

HIGH-SPEED 1-NEEDLE FEED LOCKSTITCH MACHINE

**DLN-5410N**  
**DLN-5410**

## INSTRUCITON MANUAL

Congratulations on your purchase of a JUKI sewing machine.  
Please read this Instruction Manual carefully before using the unit in order to get the most out of it and to enjoy using it for a long time.

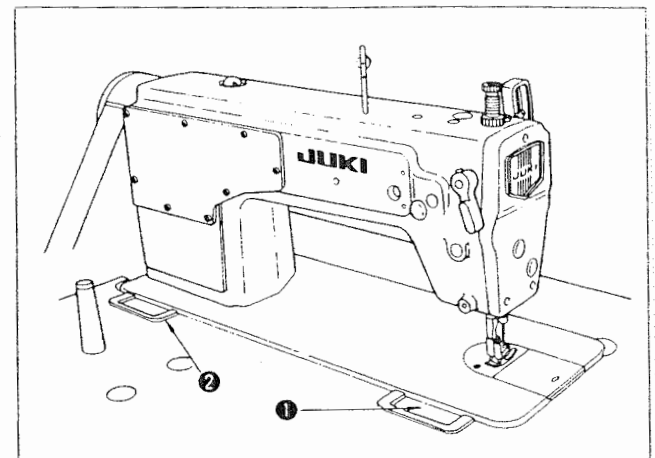
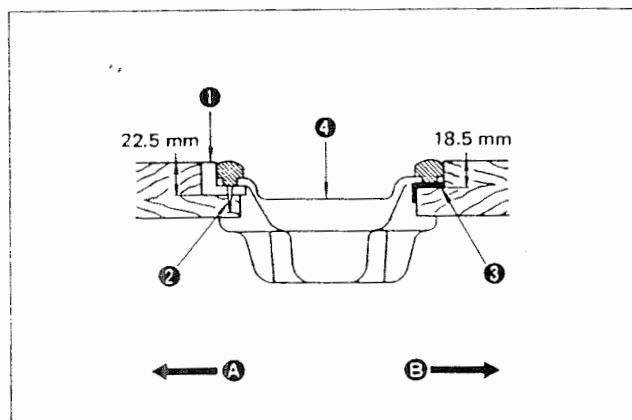
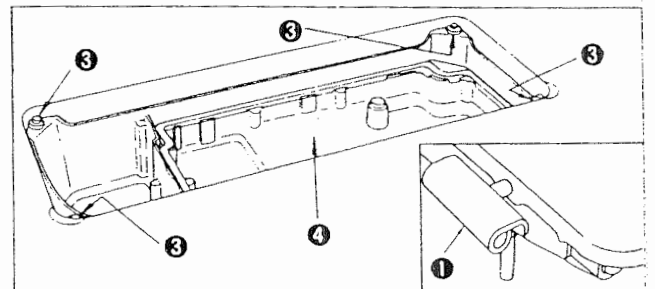
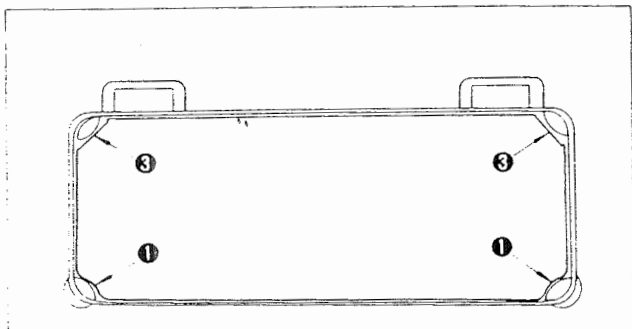
### BEFORE OPERATION

1. Never operate the machine unless its oil pan has been filled with oil.
2. After setting up the machine, check the direction of motor rotation. To check it, turn the handwheel by hand to bring the needle down, and turn the power switch ON while observing the handwheel. (The handwheel should turn counterclockwise as observed from the handwheel side.)
3. Do not use a larger motor pulley for the first one month.
4. Confirm that the voltage and phase (single- or 3-phase) are correct by checking them against the ratings shown on the motor nameplate.

### 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. When an operator leaves from the machine, make sure to turn off the power.
5. During operation, be careful not to allow your or any other person's head or hands to come close to the handwheel, V belt, bobbin winder or motor. Also, do not place anything close to them. Doing so may be dangerous.
6. 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.
7. Do not wipe the surface of the machine head with lacquer thinner.

