JUKI®

SINGLE-NEEDLE LOCKSTITCH UPPER AND LOWER FEED
CYLINDER-BED INDUSTRIAL SEWING MACHINE

MODEL

LY3-6840-B0T

INSTRUCTION MANUAL

A181E095P01

INTRODUCTION

Thank you very much for purchasing industrial sewing machine.

Please read this instruction manual before operating the sewing machine. Please read also "Safety Manual", "Instruction manual for LIMISERVO" 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℃ or higher) or low temperature (5℃ 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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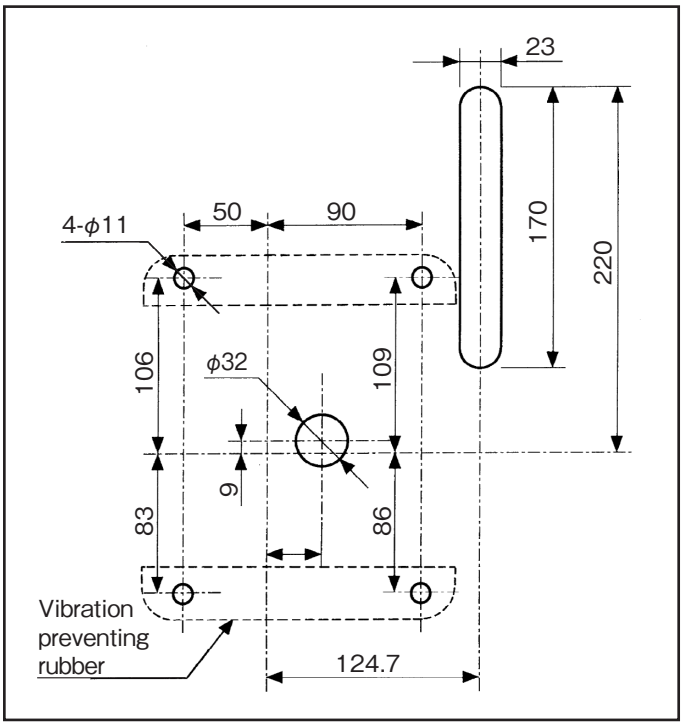
PREPARATION FOR OPERATION

1 Installation of the sewing machine

1. Prepare the sewing machine table.
   (Refer to the appendix table drawing.)
2. Align the two enclosed vibration preventing rubbers with the hole has 11 in diameter.
3. Set the sewing machine head on the table while aligning it with the hole has 11 in diameter. Then, tighten with the enclosed screws, washers and nuts.
   Note: Make sure that the sewing machine head does not tilt in the direction of the cylinder end.



2 Adjustment of the needle stopping position

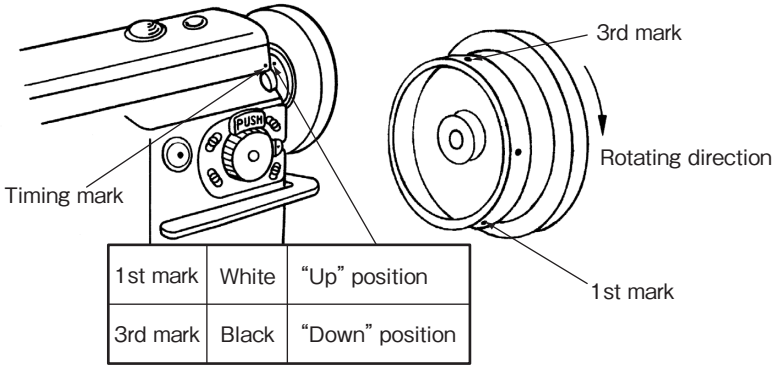
1. Adjustment of "UP" position

When the pedal is kicked down by heel, the machine stops at "UP" position.
If marks deviate larger than 3 mm, adjust as follows.
(1) Disconnect the plug (12pins) of cable from the machine head.
(2) Run the machine and stop at "UP" position.
(3) While holding the pulley, insert the "Adjusting tool" in the hole Ⓐ, then turn the tool.

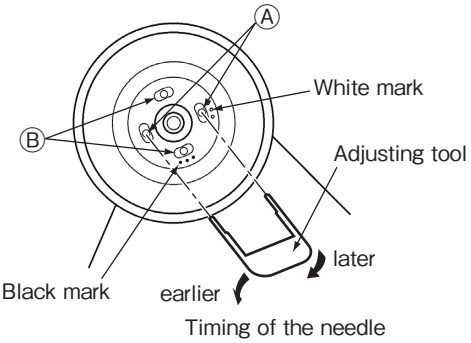
2. Adjustment of "Down" position

When the pedal is "Neutral" the machine stops at "Down" position.
If marks deviate large than 3 mm, adjust as follows.
(1) Disconnect the plug (12pins) of cable from the machine head.
(2) Run the machine and stop at "Down" position.
(3) While holding the pulley, insert the "Adjusting tool" in the hole Ⓑ, then turn the tool.

3. Confirm the stop operation, then set the plug (12pins) coming from the machine head into the receptacle.



1st mark	White	"Up" position
3rd mark	Black	"Down" position

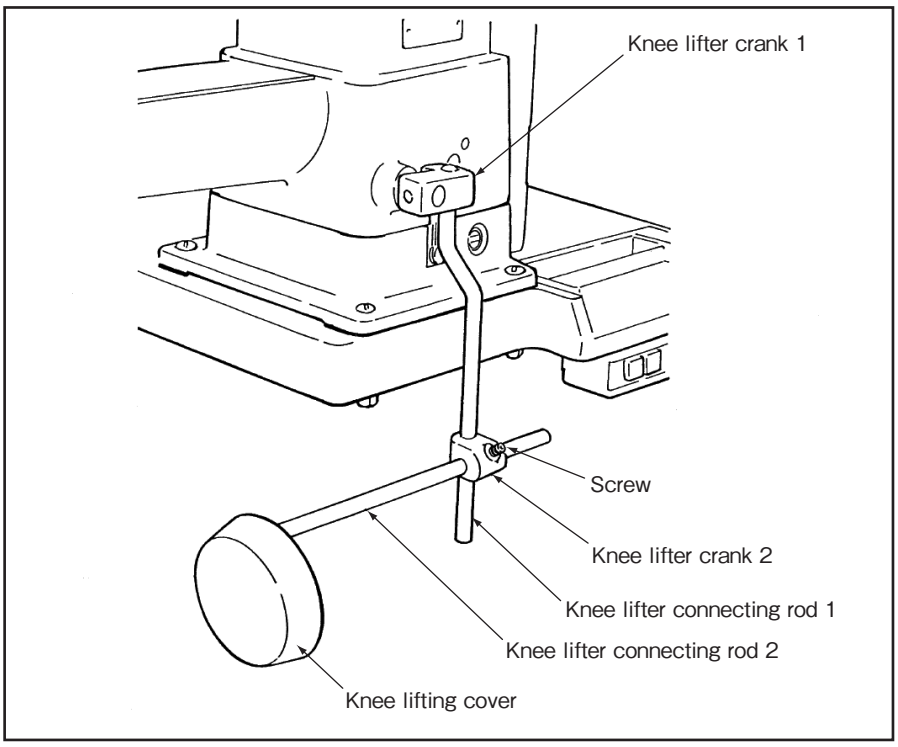


USAGE PRECAUTION

1 Installation of the knee lifter

1. Fix the knee lifter connecting rod 1 with the screw onto the knee lifter crank 1 installed on the front of the bed.
2. Install the knee lifter crank 2 to the bottom end of the knee lifter connecting rod 1, and fix with the screw.
3. Set the knee lifting cover on knee lifter connecting rod 2, and fix the knee lifter connecting rod 2 onto the knee lifter crank 2 with the screw.

Note: By loosening the screw on the knee lifter crank 2, the knee lifting cover can be moved to a position suitable for the work conditions.



