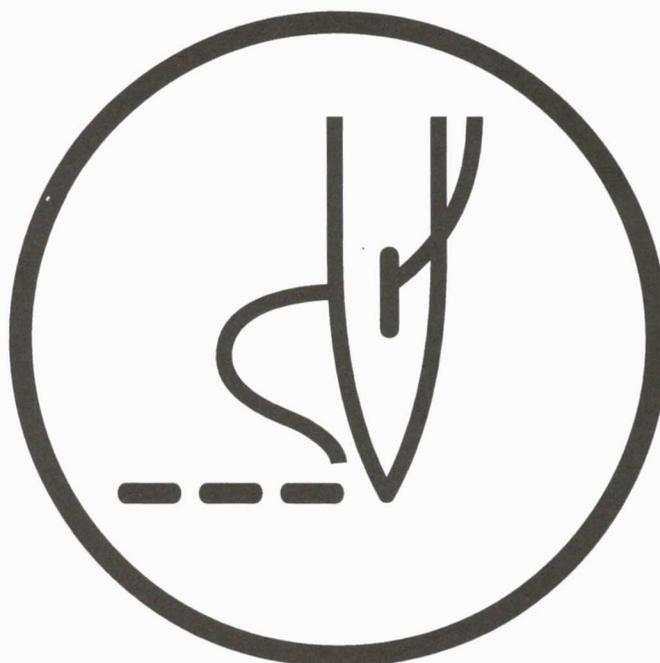


LS3-C53B, C54B LT3-C57B

INSTRUCTION MANUAL

Please read this manual before using the machine.
Please keep this manual within easy reach for quick reference.

SINGLE NEEDLE (TWIN NEEDLE) CYLINDER BED UNISON FEED LOCK STITCHER
WITH HORIZONTAL ROTARY HOOK AND REVERSE STITCHING



brother[®]

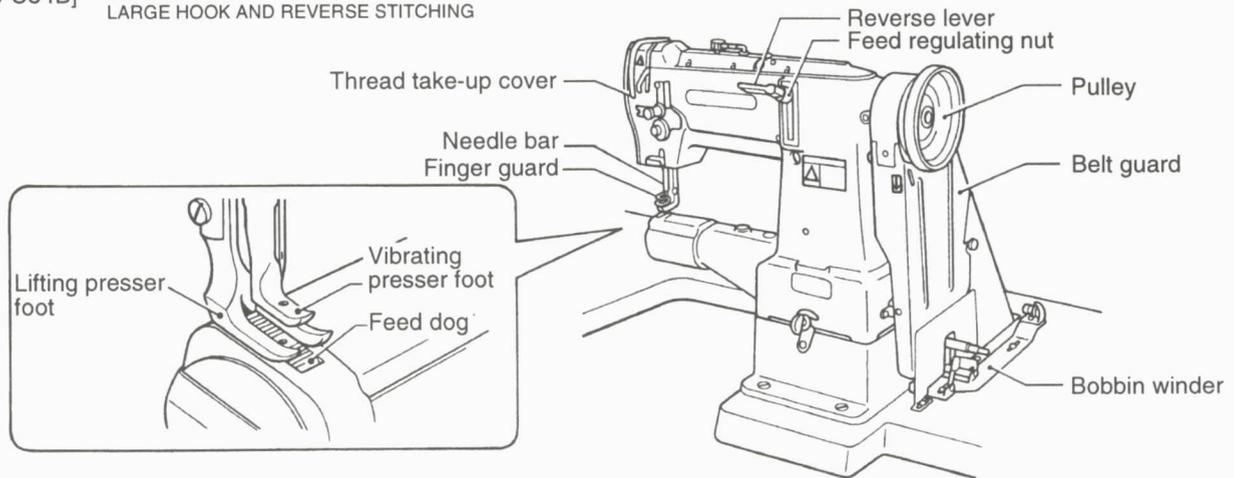
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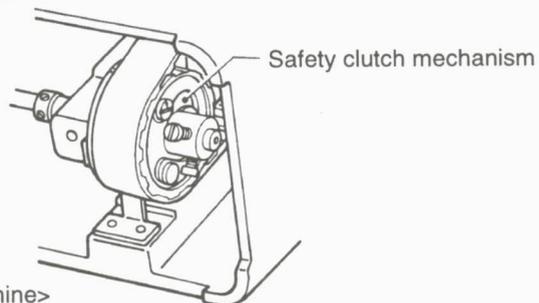
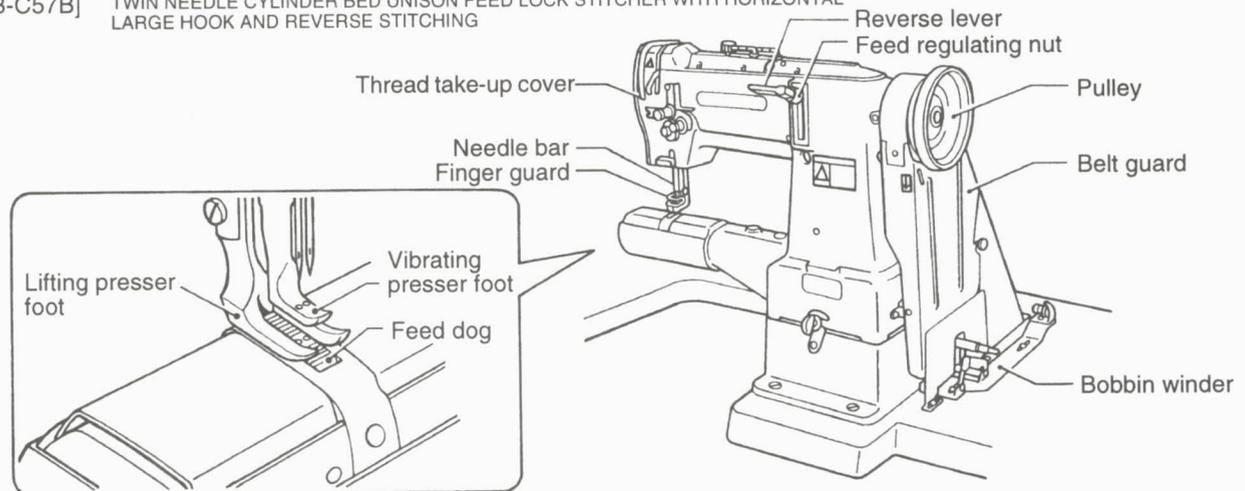
1. MAIN PARTS NAMES

[LS3-C53B] SINGLE NEEDLE CYLINDER BED UNISON FEED LOCK STITCHER WITH HORIZONTAL ROTARY HOOK AND REVERSE STITCHING

[LS3-C54B] SINGLE NEEDLE CYLINDER BED UNISON FEED LOCK STITCHER WITH HORIZONTAL LARGE HOOK AND REVERSE STITCHING



[LT3-C57B] TWIN NEEDLE CYLINDER BED UNISON FEED LOCK STITCHER WITH HORIZONTAL LARGE HOOK AND REVERSE STITCHING



2. SPECIFICATIONS

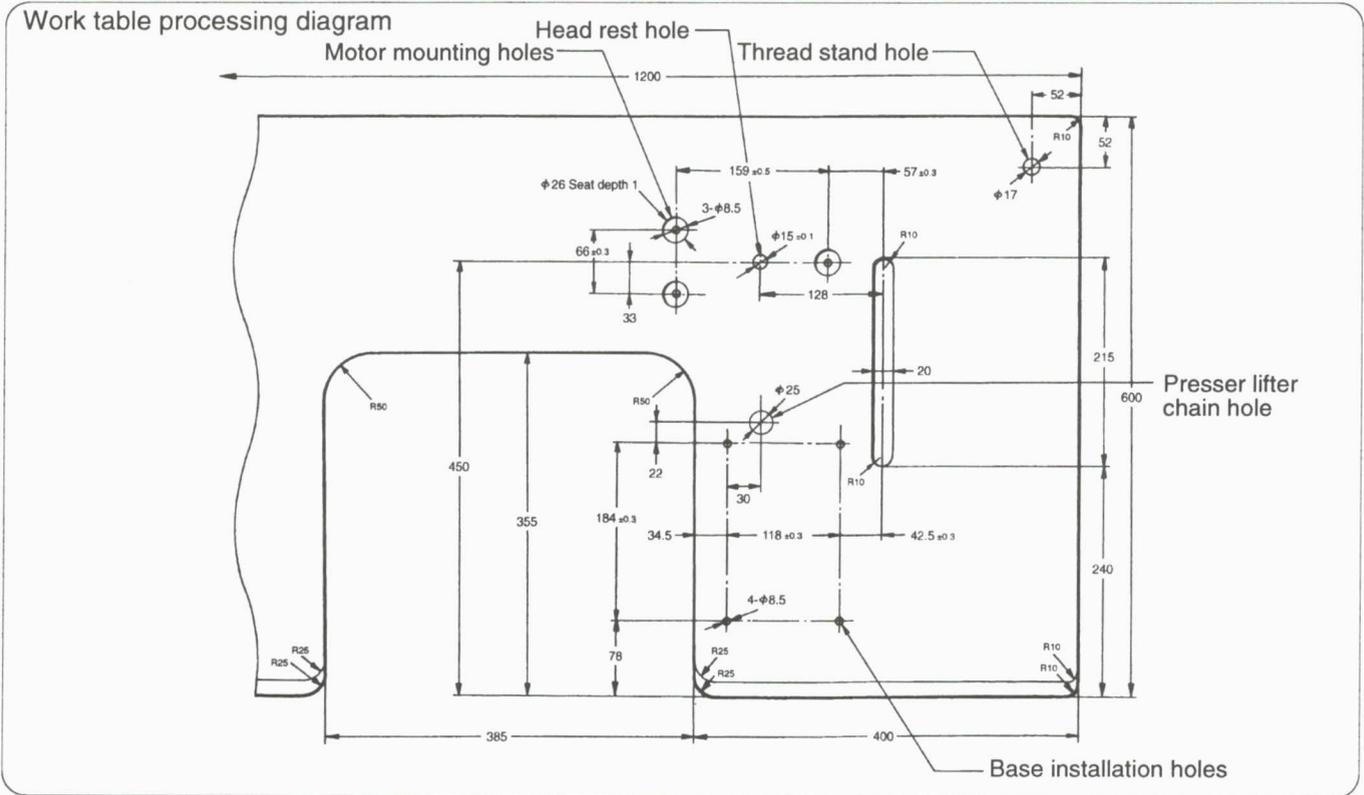
		LS3-C53B	LS3-C54B	LT3-C57B
Use		Medium-thick materials - very thick materials		
Sewing speed		2,200 spm	2,000 spm	
Presser foot height	Presser bar lifter	8 mm	9 mm	
	Presser lifter	13 mm	14 mm	
Max. stitch length		5.5 mm	6.2 mm	
Feed dog height		1 mm		
Needles		DP × 17		

3. WORK TABLE AND MOTOR

3. WORK TABLE AND MOTOR

■ Work Table

- When using a table made by another manufacturer, drill holes in the table as shown in the figure below.
- The top of the table should be 40 mm in thickness and should be strong enough to hold the weight and withstand the vibration of the sewing machine.



■ Motor

⚠ CAUTION



- All cords which are connected to the motor should be secured at least 25 mm away from any moving parts. Furthermore, do not excessively bend the cords or secure them too firmly with staples, otherwise there is the danger that fire or electric shocks could occur.



- Install the correct belt guard which corresponds to the motor being used.

<Motor>

- Select the correct motor from those listed in the table.
- Refer to the instruction manual for the motor for details on installing and using the motor.

Power	Motor
Single-phase 110V	2pole, 400W motor
Three-phase 220V	2pole, 400W motor

<Motor pulley and V-belt>

- Select the correct motor pulley and V-belt by referring to the table to suit the power frequency of your area.

