

CEDAR *Special*

CS-1790A INSTRUCTION MANUAL



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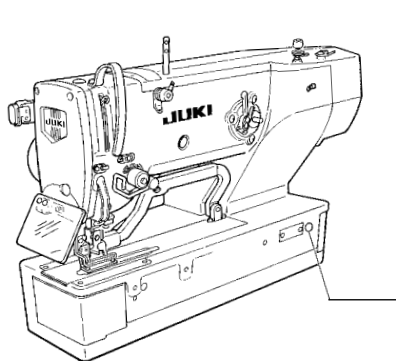
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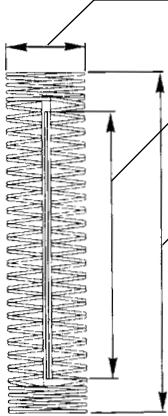
I. IMPORTANT SAFETY INSTRUCTIONS

- 1) Never operate the machine unless the oiling tank has been properly lubricated.
- 2) After the completion of a day's work, remove dust and dirt accumulating on the hook, bobbin thread trimming knife section and lubricating hole of the oil tank. At this time, also check whether or not the oil quantity is adequate.
- 3) Be sure to return the starting pedal to the home position after the machine has started to run.
- 4) This machine is provided with a machine head tilt detector so that it cannot be operated in the state that the machine head is tilted. When operating this sewing machine, turn the power switch ON after setting the sewing machine to the bed base properly.

II. SPECIFICATIONS

Main specifications of the LBH-1790A, LBH-1795A computer-controlled, lockstitch buttonholing machine

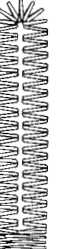
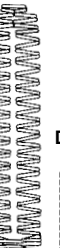
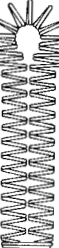
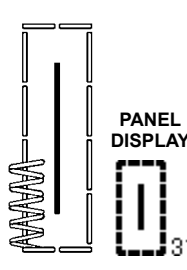


Subclass	Ⓢ
Major application	Buttonholing of cloth such as men's shirts, blouses, work uniforms, ladies' wear, etc.
Buttonholing size	 Standard : Max. 5 mm Special type part : Max. 10 mm Knife size used : 6.4 to 31.8 mm (1/4' to 1-1/4') Buttonholing sewing length Standard : Max. 41 mm Special type part : Max. 120 mm

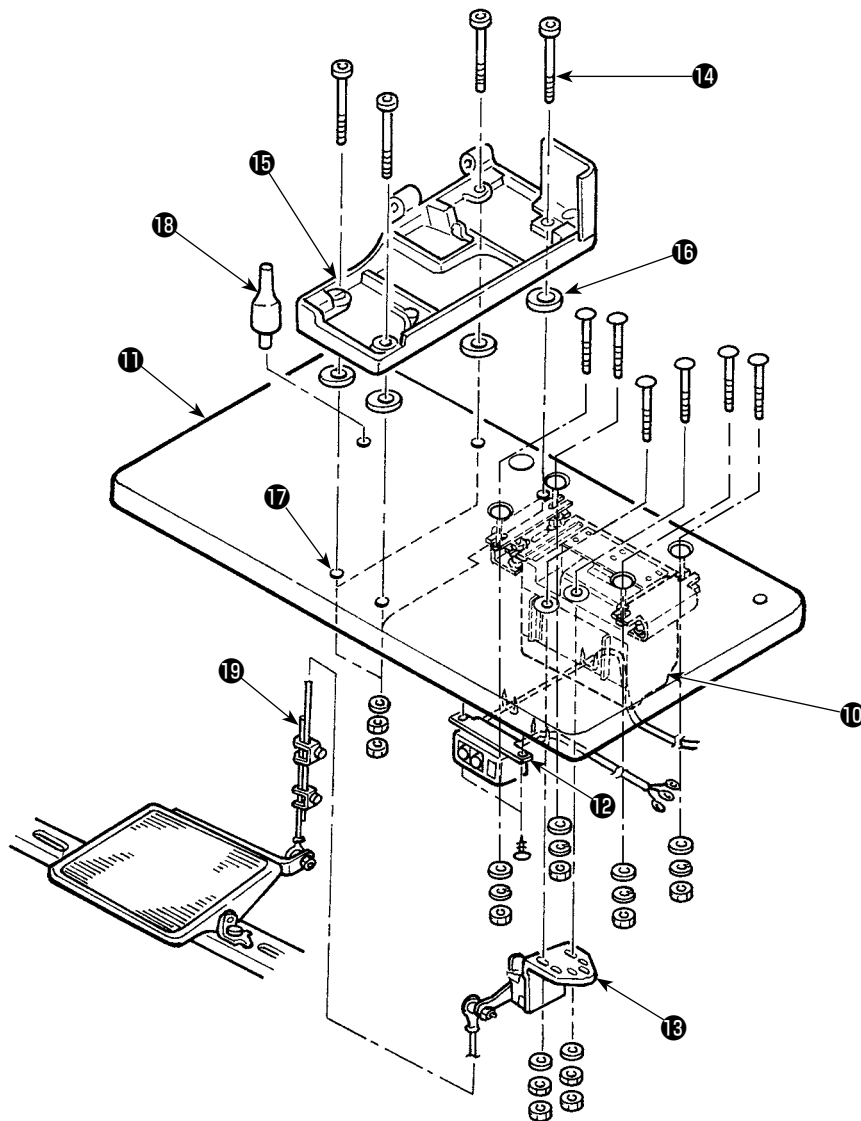
1. Specifications

Sewing speed	Standard speed : 3,600 sti/min (Max. : 4,200 sti/min) (Max. : 3,300 sti/min when dry hook is used)
Needle	DPX5 #11J to #14J
Hook	DP type full-rotary hook
Needle rocking drive method	Drive by stepping motor
Feed drive method	Drive by stepping motor
Presser lifting drive method	Drive by stepping motor
Lift of presser foot	14 mm (Optional setting available) Max. : 17 mm (At the time of needle up by reverse run)
Cloth cutting knife drive method	Motor-driven crank system
Standard sewing shape	31 kinds
Number of patterns stored in memory	99 patterns
Weight	Machine head 55 kg, Control box 5.5 kg
Power consumption	370 VA
Operating temperature range	5 °C to 35 °C
Operating humidity range	35% to 85% (No dew condensation)
Line voltage	Rated voltage $\pm$ 10% 50/60 Hz
Motor used	3-phase 200 to 240 V, 370 VA
Noise	- Equivalent continuous emission sound pressure level (L_{pA}) at the workstation : A-weighted value of 81.0 dB ; (Includes ; K_{pA} = 2.5 dB) ; according to ISO 10821- C.6.3 -ISO 11204 GR2 at 3,600 sti/min.

