

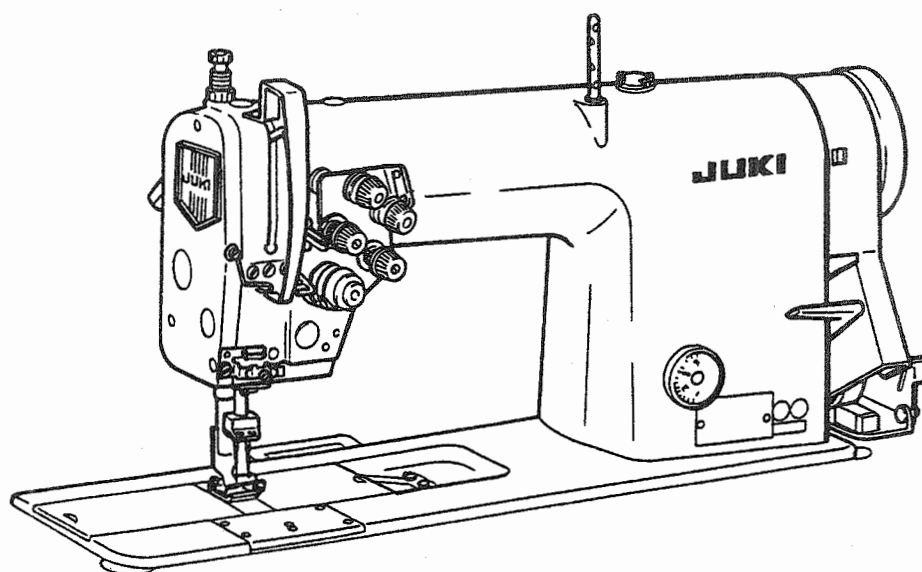
2-NEEDLE, NEEDLE-FEED LOCKSTITCH MACHINE  
WITH AUTOMATIC THREAD TRIMMER

# LH-2178

# LH-2178-7

# INSTRUCTION MANUAL

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**NOTE :** Read safety instructions carefully and understand them before using your LH-2178, 2178-7.  
Retain this Instruction Manual for future reference.

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## IMPORTANT SAFETY INSTRUCTIONS

To get the most out of the many functions of this machine and operate it in safety, it is necessary to use this machine correctly.

Please read this Instruction Manual carefully before use. We hope you will enjoy the use of your machine for a long time. Please remember to keep this manual in a safe place.

1. Observe the basic safety measures, including, but not limited to the following ones, whenever you use the machine.
2. Read all the instructions, including, but not limited to this Instruction Manual before you use the machine. In addition, keep this Instruction Manual so that you may read it at anytime when necessary.
3. Use the machine after it has been ascertained that it conforms with safety rules/standards valid in your country.
4. All safety devices must be in position when the machine is ready for work or in operation. The operation without the specified safety devices is not allowed.
5. This machine shall be operated by appropriately-trained operators.
6. For your personal protection, we recommend that you wear safety glasses.
7. For the following, turn off the power switch or disconnect the power plug of the machine from the receptacle.
  - 7-1 For threading needle(s), looper, spreader etc. and replacing bobbin.
  - 7-2 For replacing part(s) of needle, presser foot, throat plate, looper, spreader, feed dog, needle guard, folder, cloth guide etc.
  - 7-3 For repair work.
  - 7-4 When leaving the working place or when the working place is unattended.
  - 7-5 When using clutch motors without applying brake, it has to be waited until the motor stopped totally.
8. If you should allow oil, grease, etc. used with the machine and devices to come in contact with your eyes or skin or swallow any of such liquid by mistake, immediately wash the contacted areas and consult a medical doctor.
9. Tampering with the live parts and devices, regardless of whether the machine is powered, is prohibited.
10. Repair, remodeling and adjustment works must only be done by appropriately trained technicians or specially skilled personnel. Only spare parts designated by JUKI can be used for repairs.
11. General maintenance and inspection works have to be done by appropriately trained personnel.
12. Repair and maintenance works of electrical components shall be conducted by qualified electric technicians or under the audit and guidance of specially skilled personnel.

Whenever you find a failure of any of electrical components, immediately stop the machine.
13. Before making repair and maintenance works on the machine equipped with pneumatic parts such as an air cylinder, the air compressor has to be detached from the machine and the compressed air supply has to be cut off. Existing residual air pressure after disconnecting the air compressor from the machine has to be expelled. Exceptions to this are only adjustments and performance checks done by appropriately trained technicians or specially skilled personnel.
14. Periodically clean the machine throughout the period of use.
15. Grounding the machine is always necessary for the normal operation of the machine. The machine has to be operated in an environment that is free from strong noise sources such as high-frequency welder.
16. An appropriate power plug has to be attached to the machine by electric technicians. Power plug has to be connected to a grounded receptacle.
17. The machine is only allowed to be used for the purpose intended. Other used are not allowed.
18. Remodel or modify the machine in accordance with the safety rules/standards while taking all the effective safety measures. JUKI assumes no responsibility for damage caused by remodeling or modification of the machine.

19. Warning hints are marked with the two shown symbols.



Danger of injury to operator or service staff



Items requiring special attention



1. To prevent accidents caused by electric shock, never open the control box cover or touch the components inside the control box while the power switch is ON.



1. To avoid personal injury, never operate the machine with any of the belt cover, finger guard or safety devices removed.
2. To prevent accidents caused by electric shock, never operate the machine with the ground wire for the power supply removed.
3. To avoid personal injuries, never bring your fingers, hair or clothes close to or place anything on the handwheel, V-belt, or motor while the machine is running.
4. To prevent possible accidents caused by electric shock, electric leakage and fire, in case of inserting/removing the power plug, the power switch has to be turned OFF in advance and insert/remove the power plug not having the electric cord but having the power plug itself.
5. To prevent accidents caused by abrupt start of the sewing machine, turn OFF the power switch when leaving the sewing machine.
6. To prevent accidents caused by abrupt start of the sewing machine, turn OFF the power switch in case of the electricity failure.
7. To prevent accidents caused by abrupt start of the sewing machine, in case of removing belt cover, motor pulley cover or V-belt, remove any of them after turning OFF the power switch and ascertaining that the sewing machine totally stopped.
8. To prevent accidents caused by abrupt start of the sewing machine, turn OFF the power switch when checking, adjusting, cleaning, threading and replacing the needle of the sewing machine.
9. Never bring your fingers or hands under the needle when turning ON the power switch or the machine is in operation.
10. Never put your fingers into the thread take-up cover while the machine is running.

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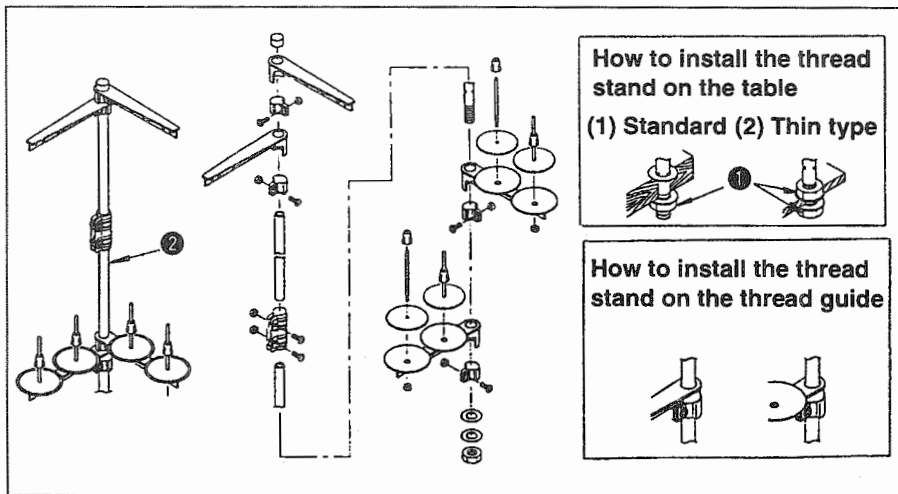
**Caution :**

To avoid malfunction and damage of the machine, confirm the following.

1. 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.
2. Confirm that the voltage has been correctly set.  
Confirm that the power plug has been properly connected to the power supply.
3. Never use the machine in the state where the voltage type is different from the designated one.
4. The sewing machine must rotate counterclockwise as viewed from the pulley.  
Take care not to allow the sewing machine to rotate in the reverse direction.
5. Don't run the machine before filling the oil reservoir with the prescribed lubricating oil.
6. Before starting a test run, remove the bobbin case and the needle thread from the machine.
7. For the first month after the set-up, use the machine at a reduced sewing speed, 4,000 s.p.m. or less.
8. Operate the handwheel after the sewing machine has totally stopped.