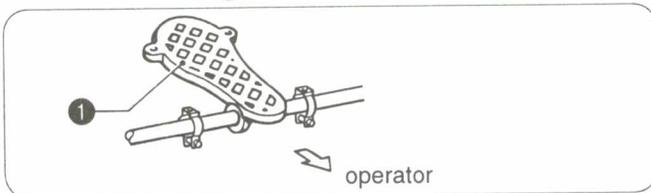
	Sewing speed	Frequency	Motor pulley	V-belt
LS3-C53B	2,000 spm	50 Hz	Motor pulley 55	56 inches
	1,900 spm	60 Hz	Motor pulley 45	56 inches
LS3-C54B	1,800 spm	50 Hz	Motor pulley 50	56 inches
LT3-C57B	1,600 spm	60 Hz	Motor pulley 40	56 inches

4. INSTALLATION

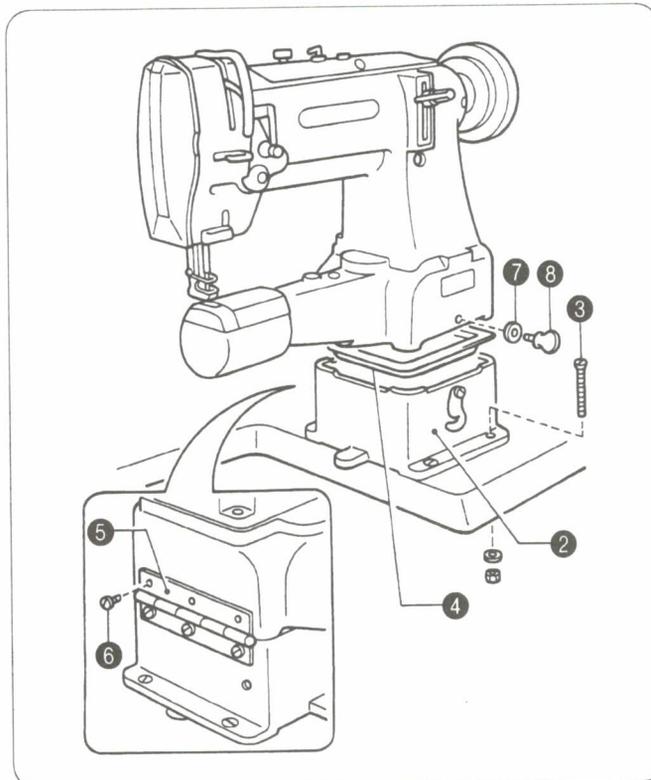
CAUTION

-  • The sewing machine should only be installed by a qualified technician.
-  • Ask your Brother dealer or a qualified electrician for any electrical work that may need to be done.
-  • The sewing machine weighs more than 27 kg. The installation should be carried out by two or more people.
-  • Do not connect the power cord until installation is complete, otherwise the machine will operate if the treadle is pressed by mistake, which could result in injury.
-  • Be sure to connect the ground. If the ground connection is not secure, serious electric shocks will result.
-  • Install the belt guard to the machine head.

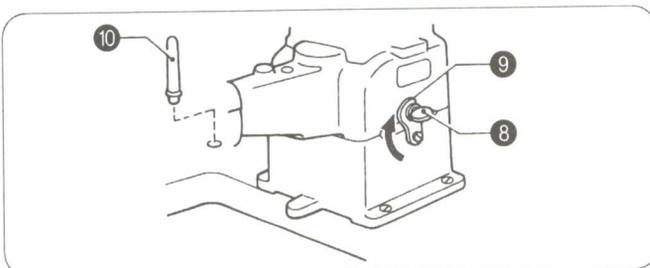
4-1. Installing the machine head



1. Provisionally install the presser lifter pedal **1** to the pipe at the foot of the work table before installing the machine head.



2. Install the base **2** on the table with 4 screws **3**. (Refer to the work table processing diagram on page 2.)
3. Place the oil reservoir **4** on top of the base **2**, and then place the machine head on top of it.
4. Attach the hinge **5** of the base **2** to the machine head with the three screws **6**.
5. Install the washer **7** and the screw **8**.

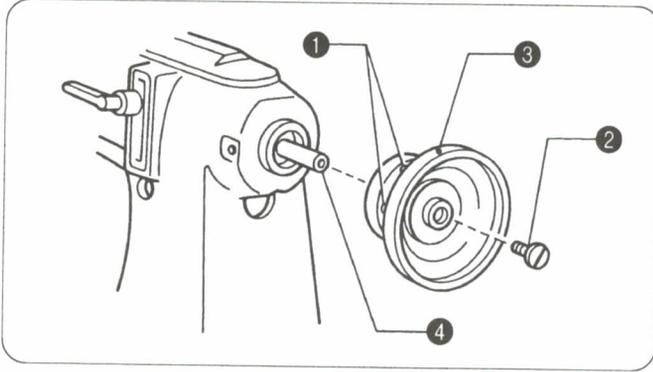


6. Engage the hook **9** and then lock it with the screw **8**.
7. Tap the head rest **10** into the table hole.

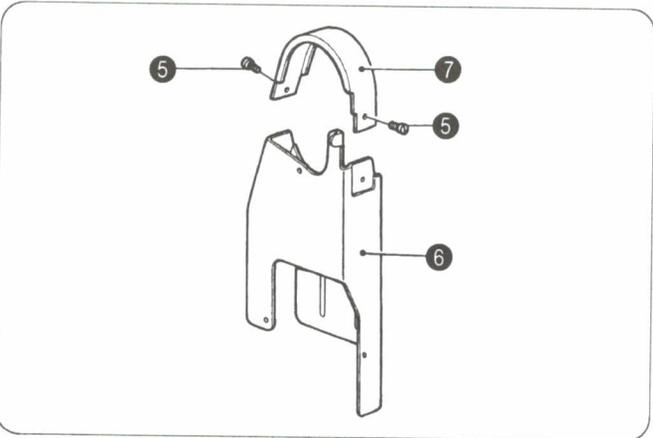
NOTE: Tap the head rest securely into the table hole. If the head rest is not pushed in as far as it will go, the machine head will not be sufficiently stable when it is tilted back.

4. INSTALLATION

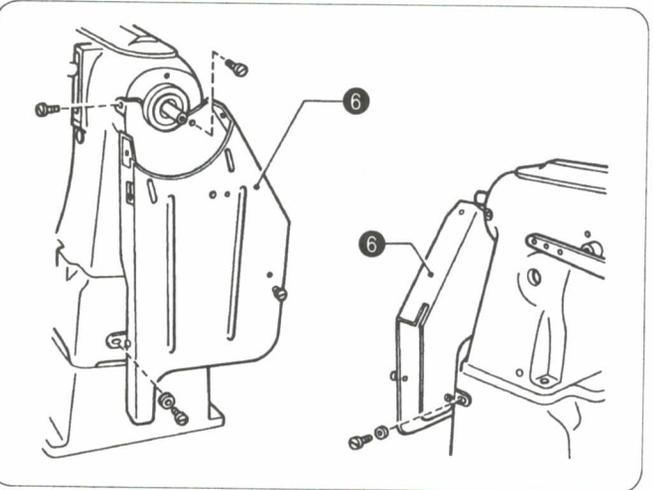
4-2. Installing the belt



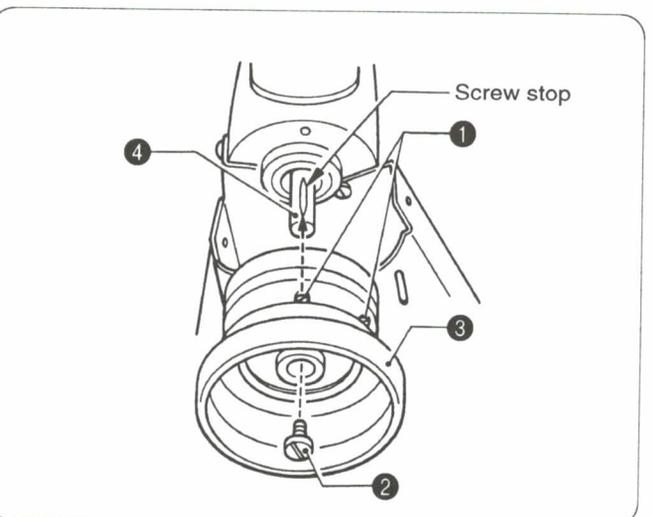
1. Loosen the two set screws ①, remove the screw ②, then pull out the pulley ③ from the arm shaft ④.



2. Remove the two screws ⑤, and then remove the belt guard upper cover ⑦ from the belt guard ⑥.

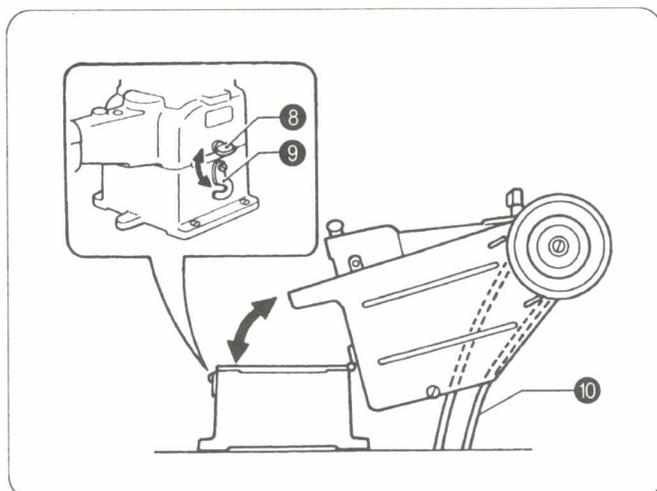


3. Remove the four screws from the machine head, and then install the belt guard ⑥ with each of the screws.

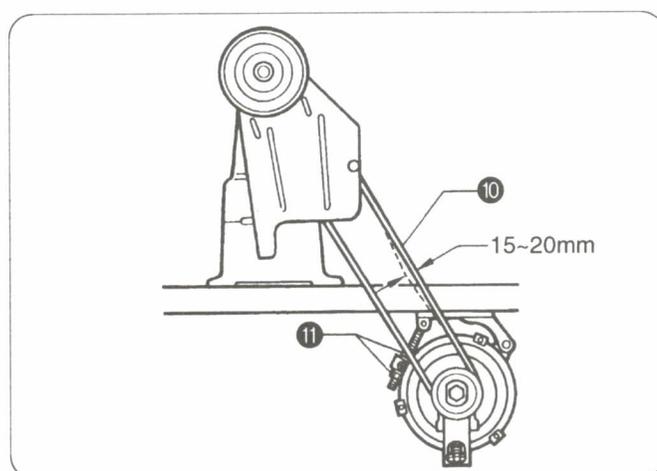


4. Place the pulley ③ onto the arm shaft ④, and then tighten the set screws ① and the screw ②.

NOTE: Install the pulley ③ so that the leading set screw ① (when the pulley is turning) is set into the V-shaped screw stop on the arm shaft ④.

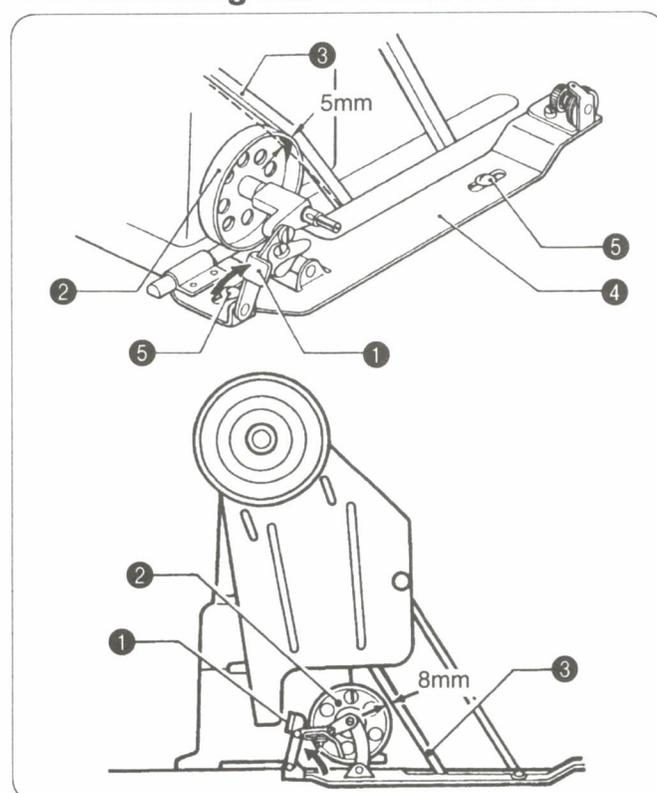


- Loosen the screw ⑧, disengage the hook ⑨ and then tilt the machine head back.
- Place the belt ⑩ onto the motor pulley and the machine pulley.
- Return the machine head to the upright position, engage the hook ⑨ and then lock it with the screw ⑧.



- Turn the nut ⑪ to adjust so that there is 15-20 mm of deflection in the belt ⑩ when it is pressed with a finger with a force of 9.8 N (1 kgf).