### 1. INSTALLATION

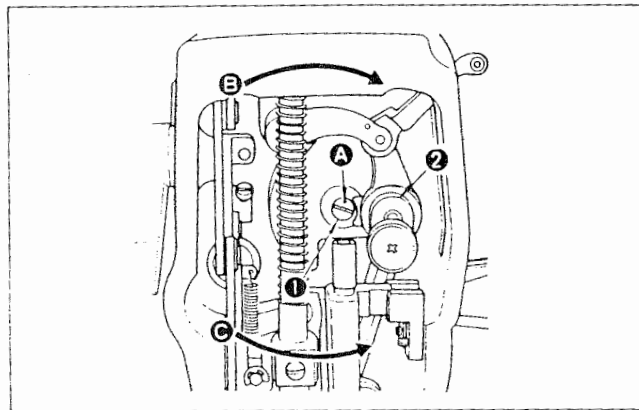
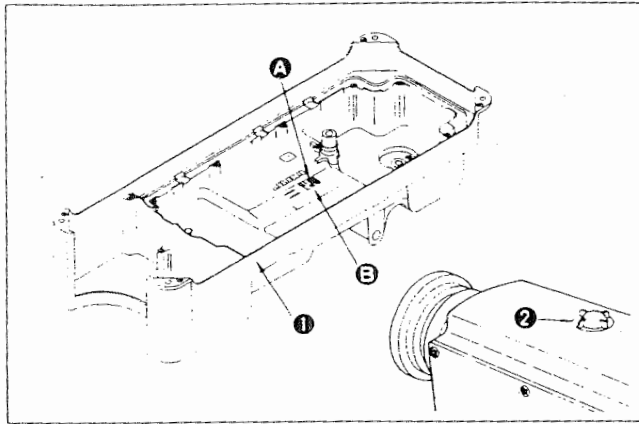


#### 1. Installing the oil pan

- 1) The oil pan should rest on the four corners of the machine table groove.
- 2) Two rubber seats ① for supporting the head portion on the operator side A are fixed on the extended portion of the table by hitting the nail ②, and the other two rubber cushion seats ③ on the hinge side B are fixed by using a rubber-based adhesive. Then, oil pan ④ is placed.

- 1) Fit hinge ① into the opening in the machine bed, and fit the machine head to table rubber hinge ② before placing the machine head on cushions ③ on the four corners.

## 2. LUBRICATION



### 1. Information on lubrication

- 1) Fill oil pan ① with JUKI New Defrix Oil No. 1 up to HIGH mark A.
- 2) When the oil level lowers below LOW mark E, refill the oil pan with the specified oil.
- 3) When you operate the machine after lubrication, you will see splashing oil through oil sight window ② if the lubrication is adequate.
- 4) Note that the amount of the splashing oil is unrelated to the amount of the lubricating oil.

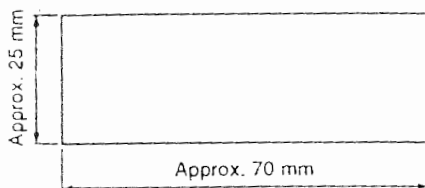
**(Precaution)** When you first operate your machine after setup or after an extended period of disuse, run your machine at 3,000 s.p.m. to 3,500 s.p.m. for about 10 minutes for the purpose of break-in.

### 2. Adjusting the amount of oil supplied to the face plate parts

- 1) Adjust the amount of oil supplied to the thread take-up and needle bar crank ② by turning adjust pin ①.
- 2) The minimum amount of oil is reached when marker dot A is brought close to needle bar crank ② by turning the adjust pin in direction E.
- 3) The maximum amount of oil is reached when marker dot A is brought to the position just opposite from the needle bar crank by turning the adjust pin in direction C.

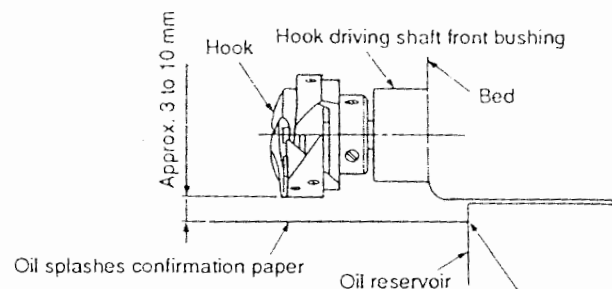
## 3. ADJUSTING THE AMOUNT OF OIL (OIL SPLASHES) IN THE HOOK

① Amount of oil (oil splashes) confirmation paper



\* Use any paper available regardless of the material.

② Position to confirm the amount of oil (oil splashes)

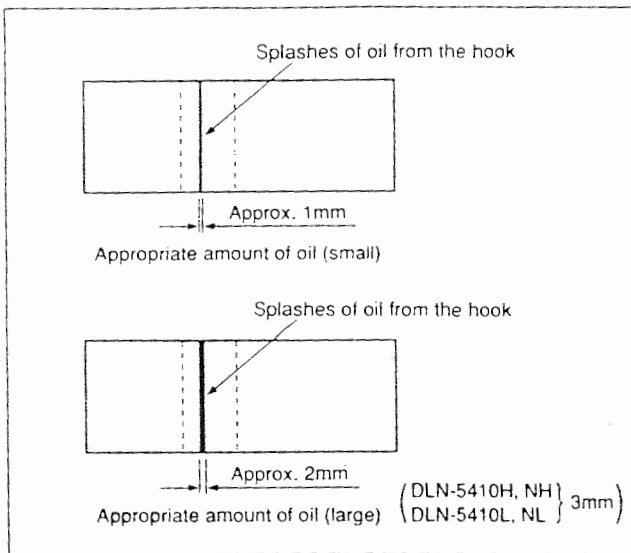


Closely fit the paper against the wall surface of the oil reservoir.

