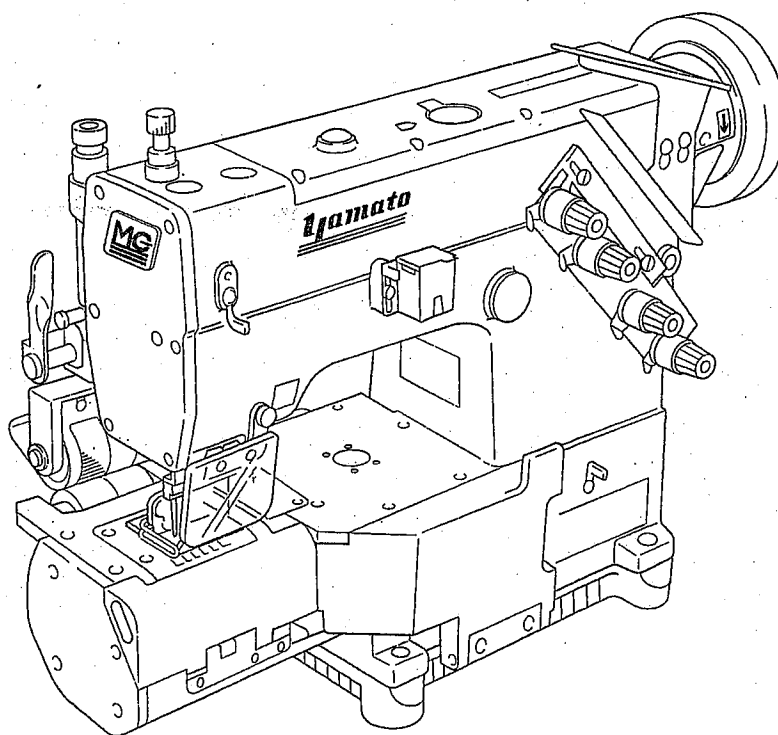




Technical Service Manual

DOUBLE CHAINSTICHMACHINE WITH NEEDLE FEEDING

MG2000 SERIES



This instruction manual describes how to use, check, adjust, and maintenance the machine properly. Please read this manual thoroughly and understand its directions fully before use, check, adjustment, and maintenance.

If not, unexpected accidents, damages, and breakages of the machine can take place.



ヤマトマシン製造株式会社

1. Name of each part

1

2. Model number on model plate

2

3. Adjustments

3

3-1. Adjusting timing between upper shaft and lower shaft	3
3-2. Adjusting needle height.....	4
3-3. Removing and replacing stitch plate	5
3-4. Adjusting feed dog	5
1. Adjusting feed dog's left-and-right position	5
2. Adjusting front-and-rear position of feed dog	7
3. Adjusting feed dog's height.....	9
3-5. Adjusting needle feed	10
1. Adjusting front-and-rear position (exceptional adjustment)	10
2. Adjusting back-and-forth moving amount (synchronized with feed dog) (exceptional adjustment)	11
3-6. Adjusting loopers and retainers	12
1. Adjusting timing between needles and loopers	12
2. Adjusting loopers' distances	13
3. Adjusting loopers' angle	13
4. Adjusting clearance between loopers and needles.....	14
5. Adjusting clearance between needles and needle guards	15
6. Adjusting clearances between retainers and needles	15
7. Adjusting left-and-right position of retainers.....	16
8. Adjusting height of retainer points.....	17
9. Timing between retainer and needles(exceptional adjustment)	17
10. Adjusting loop deflectors.....	19
3-7. Adjusting presser foot	20
1. Adjusting presser foot's position	20
2. Adjusting presser foot's height	21

3-8. Adjusting puller	22
1. Adjusting upper roller's position	22
2. Adjusting lower roller's height	23
3. Adjusting upper roller's up-and-down position (upper roller's pressure)	24
4. Adjusting movement of upper feed roller (feed amount of puller)	25
5. Adjusting pressure of clutch tension spring	26

4. Adjusting sewing performance 27

4-1. Treading	27
4-2. Adjusting needle thread tension	29
4-3. Adjusting looper thread tension	30

5. Checking and changing oil 31

5-1. Adding and supplying oil	31
5-2. Changing lubricating oil	32
5-3. Changing oil filter	33

6. Trouble shooting 34

7. Specifications 36

Attention

● This instruction manual is designed mainly for technicians, but it is advisable that also operators read the instructions with  mark to use the machine properly.

● The numbers in lower left corners of figures are figure numbers. We use them in texts as needed for your reference.

Attention

The description in this instruction manual is subject to change for improvements of the commodity without notice.

1. To ensure safe use

Always observe the following instructions to ensure the safe use of the industrial sewing machines and devices.

1-1 Application and purpose

The sewing machine is designed to improve productivity in the sewing industry and must not be used for other applications and purposes. Do not use this sewing machine until it can be confirmed that safety measures for the drive units have been taken.

1-2 Before use

Read all instruction manuals thoroughly before starting the use of this machine and follow them.

Also, read the instruction manual for the installed drive unit.

1-3 Working environment

DO NOT WORK IN THE FOLLOWING ENVIRONMENTS:

- Place where atmosphere temperature and humidity give a bad influence the performance of sewing machines.
- Outdoors and place where the sewing machines are exposed to sunlight directly.
- Atmosphere containing dust, corrosive gases or flammable gases.
- Place where voltage fluctuation exceeds 10 % of the rated voltage.
- Place where power capacity necessary for the used motor specifications cannot be secured.
- Place where strong electric or magnetic fields are generated such as near large-output high frequency transmitters or high frequency welding machines.

1-4 Unpacking and transportation

- (1) Unpack from the top.
- (2) Never hold the parts near the needle or threading parts when removing the sewing machine head from the buffer of box.
- (3) When carrying the sewing machine head, have an assistant.
- (4) Pay attention not to get excessive impact or shock when moving the sewing machine head with a pushcart.

2. Installation and preparation

Always observe the following instructions to ensure the safe use of the industrial sewing machines and devices.

2-1 Instruction and training

Operators and workers, who supervise, repair or maintain the machine head and machine unit, are required to have the adequate knowledge and operation skills to do the job safely. In order to establish such necessary conditions, it needs for the employer to plan and enforce the safety education and training to those workers.

2-2 Sewing table and motor

- (1) Prepare a machine table that has enough strength to withstand the weight of the sewing head and any reaction while operating.
- (2) Maintain a comfortable working environment with considering the lighting and the arrangement of sewing machine so that the operators can work smoothly.
- (3) When installing the control box and the related parts on the sewing machine, take care about the posture of the worker.
- (4) Install the drive unit correctly according to the instruction manual.

2-3 Wiring

- (1) Never connect the plug for power supply until assembly is finished.
- (2) Fix the connectors securely to the sewing machine head, motor, and electric apparatus.
- (3) Do not apply excessive force to the connection cords.
- (4) Connect the cords away from the driving parts.
- (5) Place the ground wire securely to the designated position on the machine head.

2-4 Before operation

- (1) Take care not to attach lubricant, silicone oil, and grease on the eyes or skin.
Keep them away from children.
- (2) Be sure to fill or drop lubrication oil before operating the sewing machine.
Use the Yamato SF oil as specified.
- (3) Never put your hand under the needle or near the moving parts of the machine when turning on power supply switch.
- (4) When operating a new sewing machine, make sure the rotating direction of pulley agrees with the rotating-direction mark.

2-5 During operation

- (1) Be sure to operate the sewing machine with the safeguards such as belt cover, finger guard, and eye guard.
- (2) Never place the finger, hair or objects under the needle or close to the moving parts while operating the sewing machine.
- (3) Be sure to turn off the power supply switch when threading or replacing the needles.
- (4) Never place your hands close to the knives when operating the sewing machine with the trimming devices.
- (5) Be sure to turn off the power supply switch when terminating the sewing work or leaving the sewing machine.

- (6) If the sewing machine malfunctions, abnormal sound or smell something unusual while operating, be sure to turn off the power supply switch.

2-6 Removal

- (1) Turn off the power supply switch if removed or replaced any parts or during adjustment of sewing machine.
- (2) Do not pull the cord when removing the plug. Be sure to hold the plug itself.
- (3) A high voltage is applied inside the control box. Turn off the power supply switch and wait more than 5 minutes before opening the cover.

3. Maintenance, inspection, and repair

- (1) Follow the instruction manuals for maintenance, inspection, and repair.
- (2) Entrust the maintenance, inspection, and repair to specially trained personnel.
- (3) Be sure to turn off the power supply switch and make sure the sewing machine and motor completely stop before the maintenance, inspection, and repair. (If using a clutch motor, take care that the motor keeps turning for a while even after turning off the power supply switch.)
- (4) Do not modify the sewing machine by the customer's judgment.
- (5) Be sure to use original replacement parts for repairs or maintenance.

4. Caution signs and alert pictorial markings

This instruction manual contains the following caution signs and alert pictorial markings to prevent you from injuring yourself or the sewing machine from being damaged.

Please follow the instructions.

4-1 Meanings of caution signs

WARNING indicates potentially hazardous situations which, if not heeded, could result in death or serious injury to you and others.

Caution indicates hazardous situations which, if not heeded, may result in minor or moderate injury to you and others, or may result in machine damage.

4-2 Alert pictorial markings



This mark indicates the warning which, if not heeded, could result in death or Serious injury.



This mark indicates the caution for high temperature.



This mark indicates the warning which, if not heeded, could result in death or Serious injury.



High-voltage applies in the control box. This label indicates that electric shock may be caused.

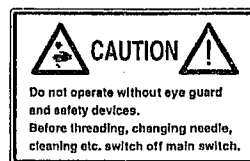


This mark indicates the caution which, if not grounded, the machine or device could malfunction and could result in personal injury.

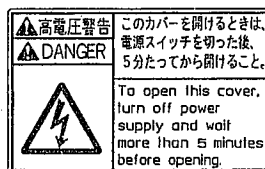
5. Warning labels on sewing machines

This instruction manual contains the following caution signs and alert pictorial markings to prevent you from injuring yourself or the sewing machine from being damaged.

Please follow the instructions.



This label indicates that removal of the safeguards and works except for sewing performance while the power supply switch is on are prohibited. (For details, see the next page.)



High-voltage applies in the control box. This label indicates that electric shock may be caused.



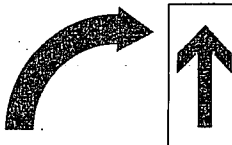
This label is affixed on the safeguards. Considering the operation, it is not affixed on the finger guard and eye guard. Be sure to operate with the finger guard and eye guard in position.



Stepping motor and solenoid may overheat if used continuously. To prevent a burn, take care not to touch.



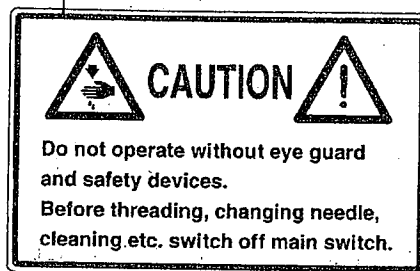
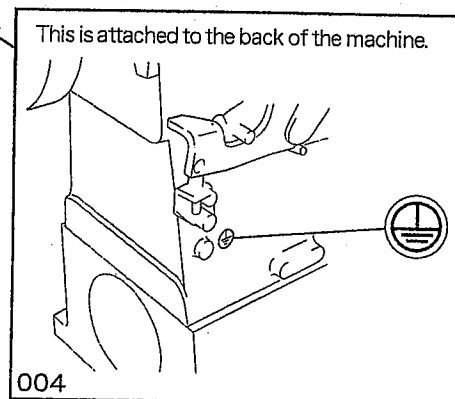
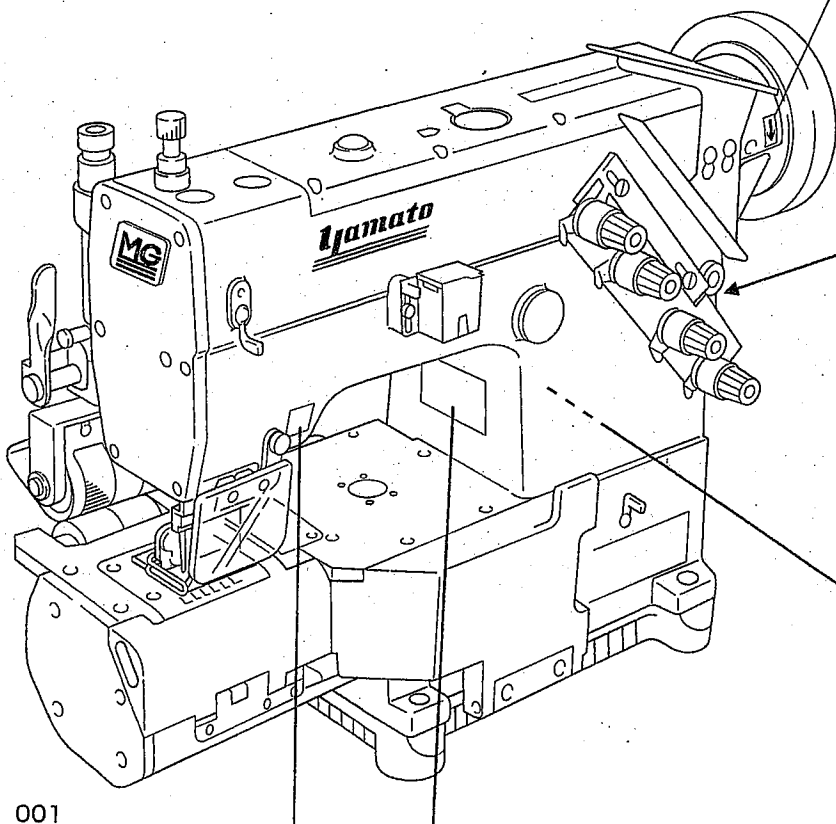
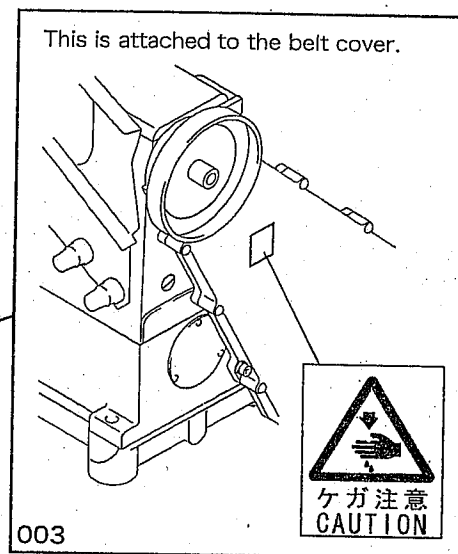
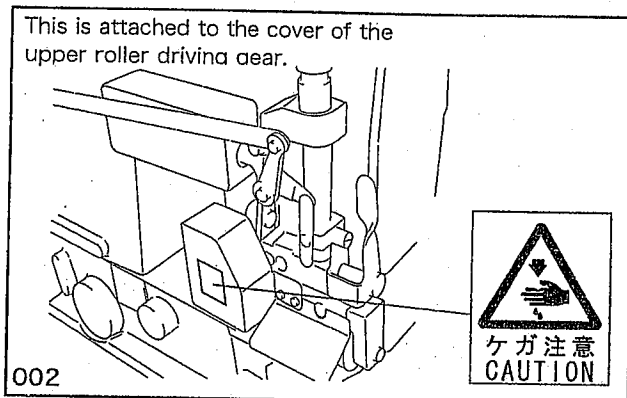
If not connected earth line, static electricity may be generated and inflict injury on person. In addition, the malfunction of electric system may cause injury to person.

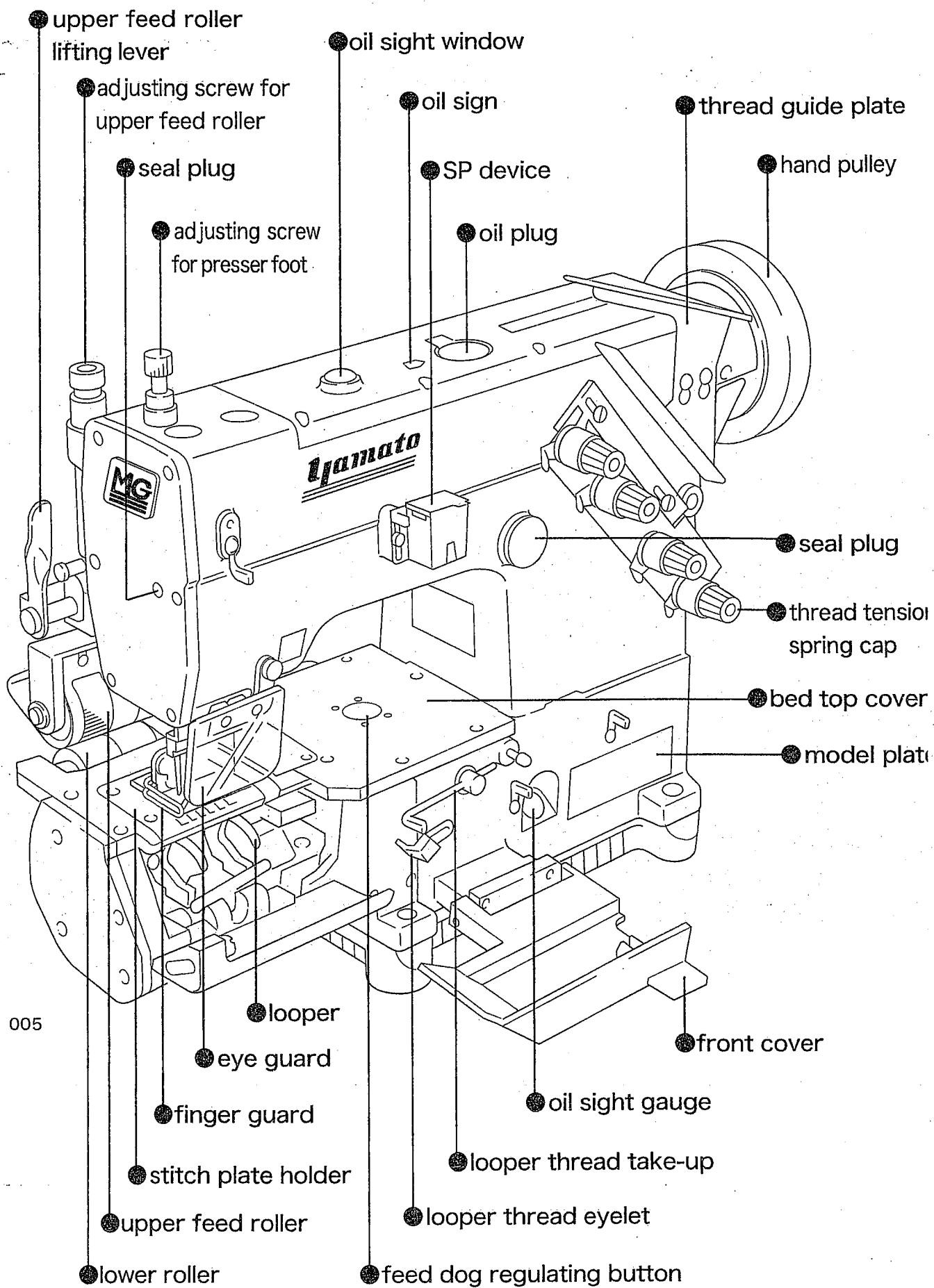


Check the rotating direction of hand pulley agrees with 'ROTATING-DIRECTION SYMBOL'.