2. Standard sewing shape list

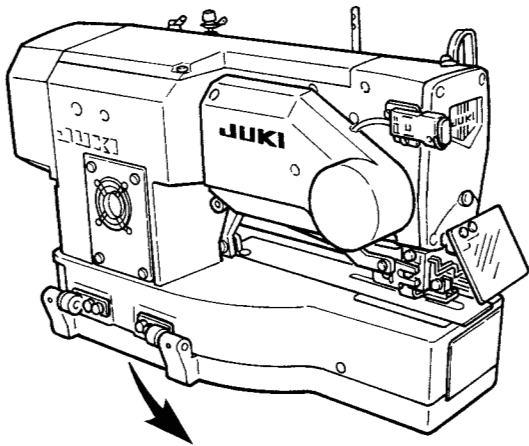
(1) Square type	(2) Round type	(3) Radial square type	(4) Radial type	(5) Radial straight bar-tacking type	(6) Radial taper bar-tacking type	(7) Eyelet square type
 PANEL DISPLAY 1	 PANEL DISPLAY 2	 PANEL DISPLAY 3	 PANEL DISPLAY 4	 PANEL DISPLAY 5	 PANEL DISPLAY 6	 PANEL DISPLAY 7
(8) Eyelet radial type	(9) Eyelet straight bar-tacking type	(10) Eyelet taper bar-tacking type	(11) Semilunar type	(12) Round square type	(13) Semilunar square type	(14) Semilunar straight bar-tacking type
 PANEL DISPLAY 8	 PANEL DISPLAY 9	 PANEL DISPLAY 10	 PANEL DISPLAY 11	 PANEL DISPLAY 12	 PANEL DISPLAY 13	 PANEL DISPLAY 14
(15) Semilunar taper bar-tacking type	(16) Eyelet semi-lunar type	(17) Eyelet round type	(18) Square radial type	(19) Square semilunar type	(20) Square round type	(21) Square straight bar-tacking type
 PANEL DISPLAY 15	 PANEL DISPLAY 16	 PANEL DISPLAY 17	 PANEL DISPLAY 18	 PANEL DISPLAY 19	 PANEL DISPLAY 20	 PANEL DISPLAY 21
(22) Square taper bar-tacking type	(23) Radial semi-lunar type	(24) Radial round type	(25) Semilunar radial type	(26) Semilunar round type	(27) Bar-tacking	(28) Bar-tacking, right cut
 PANEL DISPLAY 22	 PANEL DISPLAY 23	 PANEL DISPLAY 24	 PANEL DISPLAY 25	 PANEL DISPLAY 26	 PANEL DISPLAY 27	 PANEL DISPLAY 28
(29) Bar-tacking, left cut	(30) Bar-tacking, center cut	(31) Basting + Cloth cutting knife				
 PANEL DISPLAY 29	 PANEL DISPLAY 30	 PANEL DISPLAY 31				

(2) Set-up of the table



- 1) Fix control box 10 , power switch 12 and pedal sensor 13 on table 11 .
- 2) Fix power switch 12 with a staple.
- 3) Pass four bed base fixed screws 14 through bed base 15 .
- 4) Set rubber cushions 16 to holes 17 (4 places) for fixing bed base and fix bed base 15 .
- 5) Fix head support bar 18 on table 11 .
- 6) Place the main unit of the sewing machine on bed base 15 . Then, connect the pedal and pedal sensor 13 with connecting rod 19 supplied with the unit.

(4) Installing the sewing machine main unit



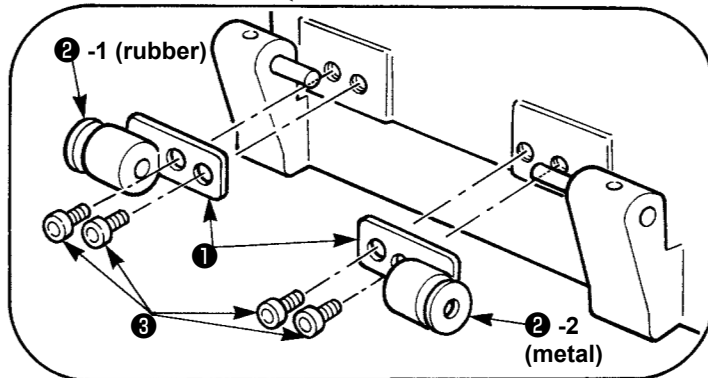
WARNING :

To prevent possible accidents caused by the fall of the sewing machine, perform the work by two persons or more when the machine is moved.

- 1) Place hinge plates ① and shaft bearings ② -1 (rubber) and ② -2 (metal) in two places on the head base and fix the hinge plates to the machine head with setscrews ③ in two places.



When the rubber hinge and metal fitting hinge are installed in reverse order, it is dangerous since the sewing machine shakes when it is tilted. So, be careful.

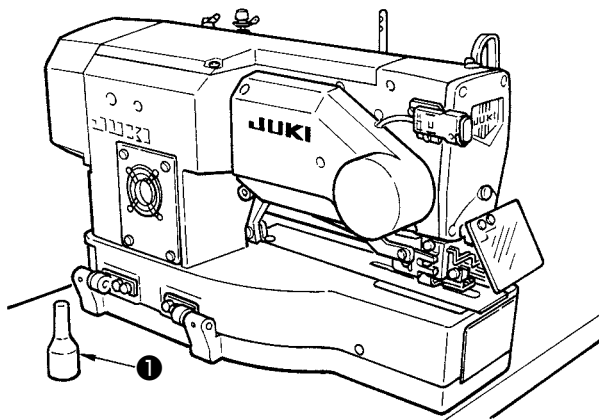


(5) Tilting the sewing machine head



WARNING :

When tilting/raising the sewing machine head, perform the work so as not to allow your fingers to be caught in the machine. In addition, to avoid possible accidents caused by abrupt start of the machine, turn OFF the power to the machine before starting the work.



When tilting the sewing machine head, tilt quietly the sewing machine until head support bar ① comes in contact with it.



1. Make sure that sewing machine head support bar ① is placed on the table before tilting the sewing machine.
2. To protect fall-down, be sure to tilt the sewing machine in a level place.

(11) Installing the eye protection cover

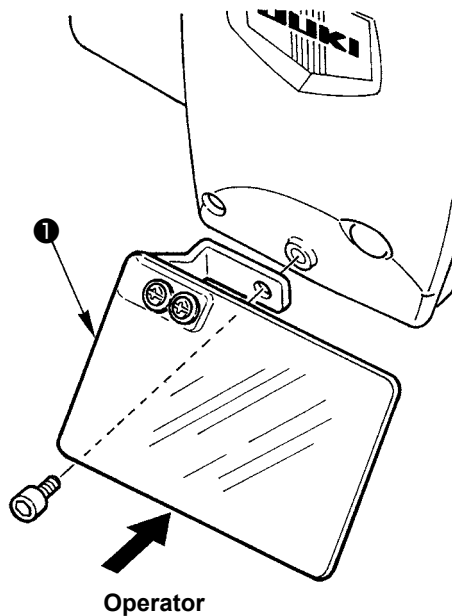


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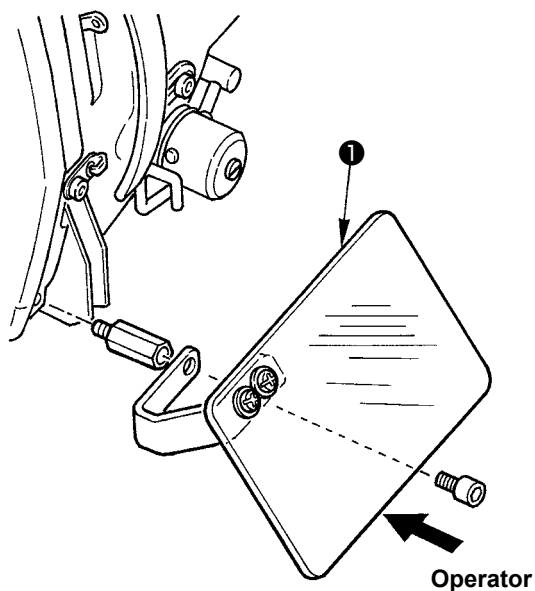
Be sure to attach this cover to protect the eyes from the disperse of needle breakage.

Be sure to install and use eye protection cover ❶ and use the sewing machine.

