

User's Manual



GF-2207-147, GF-2210-447

GF-2210-147, GF-2210-447

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SAFETY INSTRUCTIONS

Safety indications and their meanings:

This instruction manual and the indications and symbols that are used on the machine itself are provided in order to ensure safe operation of this machine and to prevent accidents and injury to yourself or other people. The meanings of these indications and symbols are given below.

 CAUTION	<p>The instructions which follow this term indicate situations where failure to follow the instructions could cause injury when using the machine or physical damage to equipment and surroundings.</p>
---	---

Symbol:



This symbol () indicates something that you should be careful of. The picture inside the triangle indicates the nature of the caution that must be taken.












This symbol indicates something that you must not do.



This symbol indicates something that you must do. The picture inside the circle indicates the nature of the thing that must be done.

(For example, the symbol at left means you must make the ground connection.)

Notes on safety:

 CAUTION	
INSTALLATION	
<p> Machine installation should only be carded out by a qualified technician.</p> <p> Contact you dealer or a qualified electrician for any electrical work that may need to be done.</p> <p> The sewing machine weighs more than 55kg. The installation should be carded out by two or more people.</p> <p> Do not connect the power cord until installation is complete, otherwise the machine may operate if the treadle is pressed by mistake, which could result in injury.</p> <p> Be sure to connect the ground. If the ground connection is not secure, you run the risk of re</p>	<p> All cords should be secured at least 25mm away from any moving parts. Furthermore, de not excessively bend the cords or secure them too firmly with staples, otherwise shocks could occur.</p> <p></p> <p> 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 diarrhea. Keep the oil out of the reach of children.</p>



CAUTION

SEWING



This sewing machine should only be used by operators who have received the necessary training in safe use beforehand.



The sewing machine should not be used for any applications other than sewing.



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.

When threading the needle.

When replacing the needle and bobbin.

When not using the machine and when leaving the machine unattended.



Attach all safety devices before using the sewing machine. If the machine is used.

Without these devices attached. Injury may result.



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



If an error occurs in machine, or if abnormal noises or smells are noticed, immediately turn off the power switch.

Then contact your nearest dealer or a Qualified technician.



If the machine develops a problem contact your nearest dealer or a qualified Technician

CLEANING



Turn off the power switch before carrying out cleaning. 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,



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 oil under any circumstances, as it can cause vomiting and diarrhea. Keep the oil out of the reach of children.

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MAINTENANCE AND INSPECTION



Maintenance and inspection machine should only be carried out by a qualified technician.



Ask your dealer or a qualified electrician to carry out any maintenance and inspection of the electrical system.



Turn off the power switch and disconnect the power cord from the wall outlet at the following time.

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.



When checking the rotary hook lubrication, do not touch moving parts such as the rotary hook, needle and needle bar with your finger or paper nor push them with other objects. Otherwise injury or damage to the machine may result.



Use only the proper replacement pads as specified by our company.



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.

Any problems in machine operation which result from unauthorized modifications to the machine will not be covered by the warranty.

Warning labels:

The following warning labels appear on the sewing machine.

Please follow the instructions on the labels at all times when using the machine. If the labels have been removed or are difficult to read, please contact your nearest dealer.

1.



CAUTION



Moving parts may cause injury. Operate with safety devices. Turn off main switch before threading, changing bobbin and needle, cleaning etc.

2.



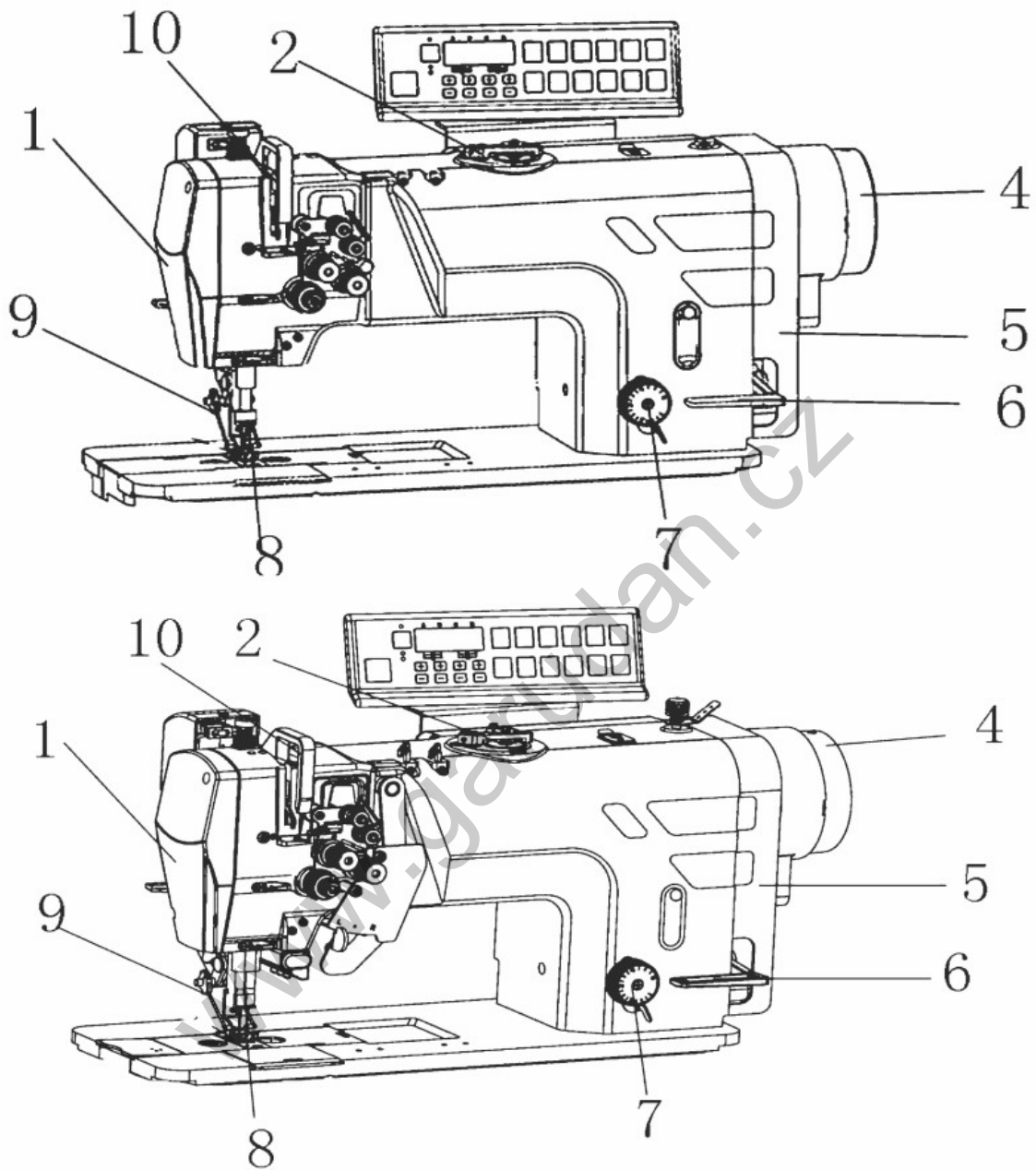
Be sure to connect the ground. If the ground connection is not secure, you run the risk of receiving a serious electric shock.

3.