**SPECIFICATIONS**

Stitch specification	G
Fabrics	Denim
Sewing speed	4,000 s.p.m.
Stitch length (max.)	5 mm
Needle	DP x 5U #18 to #22
Needle gauge	3/16", 1/4" (4.8 mm, 6.4 mm)
Presser foot lift	6 mm (15/64") by hand lifter, 12 mm (15/32") by knee lifter
Lubricating oil	JUKI New Defrix Oil No. 2

**1. INSTALLATION OF THREAD STAND**

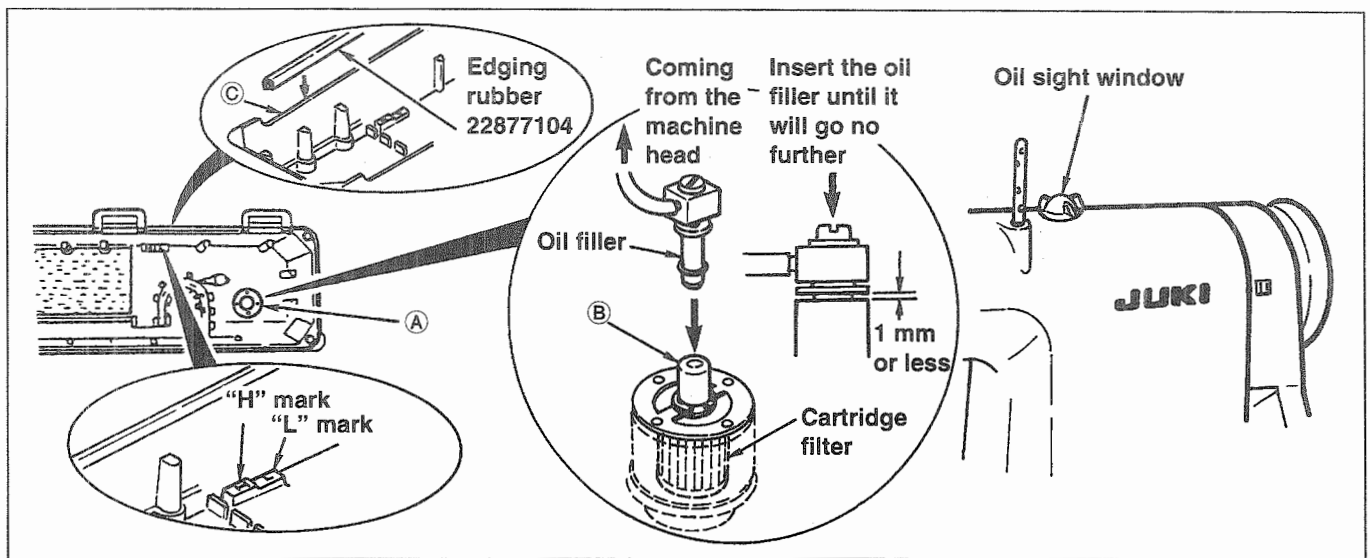
Assemble the thread stand, set it up on the machine table using the installation hole in the table. Then tighten nut ① gently. If ceiling wiring is made, pass the power cord through spool rest rod ②.

## 2. LUBRICATION



### WARNING :

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



### \* Before putting the machine into service

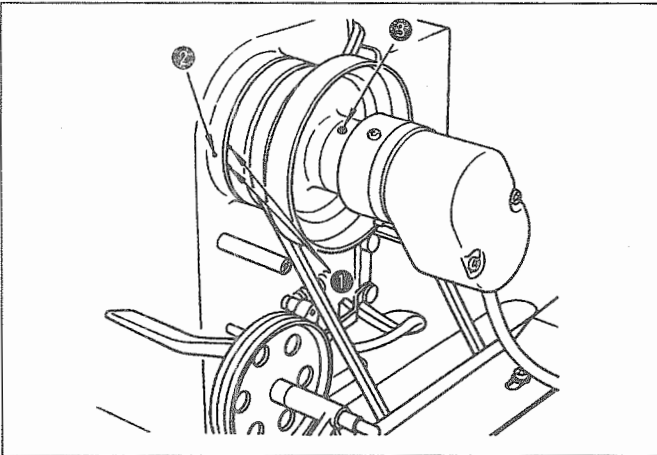
- 1) Pour New Defrix oil No. 2 into the oil pan until the "H" mark is reached.
- 2) Fully insert the oil filler coming from the machine head into (B) in portion (A).
- 3) After oiling, run the machine. As long as the machine is normally lubricated, you can observe oil splashing on the oil sight window. (Only when the machine runs at 1,500 s.p.m. or more.) If any oil (such as white oil) other than the designated kind, re-adjust the oil amount for each section of the machine referring to "25. Adjustment of oil amount" on page 13 approximately 30 minutes after the start of the operation of the machine.
- 4) If the oil amount decreases to such an extent that the oil surface is lower than the "L" mark, re-fill the oil pan with oil.
- 5) If the amount of oil splashing on the oil sight window decreases after an extended use of the machine, replace the cartridge filter inside the oil pan with a new one. (See page 12 for the replacing procedure.)
- 6) Whenever the machine head needs to be detached from the oil pan, be sure to remove the oil filler from the oil pan.

**(Caution) 1.** When you first operate your machine after the set-up or after an extended period of disuse, run your machine at 2,000 to 2,500 s.p.m. for approximately 30 minutes for the purpose of break-in.

2. If an ergonomics table is used, oil may exude to the lower portion of the oil pan. If this phenomenon takes place, fit an edging rubber (part number 22877104) supplied with the unit in portion (C) of the oil pan.

**WARNING :**

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



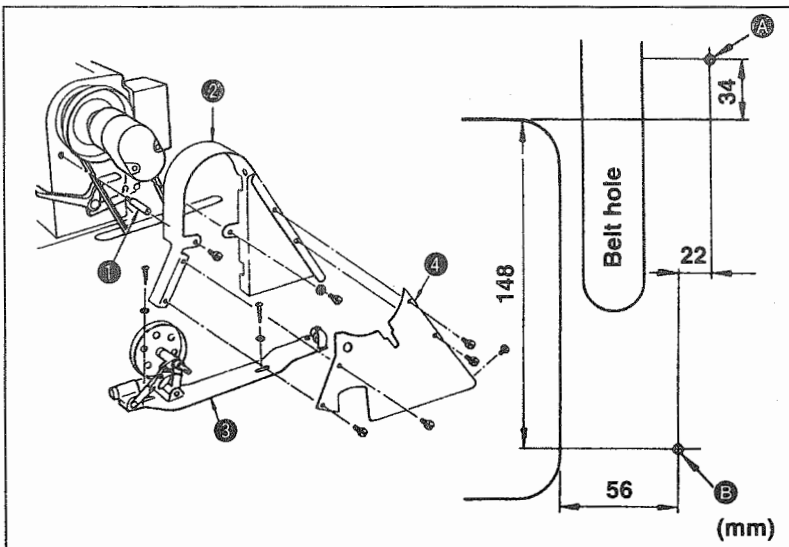
- 1) Temporarily fix the synchronizer on the handwheel.
- 2) Turn ON the power to the machine. Adjust so that the machine stops with its needle up using screw ③ in the synchronizer.
- 3) Make the machine perform thread trimming, and adjust so that red marker dot ② engraved on the arm comes to the position which is just the middle of two white marker dots ① engraved on the handwheel by turning screw ③ in the synchronizer.

**(Caution)**

Be sure to adjust the machine with respect to thread trimming action while actually sewing the material on the machine.

**4. ATTACHING THE BELT COVER AND THREAD WINDER****WARNING :**

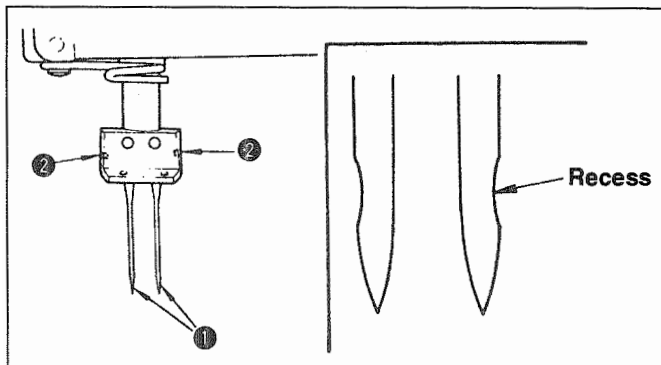
Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.



- 1) Make guide holes ① and ② in the table for wood screws.
- 2) Screw belt cover post ① into the tapped hole in the machine arm.
- 3) Fix belt cover ② to the belt cover post and then to the groove on the machine arm.
- 4) Put thread winder assembly ③ in the belt cover and adjust its position.
- 5) Attach top cover ④ to the belt cover.
- 6) Tilt the head back and make sure that the belt cover does not touch the table.
- 7) Fix the thread winder using the wood screws and guide holes ① and ②.

**5. ATTACHING THE NEEDLES****WARNING :**

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



\* Switch "off" the motor.

