

ENGLISH

**LU-1520NCS-7
INSTRUCTION MANUAL**

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BEFORE OPERATION



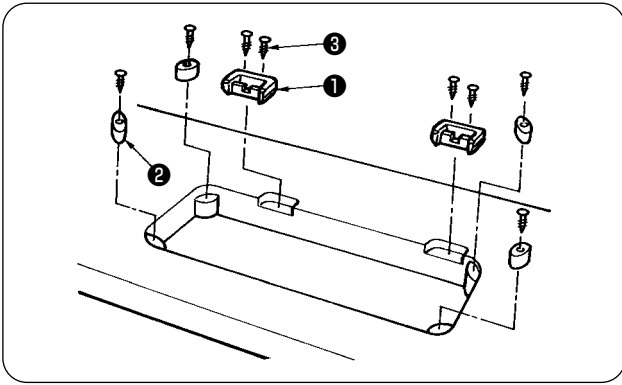
CAUTION :
Check the following so as to prevent maloperation of and damage to the machine.

- Before you put the machine into operation for the first time after the set-up, clean it thoroughly . Remove all dust gathering during transportation and oil it well.
- Confirm that voltage has been correctly set.
Confirm that the power plug has been properly connected to the power supply.
- Never use the machine in the state where the voltage type is different from the designated one.
- The direction of normal rotation of the machine is counterclockwise as observed from the pulley side. Take care not to allow the machine to rotate in the reverse direction.
- When tilting the machine head, tilt it after removing knee lifter hook.
- Never operate the machine unless the machine head and the oil tank have been filled with oil.
- For a test run, remove the bobbin and the needle thread.
- For the first month, decrease the sewing speed and run the sewing machine at a speed of 80% or less of the maximum sewing speed. As to the maximum sewing speed, refer to "["27. SEWING SPEED TABLE" p. 21.](#)"
- Operate the handwheel after the machine has totally stopped.

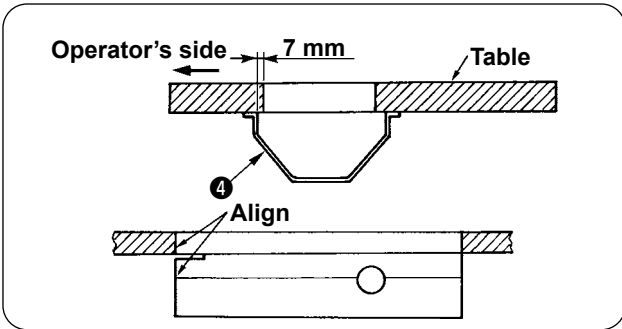
SPECIFICATIONS

Sewing speed	Max. 2,000 sti/min (Refer to " "27. SEWING SPEED TABLE" p. 21. ")
Stitch length (max.)	Normal feed : 7 mm, Reverse feed : 7 mm
Needle	GROZ-BECKERT 135×17 (Nm 120 to Nm 160) (Standard : Nm 120)
Thread	#30 to #5 (US : #46 to #138, Europe : 20/3 to 60/3)
Hook	Vertical-axis 2.0-fold capacity hook
Lift of presser foot	Hand lifter lever : 9 mm, Auto-lifter : 16 mm
Lubricating oil	JUKI New Defrix Oil No. 2
Noise	-Equivalent continuous emission sound pressure level (L _{pA}) at the workstation : A-weighted value of 80.0 dB; (Includes K _{pA} = 2.5 dB); according to ISO 10821-C.6.2 - ISO 11204 GR2 at 900 sti/min.
Machine head weight	48 kg

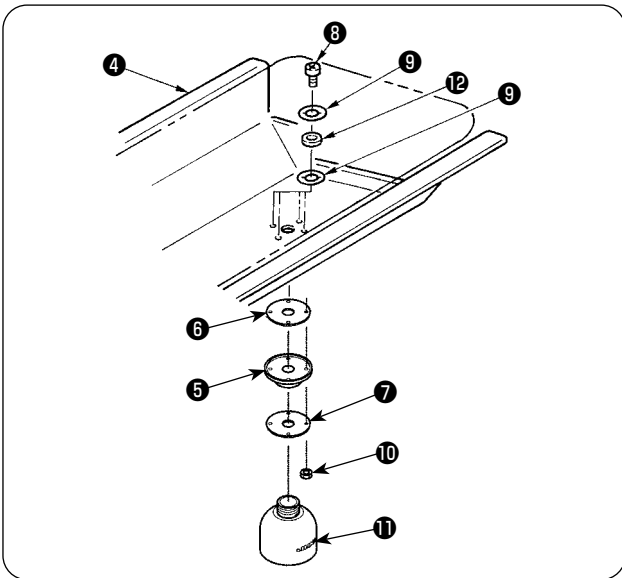
1. INSTALLATION



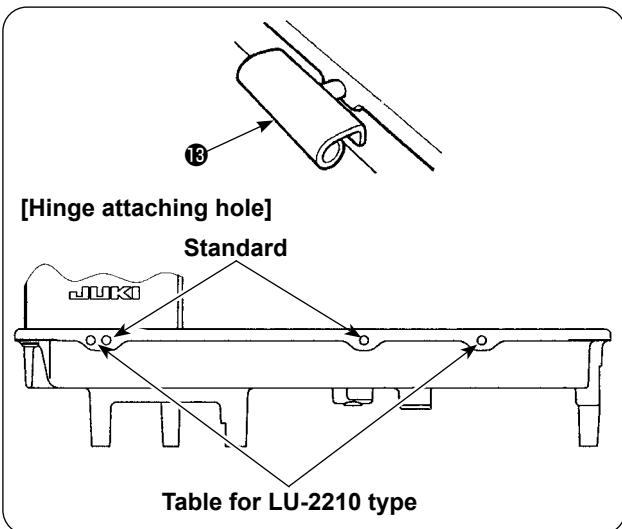
- 1) Carry the sewing machine with two persons.
(Caution) Do not hold the handwheel.
- 2) Do not put protruding articles such as the screwdriver and the like at the location where the sewing machine is placed.
- 3) Attaching the hinge seats and the support rubbers of the machine head
Fix the hinge seats **1** and the support rubbers **2** supplied with the machine on the table using nails **3**.



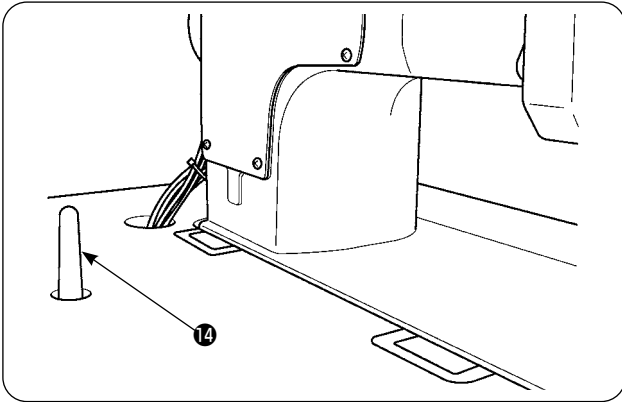
- 4) Attaching the oil pan
Fix the oil pan **4** supplied with the machine by tightening eight wood screws.



- 5) Attach drain plug **5**, oil seal **6** and washer **7** to the oil pan **4**. Attach packing **9** and washer **12** to screw **8** and fix them with nut **10**.
- 6) After they are fixed, screw in waste oil container **11** into drain plug **5**.



- 7) Fit hinge **13** into the opening in the machine bed, and fit the machine head to table rubber hinge before placing the machine head on rubber seats on the four corners.



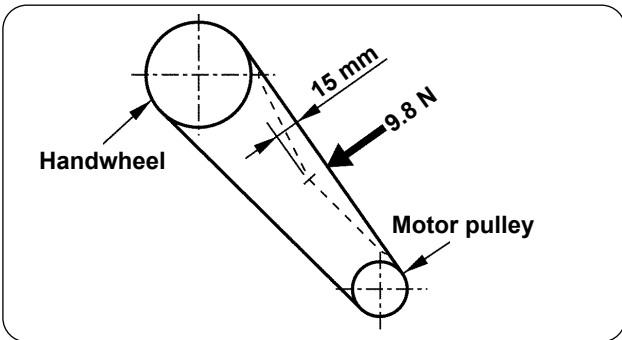
- 8) Securely attach head support rod 14 to the table until it goes no further.

2. ADJUSTING THE BELT TENSION



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.



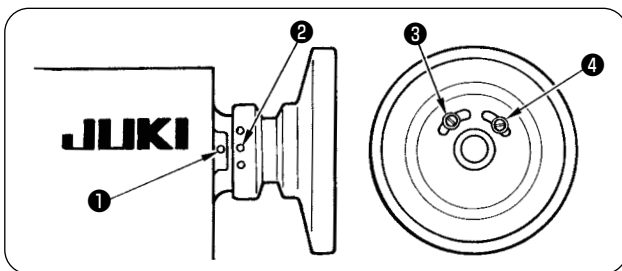
Adjust the belt tension with the height of the motor so that the belt sags 15 mm when the center of V belt is applied with a 9.8 N load.

3. ADJUSTING THE STOP POSITION



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) The respective stop positions and adjusting positions are those when marker dot 1 engraved on the machine arm aligns with marker dot 2 engraved on the handwheel. For the marker dots engraved on the handwheel, refer to the table of marker dot on the handwheel.
- 2) In case of adjusting the UP stop position, adjust it with screw 3, and in case of adjusting the DOWN stop position, adjust it with screw 4.

Marker dot on handwheel	
Center, White-White	UP stop position
Yellow	DOWN stop position
Red	For adjusting thread trimming cam

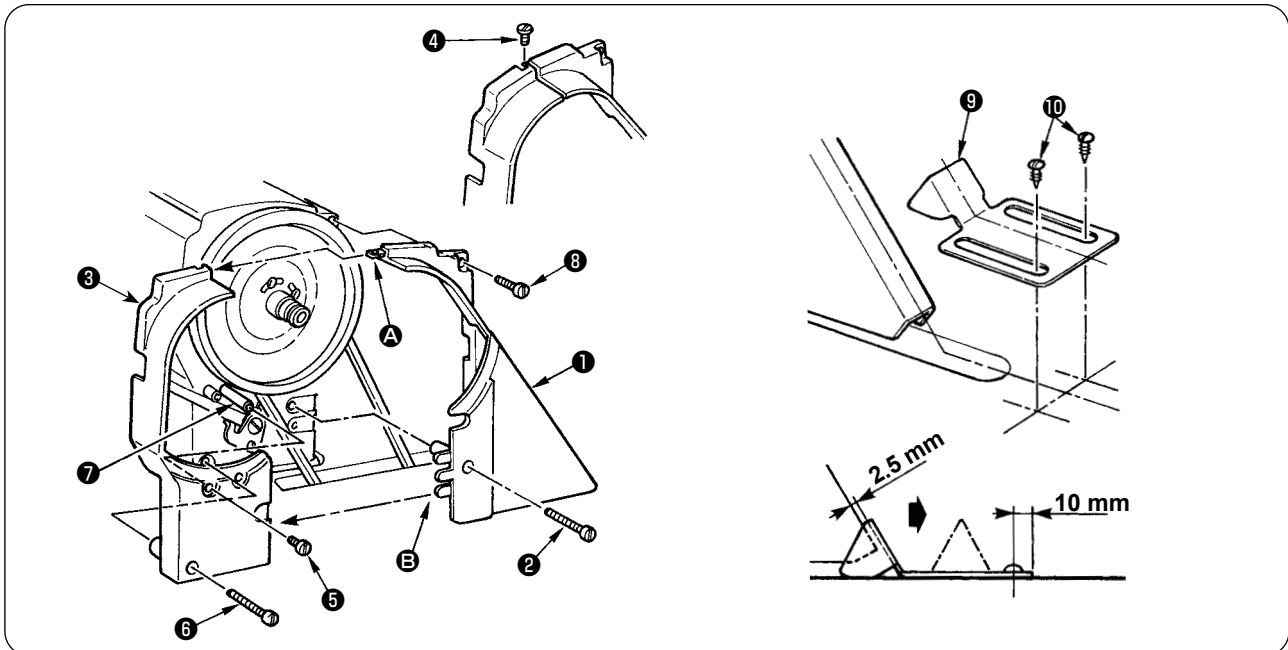
Refer to "**32. ADJUSTING AND CHECKING THE STOP POSITION OF SEWING MACHINE**" p. 23 for how to check and adjust the stop position after the completion of setup of the sewing machine.