2 Lubrication

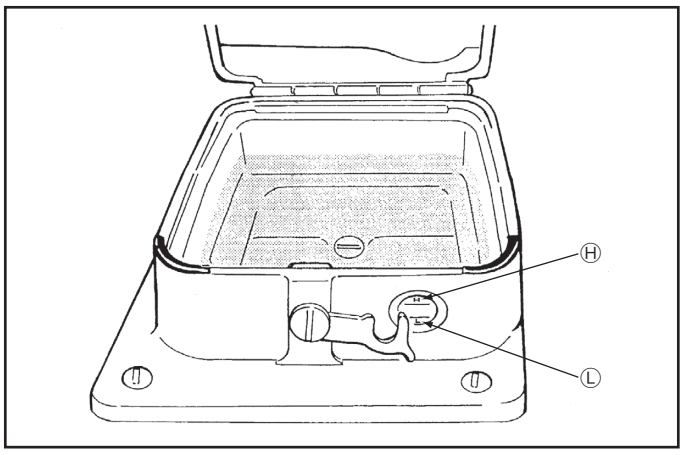
During operation, check the oil level periodically, and in cases where the oil level is below Ⓛ line, replenish the oil supply up to Ⓗ line.

For oil, use “MC70M” specified by our company.

※ Refer

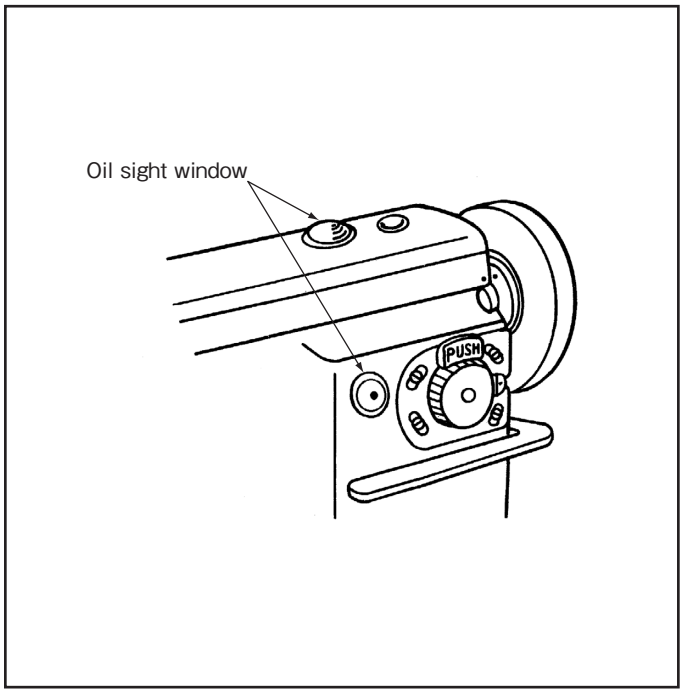
MC70M : Specific gravity (15℃) = 0.86 (g/cm^3)

: Viscosity (40℃) = 10.9 (mm^2/s)



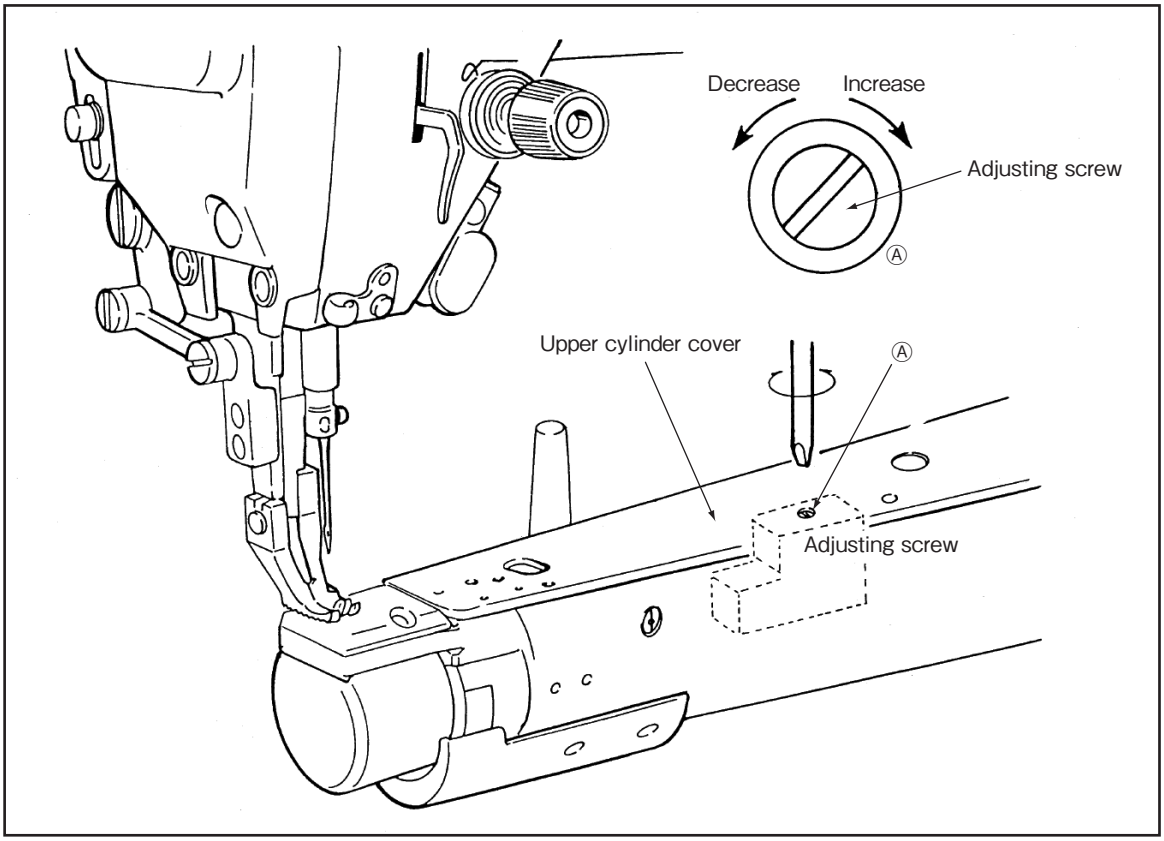
3 Lubrication condition

Check that the oil splashed the oil sight window.



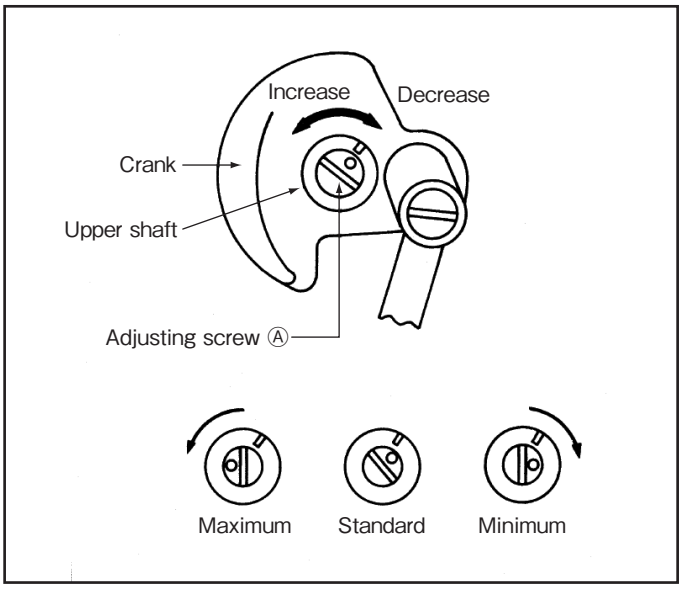
4 Adjustment of lubrication to the rotating hook

The lubrication amount to the hook can be adjusted with the adjusting screw in the upper cylinder cover Ⓐ hole.



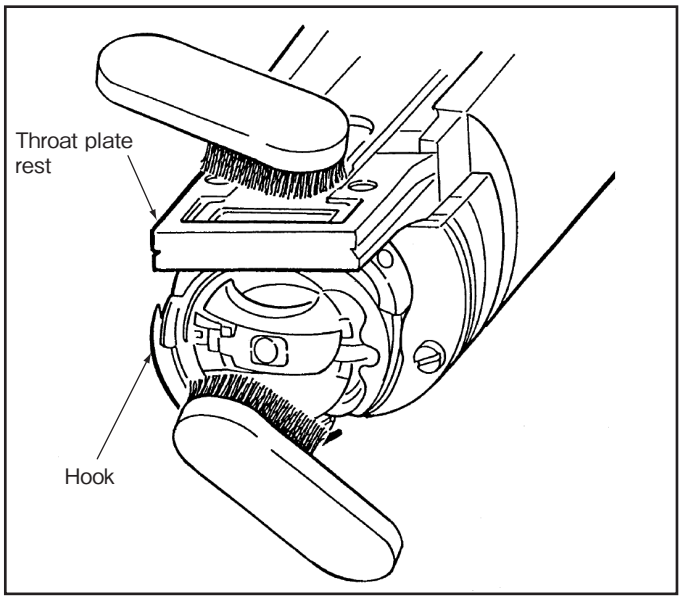
5 Adjustment of lubrication to the upper shaft

Remove the face plate, and adjust the lubrication amount by turning the upper shaft lubrication adjusting screw.

