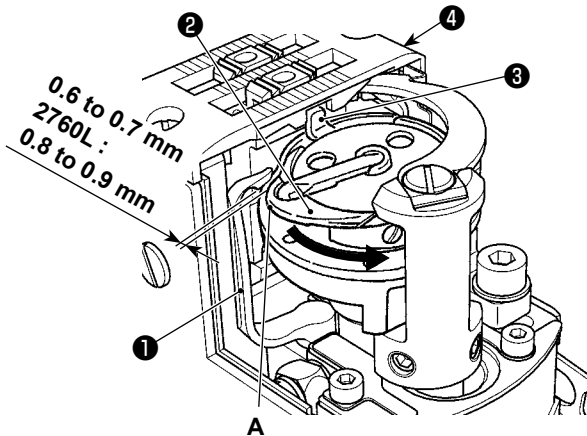
## 4-6. Adjusting the bobbin case opening lever



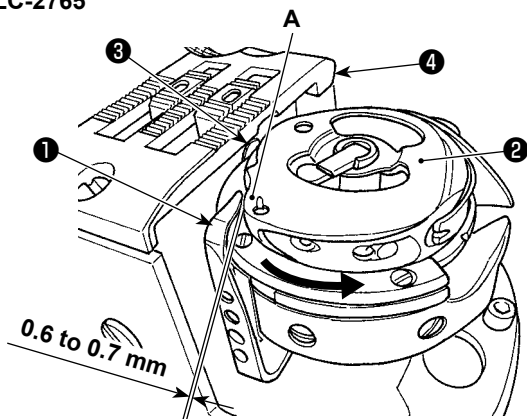
### WARNING :

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.

PLC-2710, 2710-7, 2760, 2760-7, 2760L



PLC-2765



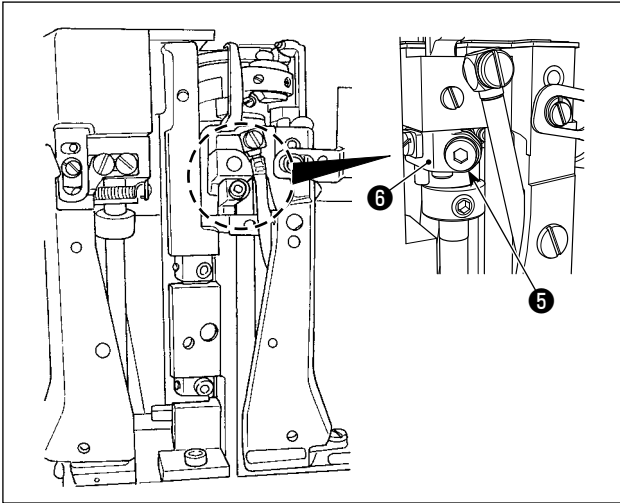
- 1) Open the hook cover. (How to open : move the hook cover to the right or left after lifting it right above.)
- 2) Turn the handwheel in its normal rotational direction to bring bobbin case opening lever ① to its back end position.
- 3) Turn inner hook ② in the direction of the arrow until stopper ③ is pressed against the slits in throat plate ④ .

- For the PLC-2710, -2710-7, -2760, -2760-7 and -2765

- 4) Loosen bobbin case opening lever crank set-screw ⑤ . Adjust the clearance between the bobbin case opening lever and protruding portion A of the bobbin case to 0.6 to 0.7 mm.

- For the PLC-2760L

- 4) Loosen bobbin case opening lever crank set-screw ⑤ . Adjust the clearance between the bobbin case opening lever and protruding portion A of the bobbin case to 0.8 to 0.9 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.



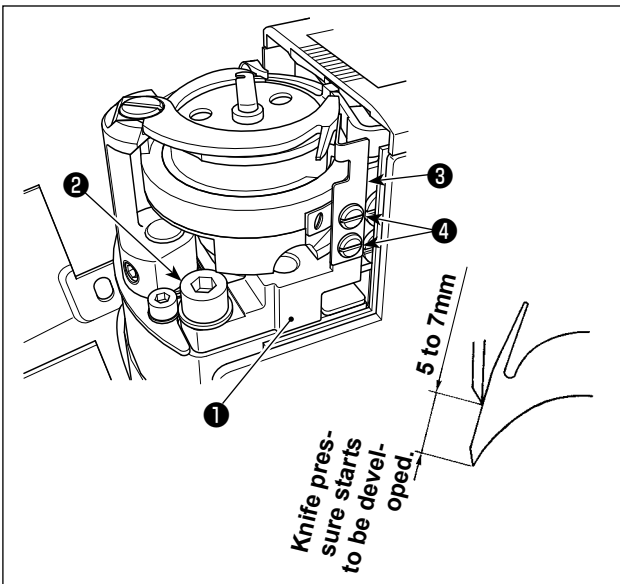
**In case of 2-needle machine, perform the same adjustment to the right and left hooks.**

#### 4-7. Position of the counter knife and adjustment of the knife pressure



##### **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.



##### • Adjusting the knife pressure

- 1) Move the moving knife by hand to its forward travel end.
- 2) Loosen setscrew ② in the counter knife base. Adjust, as standard, so that the knife pressure is applied when counter knife base ① is turned until the top end of the counter knife is spaced 5 to 7 mm from the top end of the moving knife.