When placed longitudinally



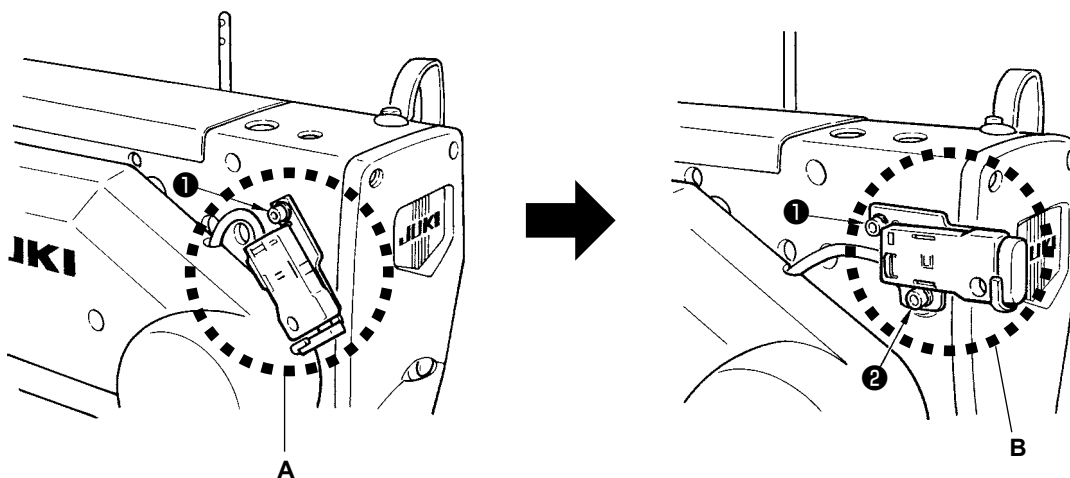
When placed horizontally



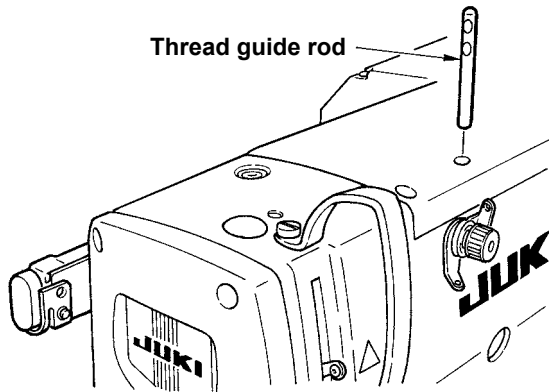
(12) Fixing the temporary stop switch

The temporary stop switch has been in the state as shown in figure A at the time of delivery.

Loosen setscrew ❶ and set the switch in the state as shown in figure B, and fix it with setscrew ❶ together with setscrew ❷ supplied with the machine.

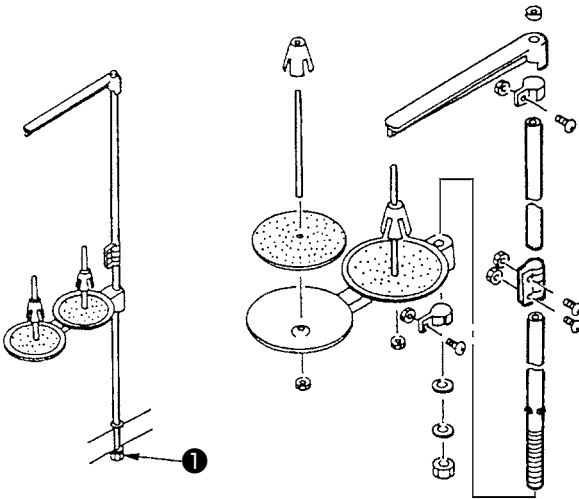


(13) Thread guide rod



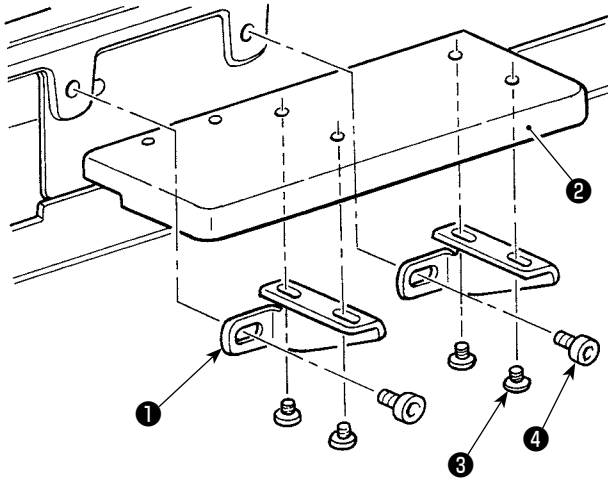
Securely fit the thread guide rod so that two side holes in the thread guide rod face the thread guide.

(14) Installing the thread stand

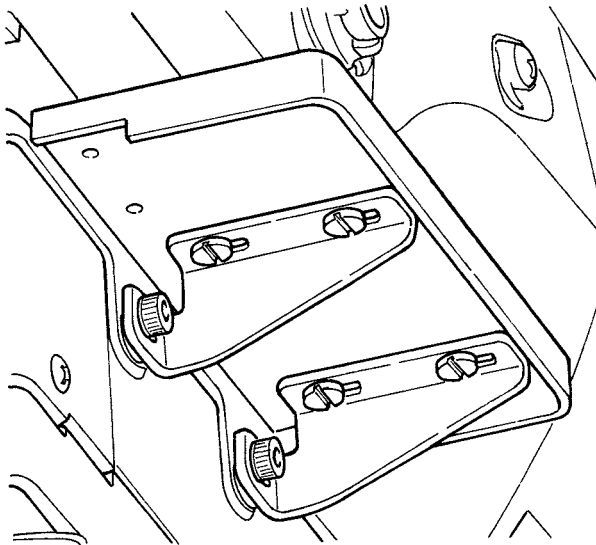


- 1) Assemble the thread stand, and set it in the hole in the top right corner of the machine table.
- 2) Tighten locknut ❶ to fix the thread stand.

(15) Installing the auxiliary table



- 1) Temporarily fix two auxiliary table mounting plates **1** on auxiliary table **2** with four bolts **3**.
- 2) Temporarily fix auxiliary table **2** on the sewing machine bed with two bolts **4**.
- 3) Fix four bolts **3** while removing a clearance between the sewing machine bed and auxiliary table **2**.
- 4) Fix two bolts **4** while aligning auxiliary table **2** with the top surface of the sewing machine bed.



