

JUKI

1-NEEDLE, UNISON-FEED LOCKSTITCH MACHINE
WITH AN AUTOMATIC THREAD TRIMMER

LU-2210-6

INSTRUCTION MANUAL

No.02

29076809

Congratulations on your purchase of the JUKI sewing machine.

Please read this Instruction Manual and the Instruction Manual of the motor carefully before using this machine in order to get the most out of it and the enjoy using it for a long time.

BEFORE OPERATION

1. Never operate your machine unless its oil pan has been filled with oil.
2. When you operate the sewing machine for the first time after the set-up, be sure to make the machine run at a low speed and check the direction of rotation of the motor.
3. For the first month, run the machine at a speed of 2,800 s.p.m. or less.
4. When carrying the machine, do not hold it by the synchronizer located at the rear of the handwheel.
5. Check the nameplate for correct indication of the voltage.

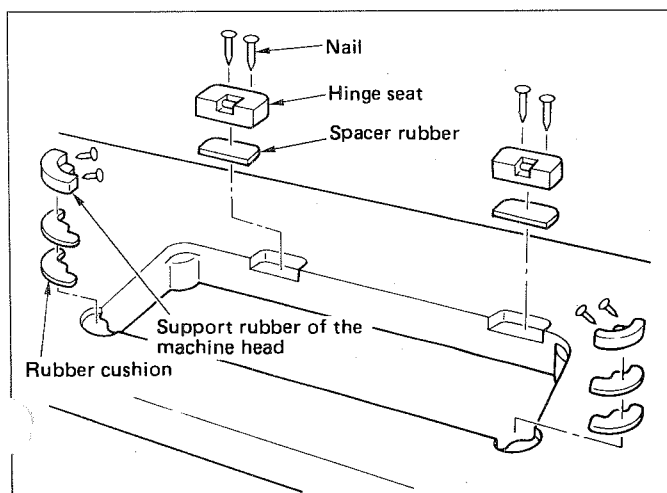
OPERATION PRECAUTIONS

1. Keep your hands away from the needle when you turn the power switch ON or while the machine is operating.
2. Do not put your fingers into the thread take-up cover while the machine is operating.
3. Be sure to turn the power switch OFF before tilting the machine head or removing the V belt.
4. During operation, be careful not to allow your or any other person's head or hands to come close to the handwheel, Vbelt, bobbin winder or motor. Also, do not place anything close to them. Doing so may be dangerous.
5. If your machine is provided with a belt cover, finger guard or any other protectors, do not operate your machine with any of them removed.
6. Operate the sewing machine at a sewing speed that matches the stitch length specified.

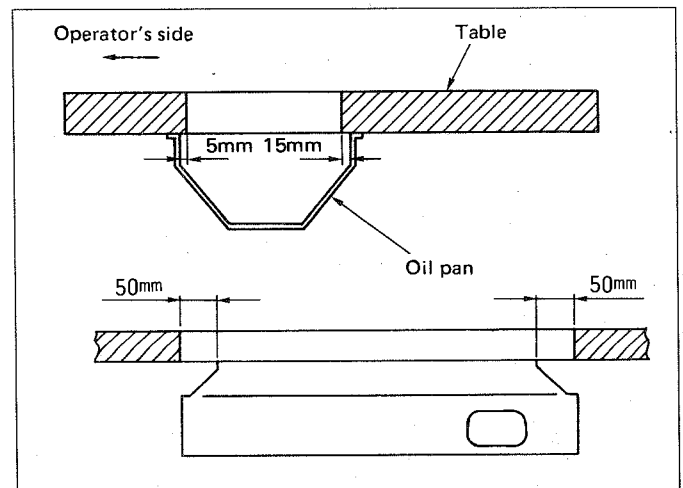
SPECIFICATIONS

Application	Car seats, furniture, etc.
Sewing speed	Max. 3,500 s.p.m. See "26. Table of sewing speed for each stitch length" on page 8.
Stitch length (max.)	Normal feed : 9 mm Reversed feed : 9 mm
Needle	SCHMETZ 134 x 35R (Nm100 to Nm180)
Lift of presser foot	Hand lifter lever : 9 mm Knee lifter : 16 mm
Lubricating oil	JUKI New Defrix Oil No. 1

1. INSTALLATION

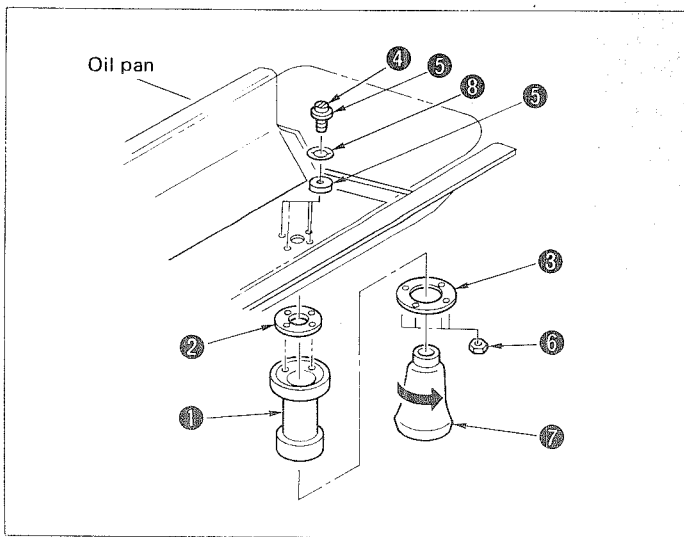


1. Attaching the hinge seats and support rubber of the machine head
Fix the hinge seats and the support rubbers supplied with the machine on the table using nails.



2. Attaching the oil pan
Fix the oil pan supplied with the machine by tightening eight wooden screws.

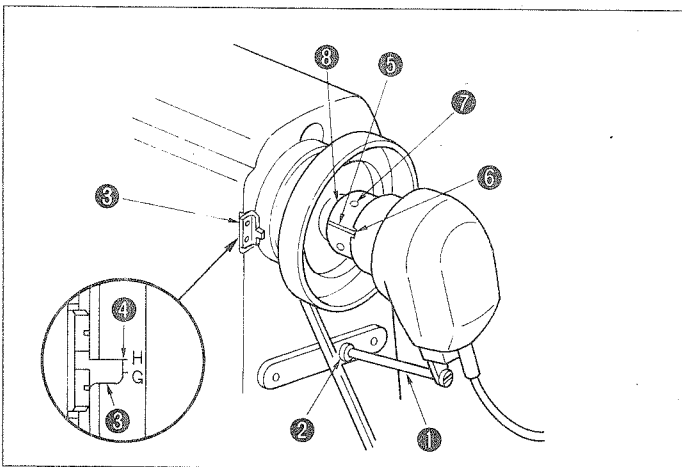
2. INSTALLING THE WASTE OIL CONTAINER



Attach drain plug ①, oil seal ② and washer ③ to the oil pan. Attach packing ⑤ and washer ⑧ to screw ④ and fix them with nut ⑥.

After they are fixed, screw in waste oil container ⑦ into drain plug ①.

3. INSTALLING THE SYNCHRONIZER



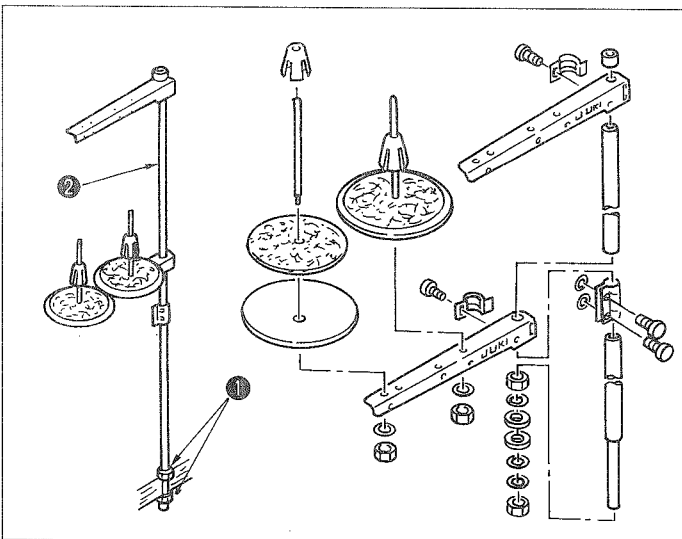
1. Attach synchronizer support rod ① to the arm using attaching nut ②.

2. Turn the handwheel by hand until handwheel pointer ③ with marker line of scale H ④ engraved on the handwheel.

3. Align marker line ⑤ engraved on the flange of the synchronizer with notch ⑥ on the edge of the synchronizer case. In this state, attach flange ⑧ on the handwheel. Then tighten screw ⑦.