**Be sure to carefully prevent from getting injured by the moving knife, counter knife, blade point of the hook, etc.**

##### • Adjusting the clamp spring

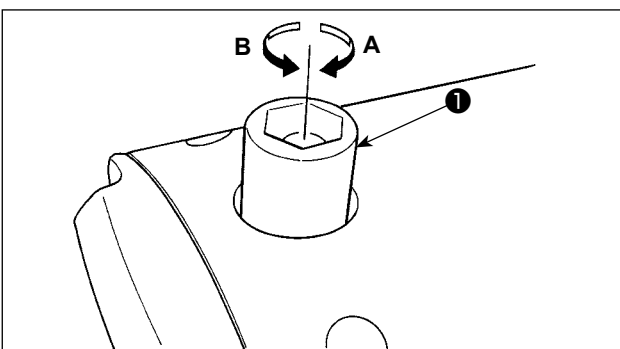
- 1) Move the moving knife to the initial position.
- 2) Loosen clamp spring setscrews ④. At the position where clamp spring ③ lightly comes in contact with the moving knife, press the undersurface of the spring against counter knife base ①. In this state, fix the clamp spring with setscrews ④.

#### 4-8. Adjusting the pressure of the presser foot



##### **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.

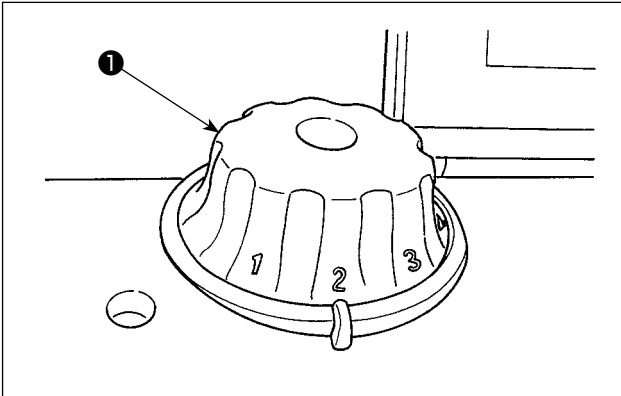


Turn presser spring regulating dial ① clockwise **A** to increase the pressure of the presser foot, or counter-clockwise **B** to decrease it.

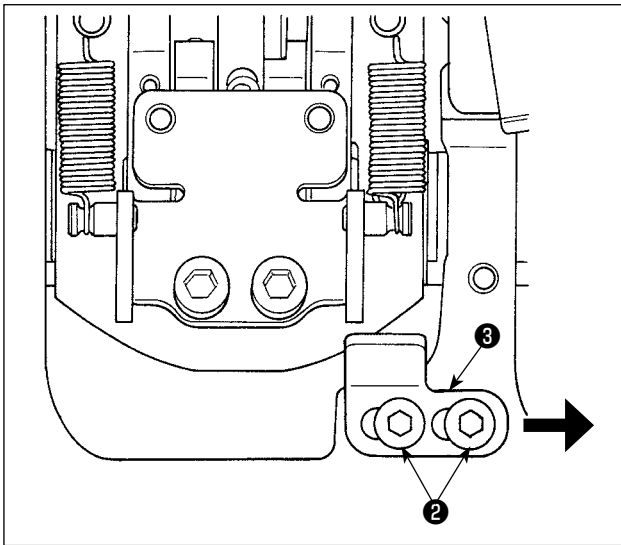


**Be sure to operate the sewing machine with the pressure of the presser foot minimized as long as the presser foot securely holds the material.**

#### 4-9. Adjusting the amount of the alternating vertical movement of the walking foot and the presser foot



Adjust the amount of the alternating vertical movement of the walking foot and the presser foot using dial ①. Turn the dial clockwise to increase the amount of the alternating vertical movement of the walking foot and the presser foot, or counterclockwise to decrease it.



The amount of the alternating vertical movement of the walking foot and presser foot has been factory-limited to 6.5 mm at the time of shipment. To cancel the restriction to the amount of the alternating vertical movement of the walking foot and the presser foot, remove the top cover, loosen setscrews ② and shift stopper ③ to the right.

**Be aware that the presser foot and the walking foot may interfere with each other when releasing the stopper.**

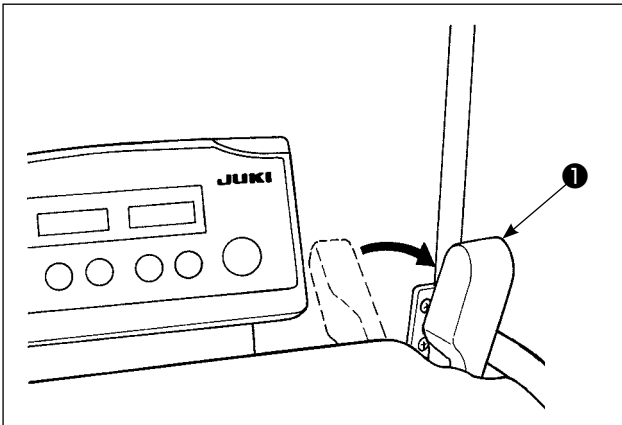
**The presser foot may also interfere with the needle bar when a heavy-weight material is used.**

**Make sure that the presser foot interferes with neither the walking foot nor the presser bar before operating the sewing machine.**



## 5. OPERATION OF THE SEWING MACHINE

### 5-1. Hand lifter



To lift the presser foot manually, pull hand lifter ❶ in the direction of the arrow.

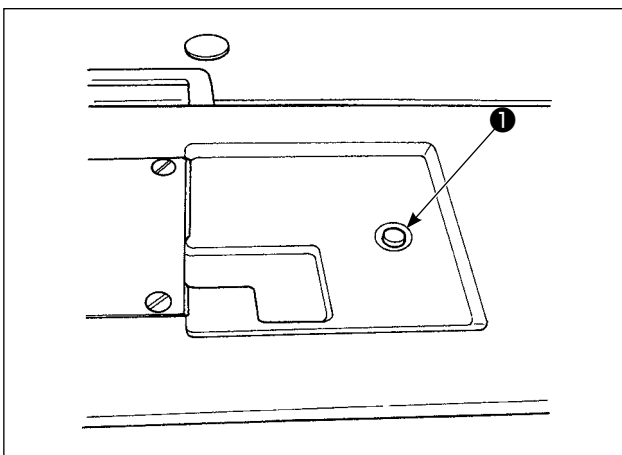
This makes the presser foot rise 10 mm and stay at that position.