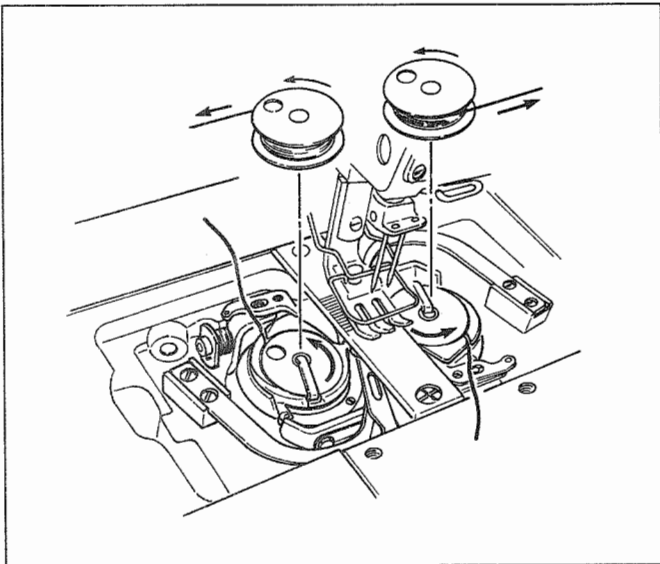
- 1) Turn the handwheel until the needle bar has come up to the highest point of its stroke.
- 2) Loosen needle clamp screws ② and pick up two needles ① in the way that their recesses are facing outwards.
- 3) Insert the needles into the needle clamp as far as they will go.
- 4) Tighten needle clamp screws ② firmly.

## 6. INSERTING A BOBBIN IN A BOBBIN CASE



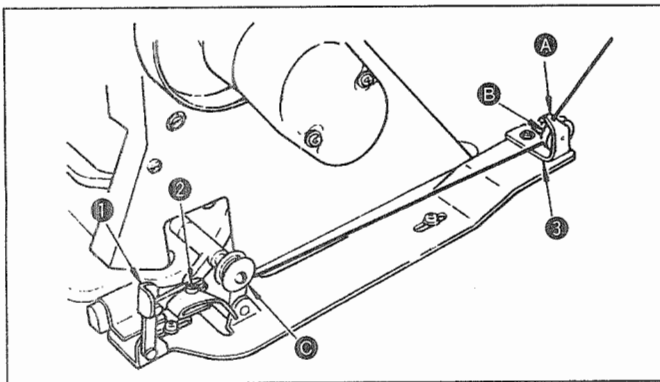
### WARNING :

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



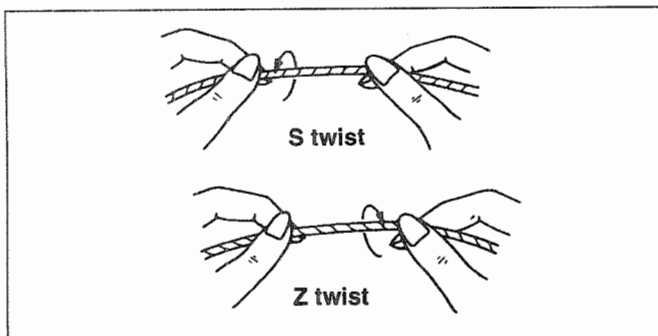
Put the bobbin in the bobbin case so that it rotates in the direction as illustrated.

## 7. WINDING THE BOBBINS (SINGLE BOBBIN WINDER)



- 1) Take the thread end from a thread spool, pass it through the thread guides as A, B and C and wind it several turns round the bobbin.
- 2) Tilt bobbin presser ① permitting the thread winder pulley to touch the running belt.
- 3) Adjust screw ② to wind a bobbin about 80% of its capacity; turn the adjusting screw clockwise to increase or counterclockwise to reduce the amount of thread to be wound.
- 4) If the bobbin is wound unevenly, adjust it by moving the position of tension bracket ③ to the left or the right.
- 5) When the bobbin is filled up, the bobbin presser automatically releases the thread winder pulley from the running belt.

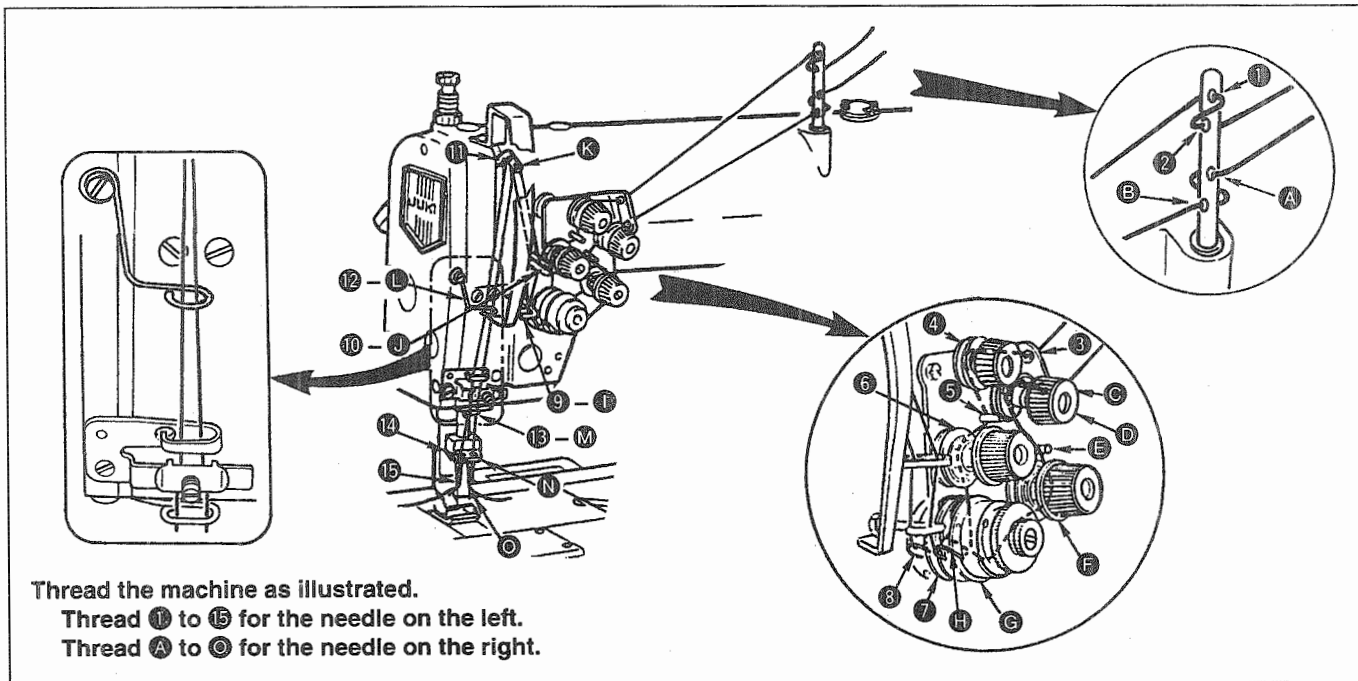
## 8. TWIST OF SEWING THREAD



It is advisable to use the left-twist thread (S twist) for the needle on the left and the right-twist thread (Z twist) for the needle on the right. If it is not possible, use only the right-twist thread (Z twist). Either twist will do for the bobbin thread.

**WARNING :**

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

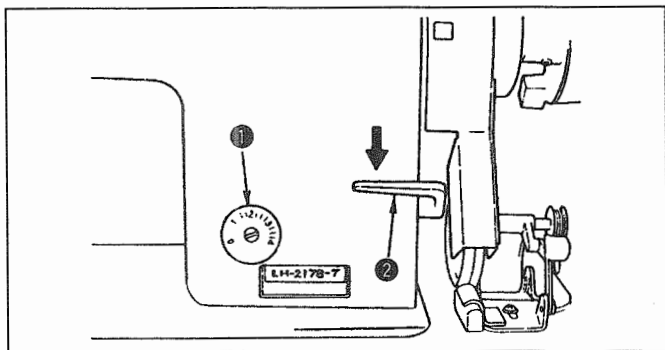


Thread the machine as illustrated.

Thread ① to ⑮ for the needle on the left.

Thread ① to ⑮ for the needle on the right.

## 10. STITCH LENGTH

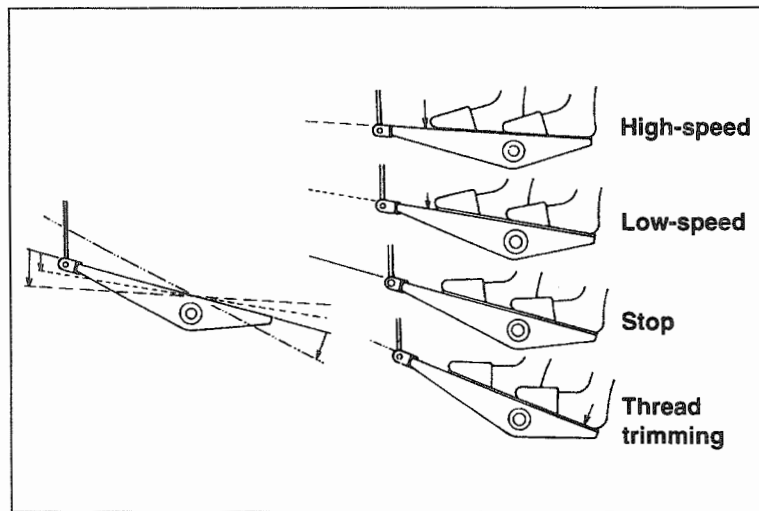


Set stitch dial ① for a desired stitch length.