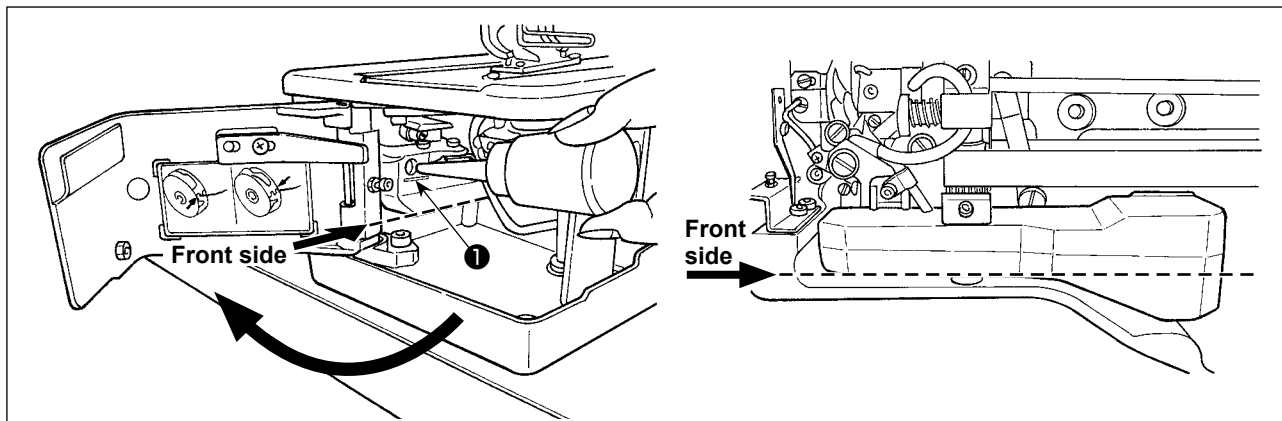
IV. PREPARATION BEFORE OPERATION

1. Lubrication



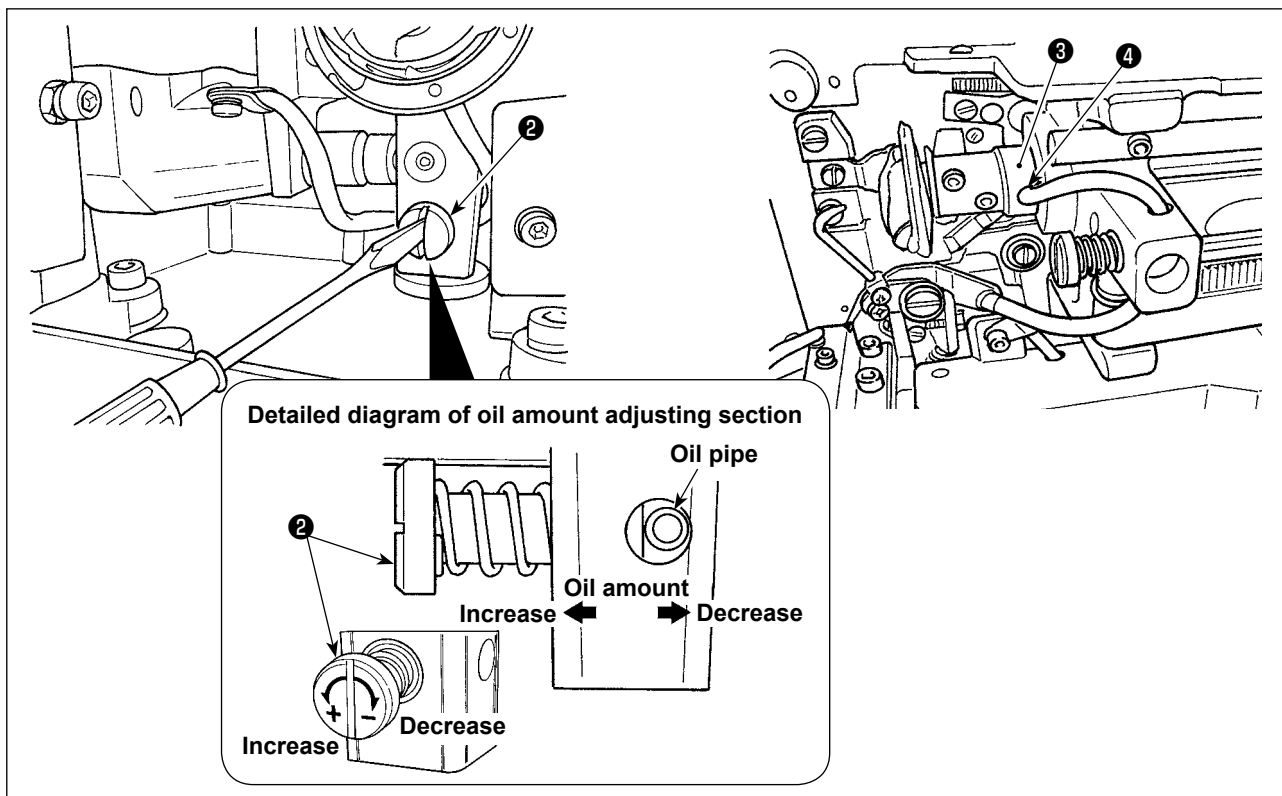
WARNING :

To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.



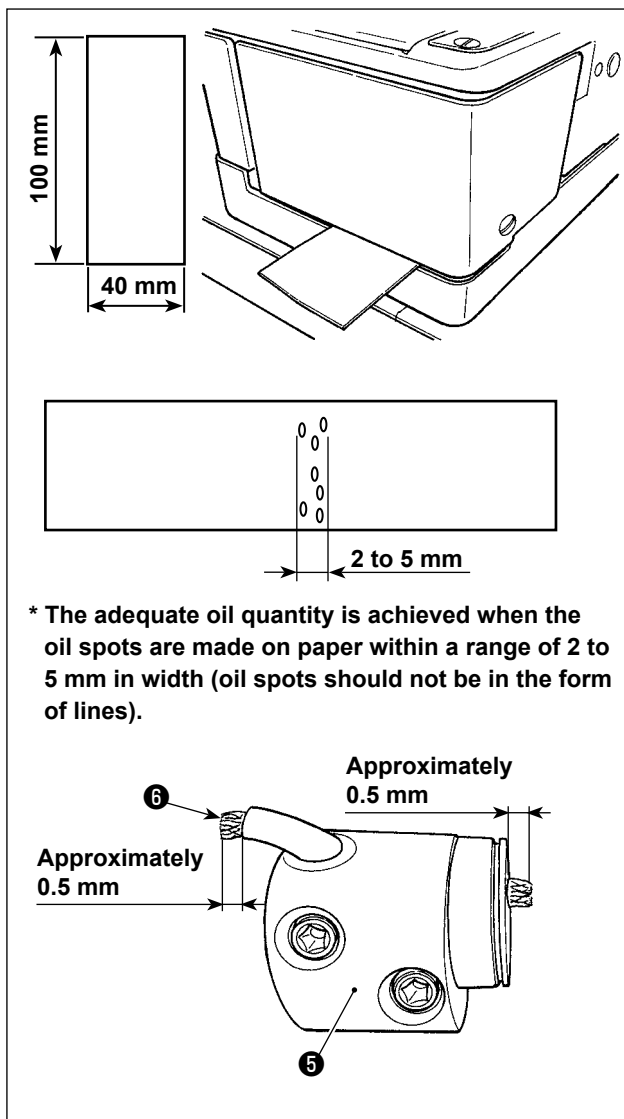
1) Lubricating oil to oiling tank

- Fill the oiling tank with JUKI New Defrix Oil No.1 up to the level indicated by “MAX” ① .
(Caution) When supplying oil to the oil tank through the lubricating hole, take care not to allow dust to enter the oil tank.
- Supply oil in the case the oil cannot be visually observed from the front side of the oil tank.



2) Adjusting the lubrication for the sewing hook

- The amount of oil is adjusted with oil amount adjusting screw ② .
- Amount of supplied oil is reduced when turning the screws ② clockwise.
- When you first operate your sewing machine after set-up or after an extended period of disuse, remove the bobbin case and apply a few drops of oil to the hook race. In addition, apply a few drops oil from oiling hole ④ in hook driving shaft front metal ③ to soak the inside felt in oil.



3) How to check the hook oil quantity

1. In preparation for checking the hook oil quantity, cut a sheet of paper to make a piece of paper size of which is approximately 40 mm x 100 mm.
2. After the adjustment of the oil quantity, start the sewing machine at a high speed (3,600 sti/min) by 100 times or more.
3. Insert the piece of paper prepared in Step 1 into the clearance provided between the hook cover and the bed base so that it is placed near the underside of the hook.
As a guide, insert the paper until it comes in contact with the hook oil shield.
4. Supporting the paper with hand, run the sewing machine by five cycles using the standard pattern (3,600 sti/min) and check the splashing oil quantity.



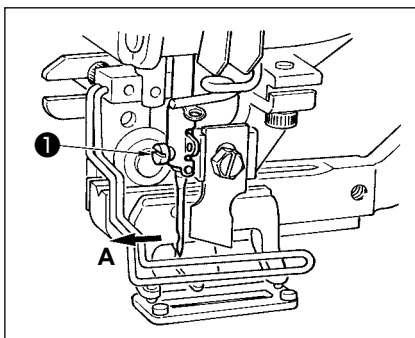
In the case the oil quantity is too much even after the oil controlling screw is fully tightened, remove the hook shaft coupling ⑤ and cut off the excess of oil wick ⑥ .