4. Confirm that pointer ③ meets marker line ④ when marker line ⑤ is aligned with notch ⑥.

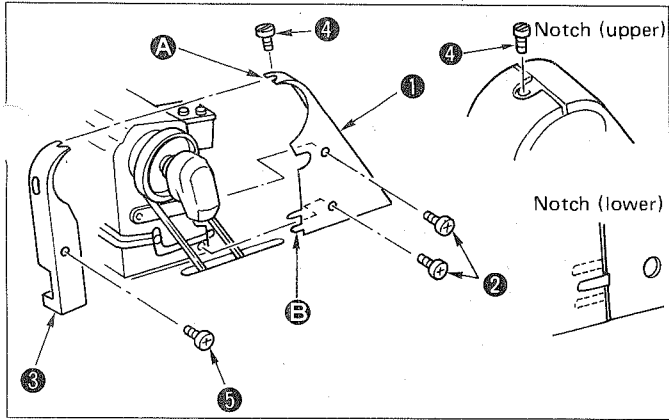
4. INSTALLING THE THREAD STAND



Assemble the thread stand, place it in the hole on the machine table and tighten nuts ① to the extent where the thread stand does not fluctuate.

If the ceiling wiring is possible, pass the power supply cable through spool rest rod ②.

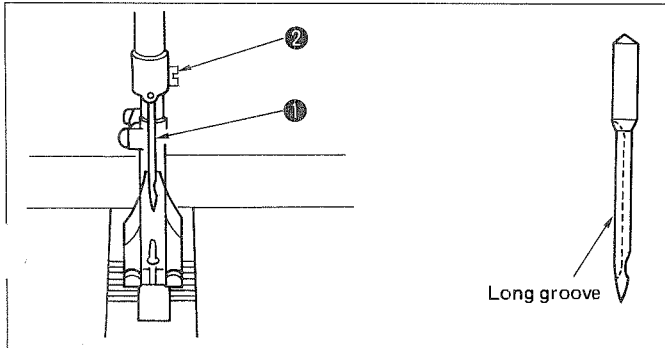
5. ATTACHING THE BELT COVER



(Order of installation)

1. Fix belt cover (rear) ① on the arm with screws ②.
2. Fit belt cover (front) ③ to notch (upper) A and notch (lower) B of the belt cover (rear).
3. Fix belt cover (front) ③ with screws ④ and ⑤.

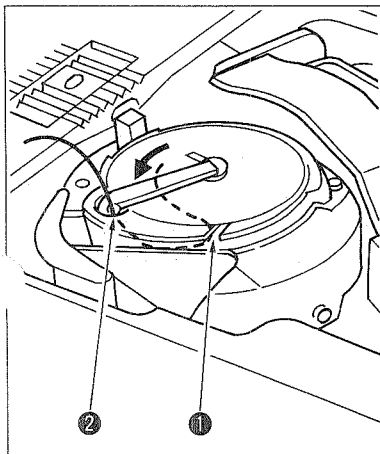
7. ATTACHING THE NEEDLE



- ☆ Turn OFF the power to the motor.
Use a SCHMETZ134 x 35R needle.

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

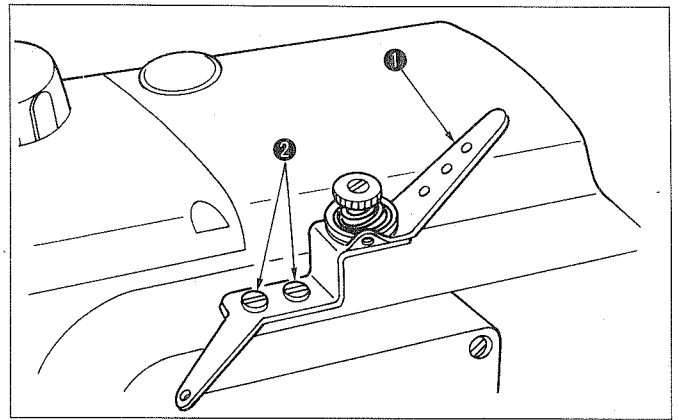
9. THREADING THE HOOK



1. Pass the thread through thread path ① in the hook and thread hole ② in the lever, and draw the thread. Now, the thread will be brought to thread hole ② via the tension spring.

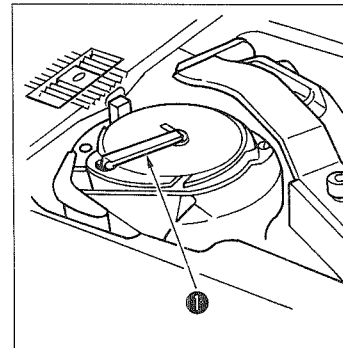
- ☆ Make sure that the bobbin revolves in the direction of the arrow when you draw the thread.

6. ATTACHING THE THREAD GUIDE OF THE BOBBIN WINDER



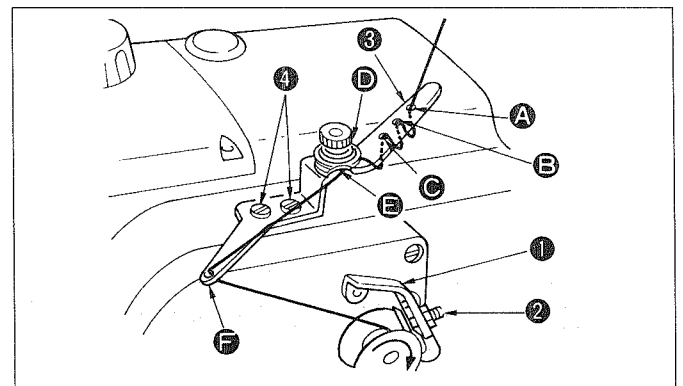
Attach thread guide ① of the bobbin winder on the bobbin winder of the arm with screws ②. Adjust the position of the thread guide referring to "10. Winding a bobbin."

8. ATTACHING/REMOVING THE BOBBIN



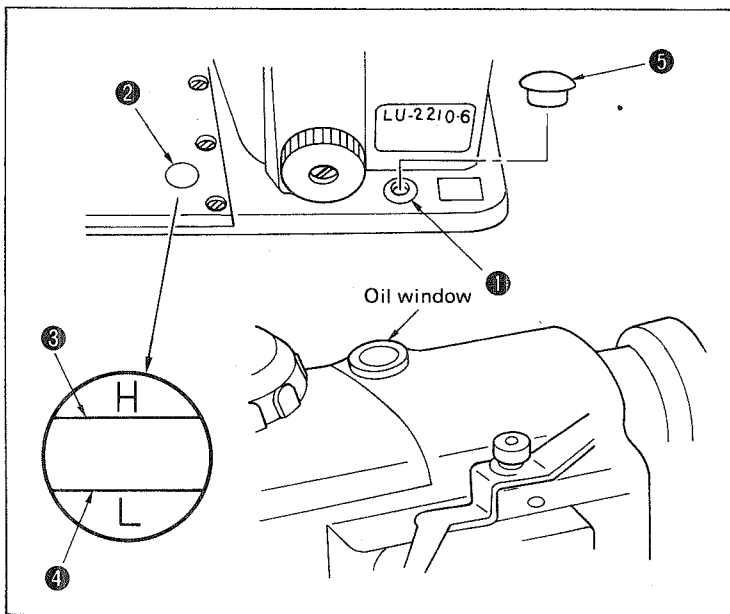
1. Lift latch ① of hook, and take out the bobbin.
2. Put the bobbin into the shaft in the hook correctly and release the latch.

10. WINDING A BOBBIN



1. Pass the thread in the order, A, B, C, D, E and F. Then wind it several turns round the bobbin.
2. Tilt bobbin presser ①.
3. Adjust bobbin thread amount adjustment screw ② to wind a bobbin about 80% of its capacity. Turn the screw counterclockwise to increase the amount of thread to be wound round the bobbin, or clockwise to decrease it.
4. If the bobbin is wound unevenly, correct it by moving thread guide ③ of the bobbin winder back or forth. Then tighten screws ④.
5. When the bobbin is filled up, the bobbin presser automatically releases the bobbin and the bobbin winder stops running.