### \* Reverse feed operation

- 1) Depress reverse feed control lever ②.
- 2) Reverse stitches are made as long as you keep depressing the lever.
- 3) Release the lever, and the machine will run forward.

## 11. HOW TO OPERATE THE PEDAL



The pedal is operated in 4 stages.

- 1) Depress the pedal lightly forward for low-speed operation.
- 2) Depress the pedal further forward for high-speed operation.
- 3) Bring the pedal back to its initial position, and the machine will stop with the needle "up" or "down".
- 4) Depress the pedal backward (toe-up) for thread trimming
  - You can depress the pedal backward for thread trimming directly from its high-speed or low-speed position.

○ You can bring the pedal back to its initial position immediately after you have confirmed the start of a thread trimming action. The machine will stop after completing a thread trimming action.

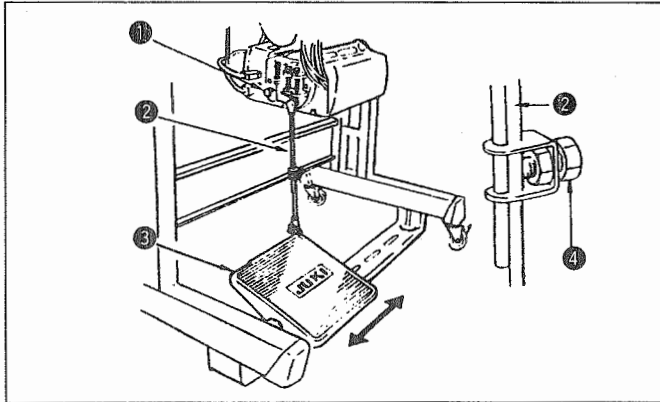
○ If you want to rise the needle which has stopped, in "down" position, depress the pedal once backward.

## 12. CONNECTION OF THE PEDAL



### WARNING :

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



### \* Attach the pedal connecting rod

Move pedal adjusting plate ③ to the left or the right to make motor control lever ① and pedal connecting rod ② straight.

### \* Adjusting the slant of the pedal:

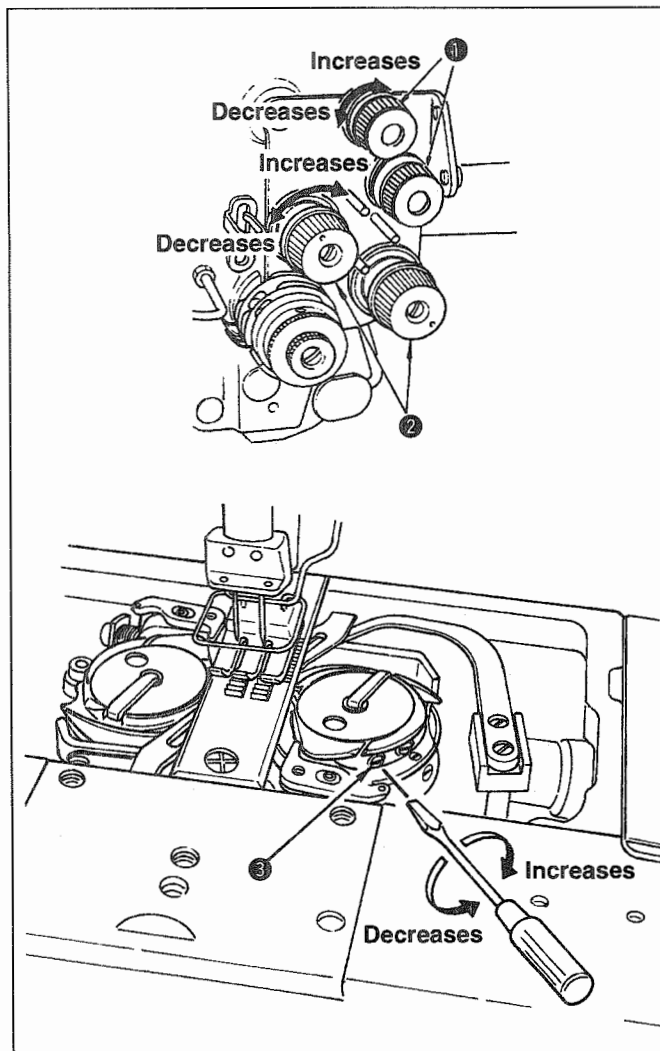
Slant of the pedal is adjustable by changing the effective length of the pedal connecting rod. Loosen adjusting screw ④, and adjust the inclination of the foot pedal by moving connecting rod ② up or down.

## 13. THREAD TENSION



### WARNING :

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

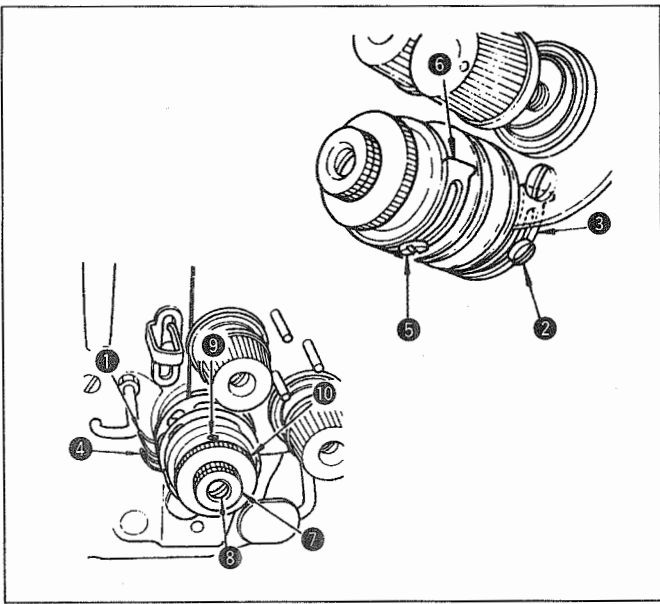


### \* Needle thread tension

Turn thread tension nut No. 2 ② clockwise to increase or counterclockwise to decrease the needle thread tension. Turn thread tension nut No. 1 ① clockwise to increase or counterclockwise to decrease the length of the thread left in the needle after thread trimming.

### \* Bobbin thread tension

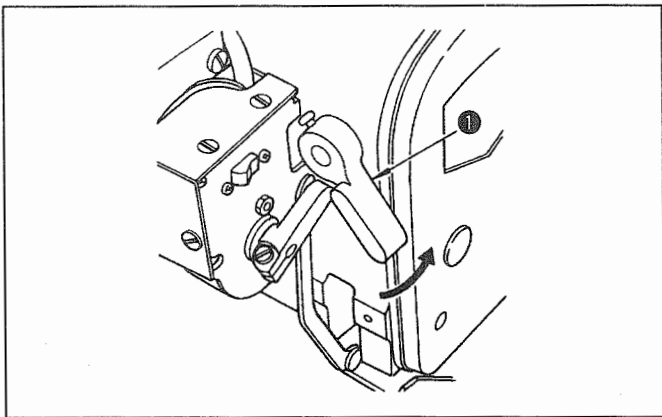
Turn tension adjusting screw ③ clockwise to increase or counterclockwise to decrease the bobbin thread tension.



- \* When you want to change the stroke of the spring:**
- 1) Stroke of take-up spring ① on the left is adjustable by moving stopper ③ to the left or the right after loosening stopper setscrew ② .
  - 2) Stroke of take-up spring ③ on the right is adjustable by moving stopper ⑥ to the left or the right after loosening stopper setscrew ⑤ .
  - 3) Move the stopper to the right to increase or to the left to reduce the stroke of the take-up spring.

- \* When you want to change the tension of the spring:**
- 1) Tension of the take-up spring on the left is adjustable by turning stud ⑧ counterclockwise to increase or clockwise to decrease after loosening nut ⑦ .
  - 2) Tension of the take-up spring on the right is adjustable by turning spring guide ⑩ clockwise to increase or counterclockwise to decrease after loosening setscrew ⑨ .