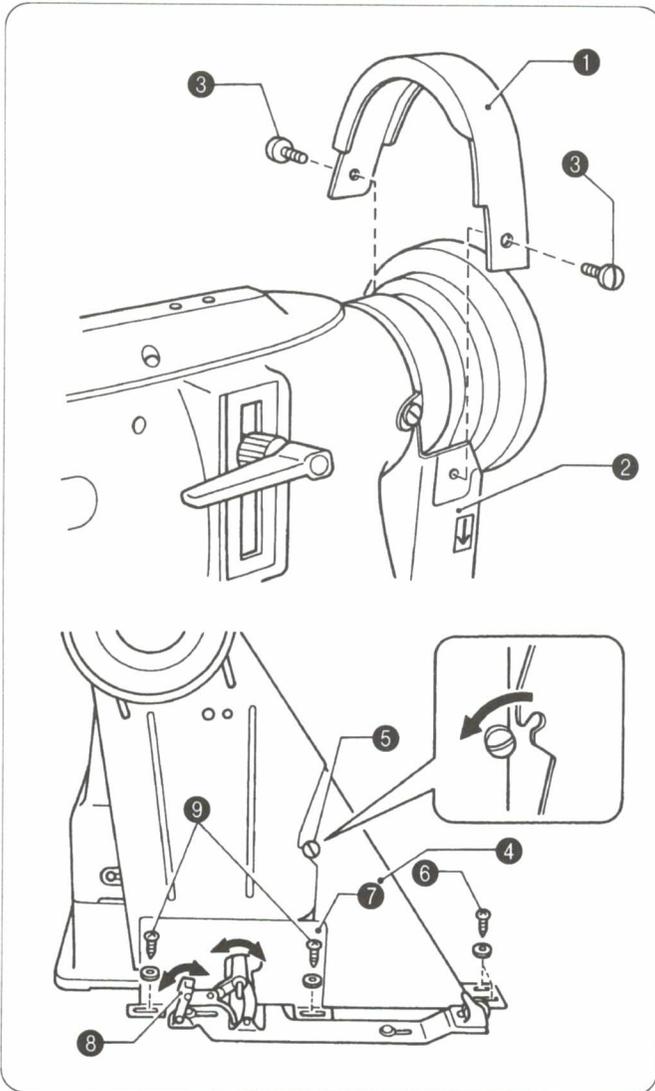
4-3. Installing the bobbin winder



- Push down the bobbin set lever ① as far as it will go.
- Place the bobbin winder pulley ② so that it pushes the belt ③ by approximately 5 mm, and then place the bobbin winder ④ so that it is parallel with the belt hole in the work table.
- Install the bobbin winder ④ to the work table with the two screws ⑤.
- Pull the bobbin set lever ① back and check that there is approximately 8 mm of clearance between the bobbin winder pulley ② and the belt ③.

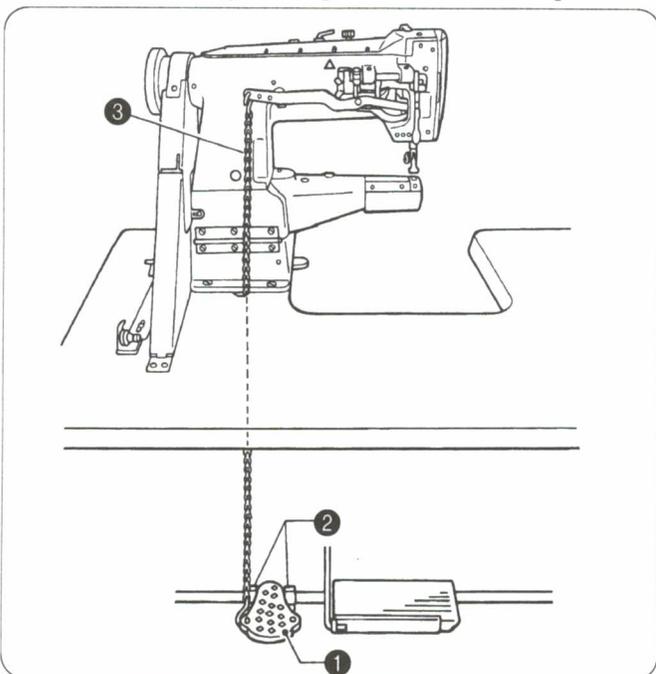
4. INSTALLATION

4-4. Installing the belt guard upper cover, etc.



1. Place the belt guard upper cover ① onto the belt guard ② from above the pulley, and then tighten it with the two screws ③.
2. Hook the auxiliary belt guard ④ onto the screw ⑤, and then lock it by turning the screw ⑤.
3. Set the auxiliary belt guard ④ so that it is parallel to the belt hole in the work table, and then secure it by tightening the two screws ⑥.
4. Install the belt guard plate ⑦ with the two screws ⑨ so that it does not touch any part of the bobbin winder when the bobbin set lever ⑧ of the bobbin winder is pushed and released.

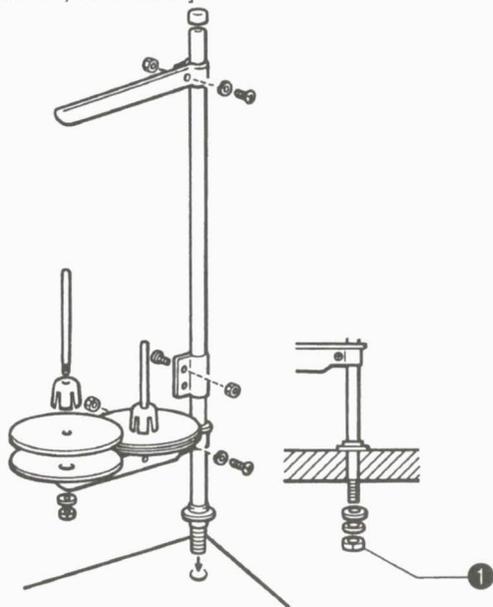
4-5. Installing the presser lifter pedal



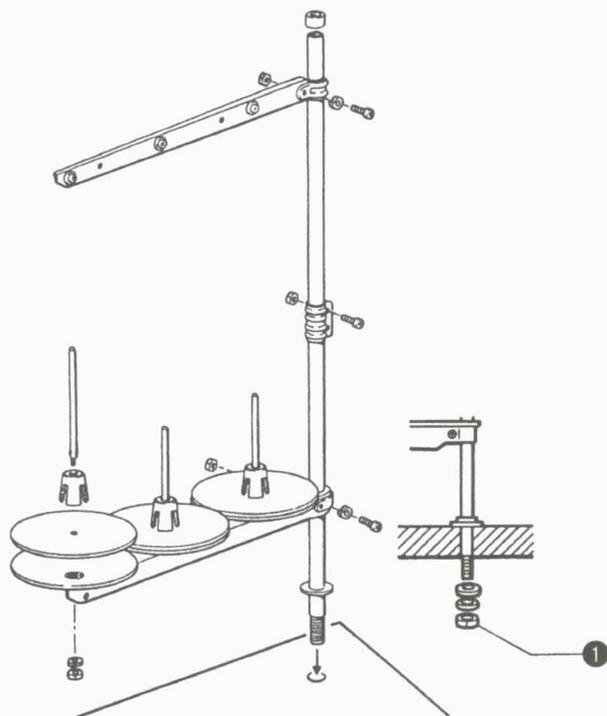
- Fix the position of the presser lifter pedal ① with the pedal blocks ② so that the chain ③ is straight.

4-6. Installing the thread stand

[LS3-C53B, LS3-C54B]



[LT3-C57B]



Assemble the thread stand as shown in the illustration, and then install it to the work table.

* Securely tighten the nut ① so that the thread stand does not move.

4. INSTALLATION

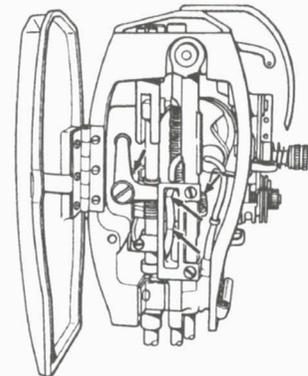
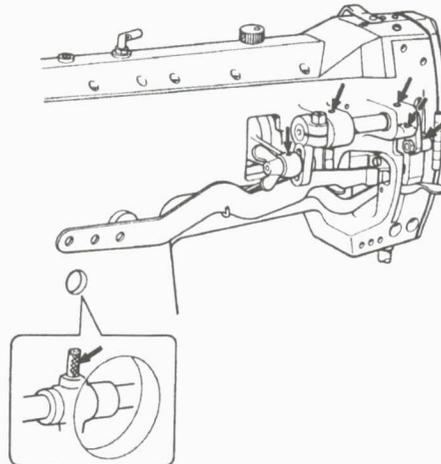
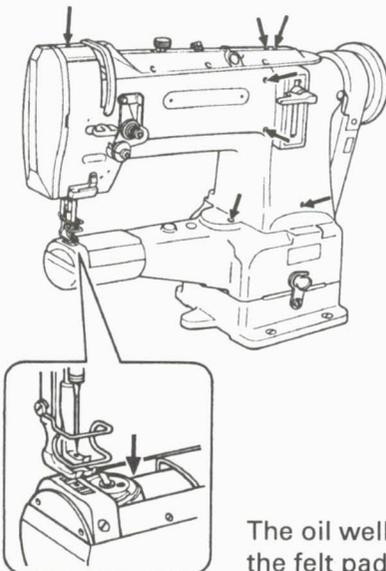
4-7. Lubrication

CAUTION

- Do not connect the power cord until lubrication has been completed, otherwise the machine may operate if the treadle is pressed by mistake, which could result in injury.
- Be sure to wear protective goggles and gloves when handling the lubricating oil, so that no oil gets into your eyes or onto your skin, otherwise inflammation can result. Furthermore, do not drink the oil under any circumstances, as it can cause vomiting and diarrhoea. Keep the oil out of the reach of children.

- The sewing machine should always be lubricated and the oil supply replenished before it is used for the first time, and also after long periods of non-use.
- Use only the lubricating oil (Nisseki Sewing Lube 10) specified by Brother.
- Oiling must be done at least once daily in continuous use.

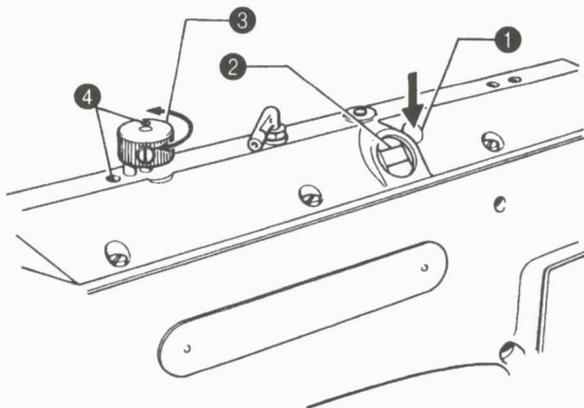
- Add 1-2 drops of oil in the places indicated by the arrows. Add oil to other sliding parts also, while being careful to avoid oil leaks.



The oil well beneath the hook should be filled with oil and the felt pad in the same should be soaked with oil.

Oil reservoir

- To fill the oil reservoir on the top of the machine, pour oil through the oil filler hole **1**, until the oil level reaches the upper reference line **2** of the oil window.
- Lubrication is automatically performed via the machine's oiling wicks in response to vibration of the machine during sewing operation. The oil flow stops automatically when the machine stops.
- If oil starts to leak out from the jaw of the arm or from the needle bar, carry out the following operation to momentarily stop lubrication.
 - 1) Turn the lubrication dial **3** until the two points **4** are aligned. The dial level will drop and lubrication will stop completely.
 - 2) After sewing a while, turn the lubrication dial **3** until it is back above the pin. Lubrication will then start again.

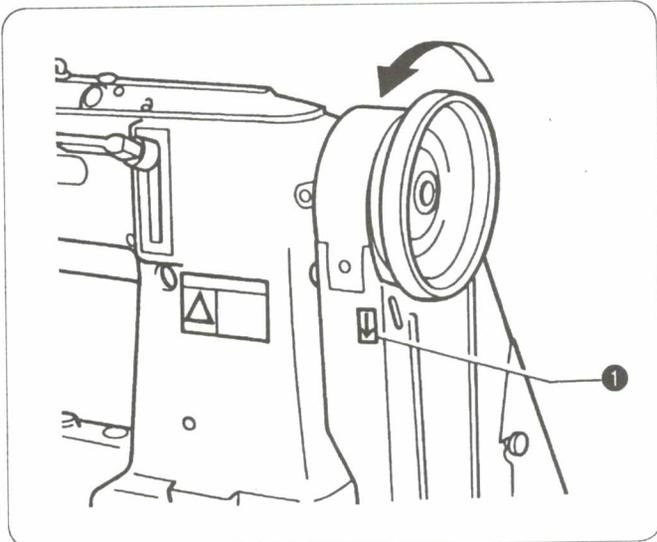


4-8. Checking the machine pulley rotating direction

! CAUTION

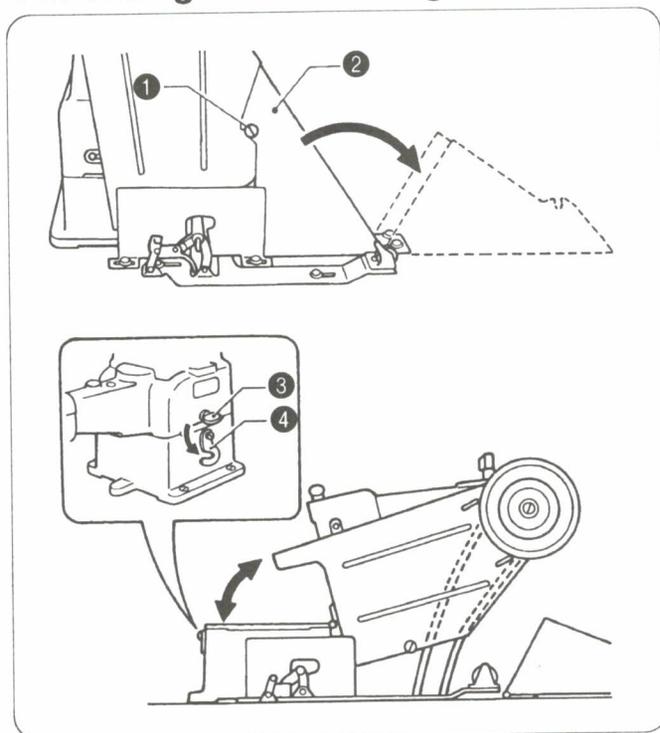


- Do not touch any of the moving parts or place any objects against the machine while sewing, as this may result in personal injury or damage to the machine.