Direction of operation

1. NAMES OF MAJOR PARTS



- ① Face plate ② Bobbin winder ④ Machine pulley ⑤ Belt cover
 - ⑥ Reverse Stitching lever ⑦ Stitch length dial ⑧ Needle plate
 - ⑪ Thread pillar
- Safety device**
- ⑨ Finger guard ⑩ Thread take-up cover

2. MACHINE SPECIFICATIONS

GF-2207-147 – Twin needle needle feed lock stitcher

GF-2210-147 – Twin needle needle feed split needle bar lock stitcher

		GF-2207-147			GF-2210-147		
		L	M	H	L	M	H
Application		Thin material	Medium-thick material	Thick material	Medium-thick material	Thick material	VERY thick material
Sewing speed (spm)		4.000			3.000		
Max, stitch length		4 mm			5 mm		
Presser foot height	Presser foot lifter	7 mm					
	Knee lifter	13 mm					
Feed dog height		1 mm					
Needle		DPX5 #9-#14	DPX5 #11-#16	DPX5 #14-#22	DPX5 #11-#16	DPX5 #14-#22	DPX5 #16-#23
Needle feed mechanism		YES	YES				
Single needle stop mechanism		NO			NO		

GF-2207-447 – Twin needle needle feed lock stitcher with large hook

GF-2210-447 – Twin needle needle feed split needle bar lock stitcher with large hook

		GF-2207-447			GF-2210-447	
		L	M	M	H	
Application		Medium-thick material	Thick material	Thick material	VERY thick material	
Sewing speed (spm)		3.000				
Max, stitch length		7 mm				
Presser foot height	Presser foot lifter	7 mm				
	Knee lifter	13 mm				
Feed dog height		1 mm				
Needle		DPX5 #11-#16	DPX5 #14-#22	DPX5 #11-#16	DPX5 #14-#22	DPX5 #16-#23
Needle feed mechanism		YES				
Single needle stop mechanism		NO			YES	

3. OPTIONAL PARTS

Upper thread tension assembly:

The following types of upper thread tension assembly are available for use with different thread take-up spring types and different thread tension spring strengths.

Part code	Thread tension spring type	Thread take-up spring strength
B4-177B	Standard	Double
B4-177B(A)	Weak	
B4-177B(B)	Very weak	

*Standard part at time of shipment GF-2207-147, GF-2210-147, GF-2207-447 and GF-2210-447.

Thread take-up spring type

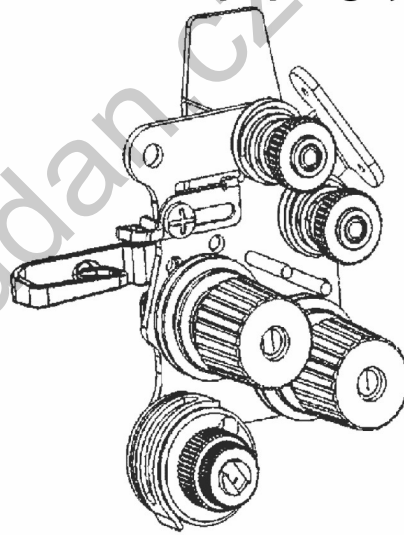
(Reference)

Tension spring force (when spring height 12mm)

Standard Approx.49N (Approx.5kgf)

Weak Approx.17.64N (Approx.1.8kgf)


Very weak Approx.2.94N (Approx.0.3kgf)





4. INSTALLATION



CAUTION

 Machine installation should only be carried out by a qualified technician.

 Contact your dealer or a qualified electrician for any electrical work that may need to be done.

 The sewing machine weighs approximately 55kg. The installation should be carried out two or more people.



Do not connect the power cord until installation is complete. The machine may operate if the treadle is depressed by mistake, which could in injury.



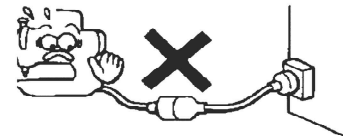
Use both hands to hold the machine head when tilting it back or returning it to its original position. If only one hand is used, the weight of the machine head may cause your hand to slip, and your hand may get caught.

About the machine set-up location:

* Do not set up this sewing machine near other equipment such as televisions, radios or cordless telephones, otherwise such equipment may be affected by electronic interference from the sewing machine.



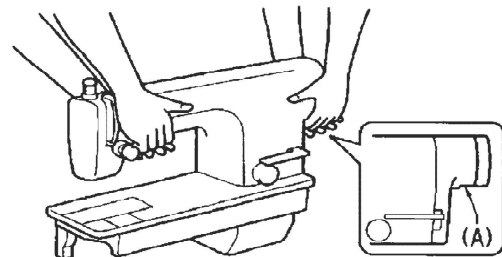
* The sewing machine should be plugged directly into an AC wall outlet. Operation problems may result if extension cords are used.



Carrying the machine:

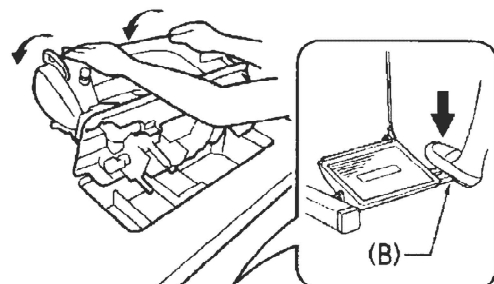
* The machine should be carried by the arm by two people as shown in the illustration.

* Hold the motor cover(A) by hand also so that the pulley does not rotate.



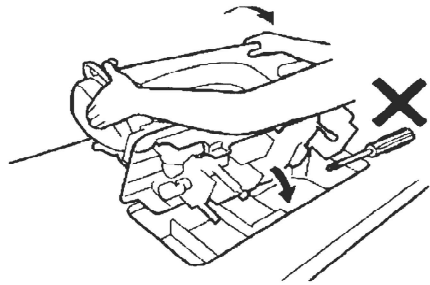
Tilting back the machine head:

* Hold section (B) with your foot so that the table does not move, and then push the arm with both hands to tilt back the machine head.

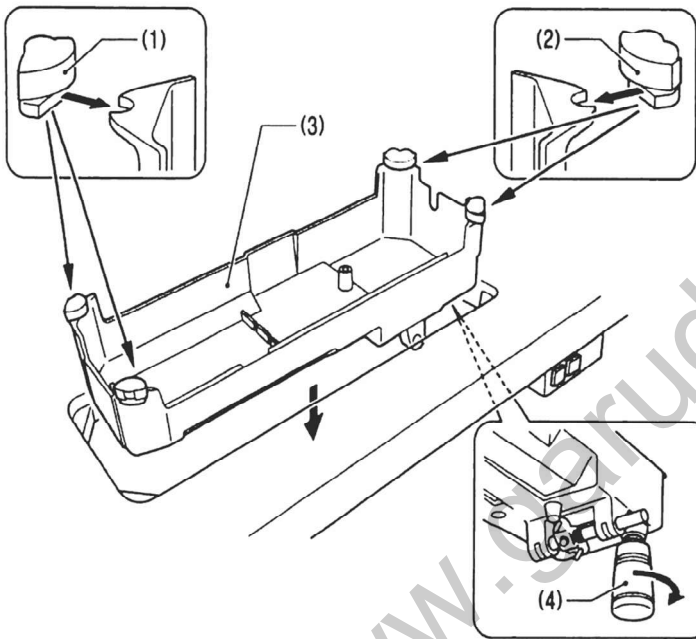


Returning the machine head to the upright position:

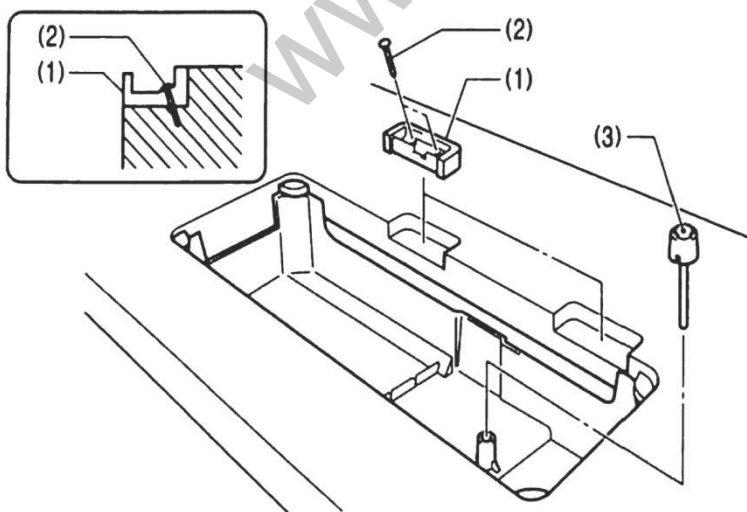
1. Clear away any tools, etc. Which may be near the table holes.
2. While holding the face plate with your left hand, gently return the machine head to the upright position with your right hand.