### 5-2. Resetting the safety clutch



#### 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.



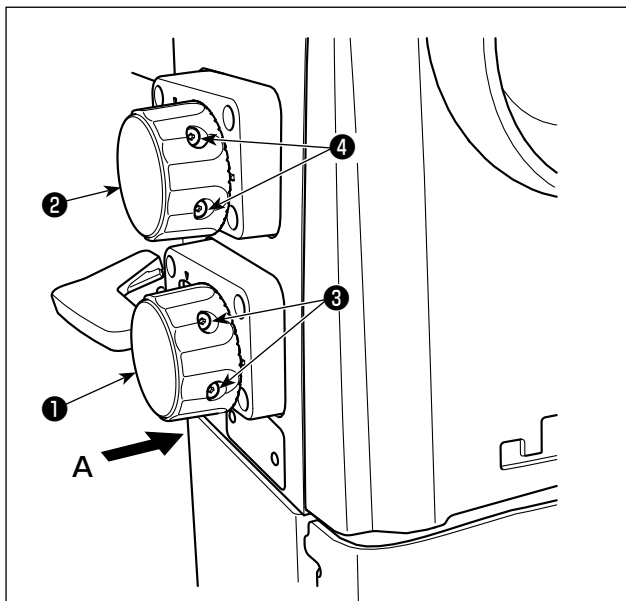
The safety clutch functions when an excessive load is applied to the hook or the other components during sewing. At this time, the hook will never rotate even if turning the handwheel. When the safety clutch has functioned, remove the cause and reset the safety clutch as given in the following procedure.

- 1) Pressing push button ❶ located on the top surface of the machine bed, strongly turn the handwheel in the reverse direction of rotation.
- 2) The resetting procedure completes when the handwheel clicks.

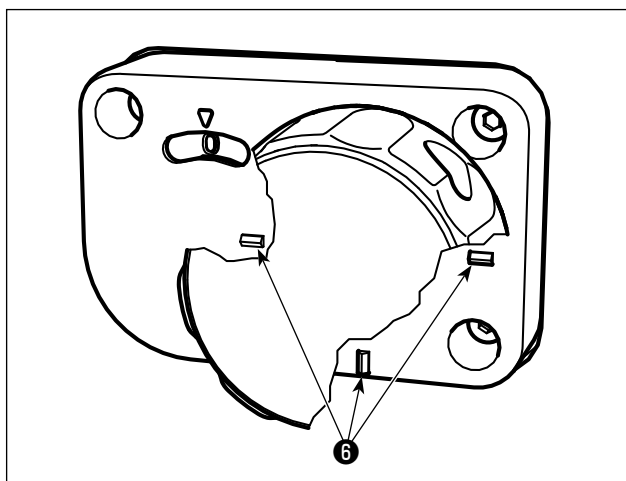


Turn the handwheel by hand, and confirm that push button ❶ has returned.

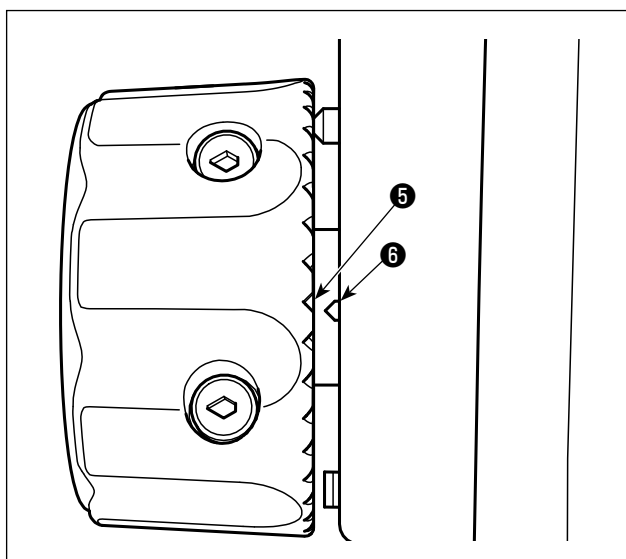
### 5-3. Fixing the feed adjusting dial



- 1) Loosen feed regulating dial setscrews 3 (or 4).
- 2) Push feed regulating dial 1 (or 2) in direction A.



Notch 5 of the dial fits on projecting sections 6 of the cover to fix the dial so that it will not turn any further.



- 3) In the state as described in 2), tighten feed regulating dial setscrews 3 (or 4) alternately to fix dial 1 (or 2).

## 5-4. Normal-/reverse-feed stitch needle entry points alignment at the time of automatic reverse feed stitching

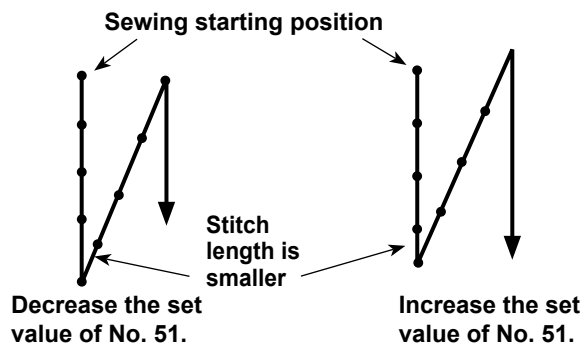
When the sewing speed or stitch pitch is changed, the normal- and reverse-feed stitch needle entry points may not be aligned at the time of automatic reverse feed stitching.