- Insert the power cord plug into the wall outlet, and then turn on the power switch.
 - Depress the treadle and check that the direction of rotation of the machine pulley matches the direction of the arrow ①.
- * If the direction of rotation is reversed, change the direction of rotation to the correct direction while referring to the instruction manual for the motor.

4-9. Tilting and returning the machine head



■ Tilting the machine head

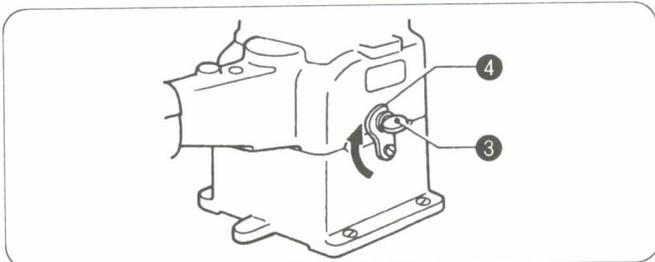
- Loosen the screw ① and then tilt back the auxiliary belt guard ②.
- Loosen the screw ③, disengage the hook ④ and then tilt the machine head back.

■ Returning the machine head

- Return the machine head to the upright position, engage the hook ④ and then lock it with the screw ③.

NOTE: Be sure to engage the hook ④ and lock it with the screw ③ after returning the machine head to the upright position. If this is not done, the machine head may tilt back suddenly if it is pushed by accident, which could damage the machine head.

- Return the auxiliary belt guard ② to its original position, place the hook onto the screw ① and then tighten the screw ①.



5. PREPARATION BEFORE SEWING

5. PREPARATION BEFORE SEWING

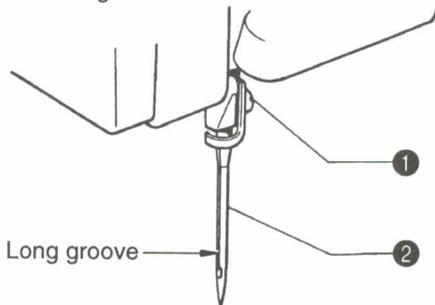
5-1. Installing the needle

CAUTION

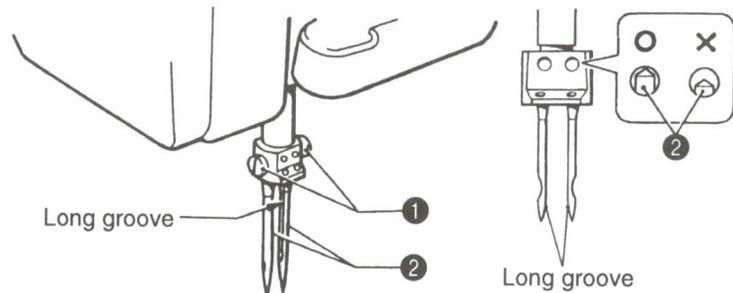


- Turn off the power switch before installing the needle. The motor will keep turning even after the power is switched off as a result of the motor's inertia. Wait until the motor stops fully before starting work. The machine may operate if the treadle is pressed by mistake, which could result in injury.

<For single-needle>



<For twin-needle>



1. Turn the machine pulley toward you to move the needle bar to its highest position.
2. Loosen the screw ①.
3. <For single-needle>
Holding the needle ② with its long groove facing left, insert all the way into the needle bar.
<For twin-needle>
Holding the needles ② with their long grooves facing inward, insert all the way into the needle bar.
4. Tighten the screw ①.

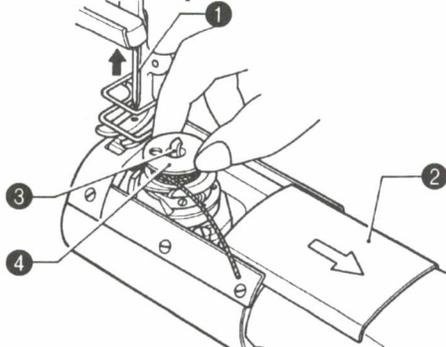
5-2. Removing the bobbin

CAUTION

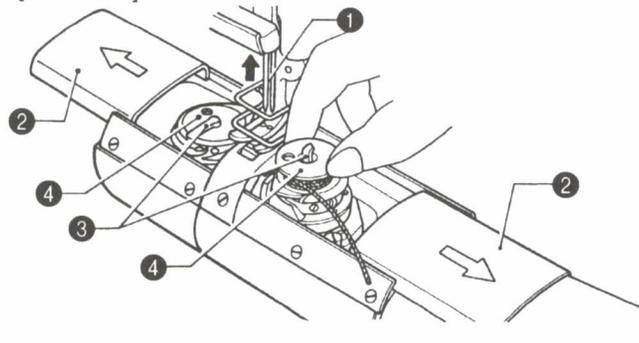


- Turn off the power supply before removing the bobbin. The motor will keep turning even after the power is switched off as a result of the motor's inertia. Wait until the motor stops fully before starting work. The machine may operate if the treadle is pressed by mistake, which could result in injury.

[LS3-C53B, LS3-C54B]



[LT3-C57B]

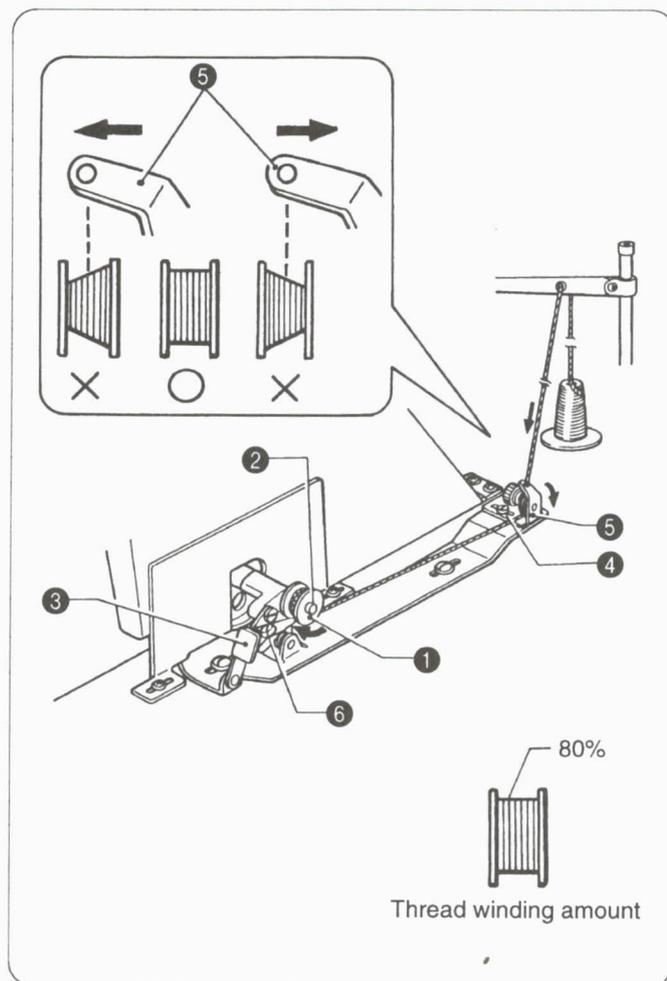


1. Raise the needle ① to its highest position, and open the bed slide ②.
2. Pull the rotary hook latch ③ upward, and then remove the bobbin ④.

5-3. Winding the lower thread

! CAUTION

- Do not touch any of the moving parts or place any objects against the machine while winding the lower thread, as this may result in personal injury or damage to the machine.



- Turn on the power switch.
 - Place the bobbin ① onto the bobbin winder shaft ②.
 - Wind the thread several times around the bobbin ① in the direction indicated by the arrow.
 - Push down the bobbin set lever ③.
 - Raise the presser foot with the presser bar lifter.
 - Depress the treadle. Lower thread winding will then start.
 - Once winding of the lower thread is completed, the bobbin set lever ③ will return automatically.
- * If the thread cannot be wound on evenly, loosen the screw ④ and move the bobbin winder bracket ⑤ to the side where there is less thread.
 - * Turn the adjustment screw ⑥ to adjust the bobbin winding amount.
 - To increase the winding amount: Tighten the screw.
 - To decrease the winding amount: Loosen the screw.

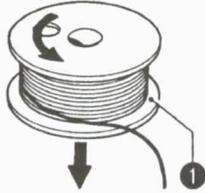
Note: The amount of thread wound onto the bobbin should be a maximum of 80% of the bobbin capacity.

5-4. Installing the bobbin

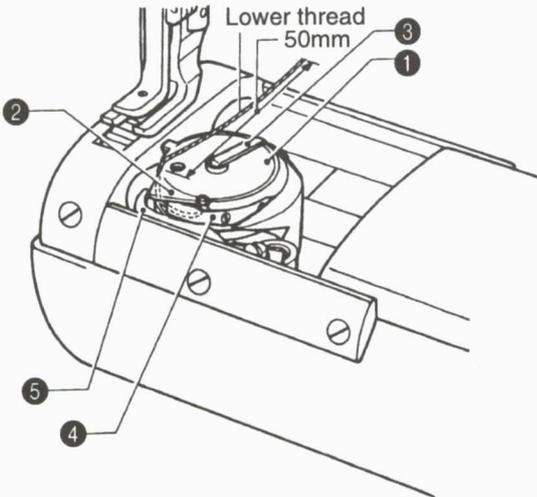
! CAUTION



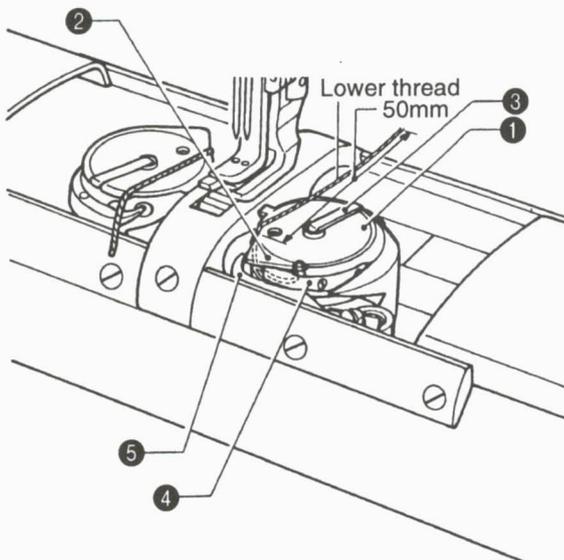
- Turn off the power supply before installing the bobbin. The motor will keep turning even after the power is switched off as a result of the motor's inertia. Wait until the motor stops fully before starting work. The machine may operate if the treadle is pressed by mistake, which could result in injury.



[LS3-C53B, LS3-C54B]



[LT3-C57B]



1. Turn the machine pulley to raise the needle to its highest position.
 2. Insert the bobbin (1) into the rotary hook (2) so that the winding direction is as shown in the illustration.
 3. Return the rotary hook latch (3) to its original position.
 4. Pass the thread end through the slit in the rotary hook.
 5. Pass the thread under the tension spring (4).
 6. Pass the thread through the clearance between rotary hook (2) and opener (5).
 7. Pull out about 50 mm of lower thread as shown in the illustration.
 8. Gently close the bed slide.
- * Be careful not to clamp the thread between the needle plate and the bed slide at this time.

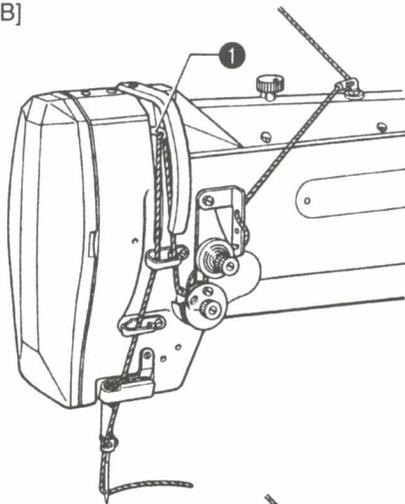
5-5. Threading the upper thread

 **CAUTION**

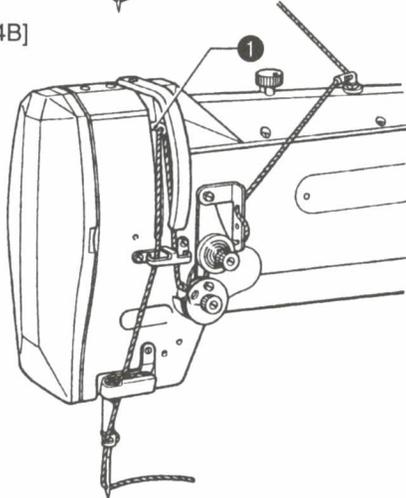

- Turn off the power switch before threading the upper thread. The motor will keep turning even after the power is switched off as a result of the motor's inertia. Wait until the motor stops fully before starting work. The machine may operate if the treadle is pressed by mistake, which could result in injury.