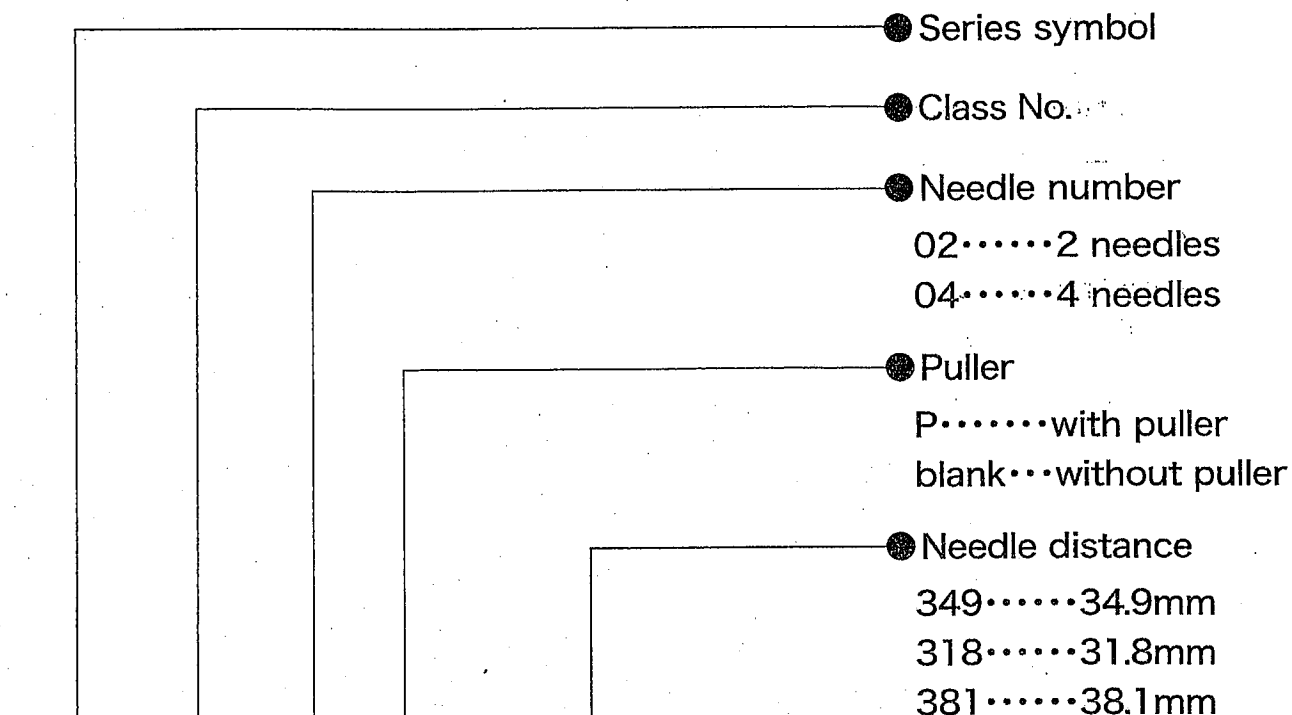
6. Where to attach pictorial markings

The drawings below show where the pictorial markings should be attached for safe operation. Keep the markings clean, and change them to new ones when they become damaged or lost.





The model number in the model plate gives the information below:



MG2002P-349-X01/FL10

- Needle arrangement
X.....equal from side to side
- Gauge type
01.....2 needles 34.9mm
02.....2 needles 38.1mm
03.....2 needles 31.8mm
04.....4 needles 1/4 -1-1/4
- Air-operated presser foot lifter

3-1. Adjusting timing between upper shaft and lower shaft

⚠ CAUTION

Before maintenance, ALWAYS turn off the power switch and check if the motor has already stopped.

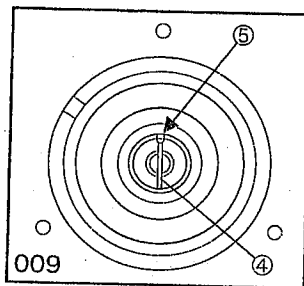
〈Checking〉

1. Rotate the hand pulley ① and set the "P" mark to the indication mark ②.

Then the needles will come to the highest position.

2. Remove the bearing cover ③ of the lower shaft.

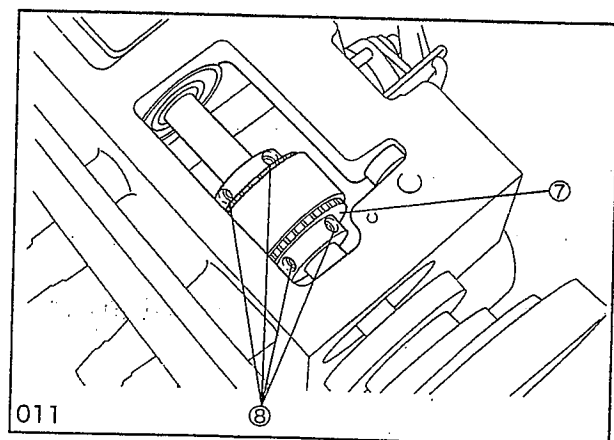
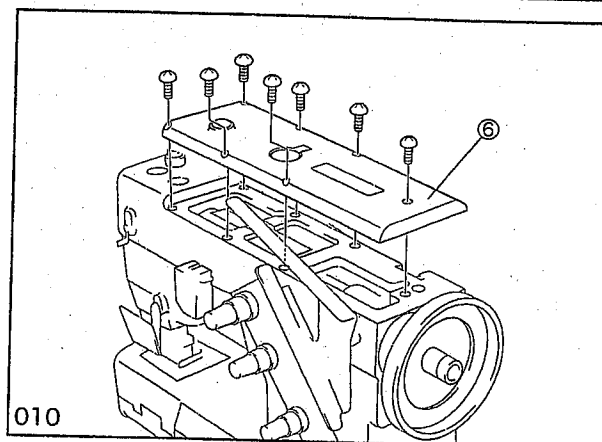
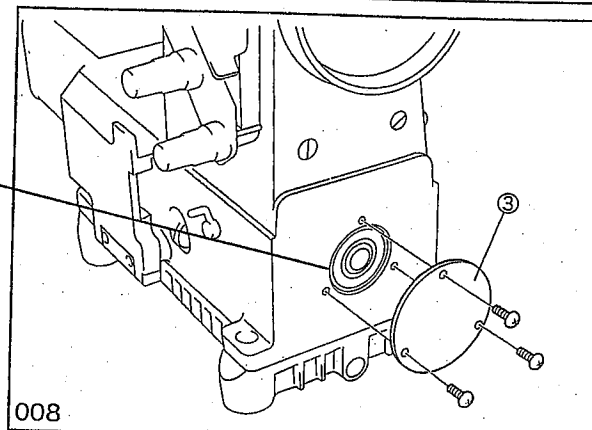
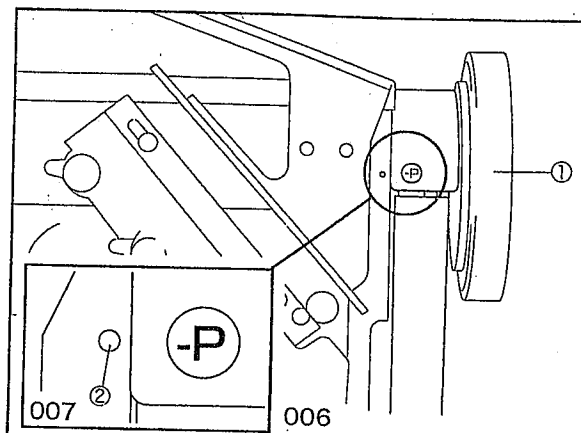
3. Check if the line ④ of the lower shaft side is vertical and the indication mark ⑤ is on the upper side.



Note: If the setting is different from that in Fig.009, make the following adjustment.

〈Making adjustment〉

1. Remove the upper cover ⑥.
2. Loosen the four screws ⑧ on the belt pulley (upper) ⑦ of the upper shaft.
3. Rotate the belt pulley (upper) ⑦ to the position where the line ④ on the side of the lower shaft is vertical and the indication mark ⑤ is on the upper side. (See Fig.009.)
4. Tighten the screws ⑧ on the belt pulley (upper) ⑦ of the upper shaft securely. (Tightening torque: 5N·m)
5. Replace the upper cover ⑥.
6. Replace the bearing cover ③.



3-2. Adjusting needle height

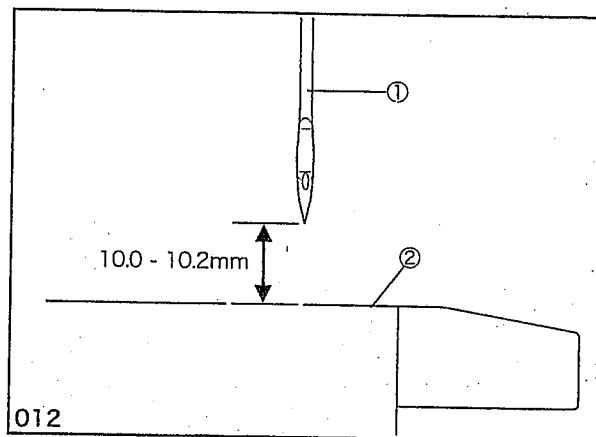
⚠ CAUTION

Before maintenance, ALWAYS turn off the power switch and check if the motor has already stopped.

〈Checking〉

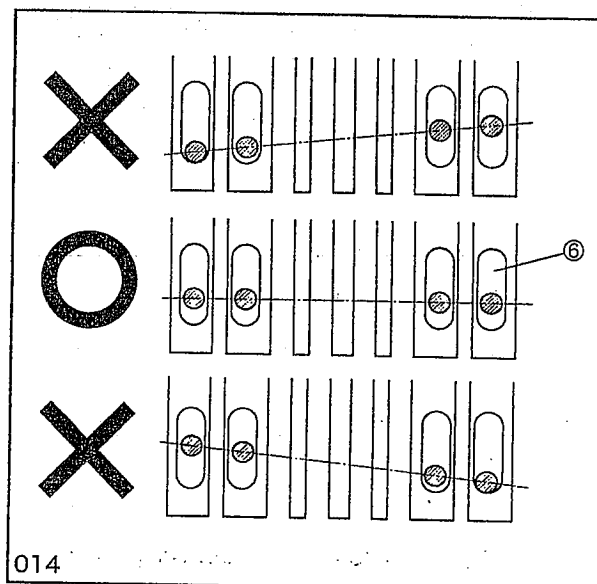
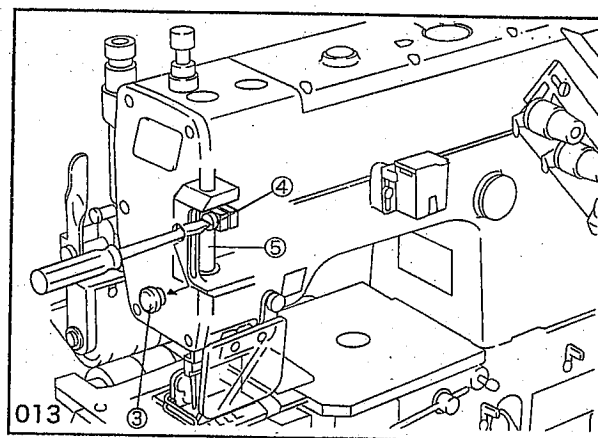
1. Remove the presser foot.
2. Remove the hand pulley and raise the needles① to the highest position.
3. Check if the distances from the stitch plate surface② to the needle① points are 10.0 - 10.2 mm.

Note: If the setting is different from that in Fig. 012, make the following adjustment.



〈Making adjustment〉

1. Remove the seal plug③ from the head cover.
2. Insert a flatblade screwdriver into the hole for the seal plug③, and loosen the screw④ for the needle bar bracket.
3. Adjust the up-and-down position of the needle bar so that the distance from the stitch plate surface② to the needle① point is 10.0 - 10.2 mm. Then, tighten the screw④ slightly. (See Fig. 013.)
4. Check if the needles① are parallel to the needle holes⑥ on the feed dog.
5. Tighten the screw④ securely. (Tightening torque: 4N·m)
6. Replace the seal plug③.



3-3. Removing and replacing stitch plate

⚠ CAUTION

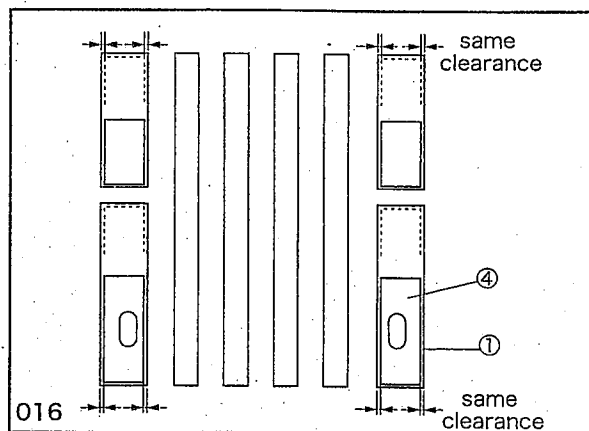
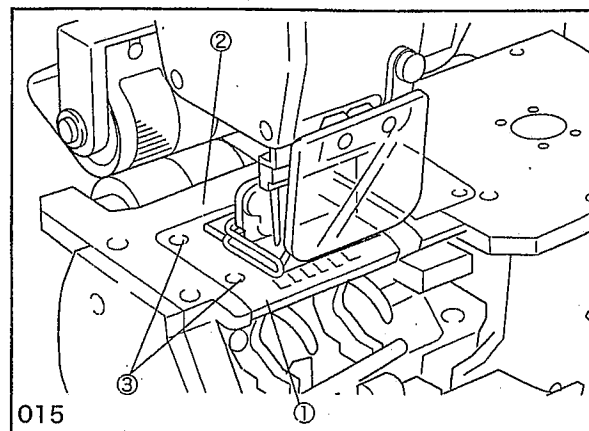
Before maintenance, ALWAYS turn off the power switch and check if the motor has already stopped.

When removing the stitch plate①, do not separate it from the stitch plate holder②. If you need to remove the plate① from the holder②, replace it taking the following steps.

〈Replacing stitch plate〉

1. Attach the stitch plate① temporarily to the stitch plate holder with the screws③.
2. Adjust the position of the stitch plate① so that the slots on the plate① are parallel to the feed dog④ and the all clearances are the same. Then tighten the screws③ securely.

At this moment, move the feed dog back and forth, and check if the clearances between the feed dog slots of the stitch plate and the feed dog are the same at the front and at the rear.



3-4. Adjusting feed dog

1. Adjusting feed dog's left-and-right position

⚠ CAUTION

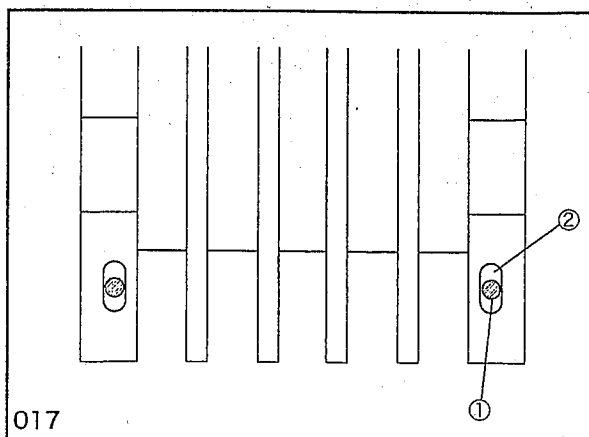
Before maintenance, ALWAYS turn off the power switch and check if the motor has already stopped.

When changing the feed dog, check the following and make needed adjustment

〈Checking〉

Check if the needles① are in the center of their needle holes②.

Note: If the setting is different from that in Fig.017, make the following adjustment.



《Making adjustment》

1. Remove the stitch plate holder.
2. Check if the feed dog② and the feed dog bracket③ are parallel.

How to check

- Measure the distance from the inner side of the cylinder case to the left side of the feed dog at the front and rear.

If the two distances are not the same, loosen the screw④ on the feed dog② and make adjustment.

- Then check if the needles are in the center of the needle holes.

3. When the machine has a puller, remove the lower roller⑤.

When the machine does not have a puller, remove the cylinder cover (rear)⑥.

4. Loosen the two screws on the feed bar⑦, and move the bar⑦ to the left or to the right so that the needles① are in the center of the needle holes on the feed dog②.