\* Place the amount of oil (oil splashes) confirmation paper under the hook.

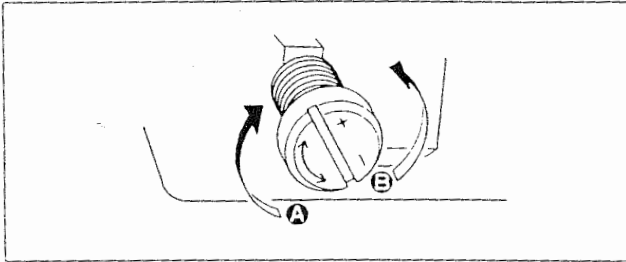
- 1) If the machine has not been sufficiently warmed up for operation, make the machine run idle for approximately three minutes. (Moderate intermittent operation)
- 2) Place the amount of oil (oil splashes) confirmation paper under the hook while the sewing machine is in operation.
- 3) Confirm that the height of the oil surface in the oil reservoir is within the range between "HI" and "LOW."
- 4) Confirmation of the amount of oil should be completed in five seconds. (Check the period of time with a watch.)

## Showing the appropriate amount of oil



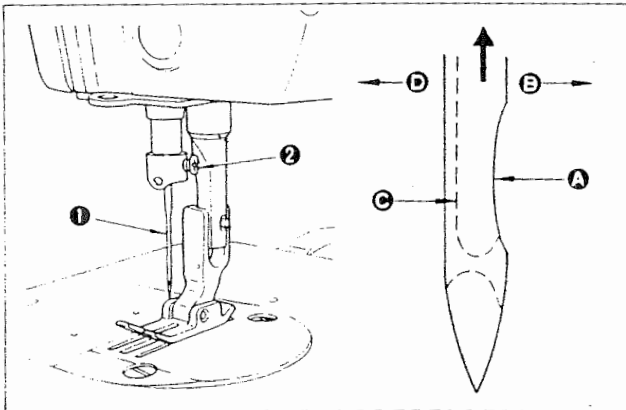
- 1) The amount of oil shown in the samples on the left should be fine adjusted in accordance with sewing processes. Be careful not excessively increase/decrease the amount of oil in the hook. (If the amount of oil is too small, the hook will be seized (the hook will be hot). If the amount of oil is too much, the sewing product may be stained with oil.)
- 2) Adjust the amount of oil in the hook so that the oil amount (oil splashes) should not change while checking the amount three times (on the three sheets of paper).

### ● Adjusting the amount of oil (oil splashes) in the hook



- 1) Turning the oil amount adjustment screw mounted on the hook driving shaft front bushing in the "+" direction (in direction A) will increase the amount of oil (oil splashes) in the hook, or in the "-" direction (in direction B) will decrease it.
- 2) After the amount of oil in the hook has been properly adjusted with the oil amount adjustment screw, make the sewing machine run idle for approximately 30 seconds to check the amount of oil (oil splashes) in the hook.

## 4. ATTACHING THE NEEDLE

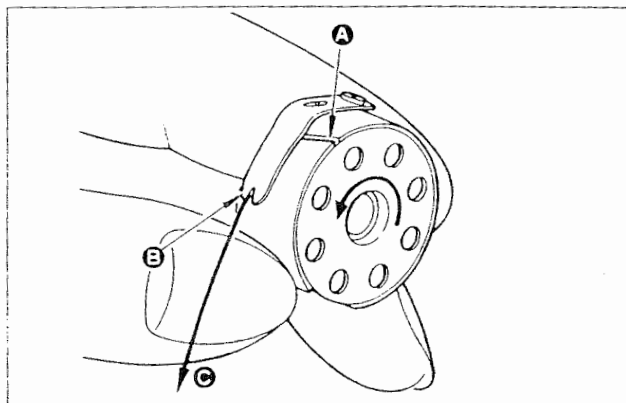


\* Turn the motor power OFF before starting to attach the needle.

Follow the procedure described below to attach the needle, after confirming that the motor has come to a complete stop. A needle of DB x 1 should be used. Select a proper needle size according to the count of thread and the type of material used.

