

SINGLE-NEEDLE LOCKSTITCH BASTING
AUTOMATIC UNDERTRIMMER
INDUSTRIAL SEWING MACHINE

MODEL

LX2-630-M1

INSTRUCTION MANUAL

INTRODUCTION

Thank you very much for purchasing Mitsubishi industrial sewing machine.

Please read this instruction manual before operating the sewing machine. Please read also “Safety Manual”, “Instruction manual for Mitsubishi Limiservo X” and operate the sewing machine correctly and safely.

PRECAUTION BEFORE STARTING OPERATION

1 Safety Precautions

1. When turning the power on, keep your hands and fingers away from the area around/under the needle and the area around the pulley.
2. The power must be turned off when the machine is not used, or when the operator leaves his/her seat.
3. The power must be turned off before tilting the machine head, installing or removing the “V” belt, adjusting the machine, or replacing parts.
4. Avoid placing fingers, hairs, obstacles, etc. near the pulley, “V” belt, bobbin winder wheel, or motor when the machine is in operation. Injury could result.
5. Don't put fingers into the thread take-up lever cover, around/under the needle, or pulley when the machine is in operation.
6. If the belt cover, the finger guard, and/or the eye guard are installed, don't operate the machine without these safety devices.

2 Precaution before Starting Operation

1. If the machine's oil pan has an oil sump, never operate the machine without filling oil in it.
2. If the machine is lubricated by a drop oiler, never operate the machine without lubricating.
3. When a new sewing machine is operated, verify the rotational direction of the pulley with the power on.
(The pulley should rotate counterclockwise when viewed from the pulley.)
4. Verify voltage and (single or three) phase indicated on the nameplate of the motor.

3 Precaution for Operating Conditions

1. Avoid using the machine at abnormally high temperature (35°C or higher) or low temperature (5°C or lower). Otherwise, machine failure may result.
2. Avoid using the machine in dusty conditions.
3. Avoid using the machine in conditions filled with a lot of electric noises such as high-frequency welders.

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PREPARATION FOR OPERATION

1 Adjustment of the needle stopping position

The needle stopping position should be adjusted with the detector installed on the machine head, but the sewing machine connector disconnected from the control box and the cover of the detector removed, as follows.

1. Adjustment of “UP” position

Turn the pulley and stop it at the position where the needle comes to the highest. (At this time, the white mark point on the pulley meets the black mark point on the arm.)

Loosen the two set screws on the detector joint. Turn the detector joint while fixing the pulley, and adjust the UP position detector disc (black) to the prescribed stop position.

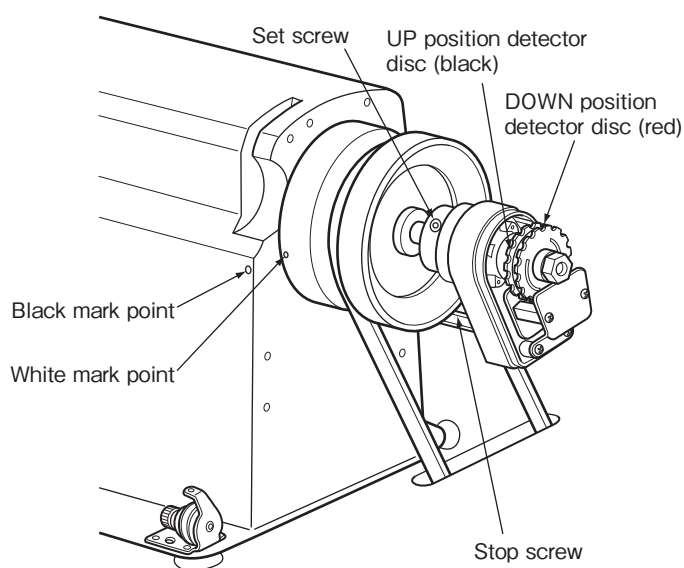
Tighten the two set screws on the detector joint.

2. Adjustment of “DOWN” position

Turn the pulley and stop it at the position where the needle comes to the lowest. At this time, check that the DOWN position detector disc (red) located in the prescribed stop position.

If not, turn only the DOWN position detector disc (red), and adjust the stop position.

After adjusting, reinstall the cover of the detector, and connect the sewing machine connector as before.



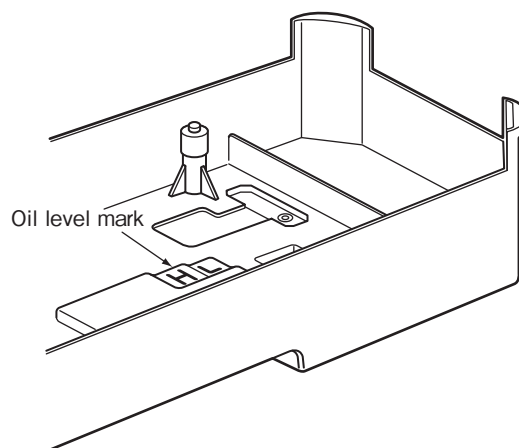
USAGE PRECAUTION

1 Lubrication (1)

Fill the oil reservoir with oil up to “H” mark.
Oil level should be periodically checked. If oil level is found below “L” level replenish oil to “H” level.
For oil, use “MC70M” specified by Mitsubishi.

※ Refer

MC70M : Specific gravity (15°C) = 0.86 (g/cm³)
: Viscosity (40°C) = 10.9 (mm²/s)



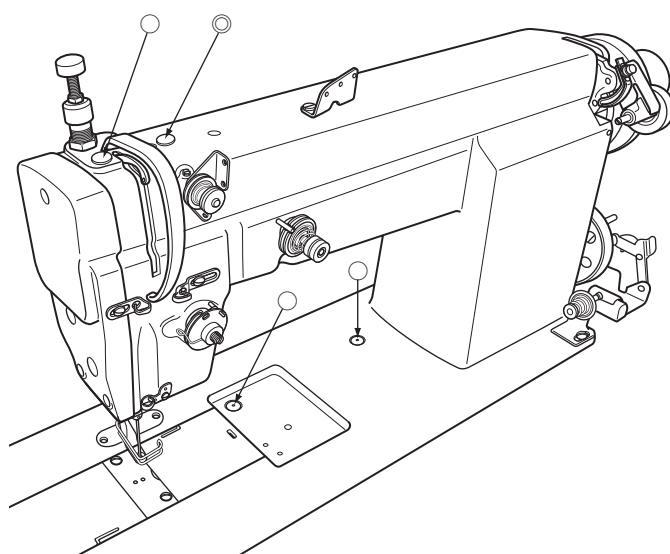
2 Lubrication (2)

When a new sewing machine is used for the first time, or sewing machine left out of use for considerably long time is used again, replenish a suitable amount of oil to the portions indicated by arrows in the figure.