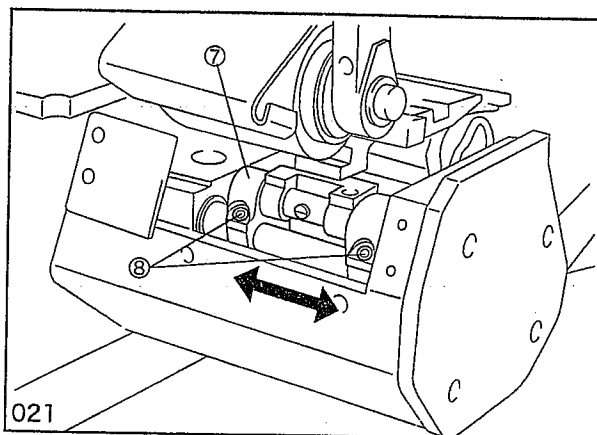
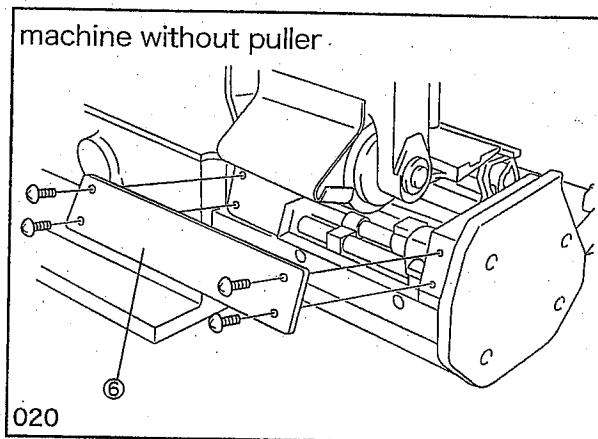
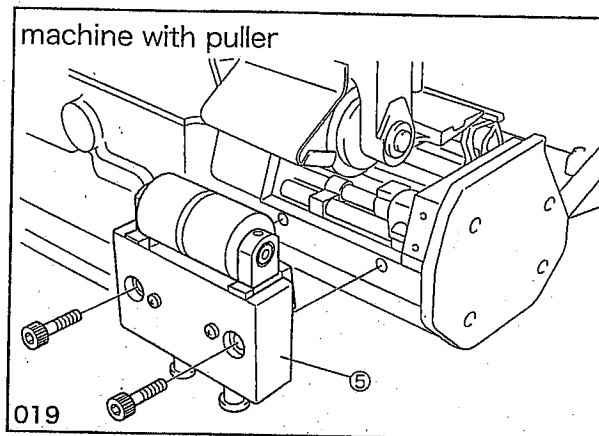
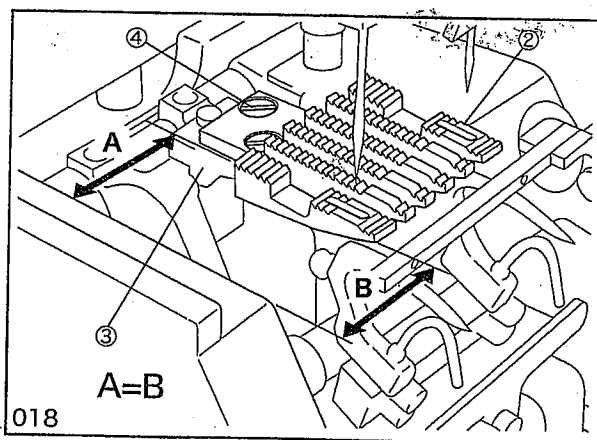
5. Tighten the two screws⑧ securely on the feed bar⑦. (Tightening torque: 3.5N·m)

Attention

After adjusting the left-and-right position of the feed dog, follow the steps in "Adjusting front-and-rear position."

6. When the machine has a puller, replace the lower roller⑤.

When the machine does not have a puller, replace the cylinder cover (rear)⑥.

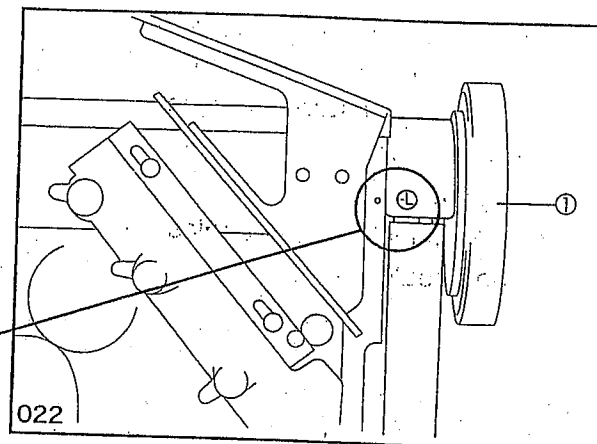
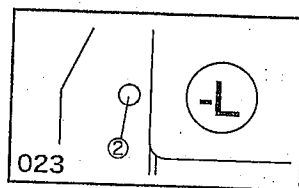


2. Adjusting front-and-rear position of feed dog

⚠ CAUTION

Before maintenance, ALWAYS turn off the power switch and check if the motor has already stopped.

Whenever making the adjustment "1. Adjusting feed dog's left-and-right position," always make the following adjustment.

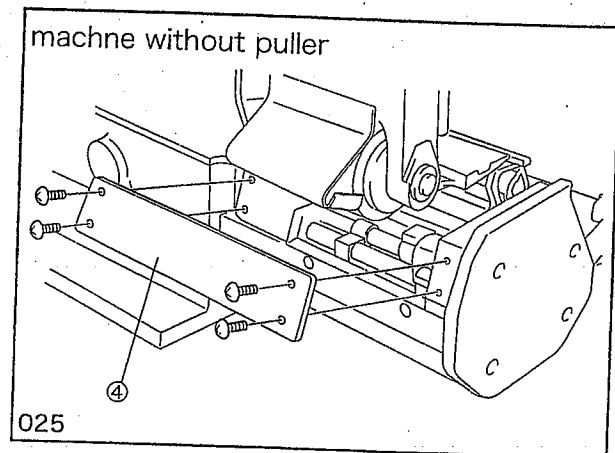
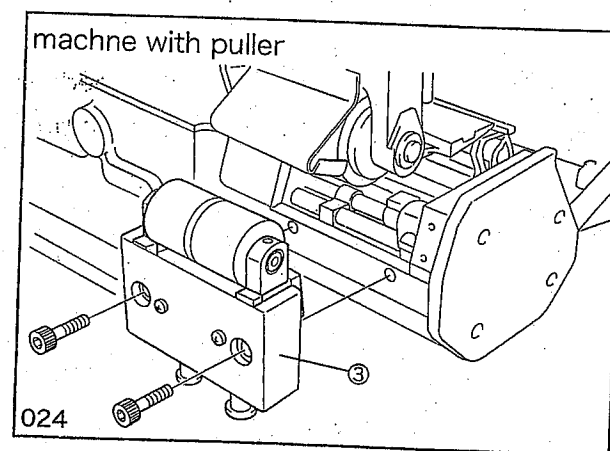


〈Making adjustment〉

1. Rotate the hand pulley① and set the "L" mark to the indication mark②.
Then the stitch length becomes the longest.

2. When the machine has a puller, remove the lower roller③.

When the machine does not have a puller, remove the cylinder cover (rear)④.



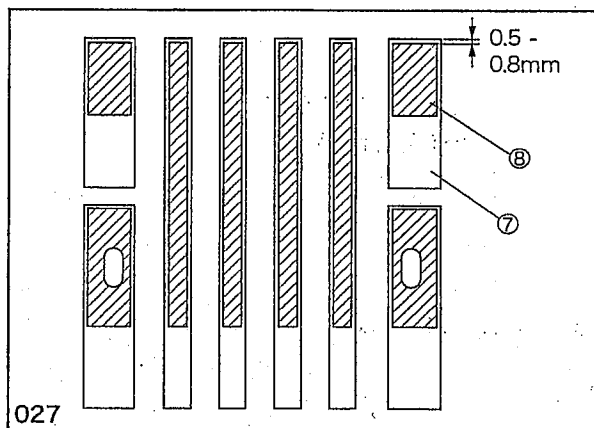
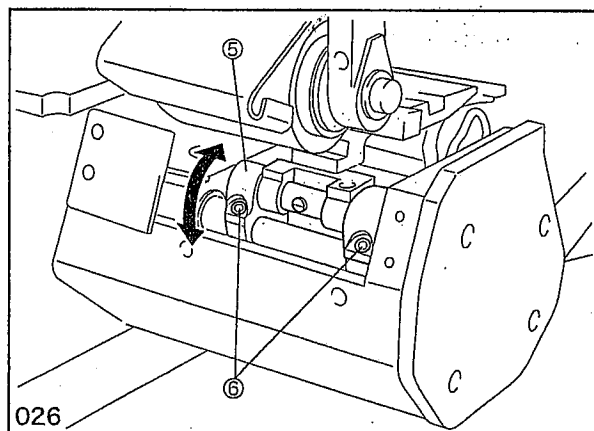
3. Loosen the two screws⑥ on the feed bar⑤.
4. Rotate the hand pulley① and adjust the feed bar⑤'s front-and-rear position so that the rear clearance is 0.5 - 0.8 mm when the feed dog⑧ is at the extreme rear against the slots of the stitch plate⑦.

⚠ CAUTION

When adjusting the feed bar⑤'s front-and-rear position, the retainer may touch the needles and the needle guards. In this case, adjust the needles, the needle guards, and the retainer so that they do not touch each other. Then readjust the feed bar⑤'s position.

5. Tighten the two screws⑥ on the feed bar⑤ securely. (Tightening torque: 3.5 N·m)
6. When the machine has a puller, replace the lower roller③.

When the machine does not have a puller, replace the cylinder cover (rear)④.



3. Adjusting feed dog's height

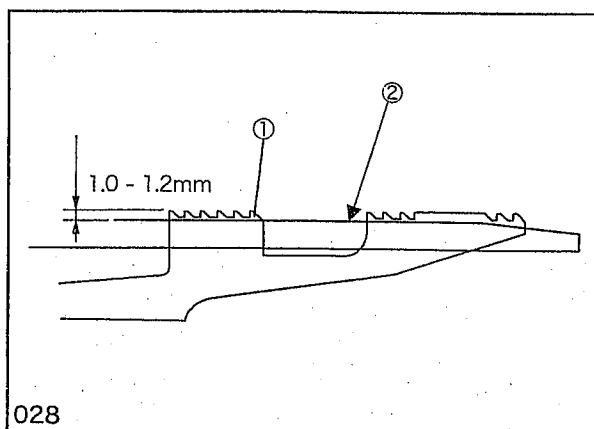
⚠ CAUTION

Before maintenance, ALWAYS turn off the power switch and check if the motor has already stopped.

〈Checking〉

Check if the feed dog① is parallel to the stitch plate② surface and the distance between them is 1.0 - 1.2 mm when the feed dog is in the highest position.

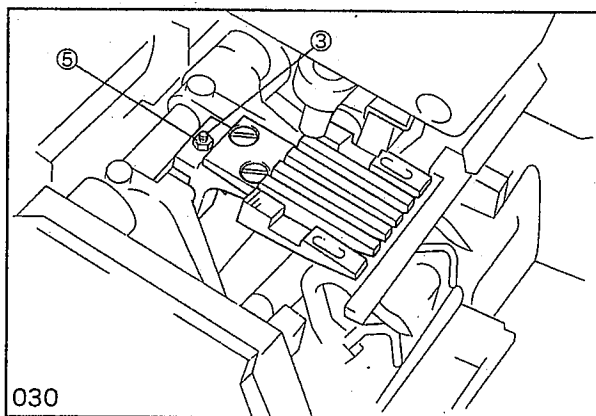
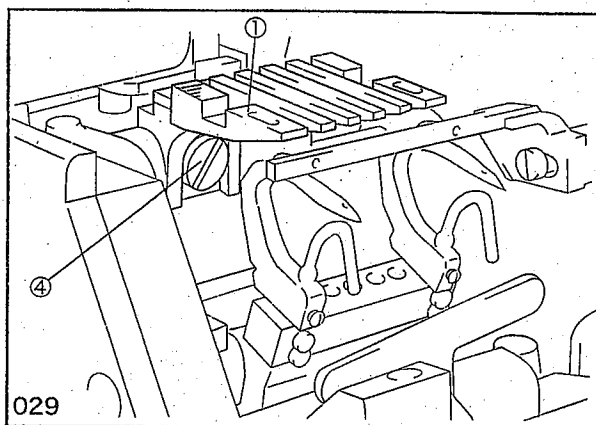
Note: If the machine's setting is different from that in Fig.027, make the following adjustment.



〈Making adjustment〉

1. Remove the needles, the presser foot, and the stitch plate holder.
2. Loosen the adjusting screw③, nut⑤, and screw④ on the feed dog①.
3. Adjust the feed dog①'s up-and-down position, and tighten the screw④.
4. Tighten the adjusting screw③ so that it softly touches the feed dog bracket (lower), and fasten it with the nut⑤.
5. Replace the stitch plate holder, the presser foot, and the needles.

Note: Once making this adjustment, it does not need to repeat this adjustment even if the feed dog is removed for cleaning.



3-5. Adjusting needle feed

1. Adjusting front-and-rear position (exceptional adjustment)

⚠ CAUTION

Before maintenance, ALWAYS turn off the power switch and check if the motor has already stopped.

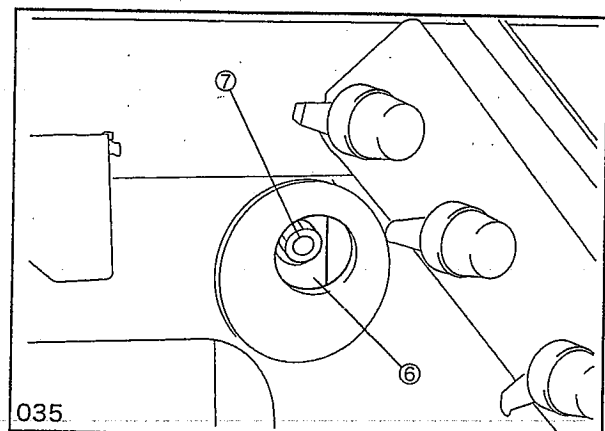
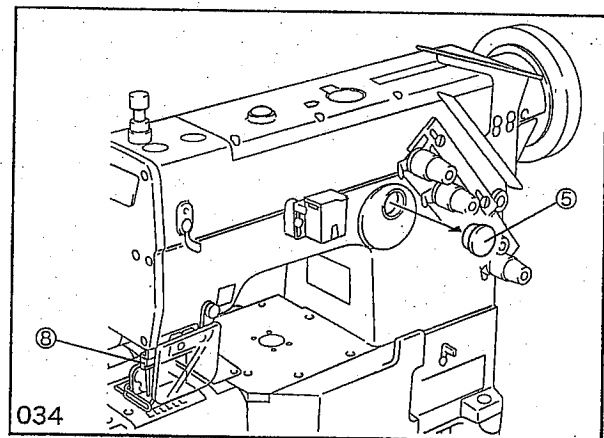
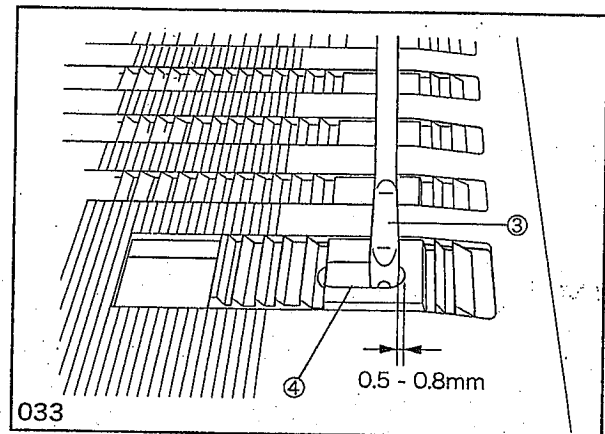
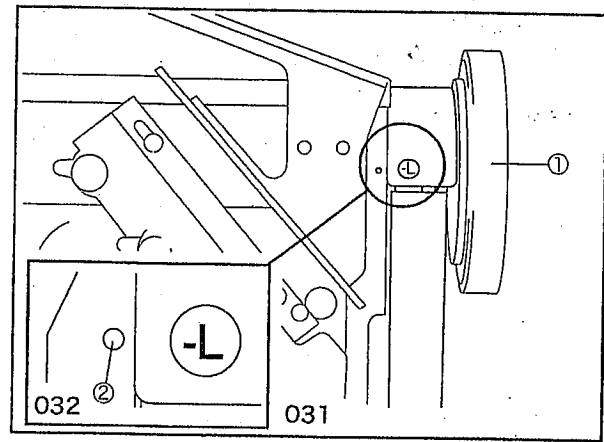
〈Checking〉

1. Rotate the hand pulley① and set the "L" mark to the indication mark②. Then the stitch length becomes the longest.
2. Rotate the hand pulley① so that the upper end of needle eyes③ and the stitch plate surface are at the same height.
3. Check if the clearances between the needle holes on the feed dog④ and the needles③ are 0.5 - 0.8 mm at the front.

Note: If the machine's setting is different from that in Fig.032, make the following adjustment.

〈Making adjustment〉

1. Remove the seal plug⑤ from the arm.
2. Loosen the screw⑦ on the driving lever⑥.
3. Adjust the clearances between the needle holes④ on the feed dog and the needle front by moving the needle clamp⑧ so that they become 0.5 - 0.8 mm.
4. Tighten the screw⑦ on the driving lever⑥ securely. (Tightening torque: 12N·m)
5. Replace the seal plug⑤ to the arm.