4. ATTACHING THE BELT 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.



- 1) Attach belt cover stud ⑦ to the screw hole in the arm.
- 2) Fix belt cover (right) ① on the arm with screws ② and ③ .
- 3) Fit belt cover (left) ③ to notch ④ and ⑤ of the belt cover (right) ① .
- 4) Fix belt cover (left) ③ with screws ④ , ⑤ and ⑥ .
- 5) Fix belt cover auxiliary plate ⑨ at the position of 10 mm from the rear end with wood screws ⑩ when there is a clearance of 2.5 mm between the belt cover and the auxiliary plate ⑨ .
- 6) When tilting the machine head, loosen wood screws ⑩ and move the belt cover auxiliary plate ⑨ in the direction of the arrow until it stops. Then, tilt the machine head.

(Caution) After attaching the belt cover, confirm whether or not the respective cords do not come in contact with the belt and the handwheel.

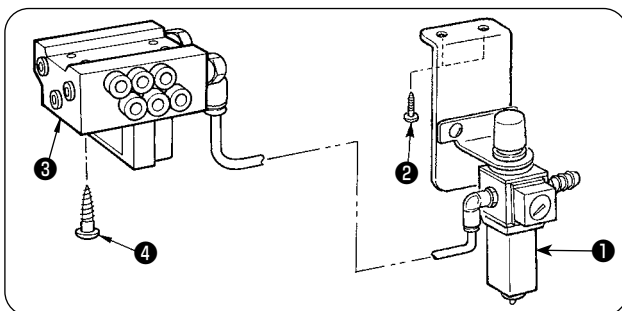
Disconnection of the cords will result when they come in contact with one another.

5. THE AIR DRIVE UNIT OF THE SEWING MACHINE EQUIPPED WITH AUTOMATIC REVERSE FEED DEVICE AND AUTO-LIFTER



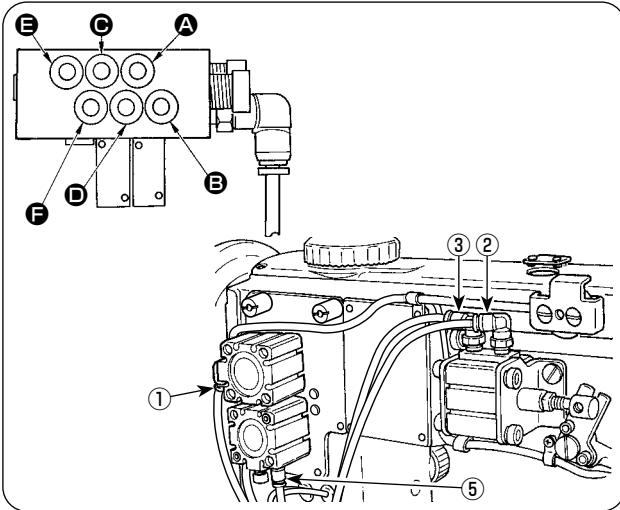
WARNING :

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) Attaching the air control unit

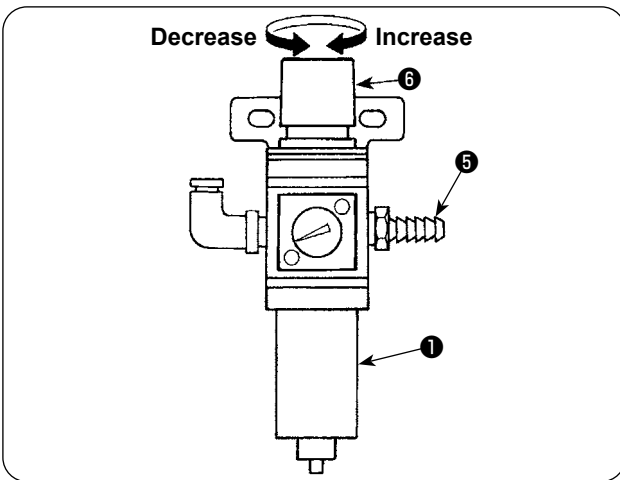
- 1) Attach regulator (asm.) ① to the underside of the table with wood screws ② supplied with the regulator.
- 2) Attach solenoid valve (asm.) ③ to the four places on the underside of the table with wood screws ④ supplied with the unit.



- 3) Adjust the number of the air hose to the number of the air cylinder joint and insert the hose to the joint.

	Solenoid valve	Cylinder
BT	A	①
AK	C	②
AK	D	③
Condensed stitches	E	⑤
—	E	—
—	F	—

(Caution) Do not run the sewing machine while the presser foot is held raised with the auto-lifter. Needle bar comes in contact with presser foot. As a result, they may be damaged.



- (2) Adjusting the air pressure

- 1) After the completion of entire air piping, supply air through joint ⑤ of regulator (asm.) ①.
- 2) The operating air pressure is 0.45 to 0.5 MPa. Adjust the air pressure using air pressure regulating knob ⑥ of the regulator (asm.) ①.

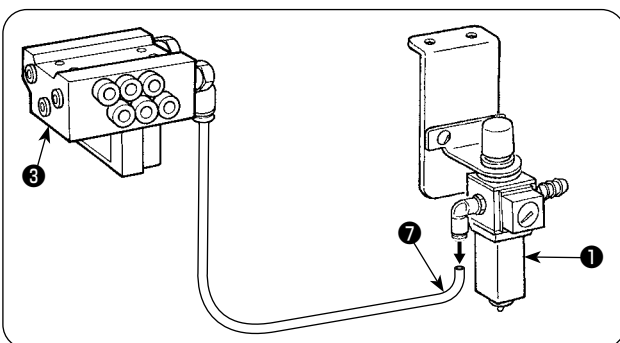
(Caution) If the air pressure is inadequate, delay in operation of the respective air cylinders can be caused, resulting in material slippage or faulty thread trimming during automatic reverse feed stitching.

- (3) Install the needle thread clamp device (option) by following the steps of procedure described below.

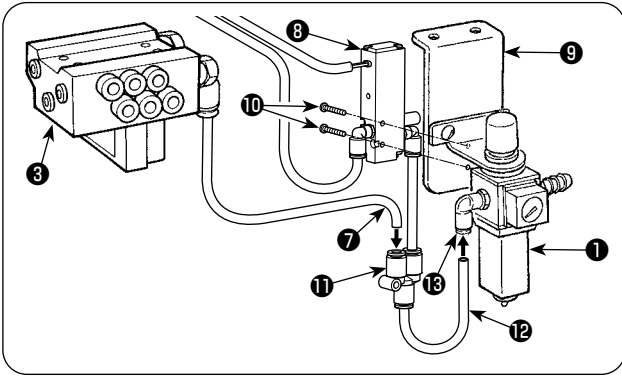
Start installation procedure after stopping the air supply to the regulator.

After the completion of installation procedure, make sure that you have completed entire air piping before supplying air to the regulator again.

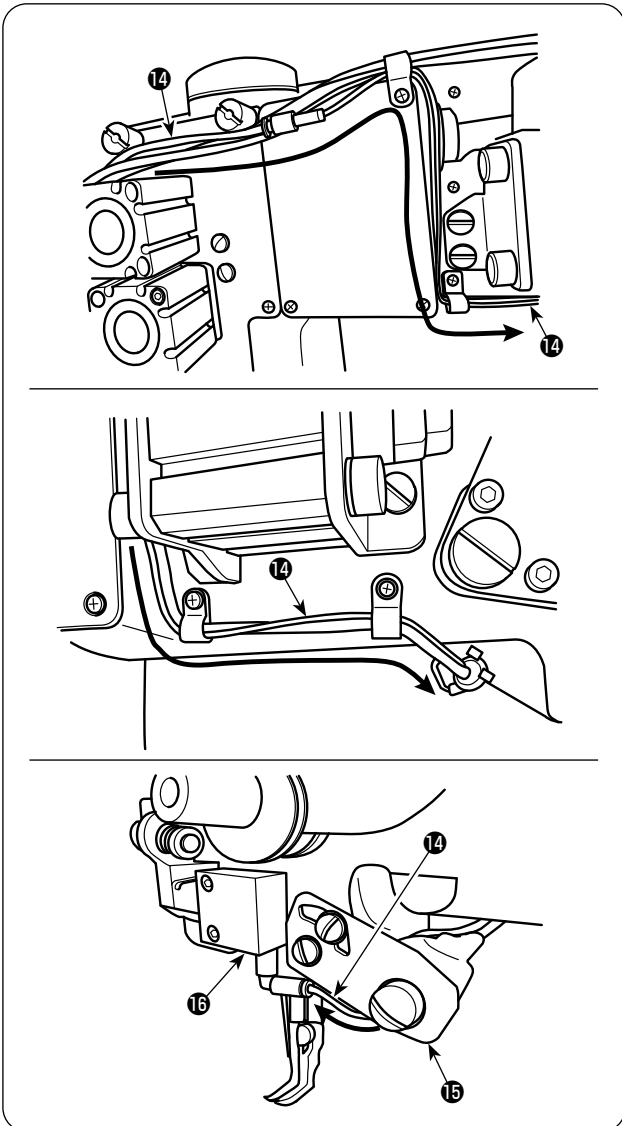
*** In order to operate the needle thread clamp device, it is required to change the function settings on the SC-922 control box. (Refer to "30. NEEDLE THREAD CLAMP DEVICE (OPTION)" p. 22 and the Instruction Manual for the SC-922 for how to change the setting.)**



- 1) Air hose ⑦ connects regulator (asm.) ① and solenoid valve (asm.) ③ which are installed on the undersurface of the sewing machine table. Now, detach air hose ⑦ from the regulator side.

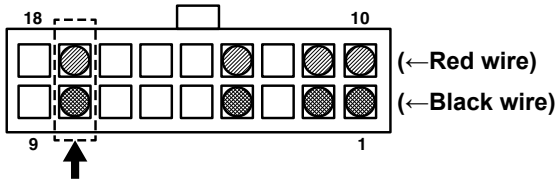


- 2) Install solenoid valve (asm.) **8** for the needle thread clamp device on the back side of regulator mounting plate **9** with screws **10** (two pieces) supplied with the unit.
- 3) Insert air hose **7** which you have detached in step 1) into joint **11** of solenoid valve (asm.) **8**.
- 4) Insert air hose **12** which is connected to joint **11** to joint **13** of regulator (asm.) **1**.



- 5) Install air hose **14** for needle thread clamping along the piping of touch-back switch **15** and connect to needle thread clamp device **16**.