In such a case, correct the alignment of needle entry points by changing the ON/OFF timing of the automatic reverse feed cylinder. In the case the timing compensation is difficult since the stitch pitch is large, it is recommended to decrease the reverse feed stitching speed or use the temporary stop function at each corner section of the material.

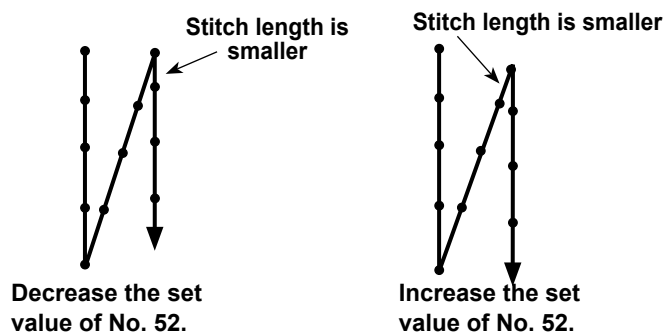
Refer to "III-8. Detailed explanation of selection of functions ⑩ Compensation of timing of the solenoid for reverse feed stitching" in the Instruction Manual for the SC-922 for detail.

- 1) How to align needle entry points of the reverse feed stitching with those of the normal feed stitching  
 Carry out "correction of the timing of the reverse feed stitching" according to the difference between the needle entry points of the reverse feed stitching and those of the normal feed stitching.  
 Refer to "III-6. Setting the SC-922 functions" in the Instruction Manual for the SC-922 for how to carry out the "correction of the timing of the reverse feed stitching".

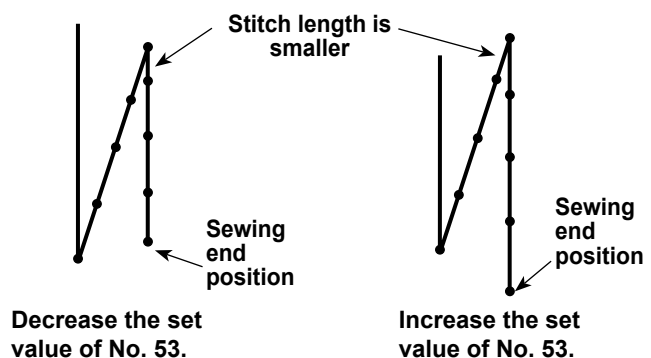
- ① ON-timing of the reverse feed stitching at the beginning of sewing (Function setting No. 51)



- ② Correction of the OFF-timing of the reverse feed stitching at the beginning of sewing (Function setting No. 52)



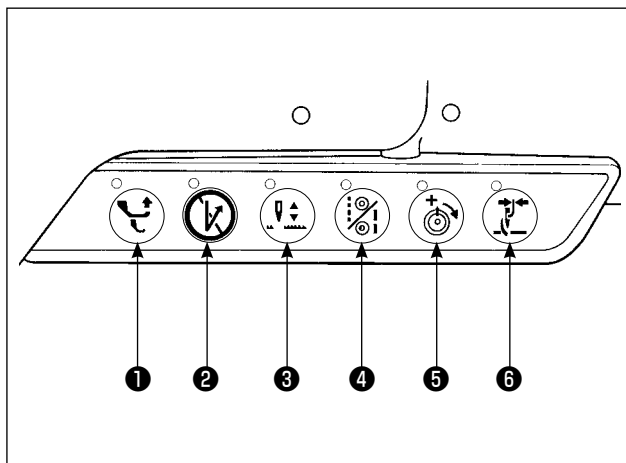
- ③ Correction of the OFF-timing of the reverse feed stitching at the end of sewing (Function setting No. 53)



- 2) Reverse feed stitching speed on basis of stitch pitch (function No. 8) and temporary stop function at each corner section of the material (function No. 151)

	Default value	Recommended value	Recommended value
Stitch pitch (mm)	3 to 7	8 to 9	10 to 12
Reverse feed stitching speed (sti/min)	600	550	550
Temporary stop function at each corner section of the material	0 (OFF)	0 (OFF)	1 (ON)

## 5-5. Operation switches (PLC-2710-7, 2760-7)



### ① Alternating vertical movement amount change-over switch

If this switch is pressed the amount of the alternating vertical movement of the walking foot and the presser foot will be maximized. (Lamp above the switch lights up)

Use this switch when a multilayered portion of the sewing product is not smoothly fed.

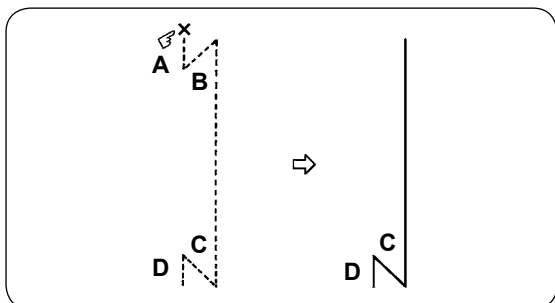
To change over the amount of the alternating vertical movement of the walking foot and the presser foot by means of the knee switch, join the knee switch and the mounting plate, supplied with the unit, together and fix them on the table with wood screw.


For the wiring, refer to "[5-7. Knee switch \(PLC-2710-7, 2760-7\)](#)" p.40 .