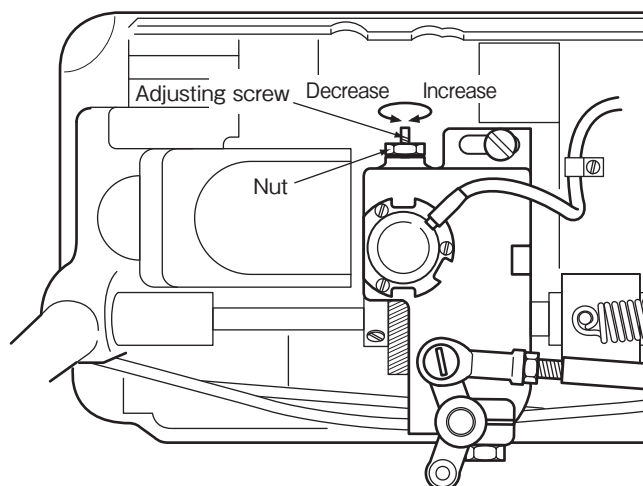
●Oiling amount

◎→ 3, 4drops

○→ 1, 2 drops



3 Adjustment of lubrication to the rotating hook



USAGE PRECAUTION

4 Cleaning of motor

Remove dust from the motor filter every one or two months. (Continued operation with the filter clogged with lint or dust may overheat the motor.)

5 Installation of the belt cover

1. Install the belt cover on the machine side for safety. Refer to the provided instruction document contained in the same package.
2. Install the belt cover on the motor side for safety.

6 Precaution on operation

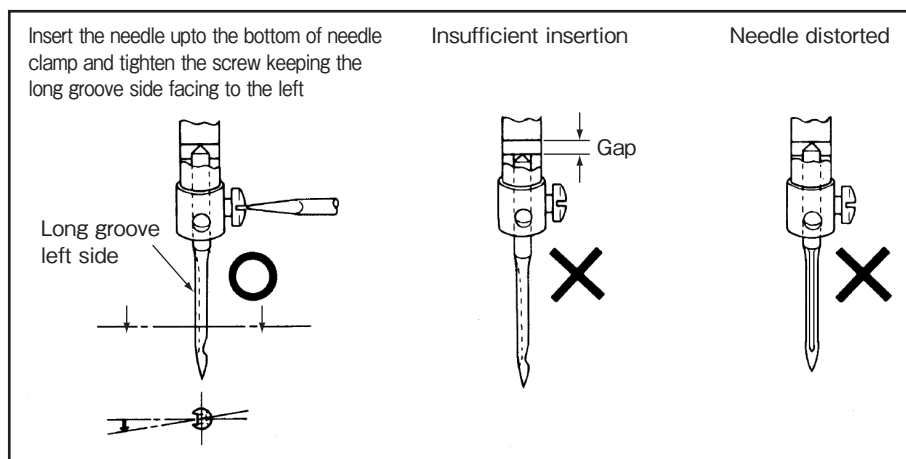
- (1) When the power is turned on or off, keep foot away from the pedal.
- (2) It should be noted that the brake may not work when the power is interrupted or power failure occurs during sewing machine operation.
- (3) Since dust in the control box might cause malfunction or control troubles, be sure to keep the control box cover close during operation.
- (4) Do not apply a multimeter to the control circuit for checking, otherwise voltage of multimeter might damage semiconductor components in the circuit.

HOW TO USE

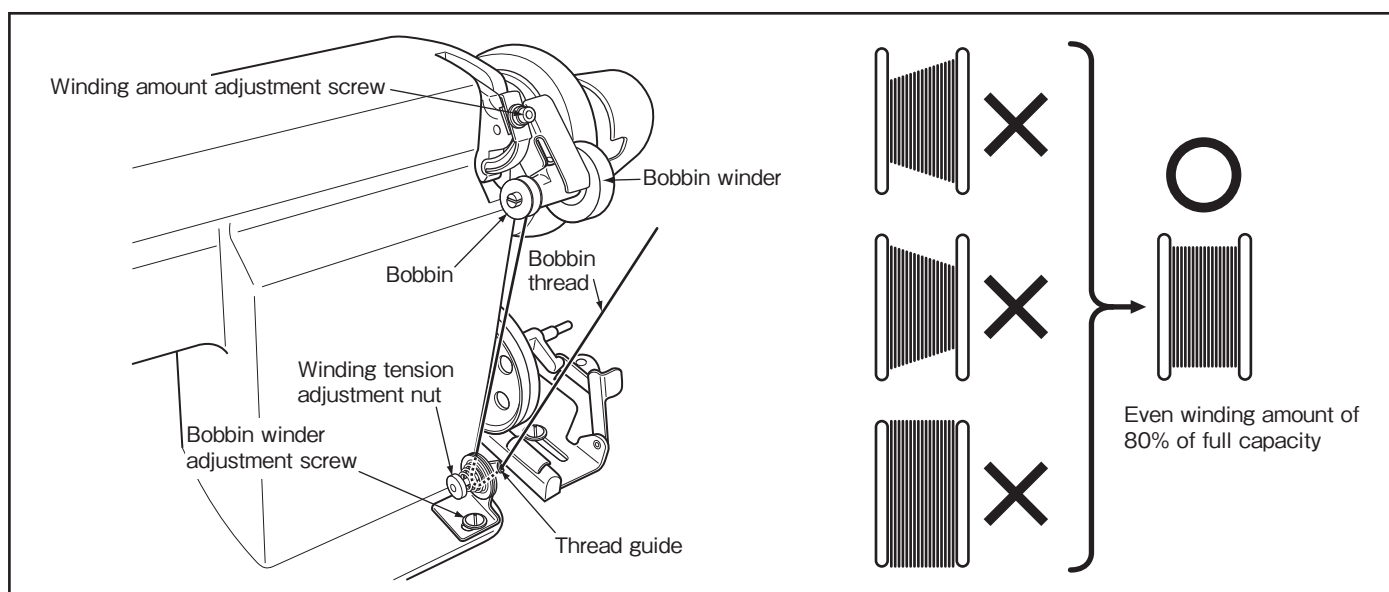
1 Installation of the needle

Note: Before installing the needles, be sure to turn off the power.