2. Inserting the needle



WARNING :

To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.



Hold needle with its recessed part facing toward the operator side **A**, insert the needle fully into the needle clamping hole, and tighten needle setscrew **①** . Use a DPx5-(#11J, #14J).



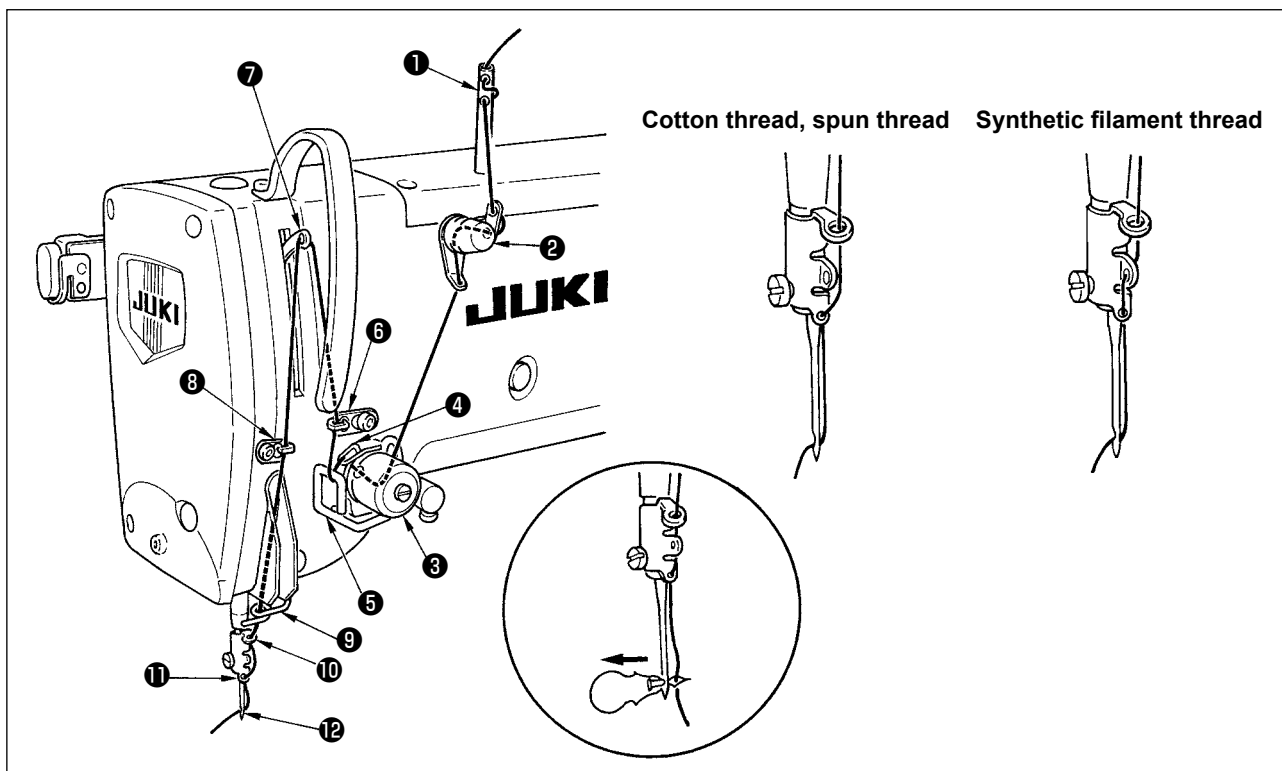
When attaching the needle, turn OFF the power to the motor.

3. Threading the needle-thread



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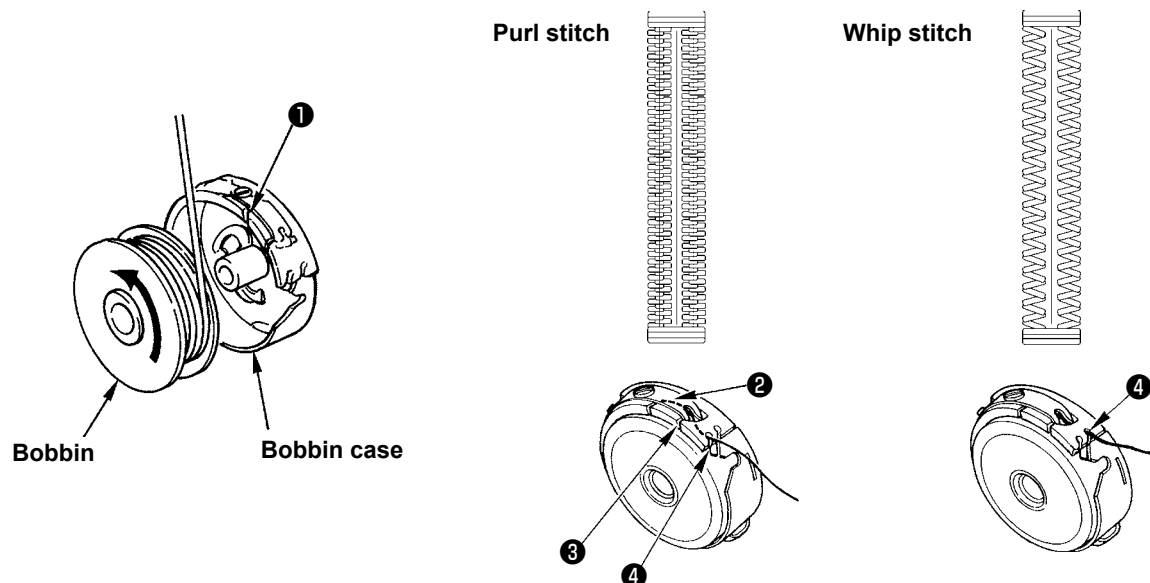


Pass the needle thread in the order ① to ⑫ as shown in the figures.

The threading can be done easily by using the needle threader supplied with the machine.

Change the thread guide threading method according to the thread to be used.

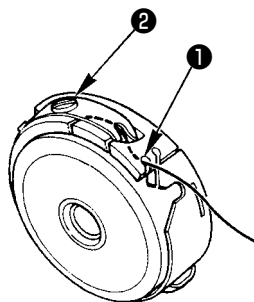
4. Threading the bobbin case



Rotating direction of bobbin and threading

- 1) Fit the bobbin so that it rotates in the direction of the arrow.
- 2) Pass the thread through thread slit ①, then through under the tension spring ②, again through thread slit ③, and pull the thread from ④.
- 3) Threading at ④ for purl stitching is different from that for whip stitching. So, be careful.

5. Adjusting the bobbin thread tension



Adjust the bobbin thread tension as given below when the bobbin thread is pulled up at the position where thread slit **1** of bobbin case comes up.

Purl stitch	0.05 to 0.15N	To such an extent that bobbin case quietly comes down when holding thread end coming from bobbin case and shaking it quietly up and down.
Whip stitch	0.15 to 0.3N	To such an extent that bobbin case barely comes down when holding thread end coming from bobbin case and shaking it somewhat strongly.

Turning tension adjust screw **2** clockwise will increase bobbin thread tension, and turning it counterclockwise will decrease the tension.

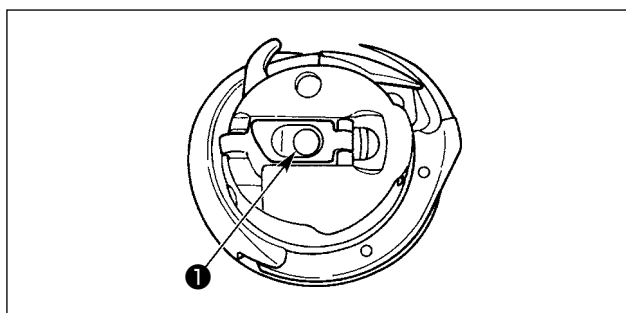
Adjust the bobbin thread tension to lower for synthetic filament thread, and to higher for spun thread. The thread tension is higher by approximately 0.05N when the bobbin case is set to the hook since idle-prevention spring is provided.