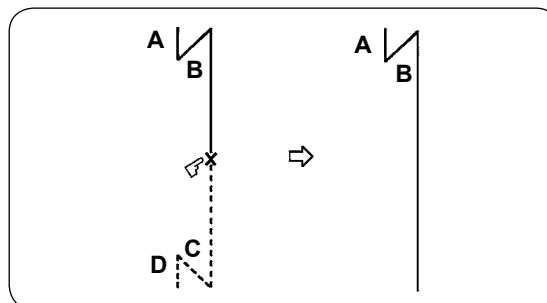
### ② Automatic reverse feed stitching cancellation/addition switch


- If this switch is pressed when the following automatic reverse feed stitching has been specified, the reverse stitching will not take place (for once immediately after it is pressed). (Example 1)
- If this switch is pressed when no automatic reverse feed stitching has been specified, the reverse feed stitching will take place (once immediately after it is pressed). (Example 2)

**(Example 1) In the case where both automatic reverse feed stitching for start and that for end have been specified :**

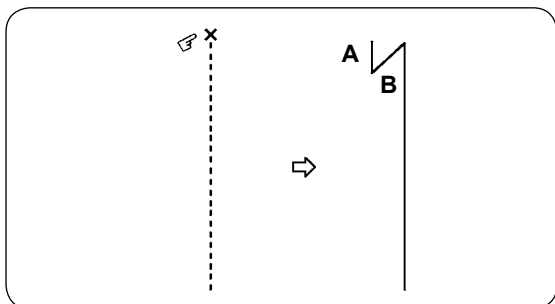



If the  switch is pressed before starting sewing, the automatic reverse feed stitching for start (between A and B) will not be carried out.

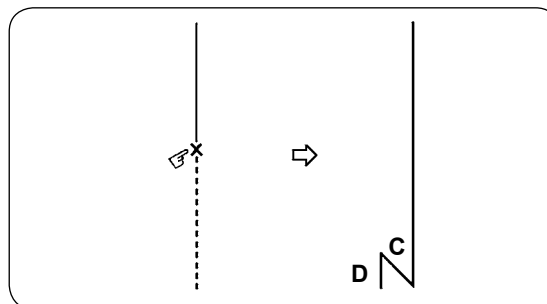



If the  switch is pressed during sewing, the automatic reverse feed stitching for end (between C and D) will not be carried out.

**(Example 2) In the case where neither automatic reverse feed stitching for start nor that for end have been specified :**



If the  switch is pressed before starting sewing, the automatic reverse feed stitching for start (between A and B) will be carried out.



If the  switch is pressed during sewing, the automatic reverse feed stitching for end (between C and D) will be carried out.

③ **Needle lifting switch** 

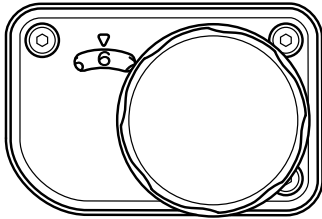
If this switch is pressed, the machine will travel from the needle-down stop position to the needle-up stop position.



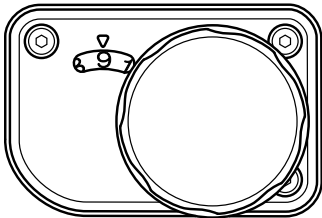
When raising the machine head which has been tilted, do not hold the operation switch to raise it.

**Example**

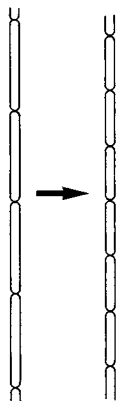
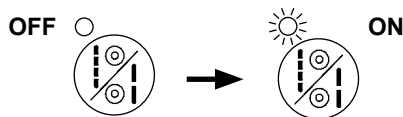
· 2P feed adjusting dial scale : 6



· Standard feed adjusting dial scale : 9



· If this switch is pressed, stitch length is changed over from 9 to 6.



· If this switch is pressed again, stitch length returns from 6 to 9.

④ **2P switch** 

If this switch is pressed, the stitch length is changed over to that of the scale on the 2P feed adjusting dial. (Lamp in the button is lit up.)



Be sure to make the number of 2P feed adjusting dial less than that of the standard feed adjusting dial.

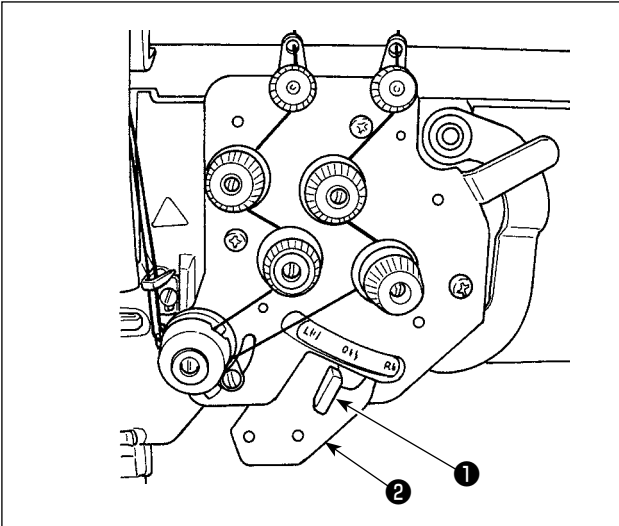
⑤ **Needle thread tension changeover switch** 

When the switch is pressed, the double tension function is selected to increase the needle thread tension. (The lamp above the switch is lit up.)

⑥ This is not used for the PLC-2710-7 and -2760-7.



## 5-6. Organized split needle bar (PLC-2765)



### (1) Stopping the needle bars (right and left)

When conversion lever ❶ is moved to the L position, the left needle bar stops. When the lever is moved to the R position, the right needle bar stops.

### (2) Returning to the 2-needle operation

Press conversion fixing lever ❷ .