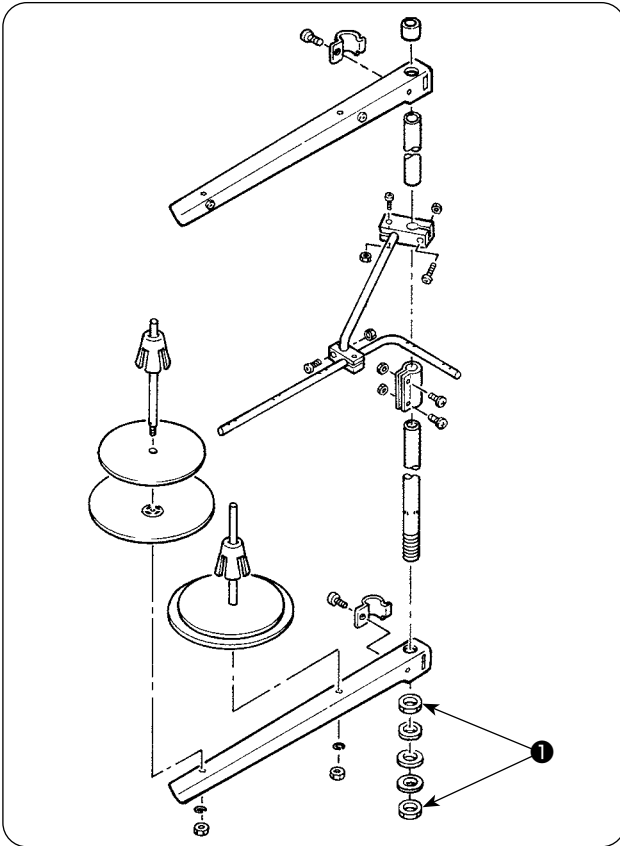
Insertion position of 18-pin connector



* The above diagram represents the model without DL device. For the DL device equipped model, a cord is connected to No.3 and No.12.

- 6) Insert two wires (red and black wires of solenoid valve (asm.) ⑧ into the 18-pin connector of solenoid valve (asm.) ③ . (Insert the black wire into No. 8 and red wire into No. 17.)

6. INSTALLING THE THREAD STAND



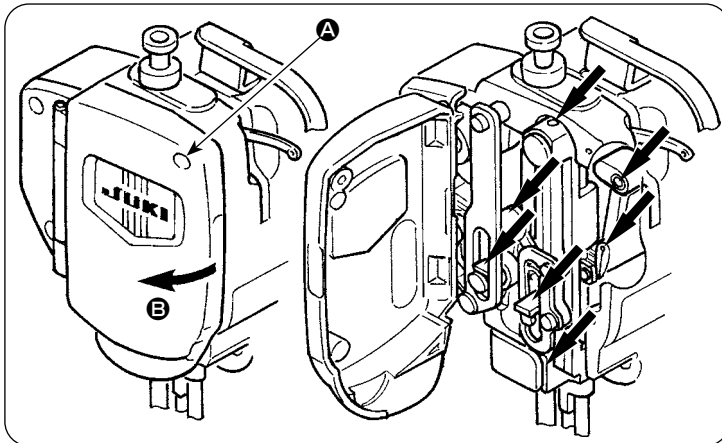
Assemble the thread stand, set it up on the machine table using the installation hole in the table and tighten nut ① gently.

7. LUBRICATION



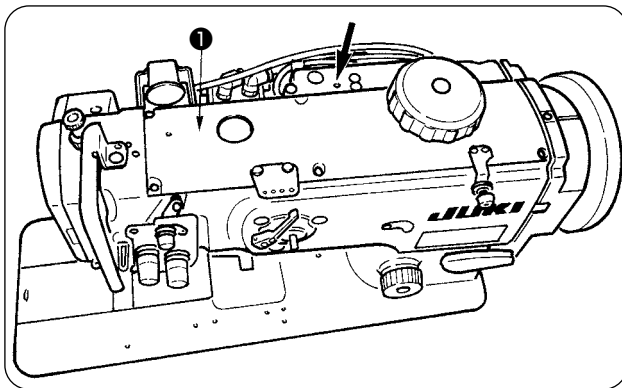
WARNING :

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(1) Lubricating procedure for the face plate portion

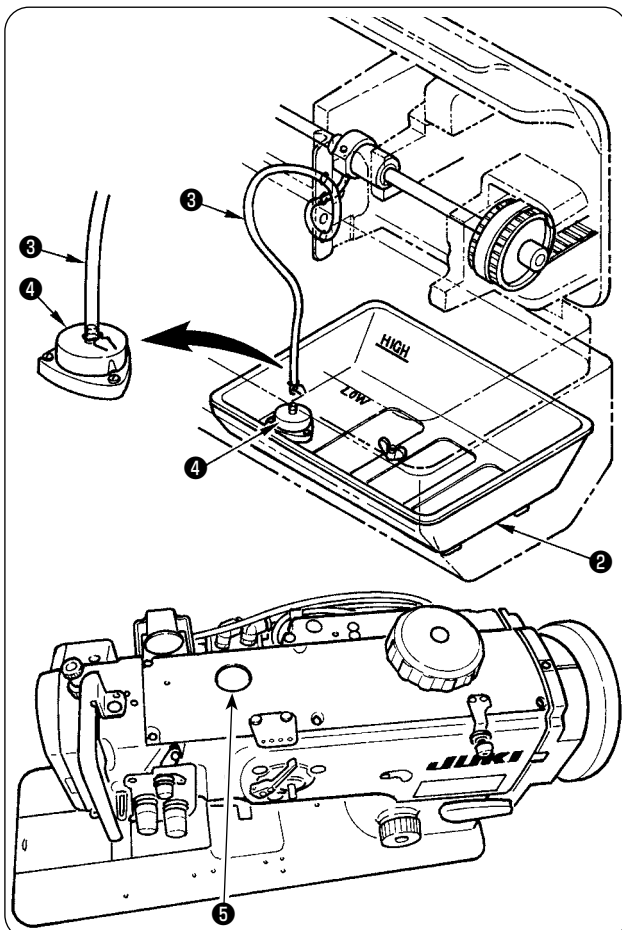
- 1) Loosen and remove screw **A**.
- 2) Open the face plate in the direction of arrow mark **B**.
- 3) Apply an adequate amount of oil once a day to the points marked with the arrow marks.
- 4) Close the face plate.
- 5) Tighten and attach screw **A**.



(2) For other parts

- 1) Apply an adequate amount of oil once a day to the points marked with the arrow marks.
- 2) Before you operate your machine for the first time, or after an extended period of disuse, apply an adequate amount of oil to the points marked with the arrow marks and to each felt and oil wick after removing top cover **1**.

(Caution) If oil is filled more than required, oil leakage may result.



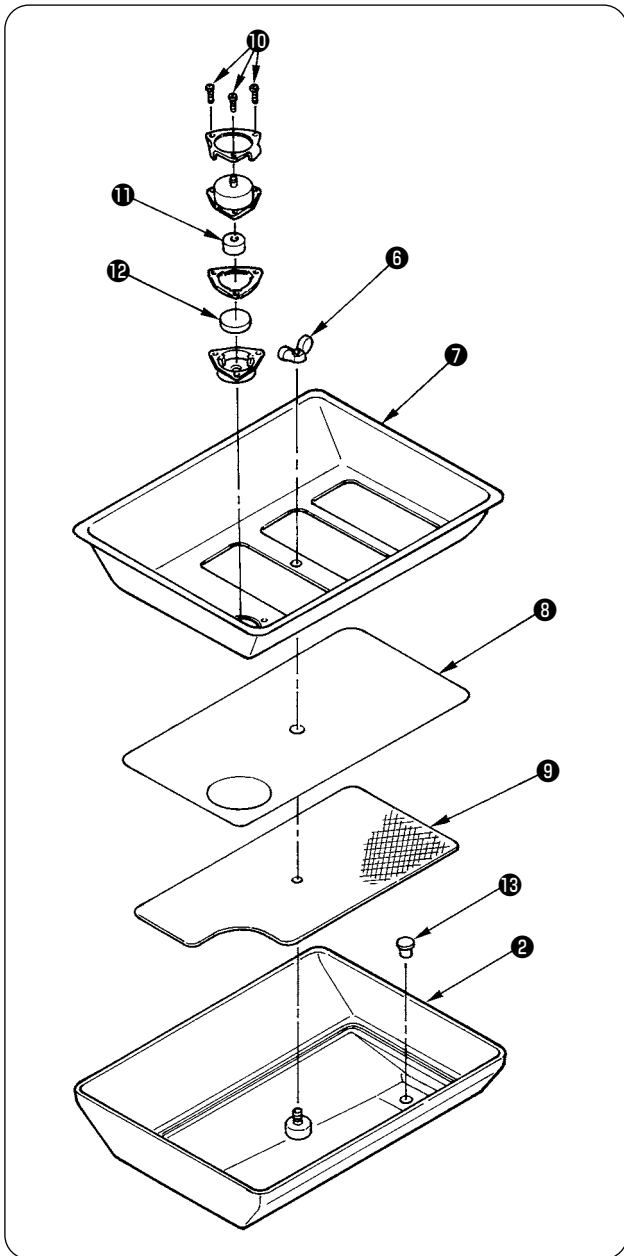
(3) Insert the projection located at the bottom of oil tank **2** into the waste oil hole of the oil pan.

(4) Insert oil pipe **3** into filter **4** of the oil tank and fix the pipe with a clip.

(5) Pour the JUKI New Defrix Oil No. 2 into the oil tank **2** until HIGH level is reached.

(6) Add the same lubricating oil up to HIGH level as soon as the oil level has come down to LOW level.

(7) After the lubrication, you can see from oil sight window **5** that the oil rises up when the operation is normal. (However, the machine should run at 1,500 sti/min or more.)



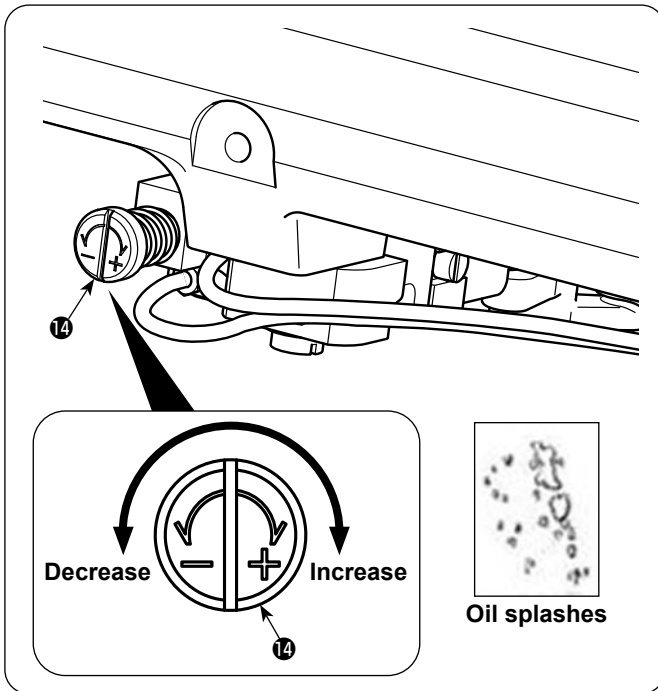
(8) Cleaning the oil tank

- 1) Remove the oil pipe ③ from oil tank ② .
- 2) Remove butterfly nut ⑥ and take out cover (upper) ⑦ , filter ⑧ and cover (lower) ⑨ to clean the oil tank ② .
- 3) Remove filter case setscrews ⑩ , and clean filter element ⑪ located on the inside of the filter case and magnet ⑫ .