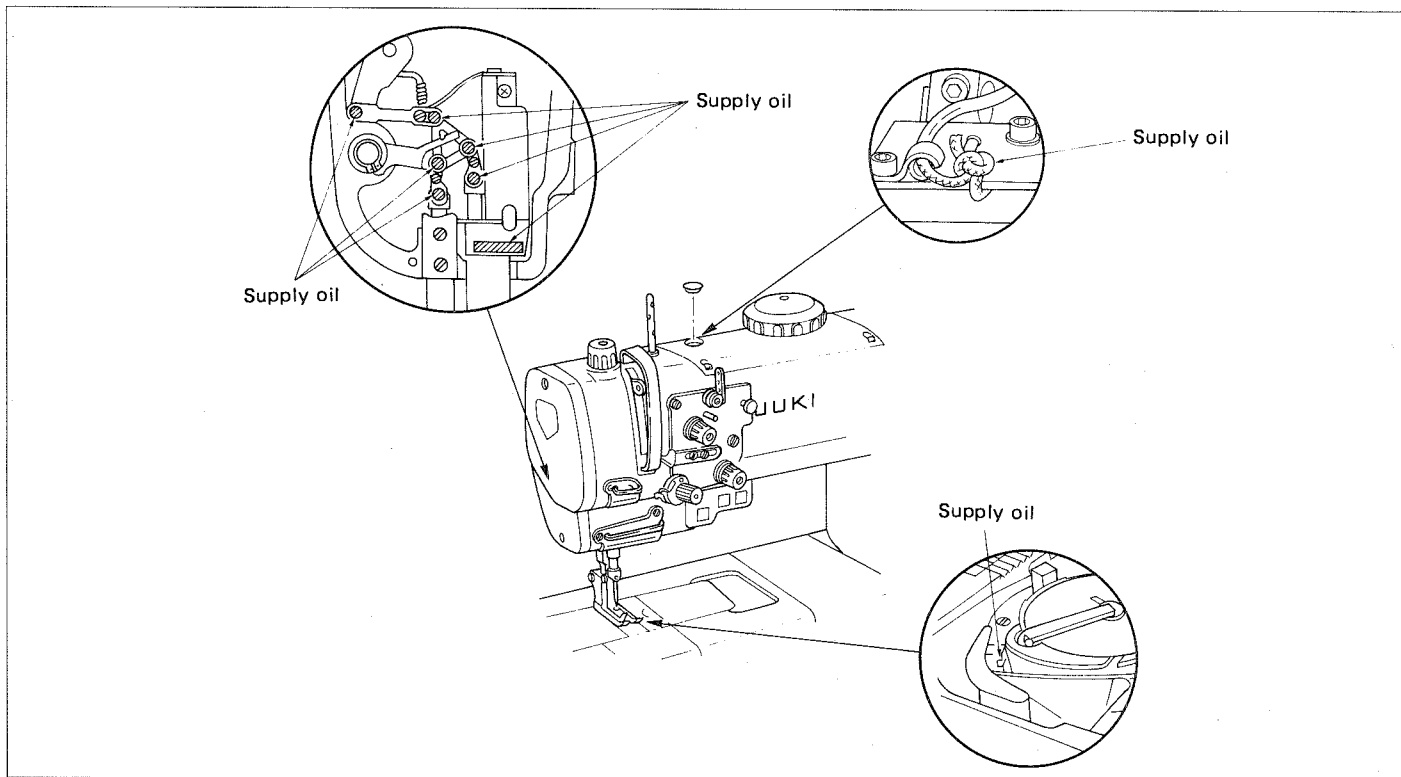
11. LUBRICATION



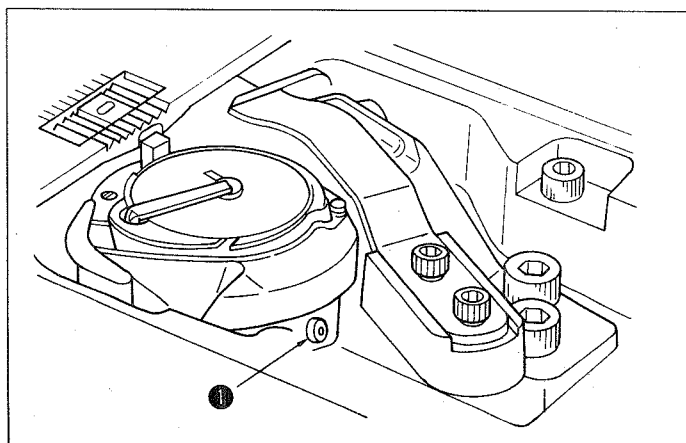
1. Pour the JUKI New Defrix Oil No. 1 into the oil tank in the bed from lubrication hole ① until H level ③ of oil gauge ② is reached.
2. Add the same lubricating oil as soon as the oil level has come down to L level ④.
3. After the lubrication, operate the sewing machine and check that the oil rises up to the oil sight window.

(Caution) Do not use any lubrication oil other than the specified type. Be sure to close cap ⑤ of the oil hole.

When you operate your machine for the first time after the set-up or after an extended period of disuse, apply two or three drops of oil to the sections indicated with arrows and run your machine for approximately 10 minutes at 1,800 s.p.m. for the purpose of break-in.

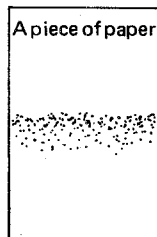


12. ADJUSTING THE AMOUNT OF OIL IN THE HOOK

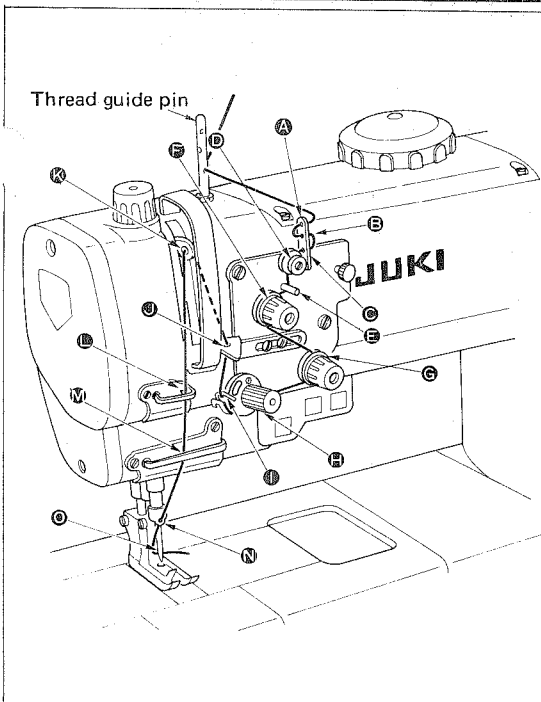


Adjust the amount of oil in the hook by turning oil amount adjustment screw ① mounted on the hook. Turning the adjustment screw clockwise will decrease the amount of oil in the hook or counterclockwise will increase it.

Place a piece of paper near the periphery of the hook, and run the machine for approximately five seconds. The proper amount of oil in the hook is obtained when the oil spots lightly make stripes on the paper as shown in the figure below.



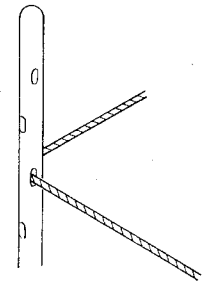
13. THREADING THE MACHINE HEAD



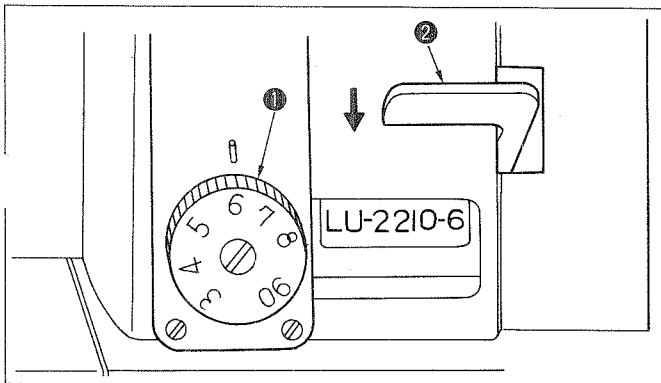
Thread the machine head in the order from **A** through **O** as illustrated in the figure on the left.

- A** **B** **C**..... Needle thread guide
- D** Thread tension controller No. 1
- E** Thread guide pin
- F** **G**..... Thread tension controller No. 2
- H** Thread take-up spring guide
- I** Thread take-up spring
- J** Thread take-up thread guide
- K** Thread take-up lever
- L** Arm thread guide A
- M** Arm thread guide B
- N** Needle bar thread eyelet
- O** Needle

★ Thread only one of the holes in the thread guide pin.



14. ADJUSTING THE STITCH LENGTH

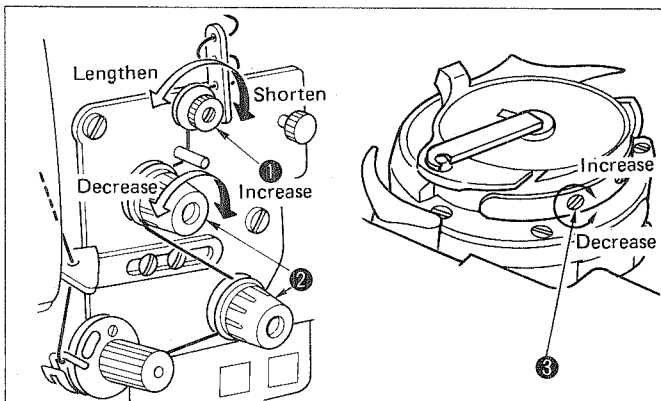


Turn stitch dial **1** counterclockwise (clockwise) so that the number corresponding to the desired stitch length is brought to the top of the dial until the marking spot is reached.

★ Reverse feed stitching

1. Press down reverse feed control lever **2**.
2. Reverse feed stitches are made as long as you keep pressing the lever down.
3. Release the lever, and the machine will run in the normal feed direction.

15. THREAD TENSION



★ Adjusting the length of thread remaining after thread trimming

Turn thread tension nut No. 1 **1** clockwise to shorten the length of thread remaining after thread trimming.

Turn the nut counterclockwise to lengthen it.