1. For needle, use "Mt × 190".
2. Determine thickness of the needle according to thickness of the thread used.

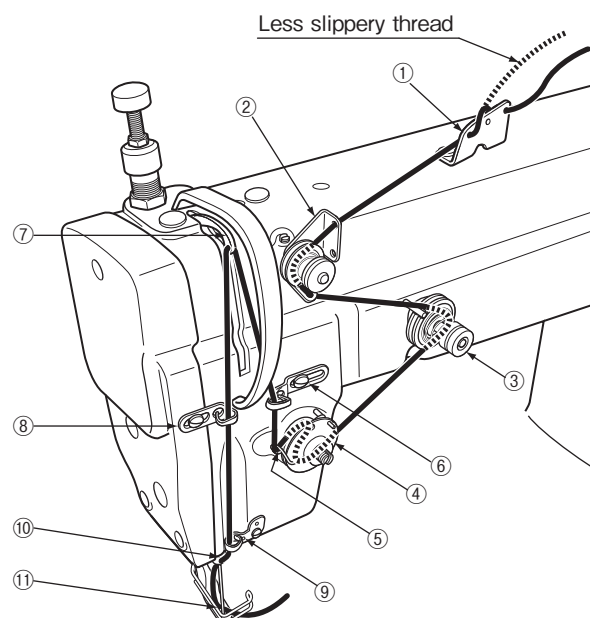


2 Winding of the bobbin thread



3 Threading of the needle thread

Pass the needle thread in the order shown in the right figure.

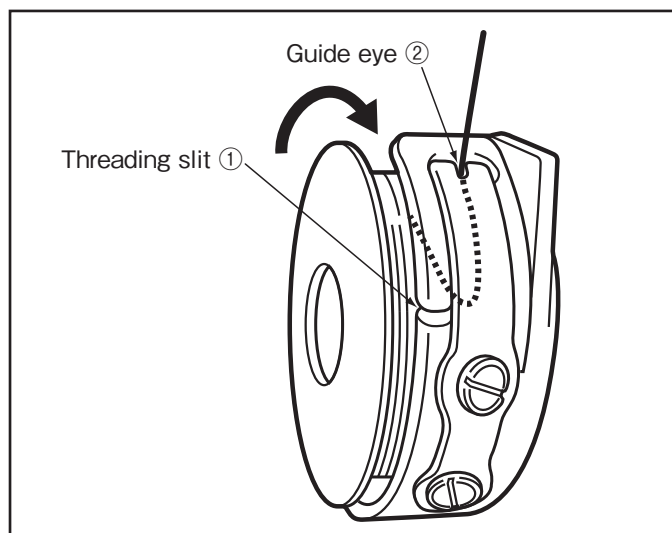


HOW TO USE

4 Setting of the bobbin

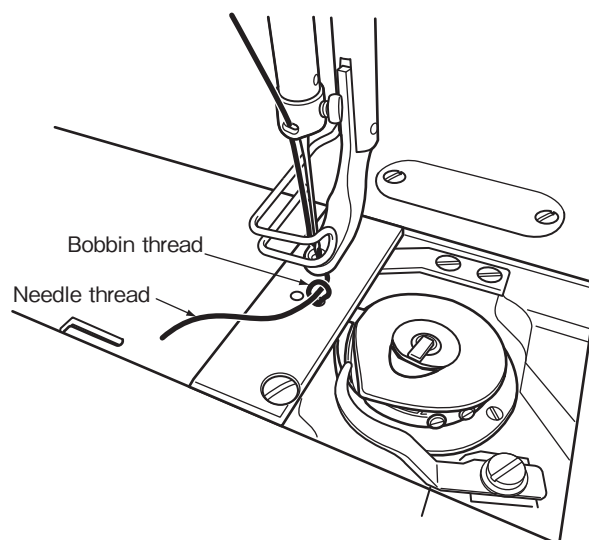
- (1) Put the bobbin into the bobbin case in the direction that the bobbin in the bobbin case turns clockwise, viewed from the front, when the thread is pulled.
- (2) Pass the thread through slit ① of bobbin case and pull.
The thread will be led out from the guide eye ②.

Note: The bobbin should turn in the direction shown by arrow in the figure when the thread is pulled.

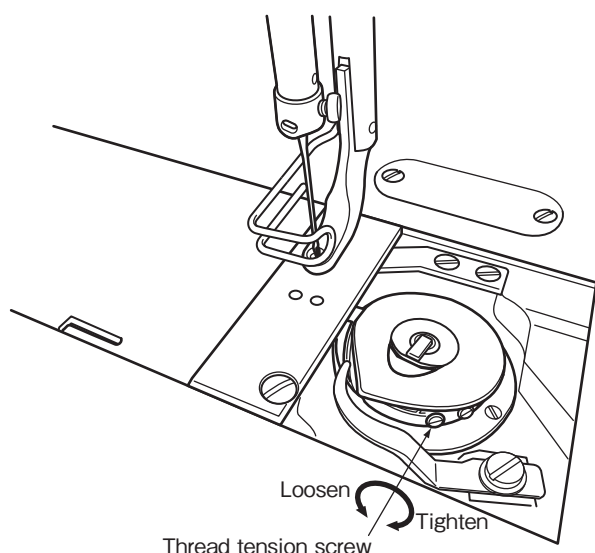


5 Leading out the bobbin thread

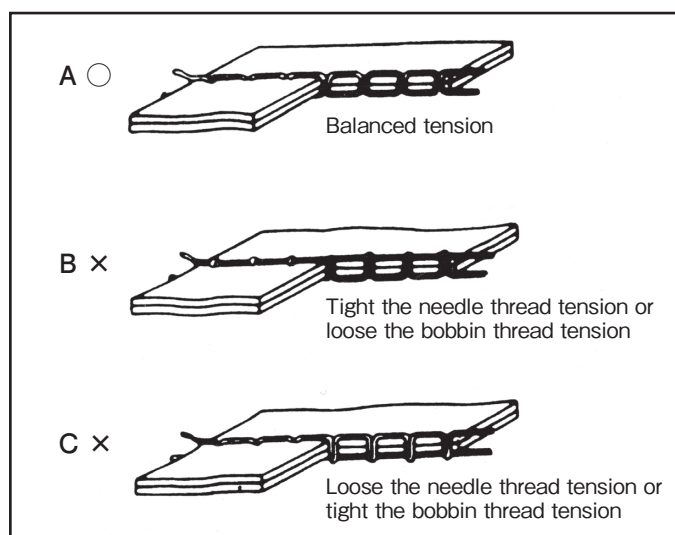
- (1) Put the bobbin and bobbin case together into the hook, as shown in the right figure.
- (2) Pick up the end of needle thread by left hand, and turn the pulley one rotation by right hand. When the needle thread is pulled up, the bobbin thread will be drawn out as shown in the right figure.



