brother

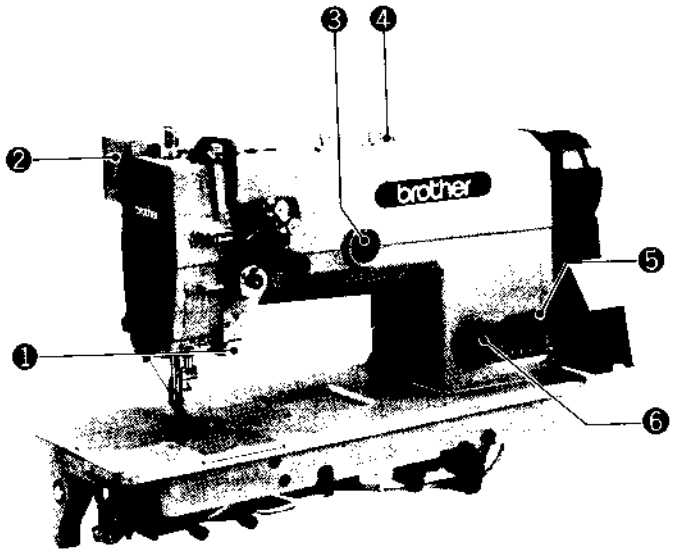
SERVICE MANUAL FOR

LT2-B841
LT2-B842-400, -700, -900
LT2-B845-400, -700, -900
LT2-B847-400, -700, -900
LT2-B848-400, -700, -900
LT2-B872-400, -700, -900
LT2-B875-400, -700, -900

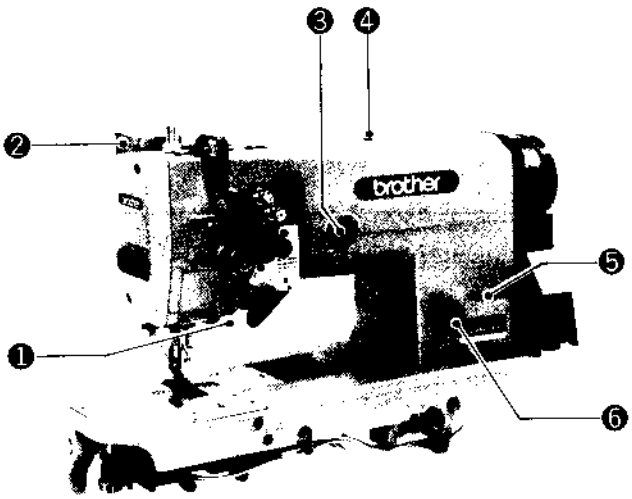
CONTENTS

NAMES OF MAIN PARTS

[LT2-B842]

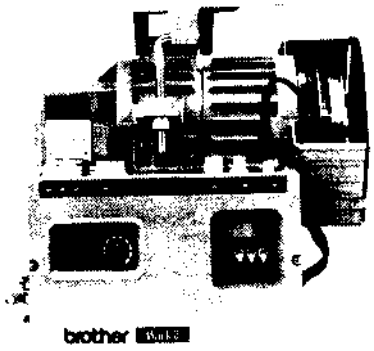


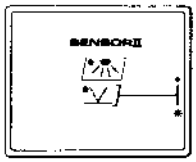
[LT2-B845]

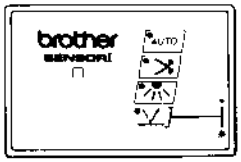


❶ Quick reverse
❷ Thread wiper
❸ Oil gauge window
❹ Oil inlet
❺ Reverse feed lever
❻ Feed adjustment dial

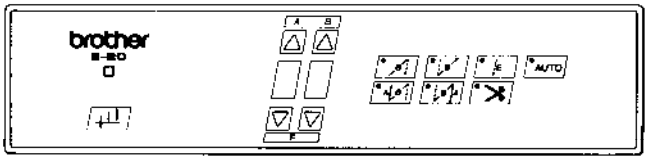
Option parts



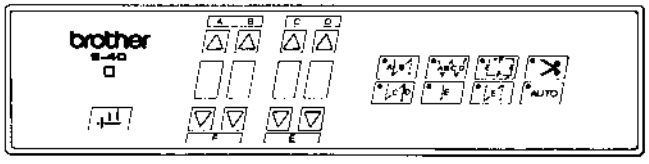




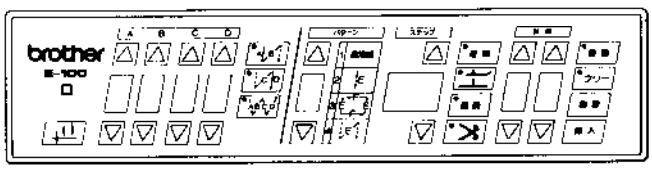
E-20



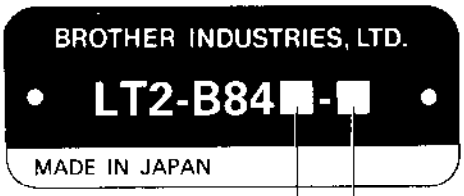
E-40



E-100



SEWING MACHINE SPECIFICATIONS



[LT2-B841] **Twin Needle, Needle Feed Lockstitch Machine**

[LT2-B842] **Twin Needle, Needle Feed Lockstitch Machine with Reverse Feed**

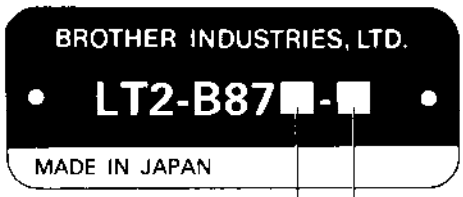
[LT2-B845] **Twin Needle, Needle Feed, Lockstitch Machine with Angular Stitching**

[LT2-B847] **Twin Needle, Drop Feed, Lockstitch Machine**

[LT2-B848] **Twin Needle, Drop Feed, Angular Stitching Machine**

	-B841		-B842		-B845			-B847	-B848
	-3	-5	-3	-5	-3	-5	-7	-1	-1
Use	For medium-thick-materials	For thick materials	For medium-thick materials	For thick materials	For medium-thick materials	For thick materials	For thick materials	For thin materials	For thin materials
Sewing speed (spm)	4500	3500	4500	3500	3000			4500	3000
Stitch length	4 mm	5 mm	4 mm	5 mm				4 mm	
Presser foot height: Presser foot lifter	7 mm								
Presser foot height: Knee lifter	13 mm								
Feed dog height	1 mm								
Needles	DP×5 #11 ~ #22						DP×17 #16 ~ #23	DP×5 #9 ~ #14	
Needle feed mechanism	Standard							Not available	
Single needle stop device	Not available				Standard			Not available	Standard

Note: The needle feed mechanism is not provided on LT2-B847 and B848 models.



[LT2-B872] **Twin Needle, Needle Feed Lockstitch Machine with Reverse Feed (Large Hook)**

[LT2-B875] **Twin Needle, Needle Feed, Lockstitch Machine with Angular Stitching (Large Hook)**

	-B872		-B875		
	-3	-5	-3	-5	-7
Use	For medium-thick-materials	For thick materials	For medium-thick materials	For thick materials	For thick materials
Sewing speed (spm)	3000				
Stitch length	7 mm				
Presser foot height: Presser foot lifter	7 mm				
Presser foot height: Knee lifter	13 mm				
Feed dog height	1 mm				
Needles	DP×5 #11 ~ #22				DP×17 #16 ~ #23
Needle feed mechanism	Standard				
Single needle stop device	Not available		Standard		

BROTHER INDUSTRIES, LTD.

• LT2-B842-□□□ •

MADE IN JAPAN

□□□	-40	-70	-90
Thread trimmer	Solenoid		
Thread wiper	Solenoid		
Quick reverse	Solenoid		
Automatic presser lifter		Pneumatic	Solenoid

LT2-B842		-403	-703	-903	-405	-705	-905
Use		For medium thick materials			For thick materials		
Sewing speed		4500spm			3500spm		
Maximum stitch length		4mm			5mm		
Presser foot height	Presser bar lifter	7mm					
	Knee lifter	10mm			10mm		
	Automatic presser lifter		10mm	8mm		10mm	8mm
Feed dog height		1mm					
Needle		DP×5 #11~#22					

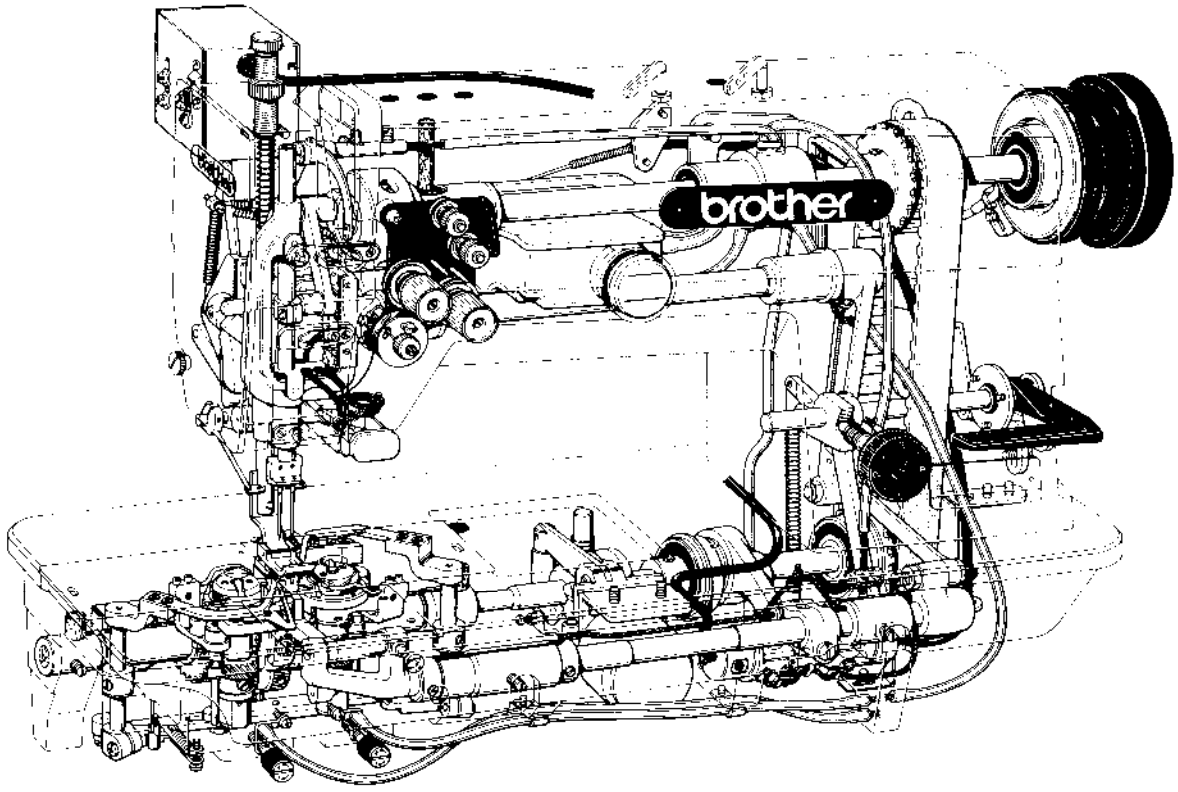
LT2-B845		-403	-703	-903	-405	-705	-905	-407	-707	-907
Use		For medium thick			For thick materials					
Sewing speed		3000spm								
Maximum stitch length		5mm								
Presser foot height	Presser bar lifter	7mm								
	Knee lifter	10mm			10mm			13mm		
	Automatic presser lifter		10mm	8mm		10mm	8mm		10mm	8mm
Feed dog height		1mm								
Needle		DP×5 #11~#22						DP×17 #16~#23		

	LT2-B847			LT2-B848		
	-401	-701	-901	-401	-701	-901
Use	For thin materials					
Sewing speed	4000spm			3000spm		
Maximum stitch length	4mm					
Presser foot height / Presser bar lifter	7mm					
Knee lifter	10mm			10mm		
Automatic presser lifter		10mm	8mm		10mm	8mm
Feed dog height	1mm					
Needle	DP×5 #9~#14					

LT2-B872		-403	-703	-903	-405	-705	-905
Use		For medium thick materials			For thick materials		
Sewing speed		3000spm					
Maximum stitch length		7mm					
Presser foot height	Presser bar lifter	7mm					
	Knee lifter	7mm			10mm		
	Automatic presser lifter		10mm	8mm		10mm	8mm
Feed dog height		1mm					
Needle		DP×5 #11~#22					

LT2-B875		-403	-703	-903	-405	-705	-905	-407	-707	-907
Use		For medium thick			For thick materials					
Sewing speed		3000 spm								
Maximum stitch length		7 mm								
Presser foot height	Presser bar lifter	7 mm								
	Knee lifter	10 mm			10 mm			10 mm		
	Automatic presser lifter		10 mm	8 mm		10 mm	8 mm		10 mm	8 mm
Feed dog height		1 mm								
Needle		DP × 5 #11~#22						DP × 17 #16~#23		

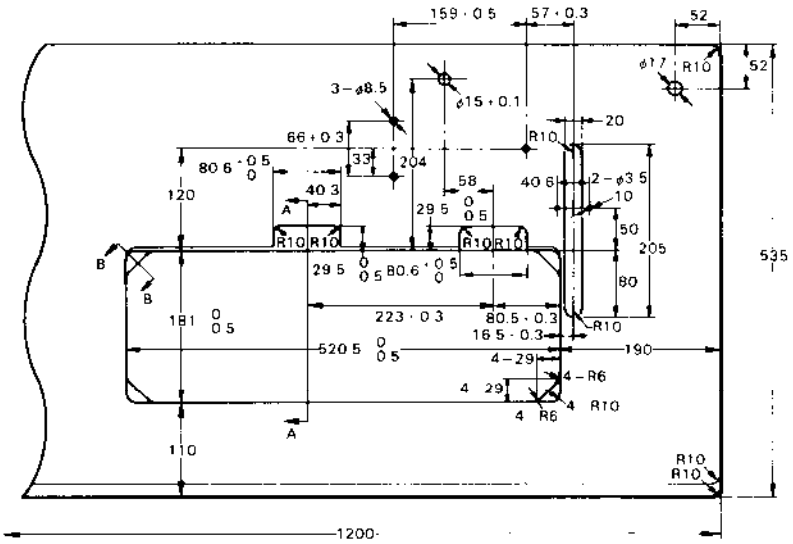
Line Drawing



INSTALLATION

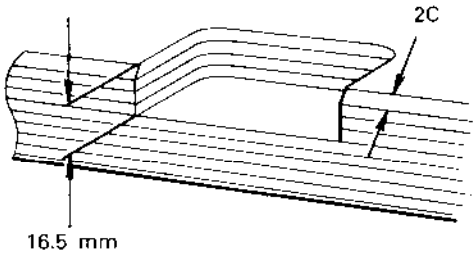
1 Power Table

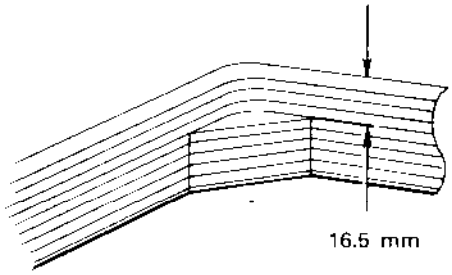
Power	Motor
Single-phase	2-pole, 400 W motor
Three-phase	2-pole, 400 W motor



A–A cross section

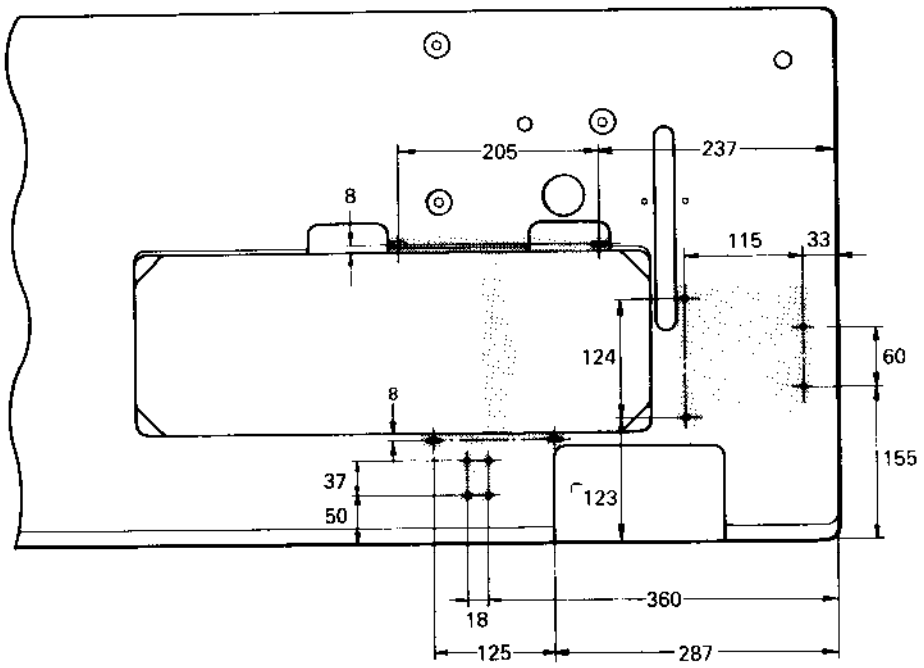
B–B cross section

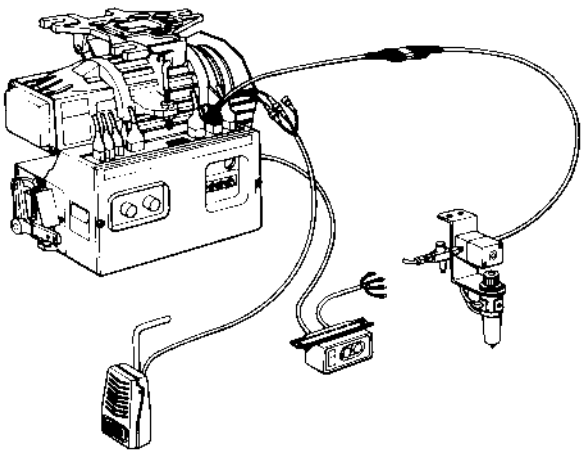




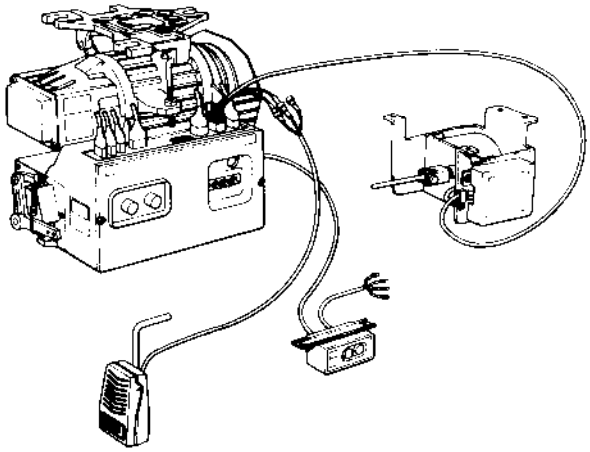
Sewing speed	Frequency	Motor pulley size	V belt
4500 spm	50 Hz	Motor pulley 115	44 inch
	60 Hz	Motor pulley 95	43 inch
4000 spm	50 Hz	Motor pulley 100	43 inch
	60 Hz	Motor pulley 85	43 inch
3500 spm	50 Hz	Motor pulley 90	43 inch
	60 Hz	Motor pulley 70	42 inch
3000 spm	50 Hz	Motor pulley 75	42 inch
	60 Hz	Motor pulley 65	42 inch

★ When using a commercial table, drill holes in the table as shown above.



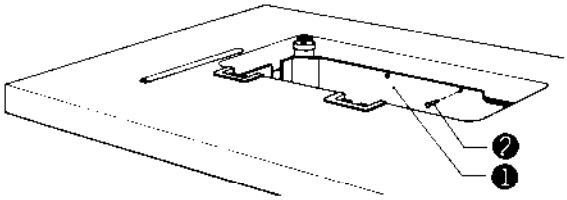


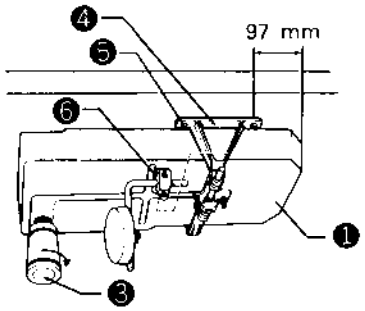
Option parts (For –700)



Option parts (For –900)

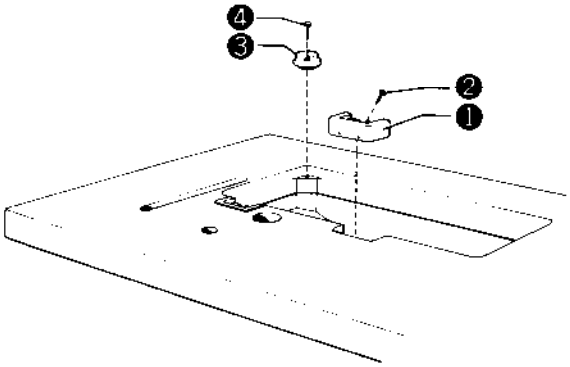
2 To Attach the Oil Pan and Knee Lifter





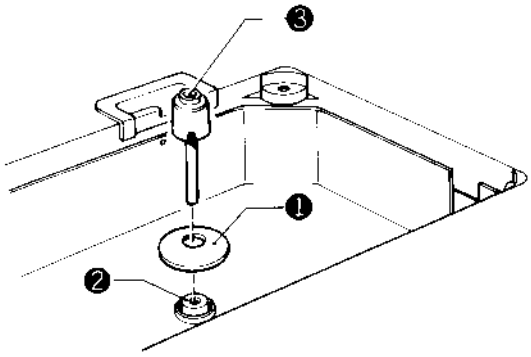
1. Fit oil pan ❶ into the opening in the table, and secure it with 5 nails ❷.
   Screw the plastic oiler ❸ into the oil pan ❶.
2. Install the knee lifter assembly ❹ to the underside of the table with the flat-head screws ❺.
3. Connect the knee lifter ❻ to the knee lifter assembly ❹.

3 To Attach the Rubber Bases and Cushions



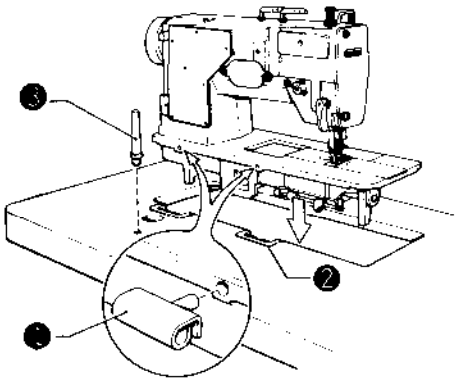
1. Install the rubber bases ❶ to the table with nails ❷.
2. Install the cushions ❸ at the four corners of the table with nails ❹.

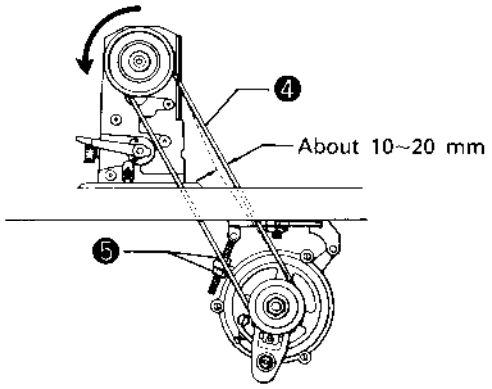
4 Installing the Skirt, Knee Lifter Complying Bar



1. Slide the skirt ❶ onto the knee lifter assembly ❷.
2. Insert the knee lifter complying bar ❸.

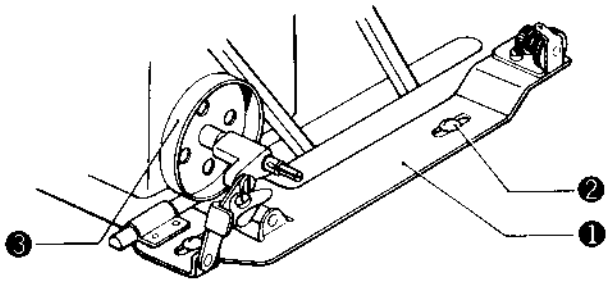
5 To Install the Machine Head · Belt Tension





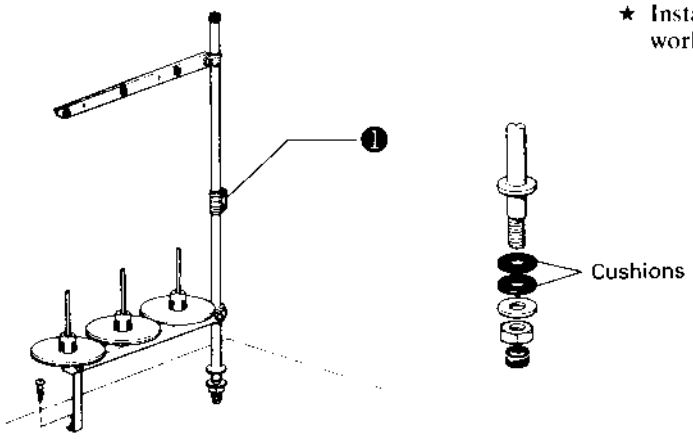
Put the head hinges ❶ into the holes of the bed and adjust them to the rubber hinge ❷, then place the machine onto the head cushions at the four corners.
◎ Use a hammer to drive the head rest ❸ into the table.
★ The correct operating direction of the machine is counterclockwise (as viewed from the pulley side).
★ Press the belt ❹, and adjust the belt tension by turning the nuts ❺ so that the belt has about 10 ~ 20 mm of play.

6 To Attach the Bobbin Winder



★ Attach the bobbin winder ❶ to the table with two round-head wood screws ❷.
(Attach it so that the bobbin winder pulley ❸ will not slip.)

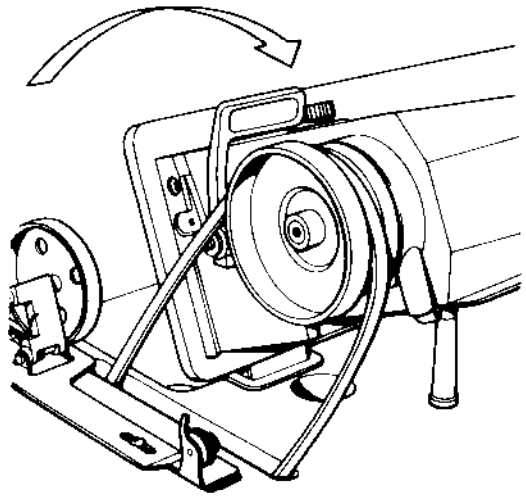
7 To Attach the Thread Unwinder



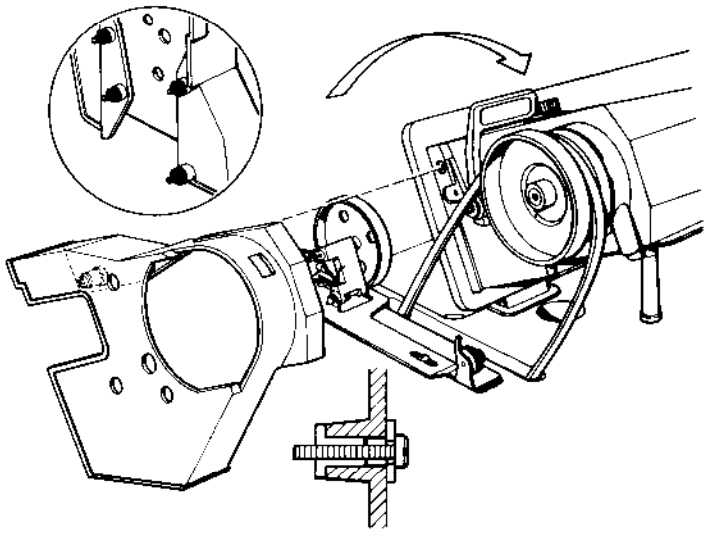
★ Install the spool stand ❶ at the front right corner of the work table.

8 Precautions before Installing the Belt Cover

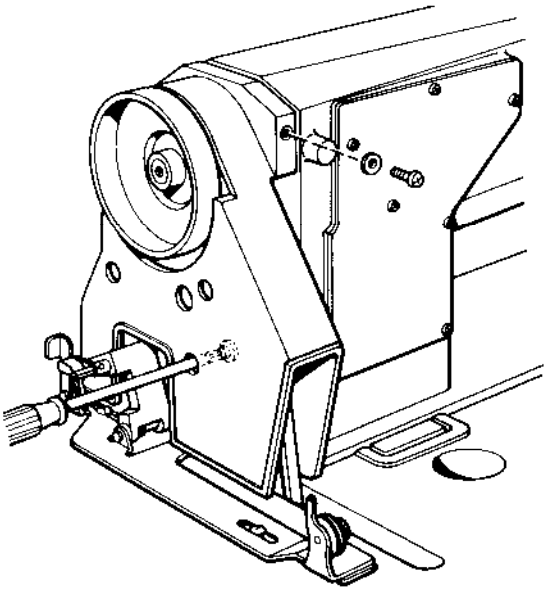
1. Bring the sewing machine down toward the horizontal position.



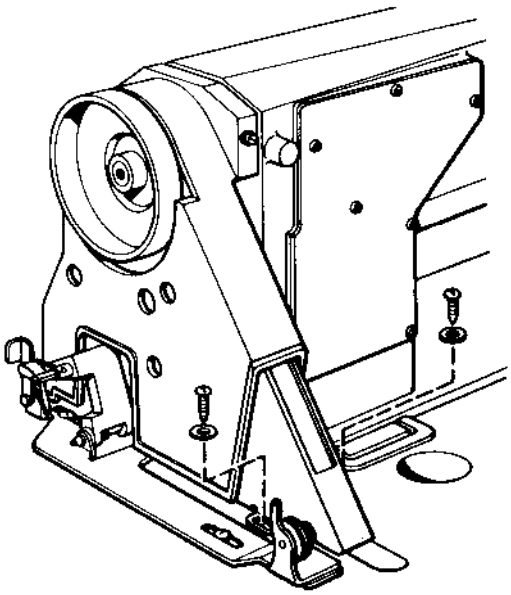
2. Secure belt cover U with the rubber collar, set screw, and washer.

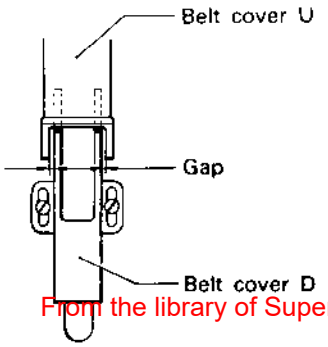


3. Install belt cover U.



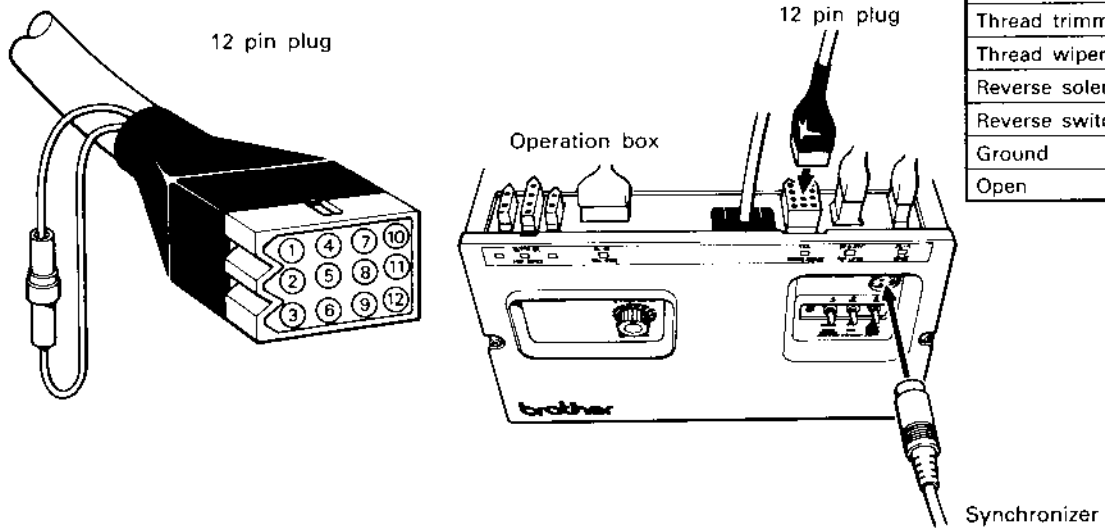
4. Install belt cover D.





Note
If the four screws for belt cover U are tightened excessively, belt cover U and the machine pulley might contact and cause noise.

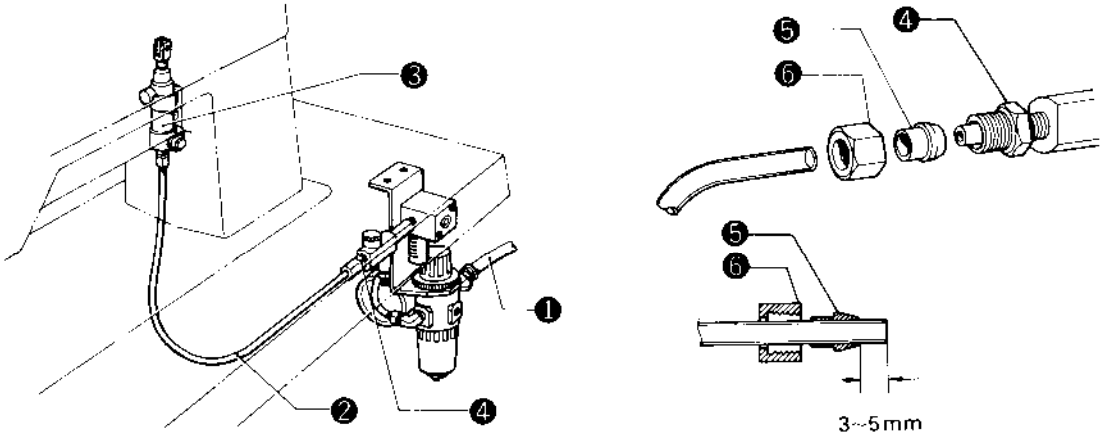
9 Connection of Wires



12 pin plug	No.
Thread trimming solenoid	④-⑤
Thread wiper solenoid	⑦-⑧
Reverse solenoid	⑩-⑪
Reverse switch	⑨-⑫
Ground	③
Open	①-②-⑥

※ Turn the power switch off before installation or removal of the plug.
★ Take care to keep the wires away from the rotating parts.
★ Pass the plug through the wire hole on the table, then install by following the figures.

10 Connection of Air Tube (–700)



1. Connect the air hose from the compressor to the connector ❶.
2. Pass the air tube ❷ through the hole in the table, and connect the air tube to the presser bar lifter cylinder ❸ and the valve case ❹.

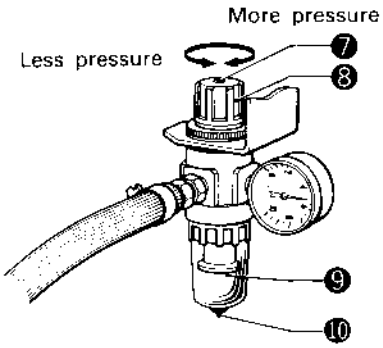
※ Push the air tube into the sleeve ❺ until its end projects about 3~5mm out from the sleeve ❺. Connect the tube end to the male connector, tighten the nut ❻ manually, and then tighten with a wrench one or two more turns.