Installing the oil pan:

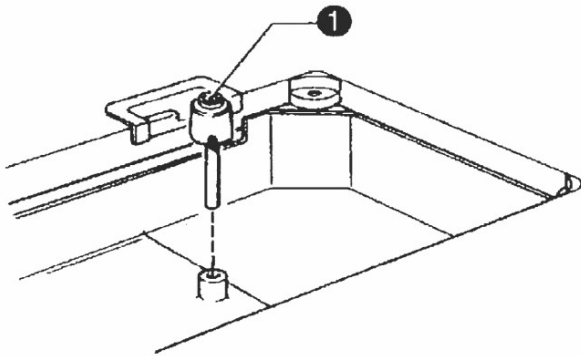


- (1) Head cushions (left) (2pcs)
- (2) Head cushions (right) (2pcs)
- (3) Oil pan
- (4) Oiler



- (1) Rubber cushions (2pcs)
- (2) Nails (4pcs)
- (3) Knee lifter complying bar

Installing the machine head:

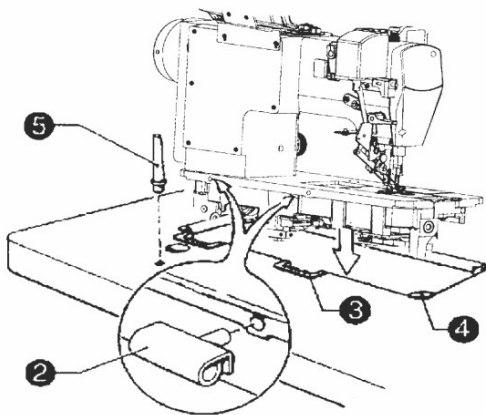


1. Insert the knee lifter complying bar (1).

2. Insert the two hinges (2) into the holes in the machine bed.

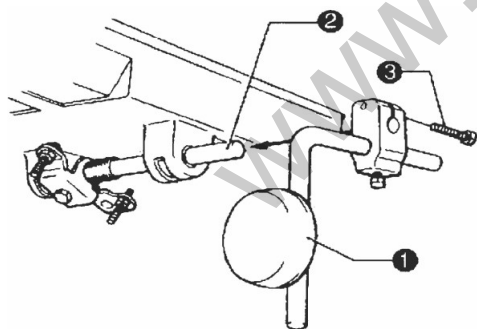
3. Clamp the hinges (2) onto the rubber Cushions (3) in the work table, and then place the machine head onto the head cushions (4) which are on top of the oil pan corners.

4. Tap the pillow (5) into the table hole.



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

Remarks: The support pin must be installed reliably, otherwise there is danger when the machines is turned over.



1. Place the knee lifter assembly (1) onto the knee lifter bar (2) on the oil pan, and then secure it by tightening the bolt (3).

2. Adjust the knee lifter.

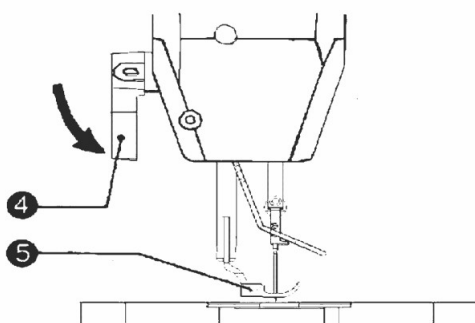
1) Lower the presser foot (4) by using the presser bar lifter (5).

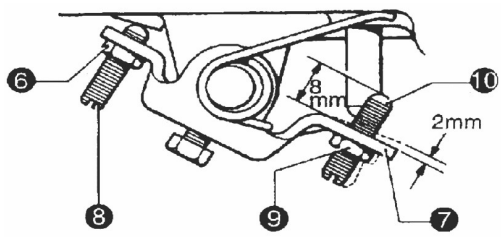
2) Loosen the nut (6).

3) Turn the screw (8) to adjust so that the amount of play in the knee lifter (7) is approximately 2mm when the knee lifter plate (1) is gently pressed.

4) Securely tighten the nut (6).

5) Loosen the nut (9).

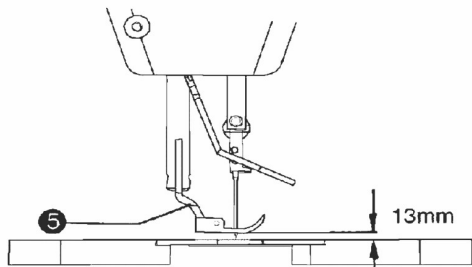




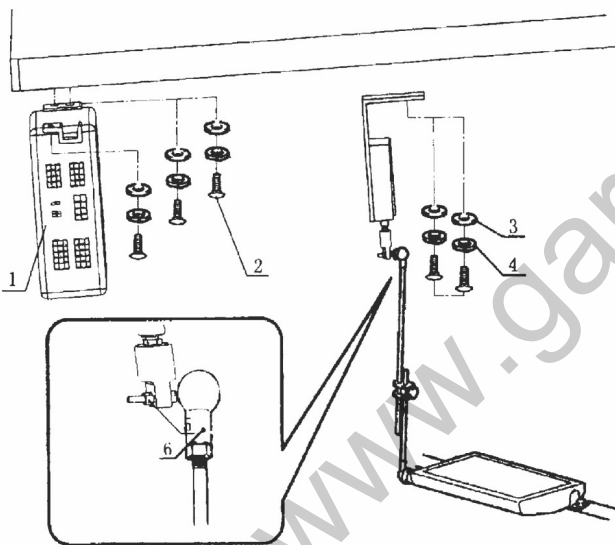
6) Turn the screw (10) until the distance between the end of the screw (10) and the knee lifter (7) is approximately 8mm.

7) Turn the screw (10) to adjust so that the presser foot (5) is at the desired position within a distance of 13mm of the needle plate when the knee lifter (9) plate is fully pressed.

8) After adjustment is complete, securely tighten the nut (9).



Installation:

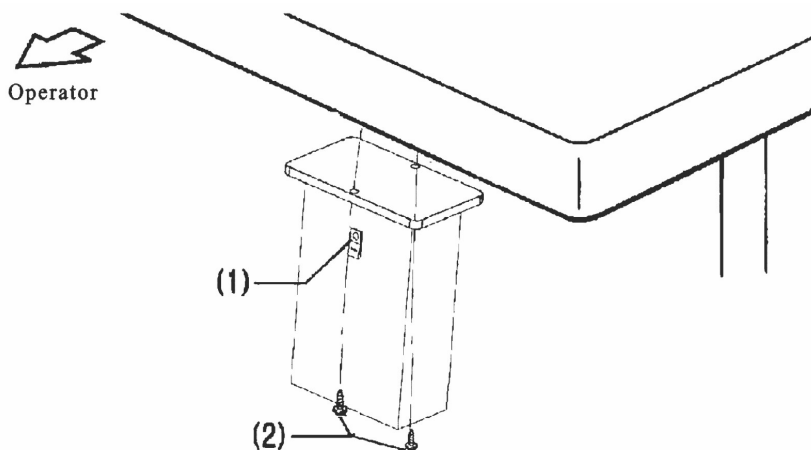


1. Control box

- 1) Control box
- 2) Bolts (5pcs)
- 3) Spring washers (5pcs)
- 4) Washer (5 purchase)

2. Connecting rod

- 5) Nut
- 6) Connecting rod



3. Power switch

- 1) Power switch
- 2) Screw (2pcs)

**DANGER**

Touching areas where high voltages are present can result in severe injury.