6 Adjustment of the bobbin thread tension



7 Balance of threads tension



HOW TO USE

8 Adjustment of the needle thread tension

The needle thread tension can be adjusted by changing pressure of the tension disk, and force and stroke of the thread take-up spring.

● Adjustment of the tension disk pressure

1. In most cases, thread tension can be properly adjusted only by changing tightness of the thread tension nut (A).
2. To increase pressure, turn the nut clockwise.
3. To decrease pressure, turn the nut counterclockwise.

● Adjustment of the thread take-up spring force

Apply a screwdriver to the thread take-up spring stud and turn the stud.

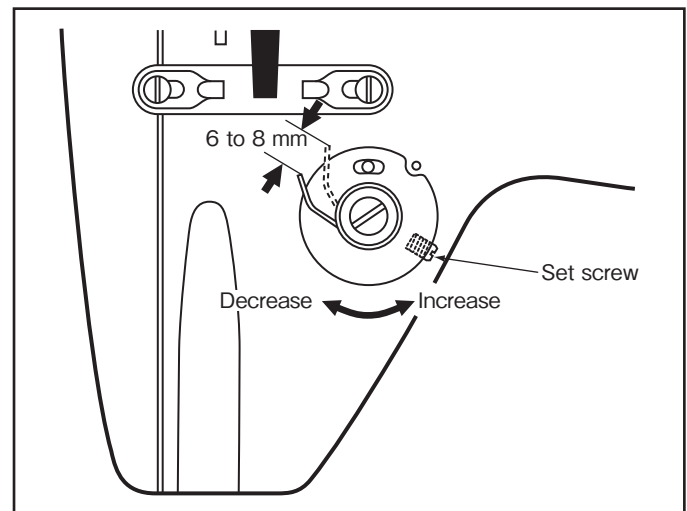
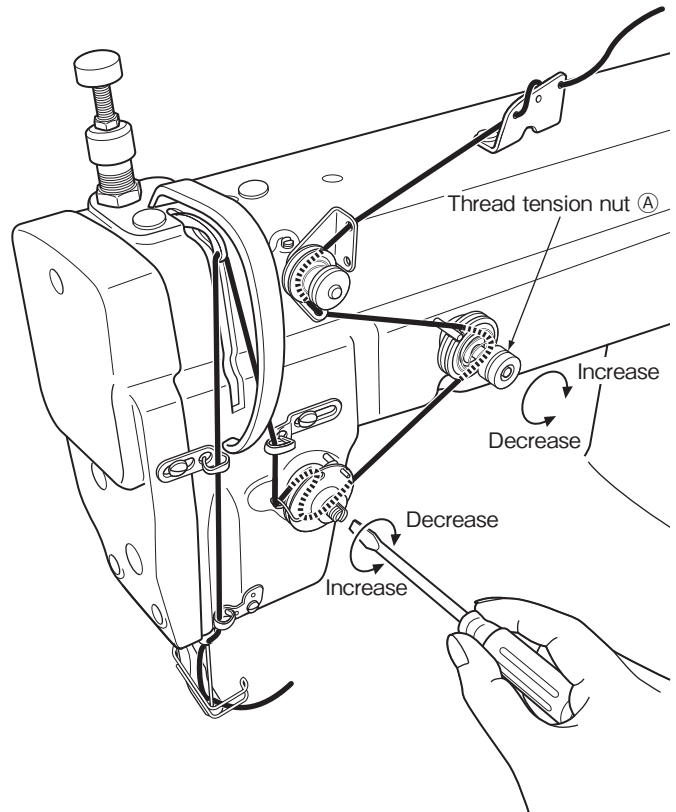
The spring force increases when the screwdriver is turned counterclockwise, and decreases when turned clockwise.

If the stud is tight, remove the face plate and loosen the screw of tension regulator slightly.

● Adjustment of the thread take-up spring stroke

1. Loosen the set screw used to secure the thread tension regulator slightly.
2. Apply a screwdriver to the thread take-up spring stud and turn the screwdriver counterclockwise to increase the stroke.
3. Turn the screwdriver clockwise to decrease the stroke.
4. After adjusting, be sure to tighten the set screw. The standard stroke of thread take-up spring is from 6 to 8 mm.

Ex.: Thread used Cotton #40 (double twist)
 Fabric General apparel and pad
 Needle thread tension 40-60g
 Bobbin thread tension 5-10g
 Thread take-up spring force 15-20g
 Thread take-up spring stroke 6-8 mm



9 Adjustment of the thread tension releasing

1. Adjustment of the thread tension regulator setting position.

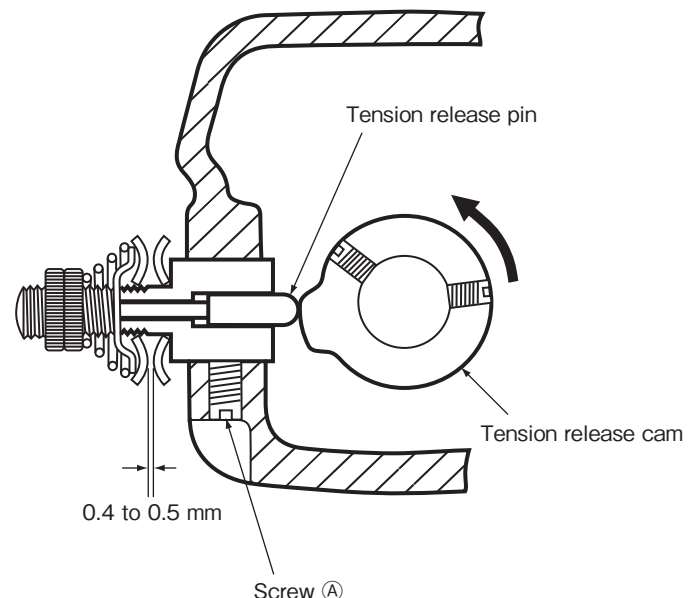
The standard gap is about 0.5 mm when the tension release cam salience is in contact with the tension release pin.

To adjust, loosen screw (A) and change position of the thread tension regulator properly.

2. Adjustment of the tension release timing

Note: The tension release timing largely affects stitching operation. If the gap between the tension disks is too small, the needle thread is not drawn properly. On the contrary if the gap is too large, the needle thread may be released earlier and become loose.