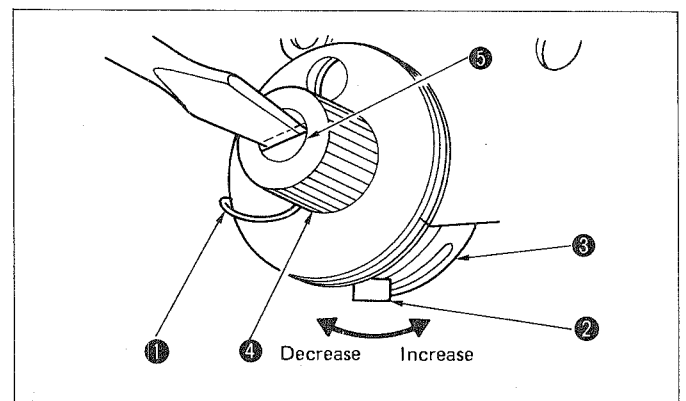
★ Adjusting the needle thread tension

Turn thread tension nut No. 2 **2** clockwise to increase the needle thread tension, or counterclockwise to decrease it.

★ Adjusting the bobbin thread tension

Turn tension adjustment screw **3** clockwise to increase the 5 bobbin thread tension, or counterclockwise to decrease it.

16. THREAD TAKE-UP SPRING



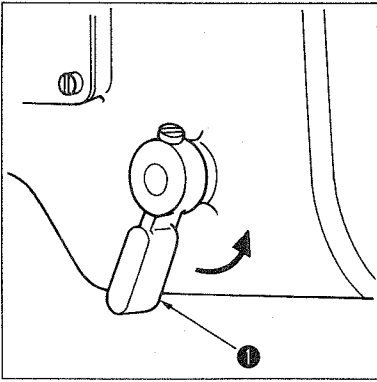
★ When you want to change the stroke of the spring:

1. Loosen screw **2** in the stopper, and move stopper **3** to the right or left to change stroke of thread take-up spring **1**.
2. Move the stopper to the right to increase the stroke of the thread take-up spring, or to the left to decrease it.

★ When you want to change the tension of the spring:

1. Loosen nut **4**, and move spring stud **5** counterclockwise to increase the tension of the spring, or clockwise to decrease it.

17. HAND LIFTER

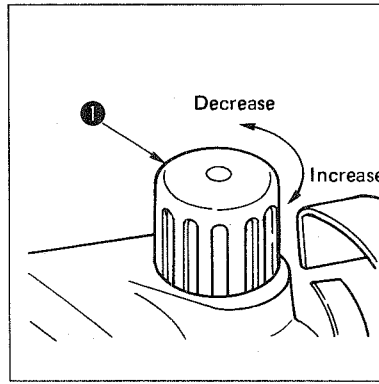


When you want to keep the presser foot in the lifted position, turn hand lifter ① in the direction of the arrow. This makes the presser foot rise 9 mm and stay at that position.

To make the presser foot come down to its home position, lower the hand lifter.

The presser foot goes as high as 16 mm when using the knee lifter.

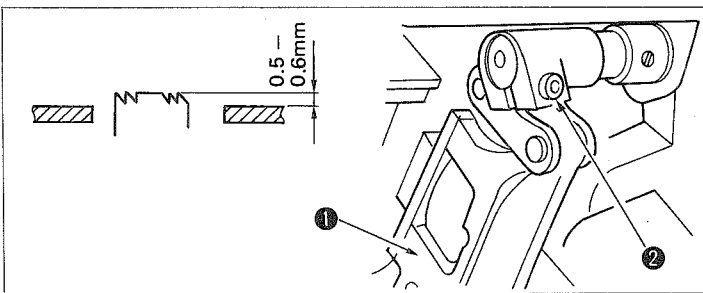
18. ADJUSTING THE PRESSURE OF THE PRESSER FOOT



Turn presser spring regulating dial ① clockwise to increase the pressure of the presser foot, or counter-clockwise to decrease it.

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

19. HEIGHT OF THE FEED DOG

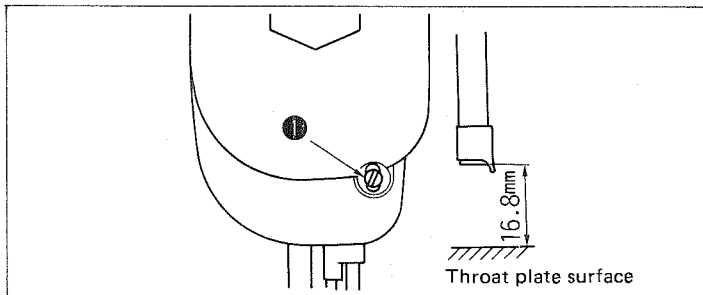


The feed dog must rise 0.5 to 0.6 mm above the throat plate.

Adjust the height of feed dog in the below-stated procedure.

1. Turn the stitch dial fully clockwise.
2. Turn the handwheel in the normal direction to bring the feed dog to the highest position of its stroke.
3. Loosen screw ②, and adjust the height of feed dog by moving feed bar ① up or down.

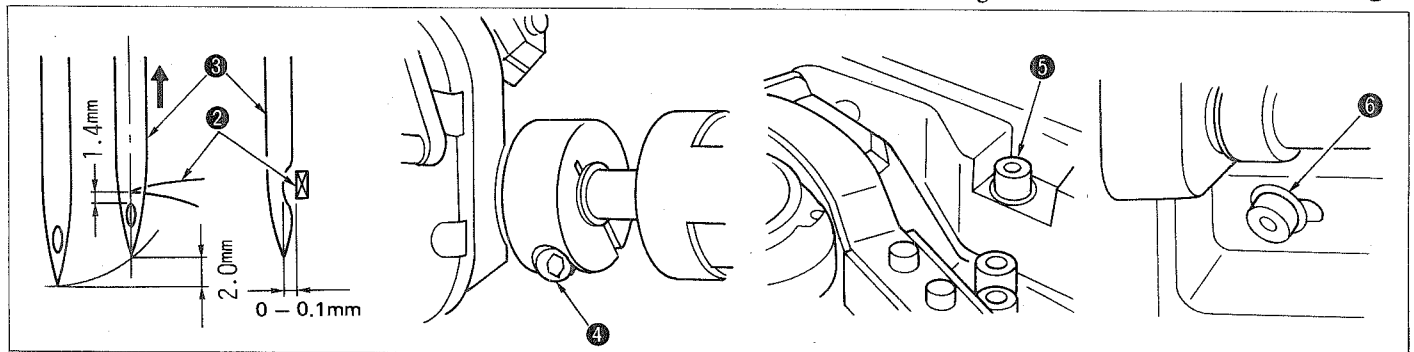
20. NEEDLE-TO-HOOK RELATION



★ Set the needle-to-hook relation in the following way.

● Determine the height of the needle bar.

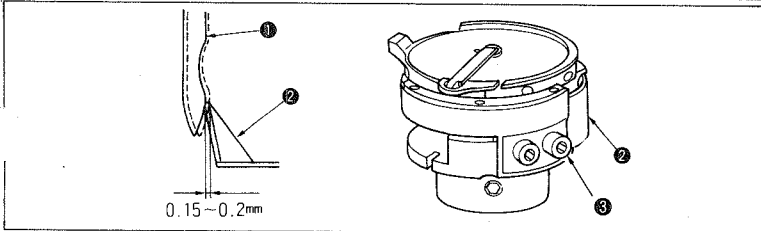
1. Set the stitch dial to 0.
2. Turn the handwheel to bring the needle bar to the lowest position of its stroke. Then loosen needle bar connection screw ①.
3. In the state described in 2., adjust so that the lowest end of the needle bar is 16.8 mm above the throat plate surface. Then tighten needle bar connection screw ①.



● Determine the position of the hook

4. Loosen hook driving shaft set collar clamping screw ④, and turn the handwheel counterclockwise to make the needle bar ascend by 2.0 mm from the lowest position of its stroke.
5. In the state described in 4., align blade point ② of the hook with the center of needle ③, and tighten hook driving shaft set collar clamping screw ④. At this time, a clearance of 1.4 mm is provided between the blade point of the hook and the top edge of the needle eyelet. (As reference, the handwheel pointer meets the marker line of the scale L on the handwheel.)
6. Loosen screw ⑤ in the top face of the bed and screw ⑥ in the hook driving shaft saddle, and adjust so that a clearance of 0.02 to 0.1 mm is provided between the blade point of hook and the needle by moving the hook driving shaft saddle to the right or left. Once the specified clearance is obtained, securely tighten screws ⑤ and ⑥.
7. Set the feed adjusting dial to "9", and check that the blade point of the hook does not come in contact with the needle.

21. ADJUSTING THE HOOK NEEDLE GUARD

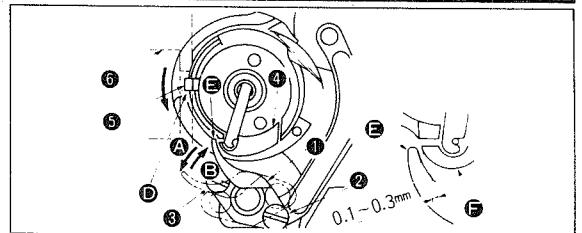


When a hook has been replaced, be sure to check the position of the hook needle guard.