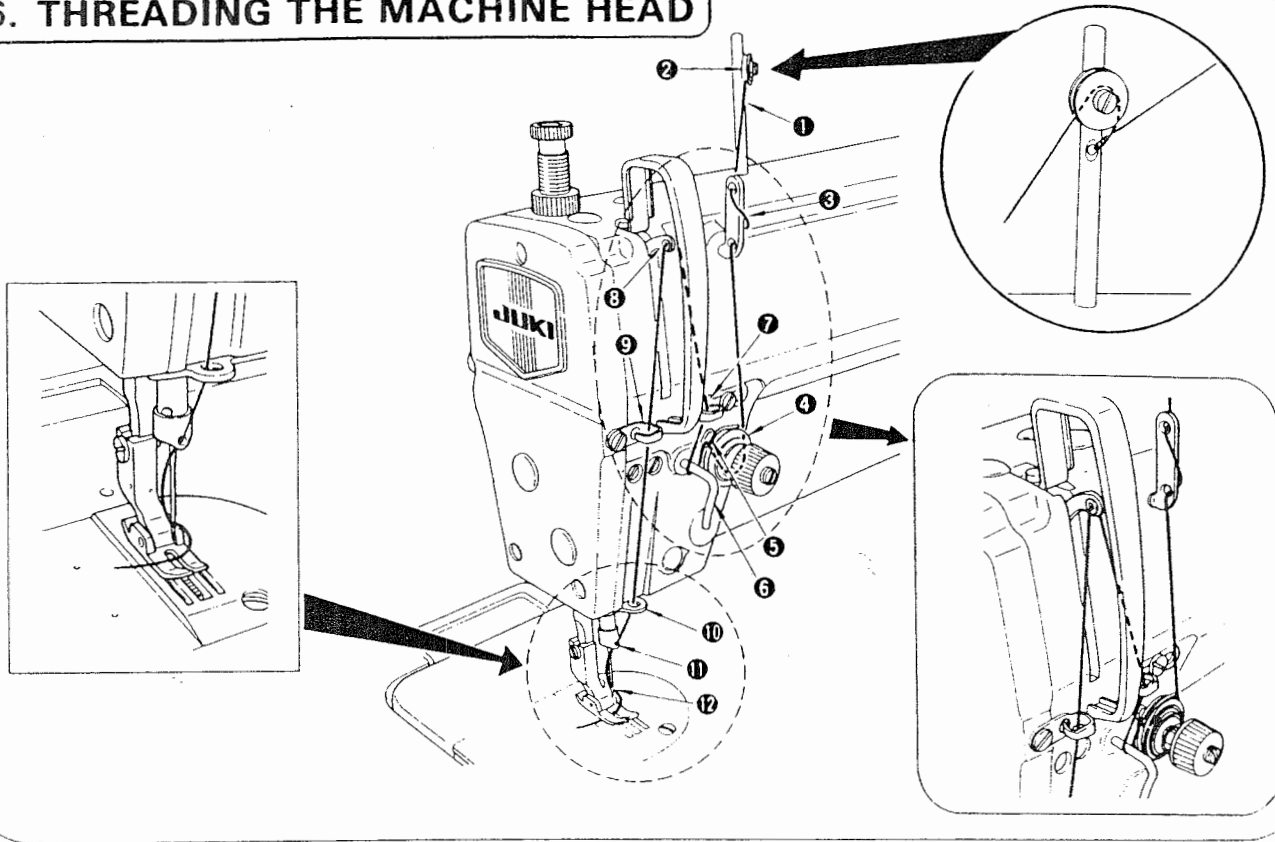
- 1) Turn the handwheel until the needle bar reaches the highest point of its stroke.
- 2) Loosen screw 2, and hold needle 1 with its indented part A facing exactly to the right in direction B.
- 3) Insert the needle fully into the hole in the needle bar in the direction of the arrow until the end of hole is reached.
- 4) Securely tighten screw 2.
- 5) Check that long groove C of the needle is facing exactly to the left in direction D.

## 5. SETTING THE BOBBIN INTO THE BOBBIN CASE

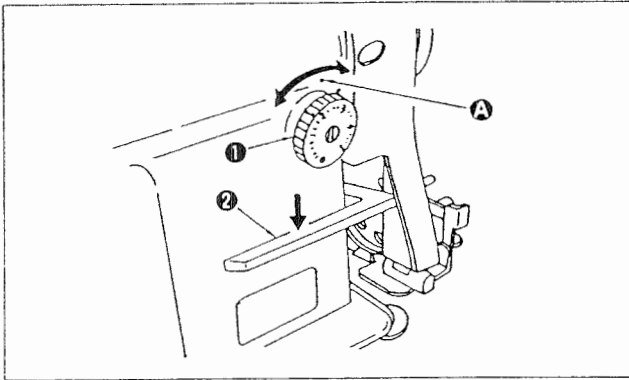


- 1) Install the bobbin in the bobbin case so that the thread wound direction is counterclockwise.
- 2) Pass the thread through thread slit A, and pull the thread in direction B. By so doing, the thread will pass under the tension spring and come out from notch B.
- 3) Check that the bobbin rotates in the direction of the arrow when thread C is pulled.