**CAUTION**

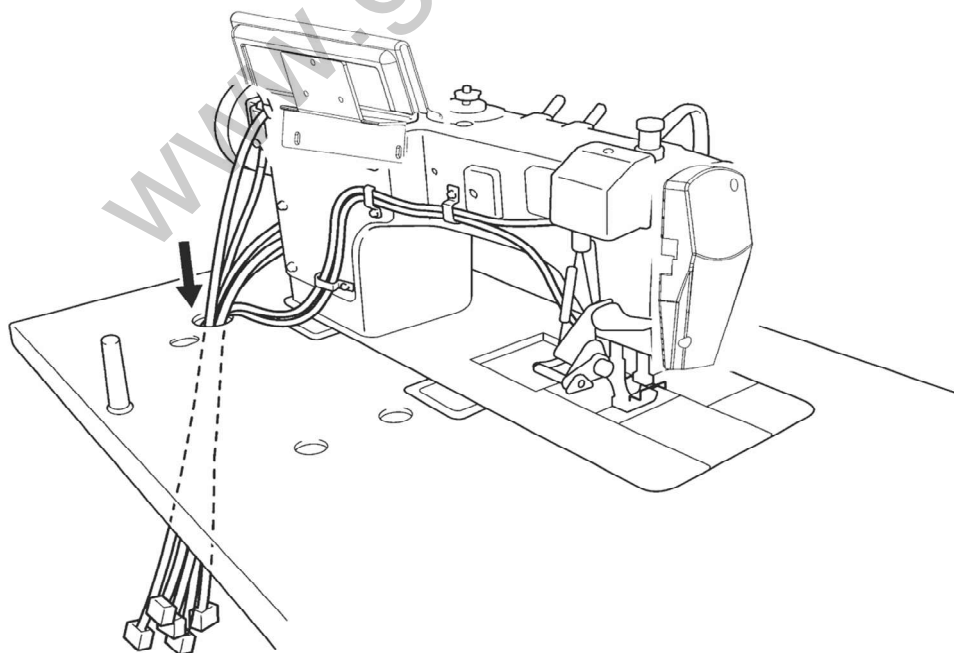
Contact your dealer or a qualified electrician for any electrical work that may need to be done.



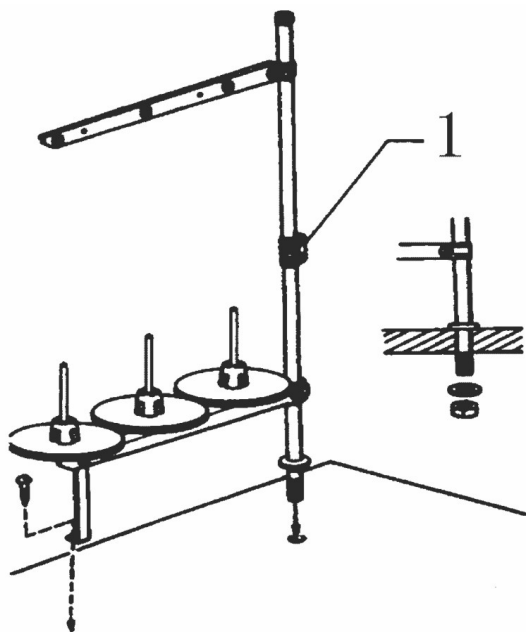
Do not connect the power cord until installation is complete. The machine may operate if the treadle is depressed by mistake, which could injure.



Be sure to connect the ground. If the ground connection is not secure, you run a high risk of receiving a serious electric shock, and problems with correct operation may also occur.

Connecting the cords:

Installing the cotton stand:

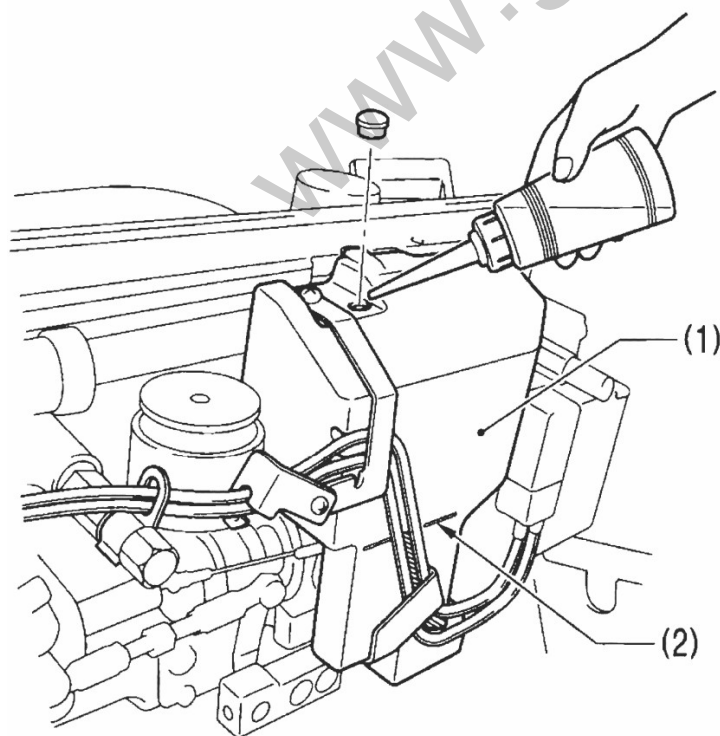


Assemble the cotton stand ① while referring to the cotton stand instruction manual, and then install the cotton stand to the far right corner of ① the work table.

Lubrication:

- 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 no-use.
- Use only the lubricating oil

Lubricating via the oil cover (every 6 months)



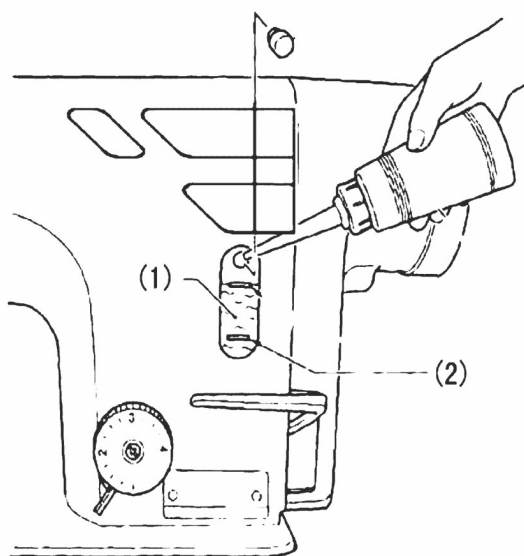
(Minimum lubrication specifications)

Pour lubricating oil into the oil (1) about once every six months.

(Semi dry specifications)

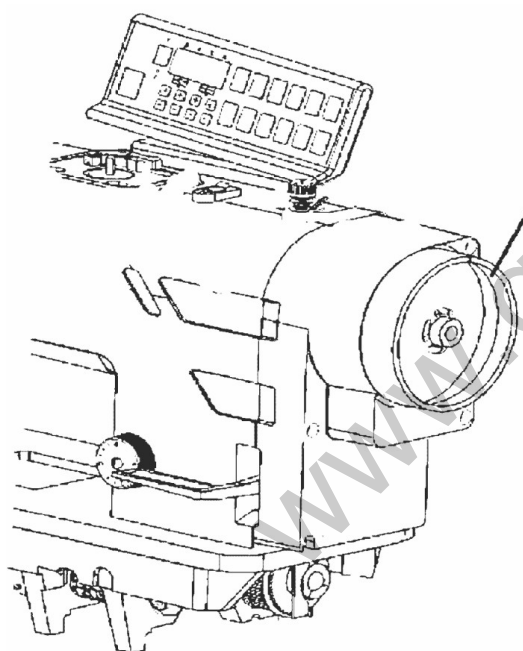
Pour lubricating oil into the oil cover (1) about as often as grease is applied.

1. Tilt back the machine head
2. Pour lubricating oil into the oil cover (1) until the oil level reaches the reference line (2)
3. Return the machine head to its normal position.



If the lubricating oil level drops below the bottom reference line (2) of the oil gauge window (1) be sure to add more oil.