As the standard position of the hook needle guard, hook needle guard ② must push the side face of needle ① to lean the needle by 0.15 to 0.2 mm away from its straight position. If not, adjust the hook needle guard by bending it.

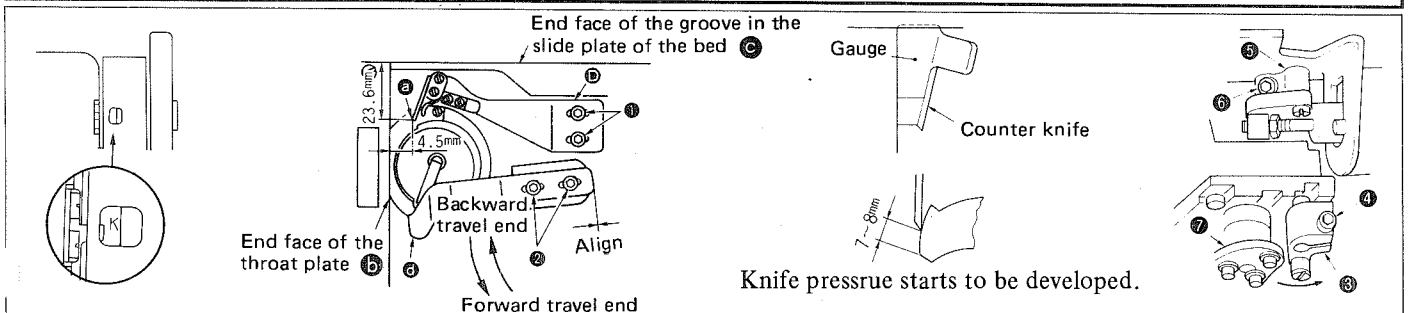
1. If you want to move the hook needle guard inwards, turn adjusting screw ③ clockwise.
2. If you want to move the hook needle guard outwards, turn adjusting screw ③ counterclockwise.

22. ADJUSTING THE BOBBIN CASE OPENING LEVER



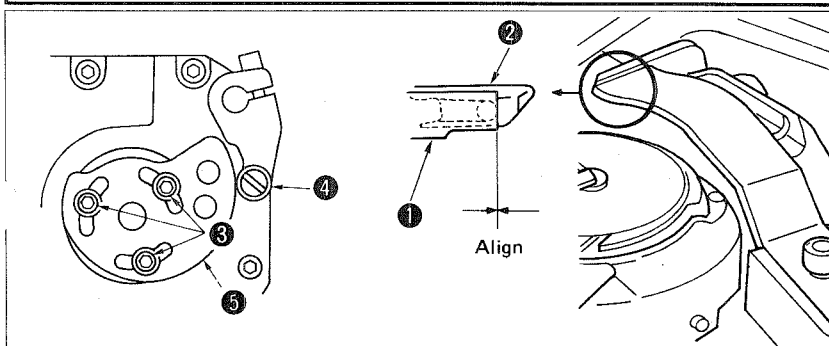
1. Turn the handwheel to move bobbin case opening lever ① in the direction of the arrow ④, and loosen screw ②.
2. Turn the handwheel to move bobbin case opening lever ① in the direction of arrow ③, and loosen screw ③.
3. Turn bobbin case ④ in the direction of arrow ⑤ to until bobbin case stopper ⑤ rests in groove ⑥ on throat plate ⑥. In this state, adjust so that a clearance of 0.1 to 0.3 mm is provided between top end ② of bobbin case opening lever and protrusion ⑦ on the bobbin case when they approach most. Then, tighten screws ② and ③.

23. INITIAL POSITION OF THE KNIVES



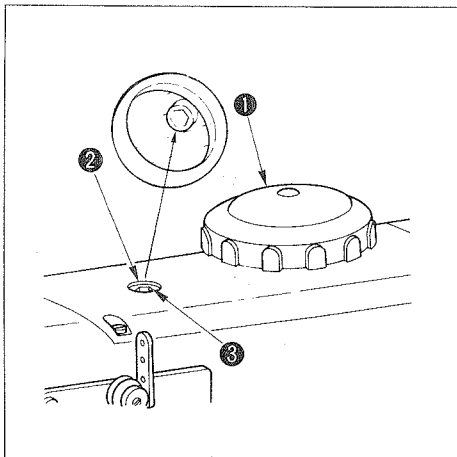
1. Align the handwheel pointer to the marker line of scale K on the handwheel.
2. Under the aforementioned state, move the moving knife by hand to its forward travel end (where the thread trimming solenoid is fully drawn.)
- **Initial position of the counter knife**
3. Loosen screw ① in the counter knife base, and adjust the position of the counter knife so that top end ① of counter knife is 4.5 mm away from end face ② of throat plate and 23.6 mm away from end face ③ of the slide plate of the bed. Then tighten screws ①. (Use the gauge supplied with the machine as reference.)
- **Adjusting the knife pressure**
4. Loosen screws ② of the moving knife. Turn the handwheel to move the moving knife and adjust the knife pressure. In the standard state, the knife pressure is developed from the position where the top end of the moving knife is spaced 7 to 8 mm from the top end of the counter knife.
- **Initial position of the moving knife**
5. Loosen clamping screw ④ in moving knife driving arm A ③ and clamping screw ⑥ in moving knife driving arm B ⑤. Then move the moving knife backward until it will go no further.
6. Adjust so that top end ⑥ of the moving knife is brought to the position that is 0.5 mm behind top end ② of the counter knife. Then, tighten clamping screw ⑥.
7. Turn the handwheel to make thread trimmer cam ⑦ turn moving knife driving A ③ in the direction of the arrow until the arm will go no further. Then, tighten clamping screw ④.

24. ADJUSTING THE TIMING OF THE THREAD TRIMMER CAM



1. Let the blade of counter knife ① align with the blade of moving knife ②.
2. Loosen screws ③ in the thread trimmer cam.
3. Align the handwheel pointer with the marker line of scale D on the handwheel.
4. Tighten screw ④ to fix the thread trimmer cam with thread trimmer roller ⑤ come in contact with thread trimmer cam ⑤.
5. Turn the handwheel by hand until the handwheel pointer meets the scale D on the handwheel. Now, check that the blades of the moving knife and counter knife with each other.

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



1. Adjust the lifting amount of the presser foot and walking foot using dial ①. Turn the dial clockwise to increase the lifting amount, or counter-clockwise to decrease it.
2. To adjust the balance between the lifting amount of the presser foot and that of the walking foot, loosen hexagon socket head cap screw ③ which is observed through hole ② when the walking foot descends to the

position where the sole of walking foot is flush with the sole of presser foot on the top surface of the throat plate. Now turn the handwheel toward you and tighten clamping screw ③, and the lifting amount of the presser foot will be increased. Turn the handwheel away from you and tighten the clamping screw, and the lifting amount of the walking foot will be increased.

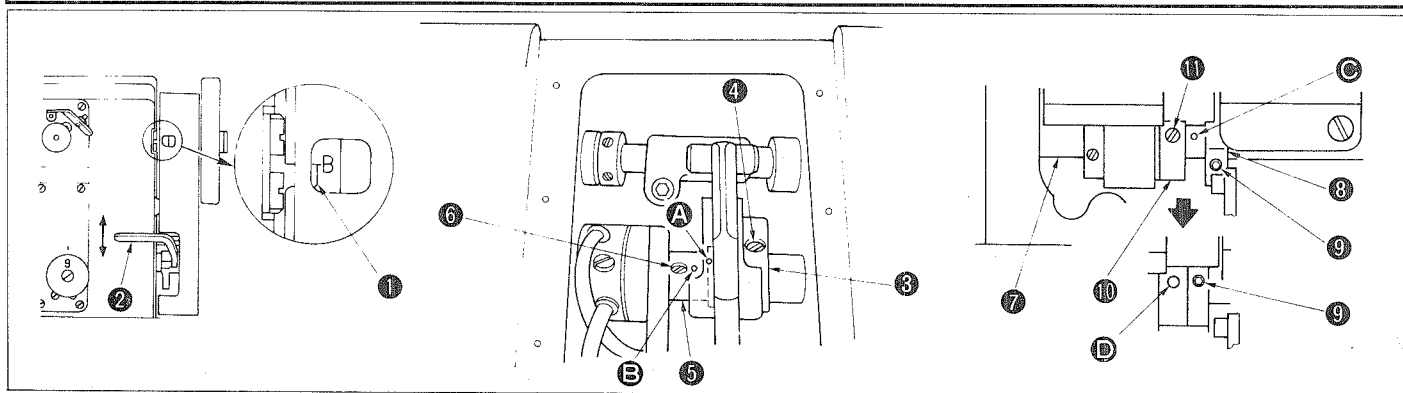
26. TABLE OF SEWING SPEED FOR EACH STITCH LENGTH

- Max. 3,500 s.p.m. (changes in accordance with conditions for sewing)

Amount of alternate vertical movement of the walking foot and presser foot	Stitch length : 6 mm or less	Stitch length : More than 6 mm and 9 mm or less
2.0 mm	3,500 s.p.m.	2,000 s.p.m.
3.5 mm	3,000 s.p.m.	2,000 s.p.m.
5 to 7 mm	2,000 s.p.m.	2,000 s.p.m.