2. Adjusting back-and-forth moving amount (exceptional adjustment) (synchronized with feed dog)

⚠ CAUTION

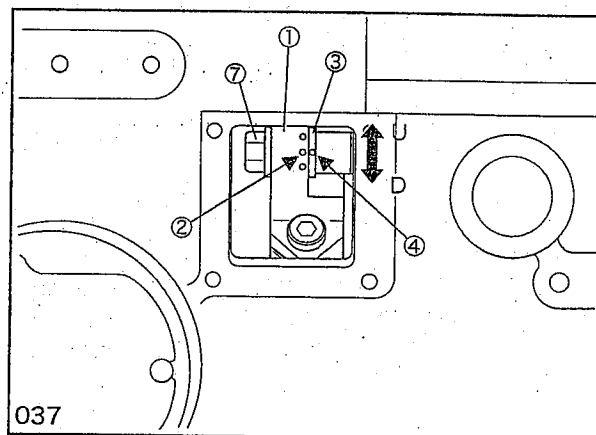
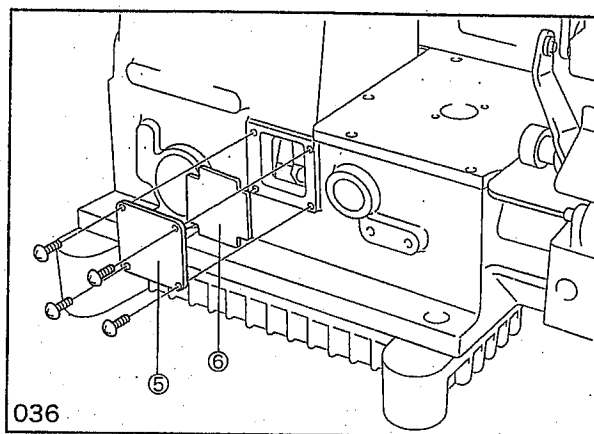
Before maintenance, ALWAYS turn off the power switch and check if the motor has already stopped.

In the standard position, the indication mark② on the center of the needle rocker lever① and the indication mark④ on the pin③ are on the same line as shown in Fig.036. On this condition, moving amount of the needles and that of feed dog are the same. When it is needed to change the moving amount of the needles against the feed dog, make the following adjustment.

〈Making adjustment〉

1. Remove the rear cover (lower)⑤ and the rear cover (lower) gasket⑥.
2. Loosen the nut⑦ on the pin③.
3. Move the pin③ to the U or D directions.
 - When the pin is moved to the U direction, the moving amount of the needles increases against the feed dog.
 - When the pin is moved to the D direction, moving amount of the needles decreases against the feed dog.
4. Tighten the nut⑦ on the pin③ securely.
5. Replace the rear cover (lower)⑤ and the rear cover (lower) gasket⑥.

Note: When the indication mark on the hand pulley is set to 5 or more, do not set the pin③ at its extreme position to the direction U.



3-6. Adjusting loopers and retainers

1. Adjusting timing between needles and loopers

⚠ CAUTION

Before maintenance, ALWAYS turn off the power switch and check if the motor has already stopped.

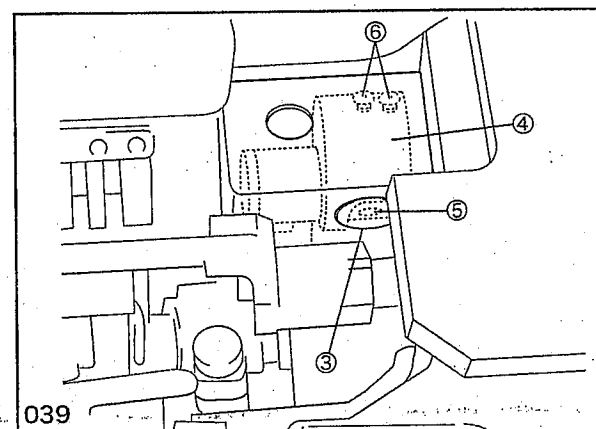
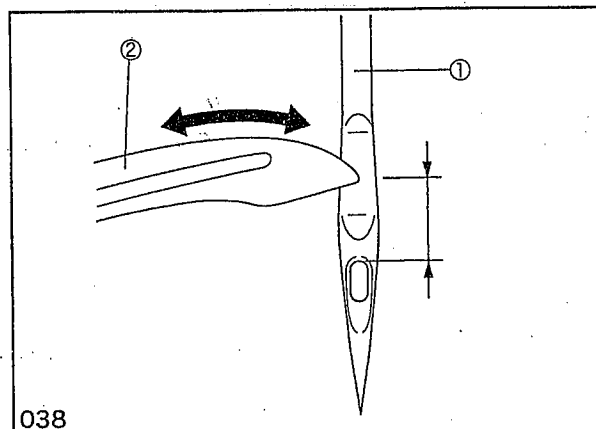
〈Checking〉

Rotate the hand pulley and check if the needles① and the loopers② pass the same point around their travel.

Note: At shipment, the machine is adjusted on condition that the indication mark is set to 3.

〈Making adjustment〉

1. Remove the seal plug③.
2. Loosen two screws⑤ on the looper eccentric④.
3. Loosen one of two screws⑥ on the looper eccentric④, and tighten the other screw.
4. Check the timing between the needles① and the loopers②.
 - When the timing is still not correct (the difference is small), repeat step 3.
 - When the timing is still not correct (the difference is big or reverses), change the tightened screw⑥ and the loosened screw at the step 3.
5. After adjustment, tighten the screws⑤ on the looper eccentric④. (tightening torque: 3N·m)



2. Adjusting loopers' distances

⚠ CAUTION

Before maintenance, ALWAYS turn off the power switch and check if the motor has already stopped.

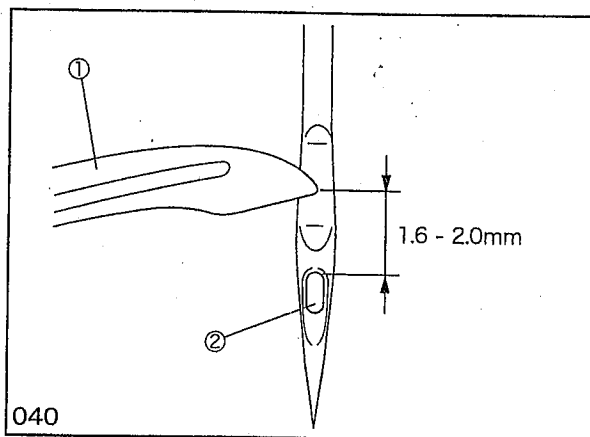
〈Checking〉

Check if the looper ① points pass 1.6 - 2.0 mm higher point from the needle eye ②'s upper ends.

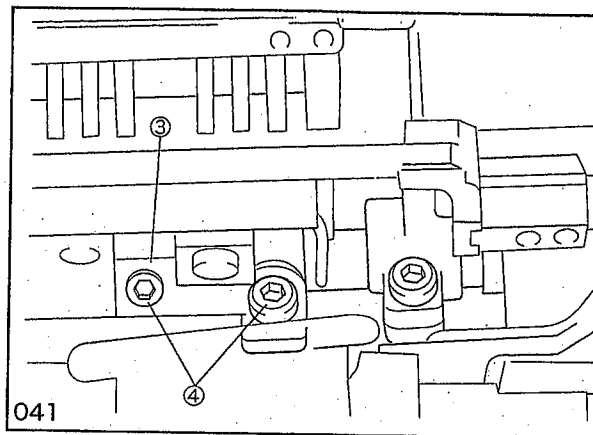
〈Making adjustment〉

After loosening the two screws ④ on the looper holder (lower) ③, adjust the front-and-rear position of the loopers ① by moving the holder ③.

After adjustment, tighten the screws ④ securely.
(Tightening torque: 10N·m)



040



041

3. Adjusting loopers' angle

⚠ CAUTION

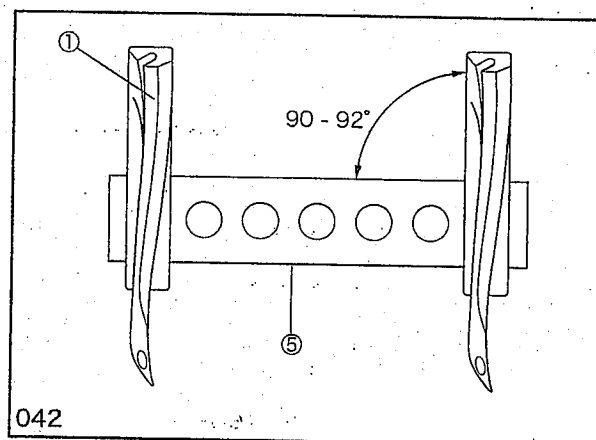
Before maintenance, ALWAYS turn off the power switch and check if the motor has already stopped.

〈Checking〉

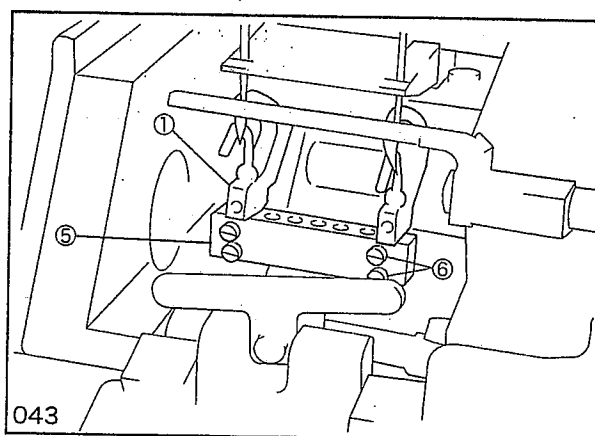
Check if the loopers' angle is 90 - 92°.

〈Making adjustment〉

After loosening the screws ⑥ on the loopers ①, adjust the loopers' angle. Then tighten the screws ⑥ securely. (Tightening torque: 1.5 N·m)



042



043

Attention

Do not set the loopers ① angle to 90° or less.

4. Adjusting clearance between loopers and needles

⚠ CAUTION

Before maintenance, ALWAYS turn off the power switch and check if the motor has already stopped.

〈Checking〉

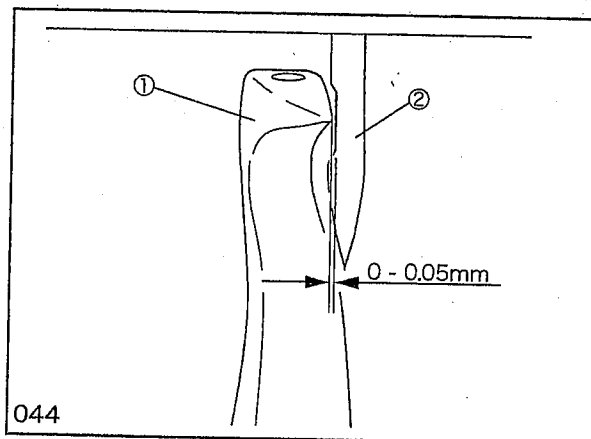
Check if the clearance between the looper① points and the needles② are 0 - 0.05 mm when the needle guards⑥ do not push the needles.

〈Making adjustment〉

1. Adjust the angle of all the loopers① (two or four) to 90°, and tighten the screws③ on the loopers① slightly.
2. Move the looper holder④ to the right so that the loopers① get near to the needles②.
3. Move the looper holder④ to the right so that the biggest clearance between a looper and a needle is 0 - 0.05 mm. Then tighten the screws③ on the loopers① and the screw⑤ on the holder④ securely.
4. Turn other loopers to the direction of 92°, and readjust their angle so that the clearances between these loopers and the needles are 0 - 0.05 mm. Then tighten the screws③ on the loopers① securely.

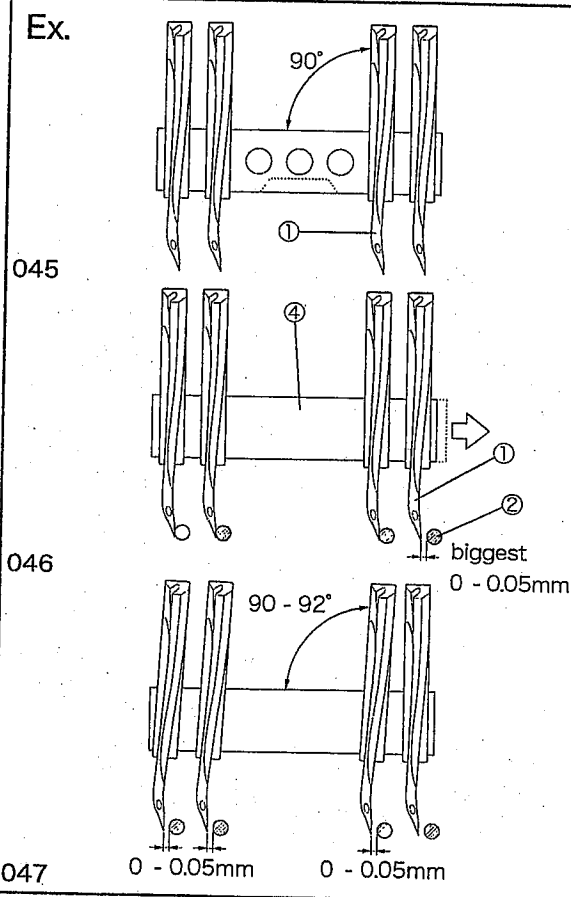
⚠ CAUTION

- If the loopers angle is 92° or more, the loopers can hit the loop deflector.
- If the loopers angle is 90° or less, skip stitch can easily happen when the retainers catch the looper threads in their receding movement.



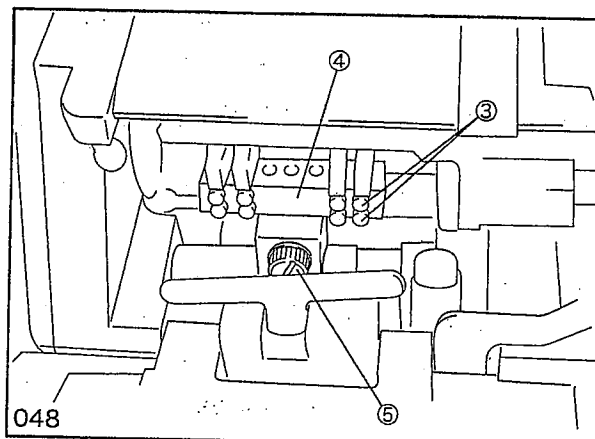
044

Ex.



0 - 0.05mm

0 - 0.05mm



048

5. Adjusting clearance between needles and needle guards

⚠ CAUTION

Before maintenance, ALWAYS turn off the power switch and check if the motor has already stopped.

Adjust the needle guards① so that they push the needles② by 0 - 0.05 mm.

At this moment, the clearances between the looper③ points and the needles② will be 0 - 0.1 mm.

⟨Making adjustment⟩

After loosening the screws④ on the needle guards①, turn the needle guards① so that they push the needles② by 0 - 0.05 mm.

Then tighten the screws④ securely.

6. Adjusting clearances between retainers and needles

⚠ CAUTION

Before maintenance, ALWAYS turn off the power switch and check if the motor has already stopped.

⟨Checking⟩

When the needles② move down and the needle② points and the retainer pin④ points come to the same height, check if the clearances between them are 1.6 - 1.8 mm.

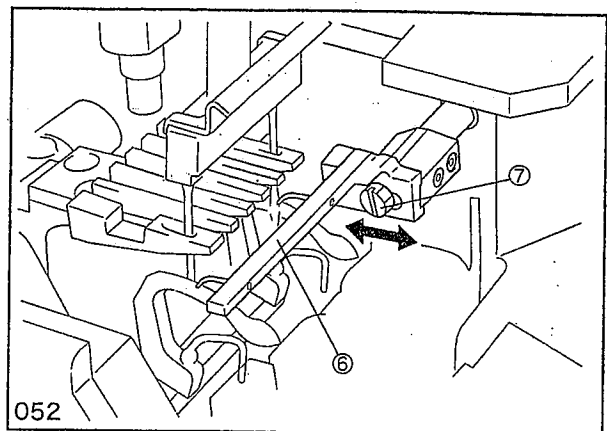
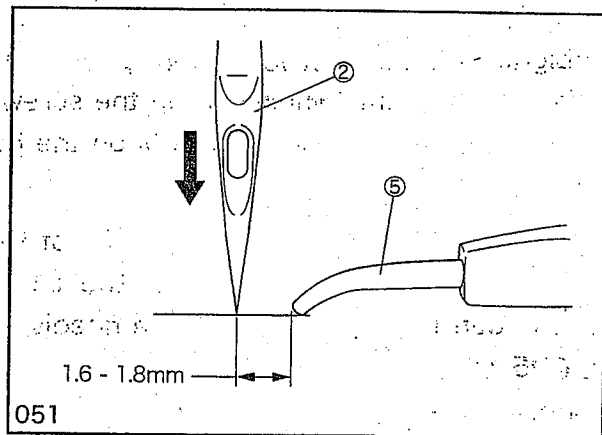
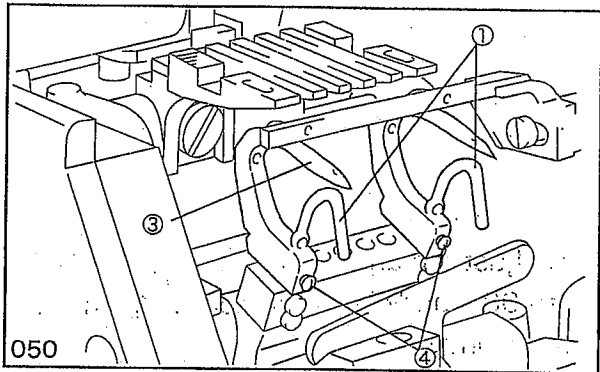
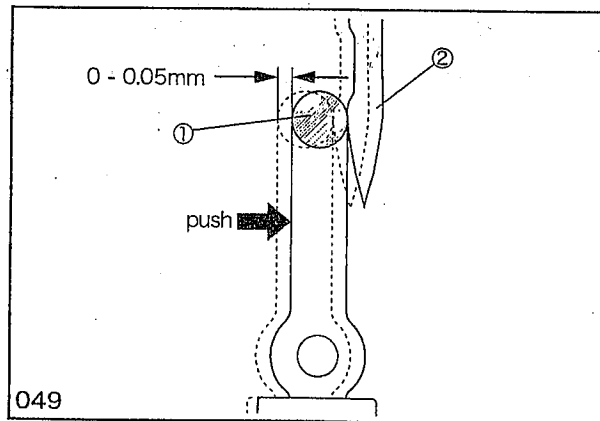
Note: At shipment, the machine is adjusted when the indication mark on the hand pulley is set to 3.

⟨Making adjustment⟩

After loosening the screw⑦ on the retainer⑥, set the clearances to 1.6 - 1.8 mm. Then tighten the screw⑦ securely. (Tightening torque: 2 N·m)

Note: Whenever setting the indication mark on the hand pulley to 4 or more, adjust the clearances between the retainers⑥ and the needles.