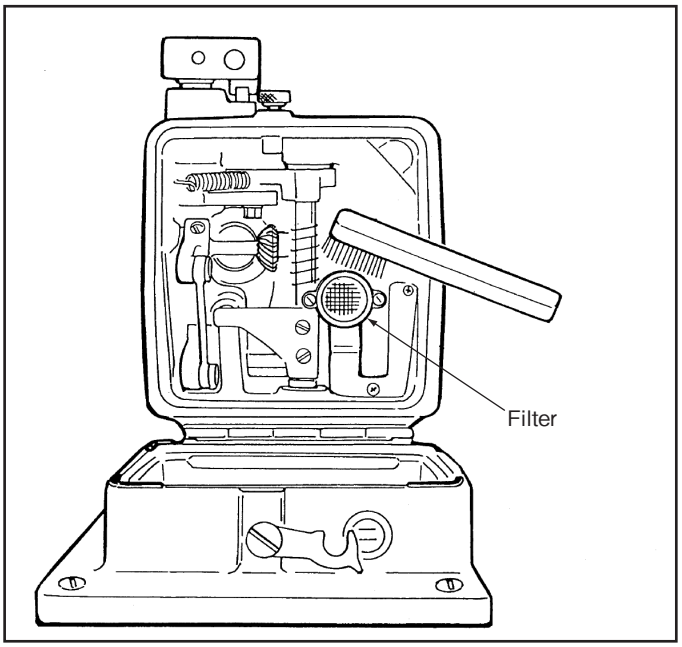


6 Periodical cleaning

1. Machine



●Remove the throat plate and feed dog, and remove any dust from the throat plate rest.
●Remove the hook cover at the end of the cylinder section, and the remove the dust and lint around the hook and in the bobbin case.



●Tilt the sewing machine, and remove the lint in the pump filter.

2. 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.)

3. Control Box

Remove dust from the connector. (If the connector is covered with dust, the machine might malfunction.)

7 Precaution for the built-in type detector

1. Since the optical type detecting element is used in the detector, prevent dust or oil from sticking to the detecting plate when the sewing machine pulley is removed for adjustment.
   If they have stuck, wipe them off with soft cloth carefully so that the surface is not scratched, do not let oil permeate the clearance on the detecting plate.
2. In case of disconnection of the position detector connector, running off the belt or complete constraint and over load, the motor is automatically turned off after predetermined time to prevent burning of the motor. (However, in case of half-constraint and over load, the power may not be turned off.) After the failure is eliminated, the normal operation is resumed by turning off the power once then turning on again.
   The same operation occurs for the detector malfunction or the line breakage.

8 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.

9 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.

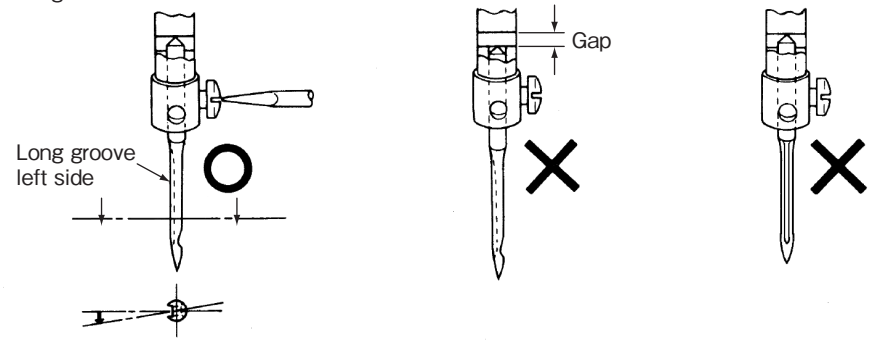
1 Installation of the needle

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

Insert the needle upto the bottom of needle clamp and tighten the screw keeping the long groove side facing to the left.

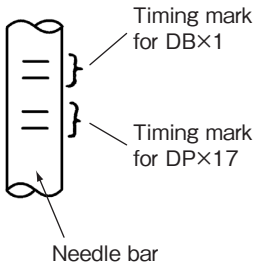
Insufficient insertion

Needle distorted



Note : If thread snapping occurs during reverse sewing with polyester threads, it may be avoided by fitting the needle with the long groove shifted to the front side. Normally, avoid fitting the needle with the groove facing backward.

Both needles DP × 17 and DB × 1 can be used.
Use the timing marks as shown in the figure.



2 Winding of the bobbin thread

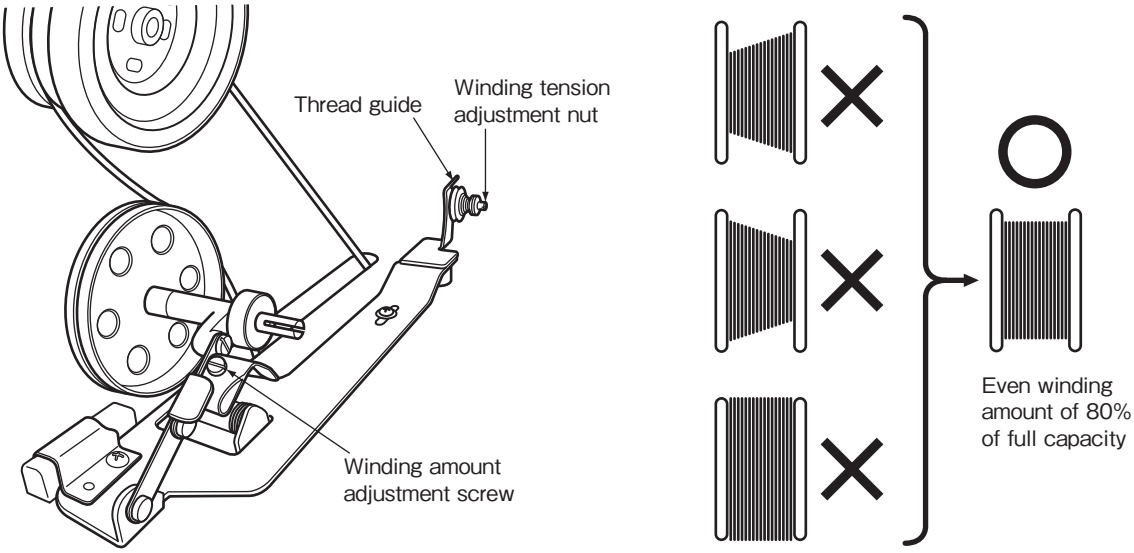
Note: When bobbin thread is wound, keep the presser foot lifted.

Adjustment

●Tension of wound thread Slack winding is recommended for polyester thread and nylon thread.

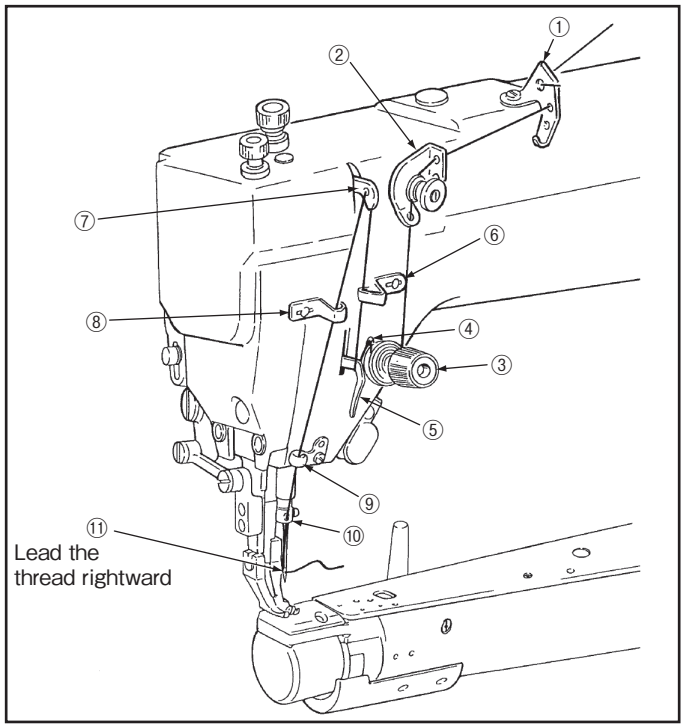
●Conically wound thread Move the thread guide toward smaller diameter of wound thread layer.