## 6. THREADING THE MACHINE HEAD

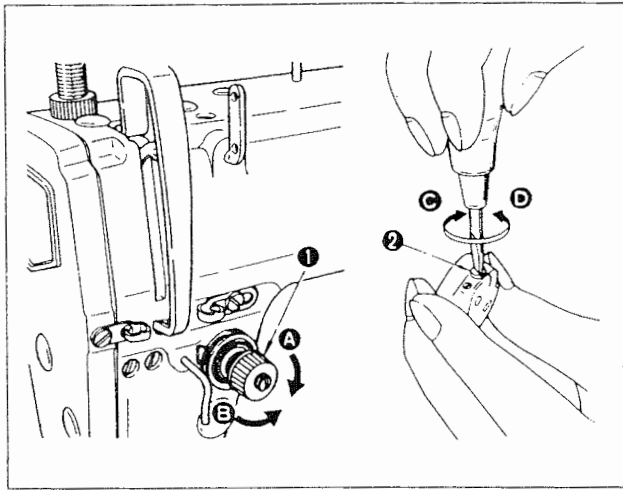


## 7. ADJUSTING THE STITCH LENGTH



- 1) Turn stitch length dial ① in the direction of the arrow, and align the desired number to marker dot A on the machine arm.
- 2) The dial calibration is in millimeters.
- 3) When you want to decrease the stitch length, turn stitch length dial ① while pressing feed lever ② in the direction of the arrow.

## 8. THREAD TENSION



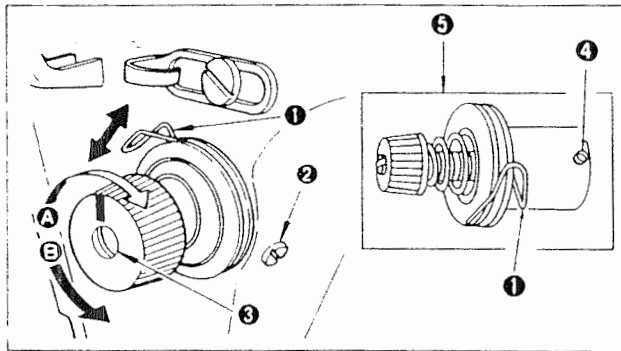
### 1. Adjusting the needle thread tension

- 1) Adjust the needle thread tension using tension adjust nut ① according to the sewing specifications.
- 2) As you turn nut ① clockwise (in direction A), the needle thread tension will increase.
- 3) As you turn nut ① counterclockwise (in direction E), the tension will decrease.

### 2. Adjusting the bobbin thread tension

- 1) As you turn tension adjust screw ② clockwise (in direction C), the bobbin thread tension will increase.
- 2) As you turn screw ② counterclockwise (in direction D), the bobbin thread tension will decrease.

## 9. THREAD TAKE-UP SPRING



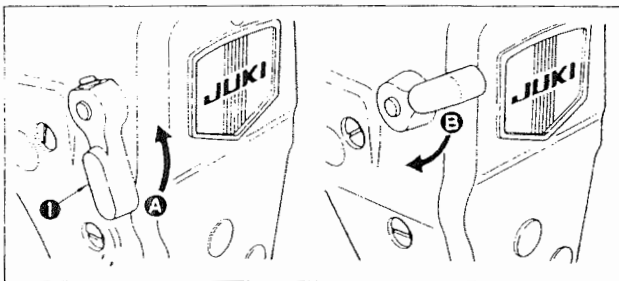
### 1. Changing the stroke of thread take-up spring ①

- 1) Loosen setscrew ②.
- 2) As you turn tension post ③ clockwise (in direction A), the stroke of the thread take-up spring will be increased.
- 3) As you turn the knob counterclockwise (in direction E), the stroke will be decreased.

### 2. Changing the pressure of thread take-up spring ①

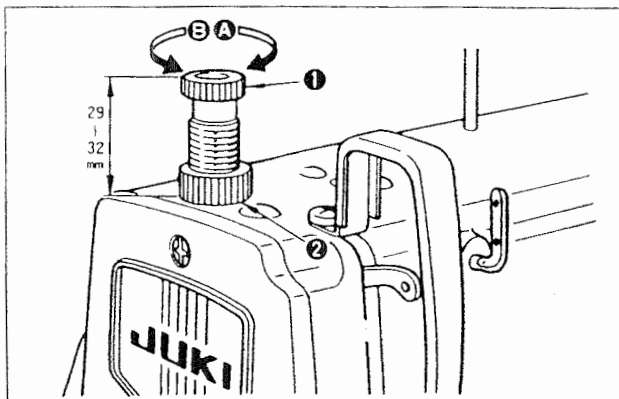
- 1) Loosen setscrew ②, and remove thread tension controller asm. ⑤.
- 2) Loosen setscrew ④.
- 3) As you turn tension post ③ clockwise (in direction A), the pressure will be increased.
- 4) As you turn the post counterclockwise (in direction E), the pressure will be decreased.

## 10. HAND LIFTER



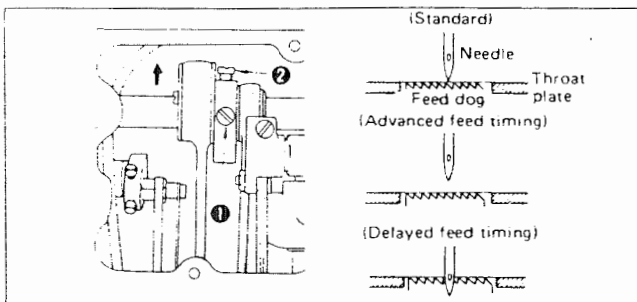
- 1) To stop the machine with its presser foot up, turn hand lifter lever ① in direction A.
- 2) The presser foot will go up about 5.5 mm and stop. The presser foot will go back to its original position when hand lifter lever is turned down in direction E.
- 3) Using the knee lifter, you can get the standard presser foot lift of about 10 mm and a maximum lift of about 13 mm.