(Caution) Approximately once a month, clean the oil tank ② and the filter case.

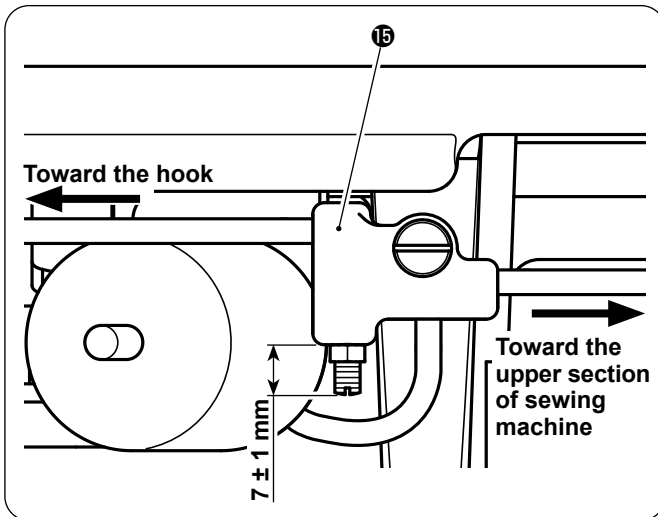
If the filter ⑧ is clogged with soil, lubrication fails resulting in trouble.

- 4) When replacing the oil in the oil tank, remove stopper ⑬ in the oil tank ② . Then, the oil can be drained from the installing port of the waste oil container in the oil pan.
After draining, securely set stopper ⑬ to the oil tank ② .
When taking out the oil tank ② , take it out after draining the oil.
- 5) Fix the filter case in which filter element ⑪ and magnet ⑫ are placed to cover (upper) ⑦ with setscrews ⑩ .
- 6) Place cover (lower) ⑨ , filter ⑧ and cover (upper) ⑦ in order in the oil tank ② , and fix them with butterfly nut ⑥ .
- 7) Insert the oil pipe ③ into the oil tank ② and fix it with a clip.
Fill the oil tank with JUKI New Defrix Oil No. 2 up to HIGH level.



(9) Adjusting the amount of oil in the hook

- 1) Turn the oil amount adjustment screw ⑭ to adjust the amount of oil in the hook. Turning the screw clockwise will decrease the amount of oil in the hook or counterclockwise will increase it.
- 2) 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.



(10) Height of the screw of oil quantity distributor

- 1) The height of the screw of oil quantity distributor ⑮ has been factory-adjusted at the time of assembly. Do not change it.

(Reference)

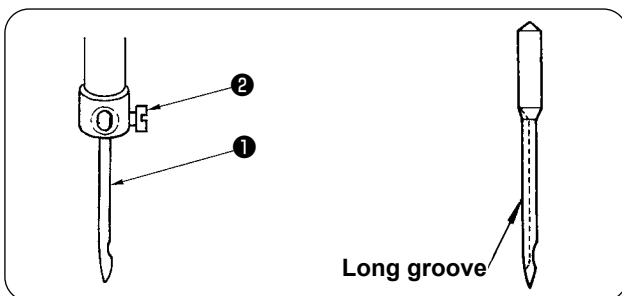
The distance between the lower edge of oil quantity distributor to the screw tip: 7 ± 1 mm

8. 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.



- 1) Turn the handwheel to bring the needle bar to the highest position of its stroke.
- 2) Loosen needle clamp screw ②, and hold needle ① so that the long groove in the needle is facing exactly to the left.
- 3) Push needle ① deep into the needle clamp hole until it will go no further.
- 4) Tighten needle clamp screw ② firmly.

(Caution) When replacing the needle ①, check the clearance provided between the needle ① and the blade point of hook. (Refer to "[19. NEEDLE-TO-HOOK RELATION](#)" p. 16 and "[20. ADJUSTING THE HOOK NEEDLE GUARD](#)" p. 17.)

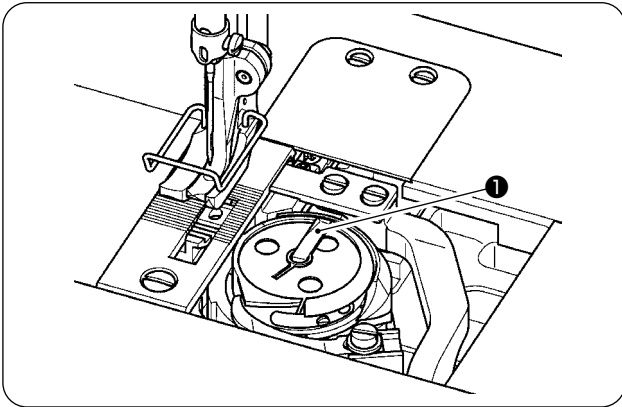
If there is no clearance, the needle ① and the hook will be damaged.

9. 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.



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

(Caution) 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.

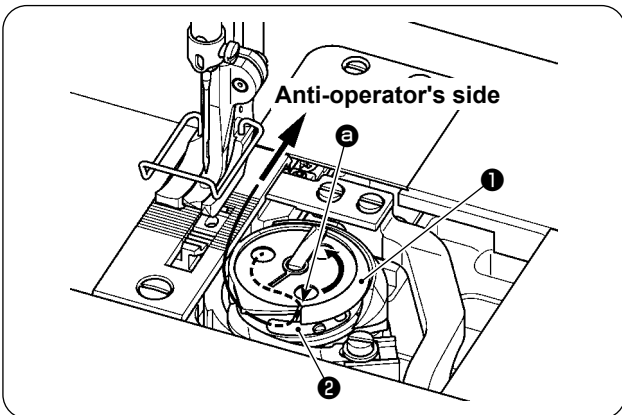
2. Be careful so as not to get hurt with the top end of the counter knife.

10. THREADING THE HOOK



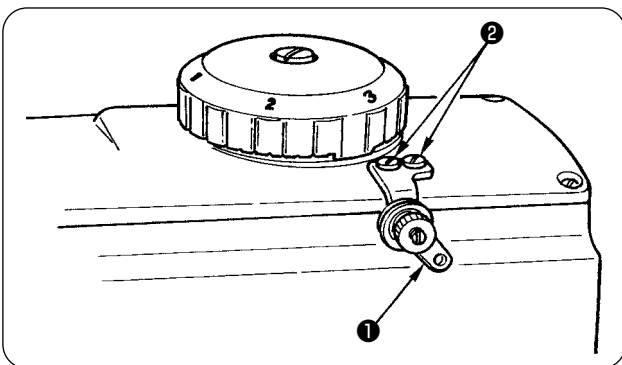
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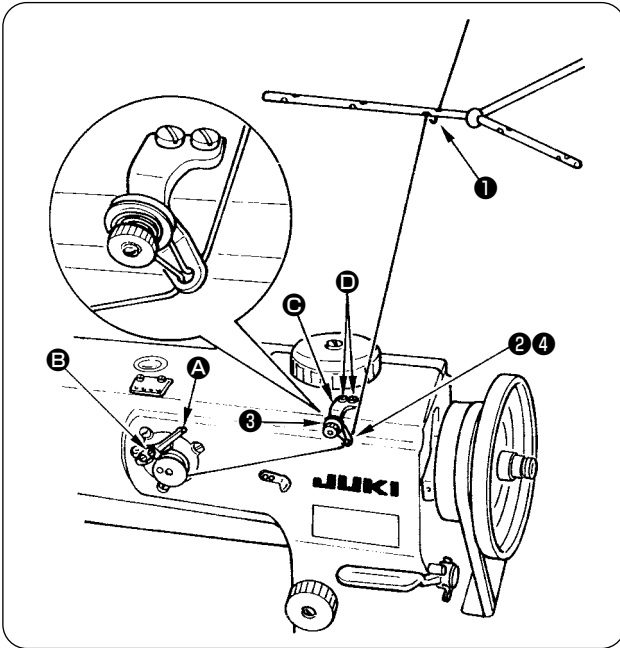
- 1) Bobbin thread can be routed under tension spring ② by passing the bobbin thread along the outer periphery of inner hook ① through threading groove a on inner hook ① , toward the anti-operator's side.
- 2) Make sure that the bobbin revolves in the direction of the arrow when you draw the bobbin thread.

11. INSTALLING THE BOBBIN WINDER THREAD GUIDE



- 1) Attach bobbin winder thread guide ① to the top cover using screws ② .
- 2) Adjust the position of the thread guide referring to "12. WINDING A BOBBIN" p. 12.

12. WINDING A BOBBIN



- 1) Pass the thread in the order of ❶ through ❷ . Then, wind it several turns round the bobbin.
- 2) Tilt bobbin winder lever ❸.
- 3) Loosen setscrew ❹ and adjust the position of the adjusting plate to wind a bobbin about 80 % of its capacity.
- 4) If the bobbin is wound unevenly, correct it by moving bobbin winder thread guide ❺ back or forth. Then, tighten setscrews ❻.
- 5) When the bobbin is filled up, the bobbin winder lever automatically releases the bobbin and the bobbin winder stops running.

(Caution) Thread guide pin (part of the shape as shown in the figure) in the accessories is not used with this sewing machine.

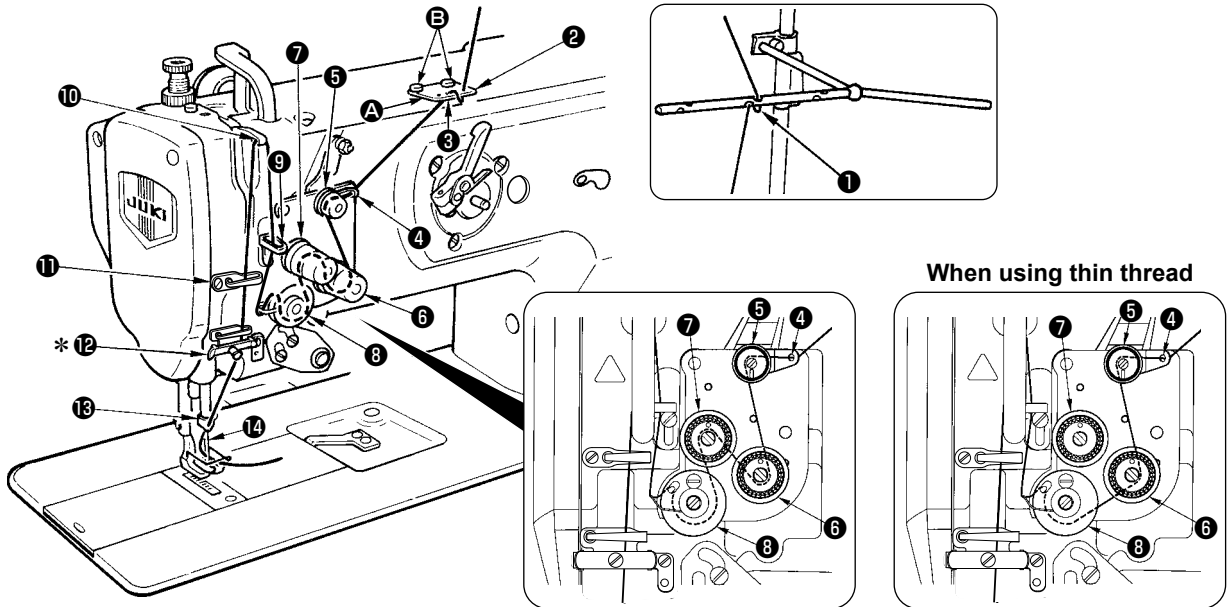


13. THREADING THE MACHINE HEAD

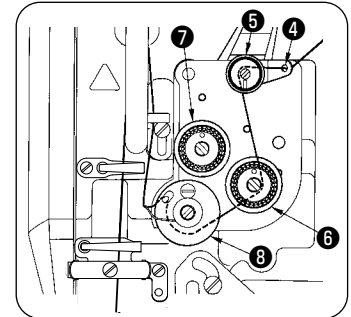
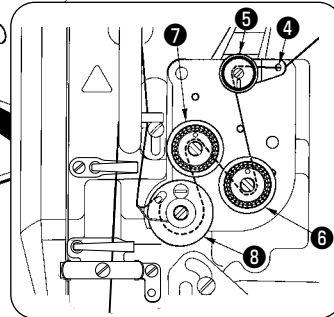