Checking the machine pulley rotating direction:



1. Insert the power cord plug into the wall outlet, and then turn on the power switch.

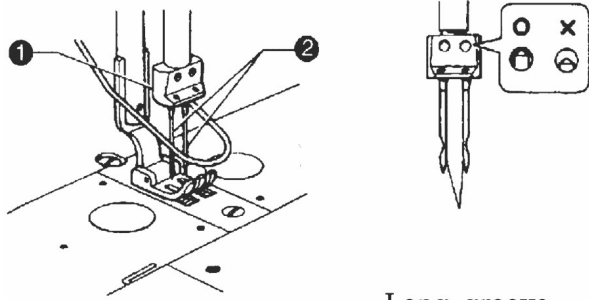
2. Depress the treadle and check that the direction of the machine pulley matches the direction of the arrow ①.

* If the direction of rotary is reversed, change the direction of rotation to the correct to the correct direction while referring to the instruction manual for the motor.

5. PREPARATION BEFORE SEWING

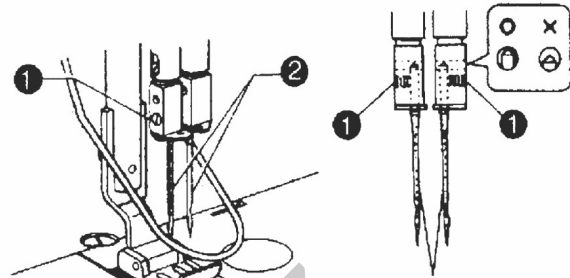
Installing the needle:

GF-2207-147, GF-2207-447



Long groove
lange Nut
Longue gorge
Ranura large

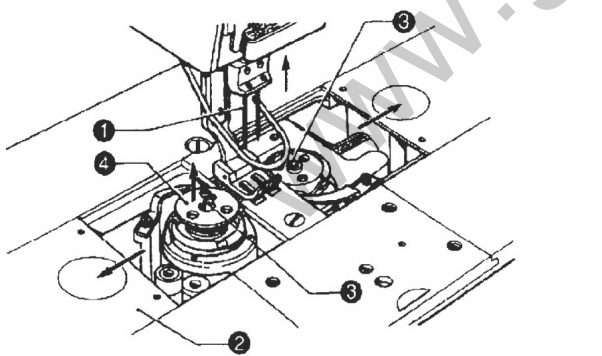
GF-2210-147, GF-2210-447



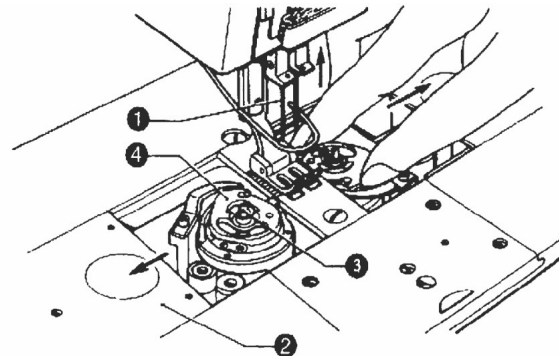
Long groove
lange Nut
Longue gorge
Ranura large

1. Turn the machine pulley to move the needle bar to its highest position.
2. Loosen the screws, hold the needles with their long groove facing inward, insert them all the way into the needle bars, and re-tighten the screws.

Remove the bobbin or cap:

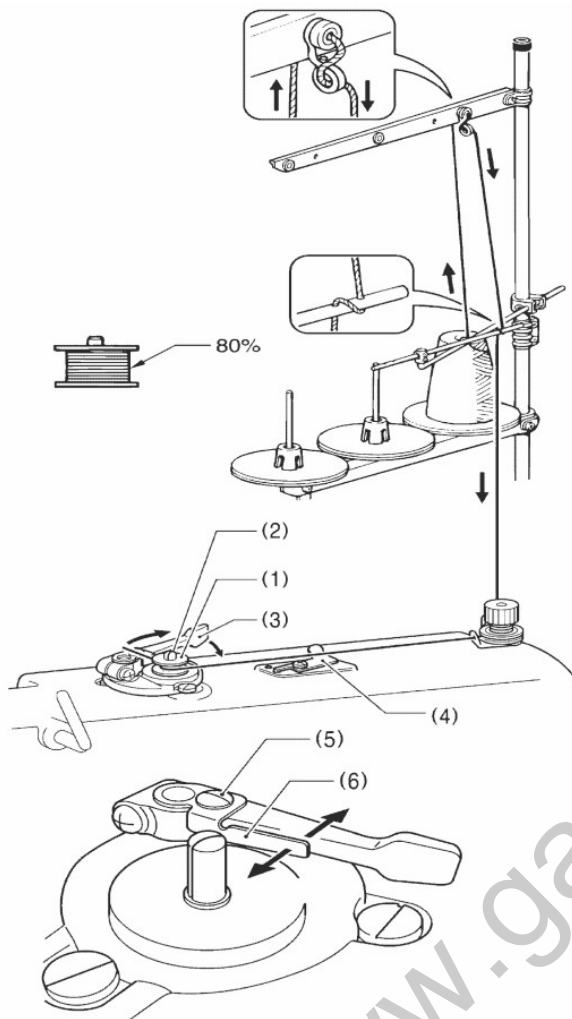


1. Raise the needles (1) to the highest positions, and open the slide plates (2) by moving them to the right and left.
2. Pull the rotary hook latches (3) upward, and then remove the bobbin (4).



1. Raise the needle (1) to this highest positions, and open the slide plates (2) by moving them to the right and left.
2. After lifting up the rotary hook latch (3), lift the corner of the cap to moving the cap (4).

Winding the lower thread:



1. Turn on the power switch.
2. Place the bobbin (1) into the bobbin winder shaft (2).
3. Wind the thread several times around the bobbin (1) in the direction indicated by the arrow.
4. Push down the bobbin presser arm (3).
5. Raise the presser foot with presser lifter.
6. Depress the treadle. Lower thread winding will then start.
7. Once winding of the lower thread is completed, the bobbin presser arm (3) will return automatically.

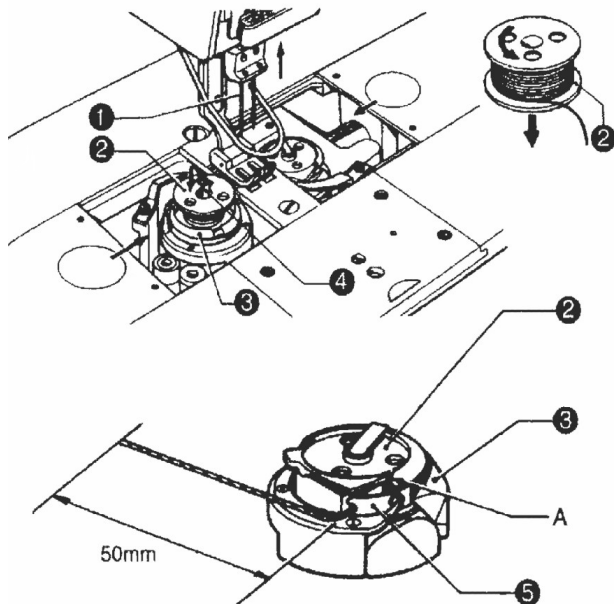
* If the thread cannot be wound on evenly, loosen the screw (4) and move the bobbin winder guide (5) to the side where there is less thread.

* 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.