- Turn the machine pulley and raise the thread take-up lever ① to its highest point before threading the upper thread. This will make threading easier and it will prevent the thread from coming out at the sewing start.

[LS3-C53B]

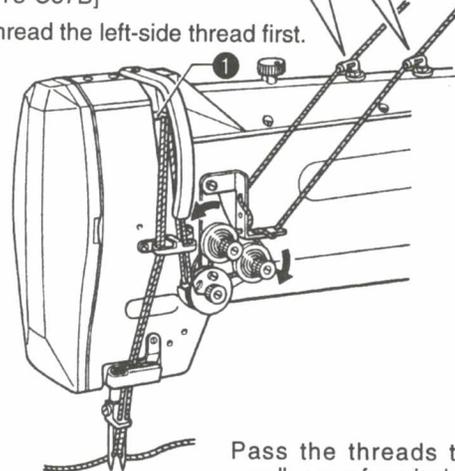


[LS3-C54B]



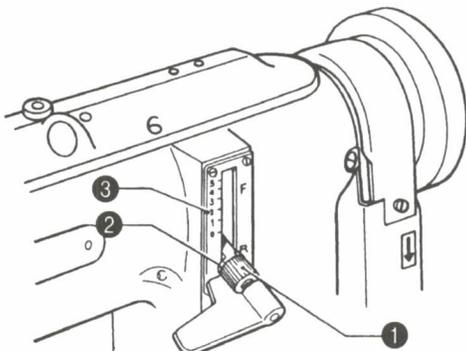
[LT3-C57B]

Thread the left-side thread first.



Pass the threads through the needle eyes from inside to outside.

5-6. Adjusting the stitch length



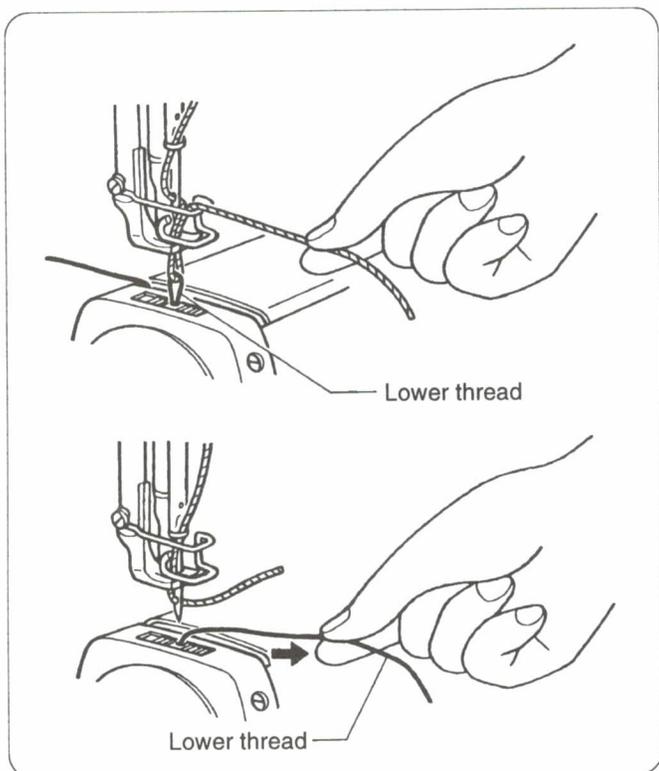
The length of the stitch is adjusted by turning the nut ① so that the reference mark on the collar ② aligns with the desired stitch length number on the plate ③.

6. SEWING

CAUTION

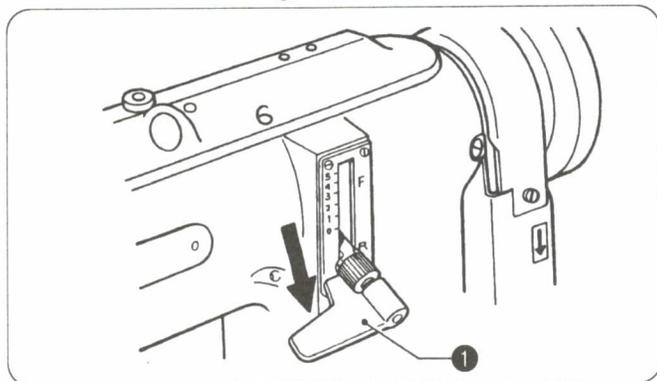
-  • Attach all safety devices before using the sewing machine. If the machine is used without these devices attached, injury may result.
-  • Turn off the power switch at the following times. The motor will keep turning even after the power is switched off as a result of the motor's inertia. Wait until the motor stops fully before starting work. The machine may operate if the treadle is pressed by mistake, which could result in injury.
 - When threading the needle
 - When replacing the needle and bobbin
 - When not using the machine and when leaving the machine unattended
-  • Do not touch any of the moving parts or place any objects against the machine while sewing, as this may result personal injury or damage to the machine.

6-1. Sewing



1. While holding the upper thread with your fingers, turn the machine pulley by hand toward you until the lower thread comes out onto the feed dog.
 - * For machines with two needles, hold both upper threads together while carrying out the above step.
2. Pull the lower thread toward you and check that it pulls out smoothly.
3. Turn on the power switch.
4. Depress the treadle to start sewing.

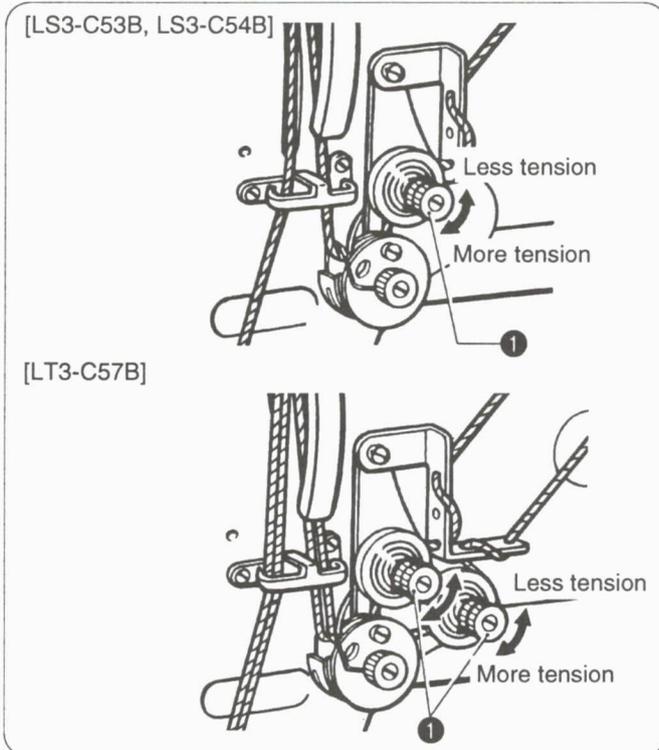
6-2. Backtacking



When the reverse lever **1** is pushed, the material feed direction will be reversed, and when it is returned to its original position, the feed direction will change back to normal.

7. THREAD TENSION

7-1. Adjusting the thread tension



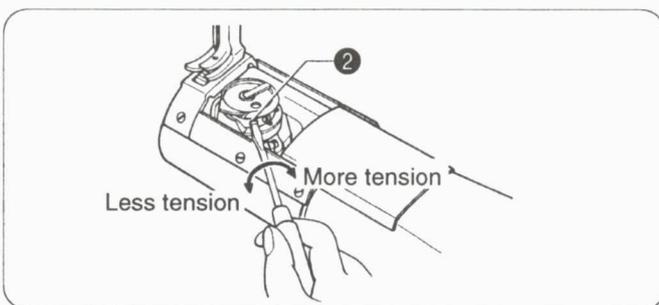
■ Upper thread tension

The tension of the upper thread is adjusted using the tension thumb nut **1**.
To increase the tension of the upper thread, turn the tension thumb nut **1** to the right. To decrease tension, turn the tension thumb nut **1** to the left.

■ Lower thread tension

CAUTION

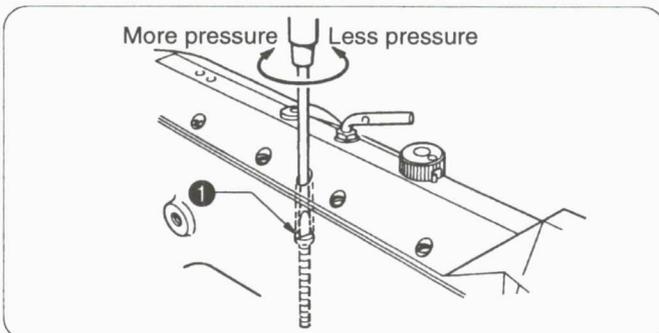
- Turn off the power supply before adjusting the lower thread tension. The motor will keep turning even after the power is switched off as a result of the motor's inertia. Wait until the motor stops fully before starting work. The machine may operate if the treadle is pressed by mistake, which could result in injury.



The tension of the lower thread is adjusted using the screw **2**.
To increase the tension, turn the screw **2** to the right. To decrease tension, turn the screw **2** to the left.

* For the LT3-C57B, turn the screw on the left-side rotary hook in the same way to adjust the tension of the left-side lower thread.

7-2. Adjusting the presser foot pressure



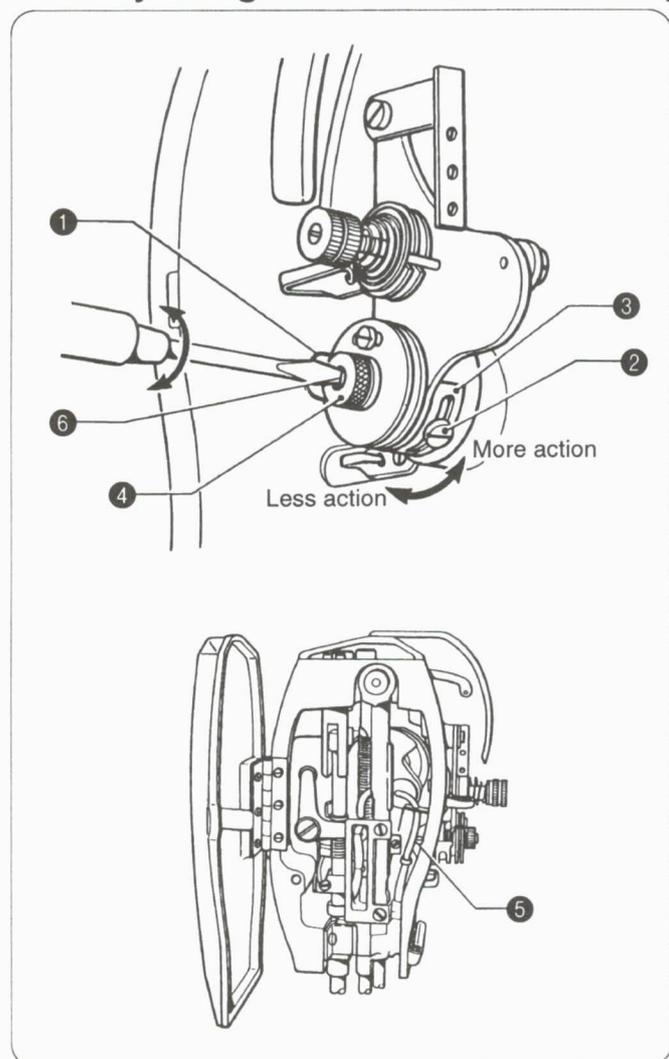
Adjust the presser foot pressure to lower as much as possible so that the presser foot can properly hold down material by turning the screw **1**.

8. STANDARD ADJUSTMENTS

CAUTION

-  Maintenance and inspection of the sewing machine should only be carried out by qualified personnel.
-  Ask your Brother dealer or a qualified electrician to carry out any maintenance and inspection of the electrical system.
-  If any safety devices have been removed, be absolutely sure to re-install them to their original positions and check that they operate correctly before using the machine.
-  Turn off the power switch and disconnect the power cord from the wall outlet at the following times, otherwise the machine may operate if the treadle is pressed by mistake, which could result in injury. However, the motor will keep turning even after the power is switched off as a result of the motor's inertia. Wait until the motor stops fully before starting work.
 -  When carrying out inspection, adjustment and maintenance
 -  When replacing consumable parts such as the rotary hook
-  If the power switch needs to be left on when carrying out some adjustment, be extremely careful to observe all safety precautions.