WARNING :

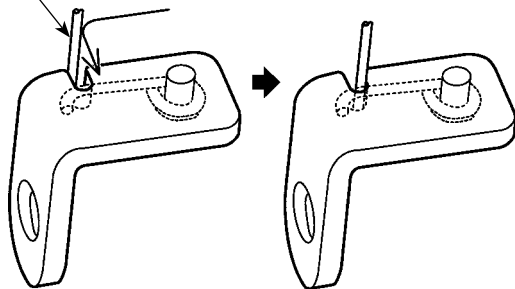
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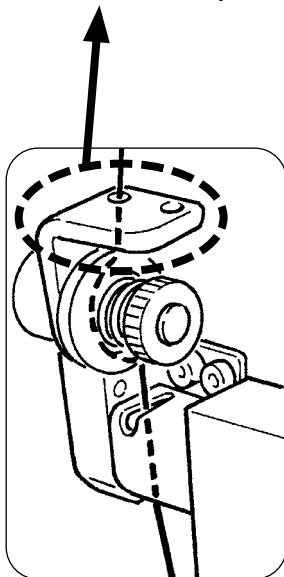
When using thin thread



Needle thread



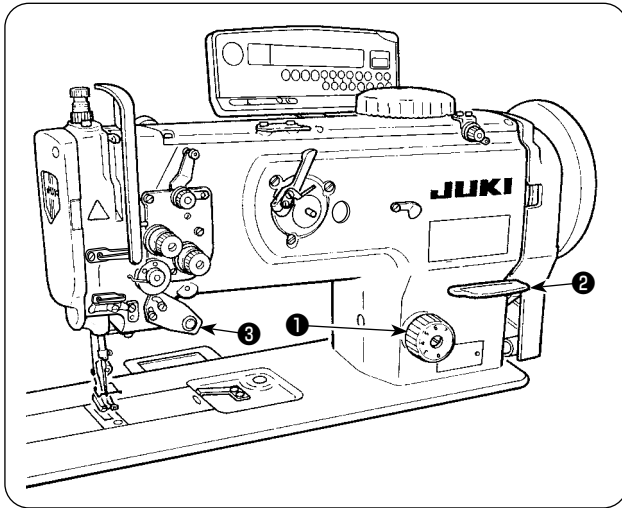
Threading method :
Draw the thread to the operator's side.



1. Attach arm thread guide **A** to the top cover with set-screw **B**.
 2. Thread the machine head following the order of **1** through **14** as shown in the illustration given above.
- * Pass thread through the right side of thread guide **12**. Also, thread guide should be threaded differently in the case of installing the needle thread clamp device (option). Pass the needle thread through thread guide **12** as illustrated in the figure on the left.

(Caution) When using thin needle thread (when needle thread is passed through both of the thread tension disk No. 2, necessary tension cannot be applied and the disks play), do not pass the thread through **7** and pass it in the order of **6** to **8**.

14. ADJUSTING THE STITCH LENGTH



Turn stitch dial ❶ counterclockwise (clockwise) so that the number corresponding to the desired stitch length is brought to the top until the marking spot is reached.

(1) Reverse feed stitching

- 1) Press down reverse feed control lever ❷ .
- 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 ❸ .
- 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) Automatic reverse feed stitching

Provided that a JUKI motor and control box, it is possible to automatically carry out reverse feed stitching respectively at the beginning and end of sewing.

Refer to "How to operate sewing patterns" in the Instruction Manual for the JUKI motor and control box for details.

(4) Condensation stitching function at the beginning of sewing

Conditions under which the condensation stitching function for the beginning of sewing is enabled/disabled are specified.

Unraveling and skipping of stitches can be prevented by carrying out condensation stitching at the beginning of sewing.

Function setting No. 196

1 9 6 2

Condensation stitching function at the beginning of sewing

0 : The function is disabled

1 : The function is enabled

2 : The function is enabled when the reverse feed stitching at the beginning of sewing is disabled. The function is disabled when the reverse feed stitching at the beginning of sewing is enabled. (Initial value)

Function setting No. 197

1 9 7 2

The number of condensation stitches at the beginning of sewing

Setting range : 0 to 19 stitches (Initial value : 2 stitches)

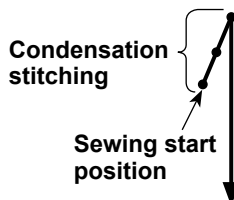
In the case the reverse feed stitching for the beginning of sewing is not carried out (Example 1)	When the number of reverse feed stitches is set at 0 (zero), the condensation stitching function for the beginning of sewing does not work at the beginning of sewing. When it is set at 1 or 2, the condensation stitching function for the beginning of sewing works.
In the case the reverse feed stitching for the beginning of sewing is carried out (Example 2)	When the number of reverse feed stitches is set at 0 (zero) or 2, the condensation stitching function does not work at the beginning of sewing. When it is set at 1, the condensation stitching function for the beginning of sewing works.

(Example 1) In the case the reverse feed stitching function for the beginning of sewing is disabled :

(Set value: 0)

(Set value: 1 or 2)

Sewing start position

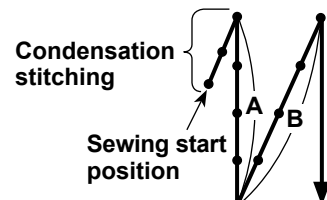
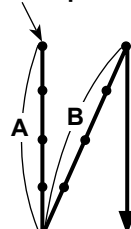


(Example 2) In the case the reverse feed stitching function for the beginning of sewing is enabled :

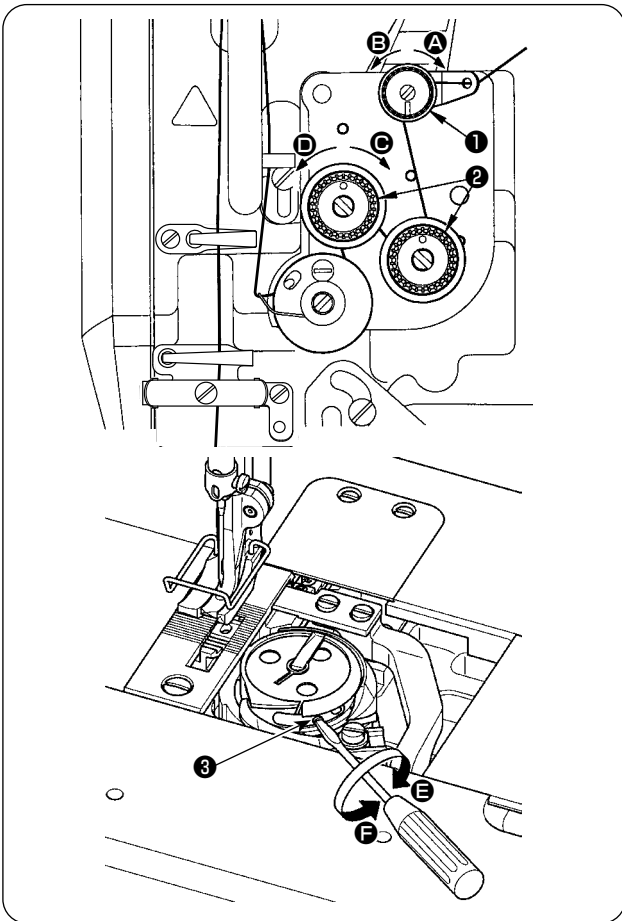
(Set value: 0 or 2)

(Set value: 1)

Sewing start position



15. THREAD TENSION



- (1) Adjusting the needle thread tension
- 1) Turn thread tension nut No. 1 **1** 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.
 - 2) Turn thread tension nut No. 2 **2** clockwise (**C**) to increase the needle thread tension, or counterclockwise (**D**) to decrease it.

(Caution) Apply the same tension to both of the thread tension nut No. 2 **2** .

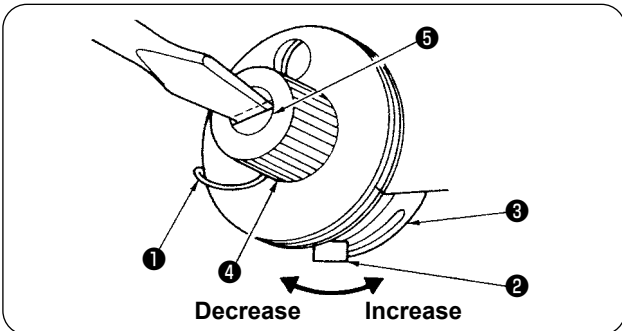


WARNING :

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.

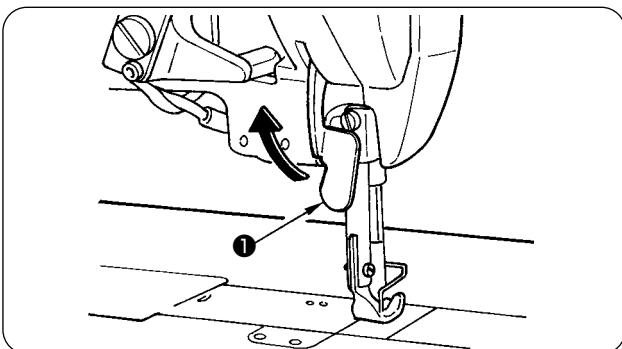
- (2) Adjusting the bobbin thread tension
- 1) Turn tension adjustment screw **3** clockwise (**E**) to increase the bobbin thread tension, or counterclockwise (**F**) to decrease it.

16. THREAD TAKE-UP SPRING



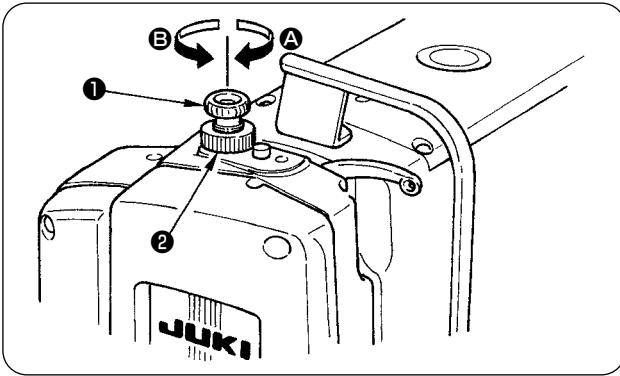
- (1) When you want to change the stroke of the spring :
- 1) Loosen screw **2** in the stopper, and move stopper **3** to the right or left to change the stroke of thread take-up spring **1** .
 - 2) Move the stopper **3** to the right to increase the stroke of the thread take-up spring, or the left to decrease it.
- (2) When you want to change the tension of the spring :
- 1) Loosen nut **4** , and turn spring stud **5** counterclockwise to increase the tension of the spring, or clockwise to decrease it.