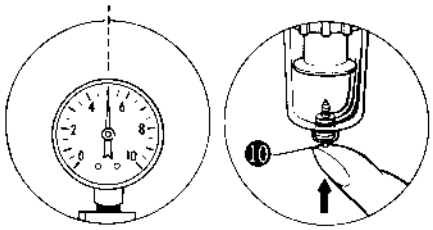
	No.
paid	④-⑤
d	⑦-⑧
	⑩-⑪
	⑨-⑫
	③
	①-②-⑥

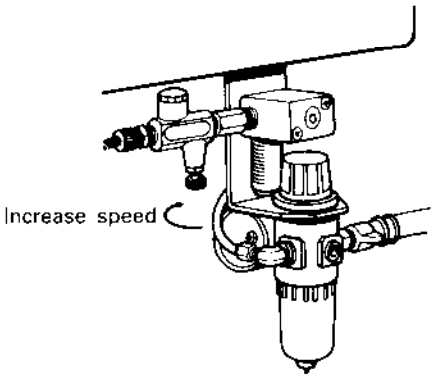
◆ Adjustment of the Air Pressure (–700)

Air pressure is 5~5.5kg/cm^2 during operation.

1. If air pressure is low:
   Loosen the screw ❼, and then turn the handle ❽ to the right.
2. If air pressure is high:
   Loosen the screw ❼, turn the handle ❽ to the left, operate the actuator or the treadle to lower the air pressure, and then increase the air pressure again.
3. If water accumulates in the bottle ❾, stop the compressor, raise the drain cock ❿, and then drain the water.



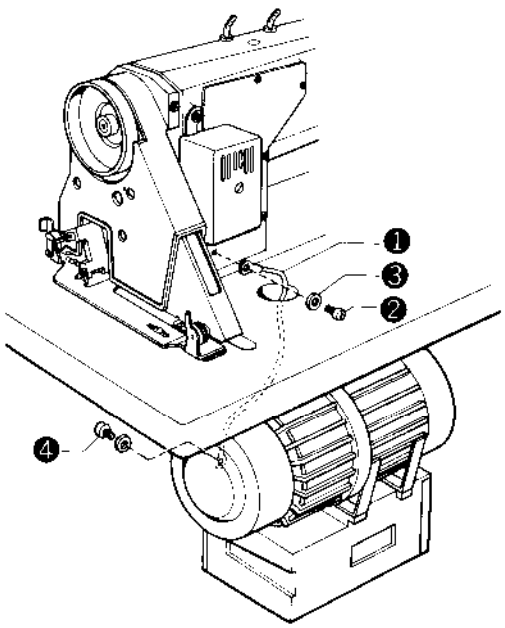




◆ Presser Foot Lift-up Speed (–700)

★ If the thread-trimming device is touched by the needle, and does not return reduce the lift-up speed of the presser foot.

11 Ground Wire Connections



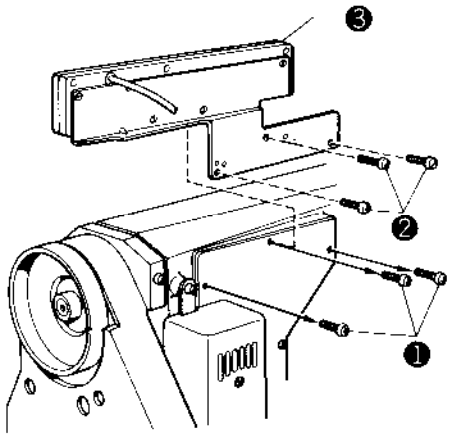
★ Connect the ground wire (in the plastic bag) to the sewing machine head and motor if a motor other than MD-803 or MD-813 is used.

1. Secure the ground wire ❶ to the sewing machine head with screw ❷ and washer ❸.
2. Pass the ground wire ❶ through the hole in the table.
3. Remove the screw ❹ on the front of the motor and connect the ground wire to the motor.

and the valve

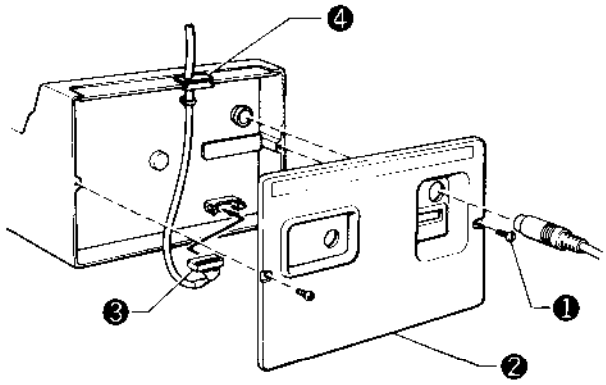
be end to the

12 Operation Box Installation



Installation of the Operational Panel

1. Remove the three set screws ❶ on the back of the arm bed.
2. There are four set screws ❷ provided. Use the larger two of these four.
3. Secure the operation box mounting panel ❸ on the back of the arm bed with the two set screws ❷.



Connecting the cord

1. Remove screw ❶, and remove the face plate ❷.
2. Connect operation panel connector ❸ to the circuit board.
3. Fit the rubber cushion ❹ over the cord, and fit the cord in the control box, being careful not to damage the cord.

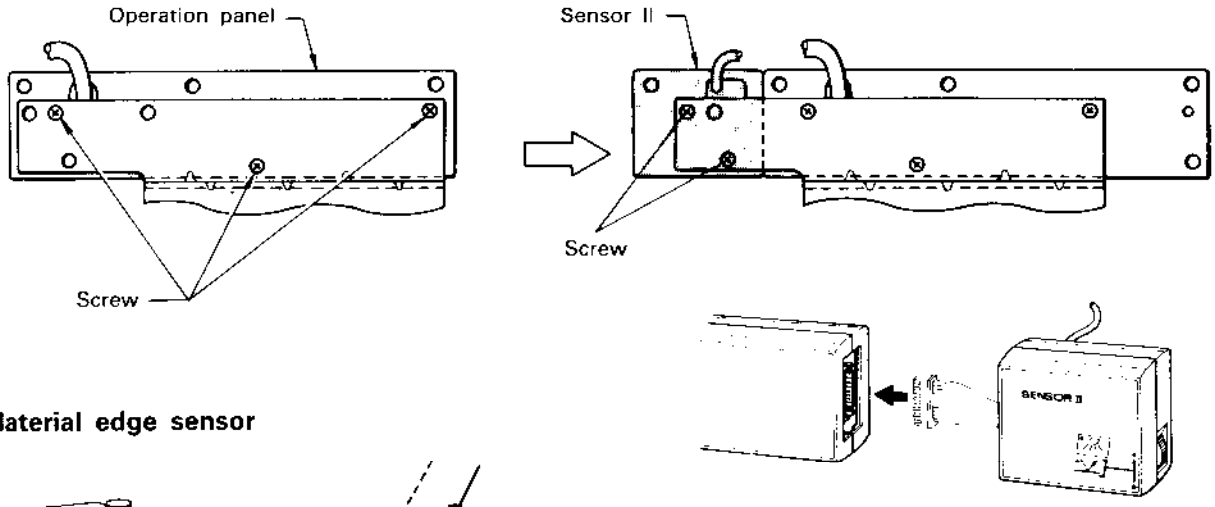
* When removing face plate ❷, unplug the synchronizer.

Models LT2-B842, LT2-B845, LT2-B847, LT2-B848, LT2-B872, LT2-B875

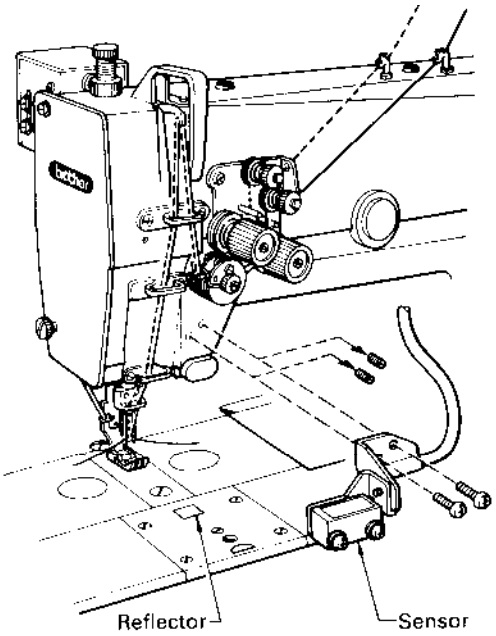
○ Be sure turn the power switch off before installing the material edge sensor.

◆ Installation of Sensor II

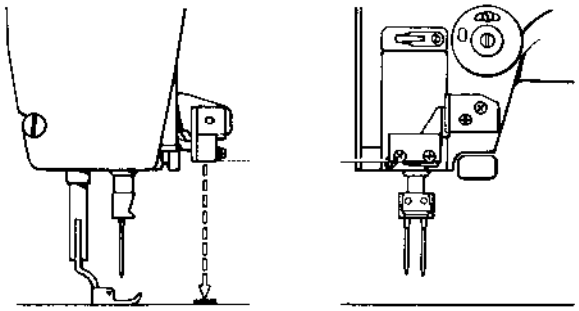
1. Shift the position of the operation panel as shown in the figure below.
2. Remove the rubber cap on the side of the operation panel, and connect the sensor II connector.
3. Secure sensor II with two screws, being careful not to pinch the flat cable.



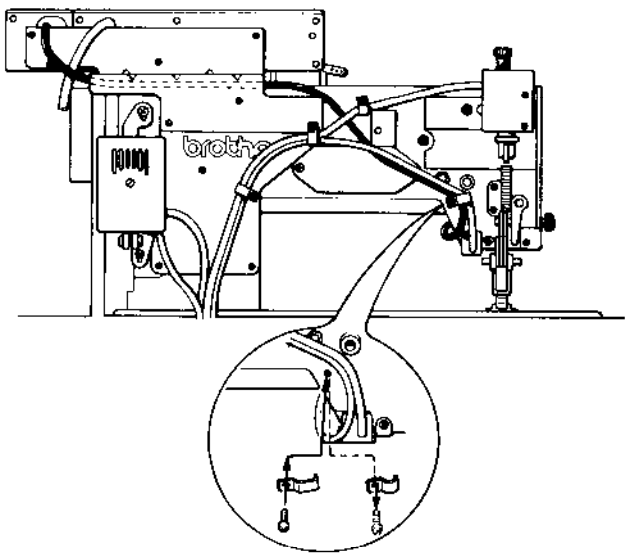
◆ Material edge sensor



※Install the reflector below the sensor.



◆ Connecting the power cord

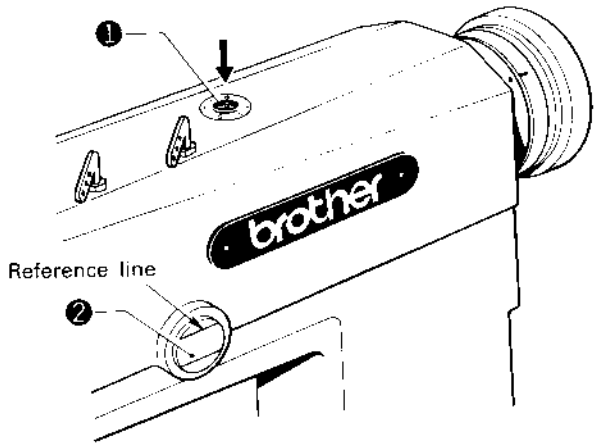


LUBRICATION

★ Use BROTHER oil (white spindle oil)

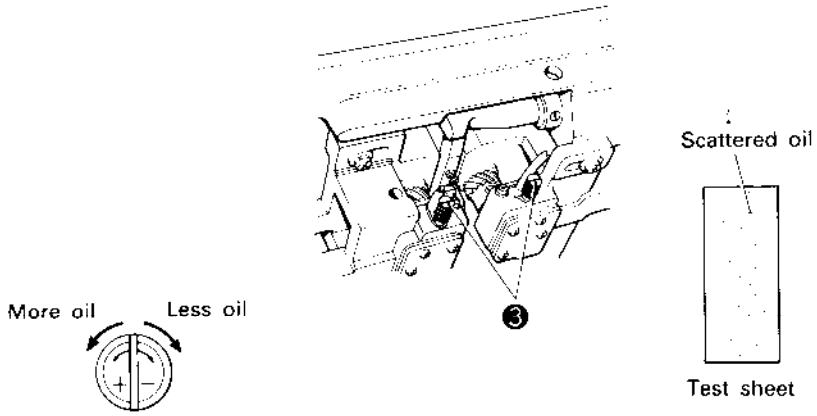
1 Lubrication

1. Filling the oil tank on top of the arm



★ Add oil from oil cap ❶ until it reaches the top reference line in the oil gauge window ❷.
★ Add more oil when the oil level drops to the bottom reference line.

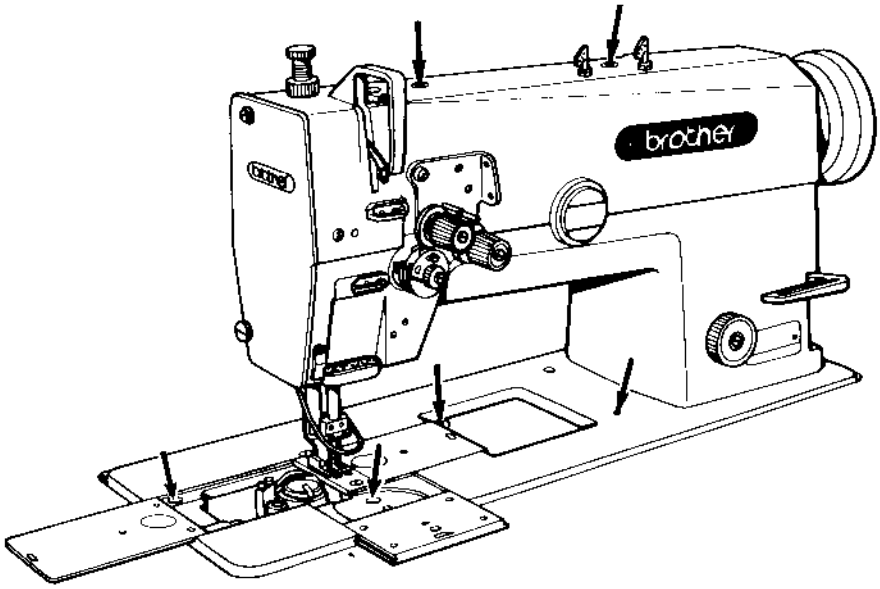
2. Adjustment of oil flow to the rotary hook

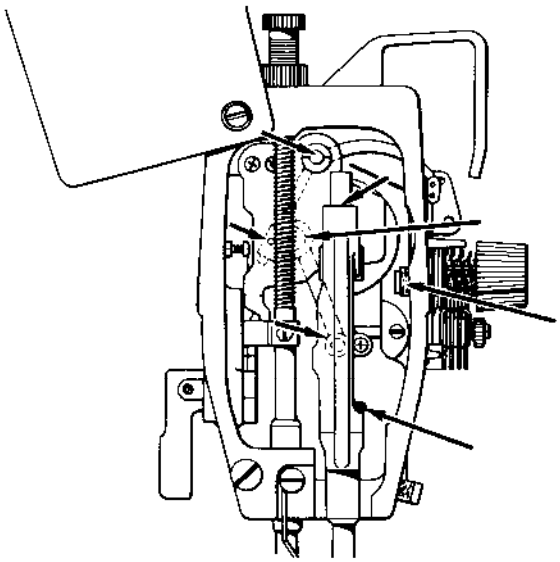


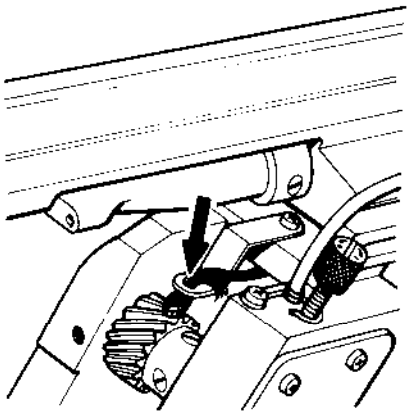
★ When replacing the rotary hook, be sure to turn adjustment screw ❸ to adjust the oil supply to the rotary hook. (The amount of oil scattering from the rotary hook should be as shown on the test sheet above for approximately every 10 seconds.)

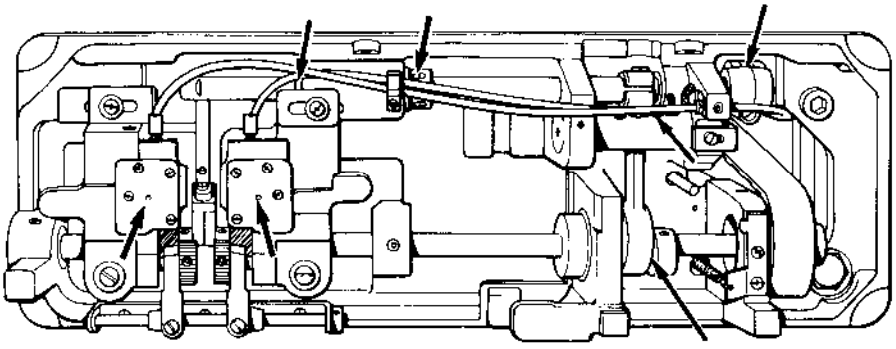
2 Oiling

Before using the machine, be sure to supply a drop or two of oil at each of the points indicated by an arrow.





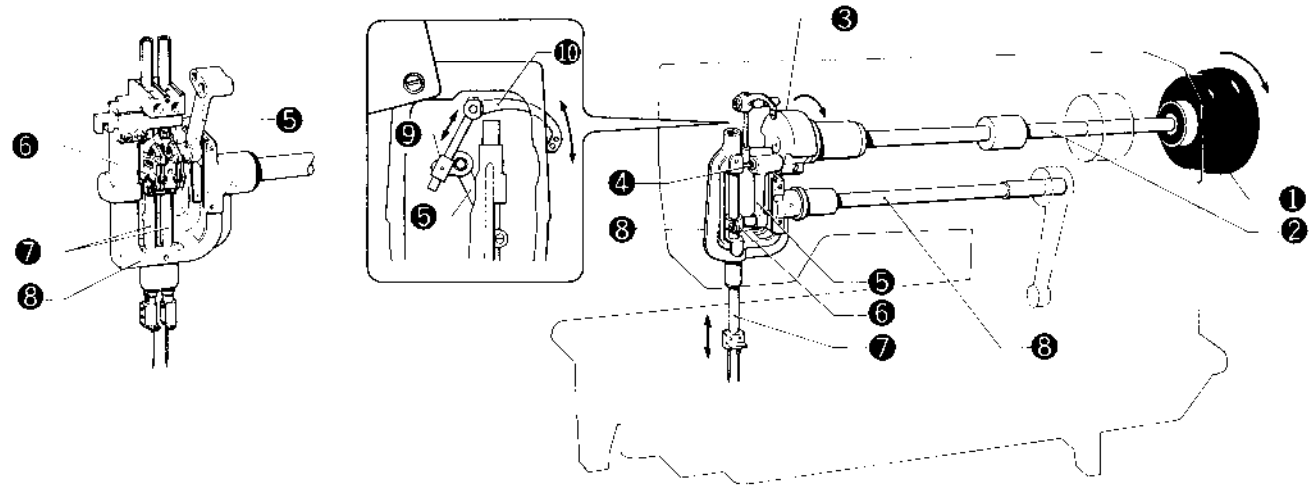




otary hook.
ely every 10

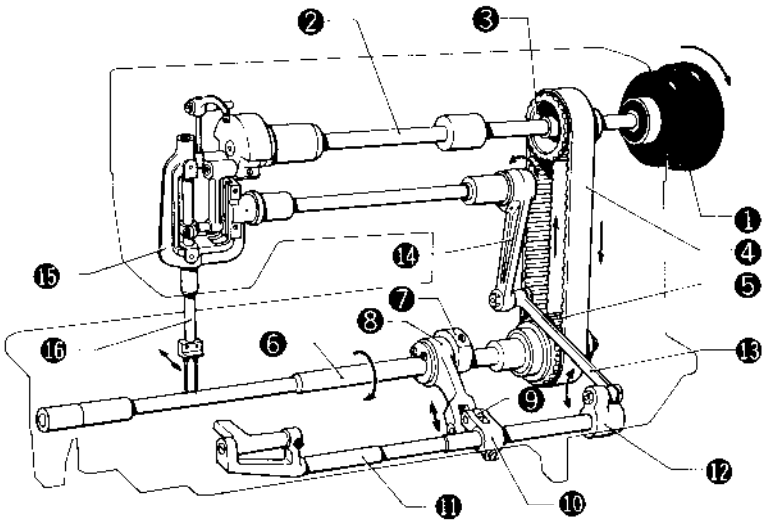
MECHANISM

1 Upper Shaft and Needle Bar Mechanism



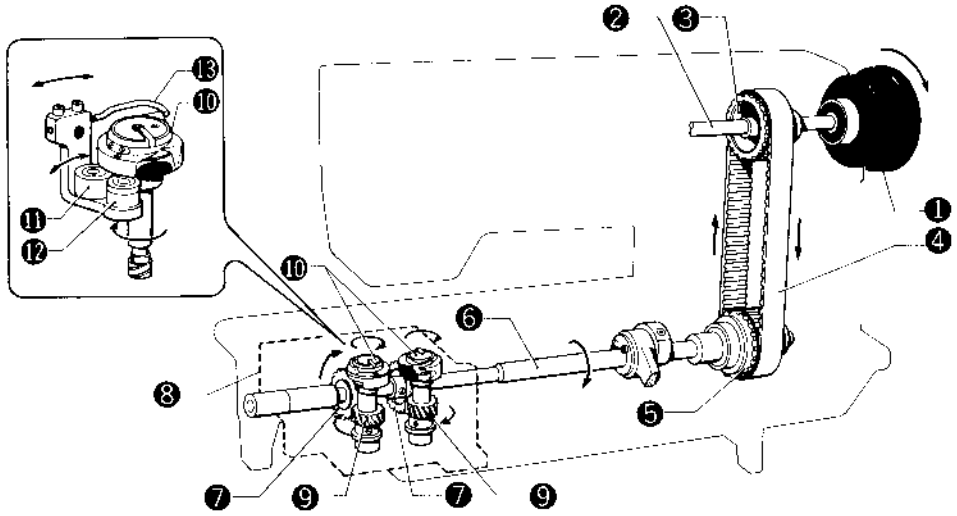
1. When pulley ❶ turns in the arrow direction, its rotating motion is conveyed to upper shaft ❷ to turn counter weight ❸.
2. The motion is conveyed to needle bar crank rod ❺ via needle bar crank ❹ which is connected to counter weight ❸. The shape of arc motion is conveyed to the thread hole in thread take-up lever ❿ via thread take-up lever slide block ❾ which is connected to needle bar crank rod ❺.
3. Needle bar ❼ moves up and down via needle bar clamp ❻ which is connected to needle bar crank rod ❺.
4. Needle bar ❼ is guided by needle bar support ❽.
   (The arc motion is conveyed to the thread hole in thread take-up lever ❿ via thread take-up lever slide block ❾ which is connected to needle bar crank rod ❺).

2 Needle Feed Mechanism



1. When pulley ❶ turns in the arrow direction, its rotating motion is conveyed to upper shaft ❷ to turn timing belt wheel upper ❸.
2. The motion is conveyed to timing belt wheel lower ❺ via timing belt ❹.
3. Eccentric wheel ❼ which is connected to lower shaft ❻ rotates via timing belt wheel lower ❺ and lower shaft ❻.
4. Level feed arm ❿ moves in the shape of arc via eccentric wheel ❼, level feed connecting rod ❽ and level feed connecting link ❾.
5. The motion is conveyed to needle bar rock crank ⓬ via feed rock shaft ⓫.
6. Needle bar support ⓯ moves back and forth via needle bar rock link ⓭ and needle bar connecting rod ⓮.
7. Needle bar ⓰ which is connected to needle bar support ⓯ moves back and forth.

3 Lower Shaft and Rotary Hook Mechanism

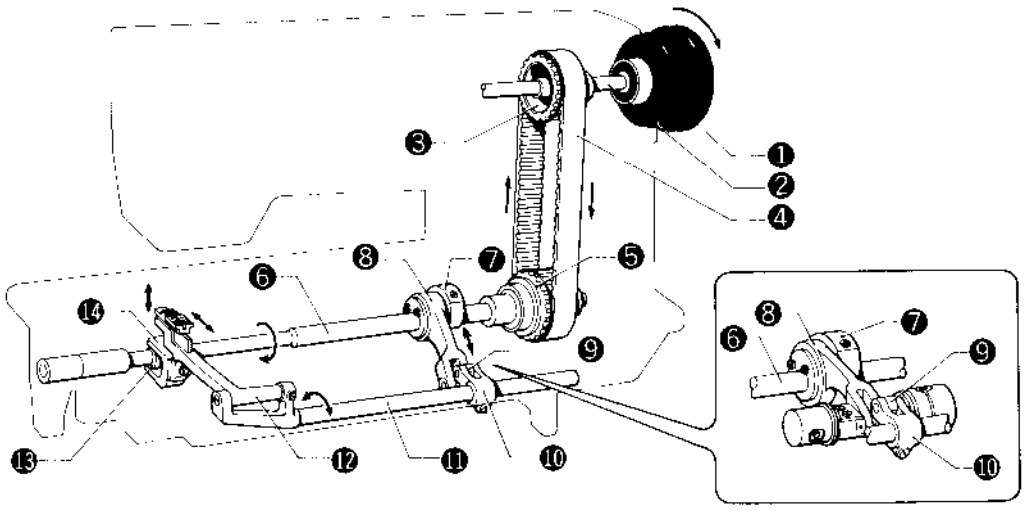


1. When pulley ❶ turns in the arrow direction, its rotating motion is conveyed to upper shaft ❷ to turn timing belt wheel upper ❸.
2. The motion is conveyed to timing belt wheel lower ❺ via timing belt ❹.
3. As lower shaft ❻ which is connected to timing belt wheel lower ❺ rotates, spiral gear ❼ is turned.
4. Rotary hook ❿ rotates via pinion gear ❾ which is connected to rotary hook base ❽.

Opener

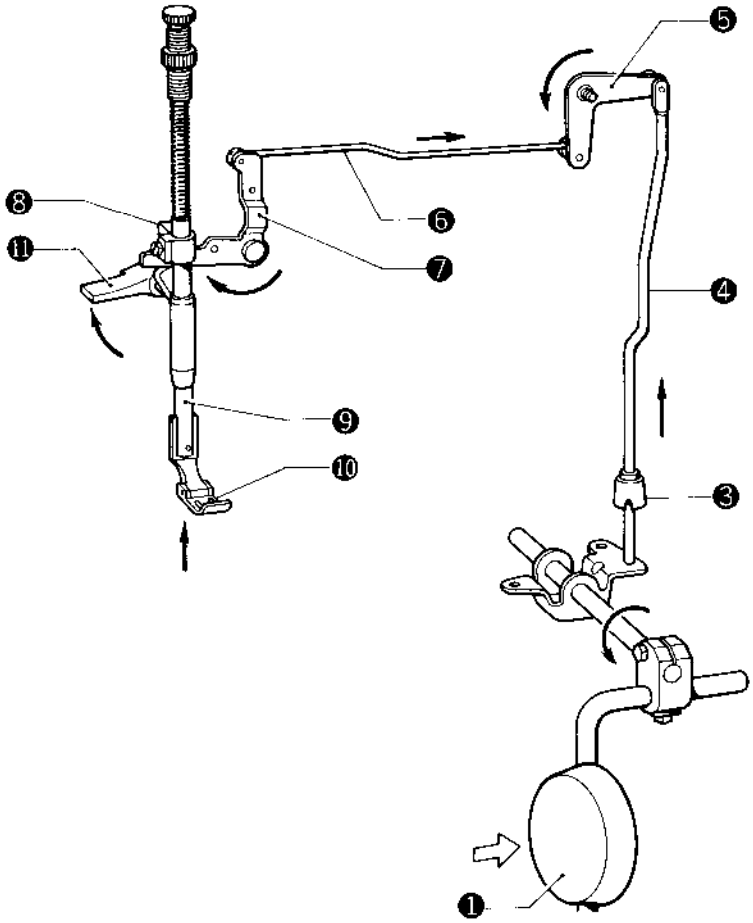
1. Opener crank ⓬ moves in the shape of an arc via rotary hook ❿ and opener link ⓫.
2. Opener ⓭ which is connected to opener crank ⓬ moves in the shape of an arc.

4 Feed Mechanism



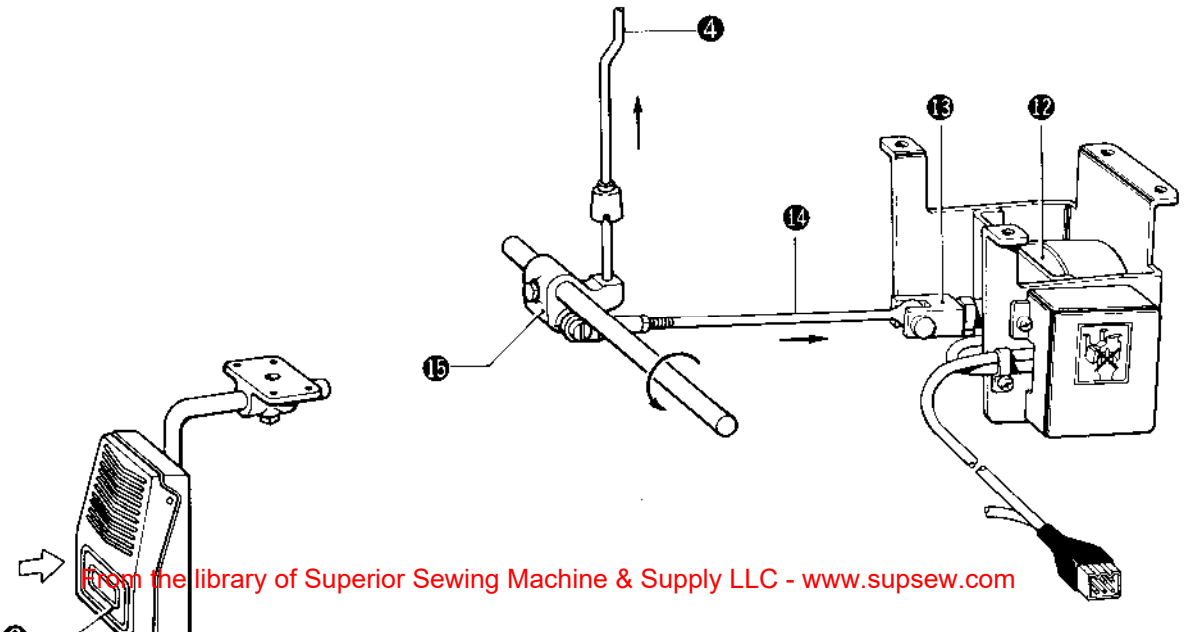
1. When pulley ❶ turns in the arrow direction, its rotating motion is conveyed to upper shaft ❷ to turn timing belt wheel upper ❸.
2. The motion is conveyed to timing belt wheel lower ❺ via timing belt ❹.
3. Eccentric wheel ❼ which is connected to lower shaft ❻ rotates via timing belt wheel lower ❺ and lower shaft ❻.
4. Level feed arm ❿ moves in the shape of an arc via eccentric wheel ❼, level feed connecting rod ❽ and level feed connecting link ❾.
5. Feed bar ⓬ moves back and forth via feed rock shaft ⓫.
6. Feed bar fork ⓮ moves up and down by vertical feed eccentric wheel ⓭ which is connected to lower shaft ❻.
7. The movement of feed dog is fixed by the combination of movements in item 5 and item 6.

5 Presser Mechanism

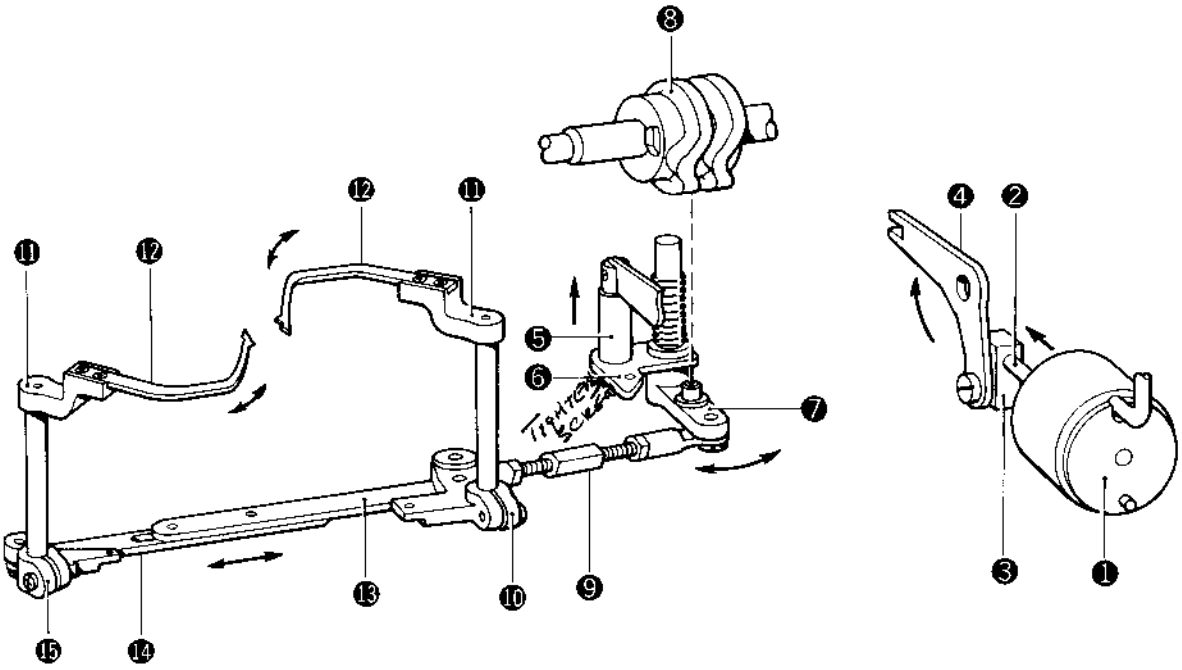


1. When knee lifter pad ❶ or knee switch ❷ (–900 models) is pressed, knee lifter complying bar ❸ rises, driving knee lifter bar ❹ in the direction of the arrow.
2. Knee lifter bar ❹ raises presser bar clamp ❽ via knee lifter lever ❺, knee lifter connecting rod ❻, and knee lifter lifting lever ❼.
3. Presser bar ❾ connected to presser bar clamp ❽ and presser foot ❿ are raised.
   (Presser bar ❾ and presser foot ❿ rise together when presser bar clamp ❽ is raised by presser bar lifter lever ⓫.)

[–900]
When knee switch ❷ is pressed, presser foot lifting solenoid ⓬ operates, thus lifting couple ⓭, adjustment rod ⓮, and presser bar lifter link ⓯.
Presser bar lifter link ⓯ lifts knee lifter bar ❹.



6 Thread Trimmer Mechanism

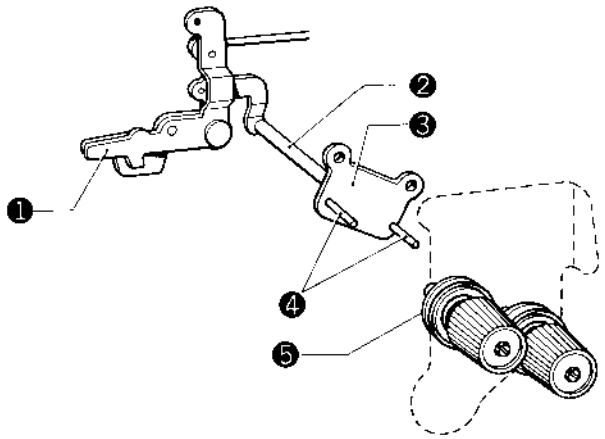


1. When thread trimmer solenoid ❶ becomes ON due to the thread trimmer signal, plunger ❷ is pulled in the direction of the arrow.
2. Thread trimming solenoid lever ❹ is driven via thread trimming solenoid joint ❸ on plunger ❷.
3. Thread trimming solenoid lever ❹ lifts thread trimming driving rod ❺.
4. Knife main lever assembly ❼ is raised in the direction of the arrow by the fork of thread trimming driving rod plate ❻, which is mounted on the bottom end of thread trimming driving rod ❺. The roller on knife main lever assembly ❼ enters the channel in thread trimming cam ❽.
5. Knife main lever assembly ❼ moves according to the channel in thread trimming cam ❽.
6. Thread trimming lever R ❿ is driven via length adjusting rod ❾, which is mounted on knife main lever assembly ❼.
7. Thread trimming lever R ❿ drives movable knife lever bracket ⓫. (Movable knife ⓬ on the right side)
8. Thread trimming lever L ⓭ is driven by thread trimming lever R ❿ via thread trimming connecting rods R ⓭ and L ⓮.
9. Thread trimming lever L ⓯ transfers motion to the movable knife lever ⓫ (the left movable knife ⓬).
10. The movable knives ⓬ are installed to thread trimming lever R ❿, the movable knife levers ⓫, and thread trimming lever L ⓯.
11. The roller on knife main lever assembly ❼ follows the channel in thread trimming cam ❽ and returns movable knives ⓬.
12. After movable knives ⓬ return, thread trimming solenoid ❶ becomes OFF, and the roller is released from the channel in thread trimming cam ❽.