6. Installation of bobbin case



WARNING :

To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.



- 1) Lift up and hold bobbin case latch lever between two fingers.
- 2) Push the bobbin case into the hook so that it is supported by the hook shaft **1** and then snap in the latch lever.

Press the bobbin case until the predetermined position is reached, and it will click.

1. If the bobbin case is out of the predetermined position, it can jump out from the hook to cause the needle thread to tangle on the hook shaft. Check to be sure that the bobbin case is properly installed in the correct position.



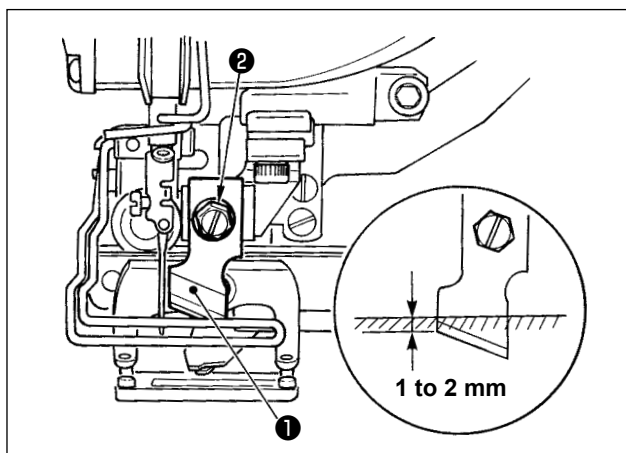
2. There is a difference in the shape of bobbin case between the standard hook and the dry one. They have nothing in common with each other.

7. Installing the knife



WARNING :

To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.



When replacing the knife with a new one, perform as follows.

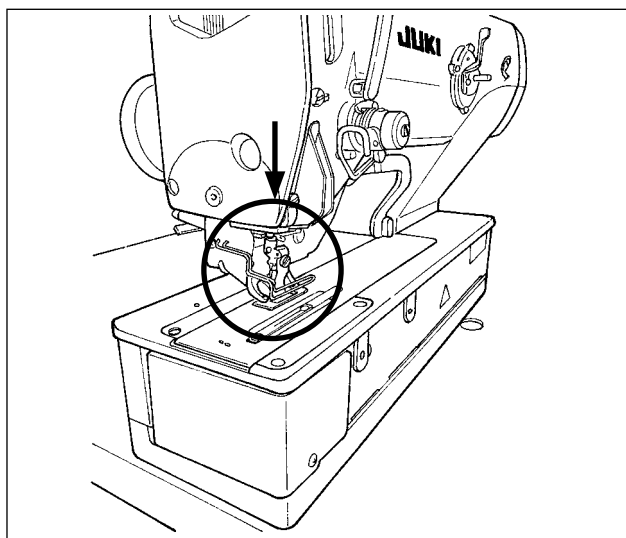
- 1) Knife ① can be easily removed together with the washer when removing knife retaining screw ②.
- 2) Lower the knife bar by hand. Now, push the knife bar down so that the knife goes below the top surface of the throat plate by 1 to 2 mm, as illustrated in the figure. In this state, place the washer and tighten the setscrew.

Inch → mm CONVERSION TABLE

Knife size	Indication of mm
1/4	6.40
3/8	9.50
7/16	11.10
1/2	12.70
9/16	14.30
5/8	15.90
11/16	17.50
3/4	19.10
13/16	20.60
7/8	22.20
1	25.40
1 1/8	28.60
1 1/4	31.80
1 3/8	34.90
1 1/2	38.10

When the cloth cutting knife you have is indicated in inch, set the cloth cutting length (knife size) in mm using the inch → mm conversion table.

8. Checking the sewing machine in the delivered state



If the work clamp foot is the lifted state before turning the power ON, lower it firstly and turn ON the power to the sewing machine.



When lowering the work clamp, take care not to place your hands near the knife.

If the power is turned ON with the work clamp raised and the ready key is pressed, "E998 Work clamp deviation error" can occur.

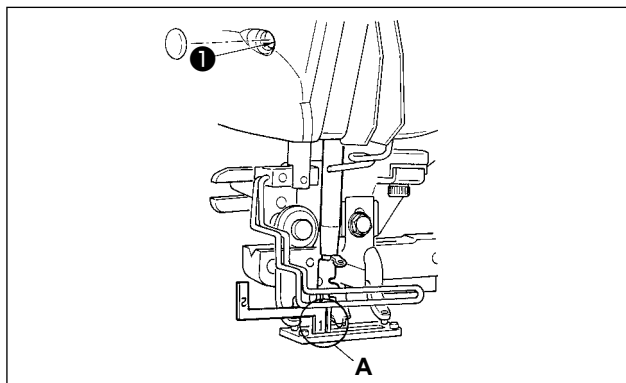
VI. MAINTENANCE

1. Adjusting the needle-to-hook relation



WARNING :

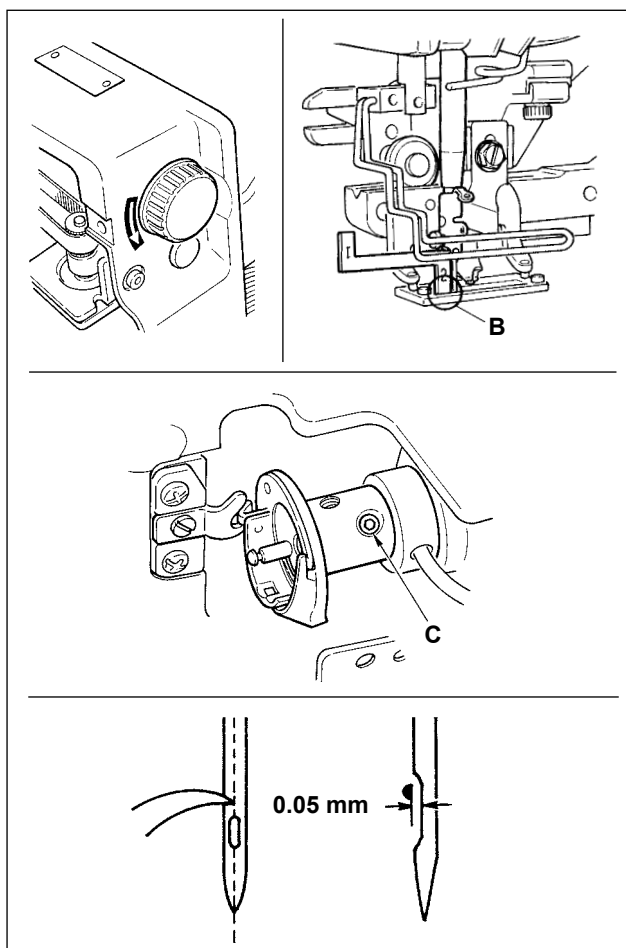
To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.



Adjust the needle-to-hook relation when the needle enters the center of the needle hole in the throat plate.

(1) Needle bar height

- 1) Bring down the needle bar to the lowest point.
- 2) Insert the part [1] **A** of timing gauge into the gap between the bottom end of needle bar and throat plate, where the bottom end of the needle bar touches the top of the part [1] **A** of the timing gauge.
- 3) Loosen needle bar connection screw **1**, and adjust the height of the needle bar.