## 15. HAND LIFTER



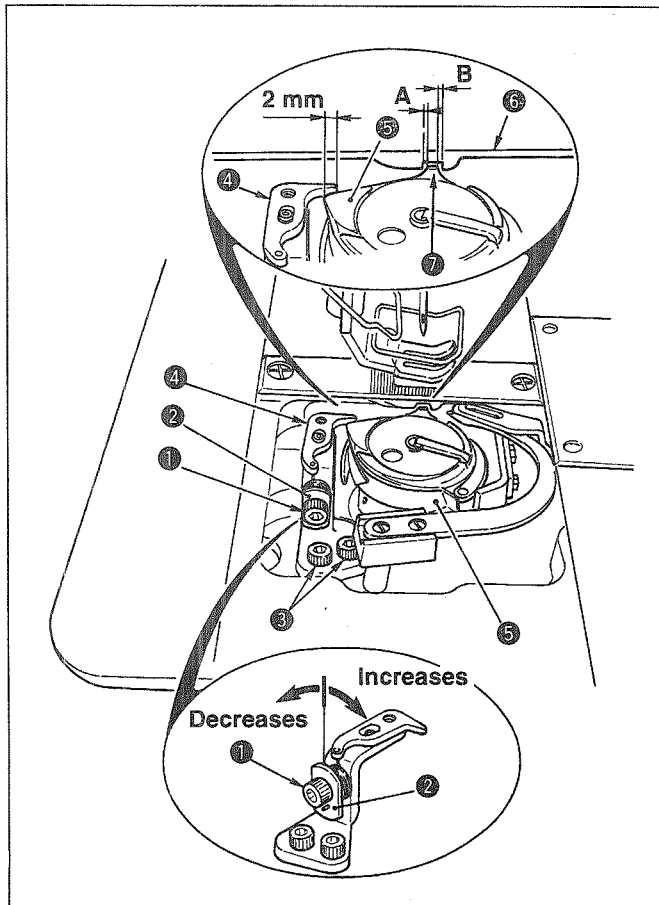
When you want to keep the presser foot in the lifted position, turn hand lifter ① in the direction of the arrow. By so doing the presser foot will rise 6 mm (15/64") and stay until the hand lifter is lowered. Operate the knee lifter, and the presser foot will rise 12 mm (15/32") from its working level.

## 16. ADJUSTING THE SPRING PRESSURE AND POSITION OF THE FIXED OPENER



### WARNING :

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



\* **Adjusting the spring pressure of the fixed opener**  
Loosen screw ① in the adjusting nut. Turning adjusting nut ② clockwise to increase the spring pressure or counterclockwise to decrease it.

The standard pressure of the opener spring is obtained by fixing adjusting nut ② at the position reached by turning it counterclockwise by 180° from the position at which no pressure is applied.

\* **Adjusting the position of the fixed opener**

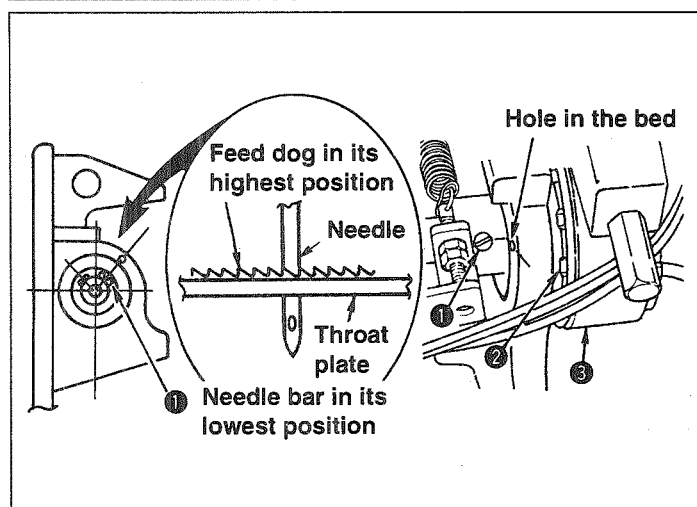
- 1) Loosen two screws ③ in the fixed opener mounting base.
- 2) Position fixed opener ④, with lightly pressed against hook ⑤, so that bobbin case stopper ⑦ is equidistantly spaced in the slit in throat plate ⑥ in terms of lateral direction so that clearances A and B are equal to each other and so that opener ④ overlaps with hook ⑤ by approximately 2 mm. Then, tighten two screws ③ in the fixed opener mounting base.

## 17. RELATION BETWEEN THE MAIN SHAFT AND THE HOOK DRIVING SHAFT



### WARNING :

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



If you have removed/replaced the timing belt, re-adjust the timing between the main shaft and the hook driving shaft following the procedure described below.

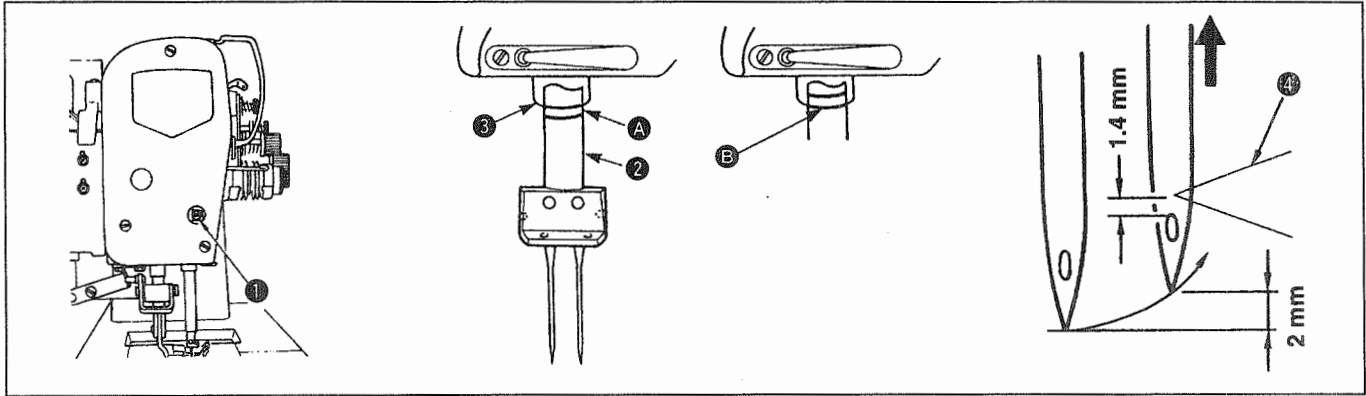
- 1) Set the stitch dial to "0 (zero)."
- 2) Turn the handwheel in the normal direction of rotation until the needle bar descends to the lowest point.
- 3) Turn the hook driving shaft in the normal direction of rotation until the hole in the bed meets the center of screw No. 2 ① in the thrust collar of the hook driving shaft.
- 4) In the aforementioned state, put timing belt ③ on lower sprocket ②.

**(Caution)**

For LH-2178/-2178-7, the timing belt is attached in a way different from that for LH-1152.

**WARNING :**

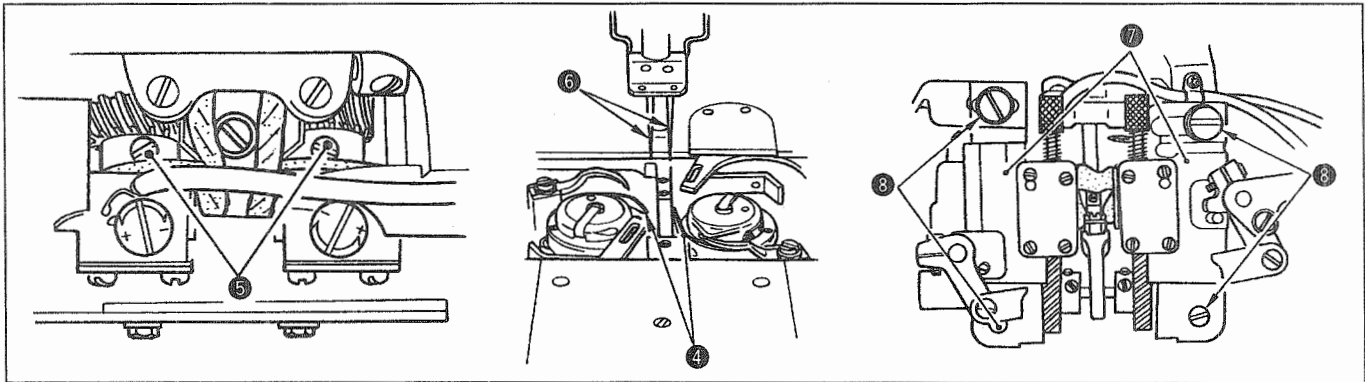
Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.

**(1) Adjust the needle-to-hook relation in the following procedure.**

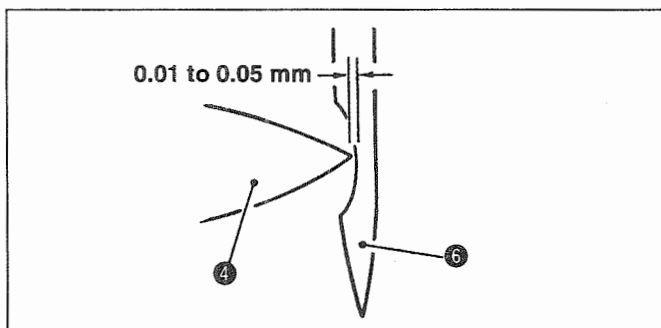
- 1) Set the stitch dial to "2" on the scale.
- 2) Turn the handwheel to bring the needle bar to the lowest position. Then, loosen needle bar connecting stud clamping screw ①.