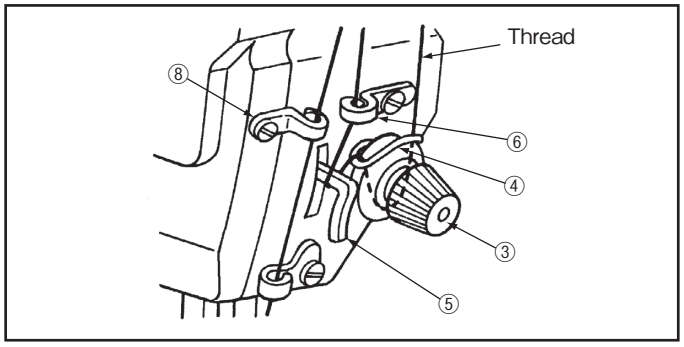
●Amount of wound thread Loosen the winding amount adjustment screw to decrease thread winding amount and tighten the screw to increase thread winding amount.



3 Threading of the needle thread

With the thread take-up lever located at the upper most position, pass the needle thread in the order shown in the following figure.

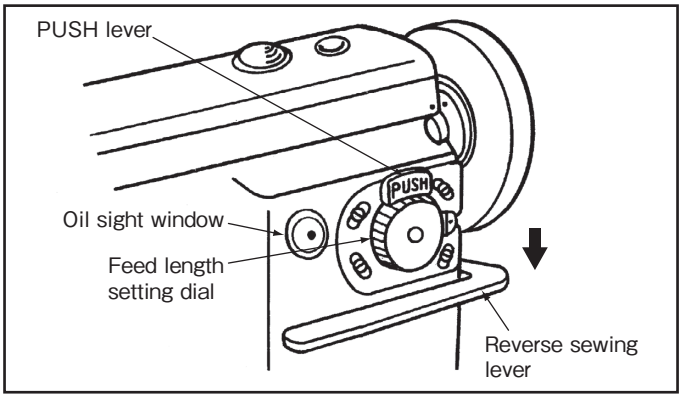




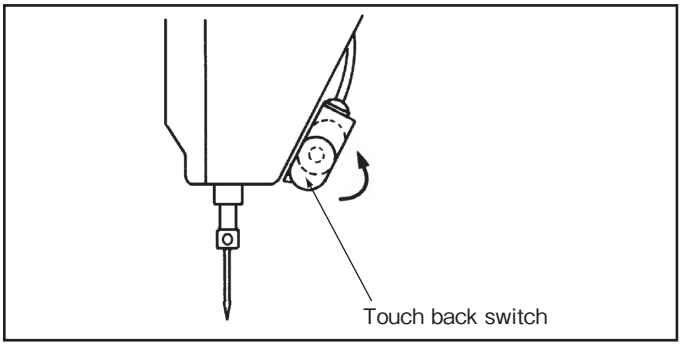
4 Adjustment of feed (stitch) length and backstitch

●Adjustment of feed (stitch) length…Adjust feed length by turning the feed length setting dial while pushing PUSH lever.

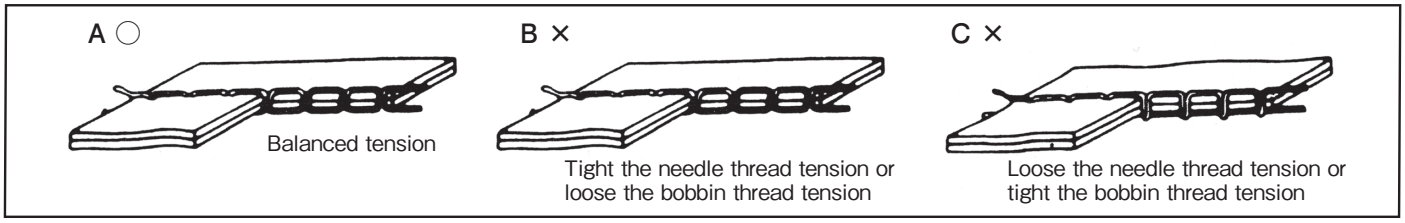
●Backstitch…Direction of stitching can be reversed by depressing the reverse sewing lever or pushing the touch back switch.



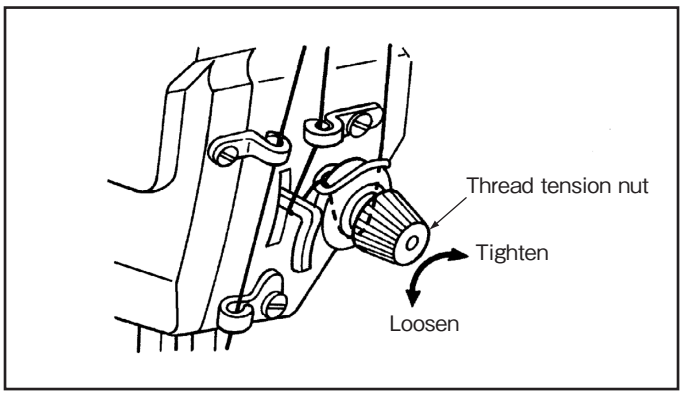
●Touch back switch…In the case that the switch is turned to the arrow direction by 180°, no backward stitching occurs even when the switch is pushed.
Use this function to avoid the malfunction such as unnecessary reverse stitching in the case that the fabric comes in contact with the switch during sewing.



5 Balance of threads tension



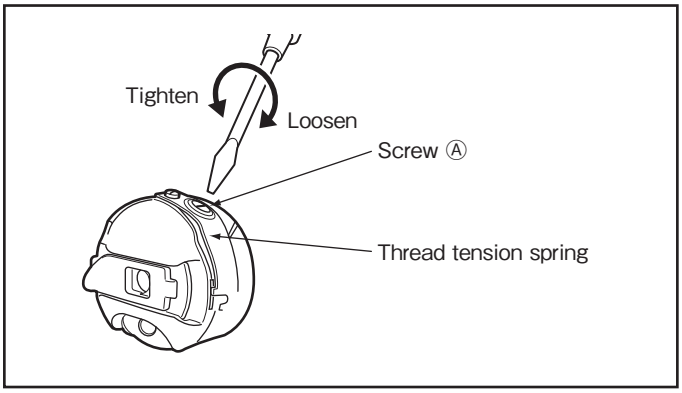
6 Adjustment of the needle thread tension



●The needle thread tension should be adjusted on the basis of the bobbin thread tension.

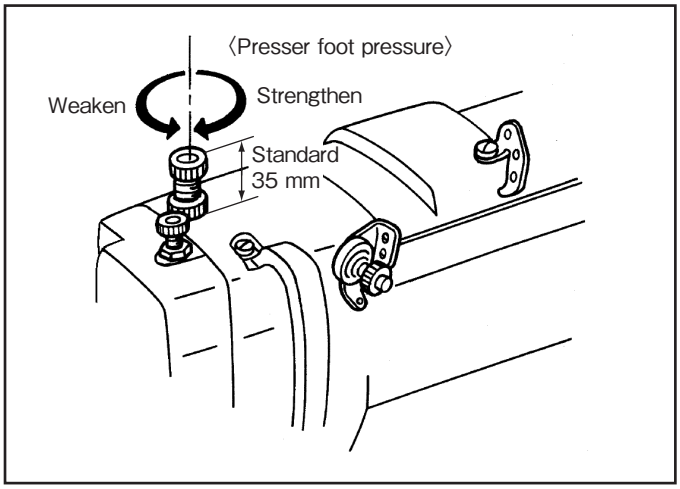
●Adjust the needle thread tension by turning the thread tension nut.
The needle thread tension can be also adjusted by changing intensity and movable range of the thread take-up spring in case of sewing the special fabric and thread.