8-1. Adjusting the thread controller spring



■ Operating range of spring

The standard operating range for spring ① is 5-10mm.

1. Loosen the screw ②, and then turn the thread controller spring stop ③ to adjust the operating range.
 - For more operating range, move the spring stop ③ to the right.
 - For less operating range, move the spring stop ③ to the left.
2. Tighten the screw ②.

■ Tension of the spring

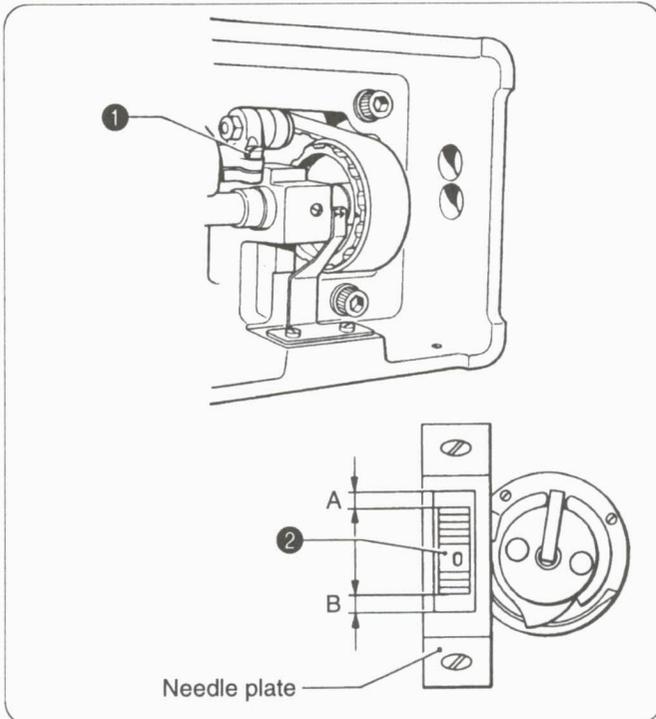
[LS3-C53B, LS3-C54B]

The standard tension for spring ① is 0.39-0.78 N (40-80g).

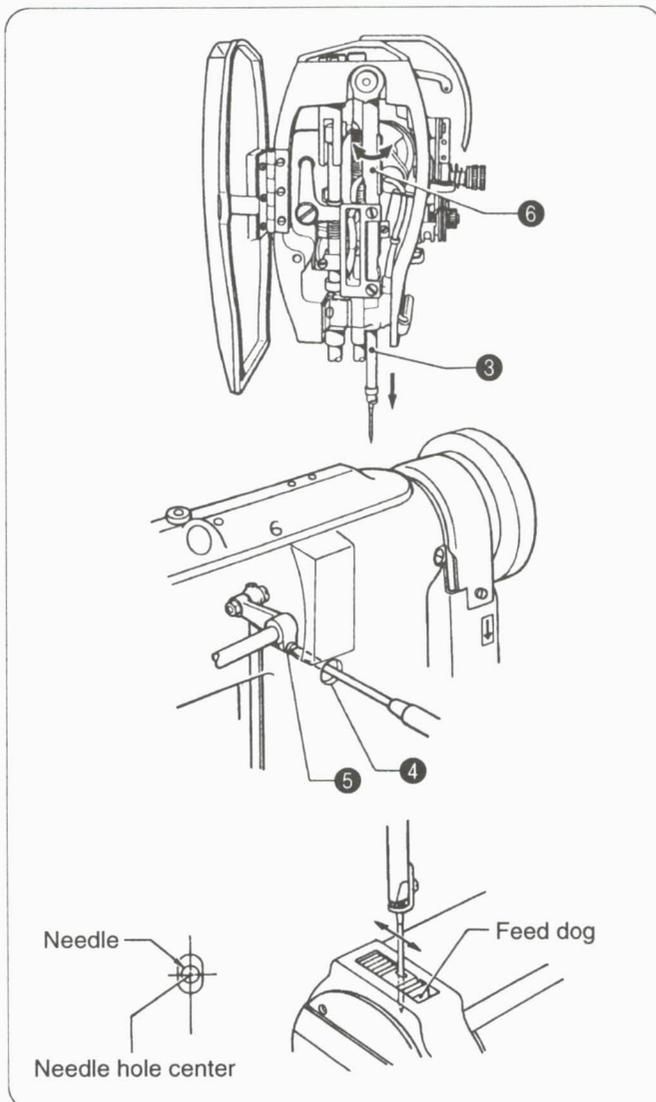
[LT3-C57B]

The standard tension for spring ① is 0.59-0.98 N (60-100 g).

1. Loosen the tension thumb nut ④ and screw ⑤.
2. Turn the tension stud ⑥ to adjust the tension.
 - To increase the spring tension, slightly turn the tension stud ⑥ counterclockwise.
 - To decrease the tension, turn the stud ⑥ clockwise.
3. After adjustment, tighten the tension thumb nut ④ and screw ⑤.

8-2. Adjusting the timing of the needle plate, the needle and the feed dog**■ Adjusting the feed dog position (longitudinal)**

1. Set the feed amount to the largest setting.
2. Loosen the screw ① and set the position of the feed dog ② so that both clearances A and B are equal when the feed dog ② moves all the way to the backward or forward.
3. After adjusting, tighten the screws ①.

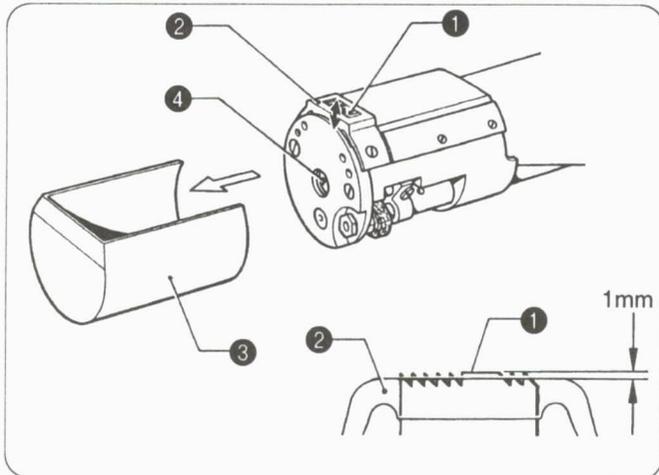
**■ Positions of the needle and needle hole of the feed dog**

Turning the pulley to lower the needle bar ③ slowly, check whether the needle descends to the center of the needle hole of the feed dog or not.

If the needle does not enter into the center of the hole:

1. Loosen the screw ⑤ through the window of the arm ④.
2. Holding the needle bar rock frame ⑥, move it as may be required to get the correct position to the feed dog. Then, tighten the screw ⑤.

8-3. Adjusting the height of the feed dog



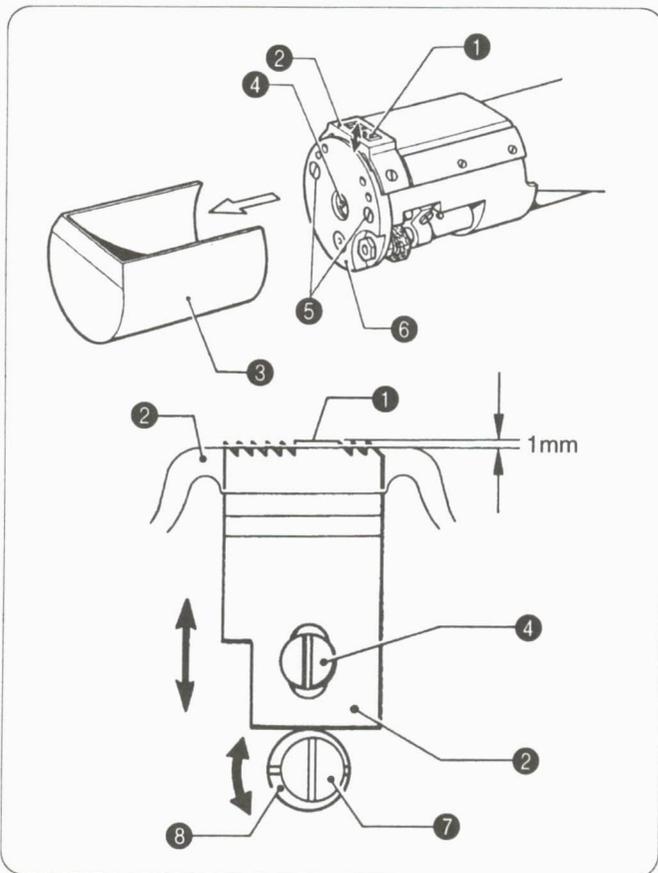
The maximum height of the feed dog ① from the surface of the needle plate ② is normally 1 mm. To adjust the height of the feed dog:

[LS3-C53B]

1. Draw out the cylinder cover ③.
2. Turn the pulley to raise the feed dog ① to its highest position.
3. Loosen the screw ④.
4. Raise or lower the feed dog ① as necessary.
5. Tighten the screw ④.
6. Replace the cylinder cover ③.

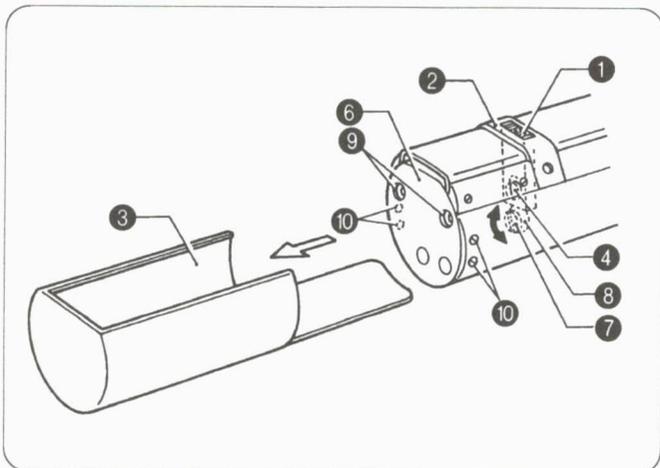
[LS3-C54B]

1. Draw out the cylinder cover ③.
2. Turn the pulley to raise the feed dog ① to its highest position.
3. Loosen the two screws ⑤ and remove the bed cylinder cap ⑥.
4. Loosen the screws ④ and ⑦, and then turn the feed dog stopper ring ⑧ to adjust the height of the feed dog ①.
5. After adjusting, tighten screw ⑦ first, and then tighten screw ④.
6. Install the bed cylinder cap ⑥ with the two screws ⑤.
7. Replace the cylinder cover ③.

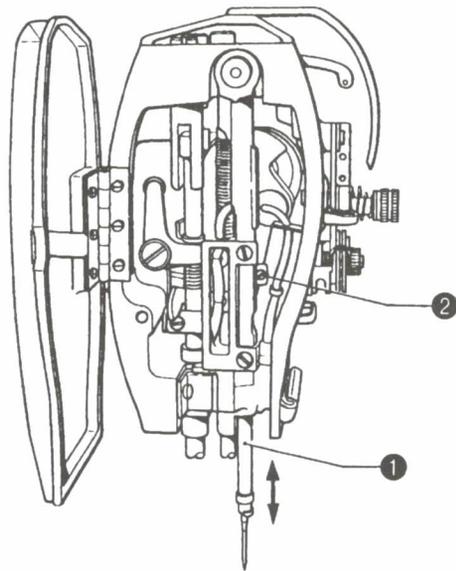


[LT3-C57B]

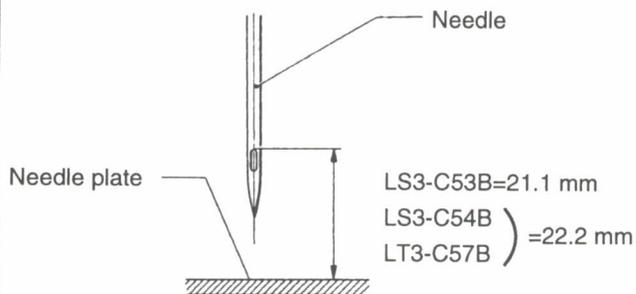
1. Draw out the cylinder cover ③.
2. Turn the pulley to raise the feed dog ① to its highest position.
3. Loosen the two set screws ⑨ and the four screws ⑩, and then remove the bed cylinder cap ⑥ together with the left-side rotary hook.
4. Carry out the same procedure as given in steps 4. and 5. above for the LS3-C54B.
5. Install the bed cylinder cap ⑥ with the two set screws ⑨ and the four screws ⑩.
6. Check the timing of the left-side rotary hook and needle. (Refer to page 20.)