## 11. PRESSER FOOT PRESSURE



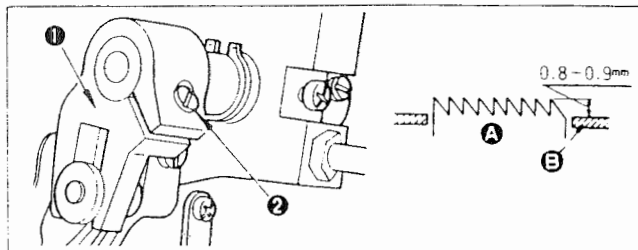
- 1) Loosen nut ②. As you turn presser spring regulator ① clockwise (in direction A), the presser foot pressure will be increased.
- 2) As you turn the presser spring regulator counterclockwise (in direction E), the pressure will be decreased.
- 3) After adjustment, tighten nut ②.
- 4) For general fabrics, the standard height of the presser spring regulator is 29 to 32 mm.

## 12. ADJUSTING THE FEED TIMING



- 1) Set the feed adjusting dial at 0 on the scale.
  - 2) For standard feed, loosen setscrew ① and ②, align the tip of the needle and the top surface of the feed dog with the top surface of the throat plate when the feed dog rises above the throat plate. Then, tighten the setscrews securely.
  - 3) To make the cloth feed action faster, travel feed eccentric cam to the direction of the arrow.
  - 4) To make the cloth feed action slower, travel feed eccentric cam to the opposite direction of the arrow.
- (Note) Too much travel of the feed eccentric cam might cause a needle breakage.

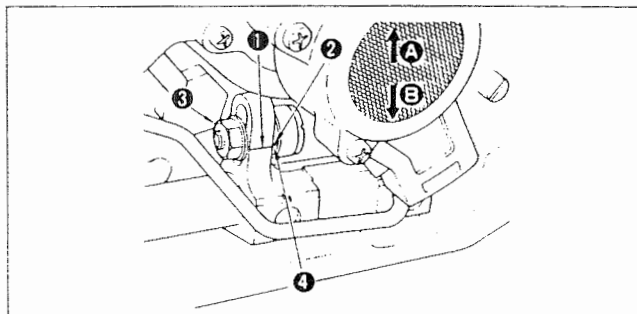
## 13. HEIGHT OF THE FEED DOG



- 1) The feed dog ① is factory-adjusted so that it juts out from the throat plate ⑤ surface by 0.8 to 0.9 mm (0.95 to 1.05 mm for DLN-5410H, -5410NH, -5410L and -5410NL).
- 2) If the feed dog juts out too much, puckering may result when sewing light-weight materials. (Recommended protrusion: 0.7 mm to 0.8 mm)
- 3) To adjust the height of the feed dog:
  - ① Loosen screw ② of crank ①.
  - ② Move the feed bar up or down to make adjustment.
  - ③ Securely tighten screw ②.

(Caution) If the clamping pressure is insufficient, the forked portion will wear out.

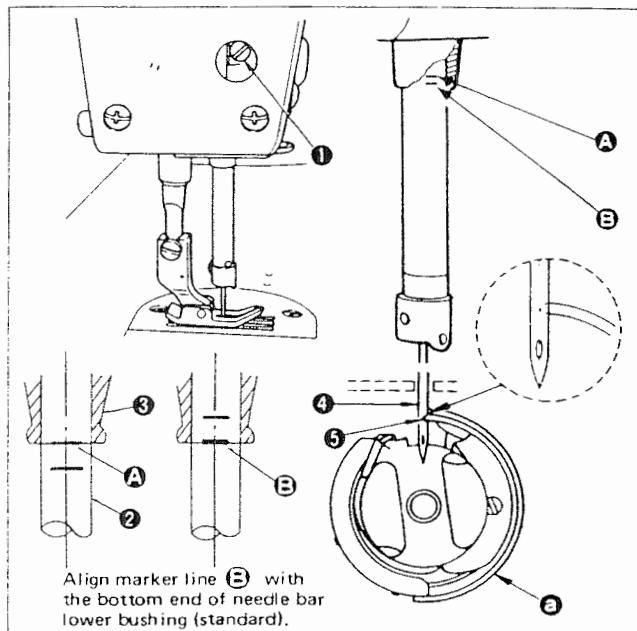
## 14. ADJUSTING STITCH WIDTH



- 1) The standard stitch width is obtained when marker line ① of the feed rocker shaft crank align with marker line ② of needle feed rod shaft.
- 2) When it is required to make the needle feed amount larger than the feed dog amount, loosen locknut ③, move needle feed rod shaft ④ to the direction ④, and tighten locknut ③.
- 3) On the contrary, moving needle feed rod shaft ④ to the direction ⑤, the needle feed amount will be smaller than the feed dog amount.