7 Tension Release Mechanism

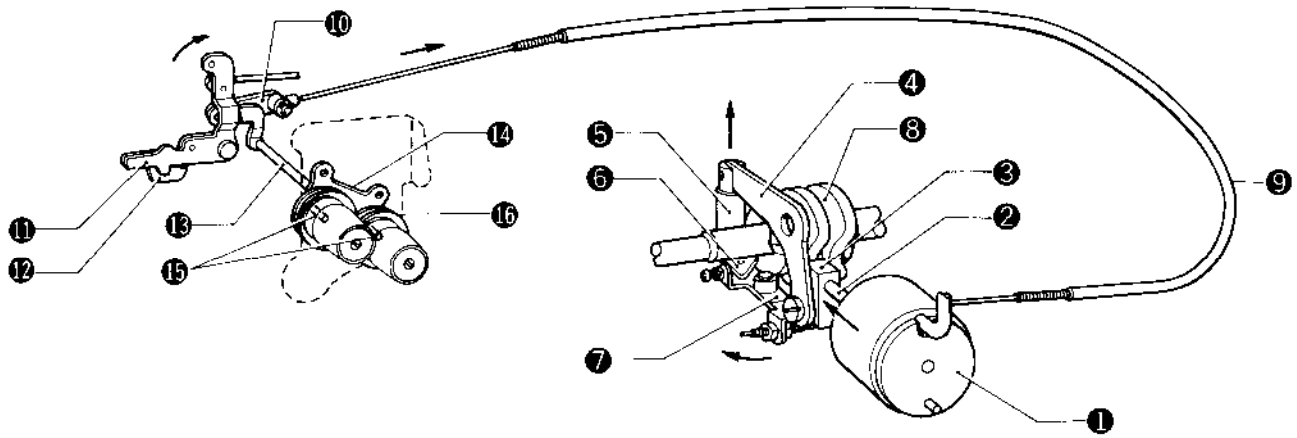
[Standard]

The tension release mechanism operates when knee lifter lifting lever ❶ operates.



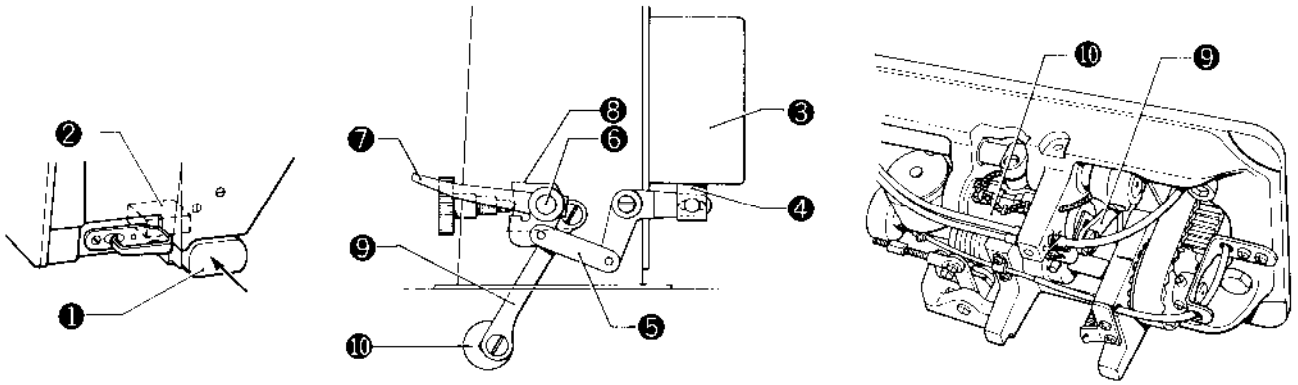
1. When lifter lifting lever ❶ operates, press tension release rod ❷.
2. The end of tension release rod ❷ presses the two tension release pins ❹ via tension release plate ❸.
3. Tension discs ❺ are spread by tension release pins ❹.

[Thread trimmer]



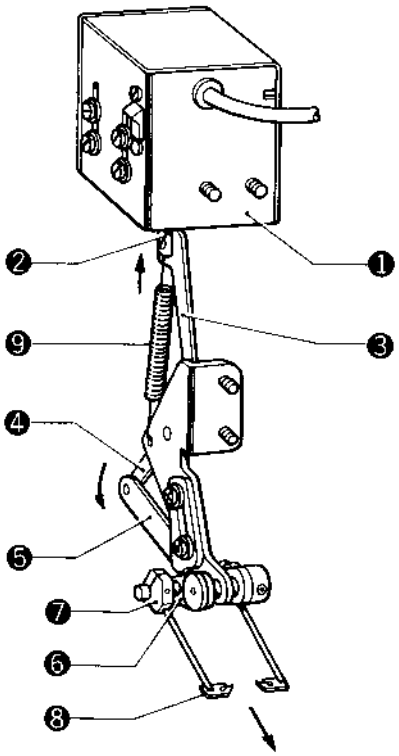
1. When thread trimmer solenoid ❶ becomes ON due to the thread trimmer signal, plunger ❷ is pulled in the direction of the arrow.
2. Thread trimming solenoid lever ❹ is driven via thread trimming solenoid joint ❸ on plunger ❷.
3. Thread trimming solenoid lever ❹ lifts thread trimming driving rod ❺.
4. Thread trimming driving rod plate ❻, which is mounted on the bottom end of thread trimming driving rod ❺, and tension releasing lever assembly ❼ are raised in the direction of the arrow.
5. The roller on tension releasing lever assembly ❼ is pressed by the tension release cam of thread trimming cam ❽, and operates in the direction of the arrow.
6. Tension release crank ❿ is driven via tension releasing wire ❾ by the operation of tension releasing lever assembly ❼.
7. Tension release rod ⓭ is pressed via tension releasing plate ⓫ and knee lifter lifting lever ⓬ by the operation of tension release crank ❿.
8. The end of tension release rod ⓭ presses the two tension release pins ⓯ via tension release plate ⓮.
9. Tension discs ⓰ are spread by tension release pins ⓯.
10. When thread trimming solenoid ❶ becomes OFF, tension releasing lever assembly ❼ is released from the side of thread trimming cam ❽, and tension discs ⓰ close.

8 Quick-back Mechanism



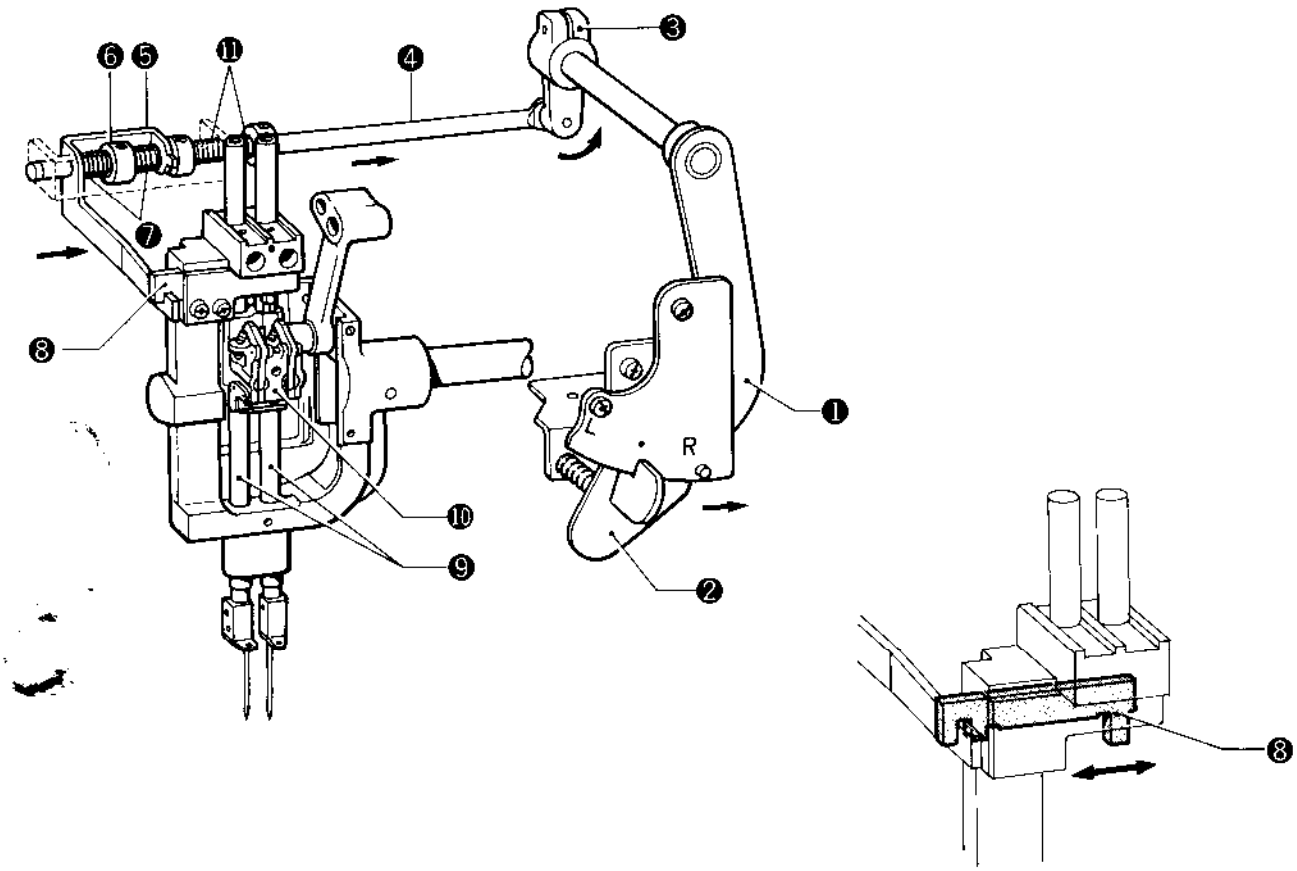
1. When the actuator ❶ is pressed, a signal from the microswitch ❷ activates the reverse solenoid ❸ (ON).
2. Reverse solenoid plunger ❹ operates, driving reverse shaft ❻ via solenoid lever assembly ❺.
3. When reverse shaft ❻ descends, feed regulator ❽ dis driven via reverse lever ❼.
4. The angle of feed regulator ❽ (action is transferred from feed regulator connecting link ❾ to feed regulator assembly ❿) determines whether feed regulator assembly ❿ is set to forward or reverse sewing.

9 Thread Wiper Assembly



1. Thread wiper solenoid ❶ continues to operate (ON) for 10~100 ms after the thread wiper solenoid is released.
2. Plunger ❷ operates, driving solenoid link ❸, thread wiper links A ❹ and B ❺.
3. Thread wiper link B ❺ is guided by link C ❻.
4. Thread wiper supporter ❼ and thread wiper ❽ mounted to link B ❺ advance.
5. When the thread wiper solenoid becomes OFF, spring ❾ returns thread wiper ❽ to the original position.

10 Needle Bar (Left, Right) Stop Mechanism (B845, B848, B875)



◆ To stop the right needle bar

1. Move stop lever assembly ❶ to the right.
   (Push lever ❷ will rise, catch on the step on the back of the stop lever, and stop.)
2. Lever shaft arm ❹ is moved to the right via lever shaft arm ❸ on stop lever assembly ❶.
3. Slide bearing board assembly ❺ fit on lever shaft arm ❹ is moved right via collar ❻ and spring ❼.
4. Slide bearing board assembly ❺ drives sliding element ❽ to the right.
5. When sliding element ❽ meets the clutch arm of needle bar clamp assembly ❿ on needle bar ❾, the clutch in needle bar clamp assembly ❿ is released from needle bar ❾, and needle bar ❾ stops.
   *To stop the left side needle bar, set stop lever assembly ❶ to the left.

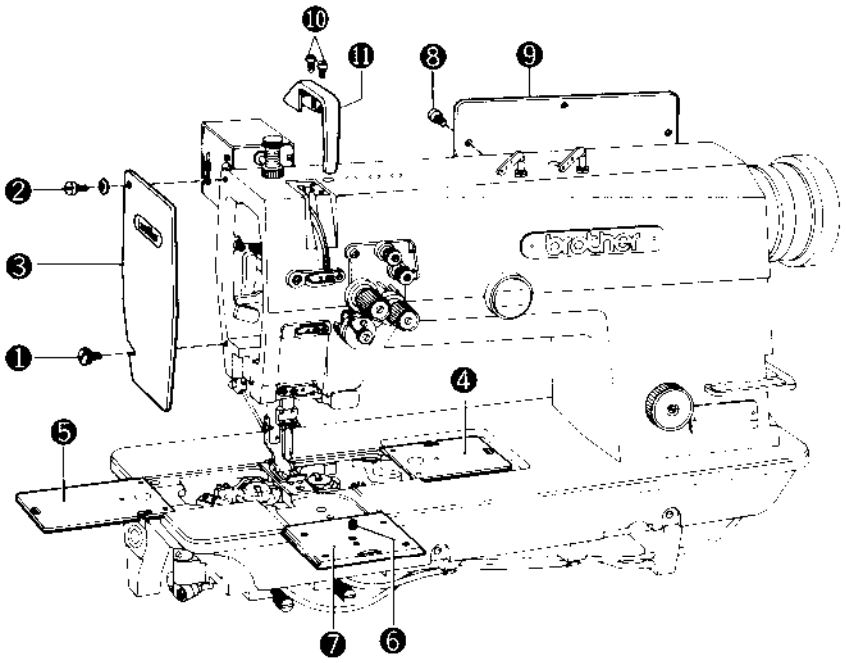
◆ To release needle bar stop

1. When push lever ❷ is pressed, push lever ❷ is released from the step on the back of stop lever assembly ❶, and is returned to the original position by spring ⓫.
2. When lever ❶ is returned to the original position by spring ⓫, sliding element ❽ is returned via lever shaft ❹ and slide bearing board assembly ❺.
3. The release pin of needle bar clamp assembly ❿ is pressed by the step on sliding element ❽, and the clutch once again engages on needle bar ❾.
4. Needle bar ❾ can now be raised or lowered.

DISASSEMBLY

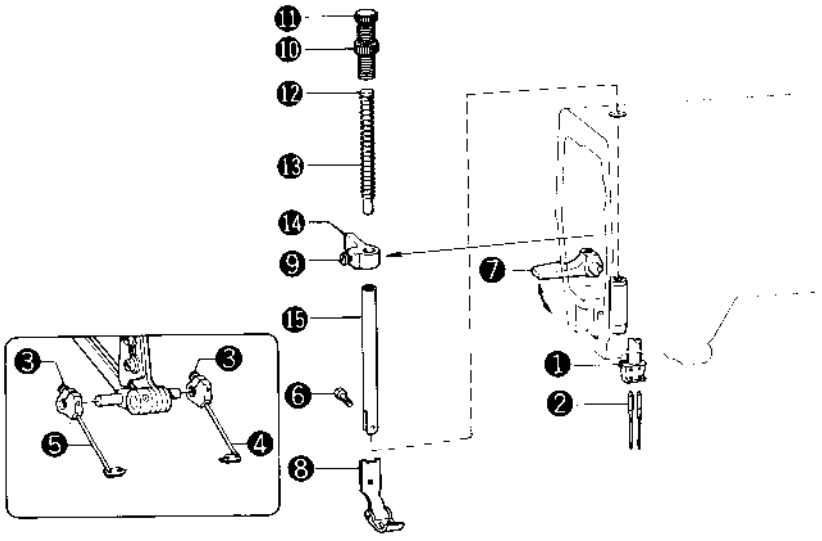
★ These disassembly directions are based on model LT2-B842-403. Use these directions with other twin needle, lockstitch machines.

1 Covers



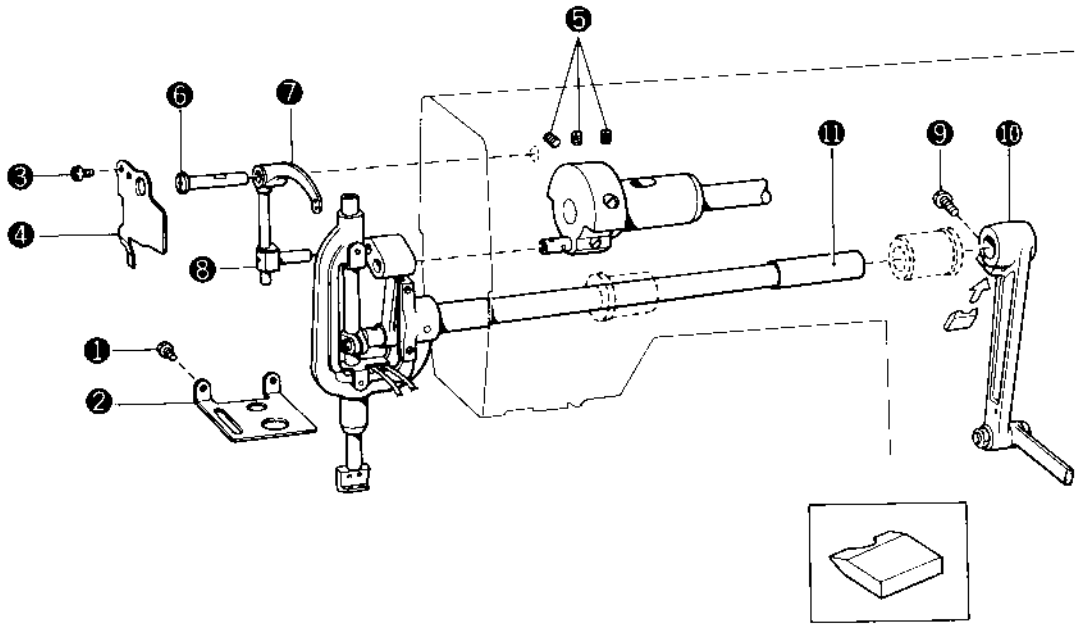
1. Loosen the thumb screw ❶, remove the screw ❷, and remove the face plate ❸.
   (Be careful not to lose the washer on the screw ❷.)
   On models B845, 848, and 875, remove the lock screws.
2. Remove slide plates R ❹ and L ❺.
3. Loosen screw ❻, tilt the machine slightly, and then remove slide plate F ❼.
4. Remove the seven screws ❽, and remove the rear cover ❾.
5. Remove the two screws ❿ and remove the thread take-up cover ⓫.

2 Presser Assembly



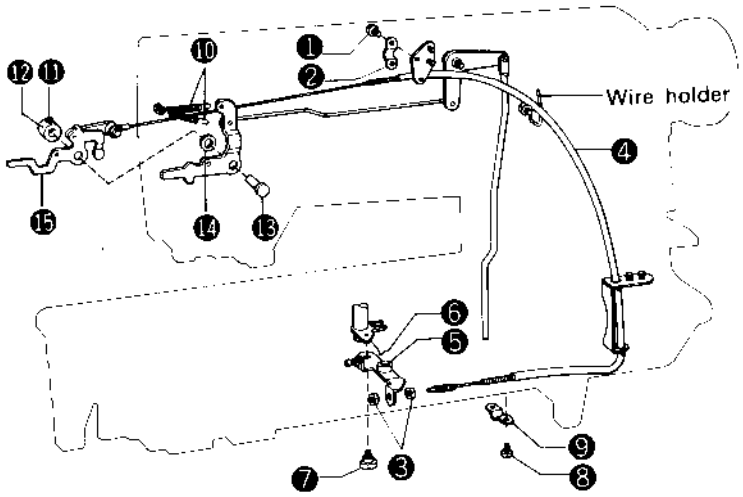
1. Loosen the two screws ❶, and remove the two needles ❷.
2. Loosen the two screws ❸, and remove thread wipers R ❹, and L ❺. (Remove as a set.)
3. Remove the screw ❻, and raise presser bar lifter ❼, and then remove presser foot ❽.
4. Lower the presser bar lifter ❼, and loosen the presser bar guide bracket screw ❾.
5. Loosen the presser adjustment nut ❿, and remove the presser adjustment screw ⓫.
6. Remove the presser spring guide ⓬, presser spring ⓭, presser bar guide bracket ⓮, and presser bar ⓯.

[3] Needle Bar Rocking Mechanism



1. Remove two screws ❶, and remove dust plate ❷.
※ If the thread wiper is equipped, loosen the screw that holds the thread wiper link holder.
2. Remove the two screws ❸, and remove the interrupt plate ❹.
Turn the machine pulley and then lower the needle bar to remove it.
3. Loosen the three screws ❺, and remove stud ❻. (Remove the rubber cap.)
4. Remove the thread take-up lever ❼ and thread take-up lever slide block ❽.
5. Loosen the screw ❾, drive a wedge into needle bar rock connecting rod ❿, and remove the needle bar rock shaft assembly ⓫.

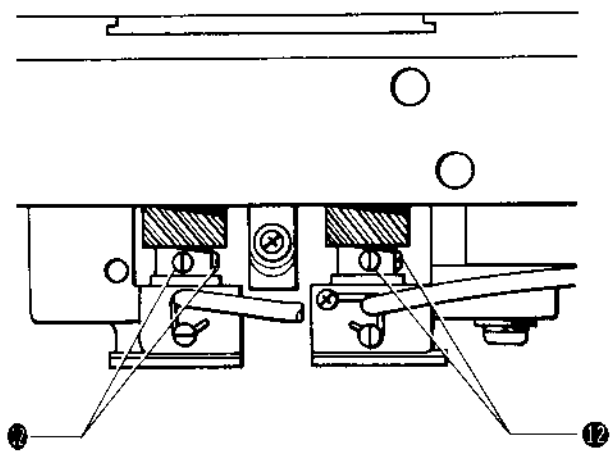
[4] Tension Release Mechanism

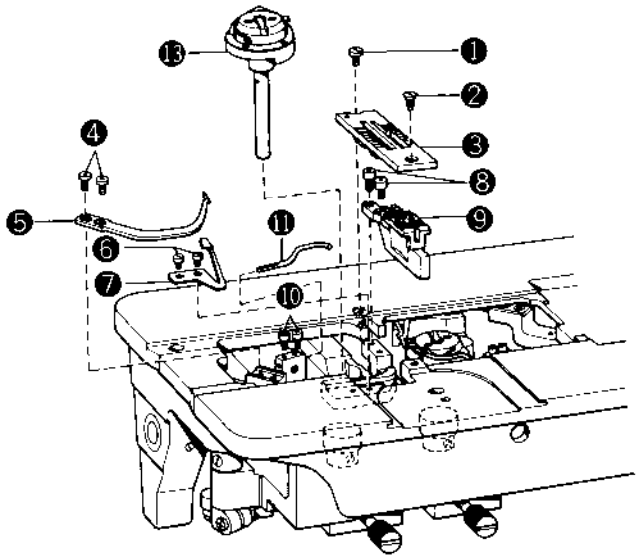


1. Remove the two screws ❶, and remove the tension releasing wire holder ❷.
2. Tilt the machine.
3. Remove the nuts ❸, and then disconnect the tension release wire ❹ from the tension release lever assembly ❺.
4. Remove the tension release lever spring ❻ applied to the tension release lever assembly ❺.
5. Remove the screw ❼, and remove the tension release lever assembly ❺.
6. Remove the two screws ❽, and remove the tension release wire holder ❾.
7. Remove the two presser foot lift lever springs ❿.
8. Loosen the two screws ⓫, and remove the set collar ⓬, and the presser foot lift lever shaft ⓭ and washer ⓮.
9. Disconnect the tension release wire ❹ from the wire holder, and remove together with the presser foot lift lever ⓯.

5 Rotary Hook, Lower Shaft, and Thread Trimmer Assemblies

1. Rotary hook assembly





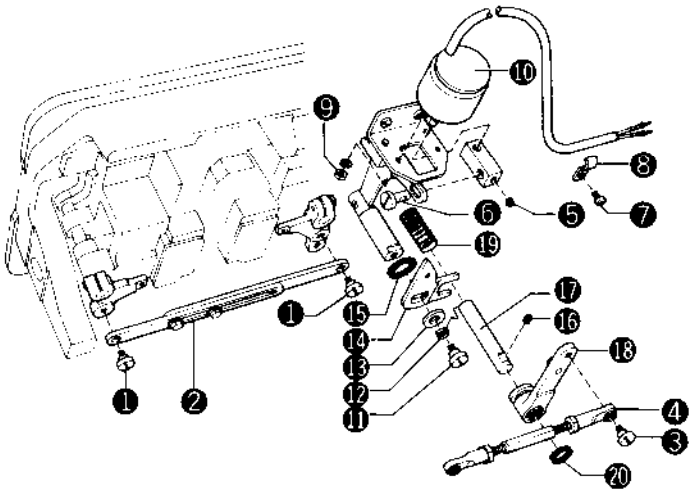
1. Loosen the screw ❶, remove the screw ❷, and remove the needle plate ❸.
2. Remove the two screws ❹, and then remove the two (left and right) movable knives ❺.
3. Remove the two screws ❻, and then remove the left and right bobbin thread retention springs ❼. (right and left)
4. Remove the two screws ❽, and remove the feed dog ❾.
5. Loosen the two screws ❿, and remove the bobbin case openers ⓫ (right and left).

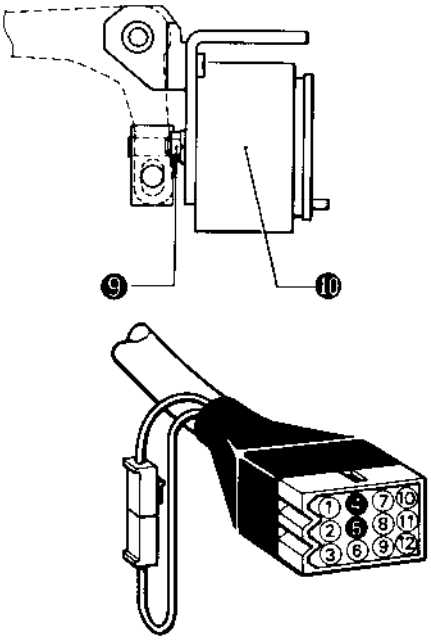
※ For a gauge width of 3/16 or less, remove after first opening the rotary hook base.

6. Tilt the machine.
7. Loosen three screws ⓬, and remove rotary hooks ⓭ (right and left).

※ When assembling the left and right rotary hooks ⓭, be sure that they are in the same (left and right) positions as they were before disassembly.

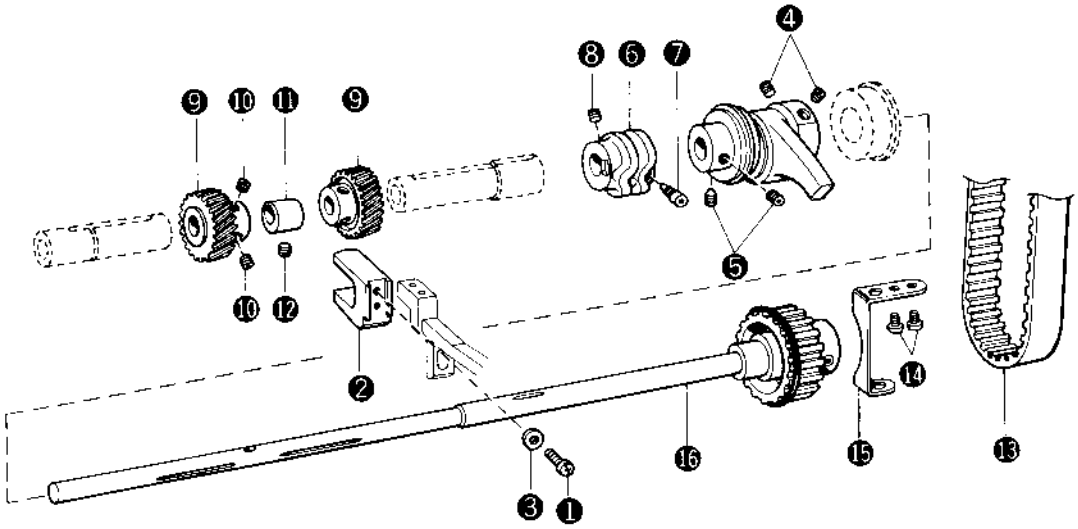
2. Thread trimmer assembly





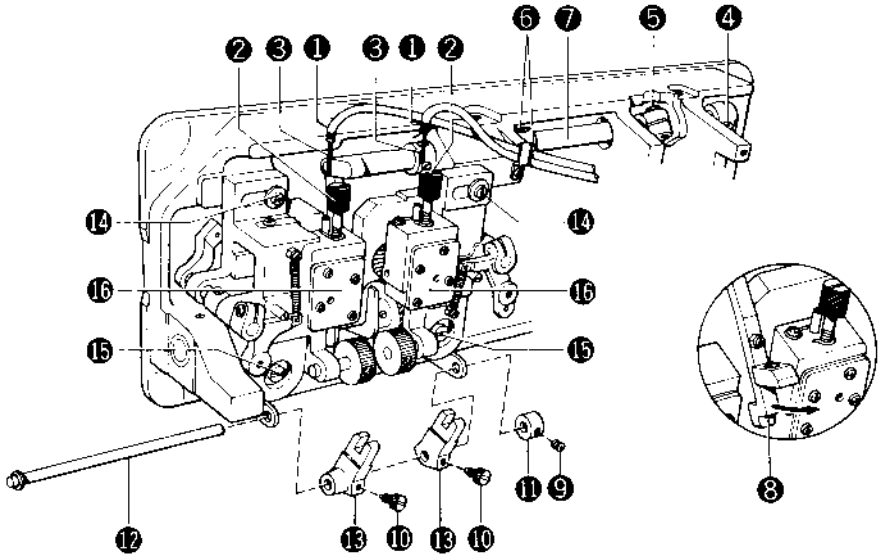
1. Tilt the machine.
2. Remove the two screws ❶, and remove the thread trimming connecting rod ❷.
3. Remove the screw ❸ on the right, and remove length adjusting rod ❹.
4. Loosen the screw ❺, and remove the feed regulator connecting link shaft ❻.
5. Loosen the screw ❼, and remove the thread trimming solenoid cord from cord holder ❽.
6. Disconnect the pin terminal from the 12P connectors No.4 and No.5.
7. Remove the two nuts ❾, and spring washers, and remove the thread trimming solenoid ❿
8. Remove the screw ⓫, and remove the tension release lever spring ⓬, washer ⓭, thread trimming setting plate ⓮, and rubber cushion ⓯.
9. Loosen screw ⓰, and remove knife main lever shaft ⓱, knife main lever assembly ⓲, knife main lever spring ⓳, and rubber cushion ⓴.

6 Lower Shaft Assembly



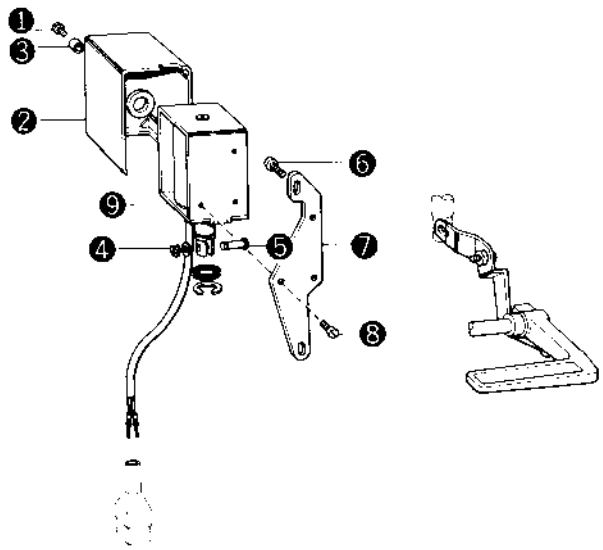
1. Remove the screw ❶, and remove the feed bar fork ❷ and washer ❸.
2. Loosen the two screws ❹ in the level feed eccentric wheel.
3. Loosen the two screws ❺ in the bushing.
4. Loosen the screw ❼ and screw ❽ in the knife driving cam ❻.
5. Loosen the three screws ❿ in the spiral gears ❾ (right and left).
6. Loosen the screw ⓬ in the vertical feed eccentric wheel ⓫.
7. Remove the timing belt ⓭.
8. Remove the two screws ⓮, and remove the wire guide ⓯.
9. Remove the lower shaft ⓰.

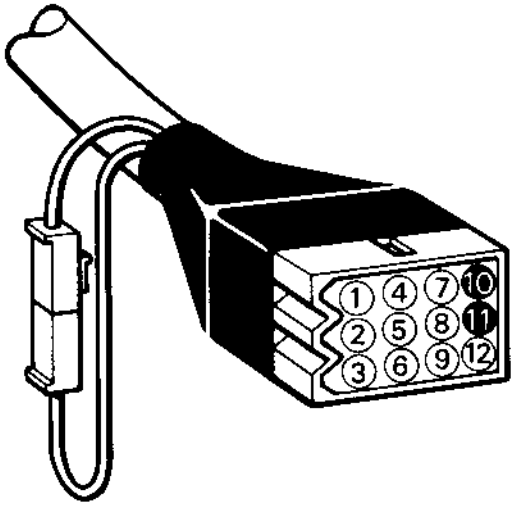
Removal of the rotary hook base



1. Remove the two tube stoppers ❶.
2. Loosen the two adjustment screws ❷.
3. Remove the wick ❸.
4. Loosen the needle bar rock crank's screw ❹, the level feed arm's screw ❺, and the set collar's two screws ❻.
5. Turn the level feed rock shaft ❼, and raise the feed bar ❽.
6. Loosen the screw ❾ and thumb screw ❿, and remove the set collar ⓫, the needle clearance adjustment bar ⓬, and the left and right needle clearance adjustment forks ⓭.
7. Remove the screw ⓮, loosen the screw ⓯, and remove the rotary hook base ⓰.
(If the thread trimming connecting rod is not removed, remove it.)

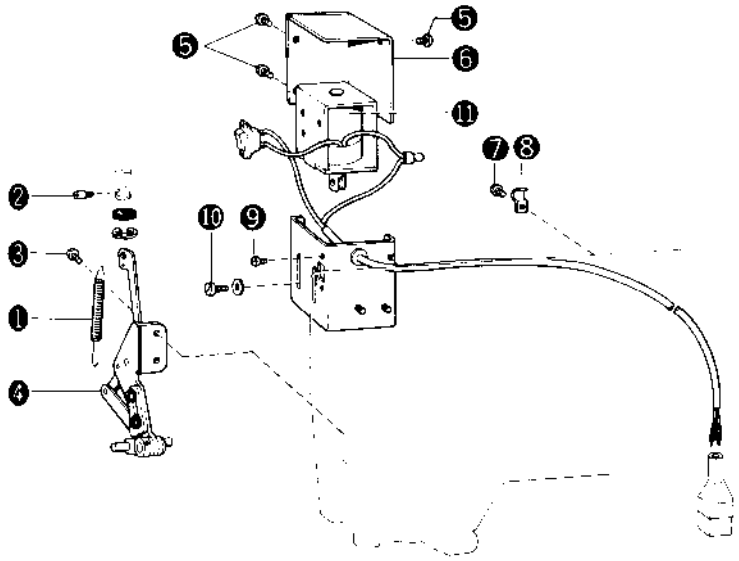
7 Quick Reverse Assembly

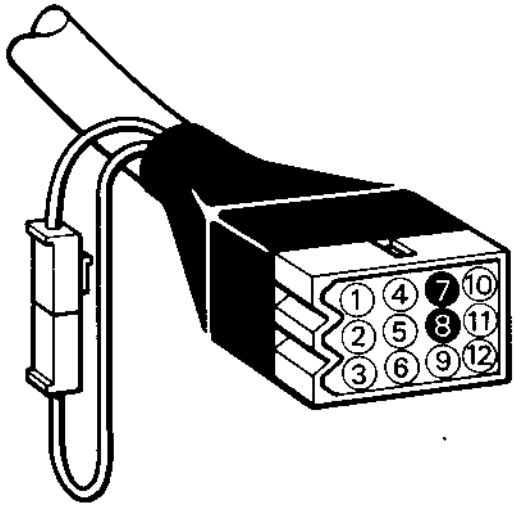




1. Right the machine.
2. Remove the screw ❶, and remove the quick reverse solenoid cover ❷ and collar ❸.
3. Remove stop ring ❹, and remove pin ❺.
4. Remove two screws ❻, and remove quick reverse solenoid bracket assembly ❼.
5. Remove three screws ❽, and remove reverse solenoid ❾.
6. Disconnect the pin terminals from 12P connector pins No.10 and No.11.