17. HAND LIFTER



- 1) When you want to keep the presser foot in the lifted position, lift hand lifter **1** in the direction of the arrow.
This makes the presser foot rise 9 mm and stay at that position.
- 2) To make the presser foot come down to its home position, lower the hand lifter **1** .

18. ADJUSTING THE PRESSURE OF THE PRESSER FOOT



Turn presser spring regulating dial ① clockwise (A) to increase the pressure of the presser foot, or counterclockwise (B) to decrease it.

After the adjustment, tighten nut ② .

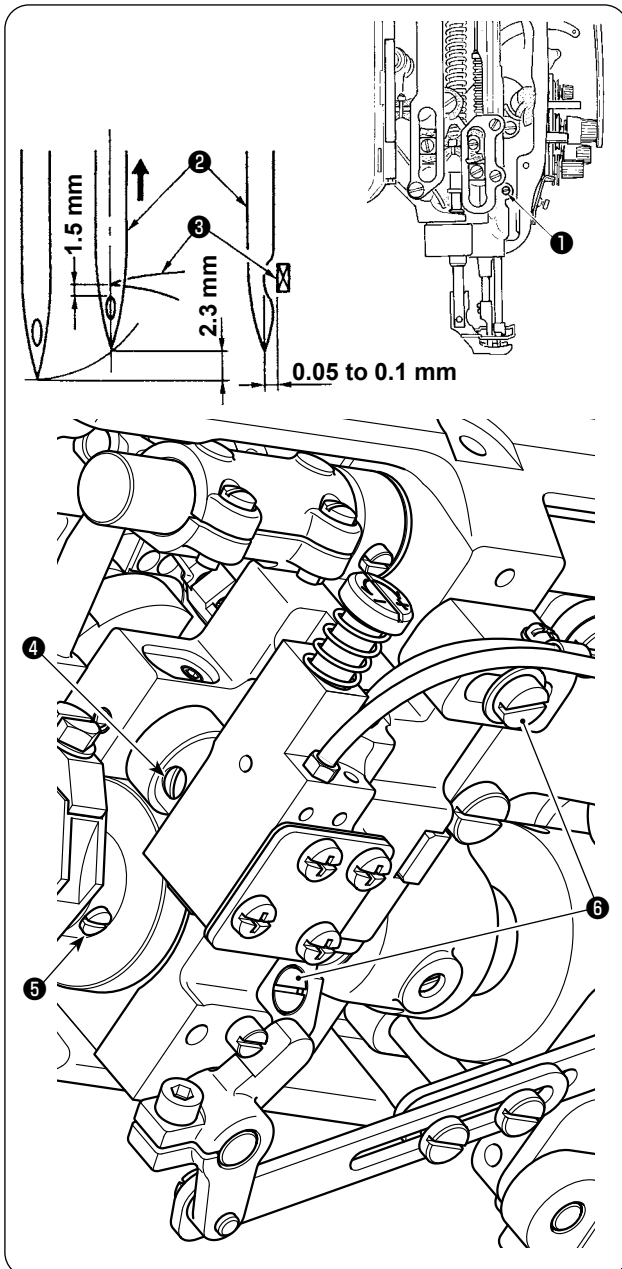
(Caution) Be sure to operate the sewing machine with the pressure of the presser foot minimized as long as the presser foot securely holds the material.

19. 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) Set the stitch dial to 0 [zero].

2) Turn the handwheel and loosen setscrew ① in the needle bar connection to adjust so that a clearance of 1.5 mm is provided between the top end of the needle eyelet of needle ② and blade point ③ of the hook when the needle bar is raised by 2.3 mm from the lowest position of its stroke. Then, tighten the screw again. (There is an engraved marker line on the needle bar as reference.)

3) Turn the handwheel to make the needle bar ascend by 2.3 mm from the lowest position of its stroke.

Tighten two setscrews ④ in the screw gear (small) so that blade point ③ of the hook is almost aligned with the center of needle ② . However, fit the setscrew No. 1 having a V-shaped top end of two setscrews ④ to the V-groove on the hook driving shaft and tighten it.

4) Loosen setscrews ⑥ in the hook driving shaft saddle and move the hook driving shaft saddle to the right or left until a clearance of 0.05 to 0.1 mm is provided between the blade point ③ of the hook and the needle ② at the position where blade point ③ of the hook is almost aligned with the center of needle ② . After the adjustment, tighten setscrews ⑥ .

5) Loosen two setscrews ⑤ in the screw gear (large) and move the screw gear (large) to the right or left until blade point ③ of the hook is aligned with the center of needle ② .

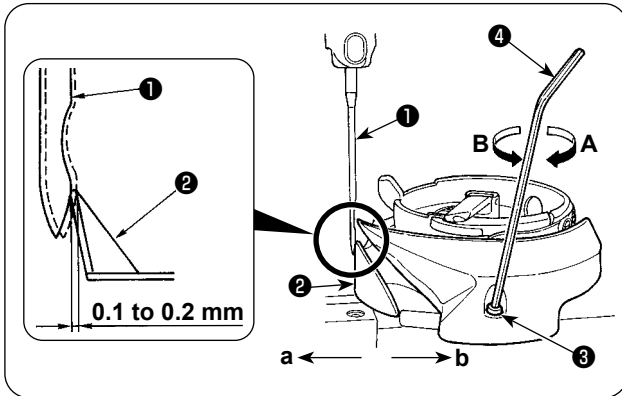
After the adjustment, tighten setscrews ⑤ . However, fit the setscrew No. 1 of two setscrews ⑤ to the flat section of the hook driving shaft and tighten it.

20. 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 ① by 0.1 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 needle guard adjusting screw ③ and adjust as follows :

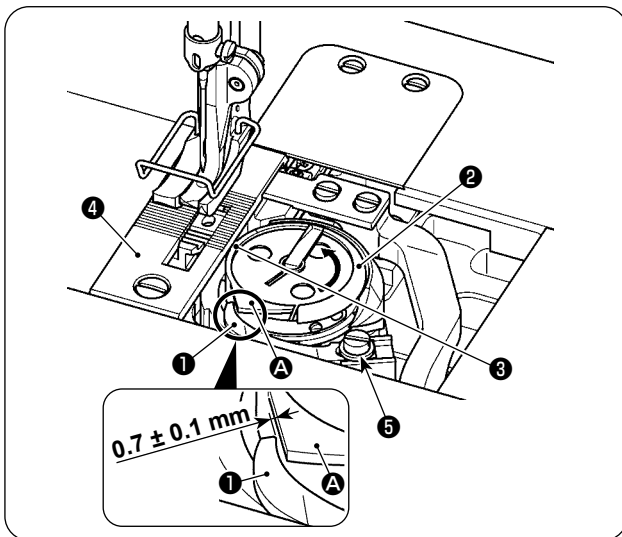
- 1) To bend the hook needle guard in direction **a**, turn the needle guard adjusting screw ③ in direction **A**.
- 2) To bend the hook needle guard in direction **b**, turn the needle guard adjusting screw ③ in direction **B**.

21. 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.



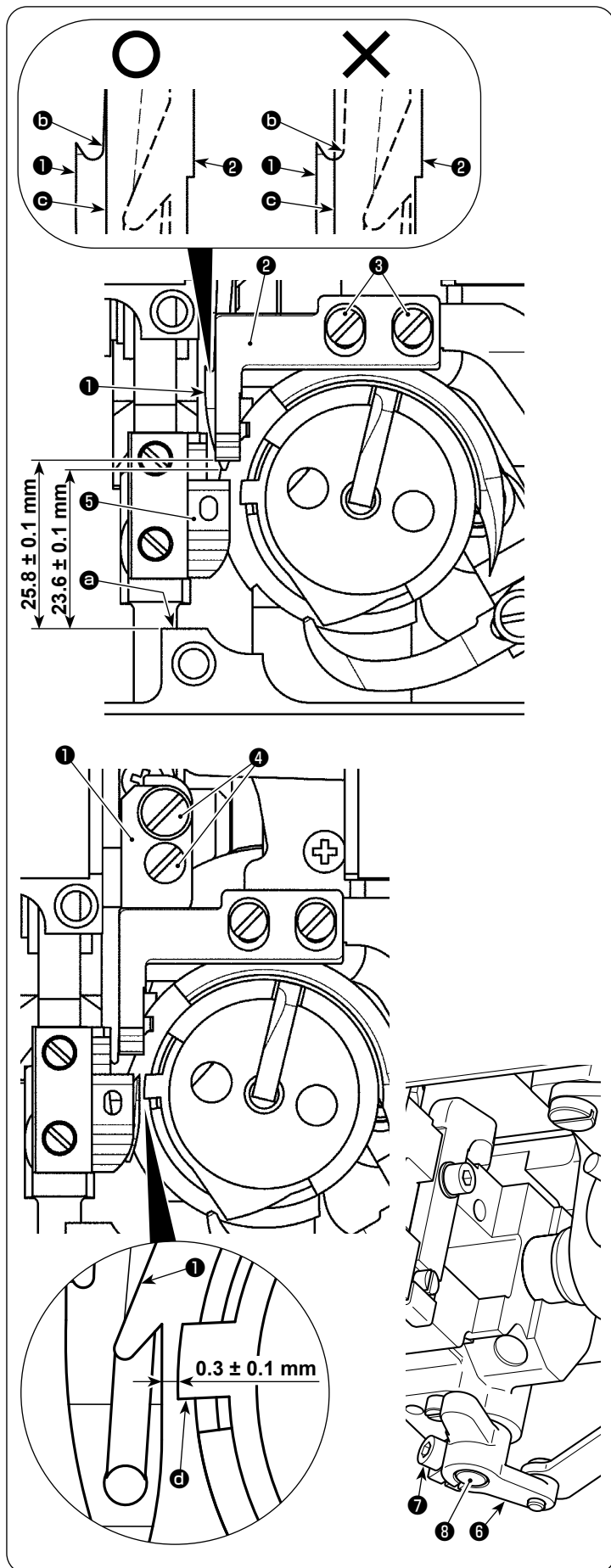
- 1) Turn the handwheel in its normal rotational direction to bring bobbin case opening lever ① to its back end position.
- 2) Turn the inner hook ② in the direction of the arrow until bobbin case stopper ③ rests in the groove (operator's side) in throat plate ④ .
- 3) Loosen screw ⑤ in the bobbin case opening lever and adjust so that a clearance of 0.7 ± 0.1 mm is provided between the bobbin case opening lever ① and protruding section **A** of the inner hook ② .

22. ADJUSTING THE POSITION OF COUNTER KNIFE AND 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) Bring moving knife ① to its initial position.
- 2) Loosen setscrews ③ and adjust the position of counter knife ② so that the following two items are satisfied.

- Longitudinal position

Adjust the distance from the tip of counter knife ② to end face ② of the throat plate mounting surface (near side) to 25.8 ± 0.1 mm.

- Lateral position

Adjust so that, when moving knife ① operates, hook section ⑤ of moving knife ① do not overlap left end face ③ of counter knife ② .

- 3) Loosen setscrews ④ and adjust the lateral position of moving knife ① so that a clearance of 0.3 ± 0.1 mm is provided between moving knife ① and bobbin case stopper ④, when moving knife ① is moved forward.

After the adjustment, tighten setscrews ④ of moving knife.

* To advance moving knife ① , loosen clamping screw ⑦ of moving knife driving arm ⑥ , or carefully turn the hand-wheel by hand to bring the needle bar upward until the needle tip is aligned with the top surface of feed dog.