(Note) Excessive adjustment of the stitch width might cause a needle breakage or other undesirable results.

## 15. NEEDLE-TO-HOOK RELATIONSHIP



### 1. Adjust the timing between the needle and the hook as follows:

- 1) Rotate the handwheel until the needle bar comes down to its lowest position, and loosen screw ①. Be sure to set feed adjusting dial at 0 on the scale.

(Adjusting the needle bar height)

- 2) Align marker line ① on needle bar ② with the bottom end of needle bar lower bushing ③, then tighten setscrew ①.

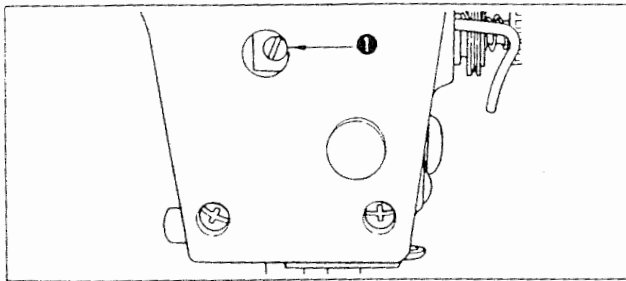
(Adjusting position of the hook ⑤)

- 3) Loosen the three hook setscrews, turn the handwheel, and align marker line ⑤ on ascending needle bar ② with the bottom end of needle bar lower bushing ③.
- 4) After making the adjustments mentioned in the above steps, align hook blade point ⑤ with the center of needle ④. Provide a clearance of 0.06 mm to 0.1 mm (reference value) between the needle and the hook, then securely tighten setscrews in the hook.

(Caution) If the clearance between the blade point of hook and the needle is smaller than the specified value, the blade point of hook will be damaged. If the clearance is larger, stitch skipping will result.

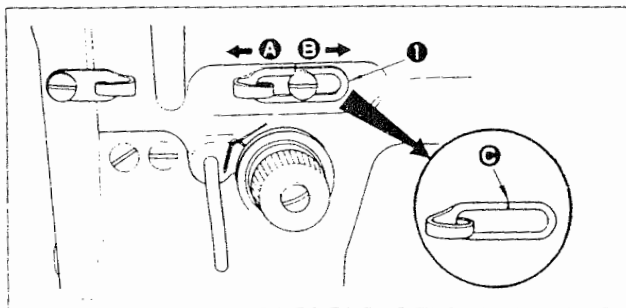
- The machine incorporates the hook of which part No. B18304150A0 (11321452 for DLN-5410H and -5410NH, -5410L and -5410NL). So use a hook of the same part No. when replacing your hook with a new one.

## 16. ADJUSTING THE HEIGHT OF THE PRESSER FOOT



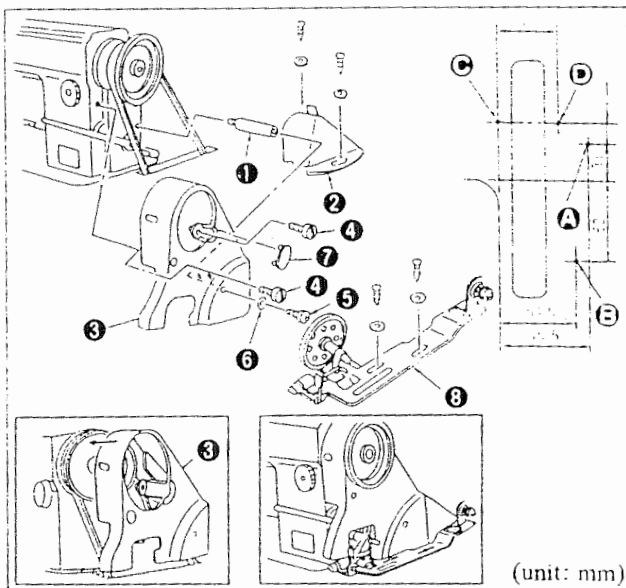
- 1) Loosen setscrew ①, and adjust the presser foot height the presser foot.
- 2) After adjustment, securely tighten the setscrew ①.

## 17. ADJUSTING THE THREAD TAKE-UP STROKE



- 1) When sewing heavy-weight materials, move thread guide ① to the left in direction A to increase the length of thread pulled out by the thread take-up.
- 2) When sewing light-weight materials, move thread guide ① to the right in direction B to decrease the length of thread pulled out by the thread take-up.
- 3) The standard position of take-up thread guide ① is obtained when marker line C is positioning approx. 1 mm away from the center of the screw to the left direction.