The tension release cam should be set so that the tension release disks come to open at the time when the red mark point on the pulley comes in line with the black mark point on the arm.

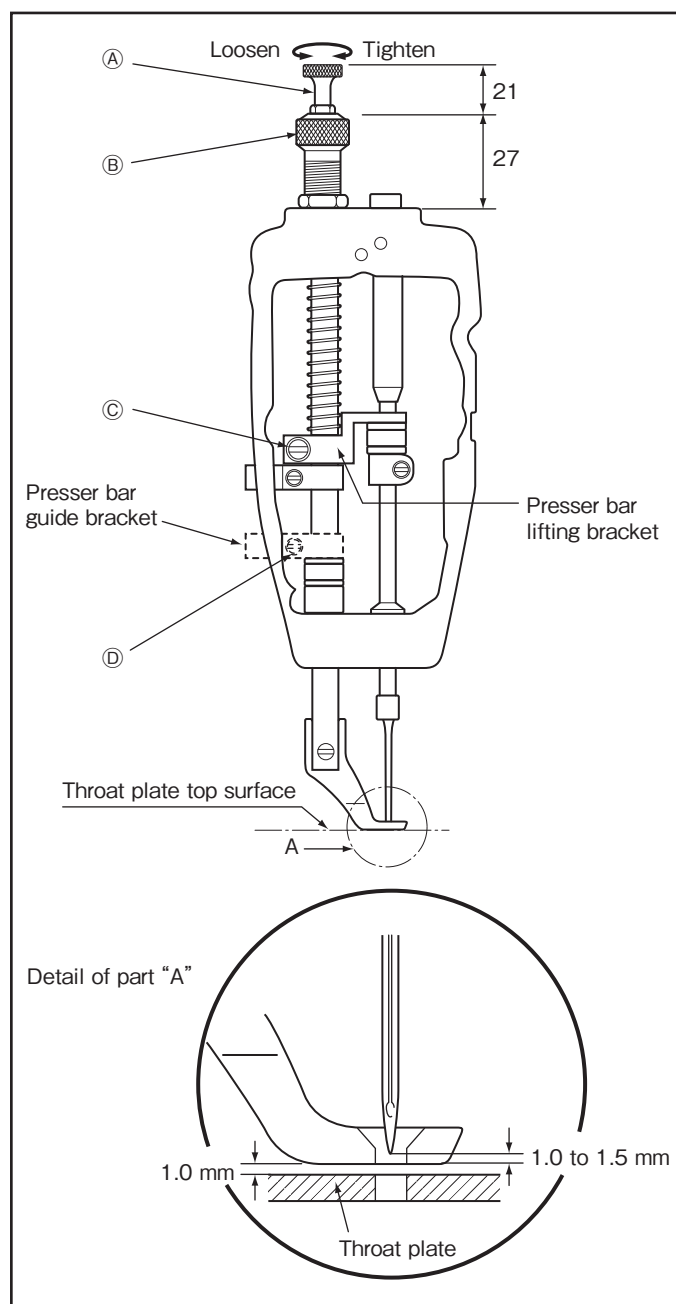


10 Adjustment of the presser foot pressure

- 1 The pressure adjusting screw is factory-adjusted as shown in the right figure.
- 2 Loosen the pressure adjusting screw locknut and turn the pressure adjusting screw ①.
- 3 Turn the screw clockwise to increase the pressure.
- 4 Turn the screw counterclockwise to decrease the pressure.

Note: Do not change setting of screw ②.

If the screw is too loose or too tight, clapping noise may occur during operation.



11 Adjustment of working height of the presser foot

1. Height of the presser foot

The standard height of the presser foot at its lowest position is 1.0 mm measured between the presser foot bottom surface and the throat plate top surface (see the detail of part "A").

To adjust the height of the presser foot, loosen the set screw ① used to secure the presser bar guide bracket and vertically move the presser bar.

2. Working height of the presser foot

Loosen screw ② and adjust position of presser bar lifting bracket so that the presser foot starts going up when the needle point reaches 1.0 to 1.5 mm above the presser foot bottom surface. (When this adjustment is made, the height of the presser foot at stop of the machine is about 15.5 mm over the throat plate.)

12 Timing between the rotating hook motion and the needle motion

Note: If you remove the presser foot and the throat plate, it makes easier to adjust.

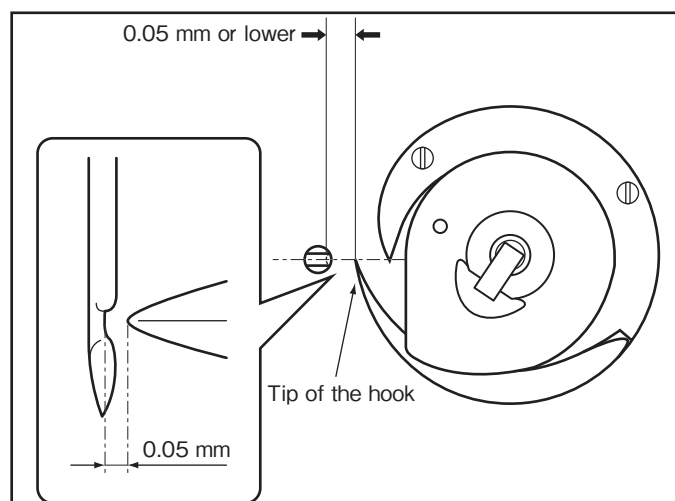
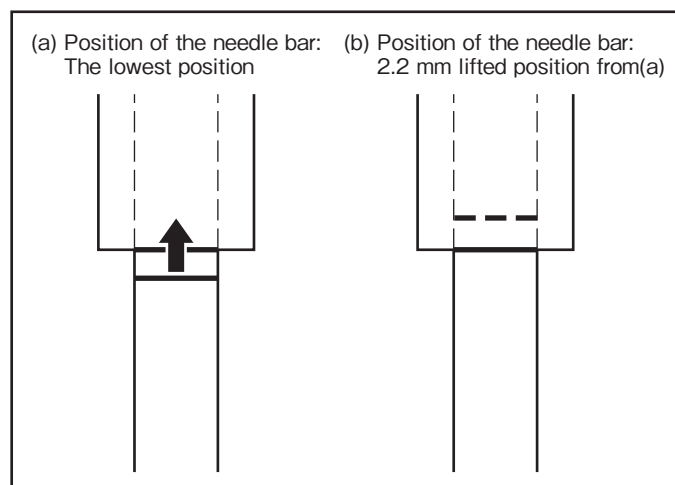
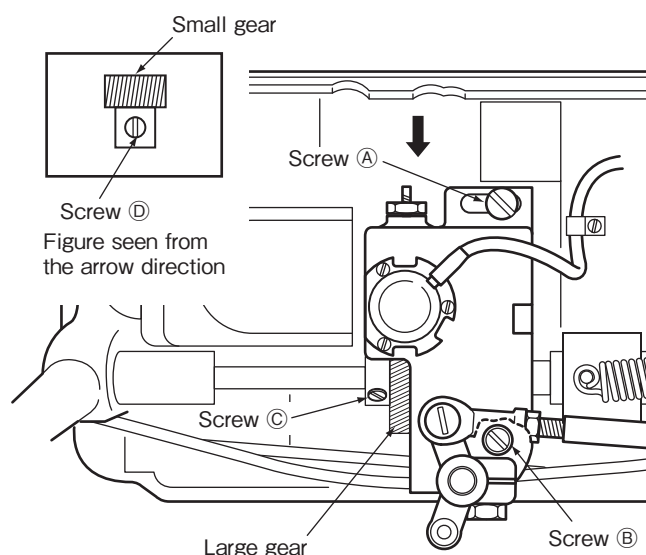
- (1) Loosen all screws ①, ②, ③, ④.