- 4) Loosen clamping screw ⑦ of moving knife driving arm ⑥ and adjust the initial position of moving knife ① so that a distance from the tip of moving knife ① to the end face ② of throat plate mounting surface (near side) is 23.6 ± 0.1 mm. After the adjustment, tighten clamping screw ⑦ .

(Caution) When tightening clamping screw ⑦ , take care not to provide an axial play in moving knife driving arm ⑧ .

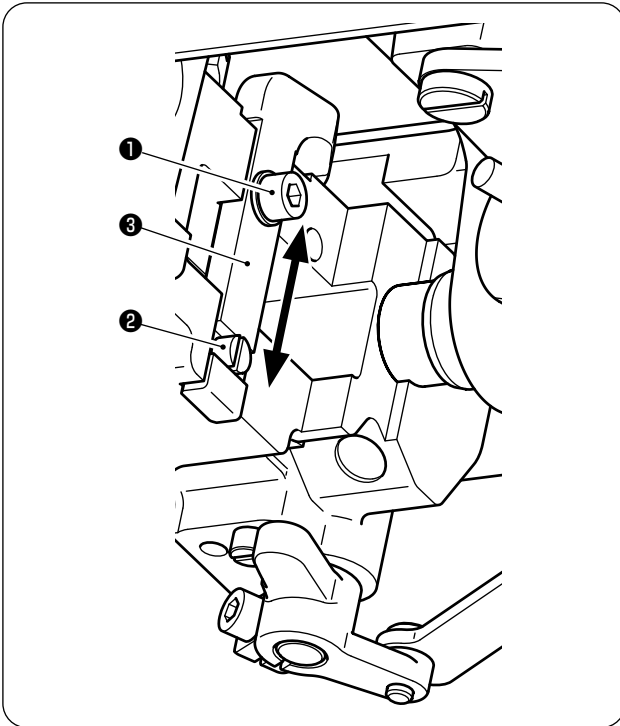
(Caution) It is possible to shift counter knife ② closer to the operator's side. Be aware, in such a case, however, counter knife ② can interfere with feed dog ⑤ depending on the stitch pitch.

23. ADJUSTING 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.



Loosen screw ①, and move the counter knife arm ③ up and down by turning the eccentric screw ② to adjust the knife pressure.

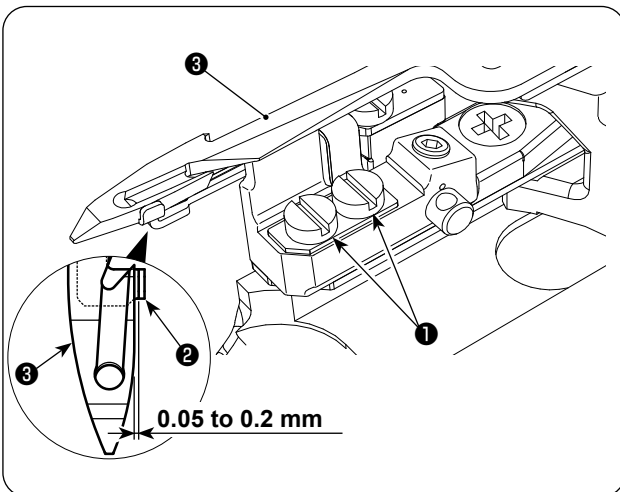
(Caution) Make the knife pressure as low as possible to such an extent that both needle and bobbin threads can be trimmed.

24. ADJUSTING THE POSITION OF BOBBIN THREAD CLAMP



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.



Loosen the two setscrews ① and adjust the gap between the protruding part of the clamp plate ② and the moving knife ③ so that the gap is 0.05 to 0.2 mm.

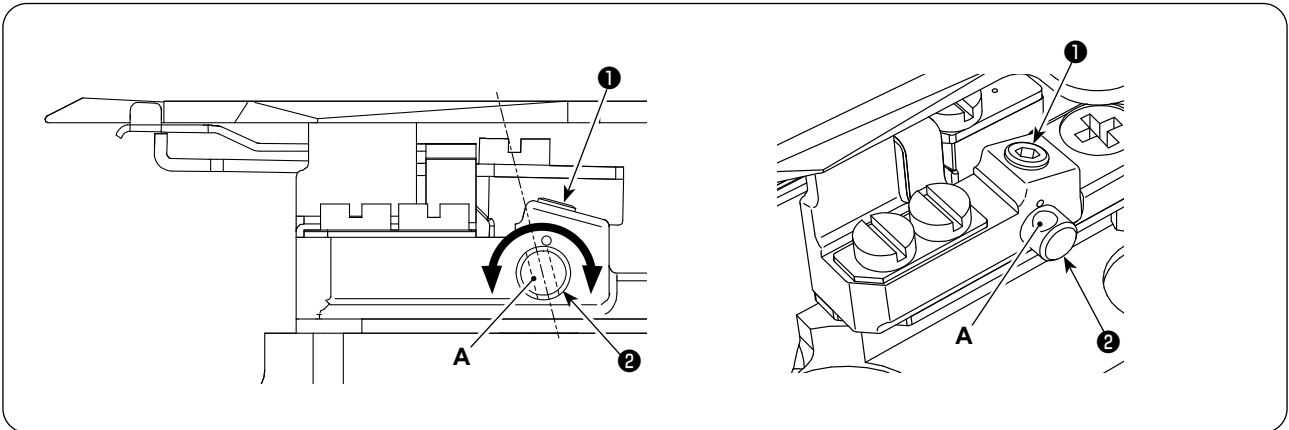
After the adjustment, tighten setscrews ①.

25. ADJUSTING THE CLAMP PRESSURE

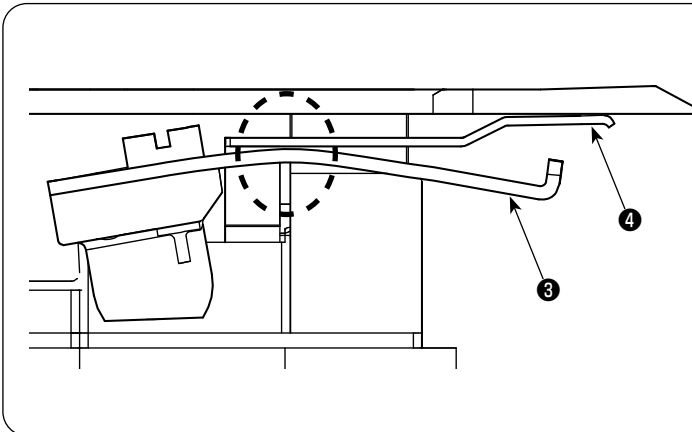


WARNING :

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.

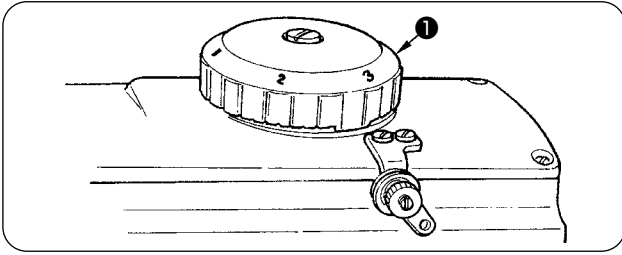


Loosen screw ① . Adjust the clamp pressure by turning the clamp arm ② in the direction of the arrow. Adjust so that the hole A of the clamp arm ② is tilted forward 5 to 10 degrees to the vertical.



(Caution) If the clamp pressure is increased too much, the clamp spring ③ will deform and the bobbin thread will not be clamped. Adjust so that the center of the clamp spring ③ does not touch the clamp plate ④ .

26. ADJUSTING THE LIFTING AMOUNT OF THE PRESSER FOOT AND THE WALKING FOOT



The lifting amount of the presser foot and the walking foot is adjusted using dial ❶. Turn the dial clockwise to increase the lifting amount or counterclockwise to decrease it.

27. SEWING SPEED TABLE

Amount of alternate vertical movement of the walking foot and presser foot	Stitch length : 7 mm or less
Less than 4.75 mm	2,000 sti/min
4.75 mm to less than 6.5 mm	1,800 sti/min

The maximum sewing speed has been specified in accordance with sewing conditions as shown in the left table.

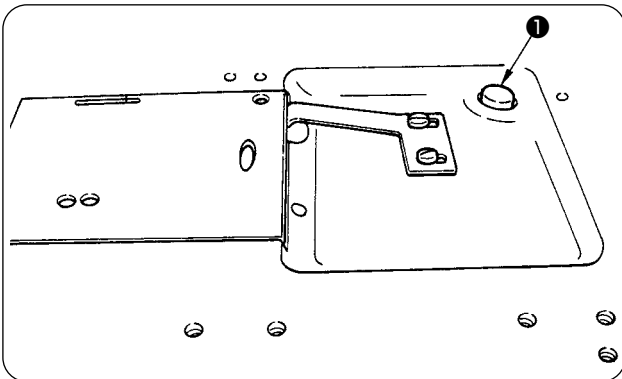
Set the maximum sewing speed appropriately in accordance with the sewing conditions given taking care not to exceed the corresponding specified value.

28. 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.

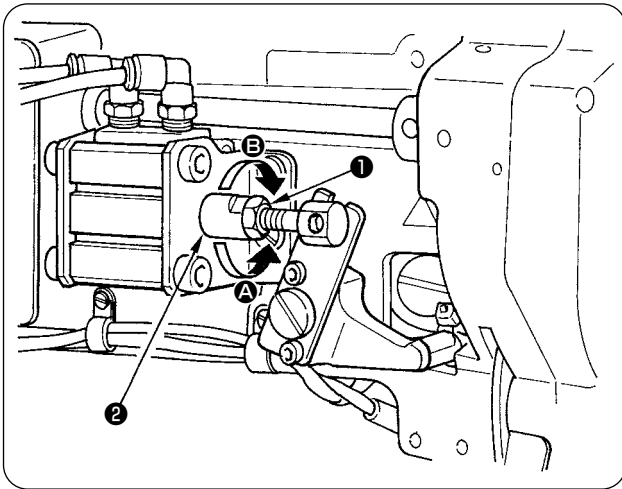
(Caution) Turn the handwheel by hand, and confirm that push button ❶ has returned.

29. ADJUSTING THE AUTOMATIC PRESSER FOOT LIFTER



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 adjustment nut ❶, turn cylinder rod ❷ and adjust so that the lifting amount of the presser foot is 16 mm when the cylinder is fully compressed.
Turn the rod in the direction of ❸ to increase the lifting amount, or turn it in the direction of ❹ to decrease the lifting amount.
- 2) After the adjustment, tighten adjustment nut ❶.

30. NEEDLE THREAD CLAMP DEVICE (OPTION)

(1) Setting the functions of SC-922 control box

For how to set the functions of SC-922 control box, refer to the Instruction Manual or Service Manual of SC-922.