8 Thread Wiper Mechanism (Machines with Automatic Thread Trimmer)



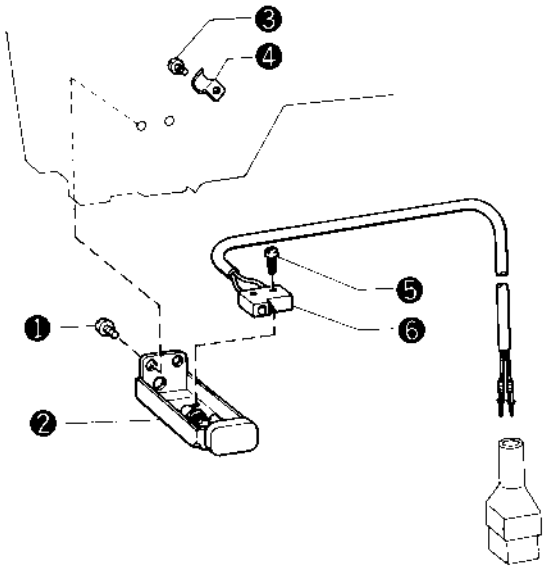


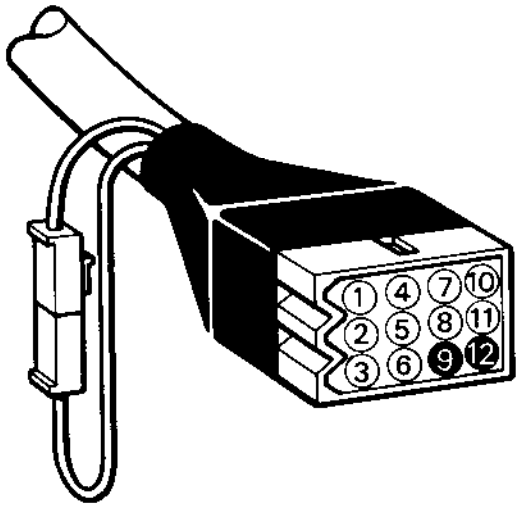
1. Remove the thread wiper spring ❶.
2. Remove the plunger pin ❷.
3. Remove the two screws ❸, and remove the thread wiper link assembly ❹.
4. Remove the three screws ❺, and remove the solenoid cover ❻.
5. Remove the three screws ❼, and remove the three cord holders ❽.
   (Remove at one place only if the side panel is removed.)
6. Remove the four screws ❾ (two for the switch) and ❿, and remove the solenoid ⓫.
7. Disconnect the pin terminal from the 12P connectors (No.7 and 8).

crews ❻.

, and the left

[9] Quick-Reverse Switch Assembly

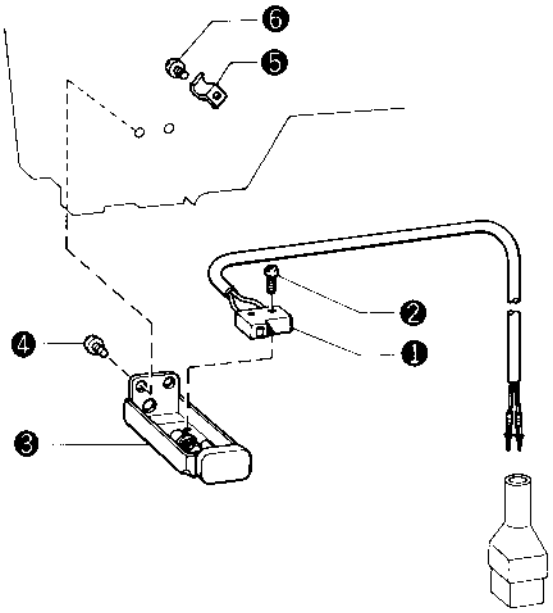


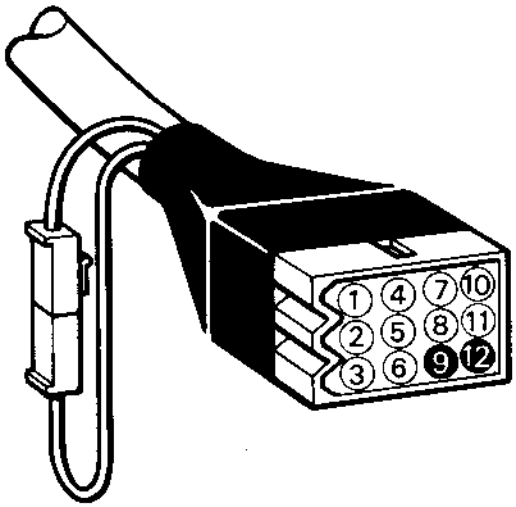


1. Loosen the two screws ❶, and remove the actuator assembly ❷.
2. Remove the screw ❸, and remove the cord holder ❹.
3. Remove the two screws ❺, and remove the microswitch ❻.
4. Disconnect the pin terminal from the 12P connectors (No.9 and No.12).

ASSEMBLY AND ADJUSTMENT

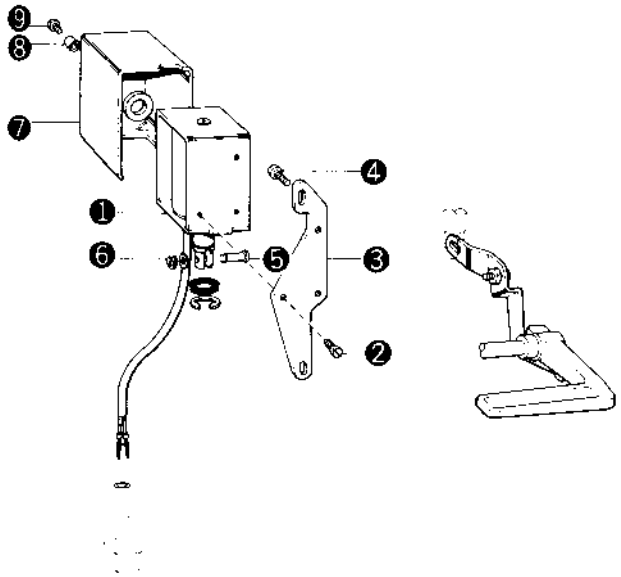
1 Quick-Reverse Switch Assembly

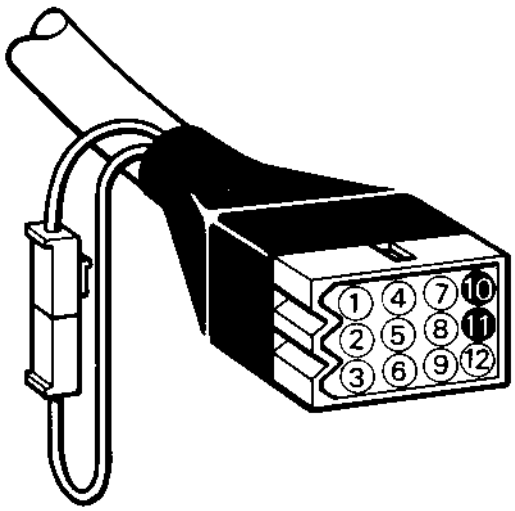




1. Install the microswitch ❶ with the two screws ❷.
2. Install the actuator assembly ❸ with the two screws ❹.
3. Install the quick-reverse switch cord by using the cord holder ❺ and the screw ❻.
4. Connect the pin terminals to 12P connectors No.9 and No.12.

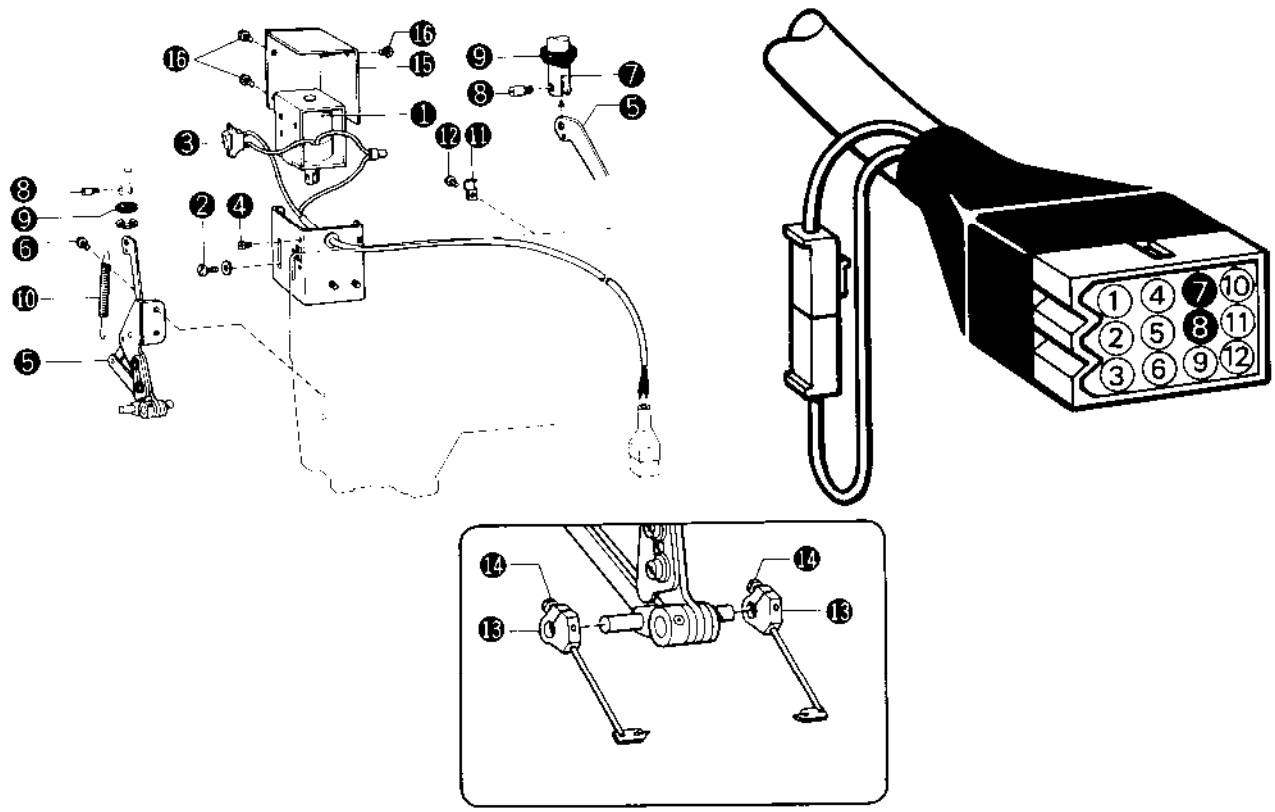
2 Quick-Reverse Assembly





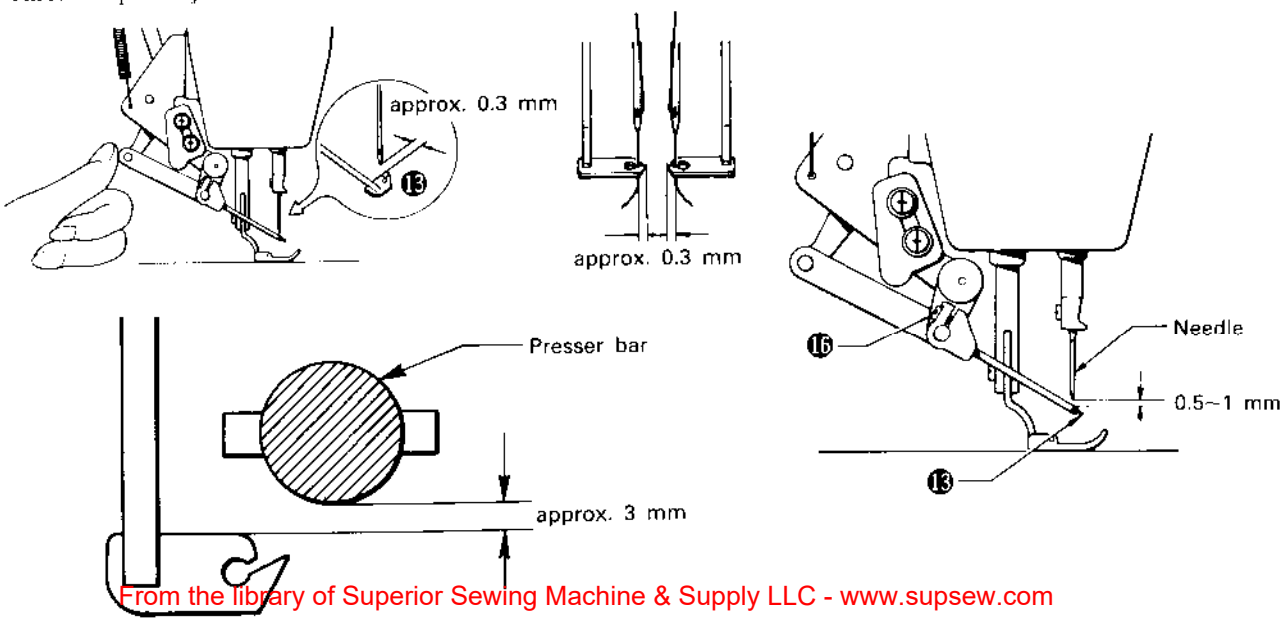
1. Install the quick-reverse solenoid ❶ with the three screws ❷.
2. Install the quick-reverse solenoid bracket assembly ❸ with the two screws ❹.
3. Secure the connecting pin ❺ with stop ring E ❻.
4. Set the feed adjustment dial to a position one-half pitch backward from the maximum setting. Then move the quick-reverse bracket assembly ❸ up and down so that the plunger rubber piece and the lower surface of the quick-reverse solenoid ❶ coincide when the quick-reverse feed lever is pressed completely downward; then tighten the screw ❹.
5. Install the quick-reverse solenoid cover ❼ by using the collar ❽ and the screw ❾.
6. Connect the pin terminals to 12P connectors No.10 and No.11.

3 Thread Wiper Assembly

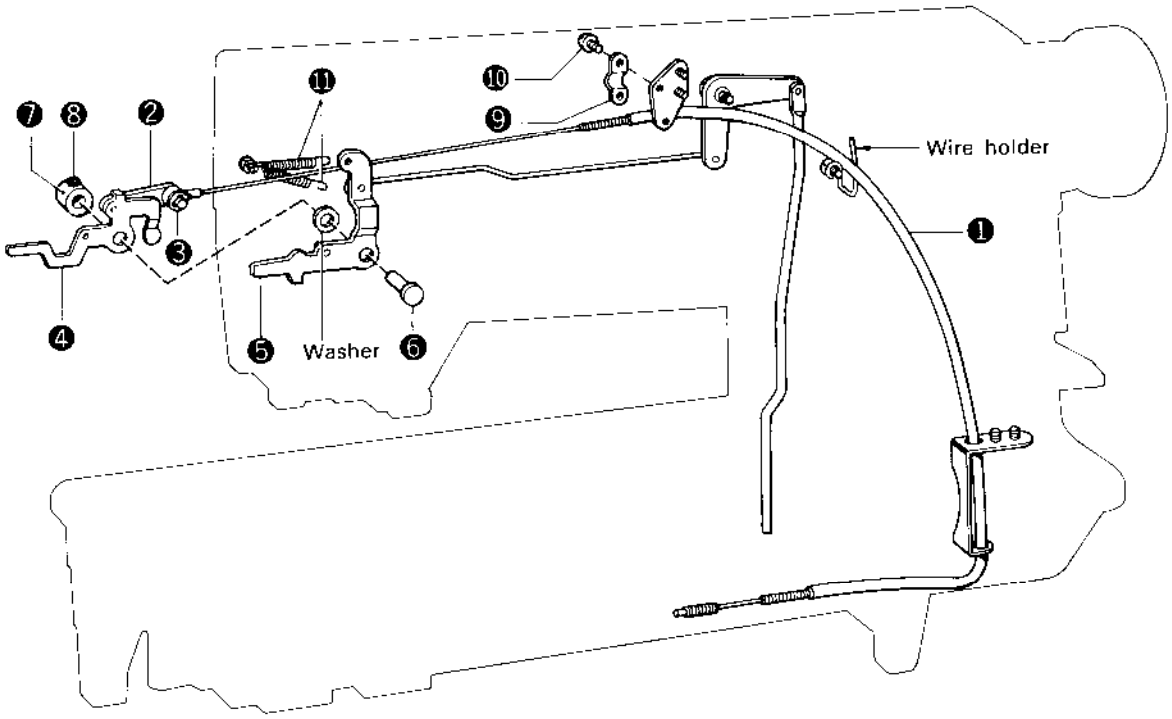


1. Provisionally secure the thread wiper solenoid ❶ by using the four screws ❷.
2. Affix the switch ❸ with the two screws ❹.
3. Install the thread wiper link assembly ❺ by using the two screws ❻. Be careful at this time of the left/right distribution.
4. Fit the edge of the thread wiper link assembly ❺ to the solenoid plunger ❼, and then install the plunger pin ❽. Be sure to install the rubber stopper ❾.
5. Attach the thread wiper spring ❿.
6. Install the cord holder ⓫ by using the screw ⓬.
7. Connect the pin terminal to the 12P connectors (No.7 and No.8).
8. After installing the presser assembly and the needle bar rock assembly, provisionally secure the thread wiper support ⓭ and link B, when making adjustment, by using the screw ⓮.
   Refer to page 54 for information concerning adjustment of the thread wiper.
9. After making the adjustment, install the solenoid cover ⓯ by using the three screws ⓰.

Thread wiper adjustment



4 Tension Release Mechanism

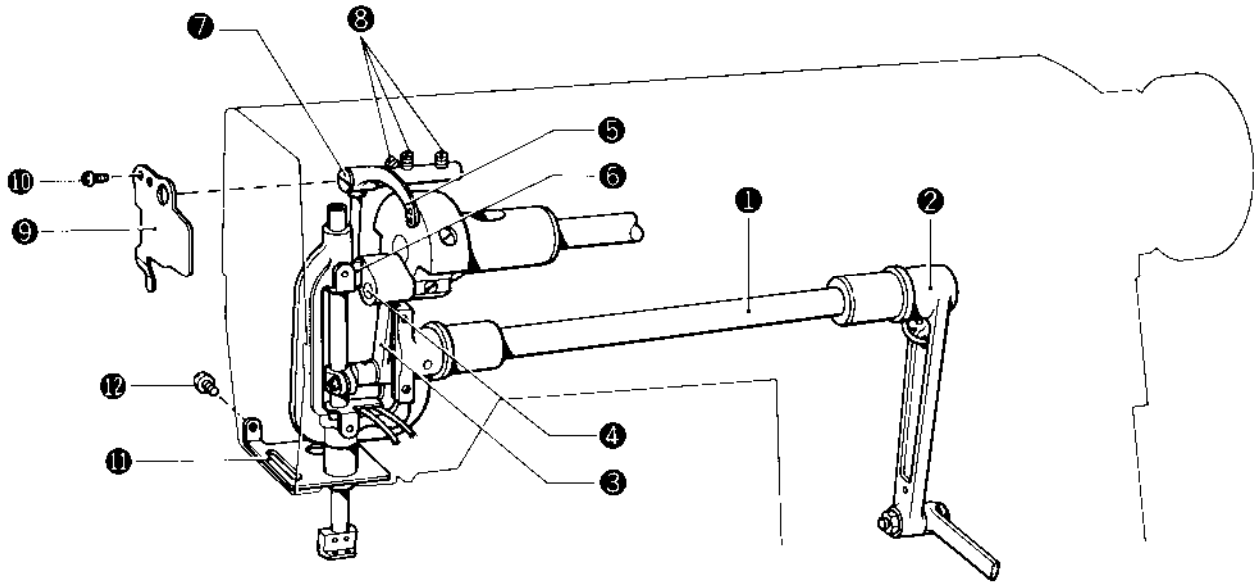


1. Connect the end of the tension release wire ❶ to the tension release wire connecting rod ❷, and secure by using the stop ring ❸.
2. After installing the tension release plate assembly ❹, the washer, and the knee lifter lifting lever ❺ to the presser lifter lever shaft ❻, fit to the arm, and then install from the outer side by using the set collar ❼ and screw ❽.

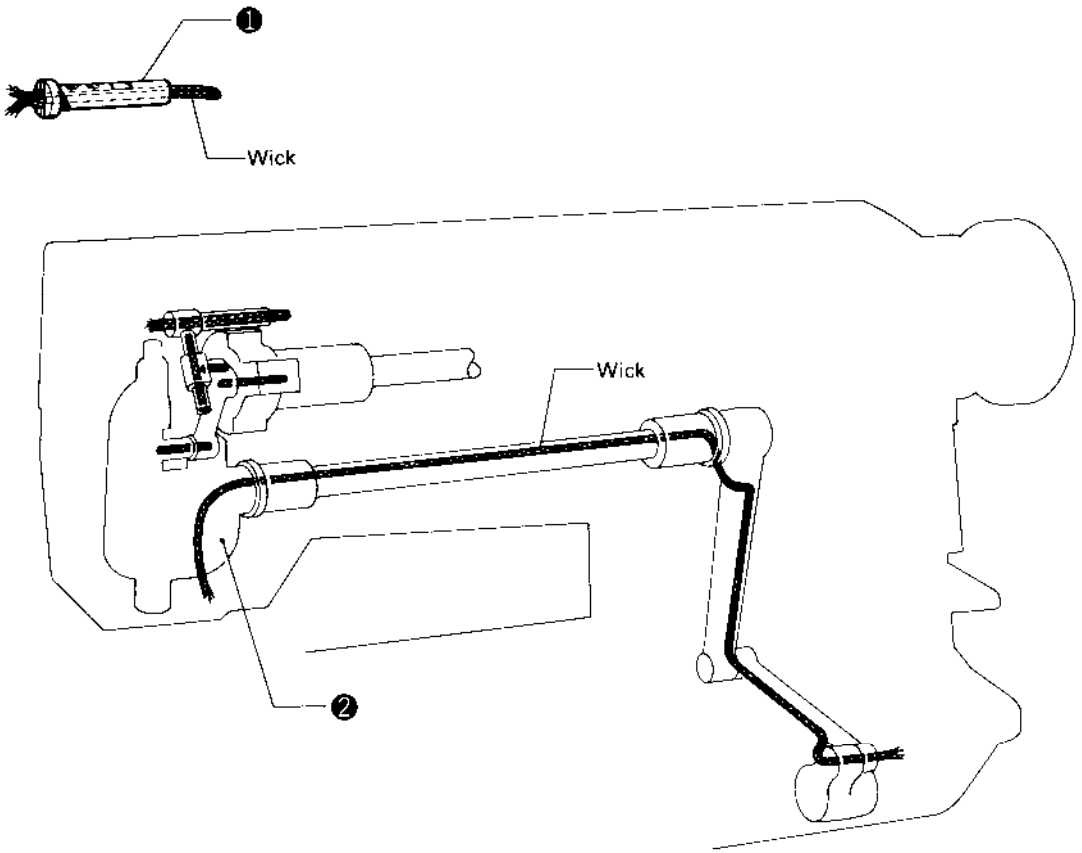
※ Check to be sure that the tension release plate assembly ❹ and the knee lifter lifting lever ❺ move lightly without play or looseness.

3. Pass the end of the tension release wire ❶ through the arm bed. Then attach the tension release wire ❶ to the wire holder.
4. Install the tension release wire holder ❾ by using the screw ❿.
5. Attach the two springs ⓫.

5 Needle Bar Rocking Mechanism

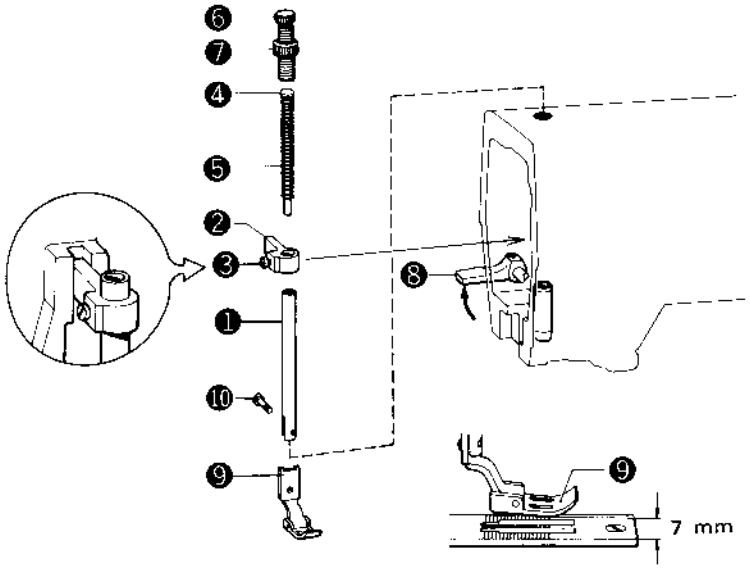


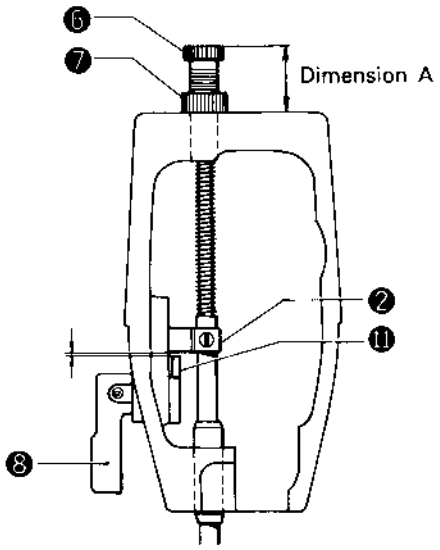
1. Mount the needle bar rock shaft ❶ to the arm, and then fit the shaft to the needle bar connecting rod ❷.
※ Fit the crank rod ❸ to the needle bar crank ❹.
2. Fit the thread take-up lever ❺ to the thread take-up lever slide block ❻.
3. Install the stud ❼ with the three screws ❽.
4. Install the interrupt plate ❾ with two screws ❿.
5. Install the dust plate ⓫ with the two screws ⓬.

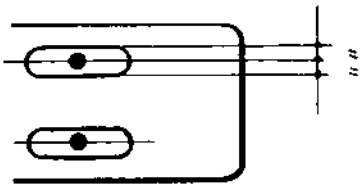


Note: Check to be sure that the plaited cord has passed through the stud ❶.
Also check to be sure that the wick is not loosened when passed through the needle bar rock connecting rod ❷.

6 Presser Foot Assembly







1. Insert the presser bar ❶ from the top of the arm.
   Pass the presser bar ❶ through the presser bar guide bracket ❷, and fit the presser bar guide bracket ❷ into the channel in the arm; then temporarily tighten the screw ❸.
2. Insert the presser spring guide ❹ and presser spring ❺, and lightly tighten the presser adjustment screw ❻ and presser adjustment nut ❼.

※ Tighten the presser adjustment screw ❻ until dimension A (34 mm for thick material, 37 mm for medium thick material) is reached.

3. Install the needle plate and needle.
4. Raise the presser bar lifter ❽, and install the presser foot ❾ to the presser bar ❶ by using the screw ❿.
5. Raise the presser bar lifter ❽, and adjust, by using the screw ❸, so that the presser foot ❾ rises 7 mm.

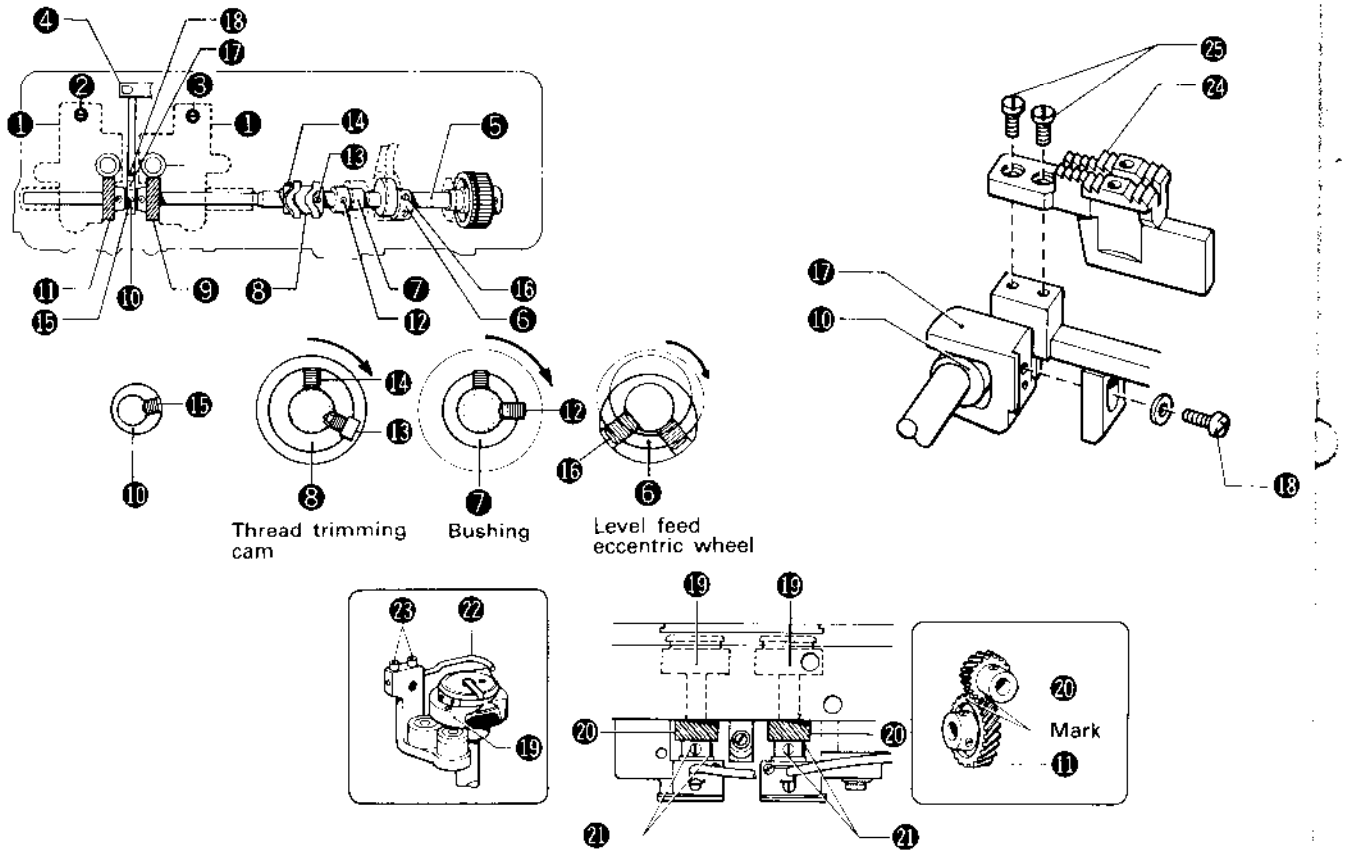
※ Install so that the center of the needle comes to the center of the groove of the presser foot ❾.
Check to be sure that there is a clearance between the knee lifter lifting lever ⓫ and the presser bar guide bracket ❷ when the presser bar lifter ❽ descends.

6. After making the adjustment, remove the needle, the presser foot, and the needle plate.

7 Rotary Hook, Lower Shaft, and Thread Trimmer Assemblies

1. Lower shaft and rotary hook assemblies

Installation of the rotary hook bases



1. Tile the machine.
2. Fit the left and right rotary hook bases ❶ to the rotary hook base bushing, and secure provisionally by using the screws ❷ and ❸.
3. Turn the feed rock shaft ❹ to return to the original position.
4. As shown in the figure above, pass the lower shaft ❺ through the bed, and then through the level feed eccentric wheel ❻, bushing ❼, thread trimming cam ❽, spiral gear ❾, vertical feed eccentric wheel ❿, and spiral gear ⓫.
5. Install the thread trimming cam ❽ with the screws ⓭ and ⓮.

※ Align the screw ⓭ with the screw stop on lower shaft ❺ and tighten firmly, and then tighten screw ⓮.

6. Install the bushing ❼ with the two screws ⓬.

※ Align the screw ⓬ at the front in the direction of the bushing ❼ rotation with the screw stop on the lower shaft ❺. Hold the thread trimming cam ❽ and belt pulley, and tighten the screw ⓬ so that there is no looseness of the lower shaft ❺.

7. Install vertical feed eccentric wheel ❿ with screw ⓯.

※ Align the screw ⓯ with the screw stop and tighten firmly.
The set screw of the spiral gears ❾ and ⓫ is tightened during adjustment of the needle to the rotary hook timing.

8. Mount the level feed eccentric wheel ❻ and install with the two screws ⓰.

※ Align the screw ⓰, located forward from the direction of rotation of the level feed eccentric wheel ❻, with the screw stop of the lower shaft ❺. Confirm the position (in the left and right directions) of the level feed eccentric wheel ❻ by turning the lower shaft ❺ and lightly moving, and then install. If the adjustment is not correct, the operation of the reverse feed lever will become "heavy".

9. Fit the feed bar fork ⓱ to the vertical feed eccentric wheel ❿, and install by using the screw ⓲ and washer.

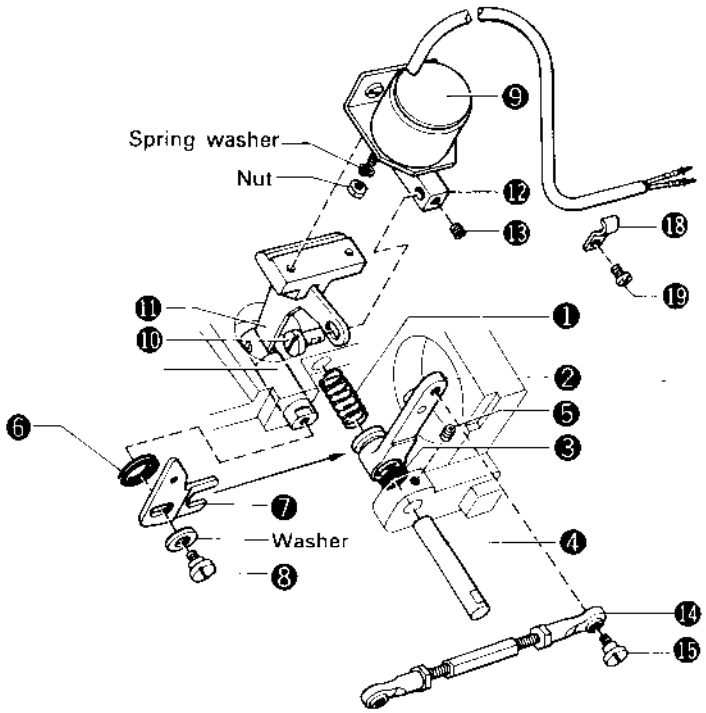
※ When installing the feed bar fork ⓱, take care regarding the vertical position.