Note: At this time, don't loosen the set screw ③ too much.

- (2) Check that the first screw of the large gear enters a notch, and set the needle bar at the lowest position.
- (3) Slide the large gear to the hook saddle and mesh with the small gear. At this time, adjust it so that one of three set screws ⑤ faces upward.
- (4) Lift the needle bar 2.2 mm from the lowest position. Refer to timing marks shown in the figure.
- (5) Adjust the saddle hook position so that the gap between the tip of the hook and the scarf of the needle is 0.05 mm or lower.
- (6) Tighten screws ①, ②.
- (7) Have a small gap between the large gear and the saddle hook, and tighten all set screws ③.
- (8) Lift the needle bar 2.2 mm from the lowest position again, and adjust the tip of the hook position so that it is in the center of the needle.
- (9) While checking that the tip of the hook is in the center of the needle, and tighten set screws ⑤.

Note: Tighten each screw ⑤ little by little.

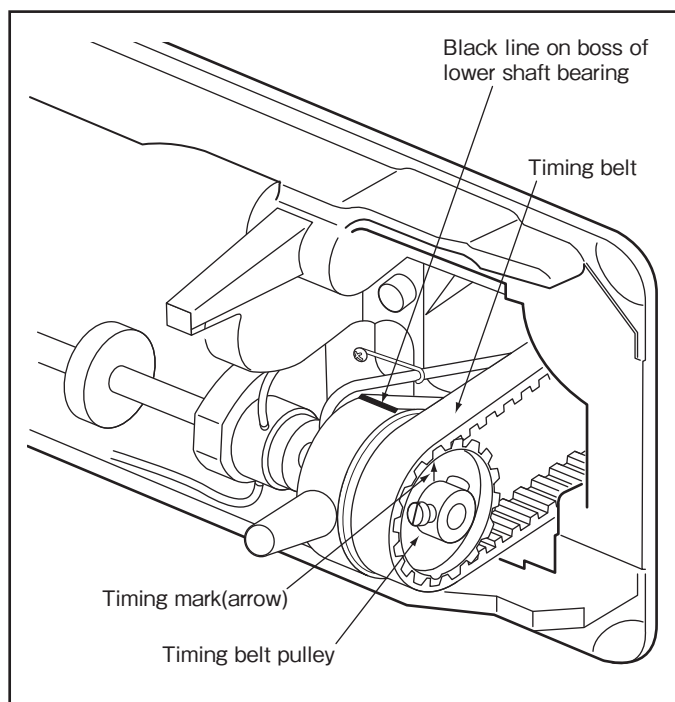
- (10) Return the machine head to the original position and adjust the needle guide position so that it comes lightly in contact with the needle.



13 Relationship between the rotating hook motion and the thread take-up lever motion

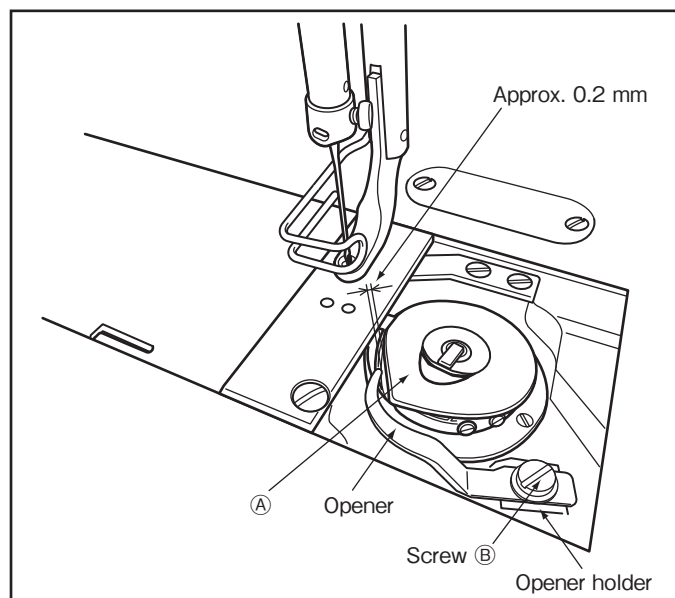
When the timing belt is removed for replacement, etc., the relation between the rotating hook motion and the thread take-up lever motion should be adjusted as follows:

- (1) Turn the pulley and stop when the thread take-up lever is lifted to the highest position.
- (2) Lean the machine head backward and check that the arrow (timing mark) put on the timing belt is aligned with the black line on the boss of lower shaft bearing.
- (3) If the timing mark is not in line with the black line, remove the timing belt and install it again to adjust.



14 Relationship between the rotating hook motion and the opener motion

- (1) Turn the pulley by your hand and stop it at the position where the opener holder is located most remotely from the throat plate.
- (2) Check that the gap between the lug (A) and the opener is approximately 0.2 mm.
- (3) If the gap is too large or small, loosen the opener holder screw (B) and adjust position of the opener.