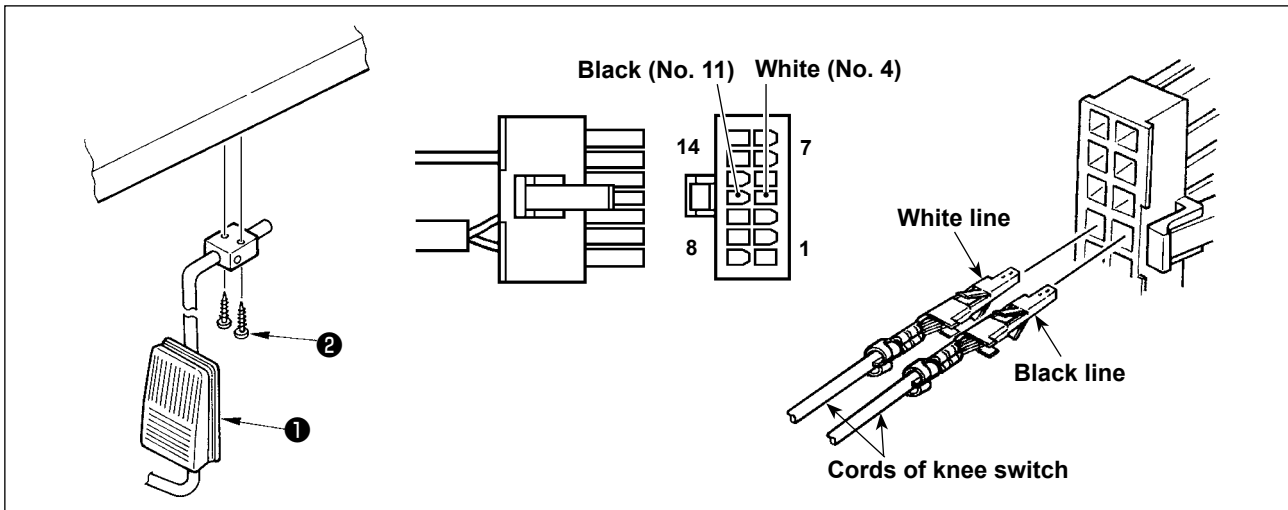
Conversion lever ❶ will move to 0 (zero) position to restore the operation mode to the 2-needle sewing mode.

1. When sewing a corner of the material by turning it to the right or left, be aware that stitch skipping occurs at the corner section if the needle bar goes up by 2 mm or more after it has passed its lower end.
2. At the corner angle of which is 40 ° or less, the thread may remain on the wrong side of the material since the thread take-up amount of the bobbin thread slack prevention spring may be insufficient.
3. When performing the operation of changeover of separately driven needle bar, perform the work after stopping the sewing machine once.  
(When the operation of changeover is performed at 1,000 sti/min or more, break-down will be caused.)
4. When the sewing machine is used as the substitute for 1-needle sewing machine in the state of separately driven needle bar, break-down of the sewing machine will be caused. When performing sewing with 1-needle sewing machine, remove one of two needles and use the sewing machine in the state that two needle bars operate.




## 5-7. Knee switch (PLC-2710-7, 2760-7)

### (1) Installation of the knee switch



- 1) Fix knee switch ① supplied with the swing machine as accessories to the position you desire to install at the bottom surface of the machine table with wood screws ② .
- 2) Connect the knee switch to No.4 and No.11 pins of the machine connector 14P which is connected to CN36 of the machine controller.

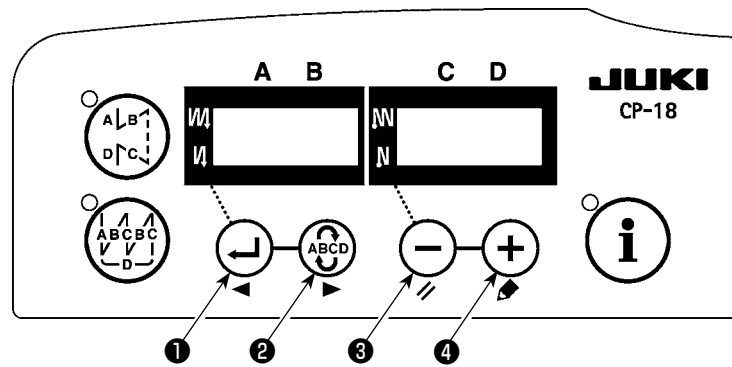
### (2) Functions of the knee switch

If knee switch ① is pressed, the amount of the alternating vertical movement of the walking foot and the presser foot will be maximized. (Same with the performance carried out by pressing the alternating vertical movement amount change-over switch “” on the machine head.)

The knee switch can be used as the presser lifting switch by setting of the motor. (When the switch is used as the presser lifting switch, the function as the alternating vertical movement amount changeover switch is lost.)

### (3) Function setting of the knee switch

• CP-18



- 1) Enter the function setting mode referring to "III-6. Setting of functions of SC-922, 1)" in the Instruction Manual for the SC-922.

□ □ 1 2 o P T \_

- 2) Press switch ① or switch ② to call out function setting No.12 (option input/output function selection).

□ o P T i n \_ \_

- 3) Press switch ③ or switch ④ and select the item for "in".

□ i 3 1 v E r T

- 4) Press switch ② and select display No.i31.

The lamps will be on alternately.

L □ 2 4

- 5) Press switch ③ or switch ④ to select the knee switch function. Refer to list 1 for the details of the functions.

□ i 3 1 L □ 2 4

- 6) Press switch ② and fix the function.

□ o P T □ □ i n

- 7) Press switch ② and end the option input.