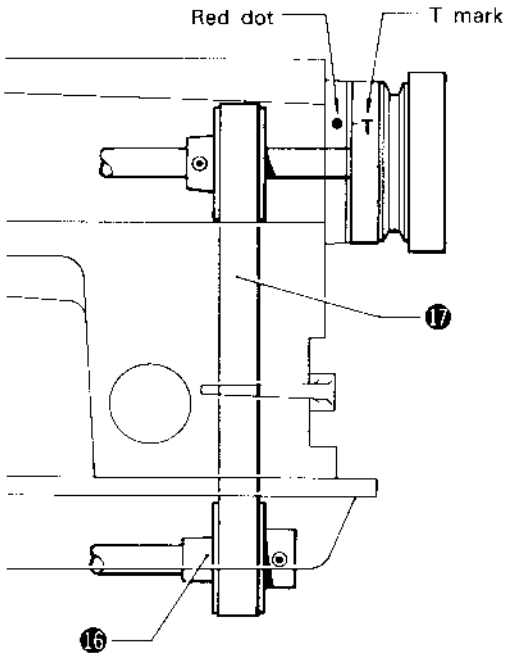
10. Fit the rotary hook ⓳ on the rotary hook base and pinion gear ⓴, and temporarily tighten the screw ㉑.

※ Align the indexes of the pinion gear and the spiral gear.

11. Right the machine.
12. Provisionally secure the opener ㉒ by using the screw ㉓.
13. Temporarily install the feed dog ㉔ with the two screws ㉕.

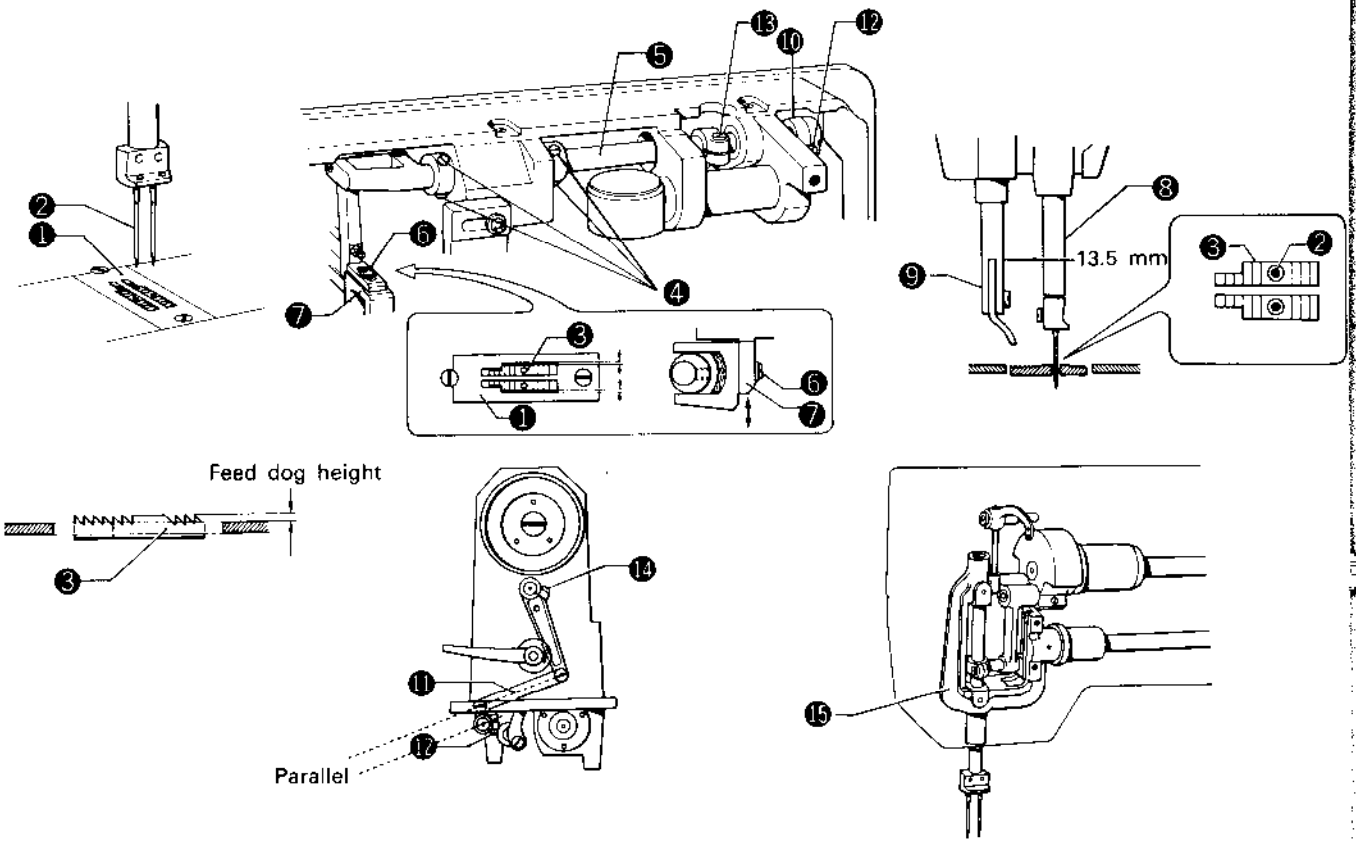
2. Thread trimming assembly





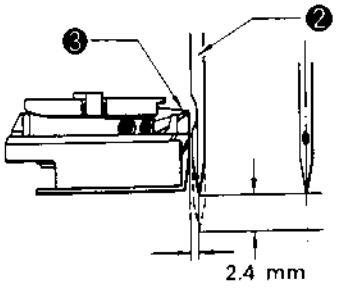
1. As shown in the figure above, fit the knife main lever spring ❶, knife main lever assembly ❷, and cushion ❸ on the bracket, insert the knife main lever shaft ❹, and secure with the screw ❺.
2. Fit the thread trimming driving rod ❼ and tension release lever assembly ❻ (cushion) on the knife main lever assembly ❷, and install with the washer and screw ❽.
3. Install the thread trimming solenoid ❾ on the thread trimming solenoid bracket with the nut and spring washer.
4. Insert the feed regulator connecting link shaft ❿ into the solenoid lever ⓫ and solenoid knee lifter joint ⓬ holes, and install by using the screw ⓭.
5. Install the length adjustment rod assembly ⓮ with the screw ⓯ to the knife main lever assembly ⓰.
6. Press the thread trimming solenoid ❾ by hand, turn timing pulley D ⓰, and stop when the pulley gets heavy.
7. Align the timming mark (T) on the machine pulley with the red dot on the arm.
8. After steps 6 and 7, mount the timing belt ⓱.
9. Install the cord holder ⓲ by using the screw ⓳.

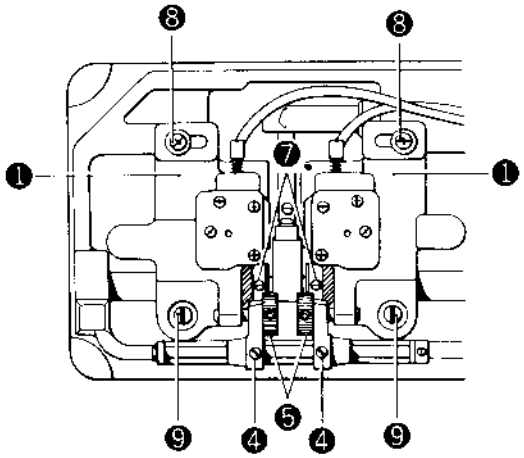
3. Feed dog position adjustment

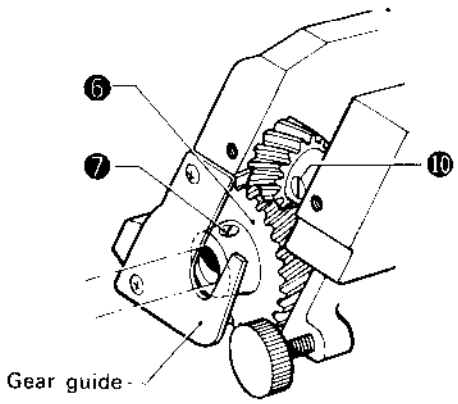


1. Set the feed adjustment dial to the 0 position.
2. Install the needle plate ❶ and needle ❷.
3. Tilt the machine.
4. Loosen the four screws ❹ so that the feed dog ❸ is divided to left and right in the hole in the needle plate ❶, and adjust by using the feed rock shaft ❺.
※ After making the adjustment, securely tighten the screw ❹ so that there is no looseness of the feed rock shaft ❺.
5. Loosen the screw ❽ and move the feed bar fork ❼ up and down so that the clearance from the upper surface of the needle plate ❶ is 1 mm for medium-thick materials and 1~1.2 mm for thick materials when the feed dog ❸ is at the uppermost position.
(Securely tighten the screw ❻.)
6. While providing a clearance of 13.5 mm for the needle bar ❽ and the presser bar ❾, make the groove of the needle bar rock crank ❿ and the needle ar rock link ⓫ parallel at the position where the tip of the needle ❷ enters the center of the needle hole of the feed dog ❸, and then tighten the screw ⓬. Then tighten the screw ⓭ of the level feed arm.
7. Securely tighten the screw ⓮ of the needle bar rock connecting rod
Install to the needle bar rock rod assembly ⓯ so that there is no looseness in the lateral direction.
※ For B845, B848 and B875 model machines, adjust so that the dimension in 6. above is 14.2 mm.

4. Rotary hook base adjustment







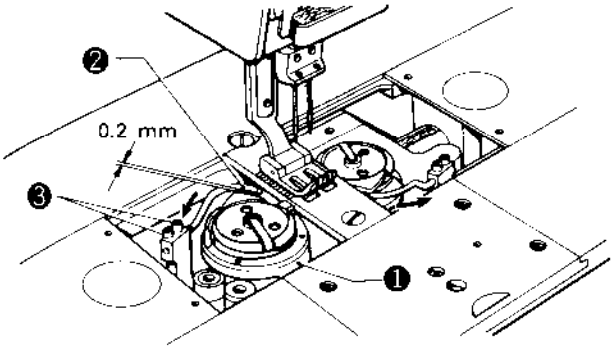
1. Remove the needle plate.
2. Move the rotary hook base ❶, and tighten the two screws ❹ at the position at which the needle ❷ and the rotary hook point ❸ are close together.
3. Turn the machine pulley, and turn the adjustment screw ❺ of the rotary hook base ❶ to move so that the clearance between the needle ❷ and the rotary hook point ❸ becomes 0.05 mm when the needle is 2.4 mm above the lowermost position.

※ When the adjustment screw ❺ is being turned, the movement will be smooth if the upper part of the rotary hook base ❶ is held.

4. Tighten the pointed tip screw ❼ (with flat head) to the screw stop of the lower shaft, and tighten the screw ❼ so that the spiral gear ❻ slightly contacts the gear guide.
5. Tighten the two screws ❽ and ❾ to the rotary hook base.
6. Set the feed adjustment dial to "2" or "3".
7. Loosen the screw ❿, align the rotary hook point ❸ with the center of the needle ❷, and tighten the screw.
   For information concerning the adjustment of the needle bar lift stroke, refer to page 46.

※ For models B847 and B848, adjust the dimension in step 3 above to 2.0 mm.

5. Bobbin case opener adjustment

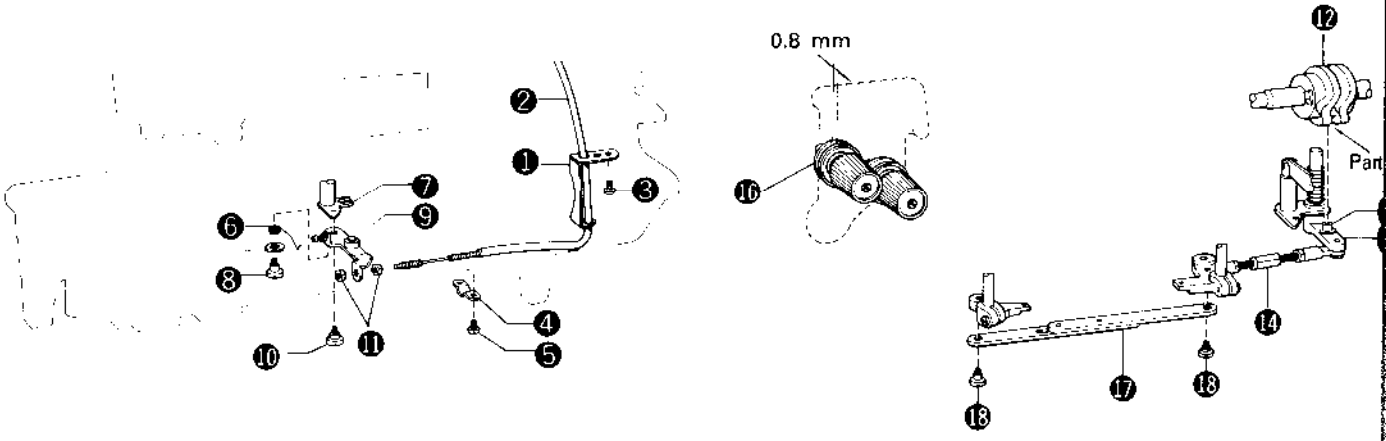


1. Right the machine.
2. Mount the needle plate.

※ Fit the projecting part of the rotary hook into the groove of the needle plate.

3. Turn the screw ❸ to adjust so that the clearance between the rotary hook ❶ and the bobbin case opener ❷ is 0.2 mm when the bobbin case opener ❷ is pulled as far as possible in the direction of the arrow.
4. Remove the needle plate.

6. Tension release adjustment

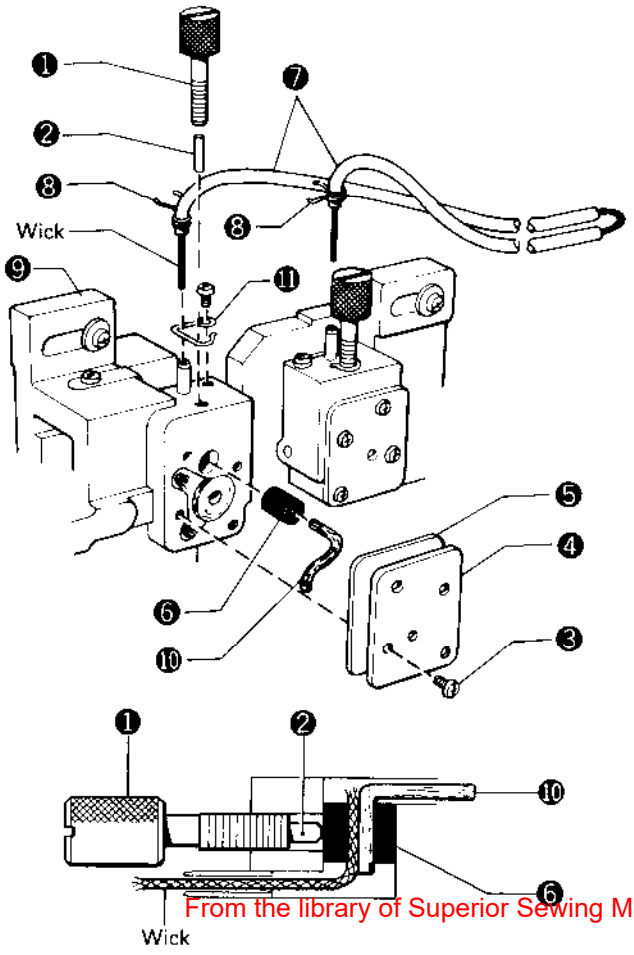


1. After passing the tension release wire ❷ through the wire guide ❶, install by using the screw ❸.
2. Install the tension release wire presser ❹ by using the screw ❺.
3. Install the tension release lever spring ❻ to the thread trimmer rod plate ❼ by using the screw ❽ and washer.
4. Install the tension release lever assembly ❾ by using the screw ❿.
5. Install the tension release wire ❷ and the tension release lever assembly ❾ by using the nut ⓫.
6. Turn the machine pulley, and adjust the length adjustment rod ⓮ so that roller ⓭ gently fits in at the end of part A of the thread trimming cam ⓬.

※ Turn the machine pulley while pressing the knife main lever assembly ⓯ by hand; activate the tension release, and adjust the nut ⓫ so that the amount of opening of the tension disc ⓰ is 0.8 mm.

7. Install the thread trimmer connecting rod ⓱ by using the two screws ⓲.

Wick threading



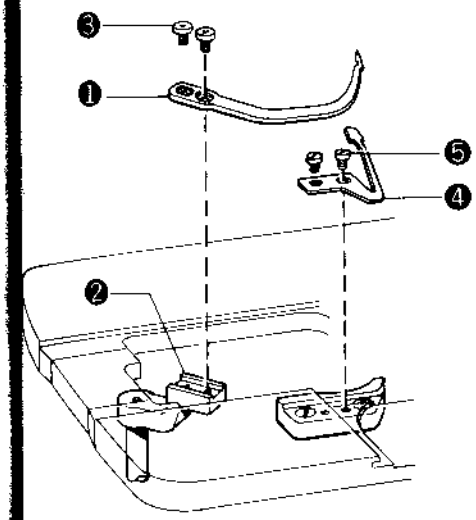
1. Remove the oil adjustment screw ❶
   Remove the rubber presser ❷.
2. Remove the screw ❸, and remove the rotary hook base cover ❹ and the packing ❺.
3. Remove the rubber ring ❻.

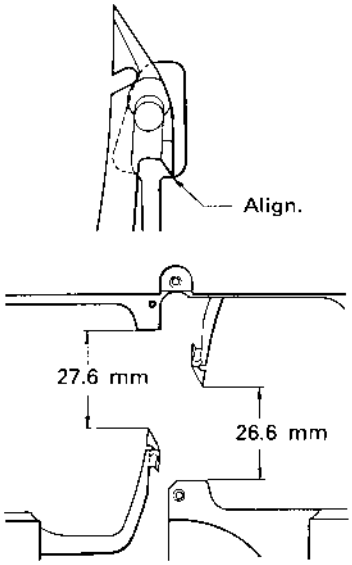
※ Care should be taken, when removing the rubber ring ❻, not to damage it.

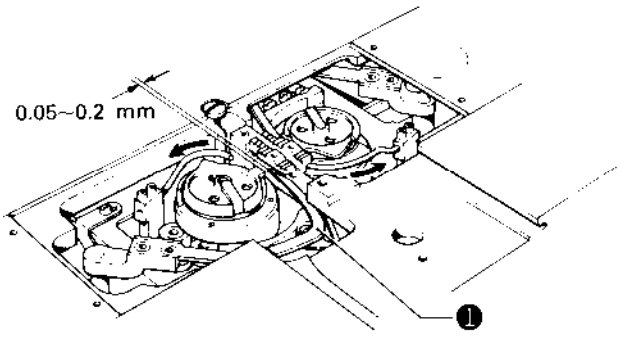
4. Install the tube stopper ❽ to the vinyl tube ❼.
5. After passing the wick through the rotary hook base ❾, insert the vinyl tube ❼.
6. Pass the wick through the rubber ring ❻.
   After passing the wick through the rubber ring, install the felt ❿ to the rubber ring ❻.
7. Install the rubber ring ❻ to the rotary hook base ❾.
8. Insert the rubber presser ❷, and tighten by turning the oil adjustment screw ❶.
9. Install the stopper spring ⓫.
10. Install the tube stopper ❽ so that the vinyl tube ❼ wil not come off.
11. Install the packing ❺ and the rotary hook base cover ❹ by using the screw ❸.

※ The lubrication of the left and right rotary hooks is by one wick.
Care should be taken not to cut the wick mistakenly.

7. Movable knife position adjustment





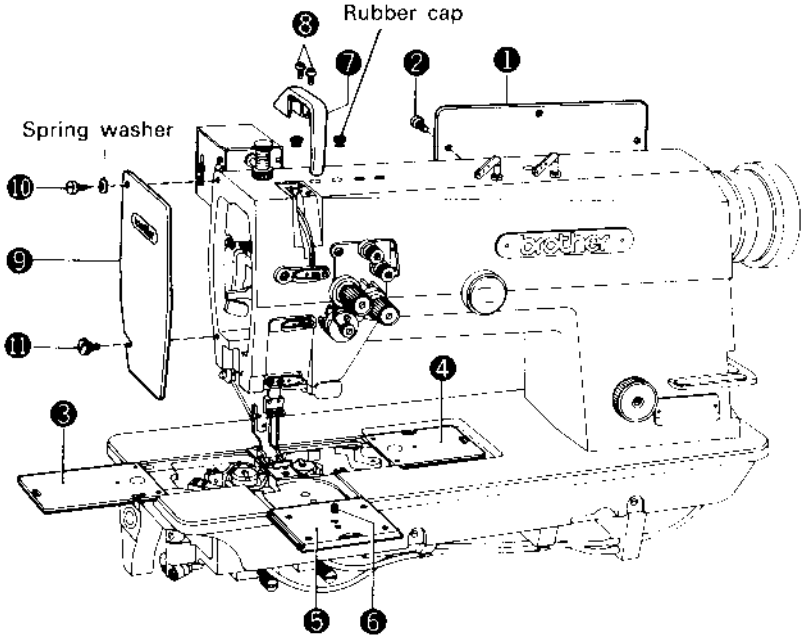


1. Mount the movable knife ❶ on the movable knife bracket ❷ with the two screws ❸.
   Concerning the movable knife installation position, refer to the figure above.
2. Mount the bobbin thread retention spring ❹ with the two screws ❺.

※ The tip of the hook of the movable knife ❶ should be approximately aligned with the end of the bobbin thread retention spring ❹.
Install so that the clearance between the rotary hook holder and the movable knife is 0.05–0.2 mm when the bobbin case opener is pulled as far as possible in the direction of the arrow.

3. After making the adjustment, install the needle plate, presser foot, and needle.

8 Covers

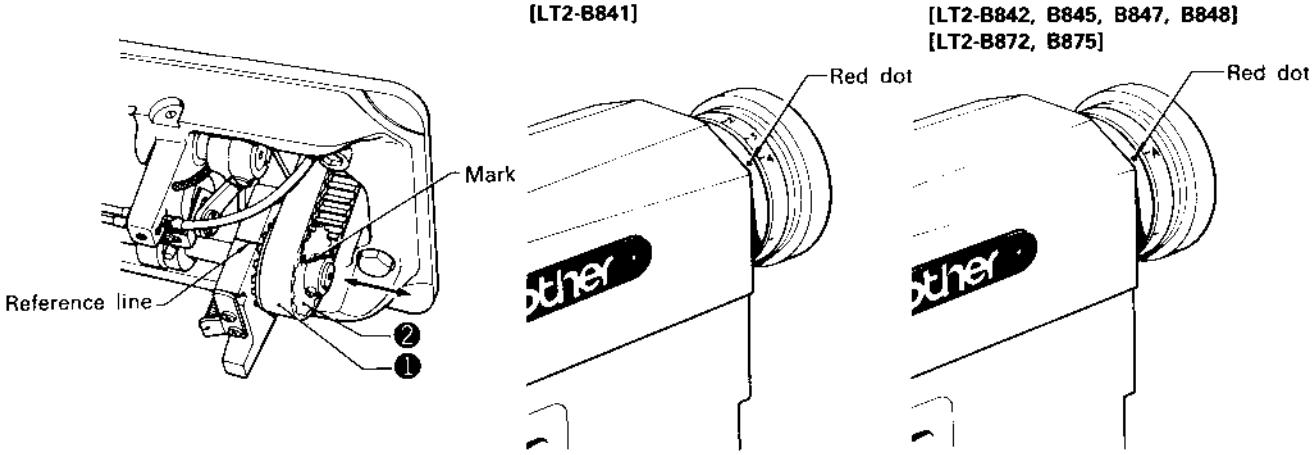


1. Install the rear cover ❶ with the seven screws ❷.
2. Install slide plates R ❸ and L ❹.
3. Tilt the machine, and install slide plate F ❺ with the screw ❻.
4. Install the thread take-up cover ❼ by using the two screws ❽.
5. Install the face plate ❾ with the screw ❿, and tighten the thumb screw ⓫.
6. Install the three rubber caps.

STANDARD ADJUSTMENTS

1 Upper and Lower Shaft Timing Adjustment

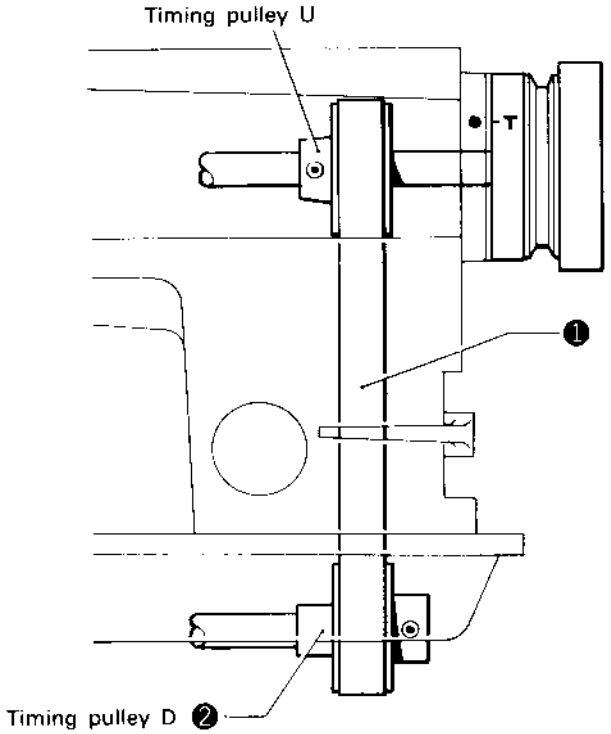
[Standard]



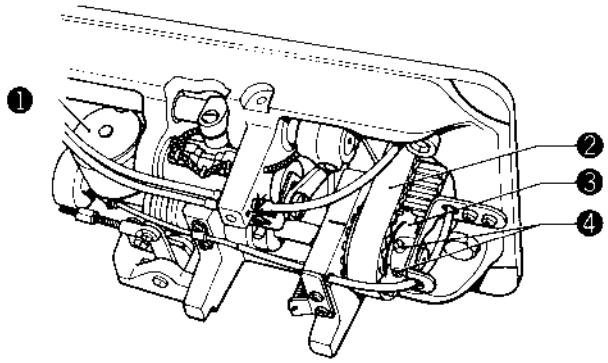
1. Remove the needles.
2. Tilt the machine head back and remove the timing belt ❶.
3. Turn the machine pulley until the "A" mark is aligned with the red dot.
4. While holding the upper shaft so that it won't move, align the arrow on the lower belt pulley ❷ with the reference line on the arm bed, and attach the timing belt ❶.
5. Return the machine head to its original position, and install the needles.

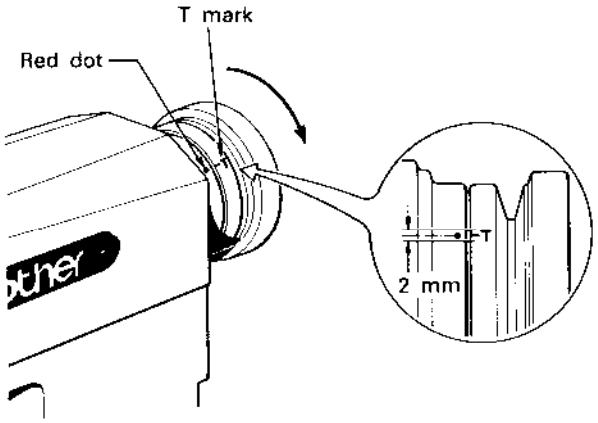
Note

※ When mounting timing belt ❶, first make sure the timing belt is mounted on upper shaft timing belt U, and then mount the belt on timing pulley D ❷.



[Automatic thread trimmer]





❖ Thread Trimmer Timing Adjustment

1. Remove the needles.
2. Remove belt cover U.
3. Hold the thread trimming solenoid ❶ depressed and turn the sewing machine pulley in its normal direction of rotation until the pulley becomes hard to turn (the movable knife will begin to move).
4. The T mark on the machine pulley scale must be in line with the red dot on the machine head. (The permissible deviation of the T mark from the center of the red dot is 2mm.)

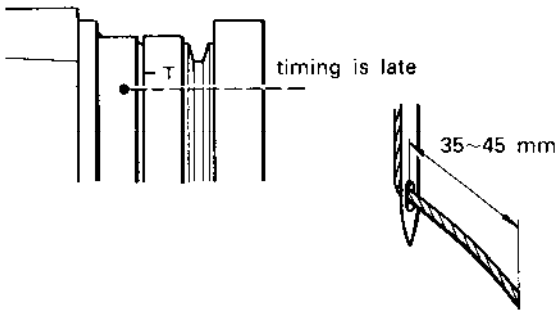
❖ Upper and Lower Shaft Timing Adjustment [LT2-B842·B845·B875]

1. Remove the timing belt ❷.
2. Turn the machine pulley until the T mark is in line with the red dot.
3. With the thread trimming solenoid ❶ depressed, turn the lower belt wheel ❸ in the arrow direction until it is hard to turn.
4. Keep the machine pulley and lower belt wheel ❸ still, and put the timing belt ❷ on.
5. Recheck the T mark on the machine pulley.

※ Never loosen the screws ❹.

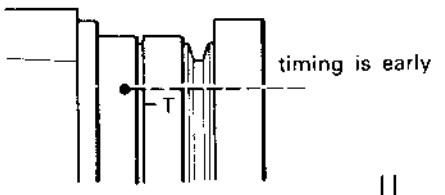
CAUTION

The T mark should be set to the position at which the movable knife begins to move even slightly.



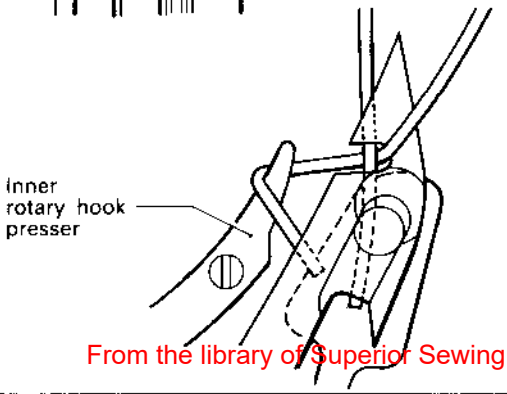
If thread trimming timing is early

* If excessively early (greater than 4mm), thread trimming errors will occur.
* The right side needle thread may be cut extremely short.
* The needle thread remainder trailing from the needle hole may be long after thread trimming.
  If the remainder is too long, the pretension will not be able to accommodate the excessive length, and the bobbin thread will not be held properly.
  The appropriate length of the needle thread remainder from the needle hole after thread trimming is 35 to 45mm.



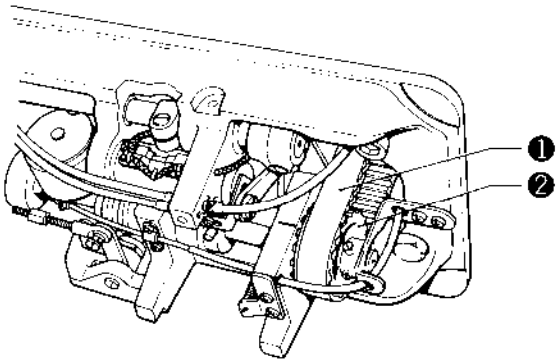
If thread trimming timing is late

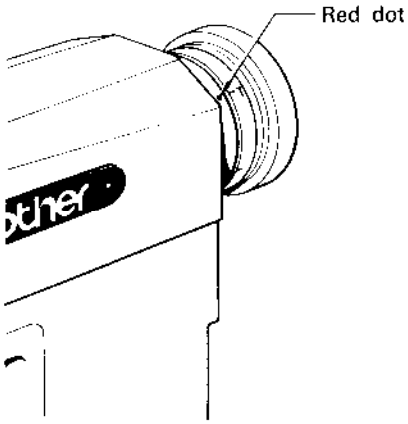
* The needle thread remainder trailing from the needle hole may be short (about 30mm) after thread trimming.
* Thread cast-offs at the sewing start may occur.



[To check]
Open the slide plate, and turn the pulley by hand to trim the thread under the normal sewing conditions.
Thread trimming is OK if the thread is not trimmed when the needle thread is caught by the loop spreader. If the timing is late, the needle thread will be pulled during thread trimming from the loop spreader and become short.

◙ Upper and Lower Shaft Timing Adjustment [LT2-B847·B848]

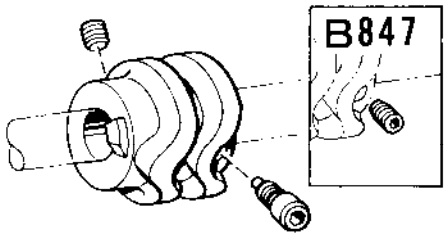




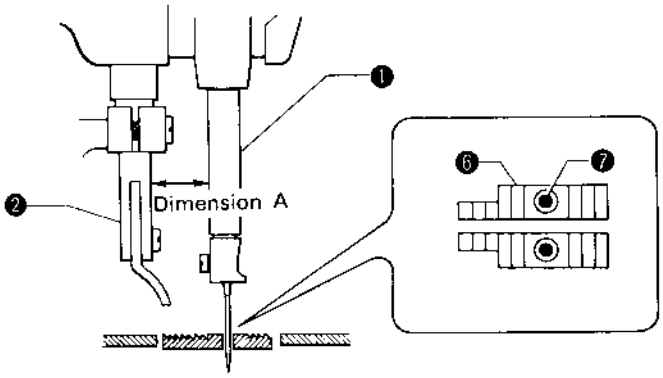
1. Remove the timing belt ❶.
2. Turn the machine pulley until the A mark is in line with the red dot.
3. While holding the upper shaft so that it won't move, align the arrow on the lower belt pulley ❷ with the reference line on the arm bed, and attach the timing belt ❶.
4. Recheck the A mark on the machine pulley.

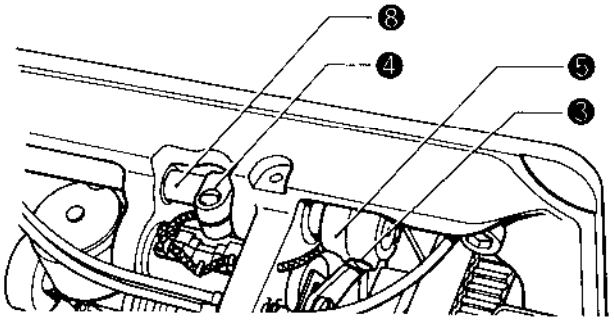
CAUTION

On models B847 and B848, the thread trimming cam is not locked by the tapered screw to the lower shaft. Adjust thread trimming timing by adjusting the thread trimming cam.



2 Adjustment of Needle Bar to Presser Bar Gap (Models B841, B842, B845, B847, B848, B872, B875)





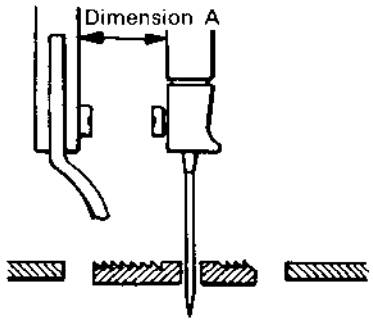
1. Set the feed regulator dial to 0.
2. The required gap between the needle bar ❶ and presser bar ❷ is dimension A.

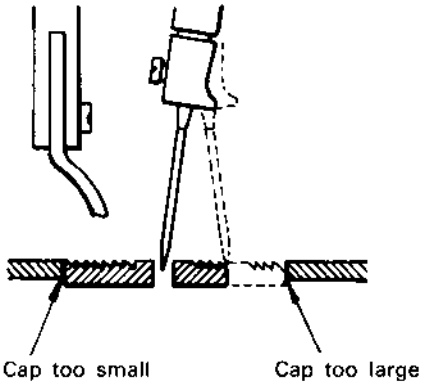
Model	A
B841 · B842 · B847 · B872	13.5 mm
B845 · B848 · B875	14.2 mm

If necessary, adjust as below.

1. Loosen screws ❸ and ❹.
2. Turn the needle bar vibrating crank ❺ until the required gap (dimension A) is obtained between the needle bar ❶ and presser bar ❷.
3. Make sure the needle comes to the center of the needle hole ❼ in the feed dog ❻.
   Turn the feed driving shaft ❽ to adjust the feed dog ❻ position (so the needle enters the center of the needle hole).

Note





When dimension A is too large (feed dog):

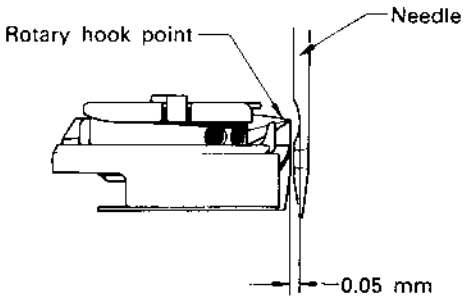
- The feed dog will strike the needle plate when the feed control dial is set to maximum.
- Skipped stitches and needle breakage will occur.
- Right side bobbin thread and left side needle thread trimming errors will occur.