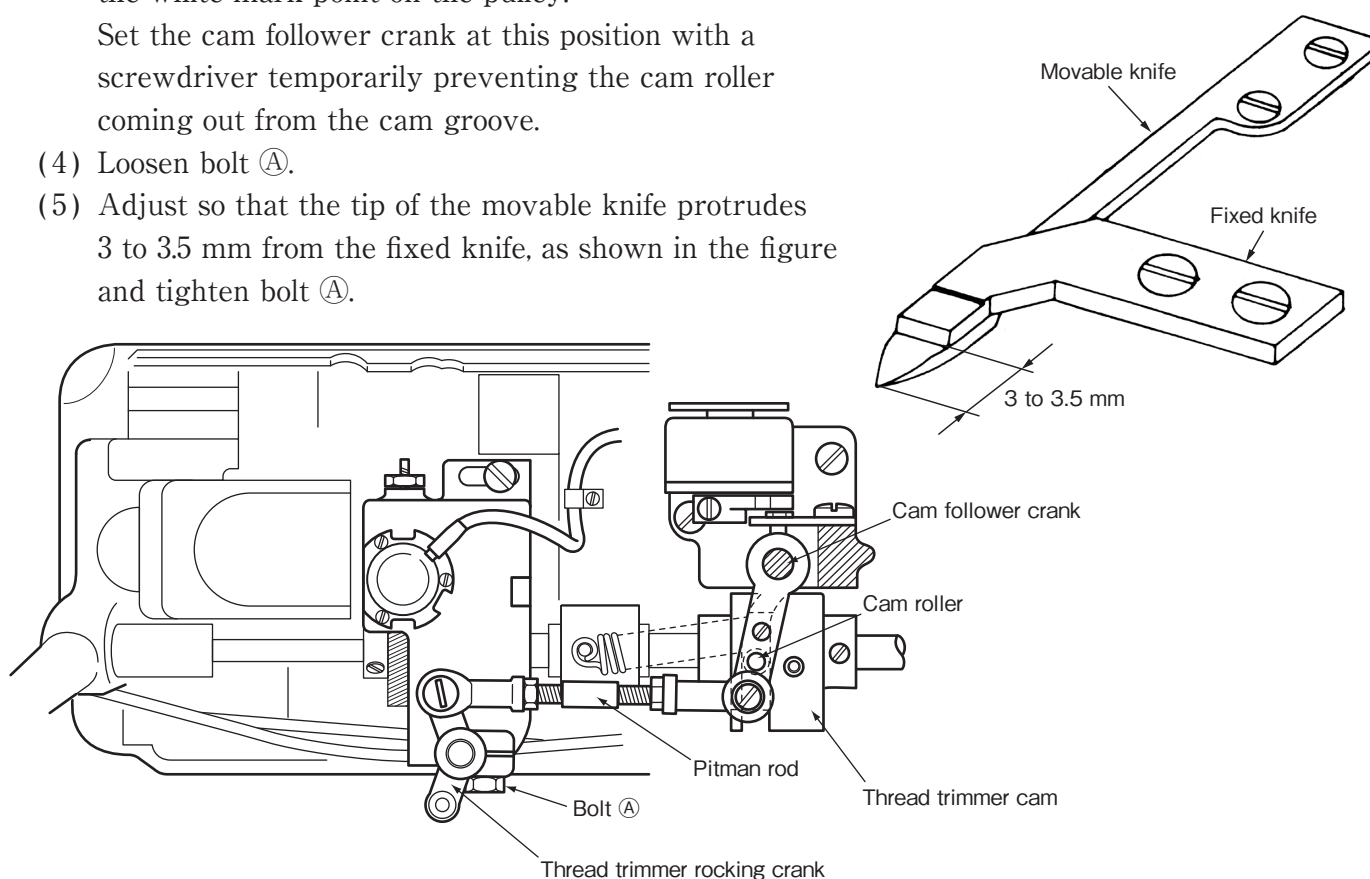
15 Installation of the movable knife

1. Initial position of the movable knife

- (1) Turn the pulley and stop it at the position where the needle comes to the lowest.
- (2) Put the cam roller into the thread trimmer cam groove by pushing the cam follower crank.
- (3) In this condition, turn the pulley and stop it at the position where the black mark point on the arm meets the white mark point on the pulley.

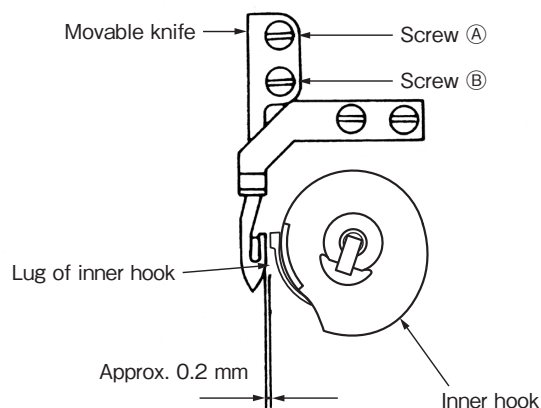
Set the cam follower crank at this position with a screwdriver temporarily preventing the cam roller coming out from the cam groove.

- (4) Loosen bolt ①.
- (5) Adjust so that the tip of the movable knife protrudes 3 to 3.5 mm from the fixed knife, as shown in the figure and tighten bolt ①.



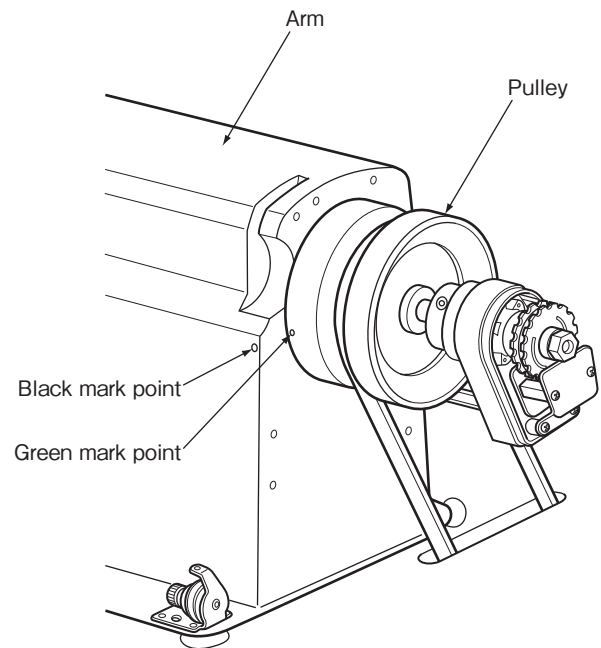
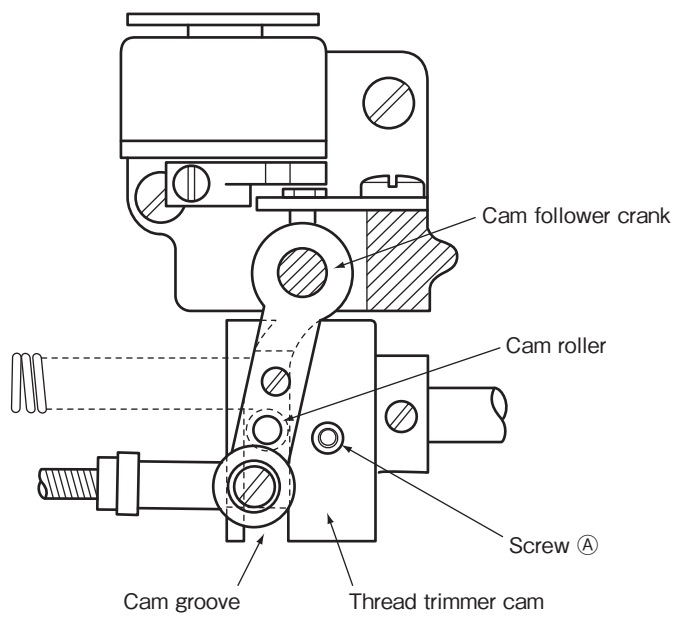
2. Gap between the movable knife and the lug of inner hook