Operate the sewing machine at a sewing speed that matches the stitch length specified.

27. FEED TIMING



• Feed rock timing

1. Set the feed adjusting dial to "9" on the scale.
2. Align handwheel pointer ① with scale "B" on the handwheel.
3. Bring reverse feed lever ② to the position where the feed dog does not move in the feeding direction even if moving the lever up or down. Now, fix feed rock cam ③.
4. As reference, screw No. 1 ④, in terms of the direction of rotation, on the feed rock cam should be straight up when pointer ① is aligned with the scale B.

• Feed driving timing

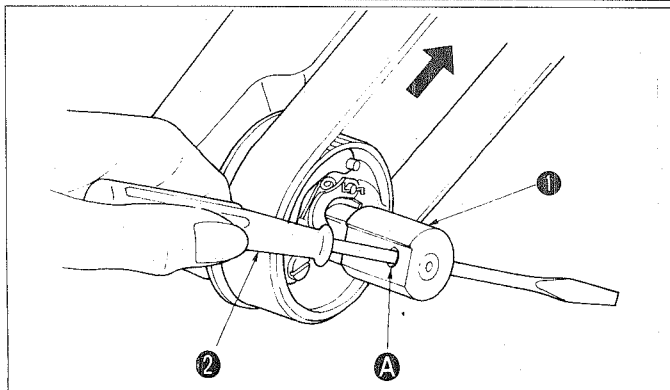
Tighten screw ⑥ in feed driving cam ⑤ so that marker dot ① engraved on feed rock cam ③ (the marker dot is on the end face of the cam) is flush with marker dot ② engraved on feed driving cam ⑤.

• Top feed timing

1. Loosen screw ⑨ in tension release cam ⑧ mounted on main shaft ⑦ to let marker dot ③ engraved on the periphery of the main shaft appear.
2. Fix top feed cam ⑩ so that screw No. 1 ⑪ on top feed cam ⑩ is flush with marker dot ④.
3. Turn the handwheel until marker dot ⑤ engraved on top feed cam ⑩ is flush with screw ⑨ of tension release cam ⑧. Now, tighten screw ⑨.

This completes the standard adjustment of the feed timing.

28. RESETTING THE SAFETY CLUTCH



The safety clutch functions when an excessive load is applied to the hook or the other components during sewing. While the safety clutch is functioning, the hook will never rotate even if turning the handwheel.

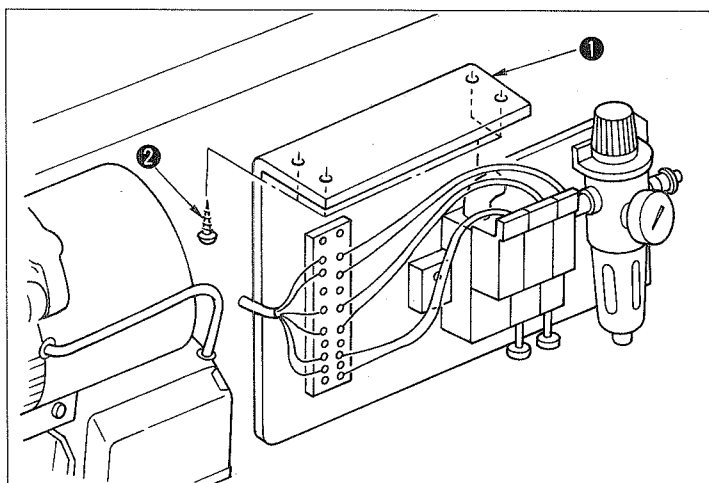
1. Reset the safety clutch with the sewing machine tilted.
2. Fit screwdriver (medium) ② supplied with the machine as an accessory in hole ① in safety clutch bushing ①.
3. Holding screwdriver ② by hand to prevent safety clutch bushing ① from rotating, turn the handwheel in the reverse direction of rotation.
4. The resetting procedure completes when the handwheel clicks.

29. OPTIONAL DEVICES (CONNECTING THE CORDS)

The following three kinds of optional devices have been prepared for the LU-2210-6.
All of these optional devices are driven by air.

Name of optional device	Name of model	Remarks
Automatic reverse feed device	-0B	
Auto-lifter	AK79B	Operated by means of the foot pedal
Instantaneous conversion of the amount of the alternating vertical movement of the walking foot and presser foot	DL16A	Operated by means of the knee switch
	DL16B	Operated by means of the switch mounted on the machine head unit

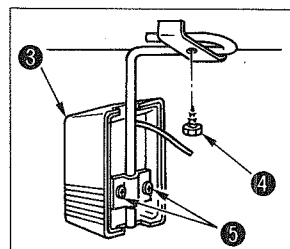
1. Installing the air control unit and the knee switch



Installing the air control unit

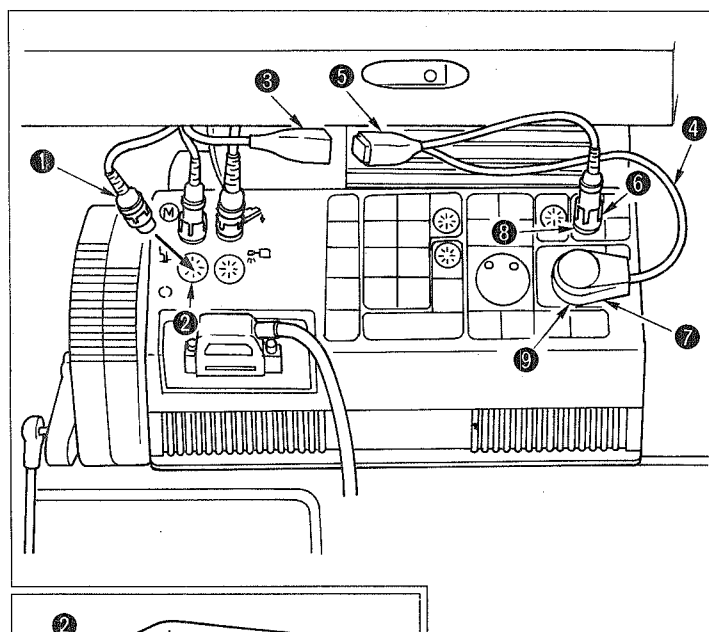
After the set-up of the sewing machine, attach air control unit ① on the underside of the rear section of the table next to the motor with wooden screws ② supplied with the air control unit. (The figure illustrates the air control unit for the -0B/AK79B/DL16A, B.)

• Attaching the knee switch (for the DL16A)



Attach knee switch ③ on the underside of the front section of the table using wooden screw ④ supplied with the knee switch so that you can operate it with ease. Loosen screws ④ and ⑤, and adjust the vertical position of the knee switch and the lateral position of the knee switch properly.

2. Connecting the signal cables



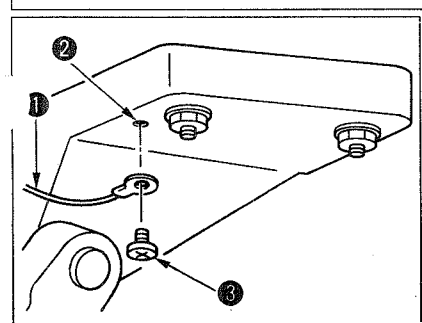
• Connecting the synchronizer cable

Connect plug ① of the synchronizer to connector ② of the PSC box.

• Connecting the thread trimming signal cables

Connect plug ③ of the 9P cable of the thread trimming signal to receptacle ⑤ of junction cable ④ supplied with the machine.

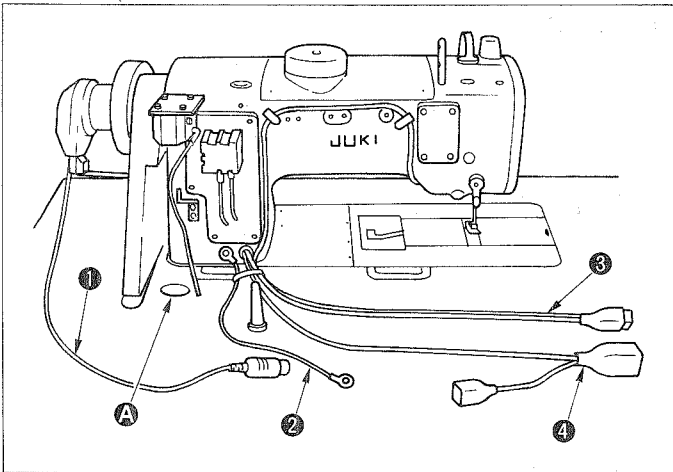
Connect plugs ⑥ and ⑦ to connectors ⑧ and ⑨ of the PSC box.