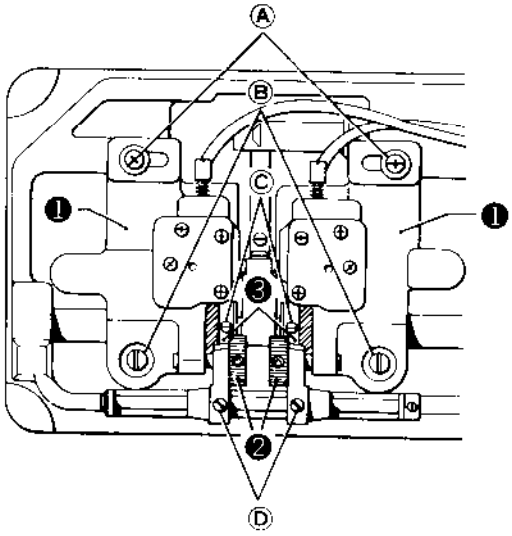
When dimension A is too small:

- The feed dog will strike the needle plate when the feed control dial is set to maximum.
- This will cause skipped stiches and needle breakage.
- Left side bobbin thread and right side needle thread trimming errors will occur.

3 Adjustment of the Needles and Rotary Hook Timing [Standard]

1. Needle to rotary hook point gap



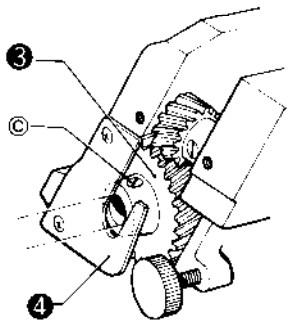


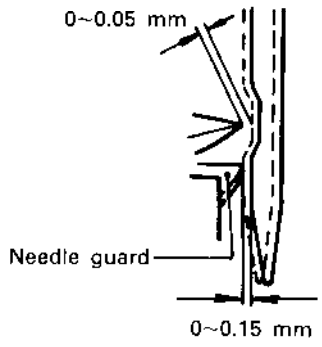
1. Loosen screws Ⓐ, Ⓑ, Ⓒ, Ⓓ, and shift the rotary hook base ❶ right or left until the clearance between the needles and rotary hook points is 1~3 mm.
2. Tighten screw Ⓓ, and then turn adjustment screw ❷ until the needle to rotary hook point gap is 0.05 mm.
3. Firmly tighten screws Ⓐ, Ⓑ, and Ⓒ when the adjustment is completed.

Note

※ Tighten screw Ⓒ so that the rotating hook shaft gear ❸ lightly touches plate ❹.
Also, be sure not to change the position of the screw stop for set screws Ⓒ of gear ❸.

※ The needle guard on the rotary hook is to prevent needle to rotary hook point contact. Be sure to readjust the needle guard position when the rotary hook is replaced.

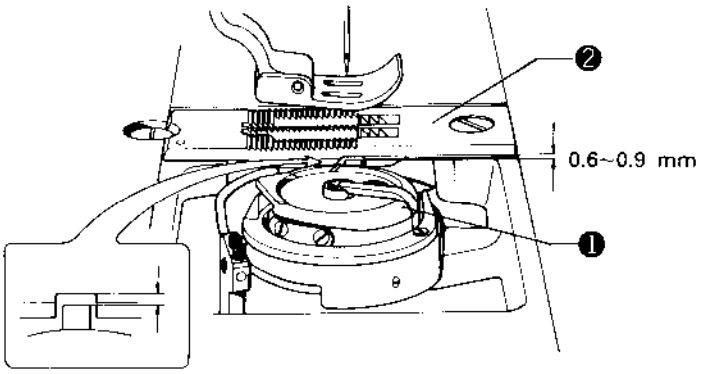


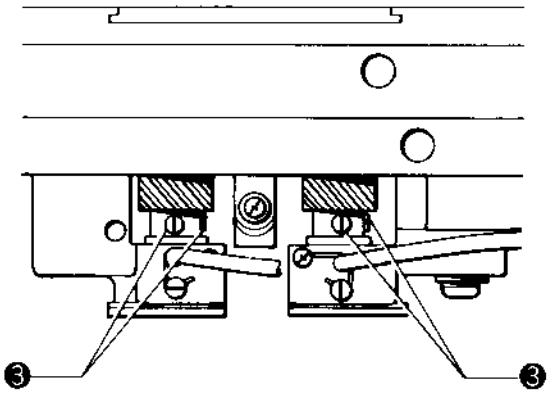


CAUTION

If the needle to rotary hook point gap is not correct, uneven sewing, skipped stitches, thread breakage, and needle breakage may occur.

2. Clearances between rotary hooks and needle plate

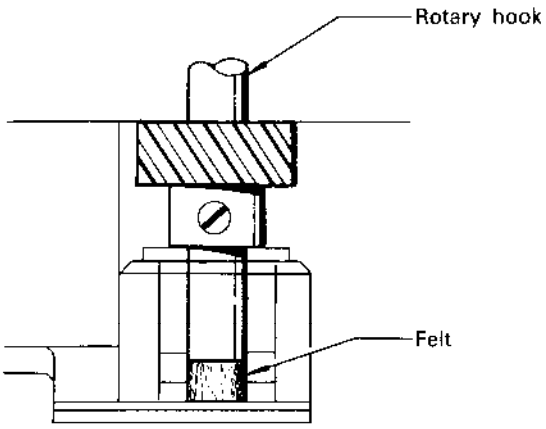




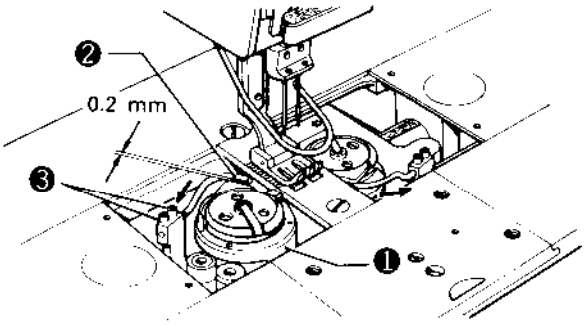
★ Loosen the screws ❸, and raise or lower the rotary hooks ❶ until the clearances between the rotary hooks ❶ and the needle plate ❷ are 0.6~0.9 mm.

CAUTION

Because there is a lubrication wick at the bottom of the rotary hook shaft on this model, it is possible to tighten the set screw without the rotary hook being properly seated. Make sure the rotary hook is properly seated before tightening the screw.
If the gap is too large, the shuttle body may separate from the needle plate.
If the gap is too small, thread tightening will be poor.



3. Clearances between rotary hooks and bobbin case openers

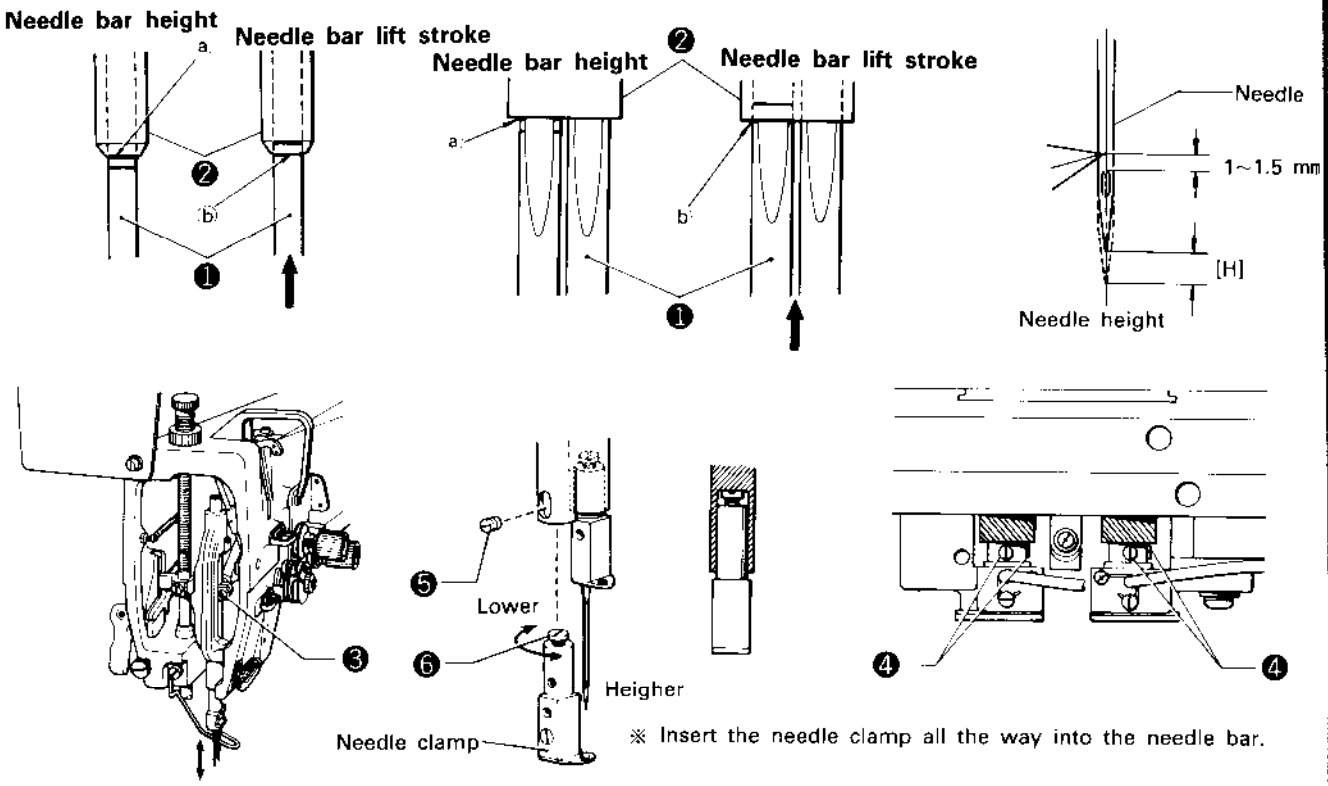


★ Adjust the clearances between the rotary hooks ❶ and the bobbin case openers ❷ to about 0.2 mm (when the bobbin case openers ❷ have fully retracted in the direction of the arrow) by loosening screw ❸ and moving the bobbin case opener ❷ to the right or left.

CAUTION

If the gap is too large, thread tightening will be poor.
If the gap is too small, the rotary hook may be damaged, or bobbin case opener ❷ may be damaged.

4. Needle bar lift stroke and height



※ Insert the needle clamp all the way into the needle bar.

	LT2-B841		LT2-B842		LT2-B845			LT2-B847	LT2-B848
	-3	-5	-3	-5	-3	-5	-7	-1	-1
Stitch length	2 mm	3 mm	2 mm	3 mm				2 mm	
Needle height [H]	2.4 mm							2.0 mm	

	LT2-B872		LT2-B875		
	-3	-5	-3	-5	-7
Stitch length	3 mm				
Needle height [H]	2.4 mm				

Needle bar height (LT2-B841, B842, B847, B872)

1. Set the feed adjustment dial to the "0" position.
2. When the needle bar ❶ is in its lowest position, the needle position reference line ⓐ of the needle bar must be aligned with the bottom edge of the needle bar support ❷. Loosen the set screw ❸, and align the needle position reference line ⓐ of the needle bar with the bottom edge of the needle bar support ❷.

Needle bar lift stroke

1. Turn the feed-adjustment dial to 2 or 3.
2. When the needle bar ❶ is H mm (2.4 mm or 2.0 mm) above its lowest position, needle position reference line ⓑ of the needle bar is aligned with the bottom edge of the needle bar. At this time, the rotary hook point must be aligned with the needle center.
   Loosen the three set screws ❹, and align the rotary hook point with the needle center.
3. When the rotary hook point is aligned with the needle center, confirm that the space between the top of the needle eye and rotary hook point is 1~1.5 mm.

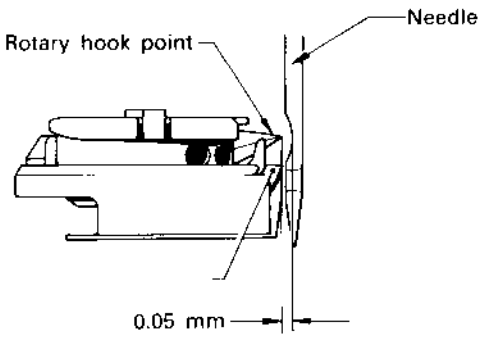
(Model LT2-B845, B848, B875)

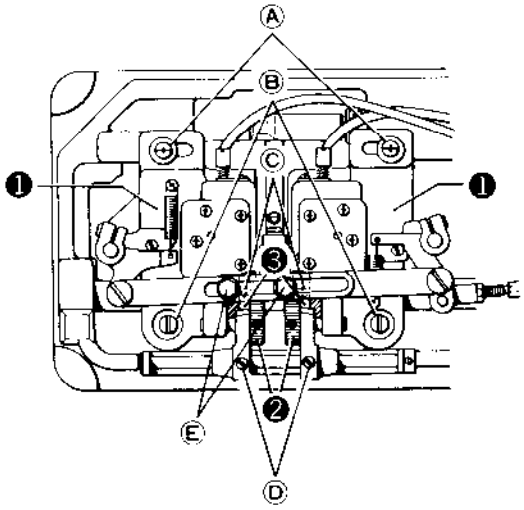
Remove the set screw ❺, turn the needle clamp screw ❻, and adjust so that the space between the rotary hook point and the top of the needle eye is 1~1.5 mm.

Note:
If the adjustment of the needle bar lift stroke and of the needle bar height are not correct, irregular sewing at the left and right, as well as skipped stitches and thread cutting are apt to occur.
※ If the rotary hook is replaced, be sure to adjust the lubrication of the rotary hook.

Adjustment of the Needles and Rotary Hook Timing [Automatic thread trimmer]

1. Needle to rotary hook point gap



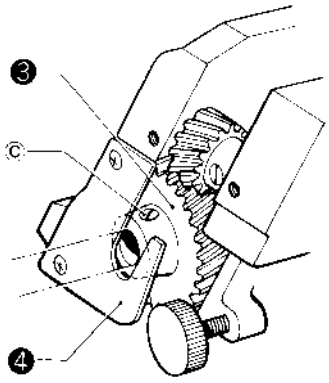


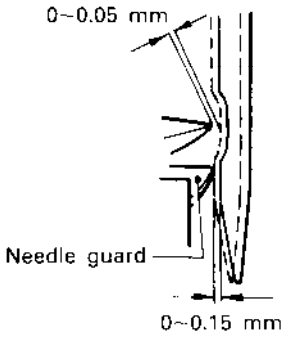
1. Loosen screws Ⓐ, Ⓑ, Ⓒ, Ⓓ, Ⓔ, and shift the rotary hook base ❶ right or left until the clearance between the needles and rotary hook points is 1~3 mm.
2. Tighten screw Ⓓ, and then turn adjustment screw ❷ until the needle to rotary hook point gap is 0.05 mm.
3. Firmly tighten screws Ⓐ, Ⓑ, Ⓒ, and Ⓔ when the adjustment is completed.

Note

※ Tighten screw Ⓒ at the position at which the rotating hook shaft gear ❸ lightly touches plate ❹. Also, be sure not to change the position of the screw stop for set screw Ⓒ of gear ❸.

※ Press the thread trimming solenoid and adjust so the roller gently enters the cam groove.

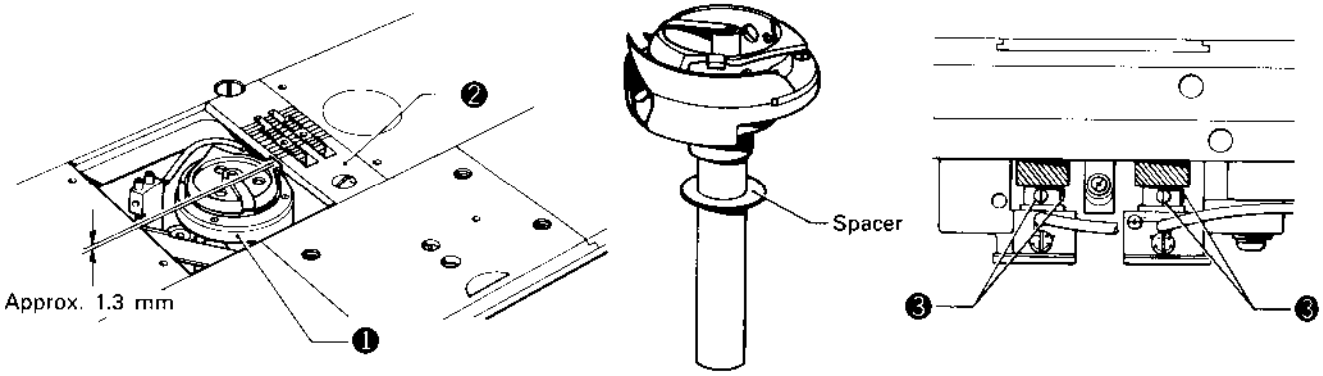




CAUTION

* If the needle to rotary hook point clearance is too large, needle thread trimming errors caused by skipped stitches may occur.
* If the needle to rotary hook point clearance is too small, bobbin thread trimming errors may occur.
* The needle guard at the rotary hook is to prevent the rotary hook point from striking the needle. Be sure, when replacing the rotary hook, to adjust the position of the needle guard.

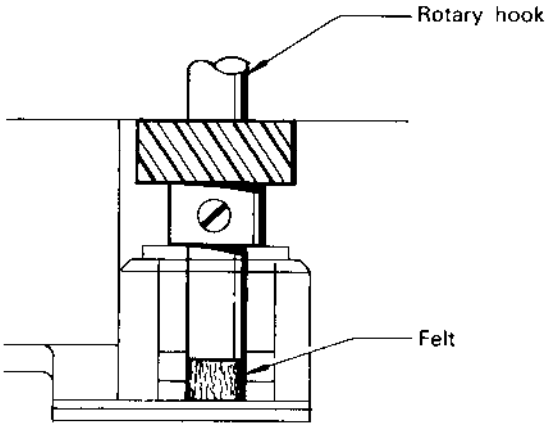
2. Clearances between rotary hooks and the needle plate



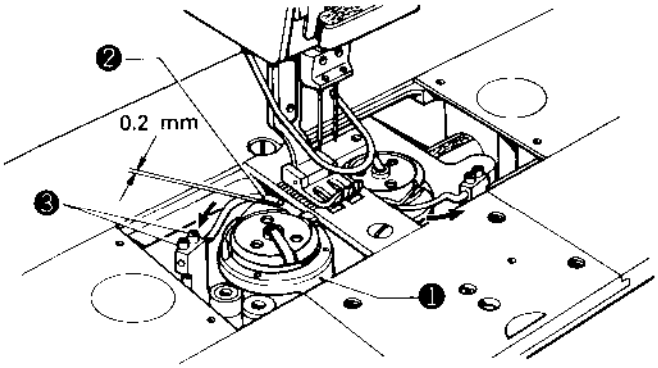
★ The clearances between the rotary hooks ❶ and the needle plate ❷ have been adjusted to about 1.3 mm with a spacer. Loosen the screws ❸ and exercise care not to lose the spacer when replacing the rotary hooks.
※ If two spacers are used, be sure to use both of them under the rotary hooks.

CAUTION

★ Because there is a lubrication wick at the bottom of the rotary hook shaft on this model, it is possible to tighten the set screw without the rotary hook being properly seated. Make sure the rotary hook is properly seated before tightening the screw.
* If the gap is too large, the shuttle body may separate from the needle plate.
* If the gap is too small, thread tightening will be poor.
* Bobbin thread trimming errors may occur.
* The right needle thread may be cut too short.
These problems may occur, in particular, when the stitch length is large, or during thread trimming when sewing without material.



3. Clearances between rotary hooks and bobbin case openers

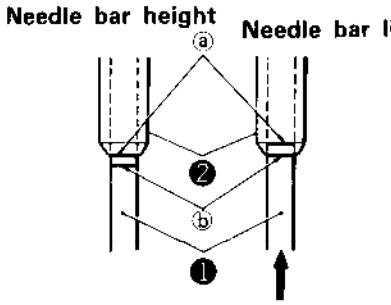


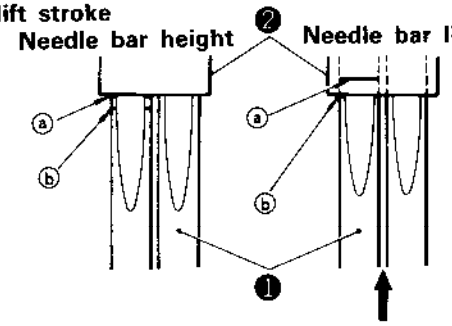
★ Adjust the clearances between the rotary hooks ❶ and the bobbin case openers ❷ to about 0.2 mm (when the bobbin case openers ❷ have fully retracted in the direction of the arrow) by loosening the screw ❸ and moving the bobbin case opener ❷ to the right or left.

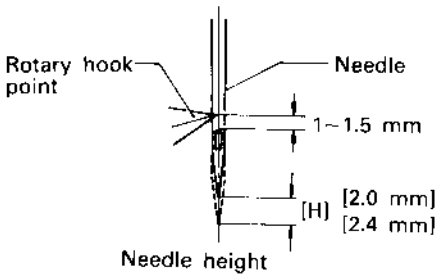
CAUTION

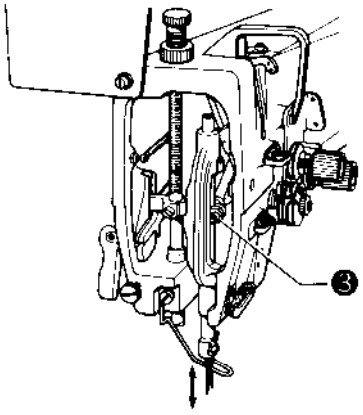
* If the rotary hook to bobbin case opener gap is too large, thread tightening will be poor.
  Also, needle thread trimming errors may occur.
  The needle thread remainder from the needle hole will be too short after thread trimming.
* If the rotary hook to bobbin case opener gap is too small, the rotary hook may be damaged. Also, the bobbin case opener may be damaged.

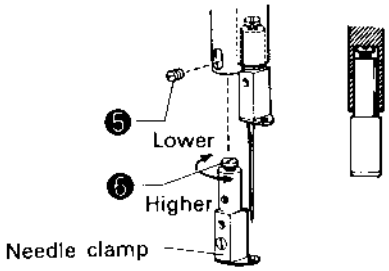
4. Needle Bar Lift Stroke and Height



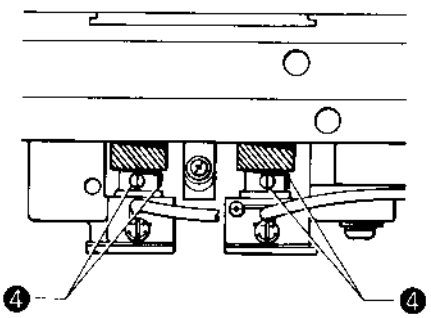








※ Insert the needle clamp all the way into the needle bar.



Needle bar height [LT2-B842, B847, B872]

1. Set the feed adjustment dial to the "0" position.
2. When the needle bar ❶ is in its lowest position, the needle position reference line ⓐ of the needle bar must be aligned with the bottom edge of the needle bar support ❷. Loosen the set screw ❸, and align the needle position reference line ⓐ of the needle bar with the bottom edge of the needle bar support ❷.

Needle bar lift stroke

1. Turn the feed-adjustment dial to 2 or 3.
2. When the needle bar ❶ is 11mm (2.4mm or 2.0mm) above its lowest position, needle position reference line ⓑ of the needle bar is aligned with the bottom edge of the needle bar. At this time, the rotary hook point must be aligned with the needle center.
   Loosen the three set screws ❹ and align the rotary hook point with the needle center.
3. When the rotary hook point is aligned with the needle center, confirm that the space between the top of the needle eye and rotary hook point is 1~1.5mm.

(Model LT2-B845, B848, B875)

Remove the set screw ❺ turn the needle clamp screw ❻, and adjust so that the space between the rotary hook point and the top of the needle eye is 1~1.5mm.

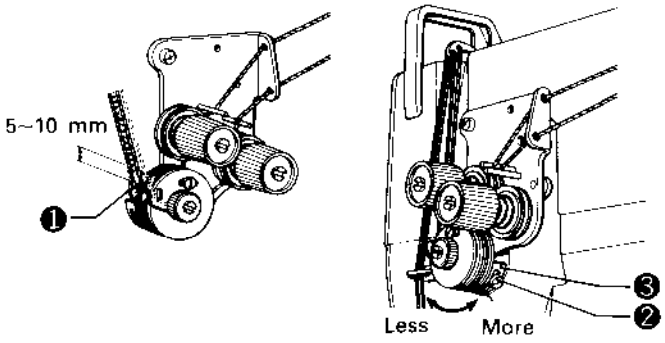
	LT2-B842						LT2-B845									LT2-B847			LT2-B848		
	-403	-405	-703	-705	-903	-905	-403	-405	-407	-703	-705	-707	-903	-905	-907	-401	-701	-901	-401	-701	-901
Stitch length	2mm	3mm	2mm	3mm	2mm	3mm										2mm					
Needle height [H]	2.4mm															2mm					

	LT2-B872						LT2-B875								
	-403	-405	-703	-705	-903	-907	-403	-405	-407	-703	-705	-707	-903	-905	-907
Stitch length	3mm														
Needle height [H]	2.4mm														

CAUTION

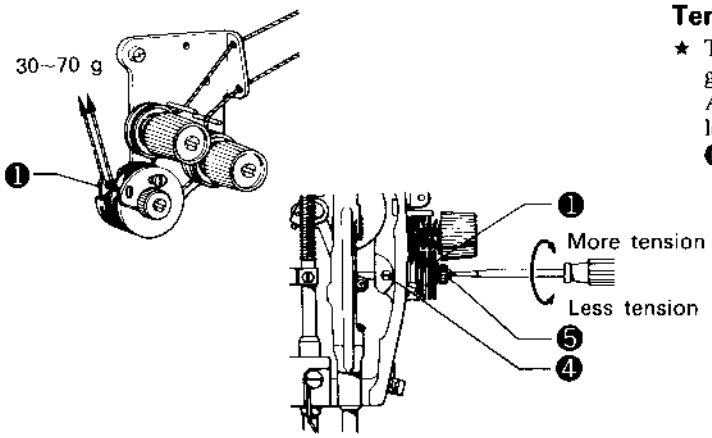
1. If the needle bar lift stroke is too great
   * Right-side thread tightening will be poor, or uneven stitches, skipped stitches, or thread breakage may occur on right and left.
   * Needle thread trimming errors may occur, or the needle thread may be too short.
   * The needle thread remainder from the needle hole after thread trimming may be too long.
2. If the needle bar lift stroke is too short
   * Skipped stitches, or thread breakage may occur.
   * The needle thread remainder from the needle hole after thread trimming may be too short.

4 Thread Take-Up Spring



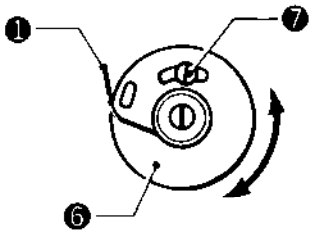
Operating range of thread take-up spring

★ The standard operating range of the thread take-up spring ❶ is 5~10 mm.
The operating range of the thread take-up spring ❶ can be adjusted by the thread take-up stopper ❸ after loosening the screw ❷.



Tension of the thread take-up spring

★ The standard tension of the thread take-up spring is 30~70 grams.
Adjust the tension of the thread take-up spring ❸ by loosening the screw ❹ and turning the thread tension stud ❺.

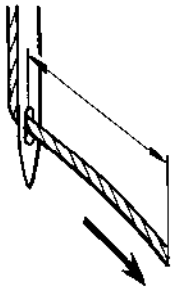


Thread take-up spring timing

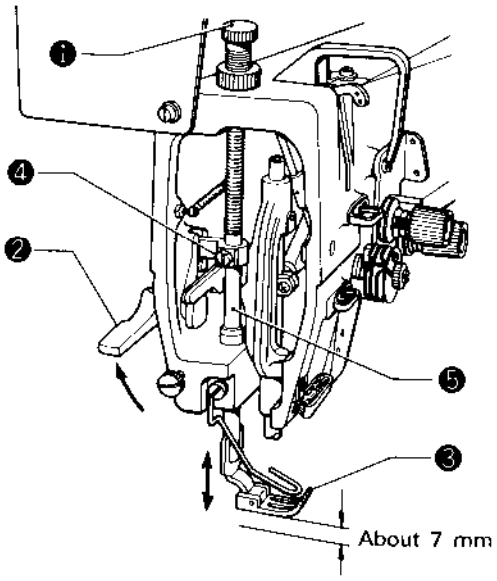
★ The take-up spring guide ❻ should be at the center for standard thread take-up spring ❶ timing adjustment. To adjust the timing of the thread take-up spring ❶, loosen set screw ❼ and turn the take-up spring guide ❻.

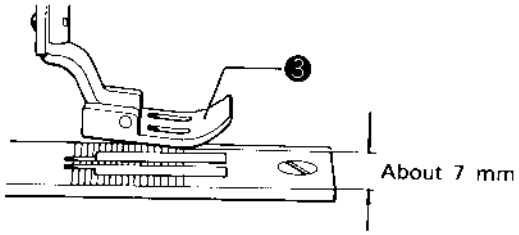
CAUTION

On thread trimming machines, the needle thread trailing from the left side needle after thread trimming may be too short. Pull the thread from the needle hole. If it is greater than 35 mm, it is OK.
To shorten the remainder, adjust thread take-up stopper ❸.
However, when using fine count threads (#50 polyester or finer), reducing the operating range too much may cause the right needle thread to be cut too short. Also, thread trimming errors may occur with the left needle thread.



5 Adjustment of the Presser Foot Height

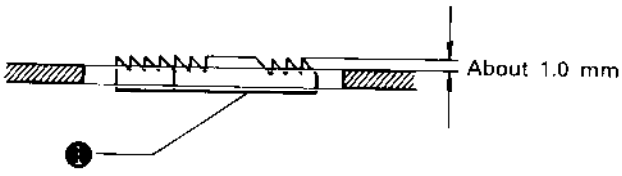


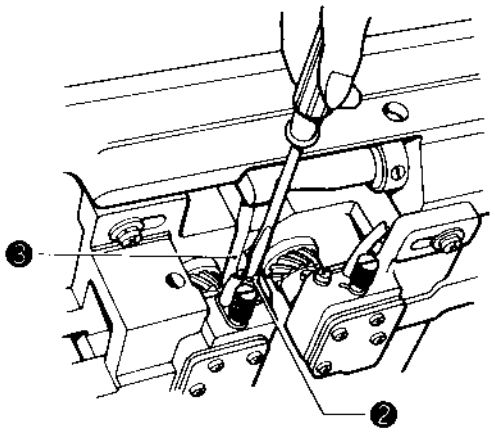


1. Loosen the screw ❶.
2. Remove the face plate, or remove the cap of the face plate.
3. Raise the presser foot ❸ by using the presser foot lifter ❷.
4. Loosen screw ❹ and raise or lower the presser bar ❺ to adjust so that the presser foot ❸ will rise to about 7 mm above the needle plate.

※ Be careful not to turn the presser bar ❺.

6 Adjustment of the Feed Dog Height





1. Turn the pulley until the feed dog ❶ rises to the highest position.
2. Loosen screw ❷ and raise or lower the feed dog holder ❸ so that the feed dog ❶ will rise to about 1.0 mm above the needle plate.

Note

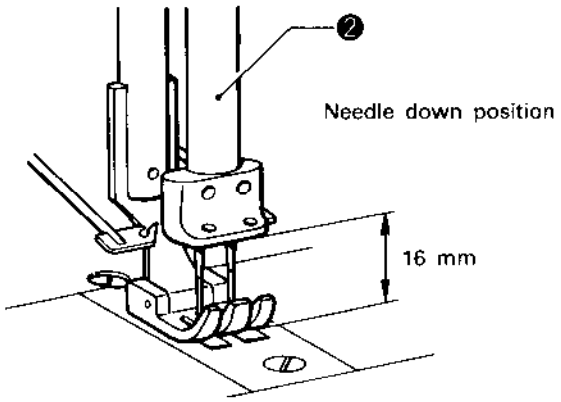
◆ When the feed dog is too high

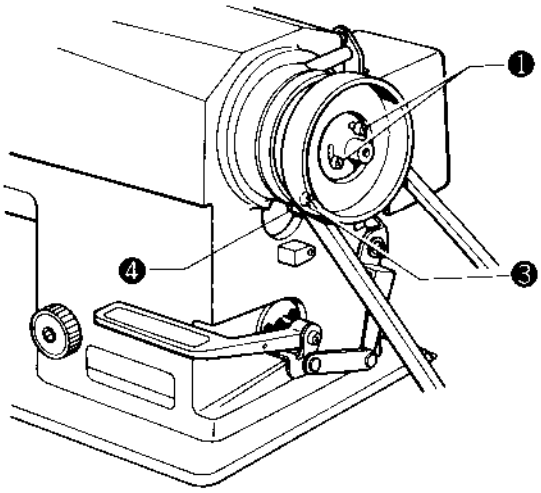
- The feed dog will strike the needle plate.
- Stitches will be larger than specified by the feed regulator dial.
- Thread tension will be poor with heavy count threads.
- Forward and reverse stitch pitch will be difficult to match.
- Bobbin thread trimming errors may occur on thread trimming machines.

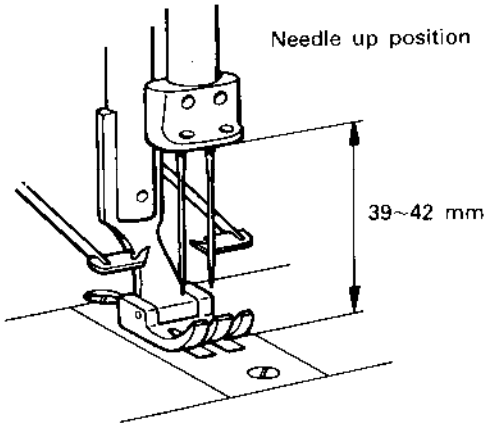
◆ When the feed dog is too low

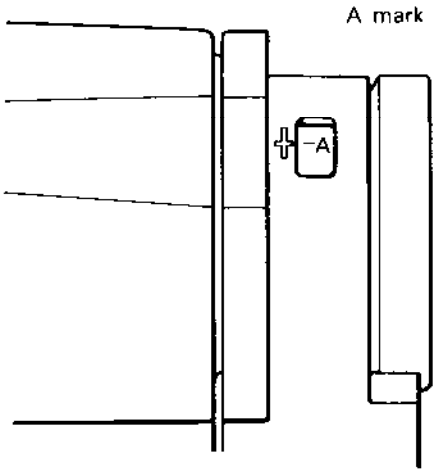
- Stitches will be smaller than specified by the feed regulator dial.
- Forward and reverse stitch pitch will be difficult to match.
- The feed dog may strike the movable knife on thread trimming machines.

7 Synchronizer Adjustment









★ The synchronizer consists of two elements which are used to detect the needle position. One of these elements is used to control the needle down signal and the thread cutter signal.
★ When the power switch is on and the sewing machine is stopped in the needle down position, there should be a 16 mm gap from the top of the needle plate to the bottom of the needle clamp. Also, when the sewing machine is stopped in the needle up position, the pulley reference line should be within the belt cover reference lines. At this time, there should be a 39 to 42 mm gap from the top of the needle plate to the bottom of the needle clamp.
★ Before making any adjustments be sure to turn the power off.