Note: Whenever making stitch length longer, readjust the clearances because changing stitch length also changes the size of the clearances (1.6 - 1.8 mm).



7. Adjusting left-and-right position of retainers

⚠ CAUTION

Before maintenance, ALWAYS turn off the power switch and check if the motor has already stopped.

〈Checking〉

Check if the right side of the retainer pin② points are near to the left side of the loopers① when the loopers① are at the extreme front.

Note: This should be correct only when the timing of the retainer eccentric is standard.

〈Making adjustment〉

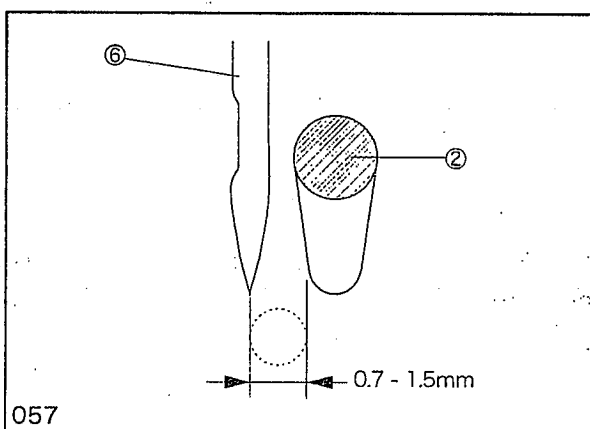
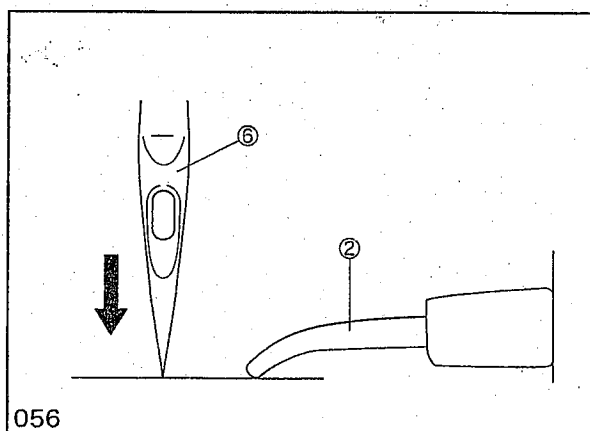
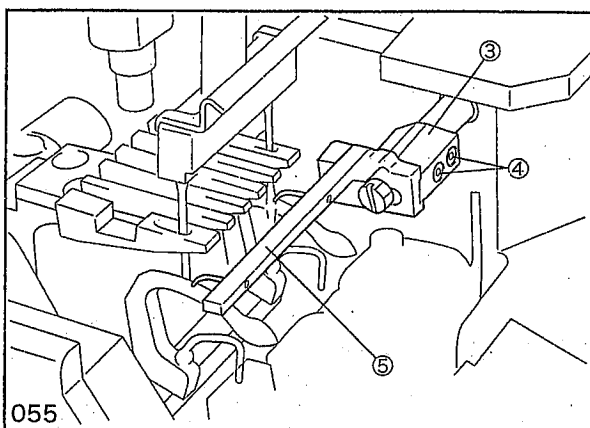
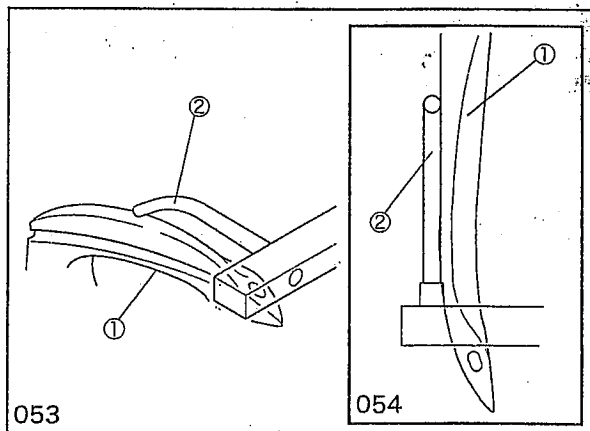
1. Loosen the screws④ on the retainer holder③.
2. Move the retainer⑤ to the left or right so that the retainer pin② points are near to the left side of the loopers①.
3. Tighten the screws④ on the retainer holder③.
(Tightening torque: 2 N·m)

NOTICE

- If the retainer pins② are positioned too right, skip stitch can easily happen when the pins② catch the looper threads and hinder formation of a thread chain.
- If the retainer pins② are positioned too left, the needles can penetrate the looper threads and skip stitch can easily happen.

〈Helpful hint〉

When the needles move down and the needle⑥ points and the retainer pin② points come to the same height (see Fig.056), the clearances between the needle⑥ points and the left side of the retainer pins② will be roughly the same size of the retainer pin② point's diameter (0.7 - 1.5 mm). (See Fig.056.)



8. Adjusting height of retainer points

⚠ CAUTION

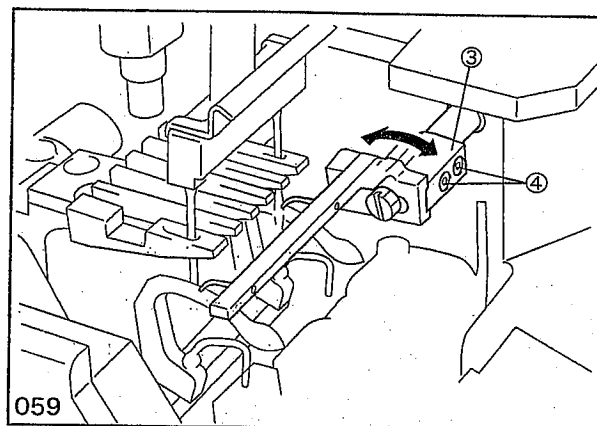
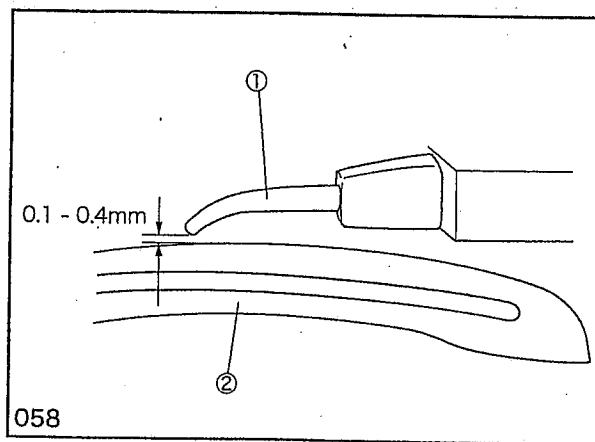
Before maintenance, ALWAYS turn off the power switch and check if the motor has already stopped.

〈Checking〉

Check if the clearances between the retainer pin ① points and the upper side of the loopers ② are 0.1 - 0.4 mm when the retainer pins ① come to the nearest position to the upper side of the loopers ②.

〈Making adjustment〉

1. Loosen the screws ④ on the retainer holder ③.
2. Turn the holder ③ to the directions in Fig.058 and set the clearances between the retainer pin ① points and the upper side of the loopers ② to 0.1 - 0.4 mm.
3. Tighten the screws ④ securely.



9. Timing between retainer and needles(exceptional adjustment)

⚠ CAUTION

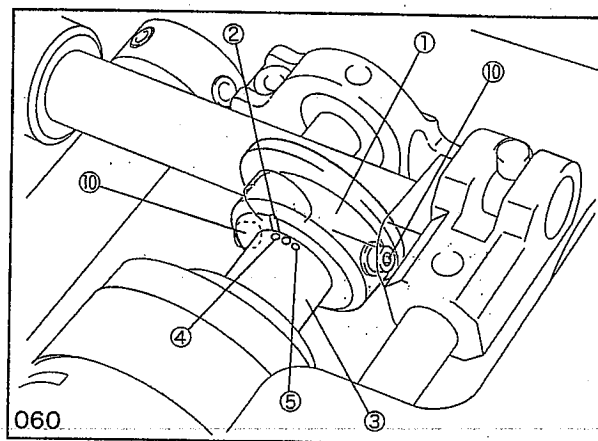
Before maintenance, ALWAYS turn off the power switch and check if the motor has already stopped.

〈Checking〉

In the standard setting, the indication mark ② on the retainer eccentric ① is set to the indication mark ④ on the lower shaft (left) ③.

When the indication mark ② is set to the indication mark ⑤, movement of the retainer and the looper thread take-up is hastened against the needles and the loopers.

When the indication mark ② is set to the indication mark ④, movement of the retainer and the looper thread take-up is delayed against the needles and the loopers.



When it is needed that looper threads come out loosely (when more thread is needed), it is advisable to hasten the movement.

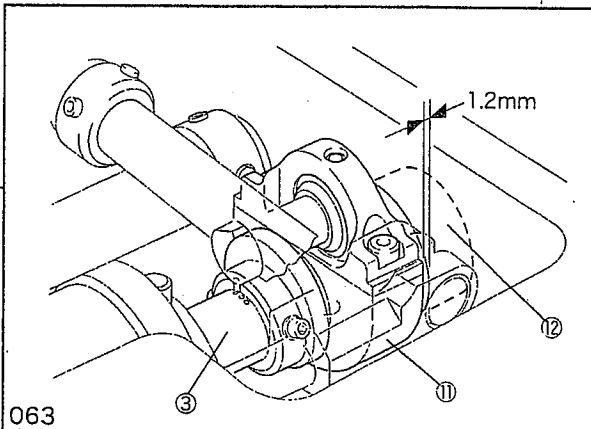
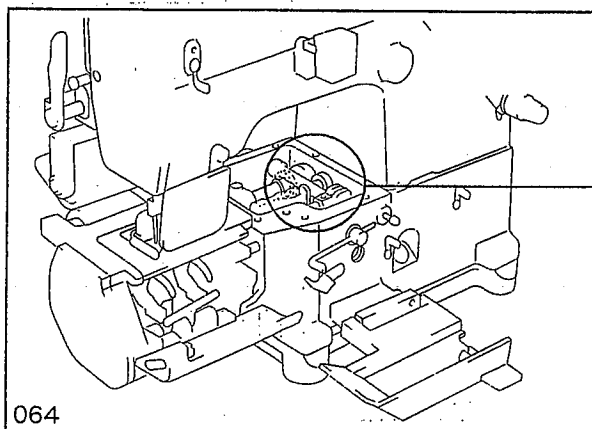
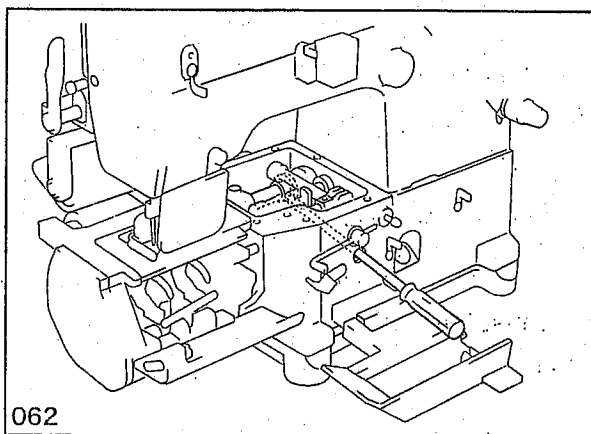
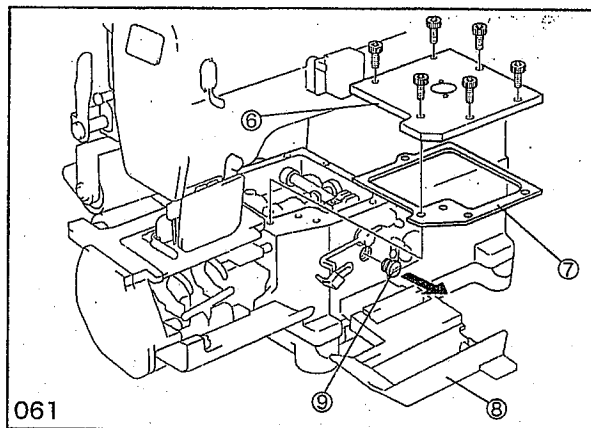
When using slippery threads (like a tetolon thread), it is sometimes advisable to delay the movement because it can stabilize sewing condition.

《Making adjustment》

1. Remove the bed top cover⑥ and the bed top cover gasket⑦.
2. Open the front cover⑧ and remove the screw⑨ on the bed.
3. Loosen the two screws⑩ on the retainer eccentric①.
4. Turn the eccentric① and adjust the position of the indication mark②.
5. Tighten the two screws⑩ on the eccentric① securely. (Tightening torque: 3.5 N·m)
At this moment, check if the clearance between the retainer rod⑪ and the lower shaft bushing (right)⑫ is 1.2 mm.
6. Replace the bed top cover⑥ and the bed top cover gasket⑦.

Note: After making this adjustment, always readjust "timing between loopers and needles," "clearances between retainers and needles," "height of retainer points," and "left-and-right position of retainers."

7. Replace the screw⑨ on the bed. At this moment, place liquid gasket on its threaded portion.



10. Adjusting loop deflectors

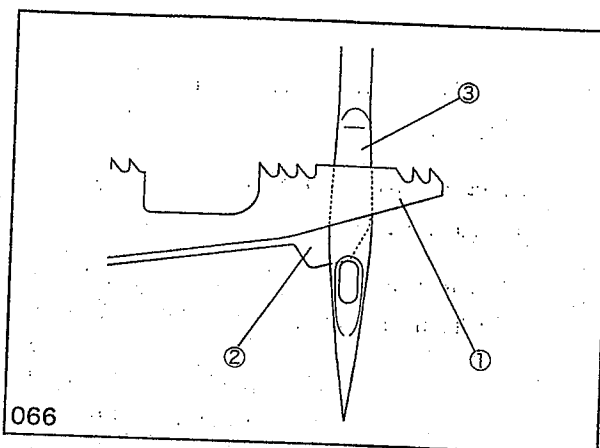
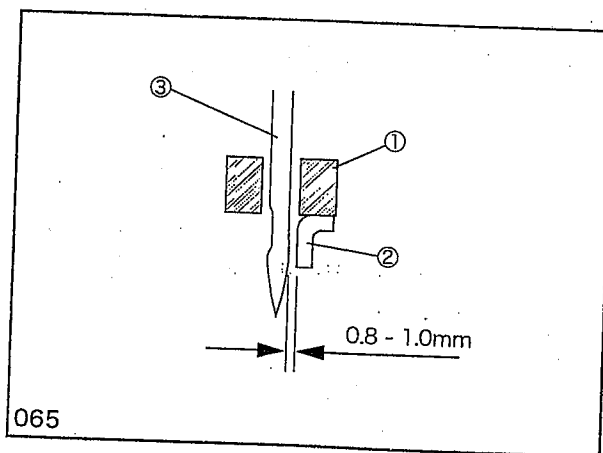
⚠ CAUTION

Before maintenance, ALWAYS turn off the power switch and check if the motor has already stopped.

〈Checking〉

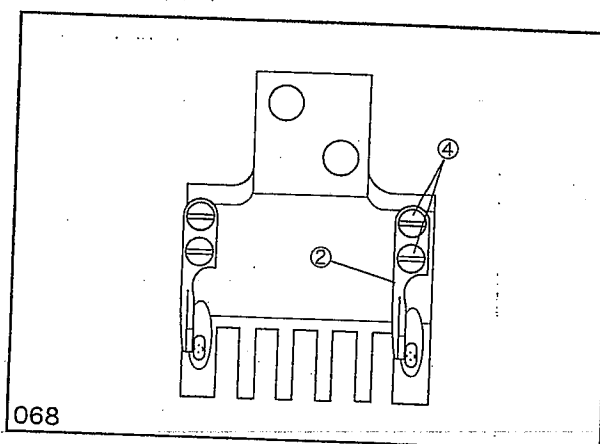
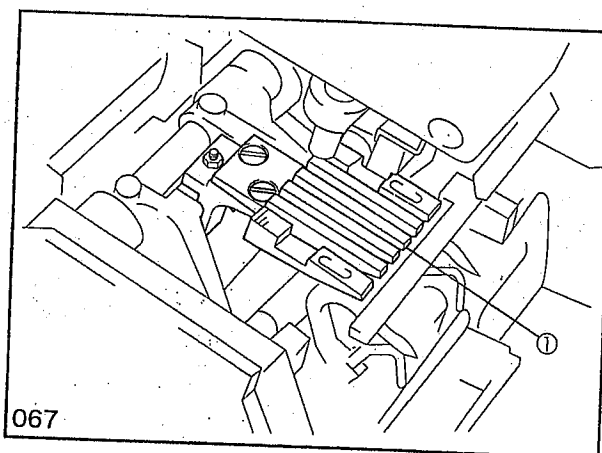
Check if the clearances between the loop deflectors② on the feed dog① and the needles are the same to that in Fig.065.

Regarding the front-and-rear position, check if the loop deflector points are not over the needle front when the needles are in the needle holes on the stitch plate.



〈Making adjustment〉

1. Remove the presser foot and the stitch plate holder.
2. Remove the feed dog①.
3. Loosen the screws④ on the loop deflectors② and adjust the deflectors④.
4. After adjustment, tighten the screws④.
5. Replace the feed dog①, the stitch plate holder, and the presser foot.



3-7. Adjusting presser foot

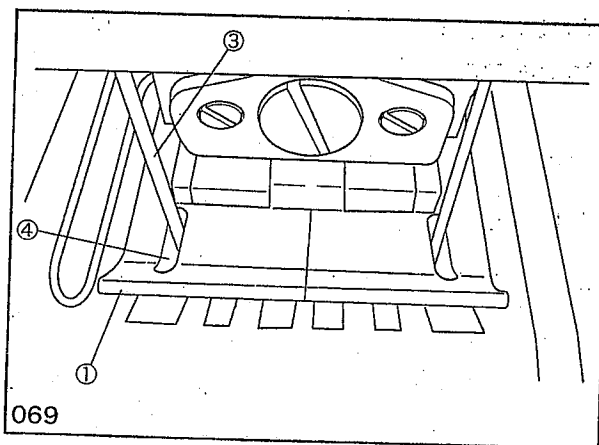
1. Adjusting presser foot's position

⚠ CAUTION

Before maintenance, ALWAYS turn off the power switch and check if the motor has already stopped.