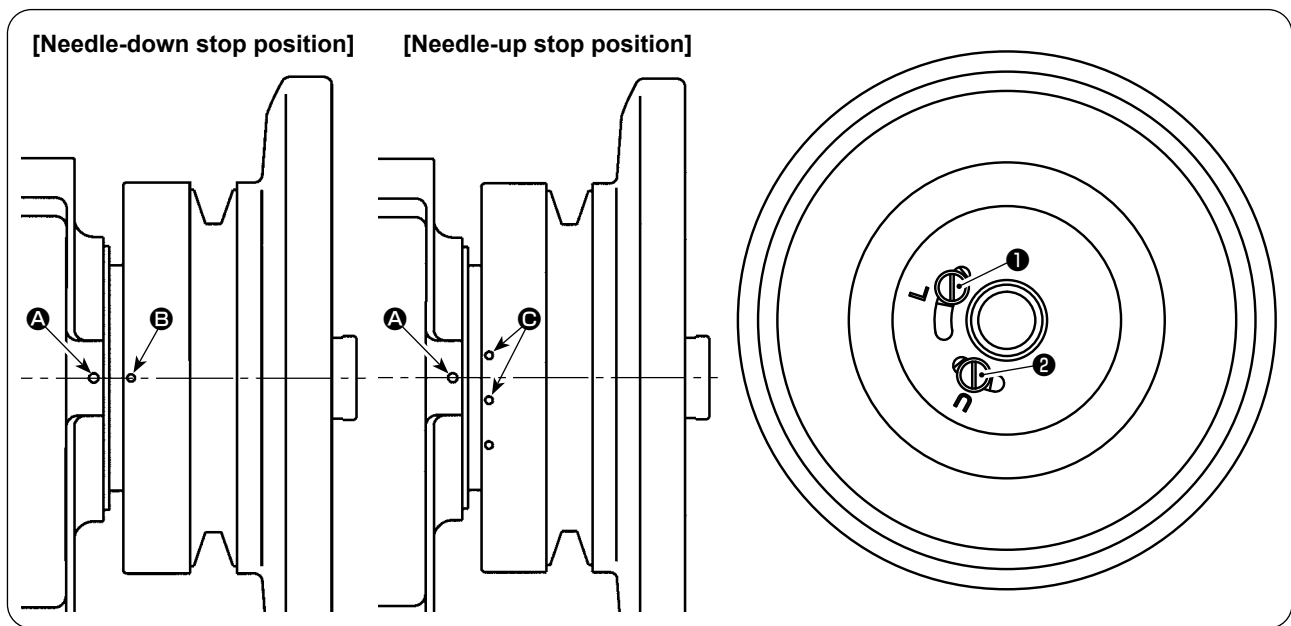
- 1) Make sure that "1" (stitch) is set for the soft start function (Function No. 1).
- 2) Make sure that "170" (sti/min) is set for the number of soft start (Function No. 37).
- 3) Set "2" (compulsory valid) for the upper thread clamp function (Function No. 156).

* The aforementioned settings 1) and 2) are required for operating the needle thread clamp device normally.

31. CAUTIONS WITH REGARD TO THE SEWING OPERATION

- 1) Be sure to perform the sewing operation after confirming that the needle bar position (needle UP stop position/needle DOWN stop position) when the sewing machine stops is properly positioned. (For the setting of the designation of needle bar position, refer to **"32. ADJUSTING AND CHECKING THE STOP POSITION OF SEWING MACHINE"** p. 23.)
- 2) Perform a trial sewing and confirm the finished state of sewing since the state at the start of sewing is different from that at the end of sewing in accordance with the sewn product (material and thread).
- 3) Be sure to perform the thread trimming motion on the cloth.

32. ADJUSTING AND CHECKING THE STOP POSITION OF SEWING MACHINE



After setting up the machine head on the table, set up the stop position of the machine.

*** If the stop position is not set, it may cause malfunction of the thread trimming.**

[Needle-down stop position]

- 1) Set "0" for the SC-922 function setting No. 10.
- 2) Step the pedal lightly to idle the machine for a few stitches, and then stop. (At this time, do not thread the needle, keep the presser down, and use no sewing object.)
- 3) Check the position of the handwheel (engraved marker position).
Check that the "arm engraved point **A**" of the arm side and the "yellow engraved point **B**" of the handwheel are matched.
- 4) If the "yellow engraved point **B**" does not match, loosen the screw **1** on the "L" marker side of the handwheel, and adjust the position within the long hole range.
- 5) After adjustment, tighten the screw **1**.
- 6) Repeat step 2) and 3).

[Needle-up stop position]

- 1) Set "1" for the SC-922 function setting No. 10.
- 2) Step the pedal to idle the machine for a few stitches, and then stop. (At this time, do not thread the needle, keep the presser down, and use no sewing object.)
- 3) Check the engraved marker position of the handwheel.
Check that the "arm engraved point **A**" of the arm side and the "white engraved point **C** and the center of the white engraved point **C**" of the handwheel are matched.
- 4) If the "white engraved point **C** and the center of the white engraved point **C**" does not match, loosen the screw **2** on the "U" marker side of the handwheel, and adjust the position within the long hole range.
- 5) After adjustment, tighten the screw **2**.
- 6) Repeat step 2) and 3).
- 7) Set "0" for the SC-922 function setting No. 10. (Restore.)
- 8) Set "0" for the SC-922 function setting No. 56.
- 9) Step the pedal to idle the machine for a few stitches, and then stop.
- 10) Reversely tread on the pedal to trim the thread.
- 11) Check the position of the handwheel (engraved marker point) after the thread trimming.
Check that the "arm engraved point **A**" of the arm side and the "white engraved point **C** and the center of the white engraved point **C**" of the handwheel are matched.
- 12) If the "white engraved point **C** and the center of the white engraved point **C**" does not match, loosen the screw **2** on the "U" marker side of the handwheel, and adjust the position within the long hole range.
- 13) After adjustment, tighten the screw **2**. Repeat step 9) to 12) and check the stop position.
- 14) After adjusting the stop position, set "1" for SC-922 function No. 56. (Restore.)

*** Steps of procedure 8) through 14) represents the checking procedure which helps reduce variation in the stop position.**

*** In the case of LU-1520NCS-7, the signals related to the thread trimming are detected with reference to the upper position, therefore, if the upper stop position (white engraved point **C** and the center of the white engraved point **C**) are off, it may cause malfunction of the thread trimming.**

33. 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>	<ul style="list-style-type: none"> ◦ 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. ◦ Decrease the needle thread tension. ◦ Decrease the clearance provided between the bobbin case opening lever and the bobbin. ◦ Refer to "21. ADJUSTING THE BOBBIN CASE OPENING LEVER" p. 17. ◦ Refer to "19. NEEDLE-TO-HOOK RELATION" p. 16. ◦ Adjust the amount of oil in the hook properly. ◦ Refer to "7. LUBRICATION" p. 8. ◦ Increase the needle thread tension. ◦ Decrease the tension of the spring and increase the stroke of the spring. ◦ Refer to "19. NEEDLE-TO-HOOK RELATION" p. 16.
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>	<ul style="list-style-type: none"> ◦ Refer to "19. NEEDLE-TO-HOOK RELATION" p. 16. ◦ Tighten the presser spring regulator. ◦ Refer to "19. NEEDLE-TO-HOOK RELATION" p. 16. ◦ Refer to "20. ADJUSTING THE HOOK NEEDLE GUARD" p. 17. ◦ Replace the needle with one which is thicker than the current needle by one count.
3. Stitch skipping at the start of sewing	<p>① Bobbin thread is not clamped after thread trimming.</p> <p>② Sewing speed is too fast and needle thread cannot catch bobbin thread.</p> <p>③ Bobbin thread tension is too low.</p> <p>④ During the previous sewing, thread trimming was carried out at a position which is located outside the material edge.</p>	<ul style="list-style-type: none"> ◦ Check again the installing position of clamp spring and clamping pressure. ◦ Increase the number of stitches of soft start at the setting of motor. (Refer to the Instruction Manual for the SC-922 for how to change the setting.) ◦ Increase the bobbin thread tension. ◦ Carry out thread trimming on the material. ◦ Change the function setting No. 158 to "1" to change the thread trimming method to the 1-stitch condensation thread trimming (*1). (Refer to the Instruction Manual for the SC-922 for how to change the setting.)

*1 "1-stitch condensation thread trimming" means the thread trimming operation during which a condensation stitch is sewn before carrying out thread trimming.

Troubles	Causes	Corrective measures
4. Loose stitches	<ul style="list-style-type: none"> ① Bobbin thread does not pass through the tension spring of the inner hook. ② Thread path has been poorly finished. ③ Bobbin fails to move smoothly. ④ Bobbin case opening lever provides too much clearance at the bobbin. ⑤ Bobbin thread tension is too low. ⑥ Bobbin has been wound too tightly. 	<ul style="list-style-type: none"> ◦ Thread the bobbin thread correctly. ◦ Remove rough parts with a fine emery paper or buff it up. ◦ Replace the bobbin or hook with a new one. ◦ Refer to "21. ADJUSTING THE BOBBIN CASE OPENING LEVER" p. 17. ◦ Increase the bobbin thread tension. ◦ Decrease the tension applied to the bobbin winder.
5. Thread slips off the needle eyelet simultaneously with thread trimming.	<ul style="list-style-type: none"> ① Thread tension given by the tension controller No. 1 is too high. 	<ul style="list-style-type: none"> ◦ Decrease the thread tension given by the tension controller No. 1.
6. Thread slips off the needle eyelet at the start of sewing.	<ul style="list-style-type: none"> ① Thread tension given by the tension controller No. 1 is too high. ② Clamp spring has improper shape. ③ Bobbin thread tension is too low. 	<ul style="list-style-type: none"> ◦ Decrease the thread tension given by the tension controller No. 1. ◦ Replace the clamp spring with a new one or correct the current one. ◦ Increase the bobbin thread tension.
7. Thread is not cut sharply.	<ul style="list-style-type: none"> ① The blades of moving knife and counter knife have been improperly adjusted. ② The knives have blunt blades. ③ Bobbin thread tension is too low. 	<ul style="list-style-type: none"> ◦ Refer to "22. ADJUSTING THE POSITION OF COUNTER KNIFE AND MOVING KNIFE" p. 18. ◦ Replace the moving knife and counter knife with new ones, or correct the current ones. ◦ Increase the bobbin thread tension.
8. Thread remains uncut after thread trimming. (Bobbin thread trimming failure when stitch length is comparatively short.)	<ul style="list-style-type: none"> ① Initial position of the moving knife has been improperly adjusted. ② Bobbin thread tension is too low. 	<ul style="list-style-type: none"> ◦ Refer to the Engineer's Manual. ◦ Increase the bobbin thread tension.
9. Thread breaks at the start of sewing after thread trimming.	<ul style="list-style-type: none"> ① The needle thread is caught in the hook. 	<ul style="list-style-type: none"> ◦ Shorten the length of thread remaining on the needle after thread trimming. ◦ Refer to "15. THREAD TENSION" p. 15.
10. Length of thread remaining on the material after thread trimming is too long.	<ul style="list-style-type: none"> ① Thread trimming is carried out at a position which is located outside the material edge. ② Thread trimming is performed in the reverse feed stitching direction. 	<ul style="list-style-type: none"> ◦ Carry out thread trimming on the material. ◦ Carry out thread trimming in the forward feed stitching direction. ◦ Change the function setting No. 158 to "1" to change the thread trimming method to the 1-stitch condensation thread trimming (*1). (Refer to the Instruction Manual for the SC-922 for how to change the setting.)
11. Thread cannot be trimmed when thread trimming is carried out at a position where there is no material.	<ul style="list-style-type: none"> ① Thread trimming is carried out at a position which is located outside the material edge. 	<ul style="list-style-type: none"> ◦ Carry out thread trimming on the material. ◦ Change the function setting No. 158 to "1" to change the thread trimming method to the 1-stitch condensation thread trimming (*1). (Refer to the Instruction Manual for the SC-922 for how to change the setting.)

*1 "1-stitch condensation thread trimming" means the thread trimming operation during which a condensation stitch is sewn before carrying out thread trimming.