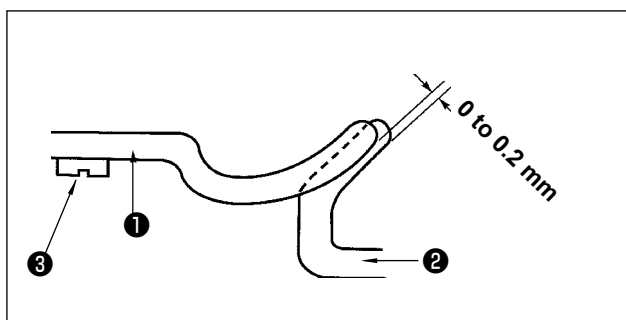


(2) Set the needle to hook relation in the following way :

- 1) Rotate the hand pulley in the correct direction until the needle starts to go up from its lowest point.
- 2) Insert the part [2] **B** of the timing gauge into the gap between the bottom end of the needle bar and the throat plate, where the bottom end of the needle bar touches the top of the part [2] **B** of the timing gauge.
- 3) Loosen setscrew **C** of the hook sleeve, and align blade point of the sewing hook with the center of needle hole. Make adjustment so that a clearance of approx. 0.05 mm is provided between the needle and the blade point of the hook.

(3) Adjusting the bobbin case positioning stopper

Adjust with setscrew **3** so that the contact of the top end of bobbin case positioning stopper **1** and the end of inner hook **2** is 0 to 0.2 mm.

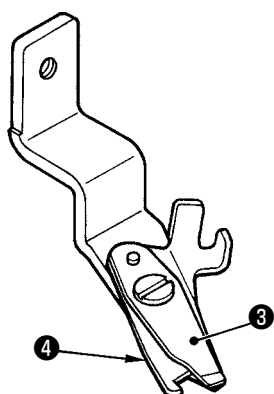
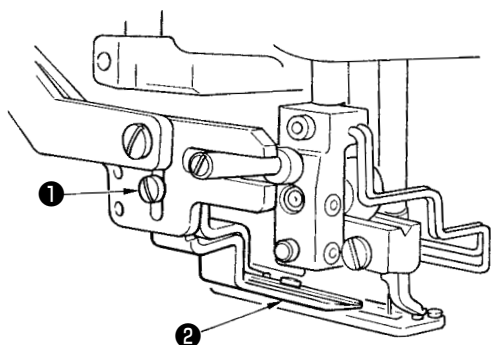


2. Adjusting the needle thread trimmer



WARNING :

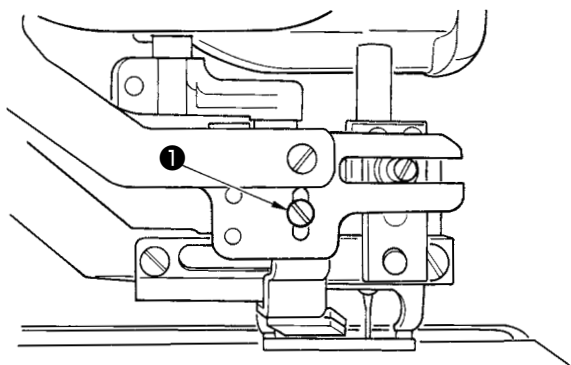
To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.



(1) Adjusting the thread grasping force of the needle thread trimmer

If the needle thread trimmer fails to provide consistent thread grasping force, the needle thread can slip off at the beginning of sewing.

- 1) If the thread grasping force of the needle thread trimmer has reduced, loosen setscrews ❶ and detach needle thread trimmer ❷ .
- 2) Slightly bend the top end of thread presser spring ❸ so that it comes in contact with thread trimming blade of upper knife ❹ over the length with no clearance and so that the needle thread trimmer securely holds the thread regardless of the position of the thread trimming blade at which the thread is trimmed.



(2) Adjusting the height of the needle thread trimmer

To adjust the height of the needle thread trimmer, loosen setscrew ❶ . Set the height of trimmer as low as possible, provided that it does not touch work clamp check, in order to minimize the length of remaining thread on the needle after trimming.

Note that the work clamp check tilts when sewing a multi-layered portion of the material, attach the needle thread trimmer to slightly raise the installing position of the trimmer.



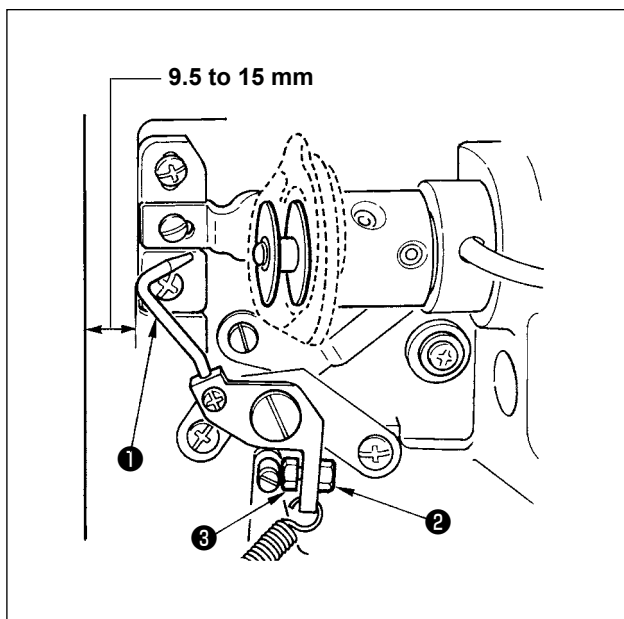
When replacing the needle thread trimmer, make sure that the trimmer normally works under the needle thread trimmer adjusting mode.

4. Adjustment of the bobbin presser unit



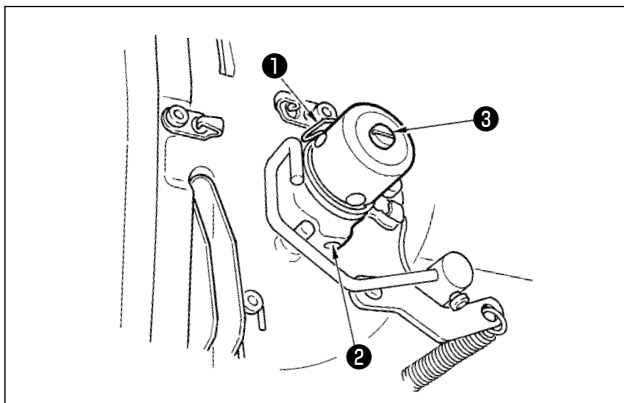
WARNING :

To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.



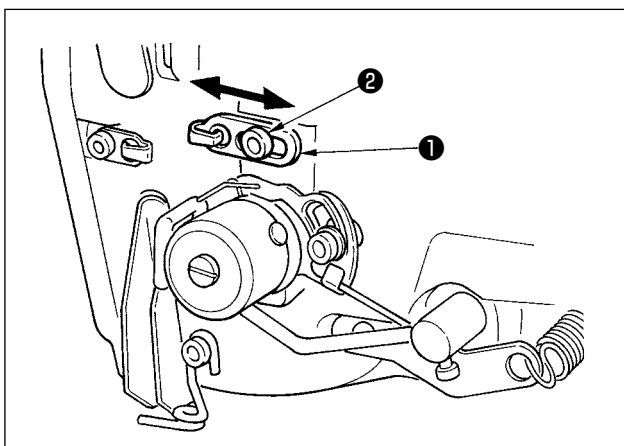
Loosen nut ❶ and adjust the position with stopper spring ❷ so that the distance from the front end of machine bed to bobbin presser ❸ is 9.5 to 15 mm when the sewing machine stops. Then tighten nut ❷.