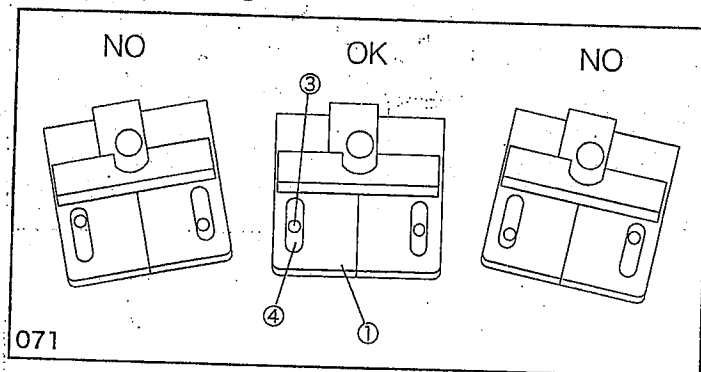
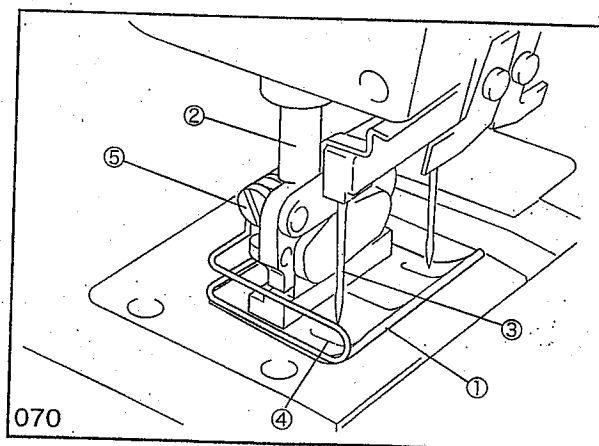
〈Checking〉

Check if the presser foot① is inserted properly into the presser bar② and the needles③ pass the center of the needle holes④ on the presser foot①.



〈Making adjustment〉

Loosen the screw (5) on the presser foot (1), and turn the presser foot (1) to the right or left so that the needles (3) pass the center of the needle holes (4) on the presser foot (1).



2. Adjusting presser foot's height

⚠ CAUTION

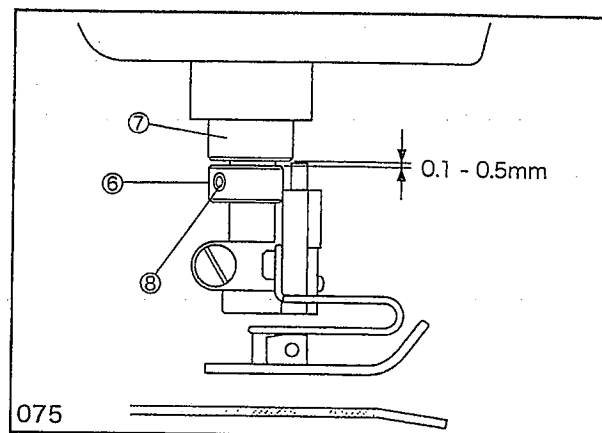
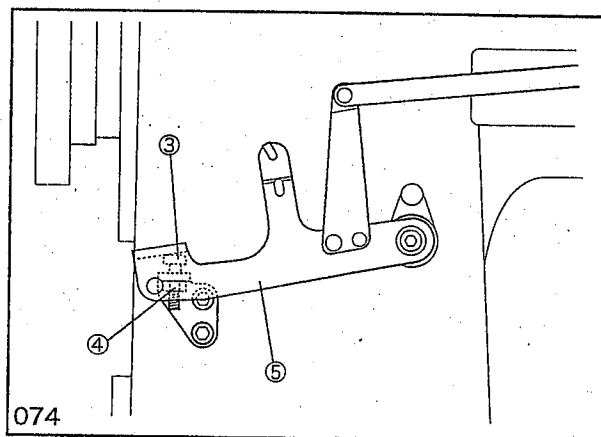
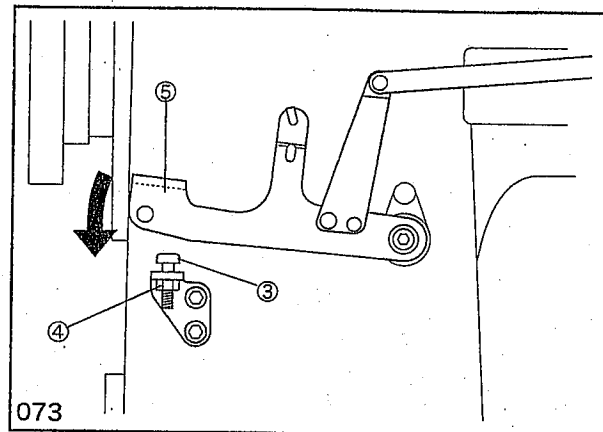
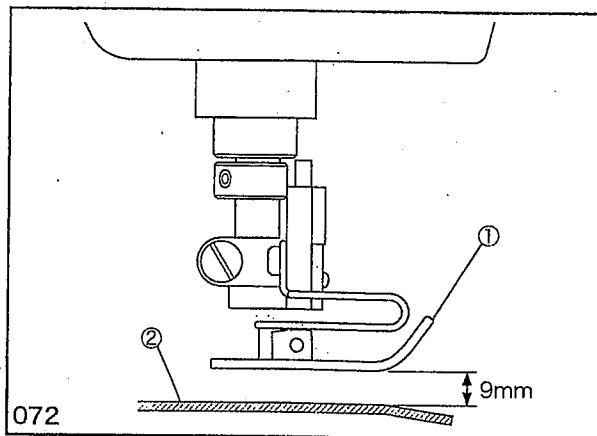
Before maintenance, ALWAYS turn off the power switch and check if the motor has already stopped.

〈Checking〉

Check if the presser foot①'s height is 9 mm from the stitch plate② surface when lifting the presser foot①, attaching a block to it, and making it parallel to the stitch plate surface②.

〈Making adjustment〉

1. Loosen the nut④ on the screw③.
2. Push down the lifter lever⑤ and make the presser foot①'s height 9 mm from the stitch plate surface②. At this moment, adjust the screw③ so that the lever⑤ does not move down from this position.
3. Tighten the nut④ on the screw③ securely.
4. Set the clearance between the collar⑥ and the presser bar bushing ⑦ to 0.1 - 0.5 mm when the presser foot's height is 9 mm from the stitch plate surface②.
To adjust the clearance, loosen the two screws⑧ on the collar⑥, and move the collar⑥ up or down. After adjustment, tighten the screws⑧ securely.



3-8. Adjusting puller

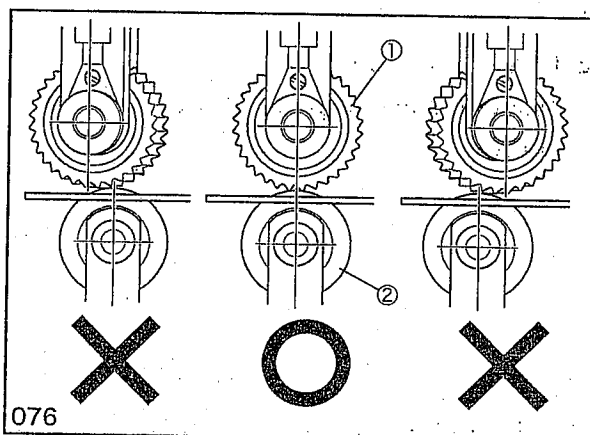
1. Adjusting upper roller's position

⚠ CAUTION

Before maintenance, ALWAYS turn off the power switch and check if the motor has already stopped.

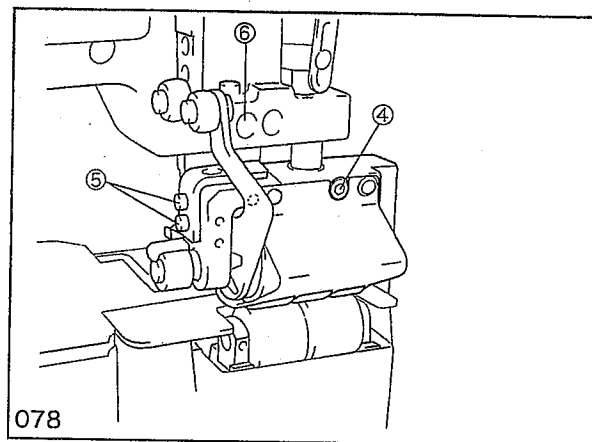
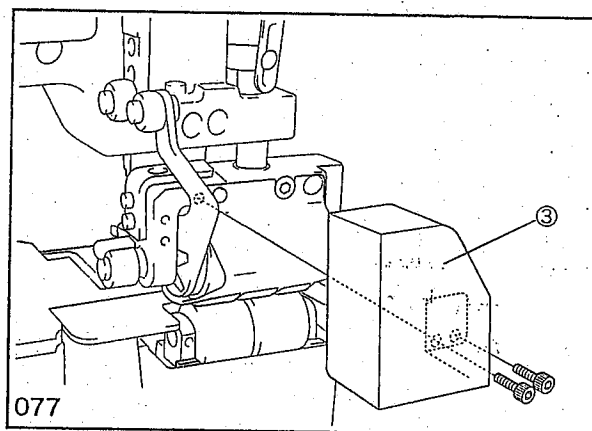
〈Checking〉

- Check if the teeth portion of the upper roller① and the lower roller② are parallel.
- Check if the upper roller moves up and down smoothly after removing the adjusting screw.



〈Making adjustment〉

1. Remove the clutch driving lever cover③.
2. Loosen the screw④ on the upper feed roller yoke, the screw⑤ on the yoke guide, and the screw⑥ on the yoke pin⑥. Then, adjust the upper roller① so that its teeth portion and the lower roller② are parallel.
3. Fasten the upper roller by tightening the screw④ on the yoke and the screw⑤ on the yoke guide.
4. Check if the upper roller① moves up and down smoothly. Then, tighten the screw⑥ on the yoke pin securely.
5. Replace the clutch driving lever cover③.



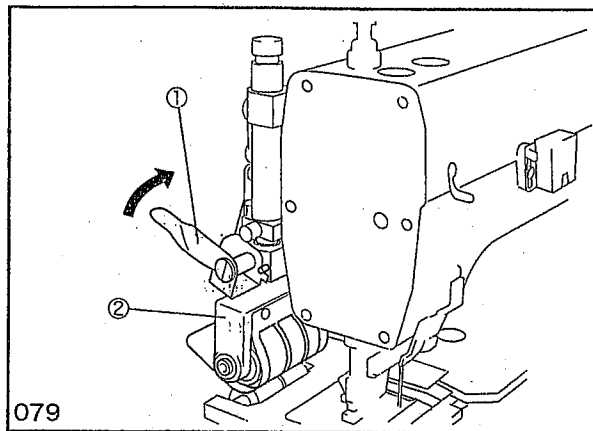
2. Adjusting lower roller's height

⚠ CAUTION

Before maintenance, ALWAYS turn off the power switch and check if the motor has already stopped.

〈Checking〉

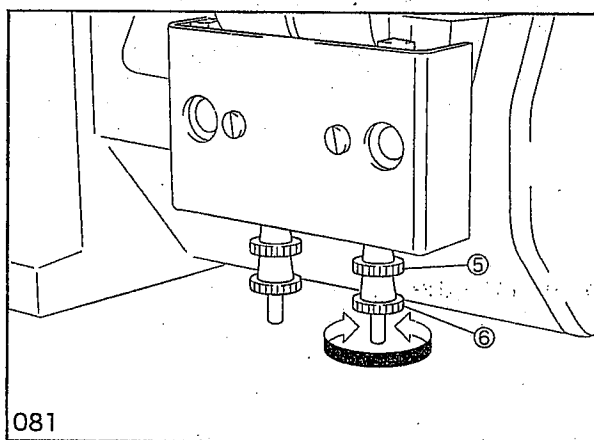
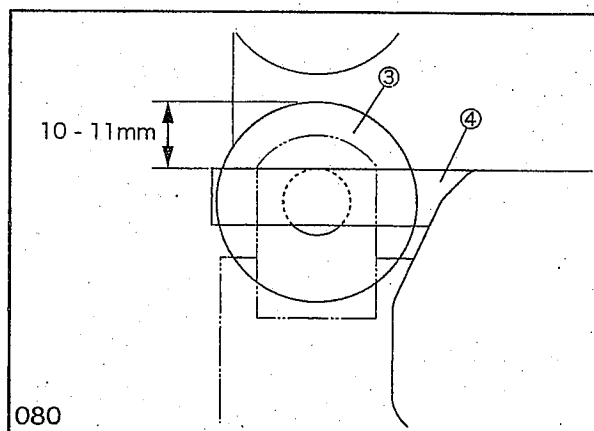
1. Lift the upper roller②, using the lifting lever①.
2. Check if the setting of the lower roller③ and the cylinder cover (upper)④ are the same to that in Fig.080.



〈Making adjustment〉

1. Loosen the rock nuts⑥ on the adjusting nuts⑤.
2. Set the lower roller③ and the cylinder cover (upper)④ to the position in Fig.080, using the adjustment nuts⑤.
3. After adjustment, tighten the rock nuts⑥ securely.

Note: Whenever making adjustment, always adjust both of the left and right adjusting nuts.



3. Adjusting upper roller's up-and-down position (upper roller's pressure)

⚠ CAUTION

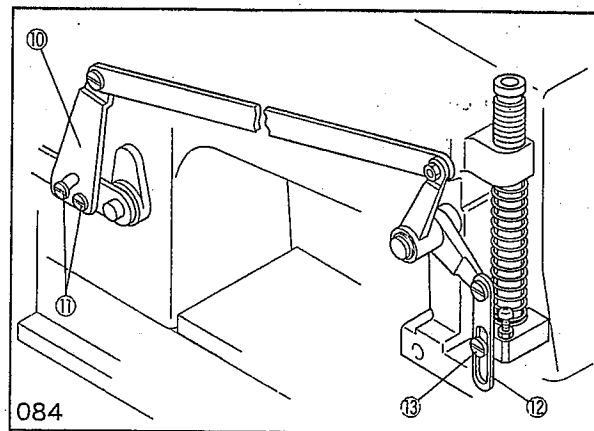
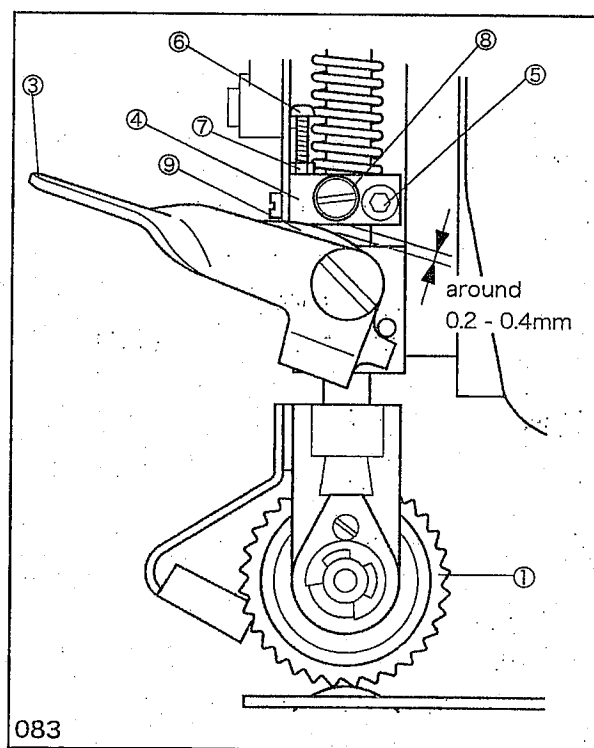
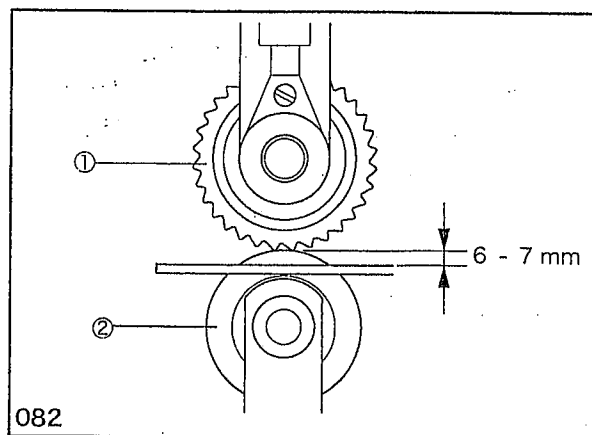
Before maintenance, ALWAYS turn off the power switch and check if the motor has already stopped.

〈Checking〉

- Check if the lower roller②'s height is the same to that in Fig.082 when lowering the upper roller①.
- The upper roller① touches the lower roller② when lifting the presser foot. When using the lifting lever to lift the upper roller①, a clearance is left between the upper roller① and the lower roller②.

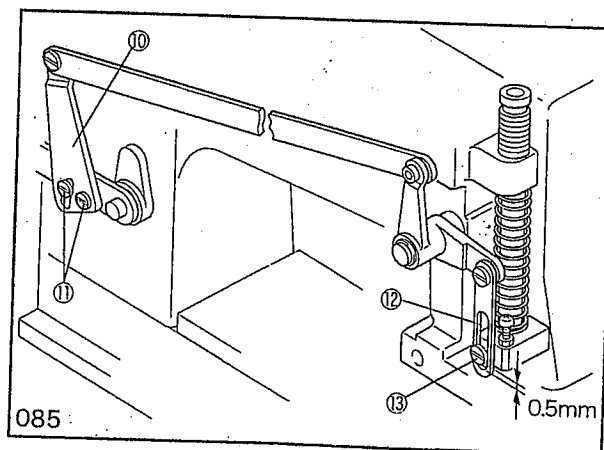
〈Making adjustment〉

1. Push the lifter lever③ and lower the upper roller①.
2. Loosen the screw⑤ on the roller press bar bracket④, and lower the bracket④ to the limit.
3. Loosen the rock nut⑦ on the stopper screw⑥.
4. Adjust the screw⑥ so that the clearance between the outside of the sleeve⑧ of the bracket④ and the cam⑨ on the lever③ is about 0.2 - 0.4 mm.
5. Tighten the rock nut⑦ on the screw⑥ securely.
6. Push down the upper roller① so that the upper roller① pushes down the lower roller② as shown in Fig.082. At this moment, tighten the screw⑤ on the bracket④ securely.
Then check if the bracket is parallel to the lower roller②.
7. Loosen the screw⑪ on the upper feed roller lifter (right)⑩, and adjust the clearance between the slot top of the lifting connecting plate⑫ and the screw⑬ so that when pushing the lifter lever③ up or down, the plate⑫ does not move.
8. Tighten the screw⑪ on the upper feed roller lifter (right)⑩ securely.