■ Needle up position stop adjustment

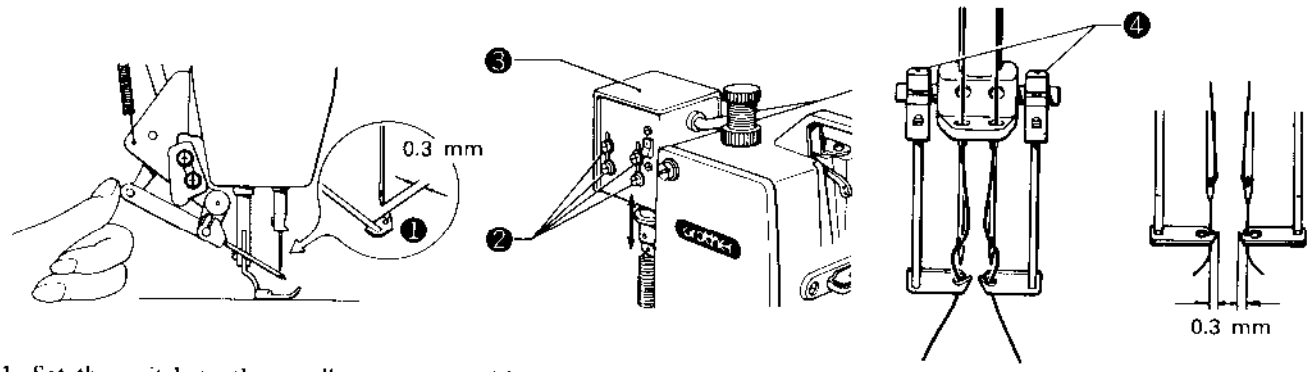
1. Loosen the two set screws ❶.
   Move set screw ❶ in the direction of normal pulley rotation to raise the needle bar ❷. Move the screw ❶ in the opposite direction to lower the needle bar.

■ Needle down and thread cutter signals

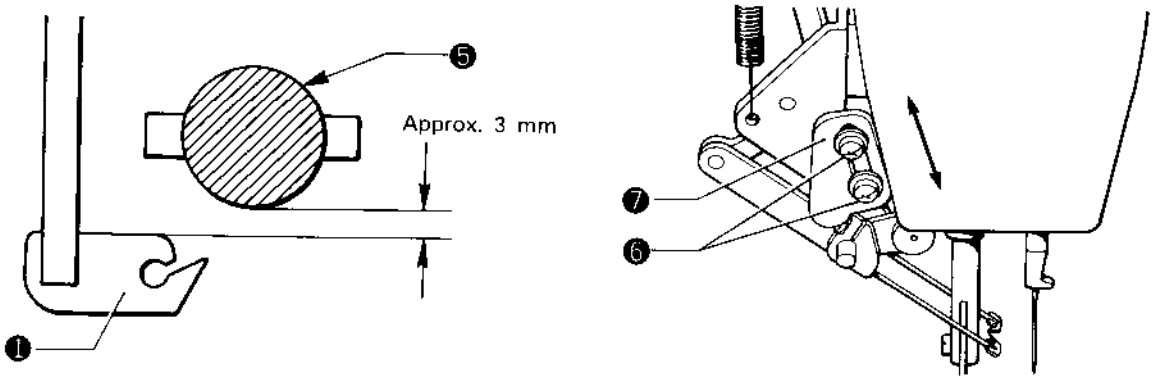
1. Turn the power on.
2. Press the treadle, and then release the treadle to neutral. (Needle down stop position)
3. Make sure the gap from the top of the needle plate to the bottom of the needle clamp is approximately 16 mm.
4. Loosen screw ❸, and move the synchronizer assembly ❹ to adjust.

■ Check the needle up stop position adjustment.

[8] Thread Wiper Adjustment

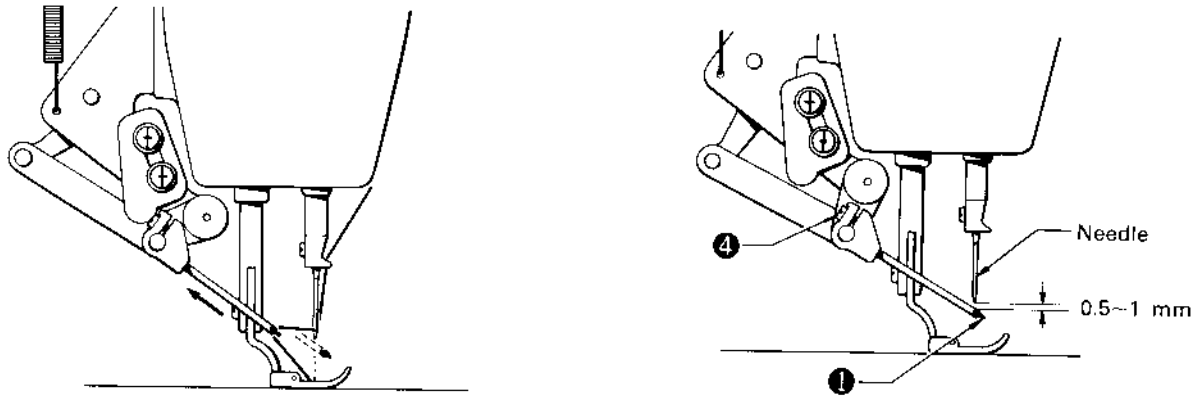


1. Set the switch to the needle up stop position.
2. Set the stitch length to the second mark on the scale.
3. Loosen the four screws ❷, and raise or lower the solenoid ❸ until the tip of the thread wiper ❶ projects about 0.3 mm from the needle point when it is pressed with your finger as shown.
4. Pass the threads through the needles.
5. Loosen the screws ❹ and move the thread wiper ❶ to the right or left so that the thread wiper ❶ will positively hook the threads with its hooked end.



6. Loosen the screws ❻, and raise or lower the stopper ❼ until the clearance between the tip of thread wiper ❶ and the presser bar ❺ is about 3 mm when the thread wiper ❶ returns to its original position.

※ If the clearance is too little, the thread wiper ❶ may not be able to hook the threads depending on the kind of thread. Set the thread wiper ❶ as close to the needles as possible, provided that the threads will positively pass through the work. Also check that the needle set screws will not contact the thread wiper.



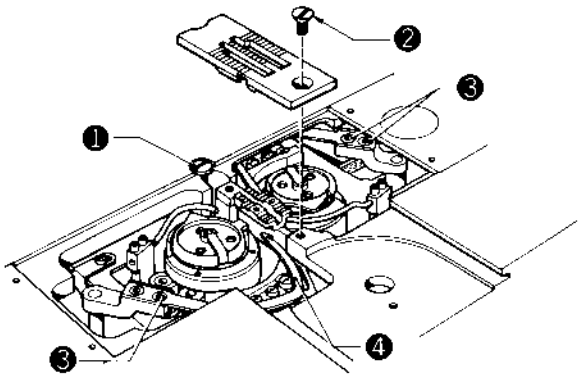
7. The tip of the thread wiper ❶ will travel as indicated by the dotted lines. Loosen the screw ❹ and adjust the clearance between the needle point and the thread wiper ❶ to 0.5~1 mm by raising or lowering the thread wiper ❶.

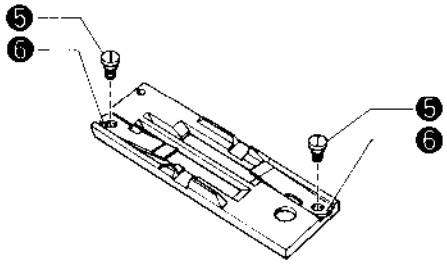
Note

If the 0.3 mm gap is too great, the thread wiper ❶ will strike the presser foot.
If the gap is too small, thread wiping will not be properly performed.
If the 3 mm gap is too great, the thread wiper ❶ will strike the presser foot.
If the 3 mm gap is too small, thread wiping errors may occur.
If the 0.5 to 1 mm gap is too great, thread wiping will not be properly performed.
If the gap is too small, the thread wiper ❶ will strike the needle tip.

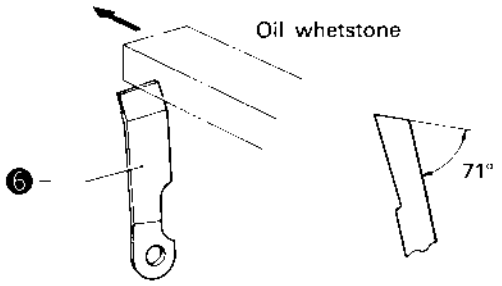
9 Movable and Fixed Knife Adjustment

1. Removing the movable and fixed knives



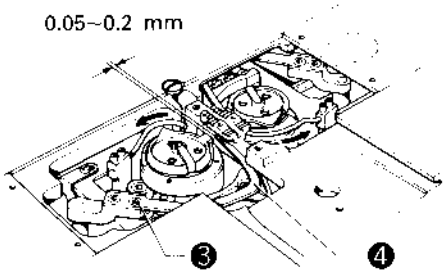


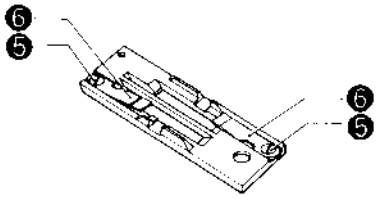
1. Remove the needles and raise the presser foot.
2. Remove the screws ❶, ❷ and remove the needle plate.
3. Remove the holed screws ❸, and remove the moving knife ❹.
   * Be careful not to scratch the tip of the movable knife ❹.
4. Remove the screws ❺ and remove the fixed knifes ❻.

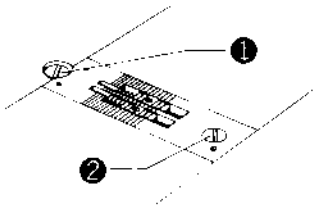


★ If the knives become blunt, sharpen the fixed knives ❻ as shown.
The moving knife ❹ cannot be sharpened with an ordinary whetstone.
If it becomes blunt, replace it with a new one.

2. Installing the movable and fixed knives





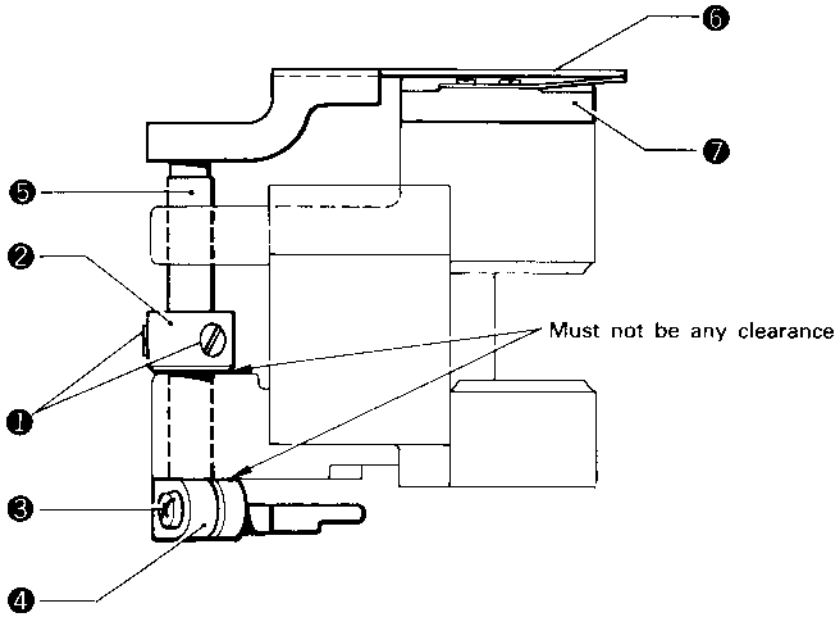


1. Turn the machine pulley by hand until the bobbin case openers are pulled all the way in the arrow direction.
2. Lightly secure the movable knife ❹ with screws ❸.
   Press down on the top of the movable knife ❹ and slide the movable knife. (Firmly tighten screw ❸ so that the gap between the tip of the movable knife and the rotary hook position bracket is 0.05 to 0.2 mm.)
   * Install the movable knife ❹ on the top of the bobbin thread clamp spring.
3. Fasten the fixed knife ❻ to the needle plate with the screws ❺.
4. Fasten the needle plate with the screws ❶, ❷.
5. Install the needles in the needle clamp and lower the presser foot.

Note

❁ Movable knife ❹ to rotary hook contact or excessive knife to hook gap may result in improper thread cutting.

3. Movable knife position adjustment



◘ Vertical position

1. Remove the needle plate.
2. Loosen screw ❶ in set collar ❷ and screw ❸ in thread trimming lever ❹, and vertically adjust movable knife lever ❺ so that movable knife ❻ lightly contacts movable knife bracket ❼.

※ Adjust set collar ❷ and thread trimming lever ❹ so that there is no gap to the rotary hook base.

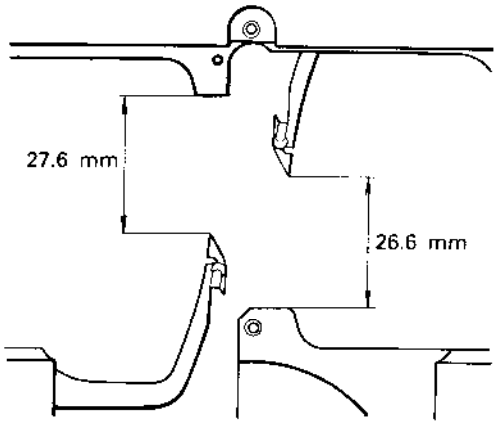
CAUTION

If the movable knife is lower than the movable knife bracket
* The thread trimming mechanism will be overloaded and may stop.
* Cutting may be poor.

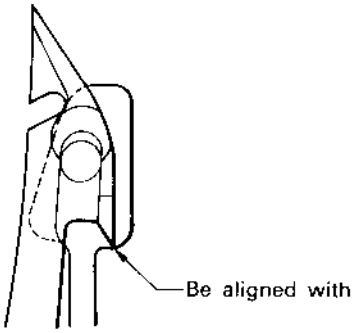
If the movable knife is higher than the movable knife bracket
* Thread trimming errors may occur.
* The knife may strike the bed and cause the machine to stop.
* Bobbin thread retention will be poor.

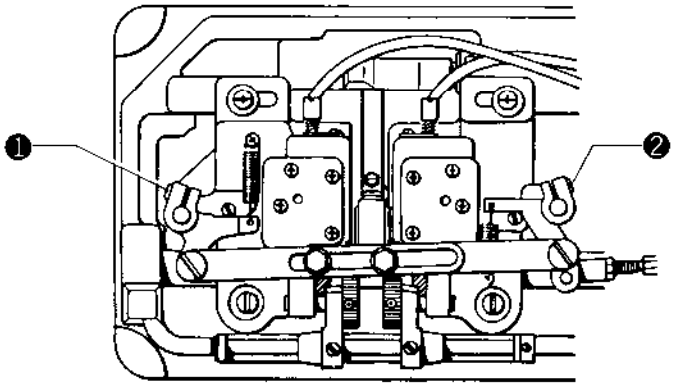
◘ Forward-back position

The standard starting position for the movable knife is as shown in the figure.



In the standard position, the tip of the hook of the movable knife should be approximately aligned with the end of the bobbin thread retention spring.
To adjust, tighten screws ❶ and ❷ of the thread trimming lever.





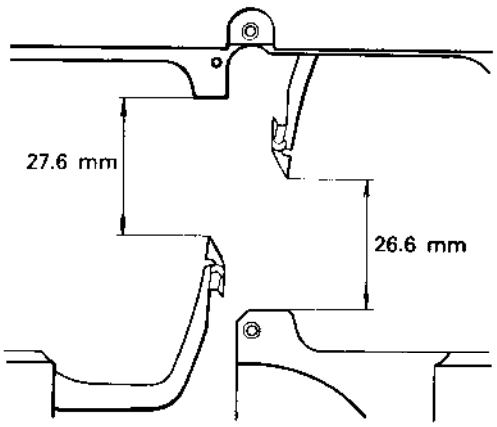
CAUTION

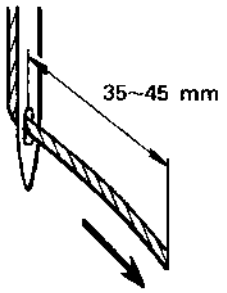
When adjusting the movable knife position, adjust to within ±0.5 mm~1 mm from the **standard** position discussed above.
When the movable knife is positioned to the front (the above dimension is less on the **rotary hook** side)

* If excessively forward, thread tightening and needle thread trimming errors will occur.
* Bobbin thread retention after thread trimming will be poor. Skipped stitches and cast-offs at the sewing start will occur; this problem is pronounced on models B872 and B875.
* The needle thread remainder trailing from the needle hole after thread trimming will be short. Particularly on the right side, the cut end of the needle thread will remain near the movable knife, and the needle thread may be cut excessively short.

When the movable knife is positioned to the back (greater than the above dimension)

* Needle thread trimming errors may occur. If far to the back bobbin thread trimming errors may occur.
* Bobbin thread retention after thread trimming will be poor. Skipped stitches and cast-offs at the sewing start will occur; this problem is pronounced on models B872 and B875.
* If the remainder is too long, the pretension will not be able to accommodate the excessive length, and the bobbin thread will not be held properly.
  The appropriate length of the needle thread remainder from the needle hole after thread trimming is 35 to 45 mm.



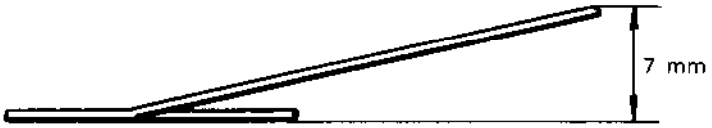


* Because the length of the needle thread remainder will become too long when the work piece is removed after thread trimming, the bobbin thread presser spring holds the needle thread end too tightly, applying resistance.

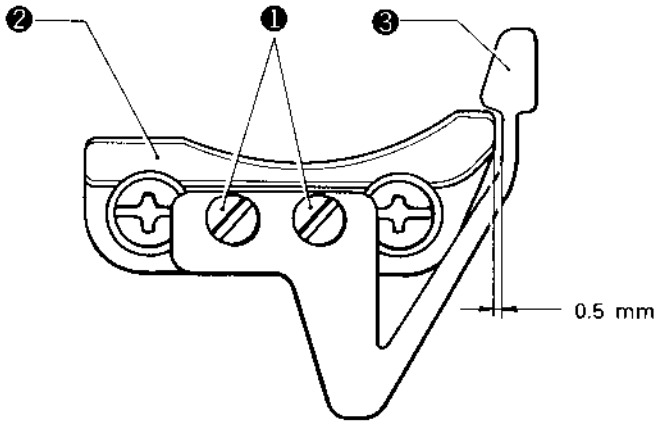
10 Bobbin Thread Presser Spring Adjustment

If the bobbin thread is not retained after thread trimming on a twin needle machine, sewing of the next work piece is not possible. Be sure to adjust the bobbin thread presser spring correctly.

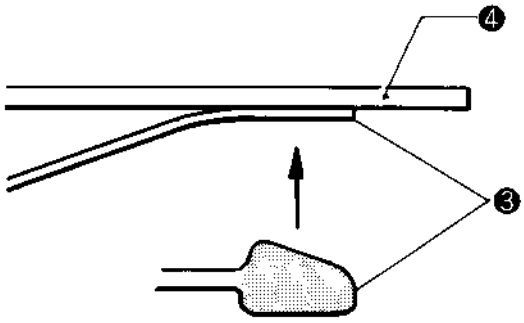
- The correct bobbin thread presser spring height is 7 mm.



- Install as shown in the figure. Loosen screw ❶, and adjust the gap between movable knife bracket ❷ and bobbin thread presser spring ❸ to 0.5 mm.



When installing movable knife ❹, if the tip of presser spring ❸ contacts the back of movable knife ❹, partial contact may cause skipped stitches and cast-offs.
If the bobbin thread is much finer than the needle thread, these problems occur more easily.



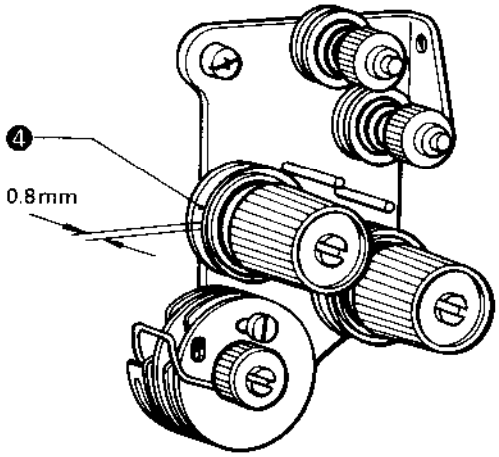
CAUTION

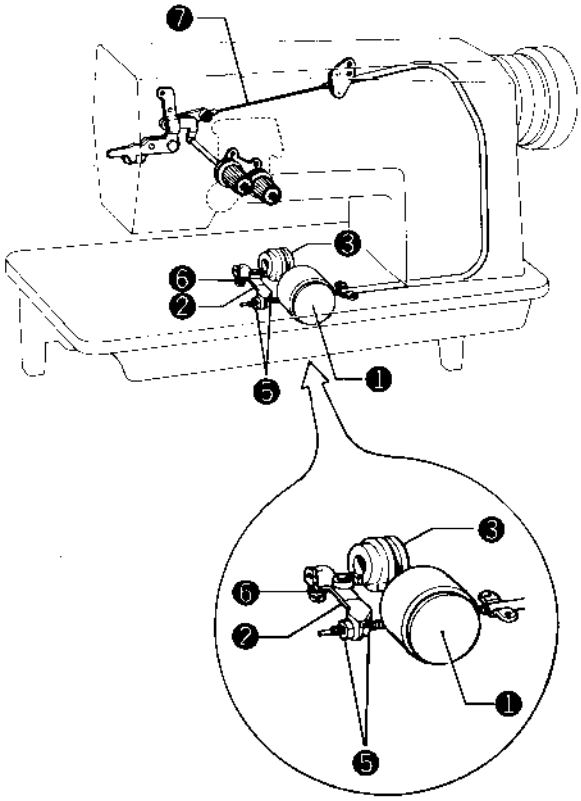
If the bobbin thread retention is too tight
* Skipped stitches and cast-offs may occur at the sewing start.

If the bobbin thread retention is too weak, or partially contacts the thread
* Cast-offs may occur at the sewing start.

11 Tension Release

★ If the thread slips out of the needle hole after thread cutting, or if the tension disc remains open, adjust as follows.





A. If the thread slips out of the needle hole (The tension release is not working properly during thread cutting.)
1. Press the thread trimming solenoid ❶ and turn the sewing machine pulley.
2. The tension disc ❹ should be open 0.8 mm when the tension release lever ❷ roller reaches the top of the tension release cam ❸.
   If the tension disc ❹ is not open, turn nut ❺ to adjust.
   Make sure the tension disc ❹ is open when the tension release lever ❷ roller is at the top of the tension release cam ❸, and closed when the lever roller is on the level.

B. If the tension disc remains open
1. Make sure the tension release lever ❷ is returned.
2. Make sure the return spring ❻ is not disengaged.
   Check the above and adjust with nut ❺ as necessary.
   If adjustment is not possible, replace the tension release wire ❼.

Note

◘ Insufficient tension disc gap

※ The thread will be held too tightly and will not pass smoothly through the disc.
※ At thread trimming, the needle thread may cast-off from the needle, or the needle thread remainder from the needle hole will be too short.

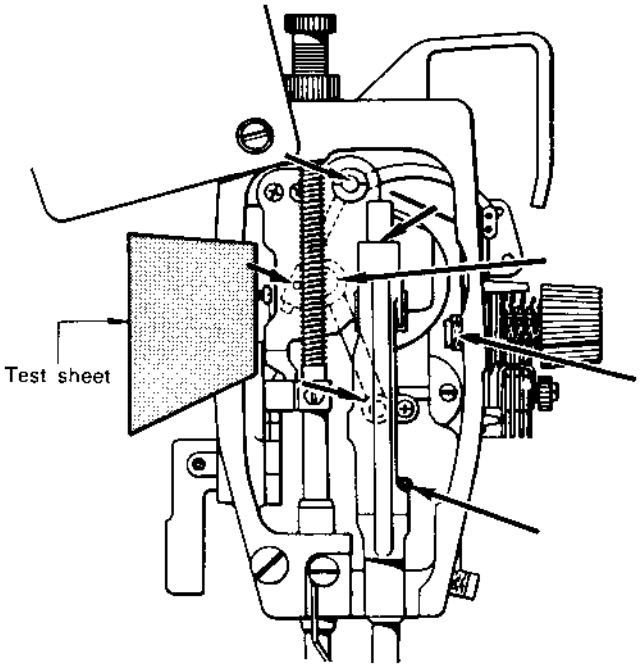
◘ Excessive tension disc gap

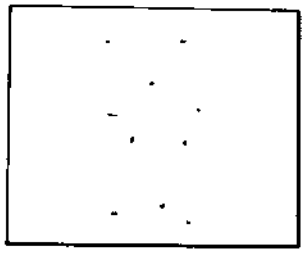
※ Improper stitch tightening
※ Loose stitches will appear at the corners stitching machines.
※ Parts may be damaged.

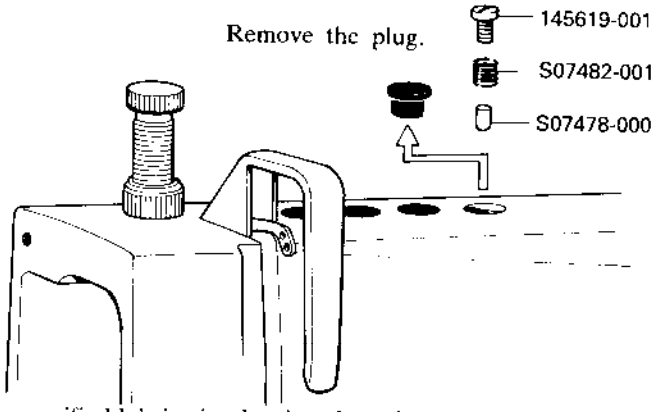
12 Lubrication Adjustment

1. Arm Lubrication

★ Appropriate lubrication — 1 min.

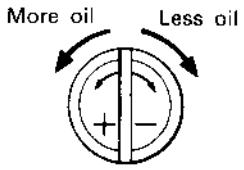


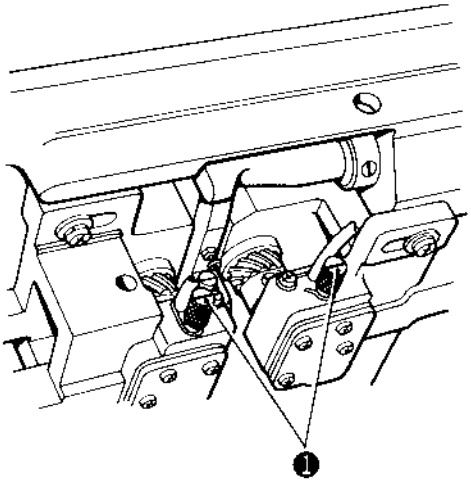


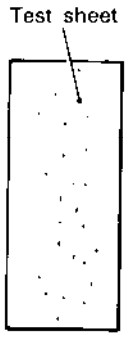


If lubrication is excessive for the sewing conditions even at the specified lubrication level, reduce the amount of lubrication with the following accessories.
If the lubrication is insufficient, the machine may seize.

2. Rotary hook lubrication

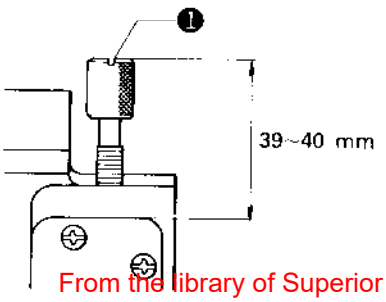






★ When replacing the rotary hook, be sure to turn adjustment screw ❶ to adjust the oil supply to the rotary hook. (The amount of oil scattering from the rotary hook should be as shown on the test sheet above for approximately every 10 seconds.)

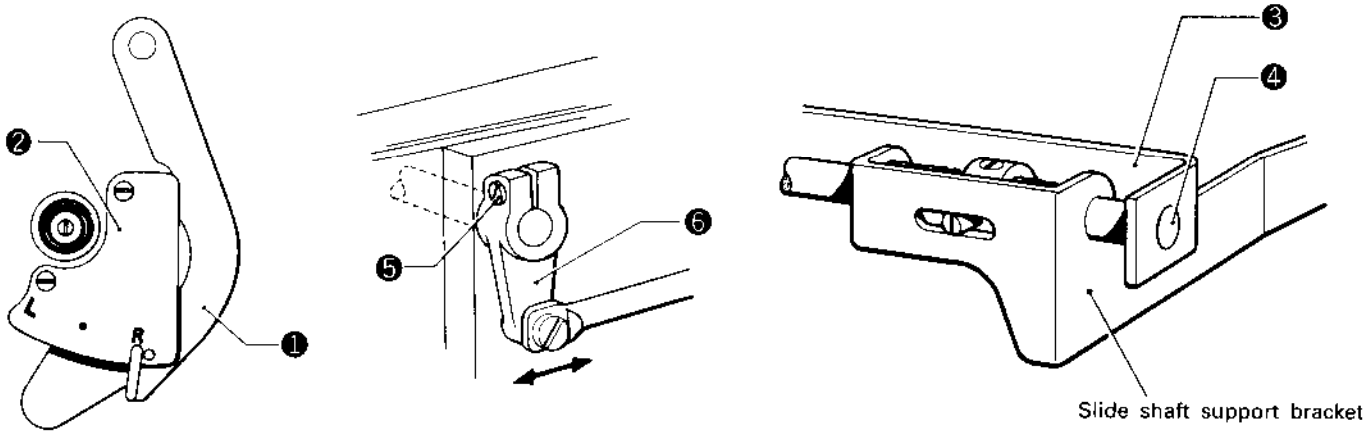
CAUTION



※ Adjust the position of the lubrication adjustment screw ❶ to the position shown in the figure, using this as a guide, as described above, for the appropriate lubrication.
※ If lubrication screw ❶ is loosened too far, the oil will be used quite quickly from the oil tank. Be sure to adjust correctly.

13 Slide shaft adjustment [B845·B848·B875]

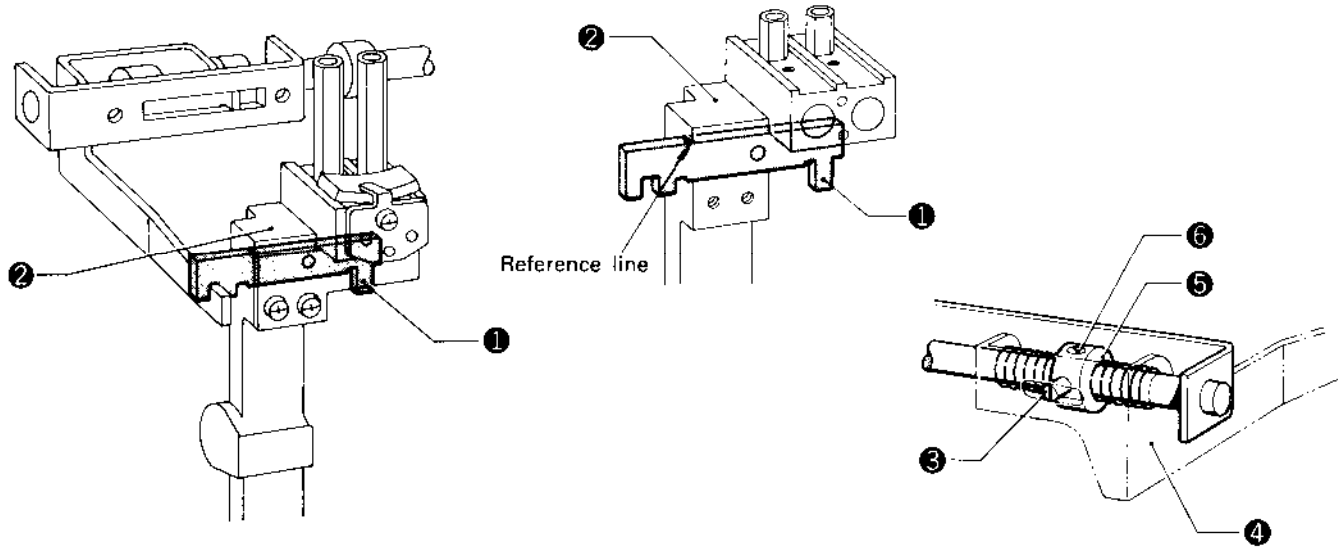
1. Slide shaft adjustment



★ Set stop lever ❶ to R on position guide ❷.
Loosen screw ❺ and move lever shaft arm ❻ right or left so that the end of slide shaft ❹ is even with the end of slide shaft support ❸.

Note
※ Lever shaft arm ❻ will not function properly, and lever shaft arm spring and set collar adjustment will be difficult, if the slide shaft ❹ is not properly aligned with the end of slide shaft support ❸.

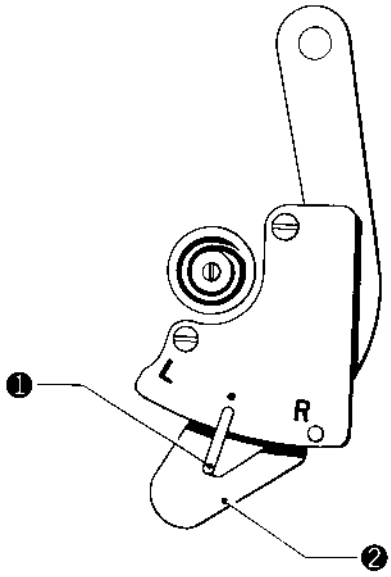
2. Slide shaft support bracket adjustment

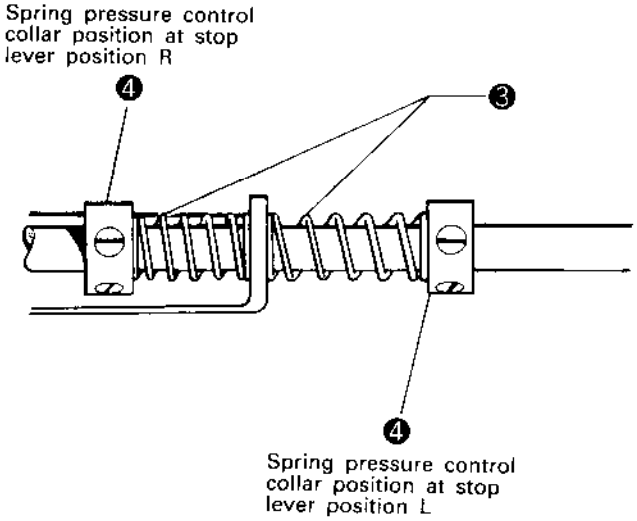


★ Set the stop lever to the dot on the position guide. Align basislinie of slide block ❶ with the left side of the needler bar frame ❷.
Insert guide screw ❸ through the oval hole in slide shaft support bracket ❹, and screw the set screw tightly into collar ❺.
Tighten stop screw ❻.

Note
※ Improper adjustment may damage the slide block tab and cause a deviation of the position of the release pin end, resulting in damage to the release pin and needle bar assembly.

3. Stop lever arm spring pressure adjustment

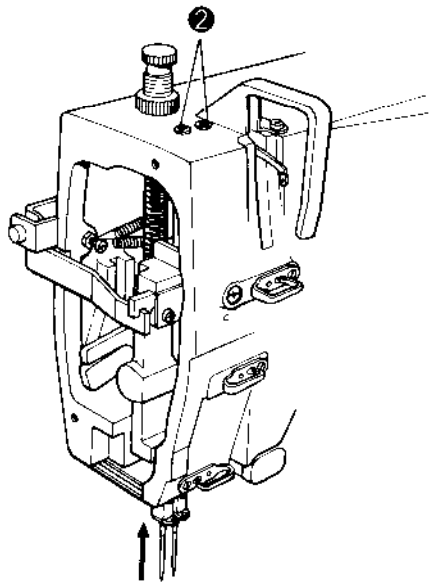


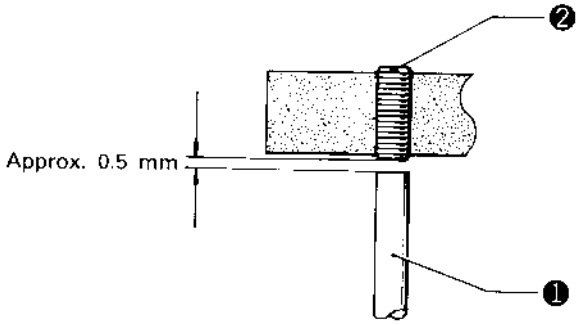


★ Spring pressure is properly adjusted if the stop lever ❶ stops at the center dot when the push lever ❷ is released from the L and R position.
★ Screw the collar ❹ tight at the point where the stop lever arm spring ❸ lightly touches the collar ❹ when the stop lever ❶ is set to the L or R position.