7 Adjustment of the bobbin thread tension

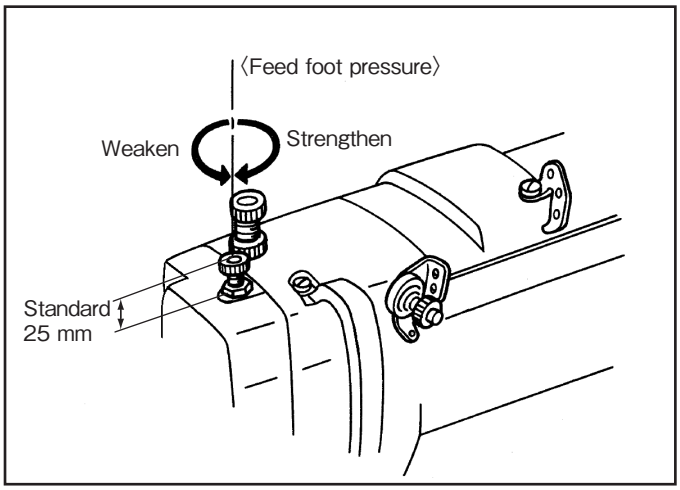


1. The bobbin thread tension can be adjusted by turning the screw Ⓐ.

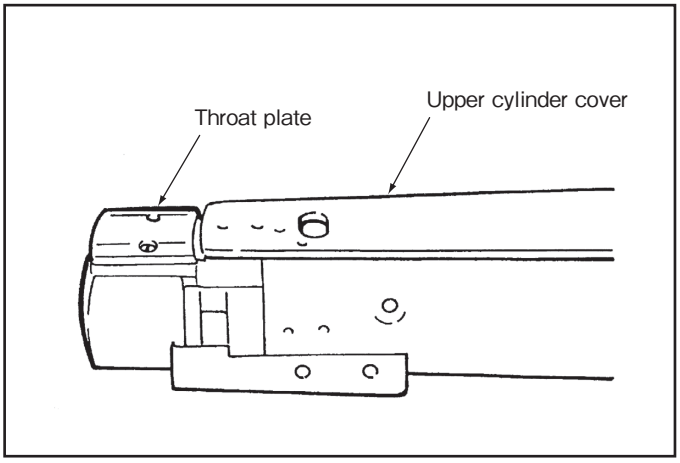
8 Adjustment of the presser foot pressure

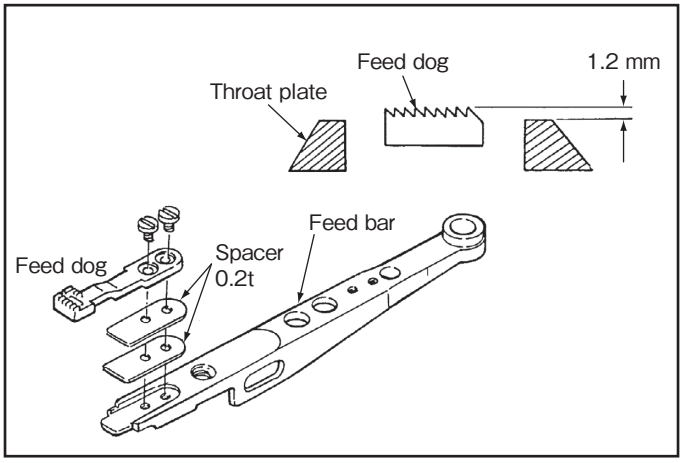


1. Adjust the presser foot pressure according to the fabric by turning the pressure adjusting screw.
2. Pressure on the both the presser foot and the feed foot can be adjusted. (The adjusting screw position is factory-adjusted as shown in the figure.)
3. Sewing pressure should be adjusted to the minimum required strength.



9 Adjustment of the feed dog height





●Two 0.2 mm thick spacers are installed between the feed dog and feed bar. The projection amount of the feed dog from the throat plate is set to 1.2 mm.

(1) Remove the upper cylinder cover and throat plate.

(2) Remove two screws fixing the feed dog, and remove the feed dog.

(3) Remove or insert spacers to adjust the feed dog projection amount.

No. of spacers	Projection amount (mm)
0	0.8
1	1.0
2	1.2
3	1.4

Note: Two extra spacers are provided in the accessories.

10 The feed bar deflection prevention device

1 . Deflection of the feed bar is prevented by pressing a square block against the lower surface of the slot on the feed bar to apply pressing force.

(1) Remove the upper cylinder cover.

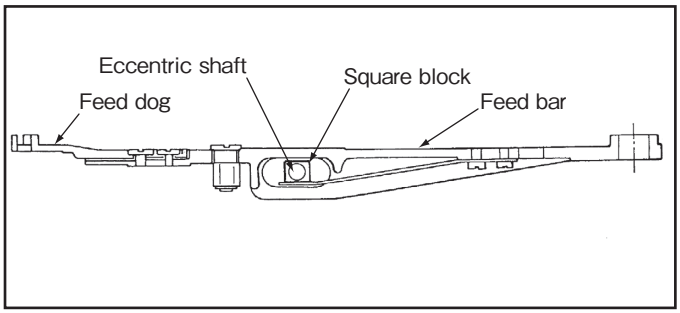
(2) Loosen the two locking screws fixing the eccentric shaft.

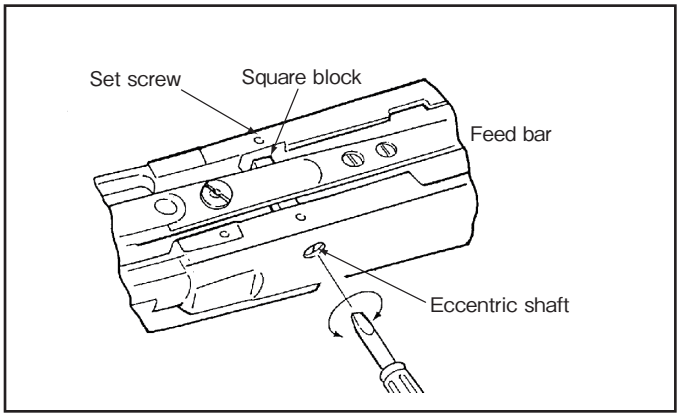
(3) Turn the pulley, lower the feed bar, and then adjust the eccentric shaft.

(4) Lower the eccentric direction, and adjust the position of the square block.
(The eccentric direction of the eccentric shaft is set directly above.)

(5) Always securely tighten the two locking screws.

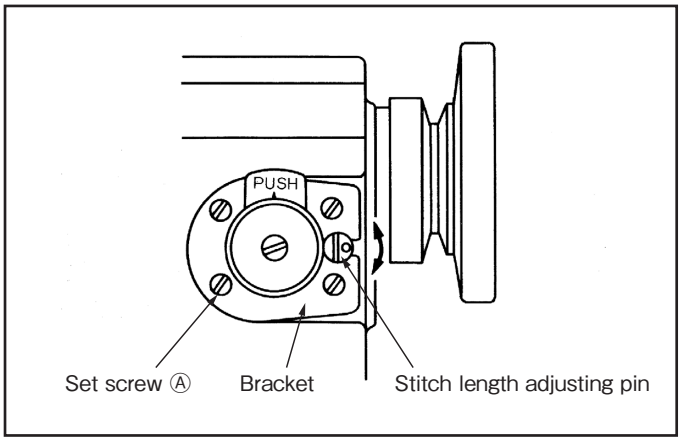
Note: If the eccentric direction is lowered too far, the pulley may become heavy.





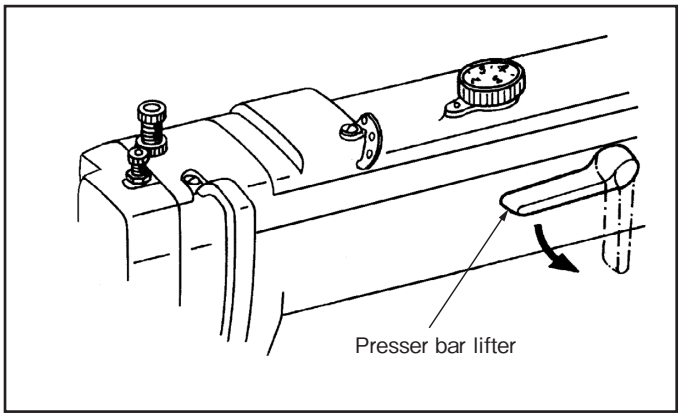
11 Adjustment of forward/ backward stitch length

1. Loosen four set screws Ⓐ.
2. Turn the stitch length adjusting pin until the desired length is reached as follows:
   (1) Clockwise: Increases the stitch length in forward sewing, and decreases the stitch length in back sewing.
   (2) Counterclockwise: Decreases the stitch length in forward sewing, and increases the stitch length in back sewing.