⟨Lifting upper roller and presser foot at the same time⟩

1. Lower the upper roller①.
2. Loosen the screw⑩ and adjust the upper feed roller lifter (right)⑩ so that the clearance between the bottom of the slot on the lifting connecting plate⑫ and the screw⑬ is 0.5 mm.
3. After adjustment, tighten the screw⑩ securely.



4. Adjusting movement of upper feed roller (feed amount of puller)

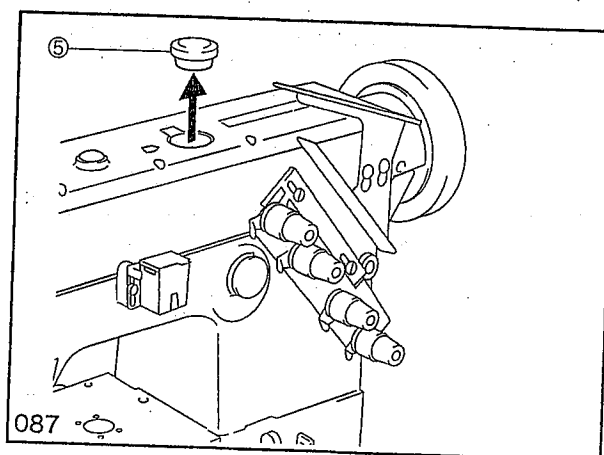
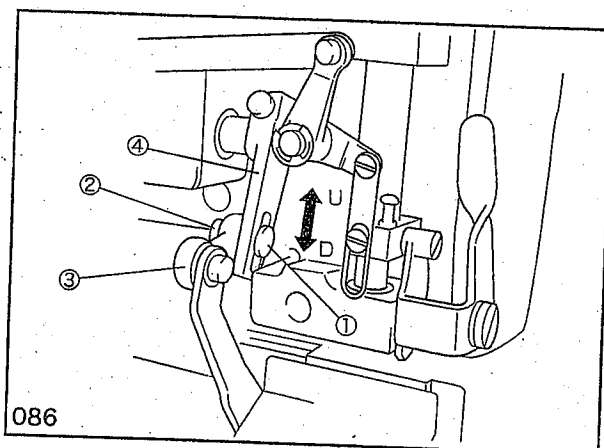
⚠ CAUTION

Before maintenance, ALWAYS turn off the power switch and check if the motor has already stopped.

Adjust the upper roller's movement according to types of materials and sewing conditions.

⟨Making adjustment 1⟩

1. Remove the cover.
2. Loosen the nut② on the upper feed roller lever pin①, and position the upper feed roller lever rod③ in the middle of the slot of the upper feed roller lever④. This is the standard setting. Then, tighten the nut② securely.
3. When the feed amount is not enough after the adjustment above, adjust the position of the rod③.
 - To decrease the feed amount, move the rod to the U direction.
 - To increase the feed amount, move the rod to the D direction.



《Making adjustment2》

When the feed amount is still not enough after the adjustment in the preceding section, take the steps below and adjust the upper feed roller regulator.

1. Remove the seal plug⑤. (See Fig.087)
2. Rotate the hand pulley so that the screw⑦ on the feed dog regulating eccentric⑥ comes to the top.
3. Loosen the screw⑦ on the eccentric⑥, using a hexagonal lenth.
4. Rotate the hand pulley so that the adjusting screw⑧ comes to the top.
5. Adjust the screw⑧, using a hexagonal lenth.
 - To increase the feed amount of the puller, turn the screw⑧ clockwise.
 - To decrease the feed amount of the puller, turn the screw⑧ counterclockwise.
6. After adjustment, tighten the screw⑦ on the eccentric⑥ securely. (Tightening torque: 2.5 N·m)

5. Adjusting pressure of clutch tension spring

⚠ CAUTION

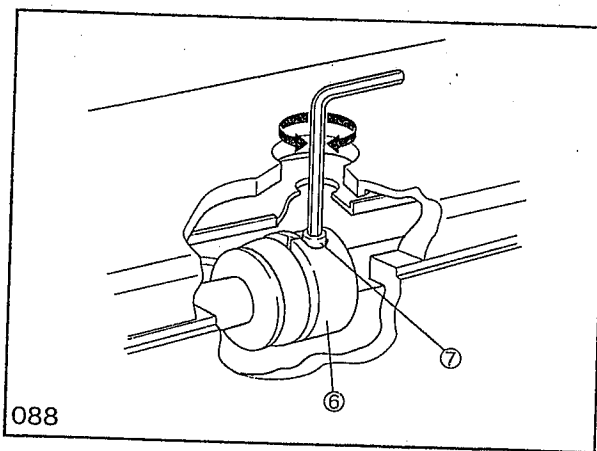
Before maintenance, ALWAYS turn off the power switch and check if the motor has already stopped.

The upper roller① is adjusted with the clutch tension spring② so that the roller does not overrun while rotating at high speed.

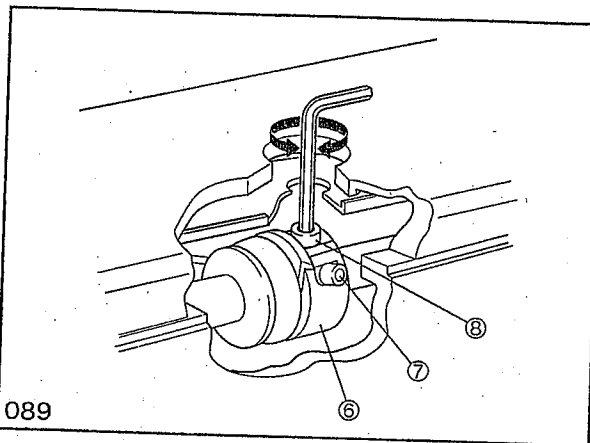
When changing the roller①, make the following adjustment to the spring②.

《Making adjustment》

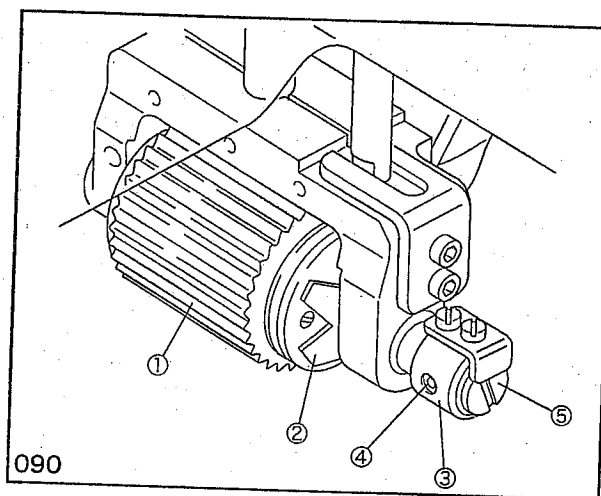
1. Loosen the two screws④ on the adjusting collar③.
2. Turn the adjusting screw⑤ on the collar③ and adjust the pressure of the clutch tension spring② so that the spring turns when it is pushed with a finger.
 - To increase the pressure, turn the screw⑤ clockwise.
 - To decrease the pressure, turn the screw⑤ counterclockwise.
3. Tighten the two screws④ on the collar③ securely.



088



089



090

4-1. Threading

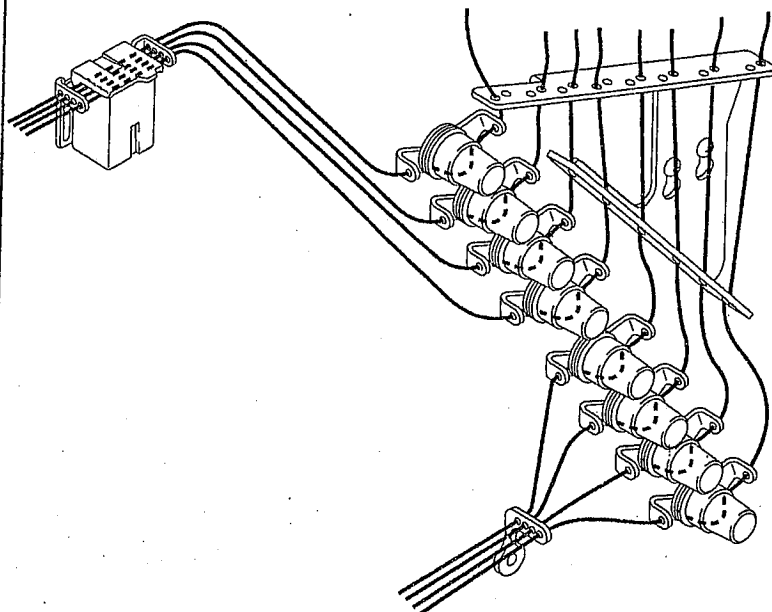
WARNING

- Before threading the machine, ALWAYS turn off the power switch and check if the motor had already stopped. If not, it can cause injury.
- If the thread is wrong, skip stitches, thread break, and irregular stitches can happen.

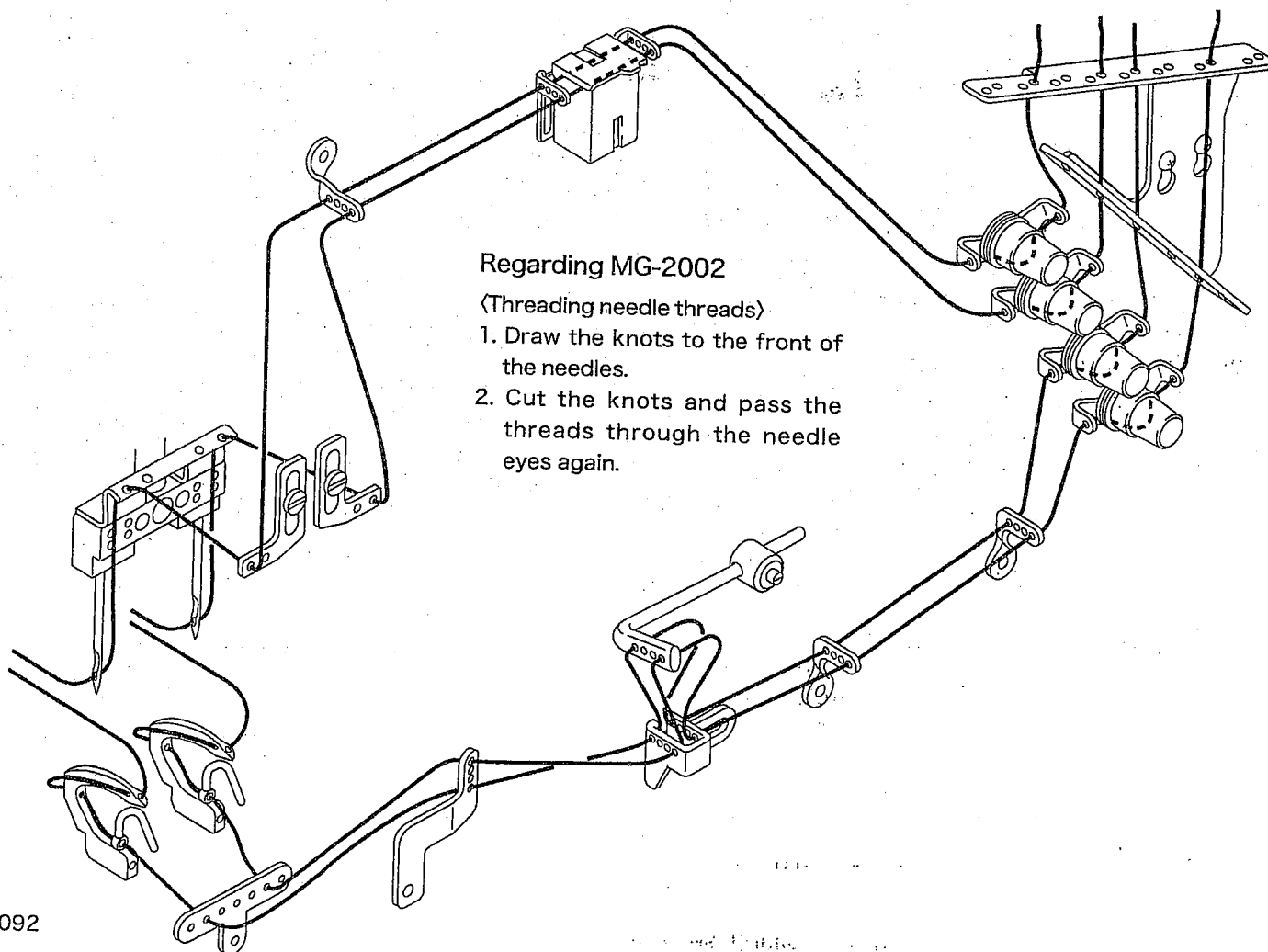
Thread the machine as shown in Fig. 031 and 032.

Note: When the machine is already threaded, tie to these threads other threads which will be used for sewing.

for MG-2004



091



Regarding MG-2002

〈Threading needle threads〉

1. Draw the knots to the front of the needles.
2. Cut the knots and pass the threads through the needle eyes again.

092

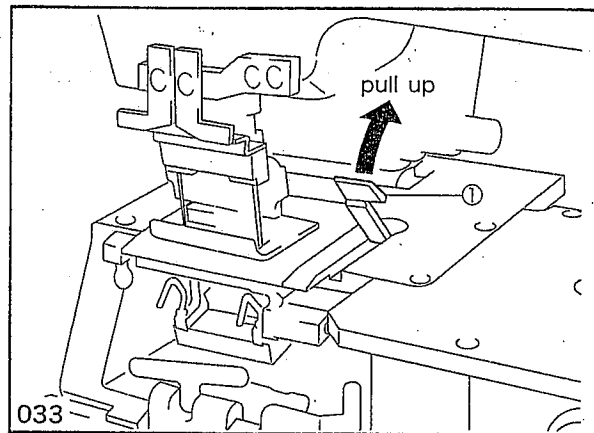
<Threading looper threads>

1. Pull up the looper throw-out lever① to the limit.



WARNING

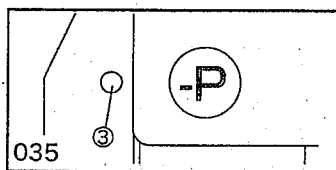
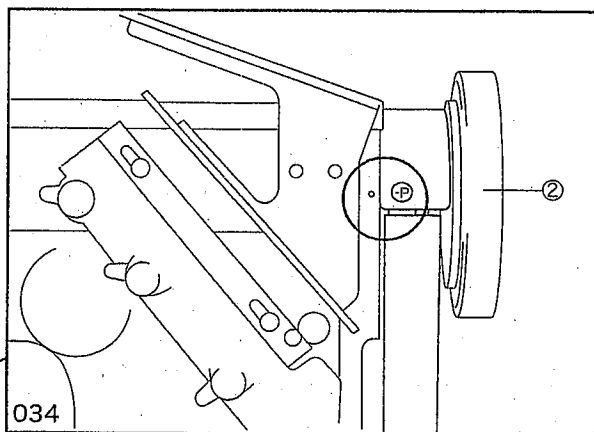
Never pull up the looper throw-out lever① while the machine is rotating. If not, it can cause injury. Before pulling up the lever, turn off the power switch and check if the motor had already stopped.



2. Rotate the hand pulley② counterclockwise.

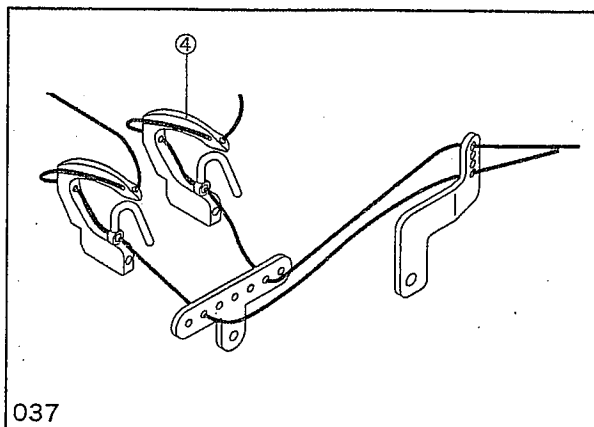
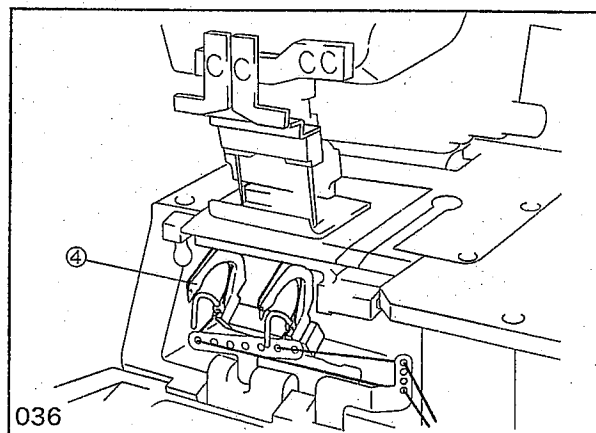
As the P mark on the pulley is approaching the indication mark③, the pulley② and the lever① become heavier to rotate or to push.

3. While keeping the lever① on the same position, rotate the pulley② counterclockwise further. Then, the loopers④ fall to the front.



4. Thread the loopers④.

5. Rotate the pulley② counterclockwise. Then, the loopers④ click into place.



4-2. Adjusting needle thread tension

At shipment, from the center of the screws① to that of the thread holes is 10 - 13 mm.