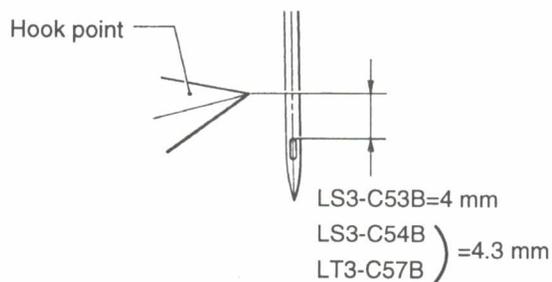
8-4. Adjusting the height of the needle bar



<Needle bar highest point>



<Needle bar lowest point>



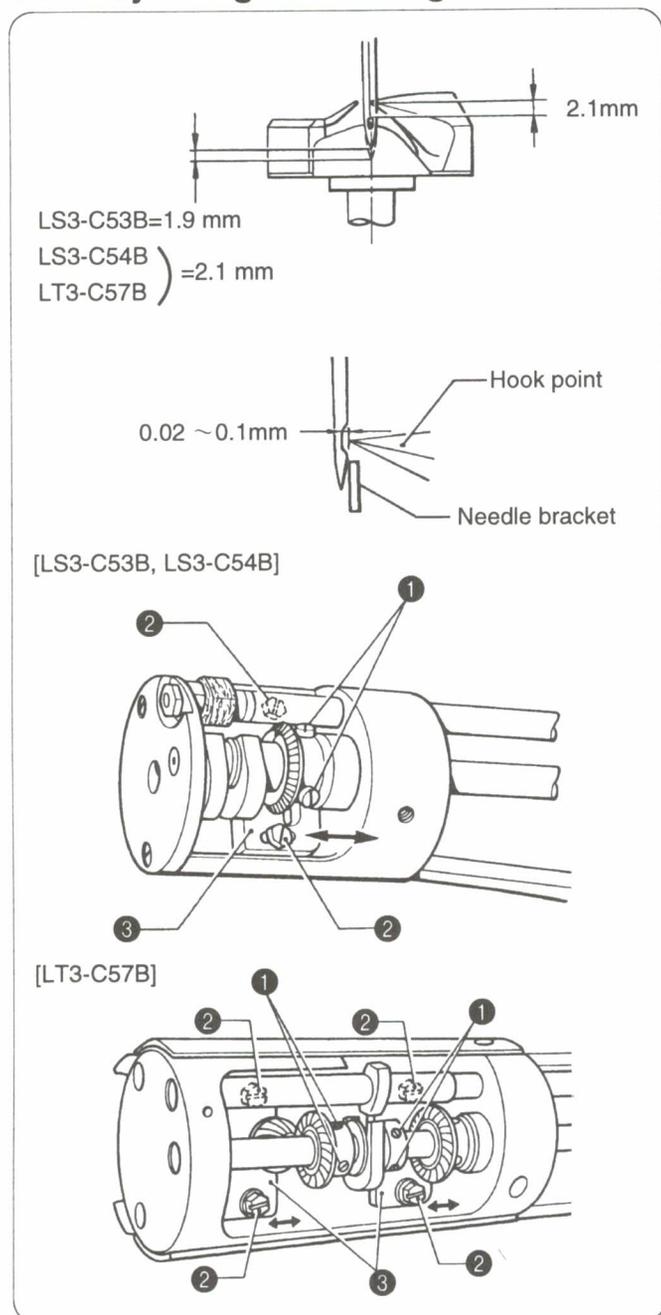
When the needle bar ① is at its highest point, normally the measurement between the surface of the needle plate and the upper end of the needle eye is 21.1mm (LS3-C54B, LT3-C57B=22.2 mm).

1. Loosen the screw ② and move the setting position of the needle bar ① to get the correct position.
2. Tighten the screw ②.

* There is another method for this adjustment by setting the needle bar to its lowest point. There should be 4 mm (LS3-C54B, LT3-C57B=4.3 mm) from the hook point to the upper end of the eye of a needle.

* These distances are given as a guide ; they should be checked again when adjusting timing between the needle and the hook.

8-5. Adjusting the timing between the needle and the hook



1. Adjust the needle bar height. (See P.19.)
2. Set the feed amount to the smallest setting.
3. Turn the machine pulley toward you until the needle bar reaches its lowest point. Continue turning and allow the needle bar to raise about 1.9 mm (LS3-C54B, LT3-C57B=2.2 mm) while on its upward stroke. With needle bar in this position, the point of the sewing hook should be at the center of the needle, and normally, the measurement between the hook point the upper end of the needle eye should be 2.1mm, further the clearance between the hook point and the needle hollow should be about 0.02 to 0.1mm. The needle should slightly contact the needle bracket.

* If they are not measured as above, perform the adjustments below.

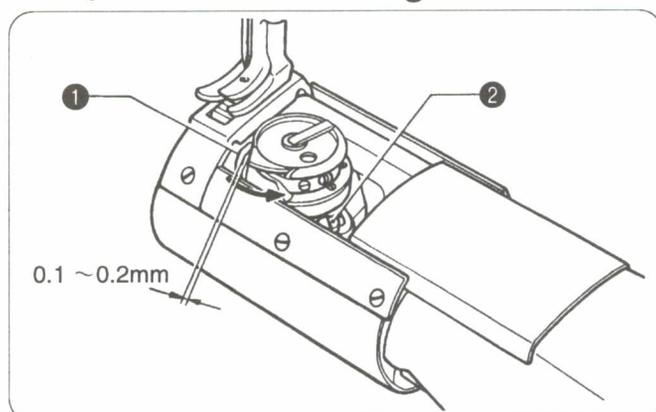
■ Adjusting the timing

1. Loosen the two screws ❶.
2. Adjust the timing by moving the rotary hook.
3. Once the timing has been set, tighten the two screws ❶.

■ Adjusting the clearance

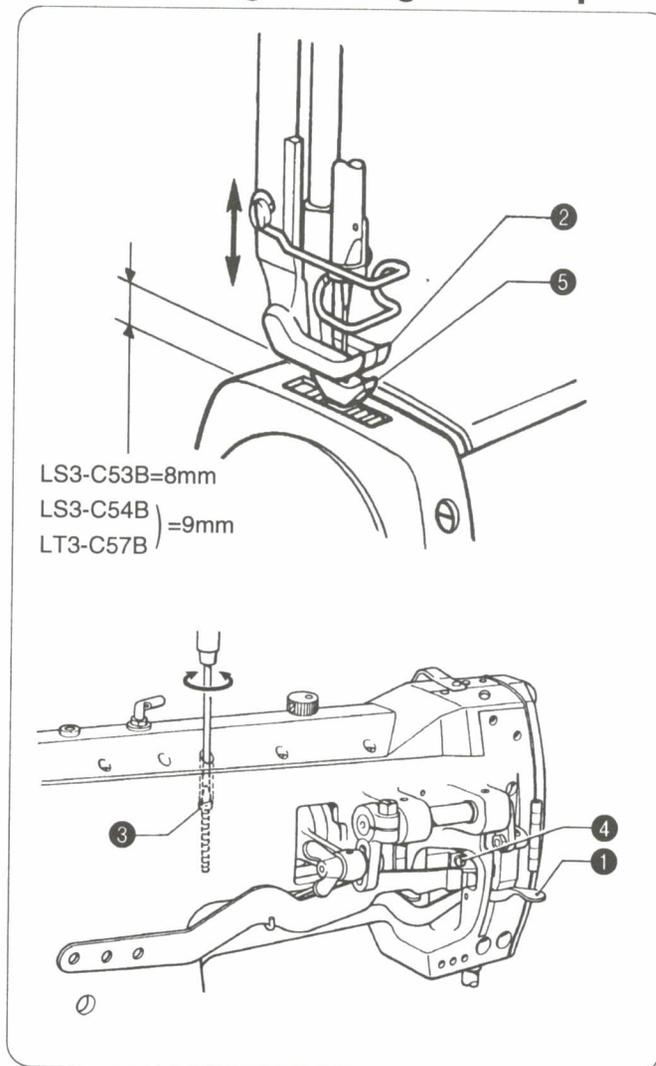
1. Loosen the screws ❷.
2. Adjust the clearance by sliding the rotary hook bracket ❸ to the right or left as may be required.
3. Tighten the screws ❷.

8-6. Adjusting the clearance between rotary hook and opener (thread release finger)



1. Adjust the clearances between rotary hook and opener ❶ to 0.1-0.2 mm when opener ❶ have retracted fully in the arrow direction by loosening screw ❷ and moving opener ❶ to the right or left.
 2. After the adjustment, tighten screw ❷ securely.
- * For the LT3-C57B, adjust the left-side opener in the same way.

8-7. Adjusting the height of the presser feet

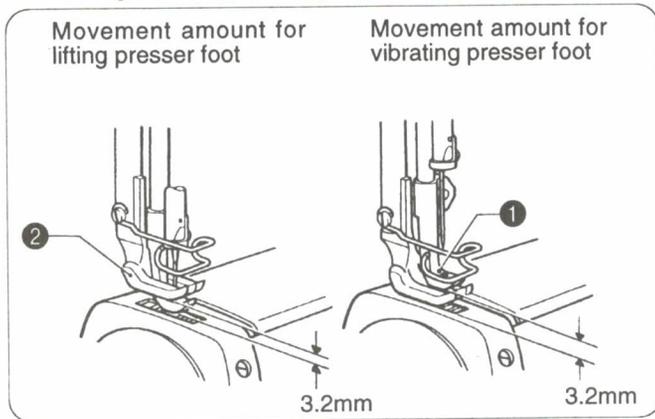


The standard height for the lifting presser foot ② is 8 mm (LS3-C54B, LT3-C57B=9 mm) when the presser foot has been raised by the presser bar lifter ①.

1. Loosen the screw ③, raise the presser bar lifter ①, and then loosen the set screw ④.
2. Move the lifting presser foot ② up or down to adjust its height.
3. Tighten the screw ④.
4. Tighten the screw ③ to adjust the presser foot pressure. (Refer to page 15.)

NOTE: If the height of the lifting presser foot ② is changed, the movement amount of the lifting presser foot ② and vibrating presser foot ⑤ will change. Adjust the amount of movement of the vibrating presser foot ⑤ so that it matches the movement of the lifting presser foot ②. (Refer to page 22.)

8-8.Adjusting the presser foot movement amount

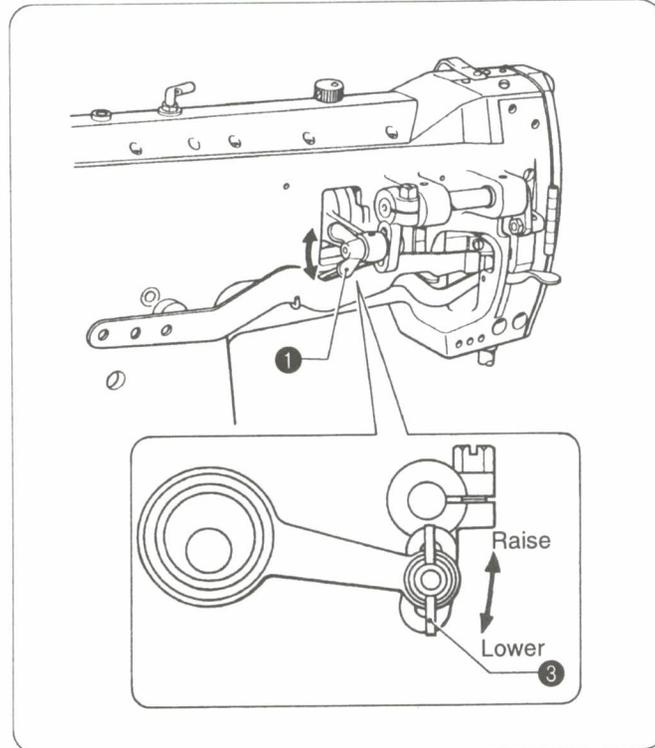


- Vibrating presser foot ① and lifting presser foot ② move up and down alternately.
- Normally, vibrating presser foot ① and lifting presser foot ② operate to the same height in their vertical motions. (Standard height 3.2mm)
- The maximum height of vibrating presser foot ① and lifting presser foot ② is 5.0 mm.

If changing the movement amounts of both the lifting presser foot and vibrating presser foot simultaneously, use method (A); if increasing the movement amount for only one (thereby decreasing the movement of the other), use method (B).