- (1) Turn the pulley and stop it at the position where the needle comes to the lowest.
- (2) While pushing the cam follower crank, turn the pulley and stop it at the position where the movable knife move to the position as shown in the figure.
- (3) Turn the inner hook and adjust so that the gap between the movable knife and the lug of inner hook is about 0.2 mm (screws ① and ② should be loosened for this adjustment).



16 Adjustment of the thread trimmer cam

- (1) Turn the pulley and stop it at the position where the needle comes to the lowest.
 - (2) Put the cam roller into the thread trimmer cam groove by pushing the cam follower crank.
 - (3) Turning the pulley, adjust the thread trimmer cam so that the movable knife starts moving when the green mark point on the pulley comes in line with the black mark point on the arm.
- To adjust, loosen two thread trimmer cam clamp screws ①.

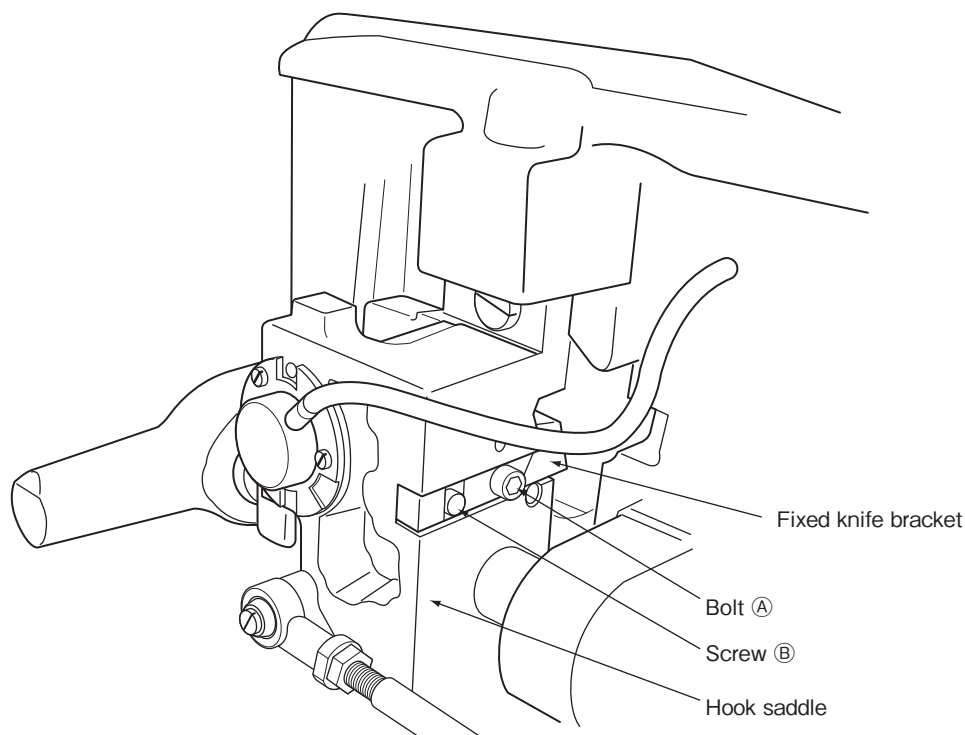


17 Adjustment of meshing pressure between the movable knife and the fixed knife

- (1) Loosen the fixed knife bracket clamp bolt ①.
- (2) Adjust meshing pressure by turning the up and down adjusting screw ②, and tighten the bolt ①.

Note: Since overpressure causes a large torque on the thread trimmer mechanism and trimming failure, adjust so that the thread can be trimmed with the minimum pressure.

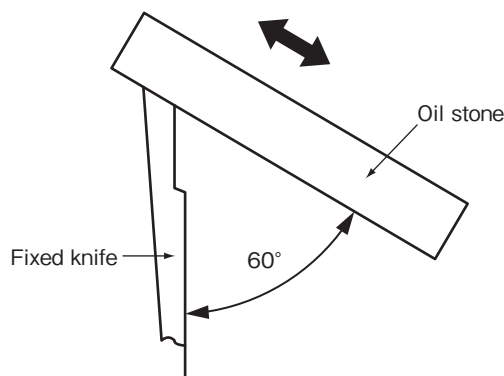
- (3) Move the movable knife and check that the thread can be sharply trimmed.



18 Sharpening of the fixed knife

If the fixed knife is dull, it should be sharpened as shown in the figure.

Since it is very difficult to sharpen the movable knife, replace it with a new one when it dulls.



SPECIFICATIONS

LX2-630-M1 Specifications

Specifications \ Model	LX2-630-M1
Application	Basting for general apparel
Max. sewing speed (rpm)	800
Needle bar stroke (mm)	39
Thread take-up lever stroke (mm)	55.5
Presser foot stroke (mm)	21.0
Presser foot height (mm) (Top dead point of thread take-up lever)	15.5
Needle	Mt × 190 #14 (#11 to #16)
Hook	horizontal rotating hook
Bobbin	Made of aluminum for thread trimmer
Lubrication system	Automatic lubrication
Bed dimensions (mm)	517 × 178

Note: ● Don't operate the machine over the max. sewing speed.

- The bobbin should be of high quality free from deformation.
- Some materials, and/or sewing conditions may require specifications other than those listed above.
- These specifications are subject to change for machine improvement.