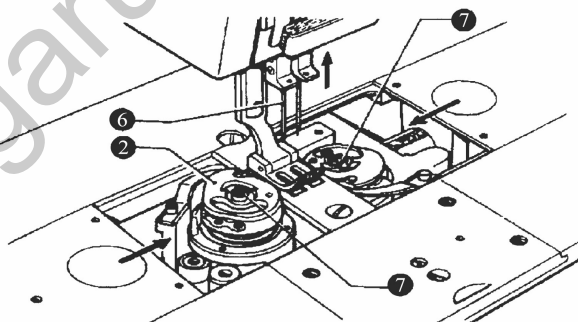
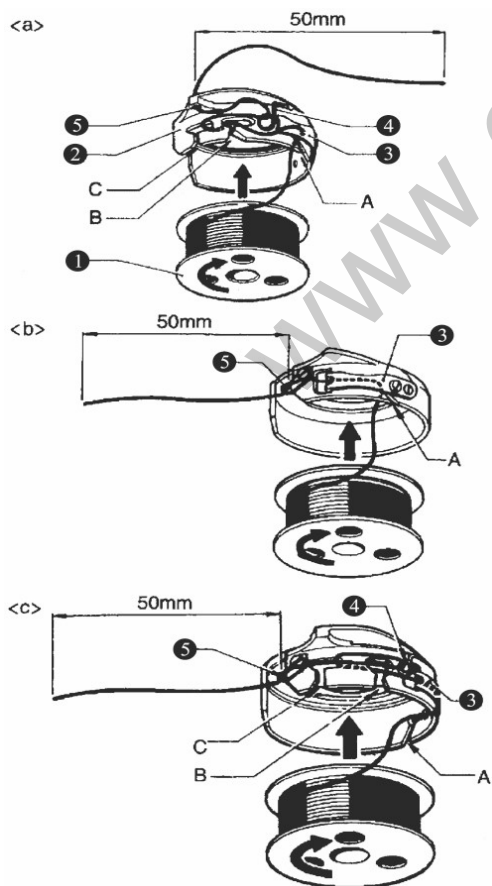
Installing the bobbin or cap:

Installing the bobbin (GF-2207-147, GF-2207-447)



1. Turn the machine pulley to raise the needle ① to its highest position.
2. Insert the bobbin ② into the rotate hook ③ so that the winding direction is as shown in the illustration.
3. Return the rotary hook latch ④ to its original position.
4. Turn the machine pulley to rotary the rotary hook ③ until the tension spring ⑤ is visible.
5. Pass the thread through slit A in the rotary hook and then pass it at under through tension spring ⑤.
6. Pull out the thread to length of approximately 50 mm.
7. Close the slide plates.

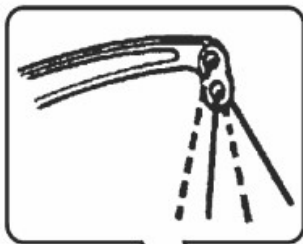
Installing the cap (GF-2210-147, GF-2210-447)



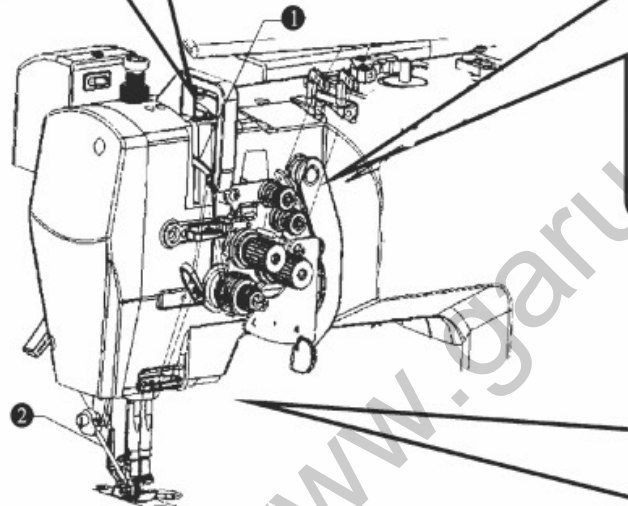
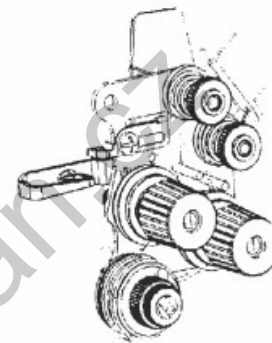
1. Insert the bobbin ① into the cap ② so that the winding direction is as shown in the illustration.
2. Thread the thread by one of the following methods in accordance with the shape of the cap being used.
 - 1) Pass the thread through slot "A" and under the tension spring ③.
 - 2) Pass the thread through slot "B" and "C" and then through the thread-loosening-prevention spring.
 - 3) Pass the thread through the thread hole ④ and pull out about 50mm.
3. Turn the machine pulley to raise the needle to its highest position.
4. Insert the cap ② into the rotary hook.
5. Push latch ⑦ of the rotary hook flat.
6. Close the bed slide.

Thread the Upper thread:

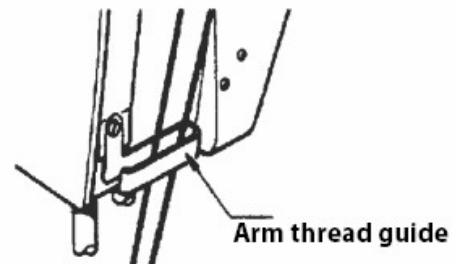
- Turn the machine pulley and raise the thread take-up lever before threading the upper thread. This will make threading easier and it will prevent the thread from coming out at the sewing start.
- Thread the left-side thread first.
- The position of the finger guard is adjustable, be sure to lower it once threading has been completed.



Pass the thread correctly between the tension discs.

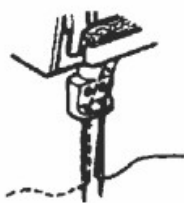


Cotton thread

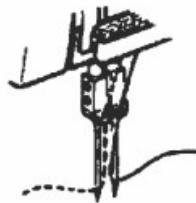


Arm thread guide

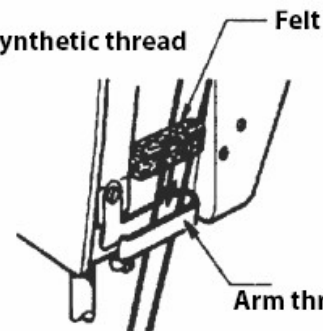
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GF-2207-447



GF-2207-147
GF-2210-447



Synthetic thread



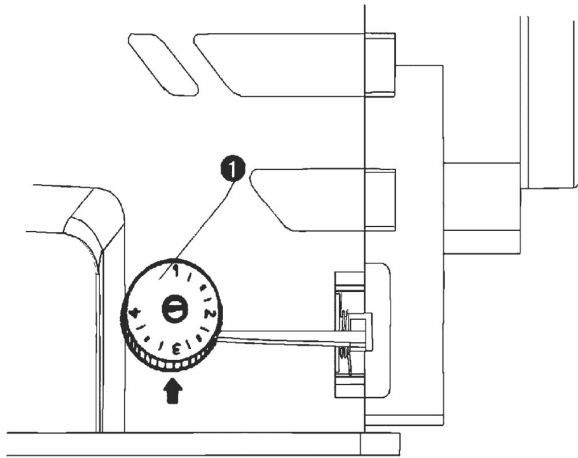
Felt

Arm thread guide

Pass the threads through the needle eyes from inside to outside. Pull out about 50 mm of the thread through each of the needle eyes.

If synthetic thread is used, use the felt (included) in the arm thread guide

Adjusting the stitch length:



GF-2207-147, GF-2207-447
GF-2210-147, GF-2210-447

Turn the stitch length dial clockwise or counter clockwise that the desired stitch length is at the uppermost position on the dial.

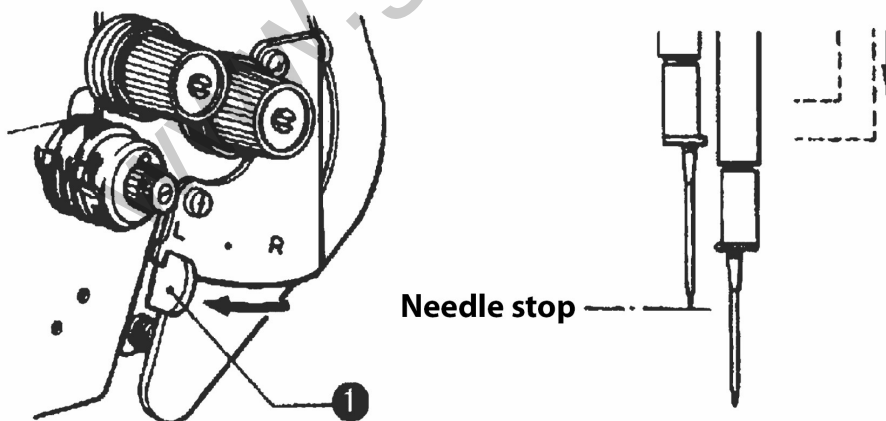
- The larger the number, the longer the stitch longer will be.