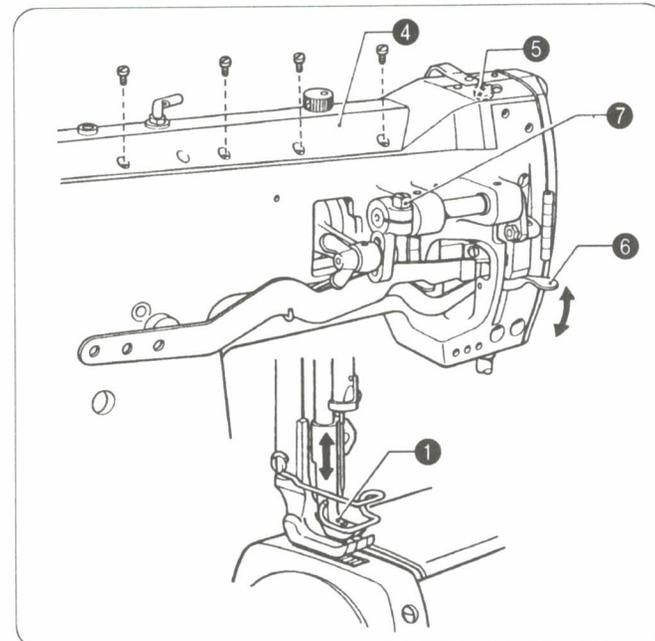
Method (A): Simultaneous adjustment of the movement amount for both the lifting presser foot and vibrating presser foot

1. Loosen nut ③.
2. Move nut ③ up or down as suitable to the work. (Raise the nut ③ for increasing motion; or lower it for decreasing motion.)
3. Tighten the nut ③.

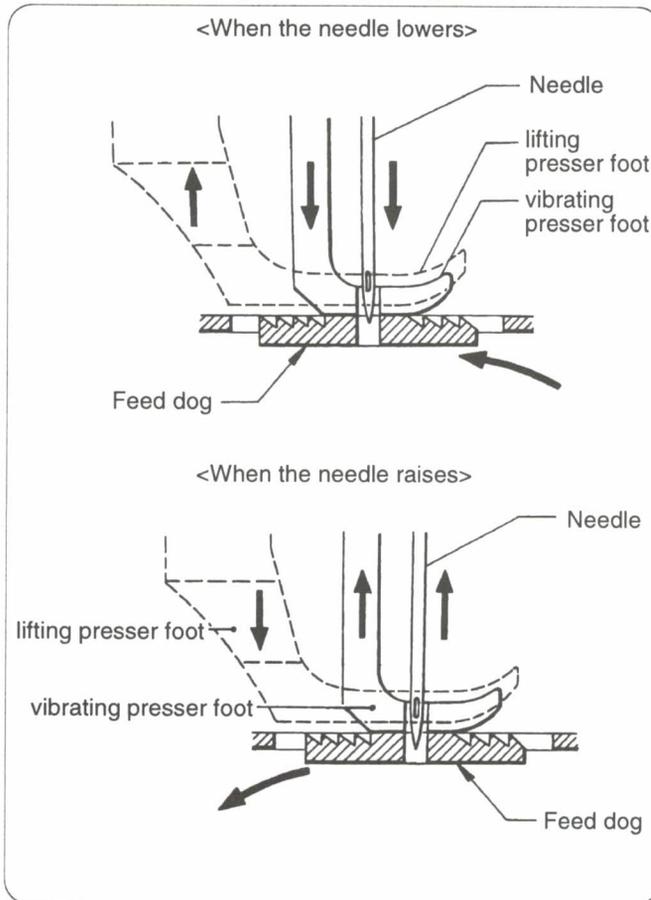


Method (B): Adjustment of the movement amount for the vibrating presser foot

1. Remove the arm top cover ④.
2. Loosen the vibrating presser bar screw ⑤ and lower the presser bar lifter ⑥.
3. While holding the vibrating presser foot ①, loosen the bolt ⑦ and then move the presser foot ① up or down as necessary.
4. After positioning the vibrating presser foot ①, tighten the bolt ⑦.
5. Tighten the vibrating presser bar screw ⑤.
6. Replace the arm top cover ④.

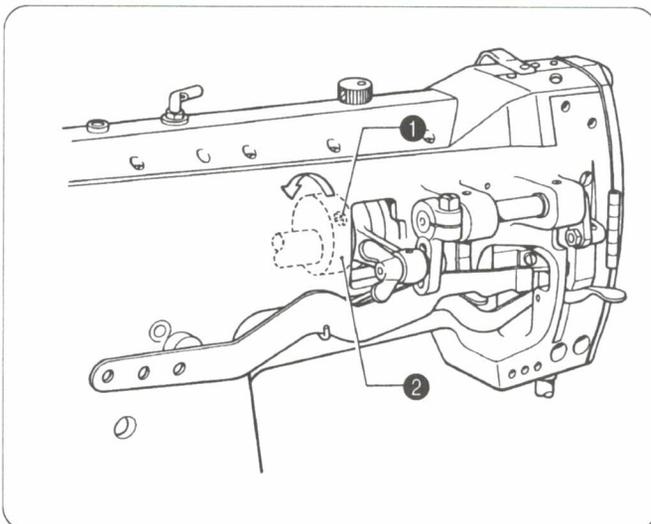


8-9. Adjusting the timing of the vibrating presser foot



Check the vibrating presser foot timing as follows:

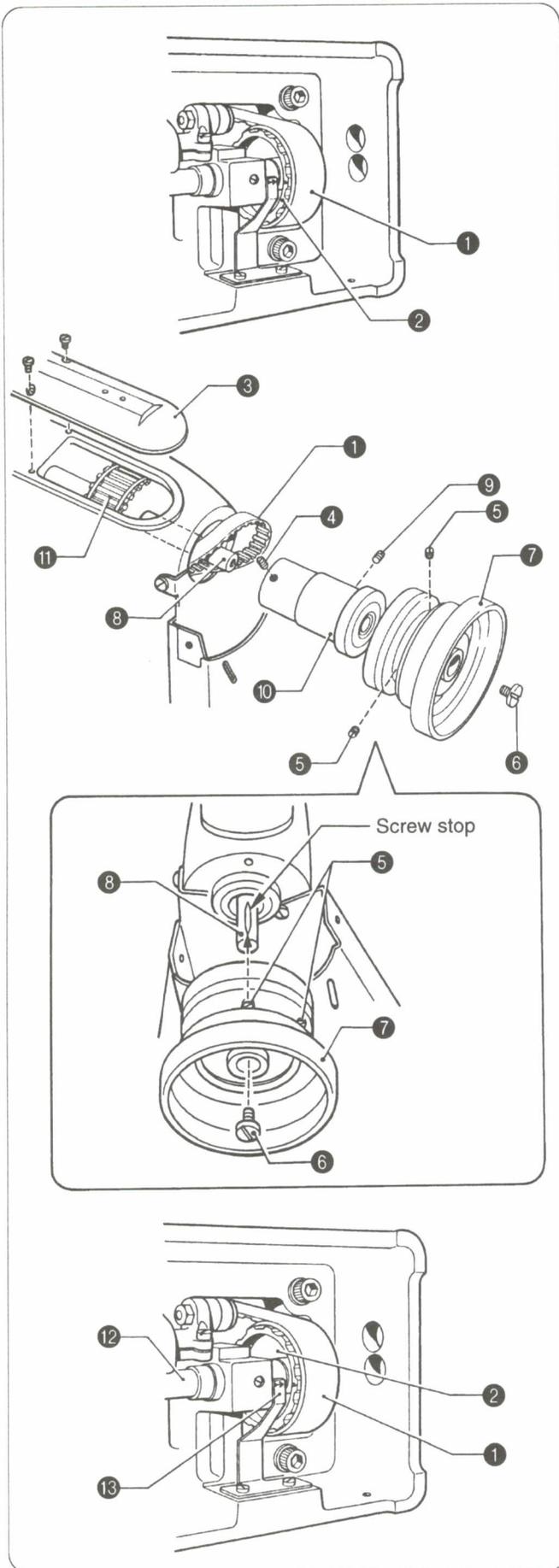
1. Lower the presser bar lifter lever, then turn the pulley toward you. At this time, the vibrating presser foot should reach the feed dog before the needle eye does.
2. When the needle is raised, make sure the vibrating presser foot is still holding the material firmly. If the vibrating presser foot rises while the needle is still penetrating to the material, it may cause skipped stitches, etc.



If the timing is not correct after you make these adjustments:

1. Loosen the two screws ①.
2. To synchronize the timing of the vibrating presser foot, turn the cam ②.
3. Tighten the screws ①.

8-10. Replacing the timing belt



■ Removing the timing belt

1. Remove the timing belt ① from the safety clutch pulley ②.
2. Remove the belt guard upper cover.
3. Remove the arm top cover ③ and loosen the two set screws ④.
4. Loosen the two set screws ⑤, remove the screw ⑥, then pull out the pulley ⑦ from the arm shaft ⑧.
5. Loosen the set screw ⑨ and pull out the ball bearing adapter ⑩ through the arm hole.

NOTE: Removing and putting on the timing belt ① is made through the arm hole.

■ Putting on the timing belt

1. Insert the new timing belt ① through the arm hole and place it onto the belt pulley (upper) ⑪.
2. Place the ball bearing adapter ⑩ onto the arm shaft ⑧, and then tighten the set screw ⑨.
3. Place the pulley ⑦ onto the arm shaft ⑧, and then tighten the set screws ⑤ and the screw ⑥.

NOTE: Install the pulley ⑦ so that the leading set screw ⑤ (when the pulley is turning) is set into the V-shaped screw stop on the arm shaft ⑧.

4. Tighten the screws ④.
5. Turn the pulley towards you until the take up lever reaches its highest point.
6. Turn the lower shaft ⑫ until the arrow on the belt timing plate ⑬ aligns with the mark.
7. Put a new timing belt ① on the safety clutch pulley ②.
8. Replace the arm top cover ③ and belt guard upper cover.

9. SAFETY CLUTCH MECHANISM

If the thread is tangled with the rotary hook during sewing, the safety clutch mechanism for the safety clutch pulley operates to stop the lower shaft and let the safety clutch pulley race off load, thereby protecting the rotary hook and timing belt.

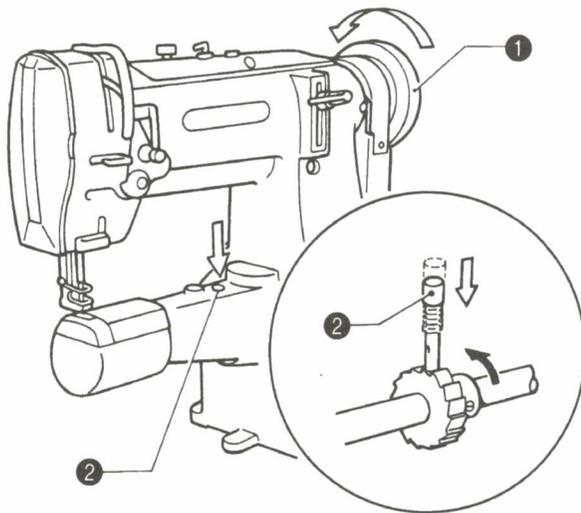
Release the safety clutch mechanism as mentioned below.

■ Releasing the safety clutch mechanism

! CAUTION



- Turn off the power switch before releasing the safety clutch mechanism. The motor will keep turning even after the power is switched off as a result of the motor's inertia. Wait until the motor stops fully before starting work. The machine may operate if the treadle is pressed by mistake, which could result in injury.



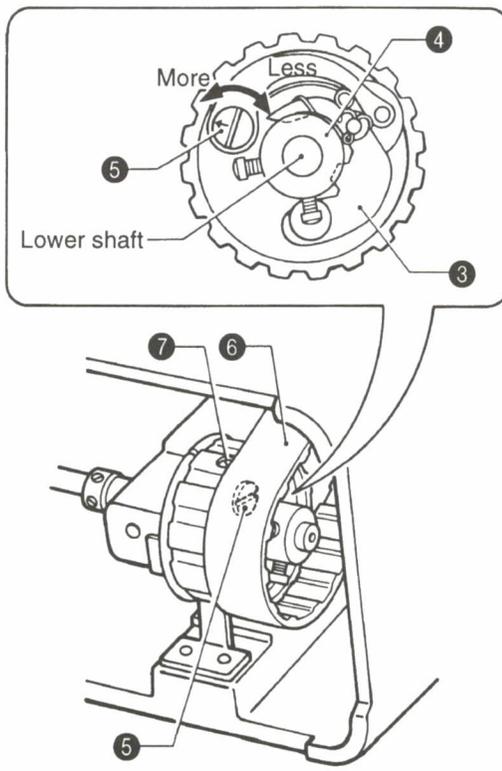
1. Remove the thread, etc. entangled with the rotary hook.

NOTE: Do not use a sharp-edged tool to clean the hook, as doing so may damage the hook.

2. Slowly turn the machine pulley ① backward while pressing push button ② and the safety clutch mechanism returns to the original position. (Safety clutch locking lever ③ must be correctly in the groove of safety clutch collar ④.)

■ Safety clutch mechanism engaging tension

The safety clutch mechanism engaging tension is weakest when the arrow on lever screw hinge pin ⑤ points to the center of the lower shaft; and increases as it points outward.



1. Remove the timing belt ⑥.
2. Loosen screw ⑦, and adjust by turning lever screw hinge pin ⑤.
3. After the adjustment, tighten screw ⑦ securely.
4. Put the timing belt ⑥ on the safety clutch pulley. (See P.24, 5-7.)

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