• Connecting the ground wire

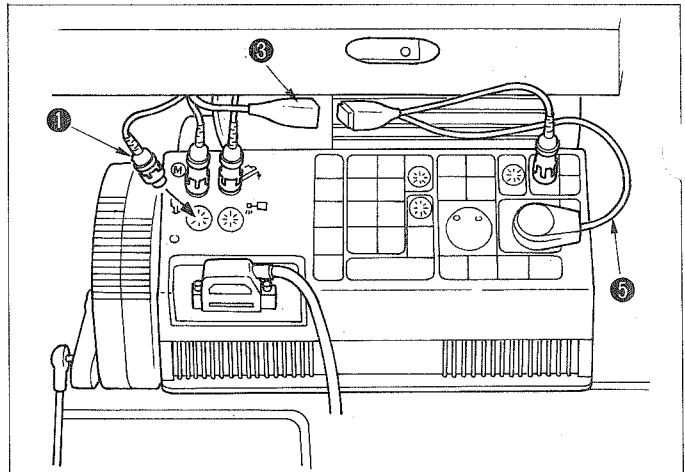
Pass ground cord ① attached on the sewing machine through the hole in the table to route it down under the table. Then fix the ground cord in tapped hole ② at the rear of the motor mounting base with screw ③.

3. Connecting the signal cables (-6-OB, -6-OB/AK79B and -6-OB/AK79B/DL16B types)

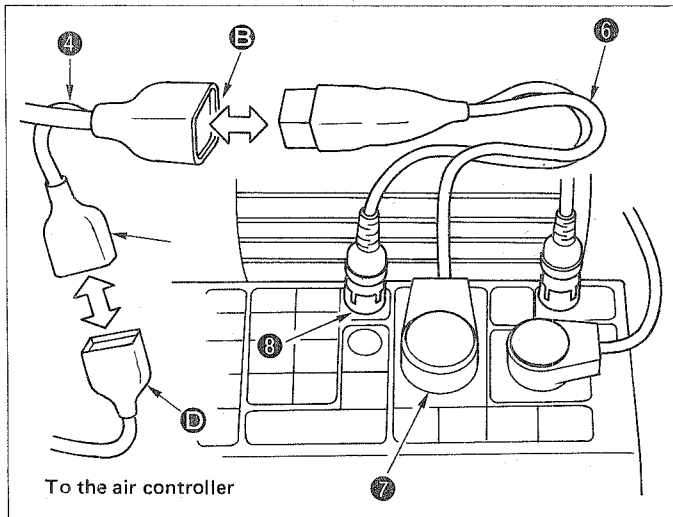


Pass synchronizer cable ①, ground cord ②, 9P cable ③ and 12P cable ④ through hole A in the table to route them down under the table.

Attach ground cord ② on the motor mounting base.

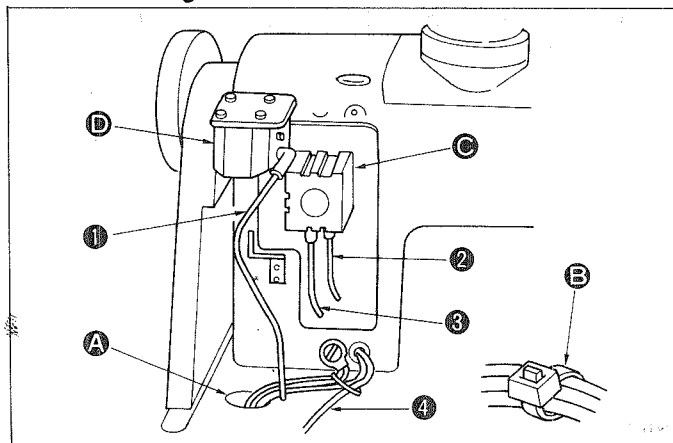


Following the steps of procedure same as those described in "2. Connecting the signal cables" on page 9, connect synchronizer cable ① to the connector. Connect plug ③ of the 9P cable to junction cable ⑤ supplied with the machine, and connect the other end of the junction cable to the connector of the PSC box.

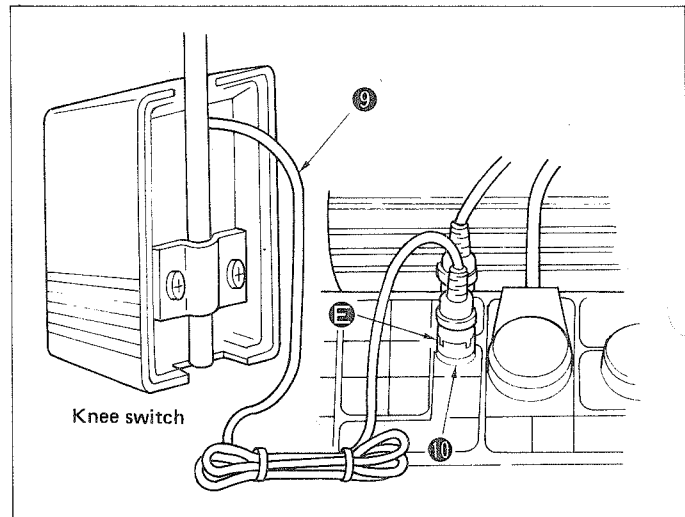


Connect plug E of 12P cable ④ to junction cable supplied with the machine, and connect the other ends of the junction cable to connectors ⑦ and ⑧. Connect 6P receptacle C plug D of the air controller cable.

4. Connecting the air hose



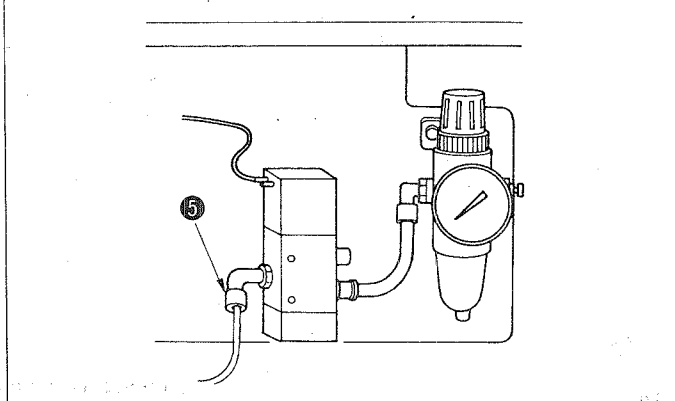
Connect the air hose coming from the air control unit to the sewing machine as illustrated in the figure above. Connect them as described below in accordance with the type of sewing machine used, while matching the number indicated on the hose with the number indicated on the label adhered on the joint. Be sure to pass the hose through hole A in the table. After the hose has been connected, arrange it with cable clip B supplied with the machine as an accessory.



[For DL16A]

For the DL16A, connect plug E of cable ⑨ coming from the knee switch to connector ⑩ of the PSC box.

• For the -OB machines

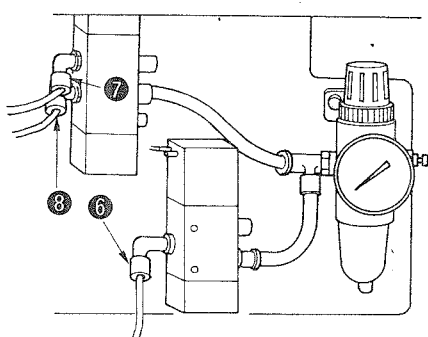


① For the OB type of sewing machine

(This type of machine is not equipped with cylinder C and air hoses ② to ④.)

- Connect hose ① of quick-coupling joint ⑤ of the solenoid valve in the control unit to automatic reverse stitching cylinder D.