Corner sewing method:

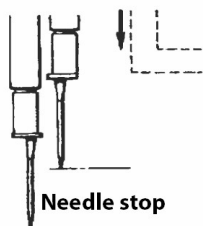
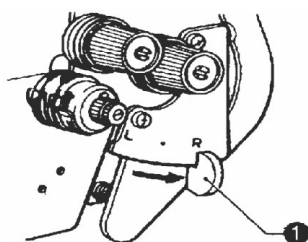
NOTE: If using this machine in place of a single-needle machine, remove the needle which is not being used. In such cases, do not use the procedures given below to stop the unused needle bar from moving, otherwise damage to the machine may result.

To stop needle bars (right and left)

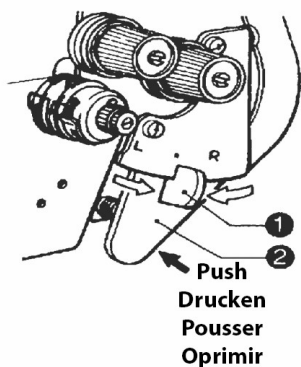
- Operate the stop lever after the needle has penetrated the material and has moving.
- Do not sew at speeds of over 1000 spm while one of the needle bars been stopped.



To stop operation of the left needle bar: Move the stop lever ① to the "L" position.

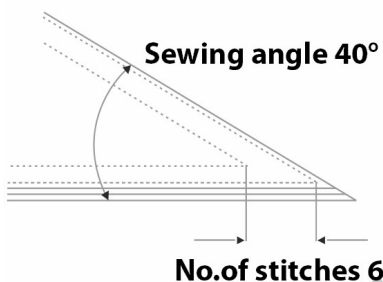


To stop operation of the right needle bar:
Move the stop lever ① to the R position.



To resume twin-needle sewing:
Press the push lever ⑦. The stop lever ① will then return to its original position automatically.

Number of stitches: quick-reference guide



Sewing angle \ No. of stitches	30°	40°	50°	60°	70°	80°	90°	100°	110°	120°	130°	140°
2					4.6	3.8	3.2	2.7	2.7	1.8	1.5	1.1
3			4.6	3.5	3.0	2.5	2.1	1.8	1.5	1.2		
4		4.4	3.4	2.8	2.3	1.9	1.6	1.3				
5	4.8	3.5	2.7	2.2	1.8	1.5	1.3					
6	4.0	2.9	2.3	1.9	1.5	1.3						
7	3.7	2.5	2.0	1.6								
8	3.0	2.2	1.7									

6.35 mm:

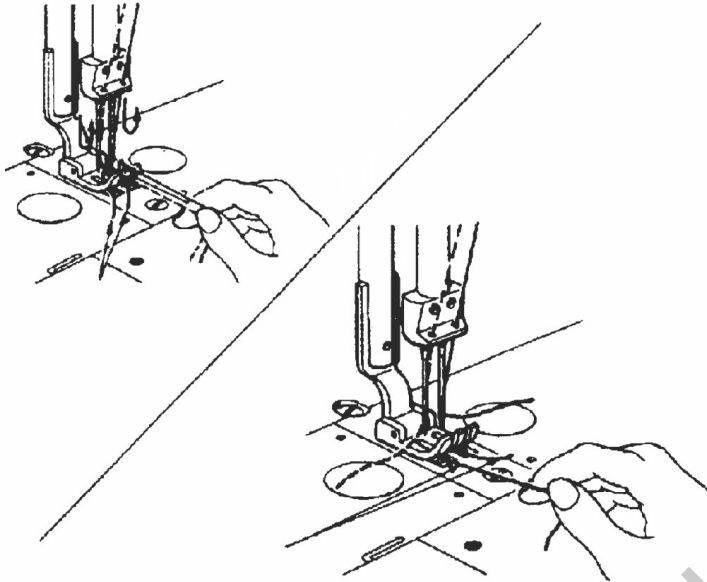
- For ¼" needle width:
Determine the sewing pitch from the chart below to make beautiful corner stitching.
The number of stitches of the outer needle varies according to the combination of sewing angle and sewing pitch.

[Example]

For a sewing angle of 40°, and a sewing pitch of 2.9 mm, the number of stitches becomes 6.

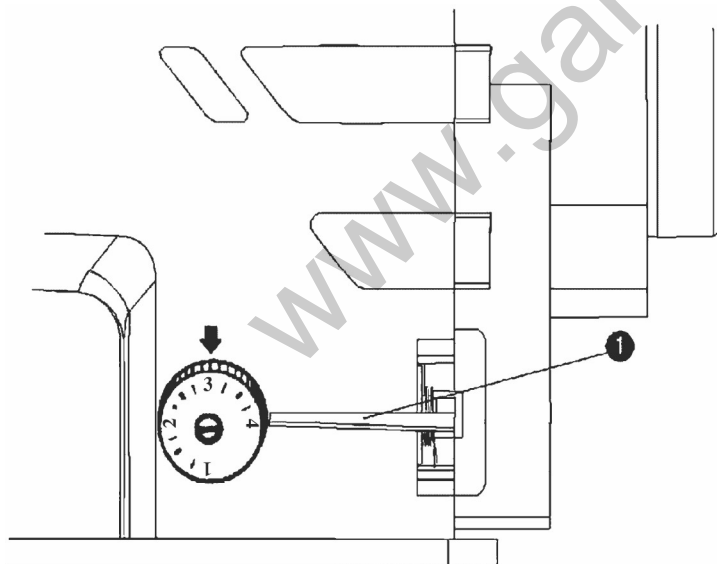
6. SEWING

Sewing:



1. While holding the two upper threads with your fingers, turn the machine pulley by hand toward you until the lower threads come out onto the feed dog.
2. Pull the lower thread toward you and check that they pull out smoothly.
3. Turn on the power switch.
4. Depress the treadle to start sewing.

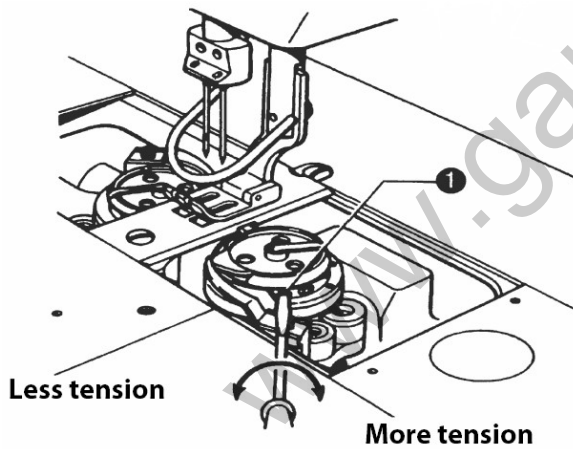
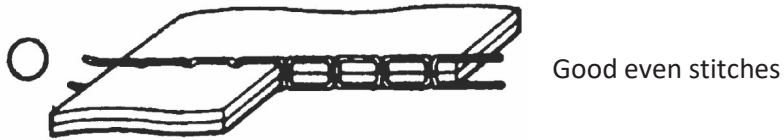
Back tacking (GF-2207-147, GF-2207-447, GF-2210-147, GF-2210-447):



When the reverse stitching lever is pushed, the cloth 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