5. Thread tension



(1) Thread take-up spring (purl stitch)

- 1) The thread take-up amount of thread take-up spring ❶ is 8 to 10 mm, and the appropriate pressure at the start is approximately 0.06 to 0.1N.
- 2) To change the stroke of the thread take-up spring, loosen screw ❷, insert a thin screwdriver into the slot of thread tension post ❸, and turn it.
- 3) To change the pressure of the thread take-up spring, insert a thin screwdriver into the slot of thread tension post ❸ while screw ❷ is tightened, and turn it. Turning it clockwise will increase the pressure of the thread take-up spring. Turning it counterclockwise will decrease the pressure.



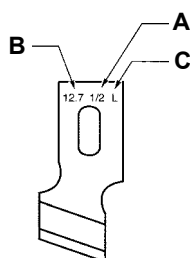
(2) Adjusting the thread take-up amount of the thread take-up lever

The thread take-up amount of the thread take-up lever should be adjusted in accordance with the thickness of the sewing products so as to obtain well-tightened stitches.

- a. For heavy-weight materials, loosen setscrew ❷ in thread guide ❶, and move the thread guide to the left. The thread take-up amount of the thread take-up lever will be increased.
- b. For light-weight materials, move thread guide ❶ to the right. The thread take-up amount of the thread take-up lever will be reduced.

VII. GAUGE COMPONENTS

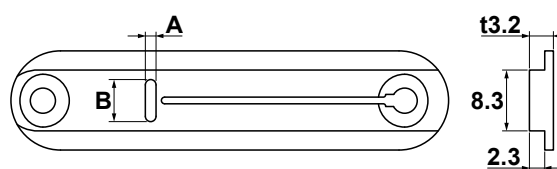
1. Cloth cutting knife



A Knife size (inch)	B Knife size (mm)	C Mark	D Part No.
1/4	6.4	F	B2702047F00
3/8	9.5	K	B2702047K00A
7/16	11.1	I	B2702047I00
1/2	12.7	L	B2702047L00A
9/16	14.3	V	B2702047V00
5/8	15.9	M	B2702047M00A
11/16	17.5	A	B2702047A00
3/4	19.1	N	B2702047N00
7/8	22.2	P	B2702047P00
1	25.4	Q	B2702047Q00A
1-1/4	31.8	S	B2702047S00A

2. Throat plate

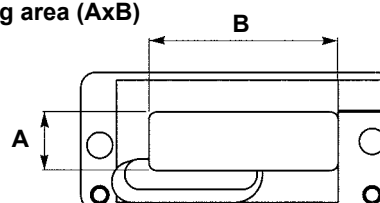
Stitch width	5mm (Marking • AxB)
Type	
Standard (S)	40027553 (S5 • 1.4x6.2)
For knits (K)	40027554 (K5 • 1.2x6.2)



3. Presser

Stitch width (AxB)	1 (4x25)	2 (5x35)	3 (5x41)	5(5x120,5x70)
Type				
Standard (S)	B1552781000A	B1552782000	B1552783000	40008658(5x120) 14523708(5x70)
For knits (K)	D1508771K00A	D1508772K00	D1508773K00	-

Sewing area (AxB)



IX. TROUBLES AND CORRECTIVE MEASURES

Troubles	Causes	Corrective measures	Page
1. Needle thread break-age	1. Thread tension at parallel section is too high.	○ Decrease the thread tension at parallel section.	27
	2. Pressure or stroke of thread take-up spring is too large.	○ Decrease the tension of thread take-up spring or decrease its stroke.	67
	3. There is a burr or scratch on the blade point of hook.	○ Buff the blade point of hook. Or, replace the hook.	–
	4. Hook timing is not proper.	○ Adjust again the hook timing with timing gauge.	64
	5. There is a scratch on the thread path.	○ Polish the thread path with sand paper and buff it.	–
	6. Attaching needle is wrong.	○ Adjust again the direction, height, etc.	16
	7. Needle is too thin.	○ Replace the needle with a thicker one.	–
	8. Needle tip is damaged.	○ Replace the needle.	–
	9. Thread breaks when it is bent.	○ Do not pass the thread through the thread guide pin.	13
2. Needle thread slips off.	1. Needle thread trimmer opens too early.	○ Delay the opening timing of the needle thread trimmer.	65
	2. Whip stitching is not formed at the start of sewing. (Tension at the start of sewing is too high.)	○ Decrease tension at the start of sewing.	39
	3. Threading needle thread is wrong.	○ Thread properly again.	17
	4. Speed at the start of sewing is too fast.	○ Set the soft-start function.	54
3. Wobbling at parallel section	1. Thread tension at parallel section is too low.	○ Increase the thread tension at parallel section.	27
	2. Bobbin thread tension is too high.	○ Decrease bobbin thread tension. (Purl stitching : 0.05 to 0.1N)	18
	3. Pre-tension is too low.	○ Increase pre-tension.	–
4. Wobbling at the start of sewing	1. Thread tension at parallel section is too low.	○ Increase the thread tension at parallel section.	27
	2. Position of needle thread trimmer is too high.	○ Lower the needle thread trimmer to such an extent that it does not come in contact with the presser.	65
	3. Stroke of thread take-up spring is too large.	○ Decrease the stroke of thread take-up spring.	67
5. Needle thread appears on the wrong side of material at bar-tacking section in dumping condition.	1. Bar-tacking thread tension is too low.	○ Increase the bar-tacking thread tension.	27
	2. Bobbin thread tension is too high.	○ Decrease the bobbin thread tension. (0.05 to 0.1N)	18
	3. Number of stitches of radial shape is too many.	○ Decrease the number of stitches.	37
	4. Tension at the end of sewing is too low.	○ Increase tension at the end of sewing.	54
6. Stitches float.	1. Bobbin thread tension is too low.	○ Increase the bobbin thread tension.	18
	2. Bobbin thread comes off bobbin case.	○ Perform proper threading the bobbin case.	17
		○ Take care that the winding amount of bobbin thread is not excessive.	29
7. Stitch skipping	1. Button hole is small in terms of the size of presser.	○ Replace the presser with a smaller one.	–
	2. Material flops because of light-weight.	○ Delay the hook-to-needle timing. (Lower the needle bar by 0.5 mm.)	64
	3. Attaching needle is wrong.	○ Adjust again the direction, height, etc.	16
	4. Needle is bent.	○ Replace the needle.	–
	5. There is a burr or scratch on the blade point of hook.	○ Buff the blade top of hook. Or, replace the hook.	–

Troubles	Causes	Corrective measures	Page
8. Thread frays.	1. Number of stitches of tie stitching is too small.	○ Increase the number of stitches of tie stitching at the end of sewing.	40
	2. Width of tie stitching is too wide.	○ Narrow the width of tie stitching at the end of sewing.	40
9. Length of needle thread remaining at the end of sewing is too long.	1. Width of tie stitching is too narrow.	○ Widen the width of tie stitching at the end of sewing.	40
	2. Tension of tie stitching is too low.	○ Increase tension at the end of sewing.	54
10. Needle thread breaks at the start of sewing, or the wrong side of seam is dirty.	1. Tension at the start of sewing is too low.	○ Increase tension at the start of sewing.	39
11. Knife drops even when needle thread is cut.	1. Check whether the thread breakage detector plate is properly adjusted.	○ Adjust the detector plate. (Refer to the Engineer's Manual.)	–
12. Needle breaks.	1. Check whether needle is bent.	○ Replace the needle.	16
	2. Check whether needle comes in contact with the blade point of hook.	○ Adjust the needle-to-hook timing.	64
	3. Check whether needle thread trimmer comes in contact with needle when it opens.	○ Adjust the installing position of needle thread trimmer.	65
	4. Check whether needle comes in the center of the needle hole of throat plate.	○ Re-adjust the installing position of throat plate base.	–
	5. Needle stop position is too low and needle comes in contact with needle thread trimmer when it closes.		
13. Knife drops plural times.	1. Check whether the cloth cutting knife dropping is set to plural dropping.	○ Release the plural time setting.	52