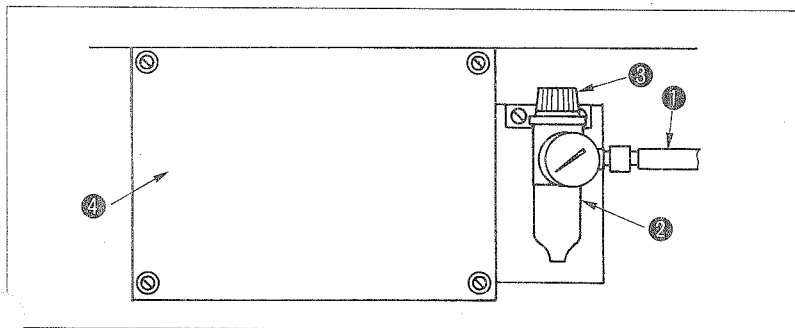
• For the -0B/AK79B machines



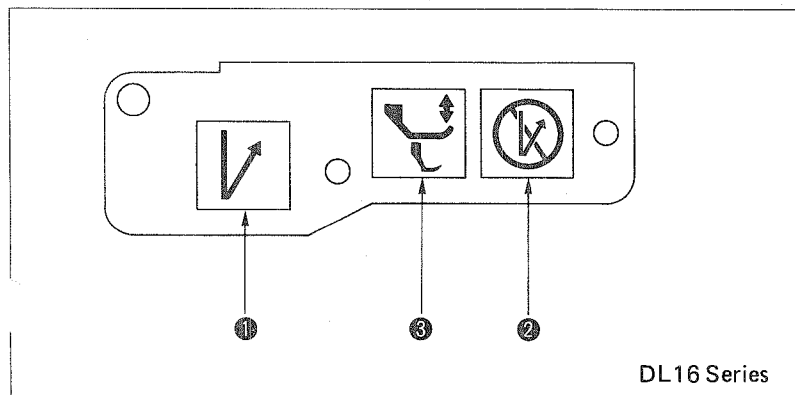
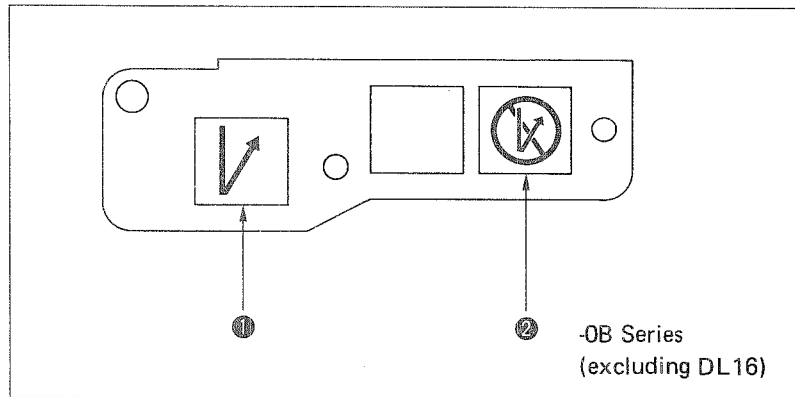
② For 0B/AK79B type of sewing machine
(This type of machine is not equipped with air hose ④.)

- Connect hose ① of quick-coupling joint ⑥ of the solenoid valve in the control unit to cylinder ⑩. Connector hoses ② and ③ of quick-coupling joints ⑦ and ⑧ to auto-lifter cylinder ⑨.

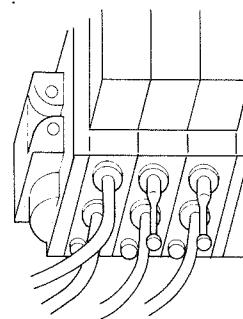
5. Adjusting the air pressure and attaching the cover



6. Switch unit



• For the -0B/AK79 and DL 16A, B machines



③ For 0B/AK79B/DL16A, B type of sewing machine

- Connect hose ① of quick-coupling joint ⑨ of the solenoid valve in the control unit to cylinder ⑩. Connect hoses ② and ③ of quick-coupling joints ⑩ and ⑪ to auto-lifter cylinder ⑨. Connect hose ④ coming from the cylinder for the conversion of the amount of the alternating vertical movement of the walking foot and presser foot to quick-coupling joint ⑫. The aforementioned cylinder is built in the sewing machine head.

• Adjusting the air pressure

- Connect air hose ① to regulator ②. Adjust the air pressure to 4 to 5 kgf/cm² using air pressure regulating knob ③ of regulator ②. Pull knob ③ up and turn it to properly adjust the operating air pressure. After the adjustment, press the knob down into the home position.

• Attaching the cover

- After the air pressure has been properly adjusted, attach cover ④ of the solenoid valve attaching plate in place.

For the -0B Series, the jaw of the arm is equipped with the switch unit.

switch unit.

• Reverse feed switch

- Press switch ① while the sewing machine feeds in the normal direction, and the sewing machine will immediately changes over the feeding direction to the reverse feed direction to perform the reverse feed stitching.

The sewing machine performs the reverse-feed stitching as long as the switch is kept pressed. Release the switch, and the machine will change the feeding direction back to the normal feed direction.

• Amount of alternate vertical movement of the walking foot and presser foot change-over switch

- Press switch ③, and the lifting amount of the presser foot and walking foot will be maximized. Use this switch at the overlapped part of the material where the sewing machine fails to feed the material smoothly.

• When Cancellation/Addition

- Switch ② used for controlling automatic reverse stitching is pressed, the automatic reverse stitching for the next sewing cycle will be canceled if it is entered or the automatic reverse stitching will be added to the next sewing cycle if it is not entered. (This function is effective just once after a press on the switch.)

30 TROUBLES IN SEWING AND CORRECTIVE MEASURES

Troubles	Causes	Corrective measures
1. Thread breakage (Thread frays or is worn out.) (Needle thread trails 2 to 3 cm from the wrong side of the fabric.)	<ul style="list-style-type: none"> ① Thread path, needle point, hook blade point or bobbin case resting groove on the throat plate has sharp edges or burrs. ② Needle thread tension is too high. ③ Bobbin case opening lever provides an excessive clearance at the bobbin case. ④ Needle comes in contact with the blade point of hook. ⑤ Amount of oil in the hook is too small. ⑥ Needle thread tension is too low. ⑦ Thread take-up spring works excessively or the stroke of the spring is too small. ⑧ Timing between the needle and the hook is excessively advanced or retarded. 	<ul style="list-style-type: none"> ○ Remove the sharp edges or burrs on the blade point of hook using a fine emery paper. Buff up the bobbin case resting groove on the throat plate. ○ Decrease the needle thread tension. ○ Decrease the clearance provided between the bobbin case opening lever and the bobbin. Refer to "22. Adjusting the bobbin case opening lever." ○ Refer to "20. Needle-to-hook relation." ○ Adjust the amount of oil in the hook properly. See "12. Adjusting the amount of oil in the hook." ○ Increase the needle thread tension. ○ Decrease the tension of the spring and increase the stroke of the spring. ○ Refer to "20. Needle-to-hook relation."
2. Stitch skipping	<ul style="list-style-type: none"> ① Timing between the needle and the hook is excessively advanced or retarded. ② Pressure of the presser foot is too low. ③ The clearance provided between the top end of the needle eyelet and the blade point of hook is not correct. ④ Hook needle guard is not functional. ⑤ Improper type of needle is used. 	<ul style="list-style-type: none"> ○ Refer to "20. Needle-to-hook relation." ○ Tighten the presser spring regulator. ○ Refer to "20. Needle-to-hook relation." ○ Refer to "21. Adjusting the hook needleguard." ○ Replace the needle with one which is thicker than the current needle by one count.
3. Loose stitches	<ul style="list-style-type: none"> ① Bobbin thread does not pass through the tension spring of the bobbin case. ② Thread path has been poorly finished. ③ Bobbin fails to move smoothly. ④ Bobbin case opening lever provides too much clearance at the bobbin. ⑤ Bobbin thread tension is too low. ⑥ Bobbin has been wound too tightly. 	<ul style="list-style-type: none"> ○ Thread the bobbin case correctly. ○ Remove rough parts with a fine emery paper or buff it up. ○ Replace the bobbin or hook with a new one. ○ Refer to "22. Adjusting the bobbin case opening lever." ○ Increase the bobbin thread tension. ○ Decrease the tension applied to the bobbin winder.
4. Thread slips off the needle eyelet simultaneously with thread trimming.	<ul style="list-style-type: none"> ① Thread tension given by the tension controller No. 1 is too high. ② Timing of thread trimming is too fast. 	<ul style="list-style-type: none"> ○ Decrease the thread tension given by the tension controller No. 1. ○ Refer to "24. Adjusting the timing of the thread trimmer cam."
5. Thread slips off the needle eyelet at the start of sewing.	<ul style="list-style-type: none"> ① Thread tension given by the tension controller No. 1 is too high. ② Clamp spring has improper shape. ③ Bobbin thread tension is too low. 	<ul style="list-style-type: none"> ○ Decrease the thread tension given by the tension controller No. 1. ○ Replace the clamp spring with a new one or correct the current one. ○ Increase the bobbin thread tension.
6. Thread is not cut sharply.	<ul style="list-style-type: none"> ① The blades of moving knife and counter knife have been improperly adjusted. ② The knives have blunt blades. ③ Bobbin thread tension is too low. 	<ul style="list-style-type: none"> ○ Refer to "23. Initial position of the knives." ○ Replace the moving knife and counter knife with new ones, or correct the current ones. ○ Increase the bobbin thread tension.
7. Thread remains uncut after thread trimming. (Bobbin thread trimming failure when stitch length is comparatively short.)	<ul style="list-style-type: none"> ① Initial position of the moving knife has been improperly adjusted. ② The moving knife fails to return to reach the counter knife blade. ③ Timing of thread trimming has been poorly adjusted. ④ Bobbin thread tension is too low. 	<ul style="list-style-type: none"> ○ Refer to "23. Initial position of the knives." ○ Refer to "24. Adjusting the timing of the thread trimmer cam." ○ Refer to "24. Adjusting the timing of the thread trimmer cam." ○ Increase the bobbin thread tension.
8. Thread breaks at the start of sewing after thread trimming.	<ul style="list-style-type: none"> ① The needle thread is caught in the hook. 	<ul style="list-style-type: none"> ○ Shorten the length of thread remaining on the needle after thread trimming. Refer to "15. Thread tension."

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Please do not hesitate to contact our distributors or agents in your area for further informations when necessary.
 * The description covered in this instruction manual is subject to change for improvement of the commodity without notice.