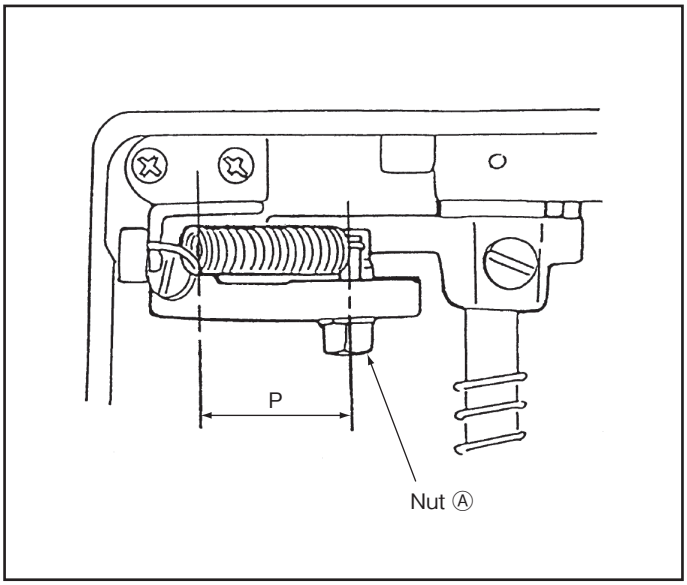
12 Manual Presser bar lifter

1. Turn the presser bar lifter in the direction of the arrow. This raises the presser foot.



13 Adjustment of the knee lifter operating force

1. Loosen the nut Ⓐ on the presser drive arm.
2. Adjust the position or the roller.
   (1) If "P" is lengthened, the knee lifter operating force will become heavier, but the knee lifter operating amount will decrease.
   (2) If "P" is shortened, the knee lifter operating force will lighten, but the knee lifter operating amount will increase.
   Note: "P" is set to the maximum as the default state.



14 Adjustment of the feed foot and the presser foot

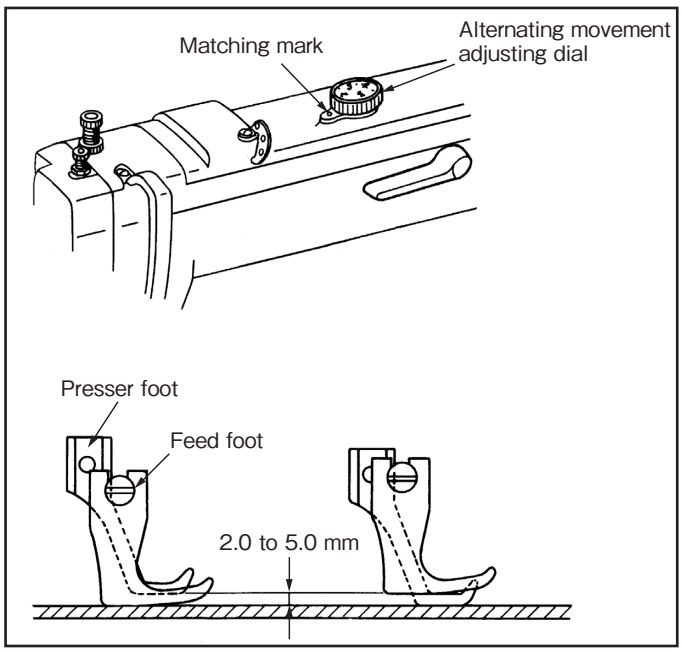
1. Adjustment of alternating movement

(1) The alternating movement on the feed foot and the presser foot can be adjusted by using the adjusting dial located on the top cover.

(2) Face the desired number printed on the dial to the matching mark located on the top cover.

(3) The number printed on the dial represents the possible protrusion of the feed foot and presser foot from the throat plate when the alternating movements on these are evenly set.

(4) If the alternating movements are evenly set, they can be readjusted up to 2.0 to 5.0 mm.



2. To change the balance of the alternating movements between the feed foot and presser foot

(1) For example, to increase the rise of the feed foot, and decrease the rise of the presser foot.

①Remove the rubber plug located on the top cover.

②Turn the pulley until the presser foot is slightly raised from the throat plate.

③Loosen the set screw Ⓐ (on the right side) located on the feed lifting rock shaft crank (right).

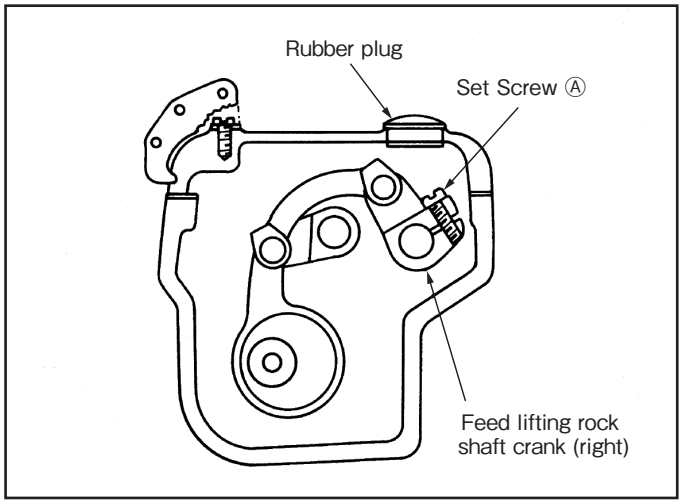
④The built-in spring pulls down the presser foot until it makes contact with the throat plate. Then, tighten the set screw Ⓐ.

⑤This completes the adjustment, i.e., the protrusion of the presser foot has been decreased by a set distance. And, the vertical motion of the feed foot has been increased by that same distance.

(2) As a contrary case (1), to decrease the rise of the feed foot, and increase the rise of the presser foot.

First, turn the pulley until the feed foot is slightly raised from the throat plate. Next, loosen the screw Ⓐ. Finally, tighten the screw Ⓐ again.

This decreases the rise of the feed foot.



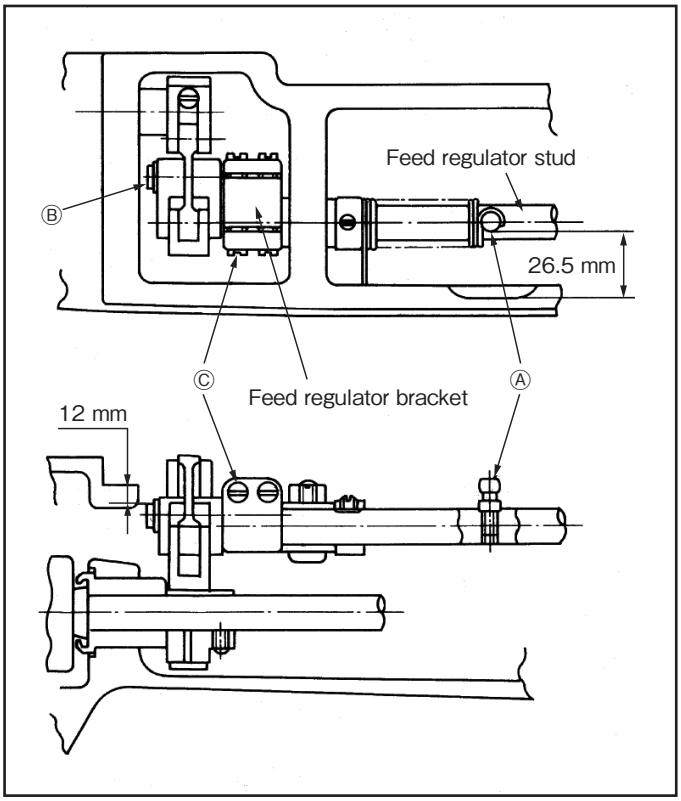
3 . Installing the feed regulator bracket

Should it be necessary to dismount and the feed regulator bracket and its related parts, use the procedure explained below.

Note: If the feed regulator bracket is poorly positioned, the resultant alternating movements may be too short or long, causing defective machine operation.

(1) Set the clearance between special screw Ⓐ located on the regulator stud and the side wall of the machine arm to 26.5 mm as illustrated to the left. (Use a 26.5 mm spacer between these parts. This facilitates the operation.)

(2) With the feed regulator stud held as explained in step (1) above, adjust the feed regulator bracket. This adjustment should insure a clearance of 12 mm between the periphery of pin Ⓑ located on the feed regulator bracket and the top cover mounting face located on the arm. Tighten screws Ⓒ.