**(Determine the needle bar height.)**

- 3) Align upper marker line ① engraved on needle bar ② to the bottom end of needle bar frame ③. Then, tighten the needle bar connecting stud clamping screw. After the adjustment, the blade point of the hook is aligned with the center of the needle when the needle bar goes up 2 mm from its lowest position (lower marker line ② is aligned with the bottom end of needle bar frame ③). At this time, the top end of the needle eyelet is spaced 1.4 mm from the blade point of the hook.

**(Determine the position of the hook.)**

- 4) Loosen three screws ⑤ in the driving gear (small). Turn the handwheel until lower marker line B engraved on the needle bar is aligned with the bottom end of the needle bar frame.
- 5) Loosen four screws ⑧ in the hook driving shaft saddle ⑦ and move hook driving shaft saddle ⑦ to the right or left to adjust so that a clearance of 0.01 to 0.05 mm is provided between the blade point ④ of the hook and needle ⑥ in the state described in step 4).
- 6) In the state described in step 4), align the blade point of the hook with the center of the needle and tighten screws ⑤ in the driving gear (small).

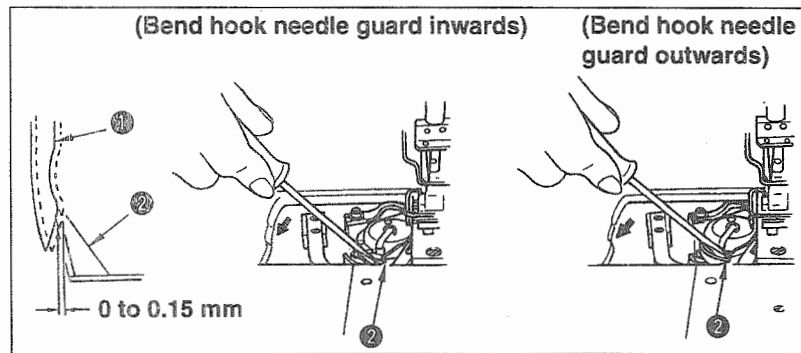


## 19. HOOK NEEDLE GUARD



### WARNING :

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



When a hook is replaced, you must adjust the working point of the hook needle guard.

Hook needle guard ② must push needle ① away for 0 or 0.15 mm. Adjust it by carefully bending the hook needle guard.

- 1) If you want to bend it inwards, do it from the outside of the hook needle guard using a screwdriver.
- 2) If you want to bend it outwards, do it from the inside of the hook needle guard using a screwdriver.

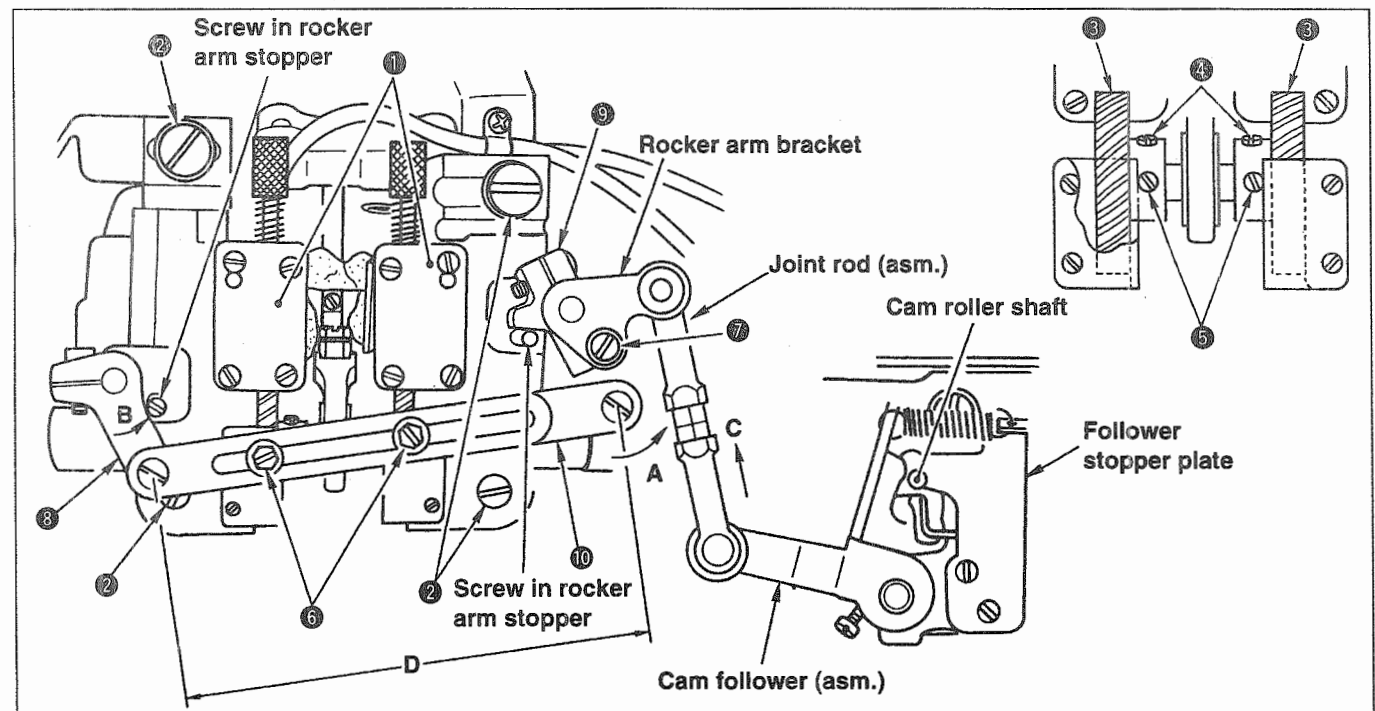
## 20. REPLACING THE GAUGE



### WARNING :

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

### (1) Moving the hook driving shaft saddle before replacing the gauges



- 1) Loosen screw No. 2 ④ in hook driving shaft gear ③.
- 2) Align the needle with the hook point.
- 3) Slightly loosen screw No. 1 ⑤ in hook driving shaft gear ③ taking care not to allow it to get out of the flat section of the hook driving shaft.

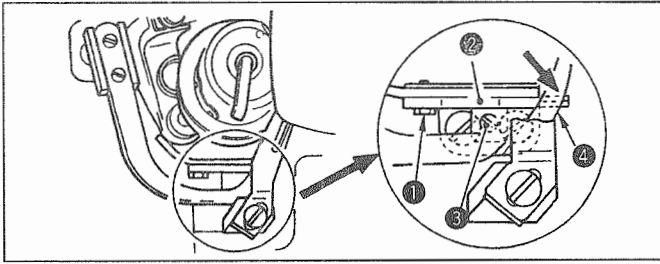
For the machine with a thread trimmer  
 • Loosen screws ⑥ in connecting link (asm.) ⑨ and screw ⑦ in the rocker arm bracket.

- 4) Loosen two screws ② in hook driving shaft saddle ①.  
 Then, move the hook driving shaft saddle away from the current position. (At this time, the hook driving gear will be moved together with the saddle. This means that the needle-to-hook relation will not become defective.)
- 5) Adjust so that a clearance of 0.01 to 0.05 mm is provided between the needle and the blade point of the hook.
- 6) Tighten two screws ② in the hook driving shaft saddle.
- 7) Adjust the clearance provided between the hook driving shaft gear ③ and the hook driving shaft saddle ① to 0.5 mm. Then, tighten first screw No. 1 ⑤. Now, tighten screw No. 2 ④.

For the machine with a thread trimmer  
 • Tighten screws ⑥ in connecting link (asm.) ⑩ while pressing rocker arm (left) ⑧ in direction B and rocker arm (right) ⑧ in direction A.

**WARNING :**

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



- 1) Loosen screw ①.
- 2) Adjust adjusting screw ③ so that thread presser regulating metal fitting ② slightly comes in contact with thread presser ④.
- 3) After the adjustment, tighten screw ①.

**(Caution)** Tightening adjusting screw ③ will increase the pressure of the thread presser spring. If the pressure of the thread presser spring is too high or too low, a thread clamp failure will result. So, be careful.

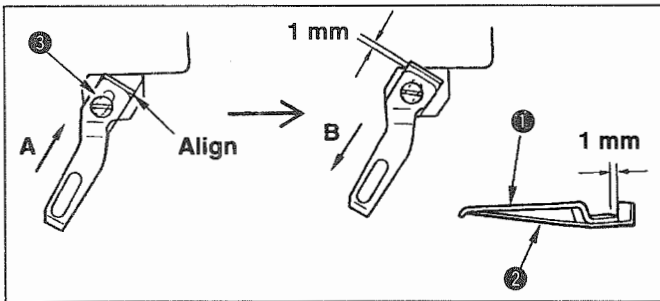
For reference, the proper clamp pressure is obtained by tightening screw ① by 90° when adjusting metal fitting ② comes in contact with thread presser ④.