## 18. INSTALLING THE BELT COVER AND THE BOBBIN WINDER

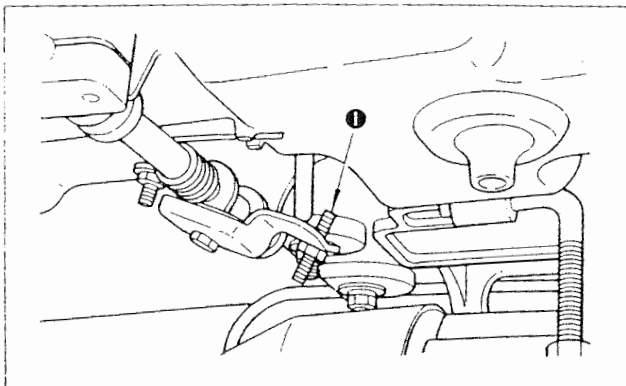


### How to install the belt cover and the bobbin winder

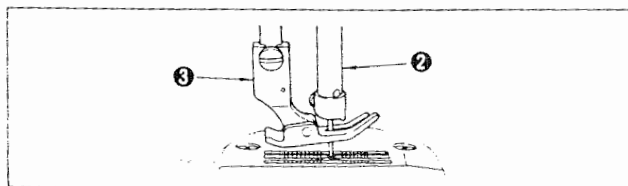
#### 1. Installation procedure

- 1) Drill four guiding holes A, B, C and D for wooden screws in the table.
- 2) Install belt cover support ① in the tapped hole in the arm.
- 3) Pass the handwheel through the hole in belt cover A ③, then set the handwheel on the arm. At this time, you can smoothly install the handwheel diagonally from the rear of the handwheel by tilting belt cover A ③ as illustrated in the figure.
- 4) Place belt cover B ② on guiding holes C and D.
- 5) Fix belt cover A ③ on the arm using screws ④, ⑤ and washer ⑥. At this time, tighten screw ④ with a tightening torque of 30 kgf/cm and screw ⑤ with a tightening torque of 25 kgf/cm. If you tighten further these screws, the securing state of the belt cover will not change.
- 6) Fit cat ⑦ to the belt cover A.
- 7) Move belt cover B ② backward until the rubber section of belt cover B ② comes in contact with belt cover A ③. Then, further move the belt cover B in the same direction by 0.5 to 1 mm. Now, fix the belt cover B in position using wooden screw and washer.
- 8) Fix bobbin winder ⑧ in guiding holes A and B using wooden screws and washers.

## 19. ADJUSTING THE HEIGHT OF THE KNEE LIFTER



- 1) The standard height of the presser foot lifted using the knee lifter is 10 mm.
- 2) You can adjust the presser foot lift up to 13 mm using knee lifter adjust screw ①.
- 3) When you have adjusted the presser foot lift to over 10 mm, be sure that the bottom end of needle bar ② in its lowest position does not hit presser foot ③.



## 20. SPECIFICATIONS

	DLN-5410 DLN-5410N	DLN-5410H DLN-5410NH	DLN-5410L DLN-5410NL
Application	For light- to medium-weight materials	For medium- to heavy-weight materials	For medium- to heavy-weight materials
Sewing speed	5,000 s.p.m.	4,000 s.p.m.	3,000 s.p.m.
Stitch length (max.)	4 mm	4.5 mm	6 mm
Presser foot lift	10 mm (standard) 13 mm (max.)		
Needle	DB x 1 #9-#18	DB x 1 #20-#22	DB x 1 #20-#22
Lubricating oil	JUKI New Defrix Oil No.1		

## 21. MOTOR PULLEYS AND BELTS

- (1) A clutch motor with 400W output (1/2 HP) is used as the standard motor.
- (2) An M-type V belt should be used.
- (3) The relationship between the motor pulleys, belt lengths and sewing speeds is shown in the following table:

Motor pulley O.D. (mm)	Motor pulley part No.	Sewing speed (s.p.m.)		Belt length (in.)	Belt part No.
		50 Hz	60 Hz		
125	MTKP0120000	5,060		44"	MTJVM004400
120	MTKP0115000	4,850		43"	MTJVM004300
115	MTKP0110000	4,630			
110	MTKP0105000	4,440			
105	MTKP0100000	4,250	5,040	42"	MTJVM004200
100	MTKP0095000	4,000	4,780		
95	MTKP0090000	3,820	4,540		
90	MTKP0085000	3,610	4,320		
85	MTKP0080000	3,390	4,000	41"	MTJVM004100
80	MTKP0075000	3,160	3,790		
75	MTKP0070000	2,950	3,520		
70	MTKP0065000	2,740	3,260		

- The effective diameter of a motor pulley is equivalent to the outside diameter minus 5 mm.
- The motor should rotate counterclockwise as observed from the handwheel side. Be careful not to allow the motor to rotate in the reverse direction.

# JUKI

### JUKI CORPORATION

HEAD OFFICE  
8-2-1 KOKURYO-CHO.  
CHOFU-CITY, TOKYO 182, JAPAN

BUSINESS OFFICE  
1-23-3 KABUKI-CHO  
SHINJUKU-KU, TOKYO 160, JAPAN  
PHONE : 03(3205)1188, 1189, 1190  
FAX : 03(3203)8260, (3205)9131  
TELEX : J22967, 232-2301

To order or for further information, please contact :

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