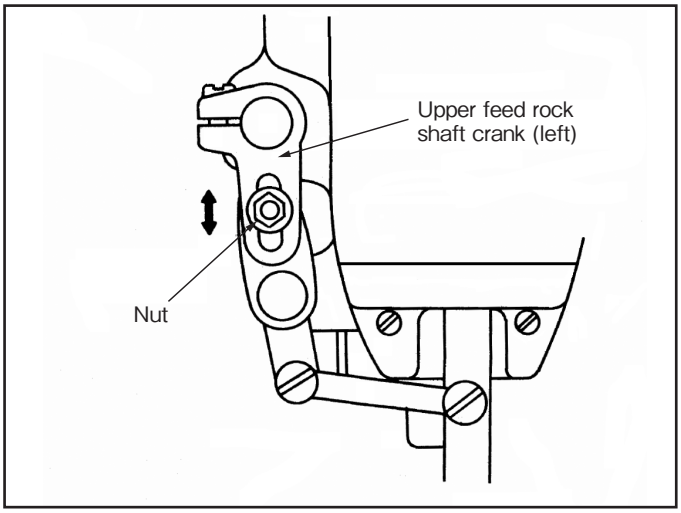
4 . Feed pitch adjustment of feed foot

The ratio of the upper feed amount (of the feed foot) to the lower feed amount (of the feed dog) has been adjusted to 1:1. However, the feed foot feeding amount can be increased or decreased depending on the operating conditions.

(1) Loosen the nut located on the upper feed rock shaft crank (left), and shift to adjust the position of the square block upward or downward.

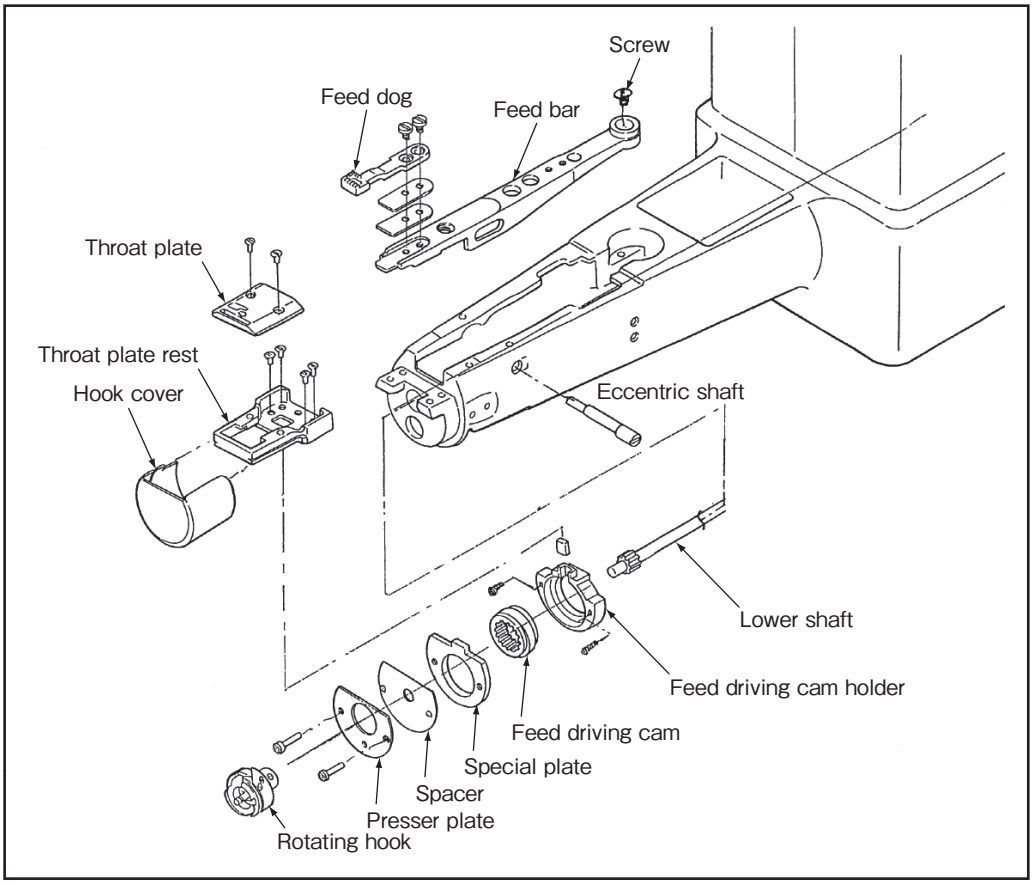
Upper position: Feed pitch → Small

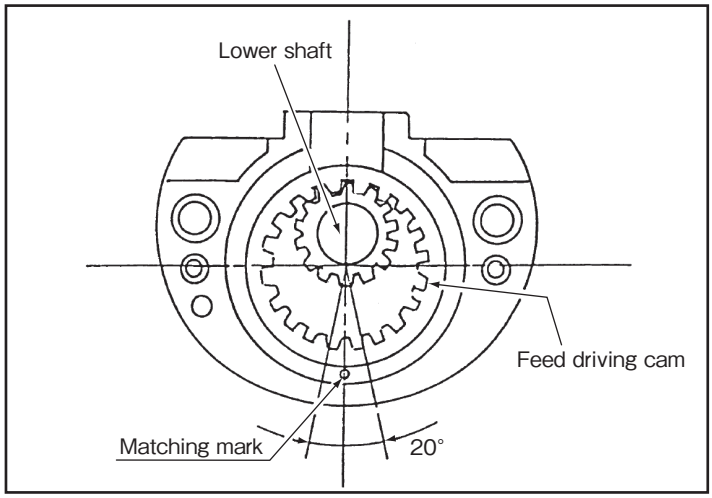
Lower position: Feed pitch → Large



15 Adjustment the feed timing (feed upper / lower position)

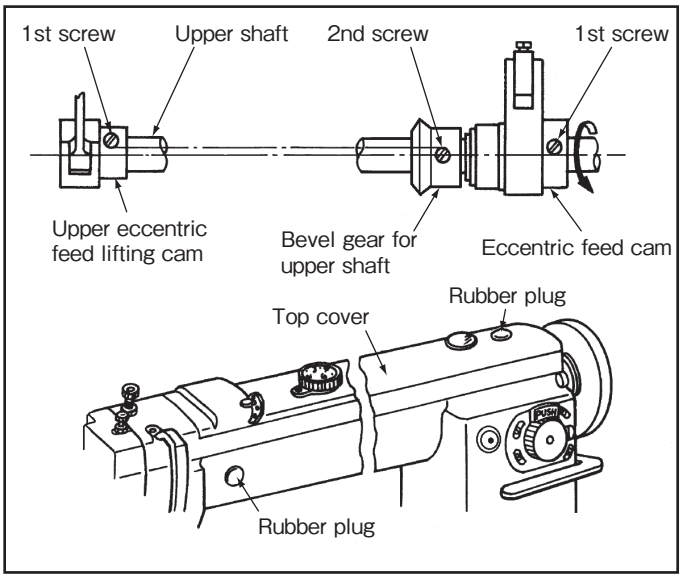
(1) Remove the parts in the order of the upper cylinder cover, throat plate, eccentric shaft, feed bar support screw, feed bar, hook cover, throat plate rest, and hook.
(2) Next, remove the screws fixing the presser plate, spacer, and special plate.
(3) Align the needle bar to the lowest position, and then turn the pulley forward to raise the needle bar. Align the line etched at the bottom of the needle bar with the lower end of the needle bar metal.
(4) Assemble so that the match mark on the feed driving cam is within the 20° range shown in the drawing.
Note: If the match mark is one tooth to the right from the 20° range in the drawing, the needle will puncture the fabric after the feed is completely sunken, or after the fabric is fed. Thus, this is suitable for sewing thick fabrics.
Note: If the match mark is one tooth to the left from the 20° range in the drawing, the fabric will be fed while the balance tightens the thread, so the thread tightening will improve.