## 22. INITIAL POSITION OF THE MOVING KNIFE (FOR 2178-7)

**WARNING :**

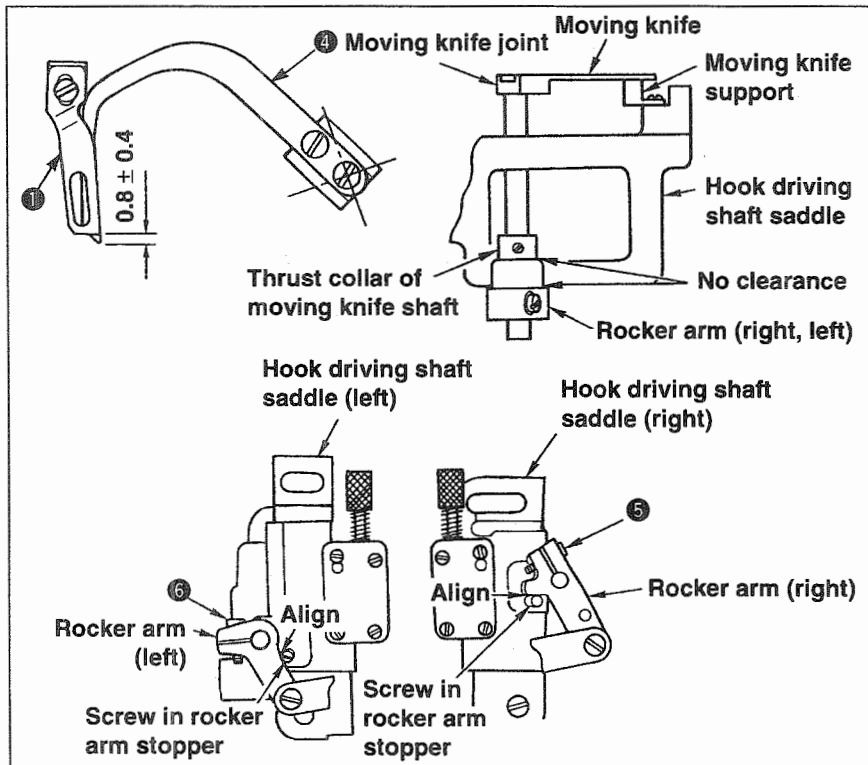
Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.

### (1) Initial position of the counter knife and thread presser



- 1) Align the rear end of counter knife ① with section L of thread presser ②. Move them back in direction A until they will go no further.
- 2) In the state where the rear end of counter knife ① is aligned with section L of thread presser ②, move only counter knife ① in direction B by 1 mm. Then, tighten screw ③ in the counter knife.

### (2) Initial position of the moving knife



- 1) Adjust so that counter knife ① is spaced  $0.8 \pm 0.4$  mm from moving knife ④.
- 2) Adjust so that no clearance is provided between the thrust collar of the moving knife shaft and the hook driving shaft saddle when connecting the rocker arms (left and right) to the moving knife shaft.
- 3) Tighten screws ⑤ and ⑥ while pressing the rocker arms (left and right) against the screw in the rocker arm stopper.

**(Caution)**

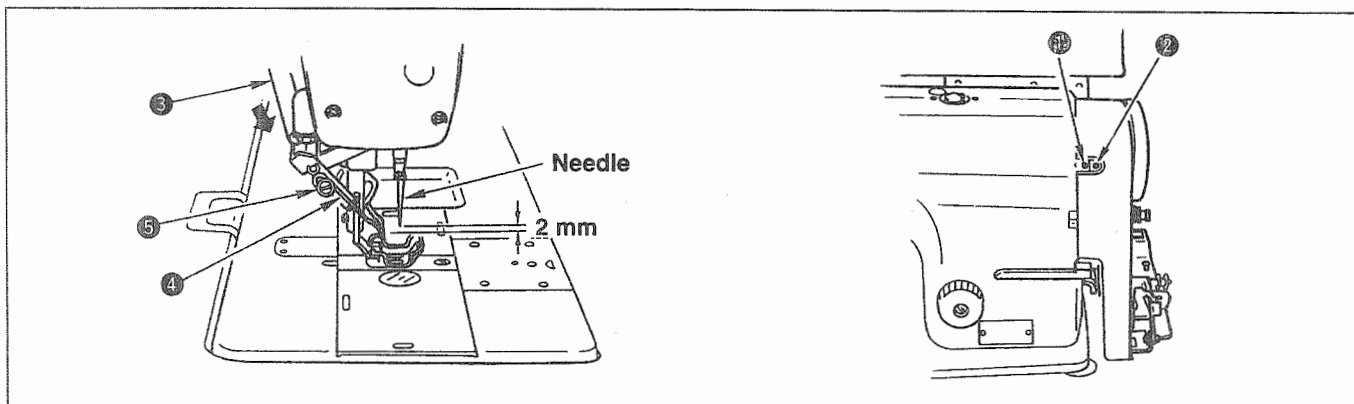
When tightening screws ⑤ and ⑥ in the rocker arms, be sure to remove thrust using the thrust collar of the moving knife shaft.

## 23. POSITION OF THE WIPER



### WARNING :

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



- 1) Align marker dot ① engraved on the machine arm with white marker dot ② (second white marker dot in terms of the rotational direction of the sewing machine) engraved on the handwheel.
- 2) Move rod ③ in the direction of the arrow and adjust so that an approximately 2 mm clearance is provided between the top end of the needle and wiper ④ using clamping screw ⑤.

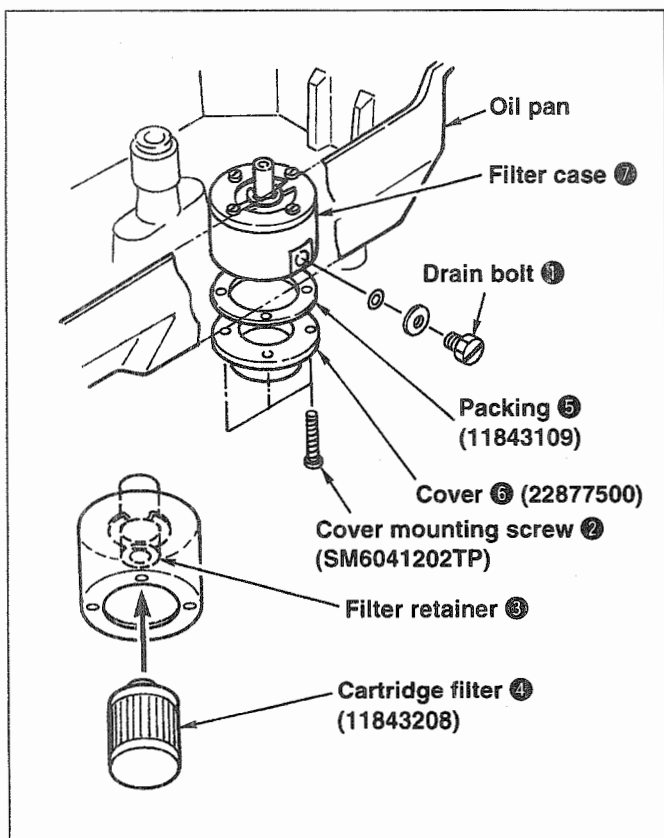
**(Caution)** Actuating the wiper with the presser foot raised will make the wiper come in contact with the needle causing danger. So, never actuate the thread trimmer while the presser foot is in the highest position.

## 24. REPLACING THE CARTRIDGE FILTER



### WARNING :

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



- 1) Remove drain bolt ① and drain oil in the oil pan.

### **(Caution)**

1. The oil can flow out abruptly from the oil pan. So, carefully drain the oil pan.

2. Be sure to prepare a container that receives oil from the oil pan before starting the work.

- 2) Remove four screws ②. Then, remove cover ⑥ and packing ⑤.
- 3) Remove cartridge filter ④ from inside filter case ⑦.
- 4) Fit a new cartridge filter into filter retainer ③.
- 5) Attach packing ⑤ and cover ⑥ in position using screws ②.

### **(Caution)**

When replacing the cartridge filter, it is recommended to also replace the packing with a new one.

- 6) Attach drain bolt ① in position.

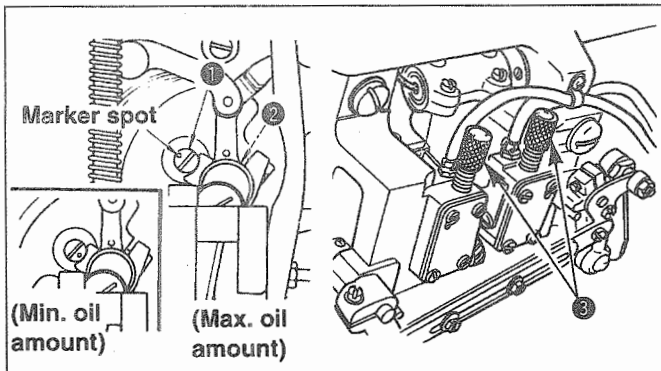
### **(Caution)**

When replacing the cartridge filter, also clean inside the oil pan.