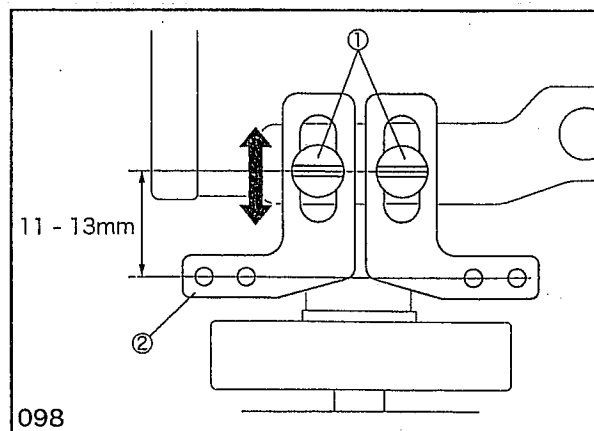
〈Making adjustment〉

Loosen the screw① and move the eyelet② to the proper position. Then, tighten the screw①.

- To decrease thread tension, raise the eyelet②.
- To increase thread tension, lower the eyelet②.

Helpful hint

When using fine threads (200dtex (30/3) or smaller size), it is advisable to place the eyelet② to the upper position (11 mm or higher) because it improves sewing performance.



4-3.Adjusting looper thread tension

〈Basic adjustment〉

1. Move the looper thread eyelet② into the horizontal position. Then tighten the screw③ securely in the middle of the take-up's slot.
2. Loosen the screw④ on the take-up①, and adjust the take-up's position so that it pulls threads in the middle of the looper thread eyelet②. Then, tighten the screw④. (See Fig.100.)

Note: This is the standard position.

〈Changing looper thread tension〉

To increase the tension, move the looper thread take-up① to direction Y in Fig.101 after making the adjustment above.

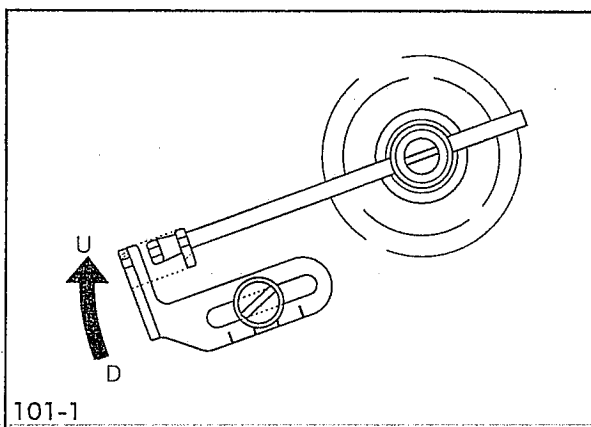
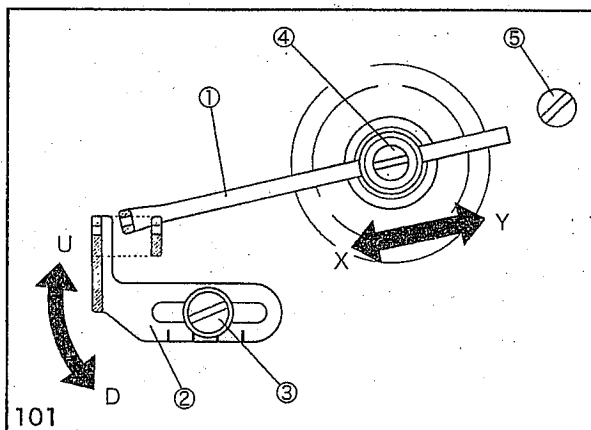
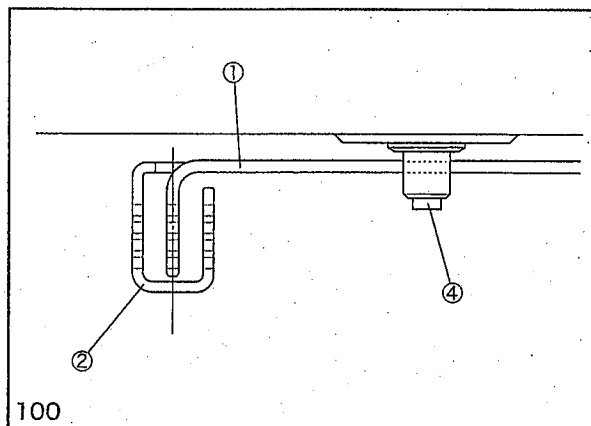
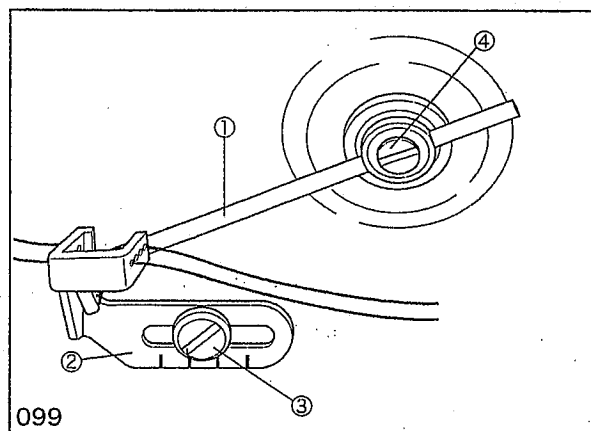
To decrease the tension, move the take-up① to direction X in Fig.101 after making the above adjustment.

At this moment, also adjust the looper thread eyelet②.

Note: When moving the take-up① to direction Y, take care not to hit it against the screw⑤.

Note: When the eyelet② moves to direction U in Fig.101, the tension increases, and when the eyelet② moves to direction D, the tension decreases. On normal occasion, however, don't make this adjustment.

Do not lower the eyelet② toward direction D from the position where when the take-up① is in the lowest position, the thread hole of the take-up① and that of the eyelet② are in the same line. (See Fig.101-1.)



5-1. Adding and supplying oil

1. Lubricating oil

〈When starting to use the machine〉

At shipment, oil is drained. Before starting to use the machine, put the oil into the machine.

- Fitting oil : Yamato SF 28 Oil
- Oil amount : 1000 cc

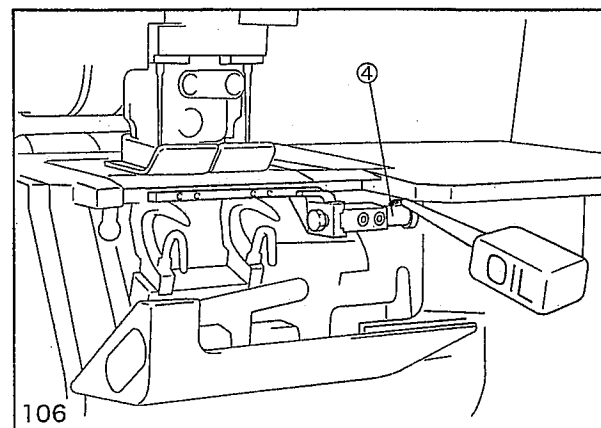
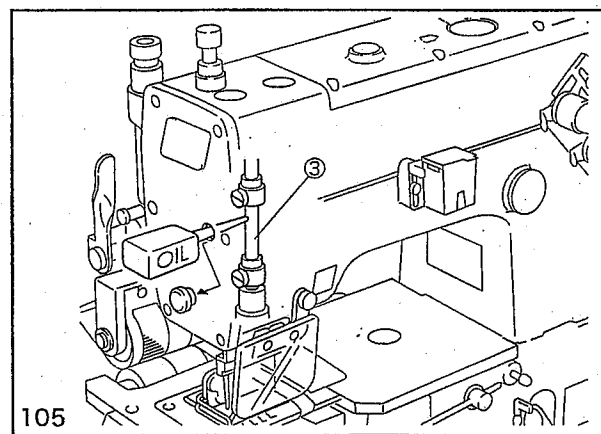
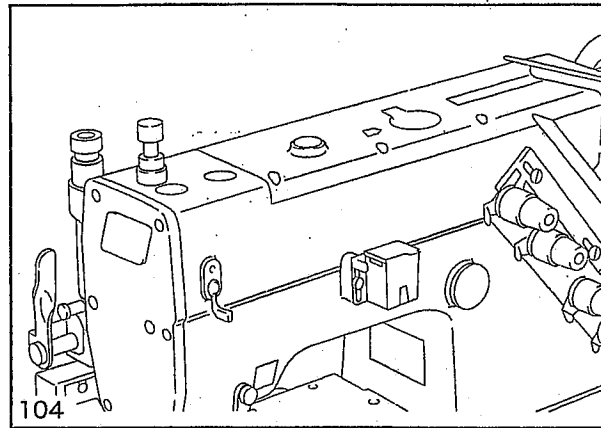
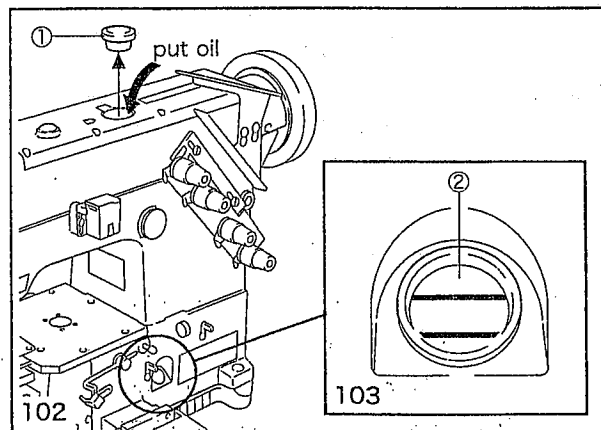
⚠ CAUTION

Never add additives to lubricating oil. If added, it can cause deterioration of oil and damage the machine.

To supply oil, remove the rubber seal plug① which has the letters of "OIL" and put oil. Make sure that the oil surface is at the same level as the upper line on the oil sight gauge②.

2. Oiling

When starting to use the machine or after the machine hasn't operated long time, supply the oil to the needle bar③ and the retainer④ with a few drops.



5-2. Changing lubrication oil

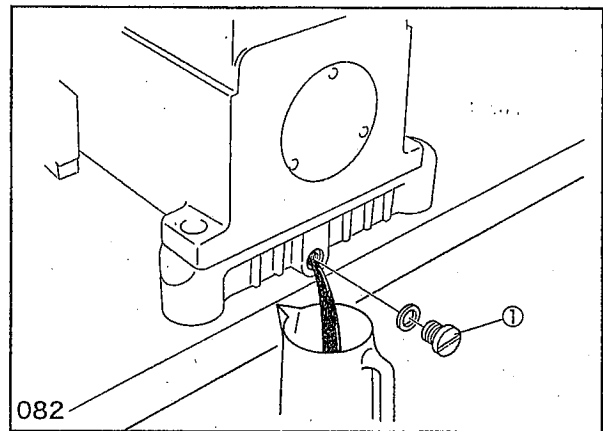
〈Time for changing〉

When the machine is new, change lubricating oil after operating the machine around 250 hours.

After that, change the oil every 6 months.

〈How to change the oil〉

1. Remove the belt cover.
2. Remove the V-belt from the motor pulley.
3. Remove the machine from the table.
4. Set a oil cup under the drain screw① to keep the oil.
5. Remove the screw①. Then the oil drains out.



⚠ CAUTION

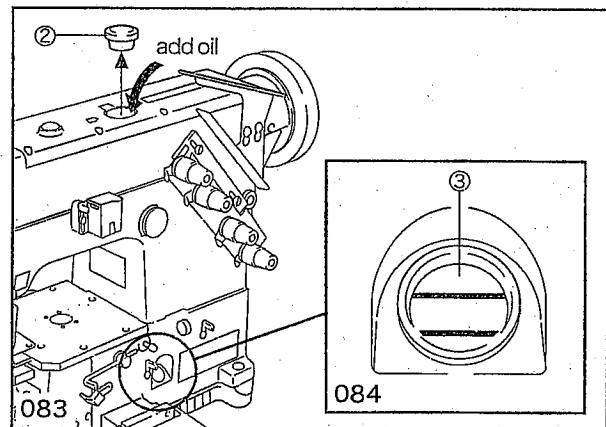
Make sure that oil doesn't attach the V-belt.

6. Reset the screw①.
7. Remove the rubber seal plug② which has the letters "OIL".
8. Pour the oil through the hole for the seal plug②. Make sure that the oil surface is at the same level as the upper red line on the oil sight gauge③.

● Proper oil : Yamato SF Oil No.28

● Oil amount : 1000cc

9. Reinstall the machine to the table.
10. Hang the V-belt on the motor pulley, and reset the belt cover.



⚠ CAUTION

Make sure that the oil surface is always between two red lines.

If the surface exceeds the upper line, oil can leak.

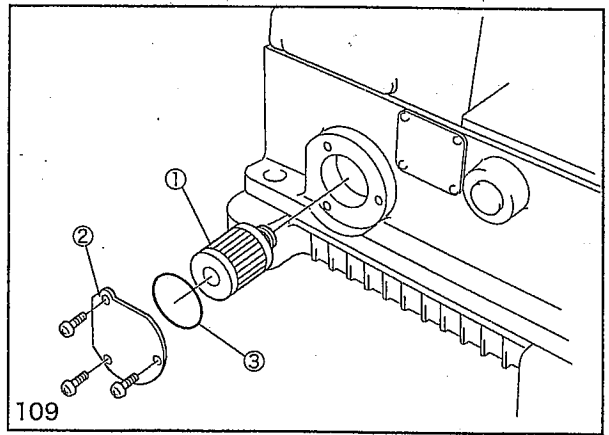
If the surface is below the lower line, the machine can be damaged.

5-3. Changing oil filter

If the oil filter① is filled with dust, oil cannot be supplied properly. Check the filter every 6 months.

〈Checking and changing〉

1. Remove the oil filter cover②, and take out and check the O ring③ and the oil filter①.
2. If the filter① is filled with dust, change it with a new one.



⚠ CAUTION

When removing the oil filter cover②, take enough care because oil in the oil filter① can drop.

Malfunctions	Check points	Cures	Ref.
Skip stitch	Is the machine threaded wrongly?	Thread the machine correctly.	P.27
	Are the needles bent and smashed?	Change the needles.	I. P.9
	Is the thread tension too tight?	Loose the tension.	I. P.13
	Is the timing and clearances between the needles and the loopers or between the needles and the retainer correct?	Adjust the timing and the clearances.	P.12, P.14, P.17
	Are the needles too thin comparing to the threads?	Change the needles or the threads with proper ones.	I. P.9
	Is setting of the needles wrong? (Is setting direction wrong, or are the needles inserted to enough height?)	Set the needles correctly.	I. P.9
Thread break	Do the threads wind up something?	Remove the winding threads.	
	Is the machine threaded wrongly?	Thread the machine correctly.	P.27
	Is the thread tension too tight?	Loose the tension.	I. P.13
	Are the threads too thick comparing to the needles?	Change the needles or the threads with proper ones.	I. P.9
	Is the threads quality low?	Use high-quality threads.	
	Is the thread broken by heat?	Use SP device.	I. P.14
	Are the thread eyelets or the looper thread take-up damaged?	Repair them, or change them with new ones.	
Chain stitch is not made properly	Is the thread tension too tight?	Loose the tension.	I. P.13
	Are the timing and the clearances among the needles, the loopers, and the retainer correct?	Adjust the timing or the clearances.	P.12, P.14, P.17
	Is the position of the feed dog too high?	Adjust the feed dog's position.	P.8
	Is the feed amount of the puller proper?	Adjust the feed amount of the upper roller.	P.24
The needles break	Do the needles hit the loopers?	Adjust the clearances among the needles, the loopers, and the retainer.	P.14, P.19
	Is the feed amount of the puller proper?	Adjust the feed amount of the upper roller.	P.24

"I." means "instruction manual."

Malfunctions	Check points	Cures	Ref.
The threads are too loose	Is the machine threaded properly?	Thread the machine properly.	P.27
	Is the balance between needle threads and looper threads correct?	Adjust the balance of the thread tension.	P.29, P.30
Irregular stitch	Is the machine threaded properly?	Thread the machine properly.	P.27
	Is the balance between needle threads and looper threads correct?	Adjust the balance of the thread tension.	P.29, P.30
Oil is not splashed from the nozzle	Is the oil surface lower than the lower line on the oil gauge?	Put the oil into the machine.	P.32
	Is the oil filter filled with dust?	Change the oil filter.	P.33

Model		MG2002	MG2004	MG2002P	MG2004P
Description		Multi Needle Double Chain Stitch Machine with Needle Feeding for Medium Material		Multi Needle Double Chain Stitch Machine with Needle Feeding for Medium Material(with Puller)	
Dimensions (mm)	Length	496			
	Width	220		270	
	Height	440			
	Cylinder circumference	395			
Weight (kg)		46		50	
Stitch type		ISO 401			
Application		For sewing weist band of jeans, working pants, etc.			
Sewing speed		Up to 5,000 s.p.m. (When stitch length is more than 4.5 mm : 4000 s.p.m.)		Up to 4,000 s.p.m.	
Stitch length (mm)		2.1 - 6.4 mm 4 - 12 stitches per inch 5 - 14 stitches per 30 mm			
Needle system		DV 57 (62 57, SY3260, 5640) #18 - 20 (#21 is standard)			
Needle distance (mm)		4.8 - 50.8			
Number of needles		2	4	2	4
Needle stroke (mm)		32			
Number of threads		4	8	4	8
Presser foot lift (mm)		9			
Feed regulation		Push button system (Lower feed and needle feed are linked)		Push button system (Lower feed and needle feed are linked)(Puller can be adjusted infinitely)	
Looper movement		Vertical looper movement, Retractable looper mechanism for easy threading			
Lubrication		Automatic lubrication by trochoid pump			
Lubrication oil		YAMATO SF OIL No.28			
Capacity of oil reservoir (cc)		1000			
Installation		Table top type or semi-submerged type			



4-4-12, NISHITENMA, KITA-KU, OSAKA, JAPAN
TEL : 81-6-6364-1321 FAX : 81-6-6364-1307

〒530-0047 大阪市北区西天満4丁目4番12号
TEL(06)6364-1321(代) FAX(06)6365-5176