Note
※ Spring pressure should be equal at both positions L and R.
※ If the stop lever ❶ will not stop at the dot, readjust the stop lever arm spring pressure.

4. Needle bar stop adjustment

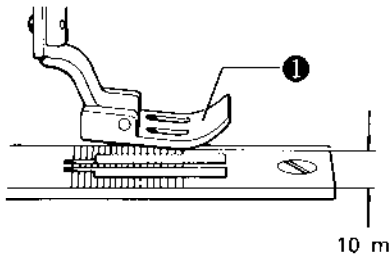


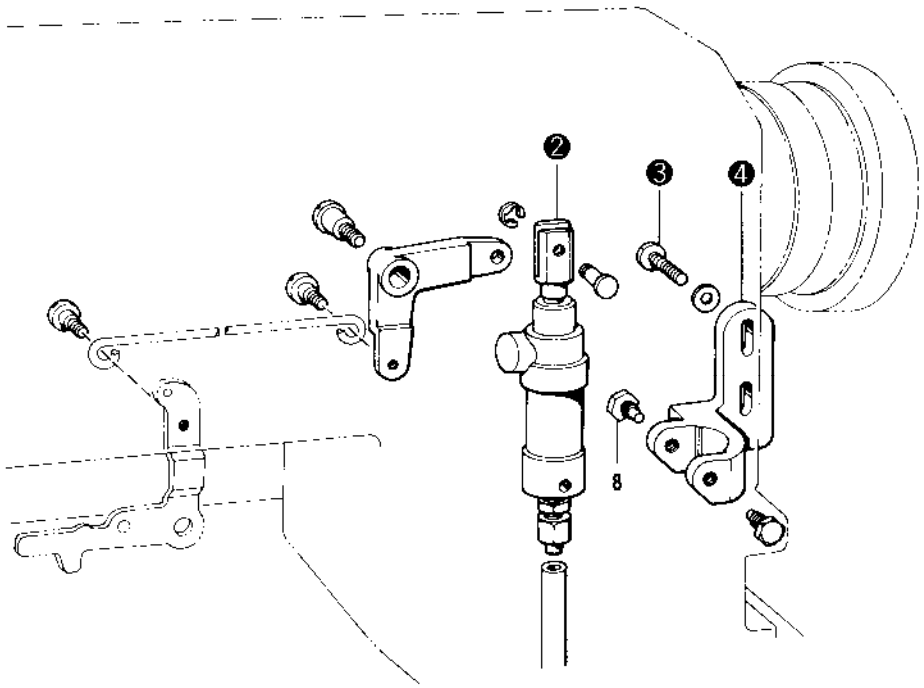


★ Set the needle bar ❶ to the up position.
★ The gap between the needle bar top and needle bar stop ❷ bottom should be approx. 0.5 mm. Turn the needle bar stop ❷ to adjust.

Note
※ If the gap between the needle bar top and needle bar stop, conclude be possibly to corse the break for needle bar frame.

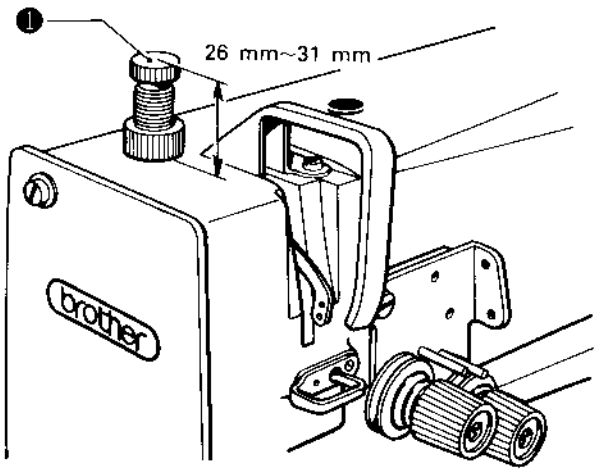
★ Presser foot height (-700)





1. The presser foot ❶ should be raised 10 mm above the needle plate by the presser bar lifter cylinder ❷.
2. Loosen screw ❸ and vertically adjust the cylinder bracket ❹ to adjust.
   (Firmly retighten the screw ❸ after the adjustment is completed.)

14 Adjustment of the Presser Foot Pressure

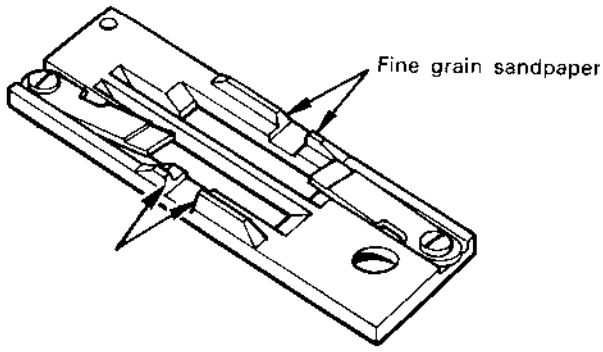


Use	Presser foot pressure	Adjustment screw height
For thin materials	3 kg	31 mm
For medium thick materials	4 kg	28 mm
For thick materials	5 kg	26 mm

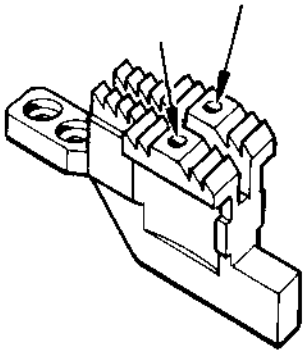
★ Adjust the presser foot pressure by turning the presser foot adjustment screw ❶.

15 Polishing the Needle Plate and Feed Dog Thread Paths

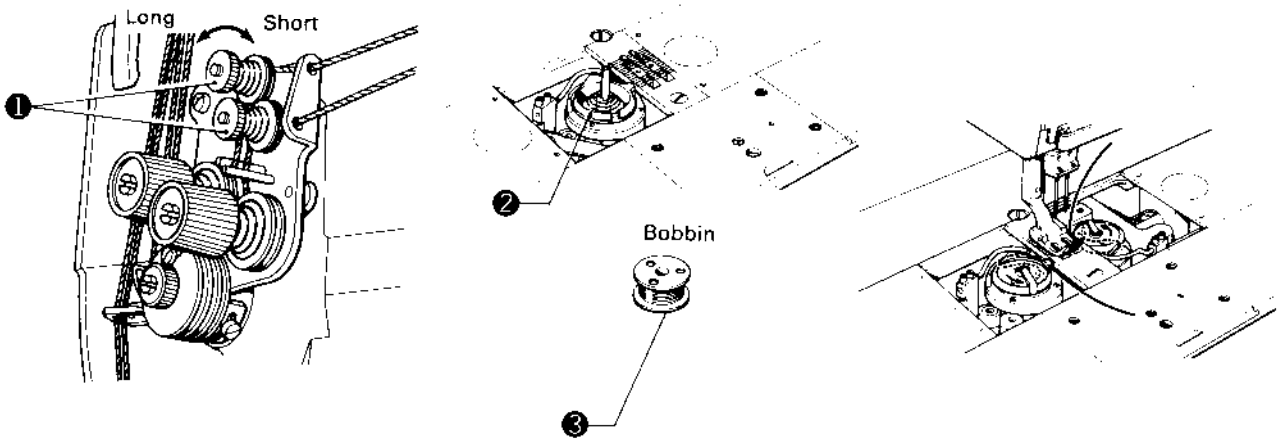
Polish the rotary hook position bracket



Polish the feed dog needle hole



16 Pre-tension and Anti-racing Spring



1. Pre-tension

★ When cutting the threads, the tension regulators loosen and only pre-tension ❶ keeps the threads taut. After thread trimming, the threads coming out of the needle eyes will be short if the pre-tension ❶ is tightened, and long if it is loosened.

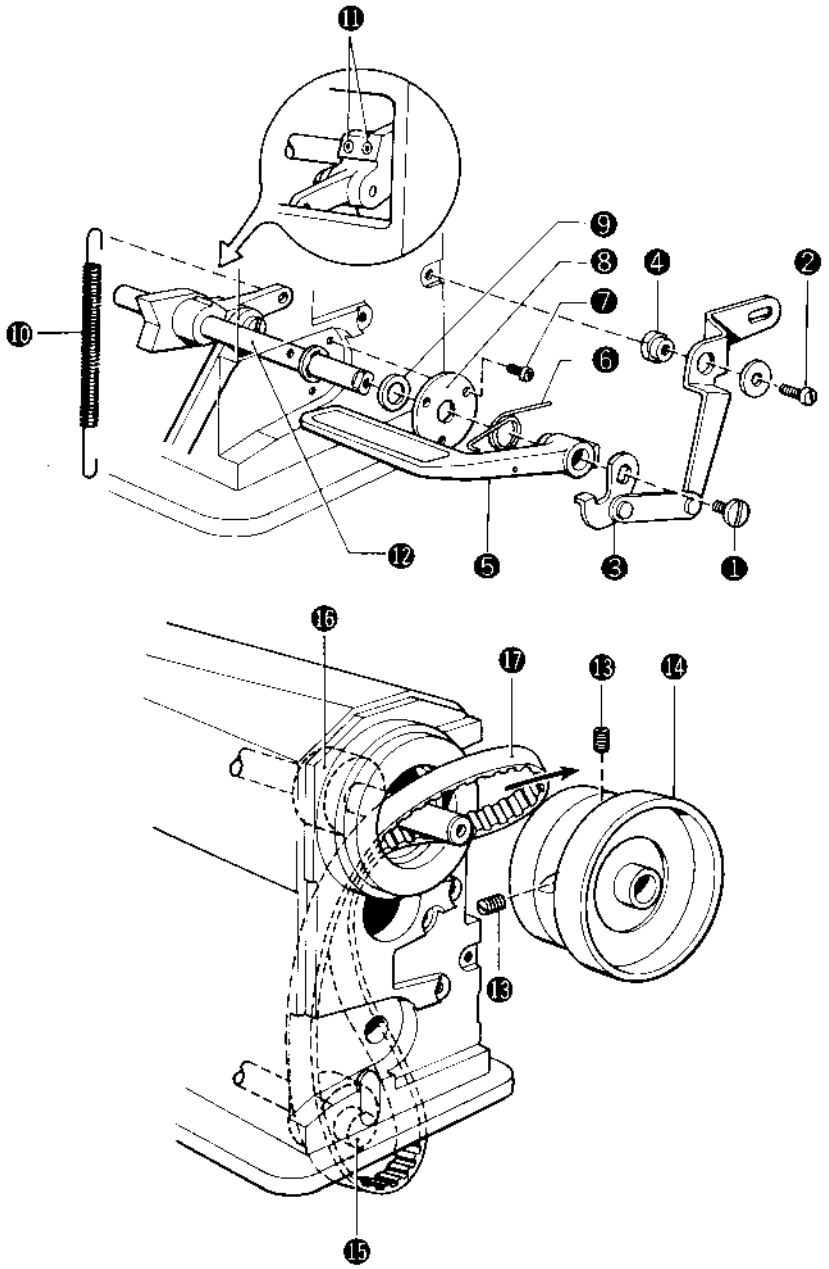
2. Anti-racing spring

★ The anti-racing spring ❷ prevents the bobbin from racing. Use bobbins ❸ made of light alloy as specified by BROTHER.

★ Pull out the lower threads as shown in the illustration above.

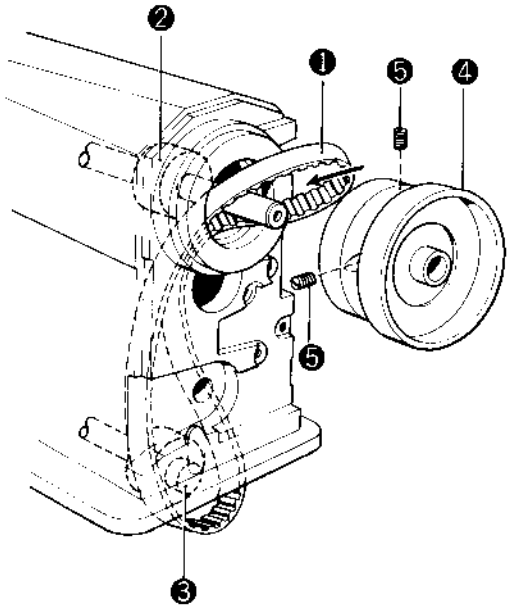
REPLACEMENT OF THE TIMING BELT

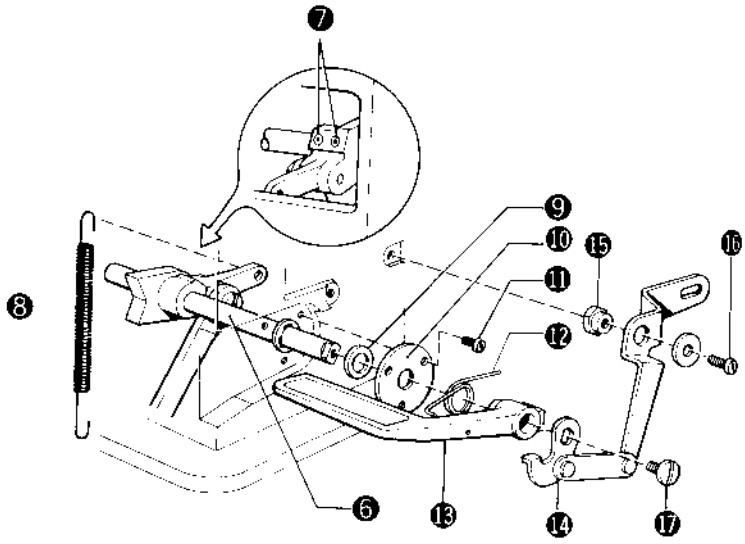
1 Removal



1. Remove the screw ❶ and the screw ❷, and then remove the reverse solenoid lever assembly ❸, the plunger and the reverse solenoid lever stud ❹.
2. Remove the reverse lever ❺ and the spring ❻.
3. Remove the three screws ❼, and then remove the spacer ❽ and the washer ❾.
4. Remove the spring ❿.
5. Loosen the two screws ⓫, and then remove the feed regulator lever shaft ⓬.
6. Loosen the two screws ⓭, and then remove the machine pulley ⓮.
7. Remove the timing belt ⓱ from timing pulley D ⓯ and timing pulley U ⓰, and then take out the timing belt ⓱ from the hole from which the pulley was removed.

2 Installation





1. Insert the timing belt ❶ into the hole from which the pulley was removed, and attach the belt to timing pulley U ❷ and timing pulley D ❸.
2. Install the machine pulley ❹ to the upper shaft, and secure by using the screws ❺.
3. Insert the feed regulator lever shaft ❻ from the side of the arm, and secure by tightening the two screws ❼.
4. Attach the spring ❽.
5. Place the washer ❾ and spacer ❿ onto the feed regulator lever shaft ❻, and secure by using the three screws ⓫.
6. Install the spring ⓬ and the reverse lever ⓭ to the feed regualtor lever shaft ❻.
7. Install the reverse solenoid lever assembly ⓮, plunger and the reverse solenoid lever stud ⓯ by using the screw ⓰ and screw ⓱.
   (After inserting the plunger to the reverse solenoid, install while checking to be sure that the reverse solenoid lever assembly ⓮ is gently activated.)

How to Change Gauges

◆ Turn the Power Switch Off.

1 Remove the slide plate.

2 Remove the needle.

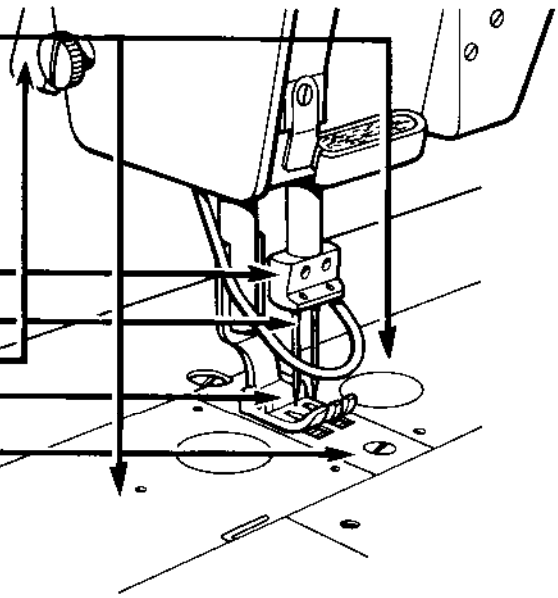
3 Remove the needle clamp.

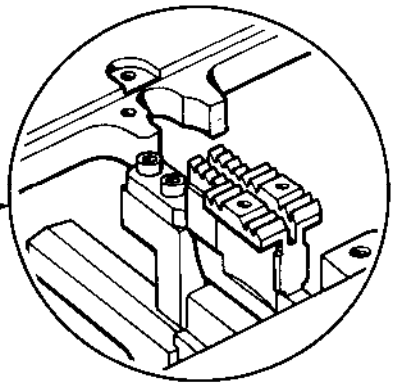
4 Raise the presser foot by using the presser foot lifter.

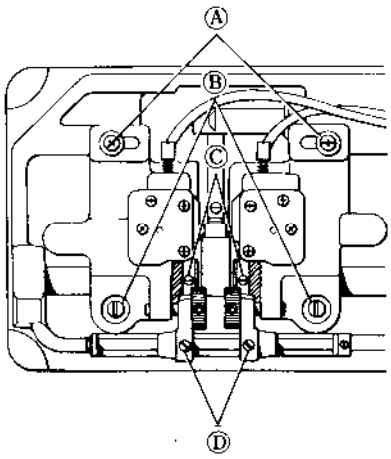
5 Remove the presser foot.

6 Remove the needle plate.

7 Remove the feed dog.



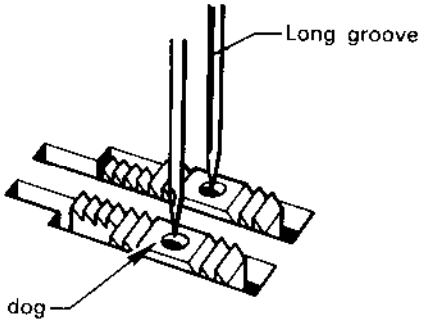


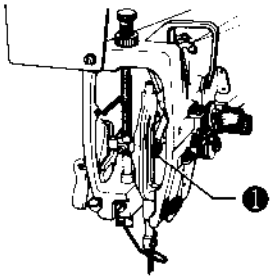


Adjusting the rotary hook base

★ Make the following adjustment when replacing the current gauge with one wider. The feed dog cannot be installed if this adjustment is not made. Loosen screws Ⓐ, Ⓑ, Ⓒ, and Ⓓ, and shift the rotary hook base right or left.

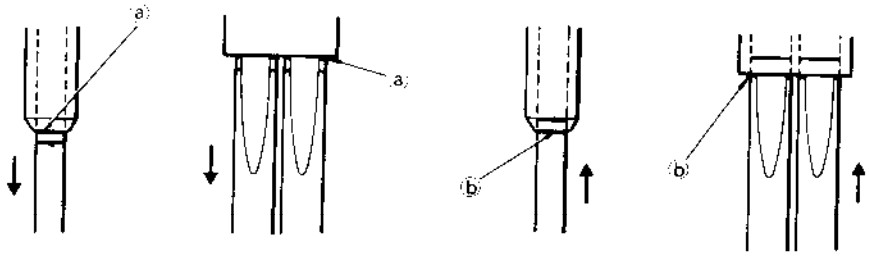
Order	What to do
1 Attach the needle clamp.	★ Loosen screw ❶ and align the needles so that the needles will fall in the centers of the needle holes in the feed dog.
2 Attach the needle.	
3 Attach the feed dog.	
4 Adjustment of needle bar lift stroke.	
5 Return the machine head to its original position.	
6 Move the rotary hook base.	
7 Clearance between rotary hooks and needle.	
8 Rotary hook timing and needle height. (Be careful of seam length. See page 46-50.)	
9 Return the head to its original position.	
10 Attach the needle plate.	
11 Attach the presser foot.	
End	





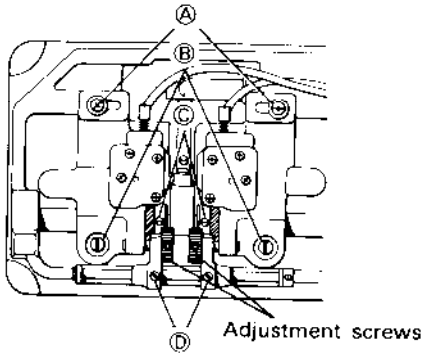
Needle bar down position

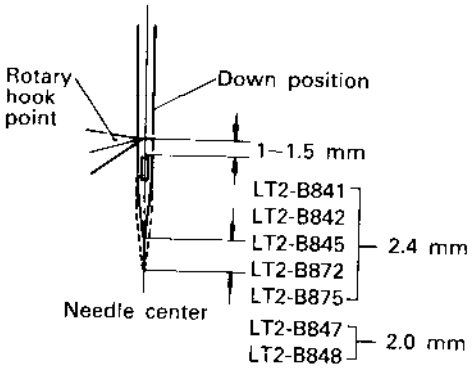
B841, B842, B872 — 2.4 mm
B847 — 2.0 mm
B845, B875 — 2.4 mm
B848 — 2.0 mm



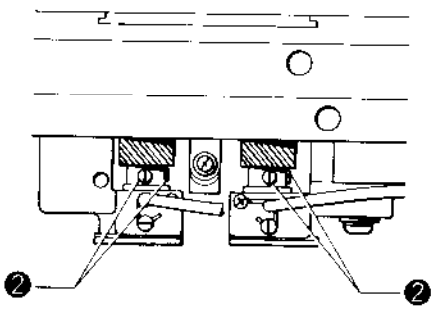
When the needle bar is in its lowest position, the needle position reference line ⓐ of the needle bar is aligned with the bottom edge of the needle bar bushing. When the needle bar is 2 or 2.4 mm above its lowest position, needle position reference line ⓑ of the needle bar is aligned with the bottom edge of the needle bar bushing. At this time, the rotary hook point must be aligned with the needle center.

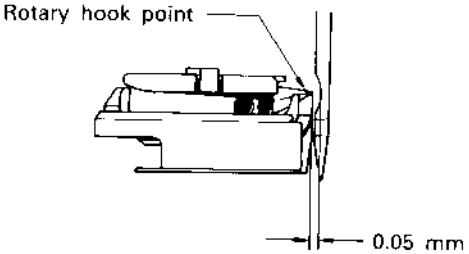
Shift the rotary hook base to the approximate position (within 1–3 mm).
※ The rotary hook base will not move unless screws Ⓐ, Ⓑ, Ⓒ and Ⓓ are loosened. Tighten screw Ⓓ, and turn the adjustment screw until the needle to rotary hook gap is 0.05 mm. After adjustment, firmly tighten screws Ⓐ, Ⓑ and Ⓒ.





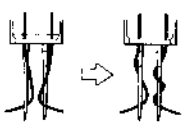
Loosen the three set screws ❷, and align the rotary hook point with the needle center.





TROUBLESHOOTING GUIDE

LT2-B841 · B842 · B845 · B847
B848 · B872 · B875

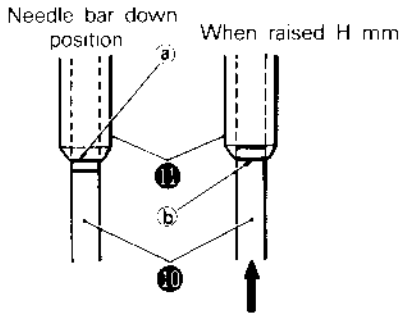
Trouble	Cause	Check	Remedy	Page
Thread breaks	Damaged rotary hook holding slot in the needle plate.		Polish the rotating hook holding slot.	64
	Improper upper thread tension.	Upper thread tension.		
		Bobbin case opener gap.	Set the rotary hook and bobbin case opener gap to 0.2 mm.	45 49
	Improper needle and rotary hook timing.	Needle and rotary hook point gap.	Set the needle and rotary hook point gap to 0.05 mm.	44 47
		Rotary hook and needle plate gap.	Check the rotary hook and needle plate clearance.	45 48
		Needle bar lift stroke and height.	Adjust the needle bar lift stroke and height.	46 49
	Insufficient lubrication to the rotary hook assembly.	Rotary hook lubrication.	Adjust the lubricating oil supply to the rotary hook.	14 60
	Improper thread take-up spring tension and stroke.	Thread take-up spring stroke and tension.	Adjust the thread take-up spring.	51
	Rotary hook point damaged.		Polish the rotary hook point.	
	Damaged needle hole in the feed dog.		Polish the needle hold in the feed dog.	64
	Improper threading.	Threading		
	Improper needle installation.	Needle groove direction		
	Bent or blunt needle.	Needle	Replace the needle.	
	Improper presser foot installation		Install presser foot correctly.	33
	Needle thread twist unravels.	If thread breakage occurs frequently with polyester thread 1) Set the needle thread tension and take-up spring tension as weak as possible. 2) Wrap the thread around the needles as shown below to reduce the problem. 		
	Concealed stitches			

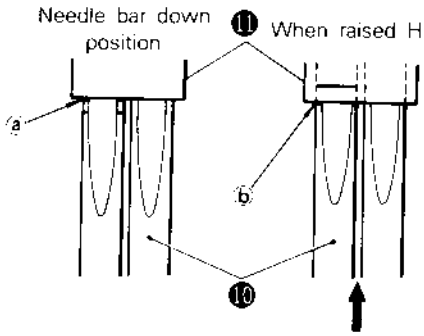
Trouble	Cause	Check	Remedy	Page
Loose threads	Refer to the "Thread breaks" section. Also check below.			
	Bobbin sticks.		Replace the bobbin.	
	When using a machine for medium-thick materials, the thread does not tighten properly with some materials.		Replace with a slotted presser foot (for med. thick materials). Replace with a slotted feed dog (for med. thick materials).	69
	Excessive gap between rotary hook and bobbin case opener.	Check the gap.	Adjust the rotary hook and bobbin case opener gap to 0.2 mm.	45 49
	Feed dog too high.	Check height.	Adjust feed dog height to 1 mm.	52
	Rough thread path.		Correct.	
	Small rotary hook to needle plate gap.	Check the gap.	Adjust the rotary hook and needle plate clearance to 0.6~0.9 mm (for the ST) and to 1.3 mm (for the thread trimmer).	45 48
	The upper thread catches on the tip of the movable knife.	Movable knife position.	Adjust the movable knife front/rear position.	56
Excessive puckering	Upper thread tension is too high.	Upper thread tension.	Set the upper thread tension as weak as possible.	
	Lower thread tension is too high.	Lower thread tension.	Set the lower thread tension as weak as possible.	
	Thread take-up spring is too strong.	Thread take-up spring tension.	Set the thread take-up spring tension as weak as possible.	51
	Thread take-up spring stroke is too large.	Thread take-up spring stroke.	Set the thread take-up spring stroke as small as possible.	51
	Presser foot pressure is too weak.	Presser foot pressure.	Increase presser foot pressure.	64
	Sewing speed is too fast (motor rotation is too fast).		Decrease sewing speed.	
	When using a machine for medium-thick material, thread may tighten excessively depending on the thread and material.		Replace with a slotless presser foot (for medium-thick materials).	69

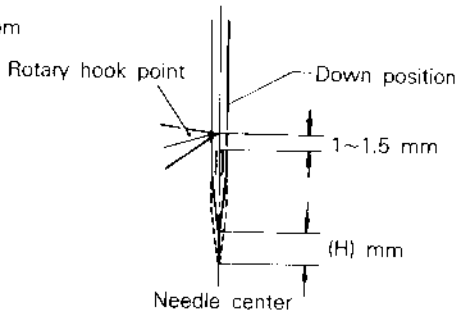
Trouble	Cause	Check	Remedy	Page
Skipped stitches occur frequently.	See thread breakage (needle to rotary hook timing).			
	Presser foot pressure low.	Presser foot pressure.	Increase pressure.	64
	Rotary hook point is blunt.	Check rotary hook point tip.	Correct or replace.	44 47
	Rotary hook needle guard is not working.	Needle guard to needle gap.	Make the rotary hook needle guard function correctly.	44 47
	Needle too heavy for thread.		Use one count finer needle.	
	Sewing heavy materials.			

If skipped stitches occur frequently, especially for spun thread Refer to pages 45 and 48, and, while referring to the section "Needle bar lift stroke", check the following.

Adjust H mm to 2.6 mm to 2.8 mm to reduce the number of skipped stitches. If H is set too large, thread tightening will be poor.







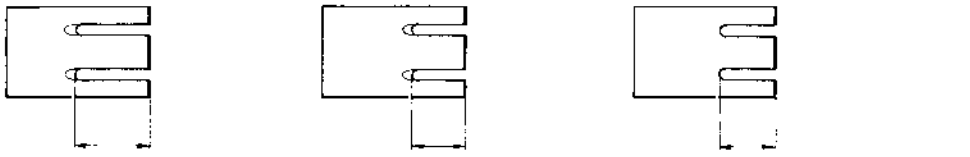
Trouble	Cause	Check	Remedy	Page
Upper thread cutting misses	Improper thread trimmer timing.		Adjust thread trimmer timing.	41
	Damaged or bent movable knife tip.		Replace the movable knife.	55
	Movable knife tip and rotary hook stop gap is too large.		Set the movable knife tip and rotary hook stop gap to 0.05~0.2 mm.	55
	Improper needle and rotary hook timing.	Bobbin case opener gap.	Adjust the rotary hook and bobbin case opener gap to 0.2 mm.	49
		Needle and rotary hook point gap.	Adjust the rotary hook point and needle gap to 0.05 mm.	47
		Needle plate and rotary hook gap.	Adjust the rotary hook and needle plate gap to approx. 1.3 mm.	48
		Needle bar lift stroke and height.	Adjust the needle bar lift stroke and height.	49
	Poor movable knife position		Adjust the movable knife front/rear position.	56
	Thread take-up spring stroke is too small.		Adjust by the thread take-up spring stopper.	51
Lower thread cutting misses	Movable knife tip is too low.	Movable knife position.	Replace the movable knife.	48
	Rotary hook is too high.	Rotary hook height.	Check the rotary hook height.	48
	Damaged or bent movable knife tip.		Replace the movable knife.	55
	Poor movable knife position.		Set gap to rotary hook to 0.05~0.2 mm.	55
	Needle hole in feed dog (needle plate) is too large.		Replace feed dog (needle plate).	
	Feed dog is too high.	Check height.	Adjust feed dog height to 1 mm.	52
	Rotary hook point is worn.		Replace rotary hook.	47
	Needle to rotary hook point gap is poorly adjusted.			

CAUTION
If the needle to rotary hook point gap is adjusted while the needle guard is applied, the needle may bend and cannot be properly adjusted. Adjustment in this condition will result in an improper movable knife position, causing the bobbin thread to be pushed out, and trimming errors to occur.

Trouble	Cause	Check	Remedy	Page
Bobbin races during thread cutting.	Lower thread not running in normal direction.		Adjust so the lower thread winds in the same direction the rotary hook rotates.	64
	Bobbin wound over 80%.	Bobbin thread.	Adjust lower thread amount to 80% of bobbin capacity.	
	Racing prevention spring tension is too weak.		Replace the racing prevention spring.	64
	Using metal bobbin.	Bobbin type.	Use aluminum bobbin for thread trimming machines.	64
	Thread trimming speed is too fast.		Set to 190 spm.	
	Rotary hook thread path is poor.		Correct or replace.	
Stitches skip or thread casts off at start of sewing. (If needle thread remainder from needle hole is more than 35 mm.)	Needle up stop position is too high.	Height from needle tip to needle plate after thread cutting.	Adjust the synchronizer.	53
	After thread cutting, the bobbin thread is not held by the lower thread tension spring.	Check if thread is held under movable knife after trimming.	Adjust the position of the movable knife, or replace the bobbin thread tension spring.	56 58
	Feed dog is too low.	Feed dog height.	Adjust feed dog height to 1 mm.	52
	Thread take-up spring tension is high, or the stroke is too large.	Thread take-up spring.	Decrease thread take-up spring tension, or stroke length.	51
	Upper thread from the needle hole is short.		Decrease pre-tension strength to increase length.	64
	Needle is too thick.		Replace with finer needle.	
	Presser foot for thick materials (slotted) is being used.		Replace with slotless presser foot.	69

CAUTION
If the stitch is held early by the presser, skipped stitches and cast-offs will occur less frequently.

Presser foot types



Long
(Space on back)
For large shuttle

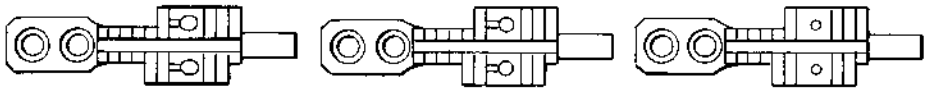
Short
Space on back
For small shuttle,
thick materials

Short
No space
For small shuttle,
medium materials

If the pitch is too small for the sewing conditions with a large shuttle, use a small shuttle.

Feed dog needle hole is too large.		Replace with feed dog having a smaller needle hole.	69

CAUTION
There are three types of feed dogs with different size needle holes. Use the feed dog with the smallest needle hole at which needle breakage does not occur.



Very thick materials

Thick materials

Medium materials

Bobbin thread tension is too great.		Decrease.	

CAUTION
Skipped stitches and cast-offs may occur when the bobbin thread gets low when using a fine count thread. It is particularly easy for the bobbin thread tension to increase excessively when using a large shuttle, and the bobbin should be wound with extra thread.

Bobbin thread tension is weak.	Bobbin spinning	Increase tension.	
Presser is free at sewing start.		Use the slow sewing start.	

Trouble	Cause	Check	Remedy	Page
After thread cutting, thread trailing from needle hole is shorter cast-off. (If thread remainder from needle hole is less than 30 mm)	Thread does not come easily off the spool stand.	Thread winding and feeding.	Adjust so thread feeds easily.	
	Pre-tension is too high.		Decrease pre-tension strength.	64
	Thread take-up spring stroke is too large.	Thread take-up spring stroke.	Decrease thread take-up spring stroke.	51
	Improperly polished knife hook.		Polish or replace the movable knife.	55
	Tension disc does not engage during thread cutting.	Tension release movement.	Adjust the tension release.	59
	Thread trimming timing is not properly adjusted.	Thread trimming timing.	Adjust.	41
	Movable knife is forward.		Adjust the movable knife front/rear position.	56
	Needle to rotary hook timing is not properly adjusted.	Excessive bobbin case opener gap.	Set gap to 0.2 mm.	49
		Small rotary hook to needle plate gap.	Set gap to 1.3 mm.	48
	Scratched needle plate rotary hook base.		Correct or replace.	64
	Knife cuts poorly.		Sharpen or replace.	55

CAUTION
The thread may be cast-off from the needle hole during thread trimming with concealed stitches. Refer to the above.

Trouble	Cause	Check	Remedy	Page
Needle strikes the thread wiper due to deviated irregular stopping in the needle up position.	Improper wiper position.		Adjust the thread wiper.	54
	Needle up stop position is weak.	Height from needle tip to needle plate after thread cutting.	Adjust the synchronizer.	53
	V-belt tension is weak.		Adjust V-belt tension.	
	Deviated irregular stopping in the needle-up position occurs due to sewing heavy material.	Needle-up stopping position.	Replace the motor pulley with one of the next smaller size.	
Wiper does not wipe the thread.	Poor wiper position.		Adjust.	54
	Thread remainder from needle hole is long after thread trimming.	Pretension strength	Adjust to 35~45 mm by the pre-tension.	64
		Thread trimming timing	Adjust the thread cutting timing.	41
		Movable knife position	Adjust the movable knife front/rear position.	56
	Bobbin thread retention pressure is too high.	Bobbin thread presser spring	Adjust the position of the bobbin thread tension spring.	58
	Knife cuts poorly.		Sharpen or replace.	55