□ E n d

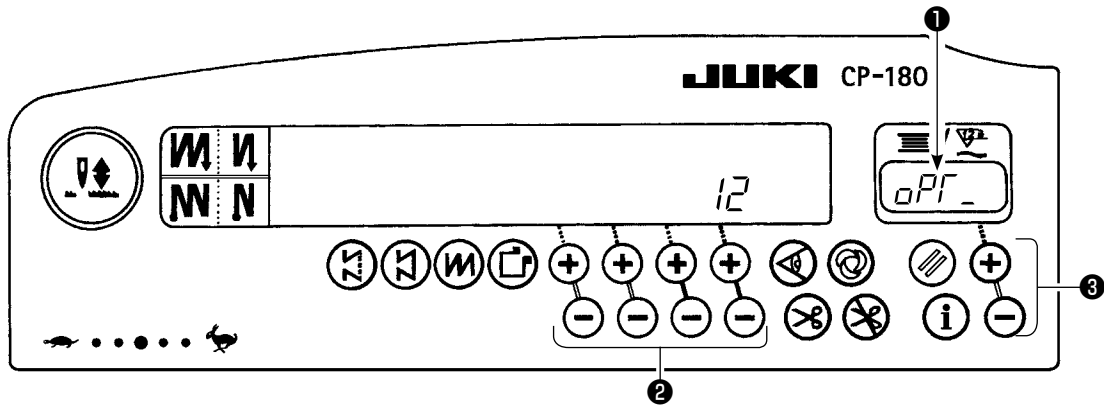
- 8) Select "End" item using switch ③ or switch ④ .

□ □ 1 2 o P T \_

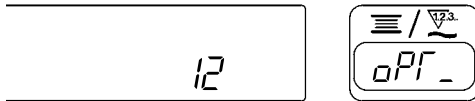
- 9) Press switch ① or switch ② and return to the function setting mode.

#### List 1

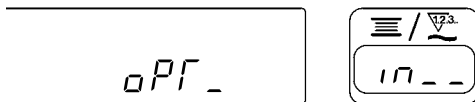
Function code	Abbreviation	Functional item	Remarks
5	FL	Presser lifter switch function	Presser output will be ON while the switch is being pressed.
31	ALFL	Presser lifter alternate switch function	Presser output will be ON or OFF each time the switch is pressed.
24	vErT	Alternate vertical movement amount conversion alternate switch function	Alternate vertical movement amount output will be ON or OFF each time the switch is pressed.
25	vSW	Alternate vertical movement amount conversion switch function	Alternate vertical movement amount output will be ON while the switch is being pressed.



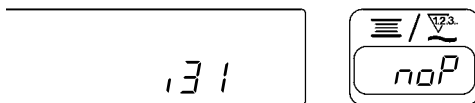
1) Enter the function setting mode referring to "18. FUNCTION SETTING SWITCH, 1)" in the Instruction Manual for the CP-180.



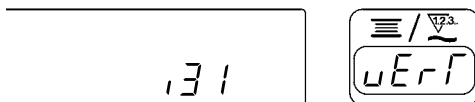
2) Select function number 12 according to the function setting method.



3) Select the item of "in" by switch 3.

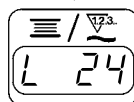


4) Select the displayed number ".31" by means of switch 2.

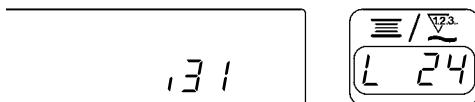


5) Select the knee switch function by switch 3. Refer to list 1 for the details of the functions.

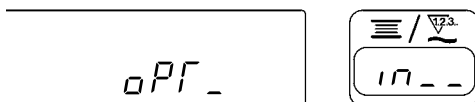
The lamps will be on alternately. ↑



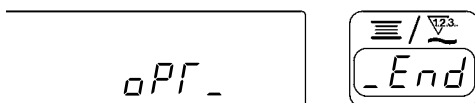
6) Fix the knee switch function by switch 2.



7) The above function is fixed by switch 2.



8) The option input is ended by switch 2.



9) Select the item of "End" by switch 3, and return to the function setting mode.

## 6. SEWING SPEED TABLE

Operate the sewing machine at a speed equal to or lower than the maximum sewing speed selected from those shown in the table below according to the sewing conditions.

For the PLC-2710-7 and -2760-7, the speed setting according to the amount of the alternating vertical movement of the walking foot and presser foot is automatically carried out

### [PLC-2710, 2710-7, 2760, 2760-7, 2765]

Amount of alternate vertical movement of the walking foot and presser foot	Stitch length : 7 mm or less	Stitch length : More than 7 mm to 9 mm or less	Stitch length : More than 9 mm to 12 mm or less
3 mm or less	2,500 sti/min	2,000 sti/min	1,800 sti/min
3.25 mm to 4 mm or less	2,200 sti/min	2,000 sti/min	1,800 sti/min
4.25 mm to 5 mm or less	2,000 sti/min	2,000 sti/min	1,800 sti/min
5.25 mm to 9 mm or less	1,800 sti/min	1,800 sti/min	1,800 sti/min

### [PLC-2760L]

Amount of alternate vertical movement of the walking foot and presser foot	Stitch length : 7 mm or less	Stitch length : More than 7 mm to 9 mm or less	Stitch length : More than 9 mm to 12 mm or less
3 mm or less	2,000 sti/min	2,000 sti/min	1,800 sti/min
3.25 mm to 4 mm or less	2,000 sti/min	2,000 sti/min	1,800 sti/min
4.25 mm to 5 mm or less	2,000 sti/min	2,000 sti/min	1,800 sti/min
5.25 mm to 9 mm or less	1,800 sti/min	1,800 sti/min	1,800 sti/min

## 7. MOTOR PULLEY AND V-BELT

Use the M-type belt.

The relation among the motor pulley, the belt length and the sewing speed is as shown in the table below.