- 7) Upon completion of the replacing procedure, fill the oil pan with oil in accordance with the procedure given in

**WARNING :**

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

**\* For the inside of face plate:**

Amount of lubricating oil supplied to the face plate components such as thread take-up lever and needle bar crank is adjustable by turning adjusting pin ①: bring the marker spot engraved on the adjusting pin close to needle bar crank ② to minimize or farthest from the needle bar crank to maximize the amount of oil.

**\* For the hook:**

Turn adjusting screw ③ clockwise to or counterclockwise to increase the amount of oil fed to the hook.

**26. TABLE OF SEWING SPEED FOR NEEDLE GAUGES**

Specification	Needle gauge	Stitch length	Sewing speed (Max.)	Sewing speed (normal)
G	3/16" to 1/4" (4.8 mm to 6.4 mm)	4 mm	4,000	3,800
		4 to 6 mm	3,800	3,600

**27. MOTOR PULLEYS AND V BELTS**

\* Use a HM type V belt.

\* The table below shows the relation between the motor pulleys, V belt lengths and sewing speeds (the number of revolutions).

**For LH-2178 (The motor used is a clutch motor with an output of 400 W.)**

Outside diameter of motor pulley (mm)	Part number of motor pulley	Sewing speed (s.p.m.)		Belt length (inch)
		50 Hz	60 Hz	
100	MTKP0095000	4,000		43
95	MTKP0090000	3,820		43
90	MTKP0085000	3,610		43
85	MTKP0085000	3,390	4,000	42
80	MTKP0075000	3,160	3,790	42
75	MTKP0070000	2,950	3,520	42
70	MTKP0065000	2,740	3,280	41
65	MTKP0060000	2,530	3,030	41
60	MTKP0055000	2,320	2,780	41
55	MTKP0050000	2,110	2,530	41
50	MTKP0045000	1,900	2,280	40
45	MTKP0040000	1,690	2,020	40
40	MTKP0035000	1,470	1,770	40

**For LH-2178-00/AK104105 and LH-2178-7**

Outside diameter of motor pulley (mm)	Part number of motor pulley	Sewing speed (s.p.m.)		Belt length (inch)
		50 Hz	60 Hz	
100	MTKP0095000	4,000	4,000	41

\* The effective diameter of the motor pulley is obtained by subtracting 5 mm from the outside diameter.

\* The direction of rotation of the motor is counterclockwise as viewed from the pulley side.

## 28. TROUBLES AND CORRECTIVE MEASURES

TROUBLES	CAUSES	CORRECTIVE MEASURES
<p>1. Thread breakage (Thread is untwisted or scraped)</p> <p>(Needle thread 20 to 30 mm (approx. 1") is left on the wrong side of the fabric.)</p>	<ul style="list-style-type: none"> <li>① There is a sharp edges or burrs on the thread path, needle point, hook blade point or bobbin case resting groove on the throat plate.</li> <li>② Needle thread tension is too high.</li> <li>③ Bobbin case opening lever provides an excessive clearance at the bobbin case.</li> <li>④ Hook blade point hits the needle.</li> <li>⑤ Hook is not lubricated properly.</li> <li>⑥ Needle thread tension is too low.</li> <li>⑦ Thread take-up spring is too tight and its stroke is too small.</li> <li>⑧ Needle-to-hook relation is wrong.</li> <li>⑨ The thread twist is moved.</li> </ul>	<ul style="list-style-type: none"> <li>○ Remove sharp edges or burrs using a fine sandpaper. Polish the surface of the bobbin case resting groove on the throat plate using a buffing wheel.</li> <li>○ Adjust the needle thread tension.</li> <li>○ Adjust the clearance.</li> <li>○ Adjust the needle-to-hook relation. (Refer to Item 18)</li> <li>○ Increase the amount oil supplied to the hook. (Refer to Item 25)</li> <li>○ Adjust the needle thread tension.</li> <li>○ Reduce the tension of the spring and increase the stroke.</li> <li>○ Adjust the needle-to-hook relation. (Refer to Item 18)</li> <li>○ It is wound onto the needle.</li> </ul>
<p>2. Stitch skipping</p>	<ul style="list-style-type: none"> <li>① Clearance between the needle and the hook blade point is too great.</li> <li>② Needle-to-hook relation is wrong.</li> <li>③ Pressing force of the presser foot is not enough.</li> <li>④ Needle bar height is wrong.</li> <li>⑤ Hook needle guard is no functional.</li> <li>⑥ Needles are a little too thin.</li> <li>⑦ The thread twist is moved.</li> </ul>	<ul style="list-style-type: none"> <li>○ Adjust the needle-to-hook relation. (Refer to Item 18)</li> <li>○ Adjust the needle-to-hook relation. (Refer to Item 18)</li> <li>○ Tighten the presser spring regulator.</li> <li>○ Adjust the needle-to-hook relation. (Refer to Item 18)</li> <li>○ Adjust the position of the hook needle guard. (Refer to Item 19)</li> <li>○ Replace the needles by thicker ones.</li> <li>○ It is wound onto the needle.</li> </ul>
<p>3. Loose stitch.</p>	<ul style="list-style-type: none"> <li>① Bobbin thread does not pass through the forked end of the tension spring on the bobbin case.</li> <li>② Thread path has rough surface.</li> <li>③ Bobbin does not spin smoothly.</li> <li>④ Bobbin thread tension is too low.</li> <li>⑤ Bobbin thread is wound too tightly.</li> <li>⑥ Spring pressure of the fixed opener is too low.</li> <li>⑦ Fixed opener is improperly positioned.</li> </ul>	<ul style="list-style-type: none"> <li>○ Thread the bobbin case correctly.</li> <li>○ Remove rough surface using a fine sandpaper or polish the surface using a buffing wheel.</li> <li>○ Replace the bobbin or the hook.</li> <li>○ Adjust the bobbin thread tension.</li> <li>○ Adjust the tension components on the thread winder.</li> <li>○ Properly adjust the spring pressure and position of the fixed opener. (Refer to page 8.)</li> <li>○ Properly adjust the spring pressure and position of the fixed opener. (Refer to page 8.)</li> </ul>

<p>4. Thread escapes from the needle eye after thread trimming action.</p>	<p>① Thread tension given by the tension post No. 1 is too high.          ② Timing of the thread trimming action is too early.          ③ The needle thread is caught by the bobbin thread catching groove on the moving knife.</p>	<p>○ Loosen tension post No. 1 slightly.          ○ Adjust the thread trimmer cam. (Refer to Item 13)          ○ Adjust the initial position of the moving knife. (Refer to Item 22)</p>
<p>5. Thread escapes from the needle eye at the start of stitching.</p>	<p>① Thread tension given by the tension post No. 1 is too high.          ② Pressure of the presser spring is too low.          ③ Position of the presser spring is wrong.          ④ Needle hole in the presser foot is too large compared to the stitch length.          ⑤ Bobbin thread tension is too low.          ⑥ The needle thread is caught by the bobbin thread catching groove on the moving knife.</p>	<p>○ Loosen the tension post No. 1 slightly.          ○ Adjust the presser spring pressure or replace it.          ○ Adjust the position of the presser spring. (Refer to Item 21)          ○ Replace the presser foot having a smaller needle hole.          ○ Increase the bobbin thread tension.          ○ Adjust the initial position of the moving knife. (Refer to Item 22)</p>
<p>6. Thread is not cut sharply.</p>	<p>① Position of the moving knife to the fixed knife is wrong.          ② Thread trimmer knife is chipped or worn.          ③ Moving knife tilts wrongly.</p>	<p>○ Adjust the position of the moving knife and presser spring. (Refer to Items 22 and 29)          ○ Resharpen or replace the knife blade.          ○ Adjust the moving knife. (Refer to Item 21)</p>
<p>7. Thread is not cut at all. (Thread remains on the material without trimmed even when removing the material from the machine.)</p>	<p>① Initial position of the moving knife is wrong.          ② Moving knife does not come back to the blade of the fixed knife.          ③ Timing of the thread trimming action is wrong.          ④ Special type thread, coating thread, monofilament thread, etc. are used.</p>	<p>○ Adjust the initial position of the moving knife. (Refer to Item 22)          ○ Adjust the thread trimmer cam. (Refer to Item 13)          ○ Adjust the thread trimmer cam. (Refer to Item 13)          ○ Slightly pull the material and make the machine perform thread trimming.</p>
<p>8. Needle thread shows on the wrong side of the fabric when sewing a corner.</p>	<p>① Thread tension release components start working a little early when the knee lifter is operated.</p>	<p>○ Adjust the timing of the thread tension release action. (Refer to Item 13)</p>

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