16 Adjustment of the feed timing

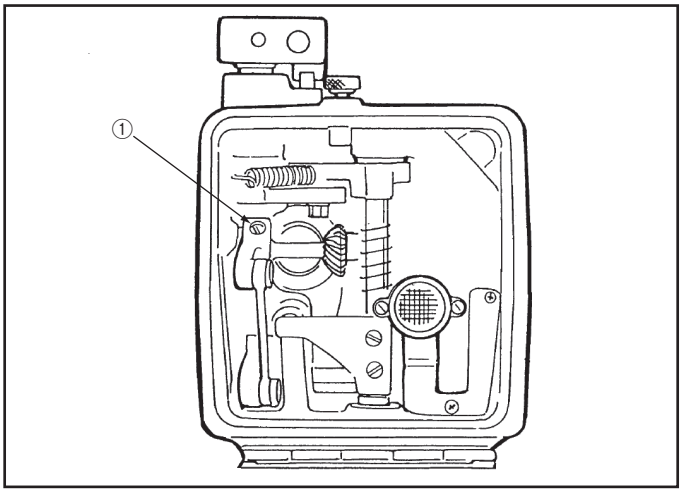
1. The standard position of the eccentric feed cam and eccentric feed lifting cam are illustrated to the right.
2. To adjust the position, first open the top cover. Properly slide the eccentric cam.
3. The eccentric feed cam can also be adjusted by removing the rubber plug located on the top cover, and the upper eccentric feed lifting cam can also be adjusted by removing the rubber plug located on the arm.
   In the latter case, however, the built-in bevel gear is concealed; care should be taken when adjusting.



17 Adjustment of the feed dog's forward / backward position

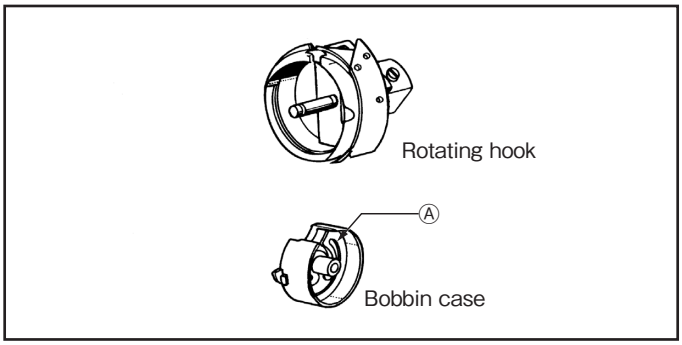
1. Set the feed adjustment dial to the maximum setting.
2. Tilt the sewing machine unit to the back.
3. Gradually turn the pulley toward the front, and loosen and adjust the feed rock shaft crank screw ① so that the feed does not contact the front and back of the throat plate groove during forward and reverse feed.

4. After adjusting, tighten screw ①



18 The rotating hook, bobbin case, and bobbin

1. A large hook for automatic lubrication is used.
2. Also, use a bobbin case whose bottom has spring Ⓐ a capable of preventing racing.
3 The bobbin provided in the package can be used.



19 Adjustment of the gap between the pulley and the machine head

The detector's reflection plate is installed on the inner side of the pulley.
So a correct distance must be kept with the detector body.
The gap between the pulley and the machine head must be 6.5 mm.

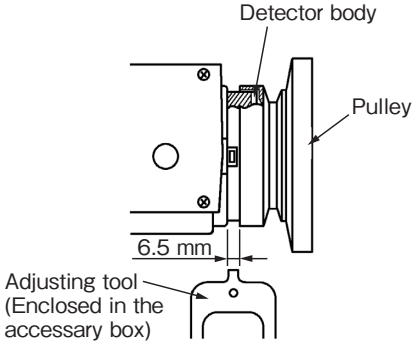
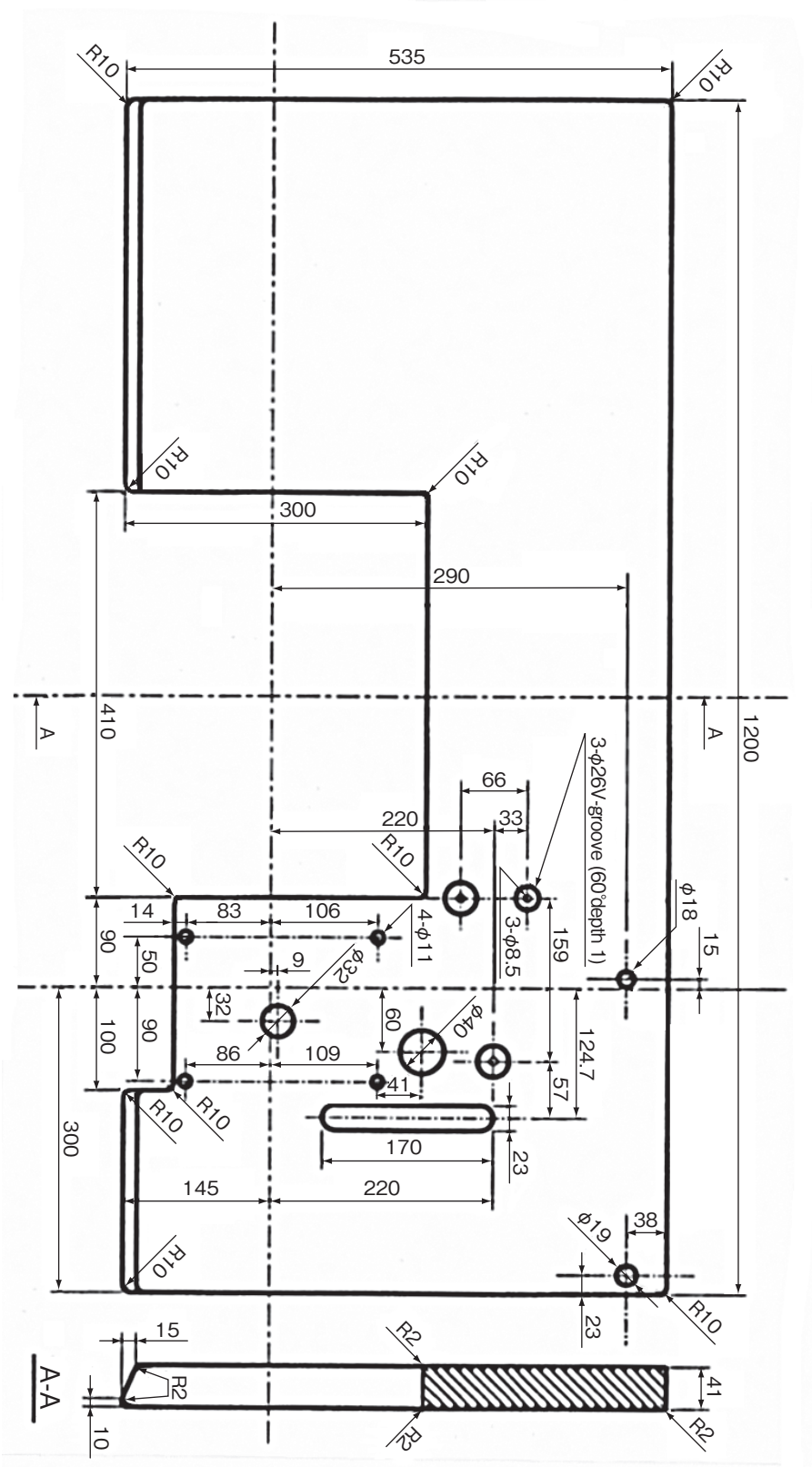


Table shape


535
R10
300
290
410
1200
A
66
33
220
3-φ26V-groove (60°depth 1)
3-φ8.5
4-φ11
φ18
15
159
14
83
106
90
50
9
φ32
32
100
90
60
φ40
86
109
124.7
41
57
R10
170
23
300
145
220
φ19
38
23
15
R2
A-A
41
10

LY3-6840-B0T Specifications

Specifications \ Model		LY3-6840-B0T
Application		Heavy material
Max. sewing speed (rpm)		2,000
Stitch length (mm)		0 to 7
Needle bar stroke (mm)		38.0
Thread take-up lever stroke (mm)		75.8
Alternating movement (mm)		2.0 to 5.0 (feed foot)
Alternating movement changing system		Dial (One-touch)
Feed dog height (mm)		1.2
Presser foot stroke (mm)	Hand	6.0
	Knee	15.0
Needle		DP × 17 #22 (DB × 1 #22)
Hook (vertical rotating hook)		Large
Bobbin case		With racing prevention spring
Lubrication system		Automatic lubrication
Touch back		○
Material handing area (mm)		Width 335 × Height 145
Cylinder bed diameter (mm)		ϕ 47
Dimension on left side of needle drop (mm)		6.5

Note: ●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.

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