Model	Sewing speed	Effective diameter of handwheel	Number of poles	Frequency	Number of revolutions of motor	Effective diameter of motor pulley	V-belt size
PLC-2710 PLC-2760 PLC-2765	2,500sti/min	ø76.0	2	50Hz	2,840 rpm	ø65	M52
				60Hz	3,400 rpm	ø55	M51
			4	50Hz	1,430 rpm	ø130	M57
				60Hz	1,715 rpm	ø110	M55
PLC-2760L	2,000sti/min	ø76.0	2	50Hz	2,840 rpm	ø55	M51
				60Hz	3,400 rpm	ø45	M50
			4	50Hz	1,430 rpm	ø105	M54
				60Hz	1,715 rpm	ø90	M53

\* Use a 3-phase, 400 W (1/2 HP) 2P or 4P clutch motor.

## 8. TROUBLES IN SEWING AND CORRECTIVE MEASURES

Troubles	Causes	Corrective measures
<p>1. Thread breakage (Thread frays or is worn out.)</p> <p>(Needle thread trails 2 to 3 cm from the wrong side of the fabric.)</p>	<p>① Thread path, needle point, hook blade point or bobbin case resting groove on the throat plate has sharp edges or burrs.</p> <p>② Needle thread tension is too high.</p> <p>③ Bobbin case opening lever provides an excessive clearance at the bobbin case.</p> <p>④ Needle comes in contact with the blade point of hook.</p> <p>⑤ Amount of oil in the hook is too small.</p> <p>⑥ Needle thread tension is too low.</p> <p>⑦ Thread take-up spring works excessively or the stroke of the spring is too small.</p> <p>⑧ Timing between the needle and the hook is excessively advanced or retarded.</p>	<p>○ Remove the sharp edges or burrs on the blade point of hook using a fine emery paper. Buff up the bobbin case resting groove on the throat plate.</p> <p>○ Decrease the needle thread tension.</p> <p>○ Decrease the clearance provided between the bobbin case opening lever and the bobbin. Refer to <b>"4-6. Adjusting the bobbin case opening lever" p.31</b> .</p> <p>○ Refer to <b>"4-4. Needle-to-hook relation" p.30</b> .</p> <p>○ Adjust the amount of oil in the hook properly. Refer to <b>"3-5. Lubrication" p.17</b>.</p> <p>○ Increase the needle thread tension.</p> <p>○ Decrease the tension of the spring and increase the stroke of the spring.</p> <p>○ Refer to <b>"4-4. Needle-to-hook relation" p.30</b> .</p>
2. Stitch skipping	<p>① Timing between the needle and the hook is excessively advanced or retarded.</p> <p>② Pressure of the presser foot is too low.</p> <p>③ The clearance provided between the top end of the needle eyelet and the blade point of hook is not correct.</p> <p>④ Hook needle guard is not functional.</p> <p>⑤ Improper type of needle is used.</p>	<p>○ Refer to <b>"4-4. Needle-to-hook relation" p.30</b> .</p> <p>○ Tighten the presser spring regulator.</p> <p>○ Refer to <b>"4-4. Needle-to-hook relation" p.30</b> .</p> <p>○ Refer to <b>"4-5. Adjusting the hook needle guard" p.31</b> .</p> <p>○ Replace the needle with one which is thicker than the current needle by one count.</p>
3. Loose stitches	<p>① Bobbin thread does not pass through the tension spring of the inner hook.</p> <p>② Thread path has been poorly finished.</p> <p>③ Bobbin fails to move smoothly.</p> <p>④ Bobbin case opening lever provides too much clearance at the bobbin.</p> <p>⑤ Bobbin thread tension is too low.</p> <p>⑥ Bobbin has been wound too tightly.</p>	<p>○ Thread the bobbin thread correctly.</p> <p>○ Remove rough parts with a fine emery paper or buff it up.</p> <p>○ Replace the bobbin or hook with a new one.</p> <p>○ Refer to <b>"4-6. Adjusting the bobbin case opening lever" p.31</b> .</p> <p>○ Increase the bobbin thread tension.</p> <p>○ Decrease the tension applied to the bobbin winder.</p>
4. Thread slips off the needle eyelet simultaneously with thread trimming.	<p>① Thread tension given by the tension controller No. 1 is too high.</p>	<p>○ Decrease the thread tension given by the tension controller No. 1.</p>
5. Thread slips off the needle eyelet at the start of sewing.	<p>① Thread tension given by the tension controller No. 1 is too high.</p> <p>② Clamp spring has improper shape.</p> <p>③ Bobbin thread tension is too low.</p>	<p>○ Decrease the thread tension given by the tension controller No. 1.</p> <p>○ Replace the clamp spring with a new one or correct the current one.</p> <p>○ Increase the bobbin thread tension.</p>
6. Thread is not cut sharply.	<p>① The blades of moving knife and counter knife have been improperly adjusted.</p> <p>② The knives have blunt blades.</p> <p>③ Bobbin thread tension is too low.</p>	<p>○ Refer to <b>"4-7. Position of the counter knife and adjustment of the knife pressure" p.32</b> .</p> <p>○ Replace the moving knife and counter knife with new ones, or correct the current ones.</p> <p>○ Increase the bobbin thread tension.</p>
7. Thread remains uncut after thread trimming. (Bobbin thread trimming failure when stitch length is comparatively short.)	<p>① Initial position of the moving knife has been improperly adjusted.</p> <p>② Bobbin thread tension is too low.</p>	<p>○ Refer to the Engineer's Manual.</p> <p>○ Increase the bobbin thread tension.</p>
8. Thread breaks at the start of sewing after thread trimming.	<p>① The needle thread is caught in the hook.</p>	<p>○ Shorten the length of thread remaining on the needle after thread trimming. Refer to <b>"4-2. Thread tension" p.28</b> .</p>
9. When a heavy-weight material is sewn, the material warps.	<p>① The feed amount of the top feed is inadequate.</p>	<p>○ Decrease the feed dog height and reduce the feed amount of the bottom feed. (Refer to the Engineer's Manual for the adjustment procedure.)</p>