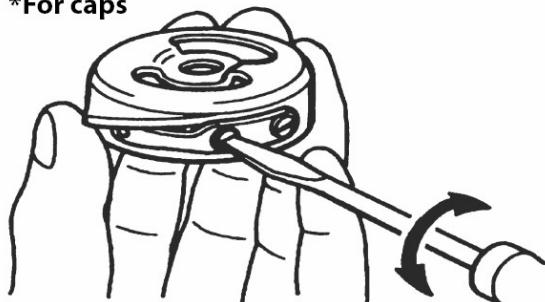
Adjusting the thread tension:

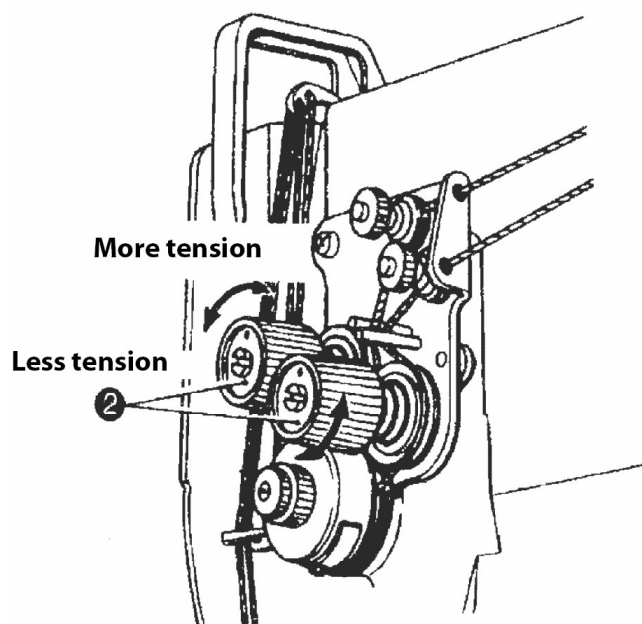


Lower thread tension

The tension of the lower thread varies with the kind of cloth and thread, and can be adjusted by turning the lower thread tension adjustment Screw ①.

*For caps



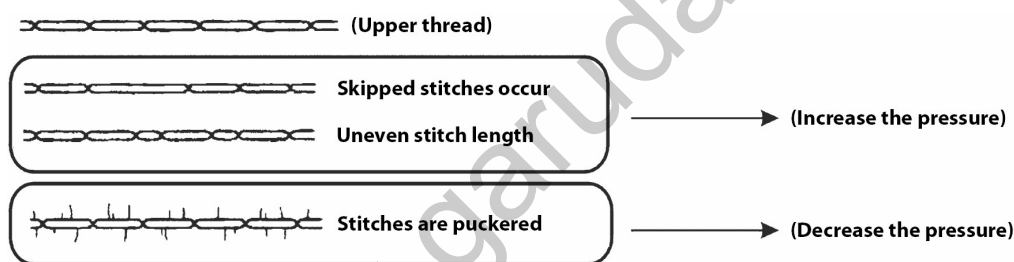


Upper thread tension

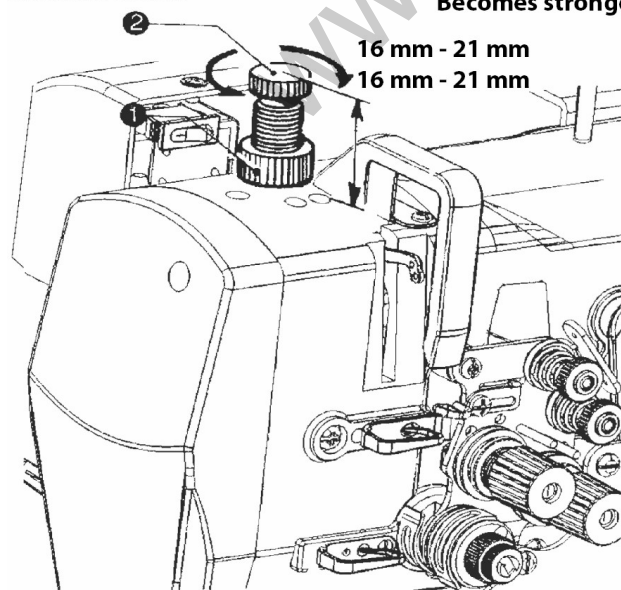
After the lower thread tension has adjusted, adjust the upper thread tension so that a good, even stitch is obtained.

1. Lower the presser foot.
2. Adjust by turning the thread tension nut ②.

Adjusting the presser foot pressure:



Becomes weaker Becomes stronger



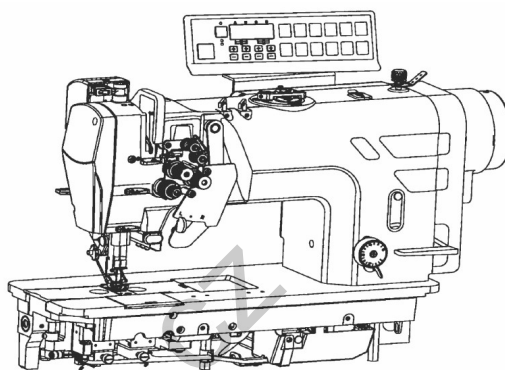
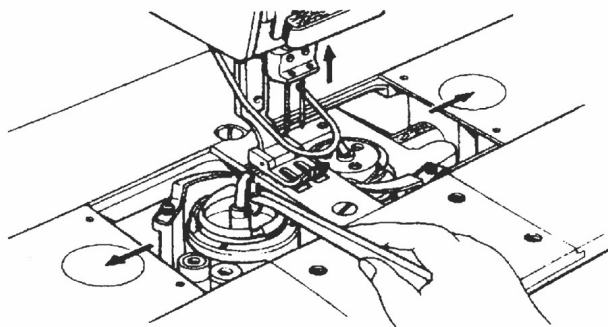
The presser foot pressure should be as weak as possible, but strong enough so that the material does not slip.

1. Loosen the adjustment nut ①.
2. Turn the adjustment screw ② to adjust the presser foot pressure.
3. Tighten the adjustment nut ①.

Use	Presser foot pressure	Adjustment screw height
For thin material	29.4N (3kgf)	21 mm 21 mm
For Medium thick material	39.2N (3kgf)	18 mm 18 mm
For thick material	49N (5kgf)	16 mm 16 mm

8. CLEANING

The following cleaning operations should be carried out each day in order to maintain the performance of this machine and to ensure a long service life. Furthermore, if the sewing machine has not been used for a long period of time, carry out the following cleaning procedures before using it again.

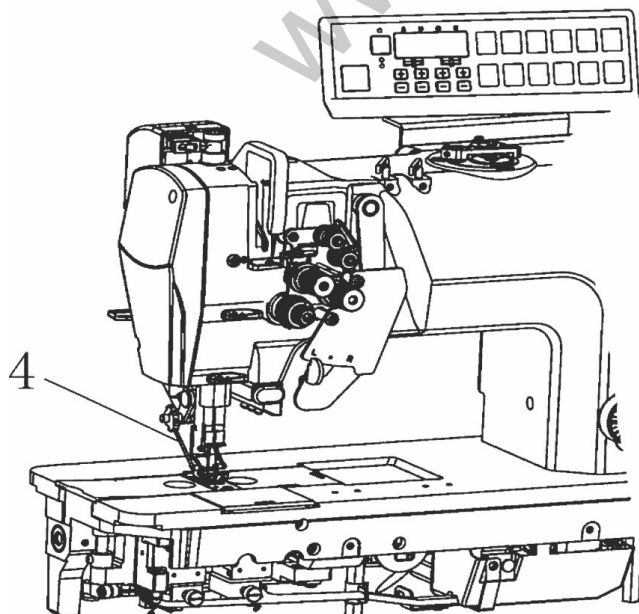


Cleaning the rotary hook

1. Turn the machine pulley to raise the needle to its highest position.
2. Open the left and slide plates.
3. Remove the bobbin or the cap.
4. Remove all thread scraps from inside the rotary hook.
5. Replace the bobbin or the cap.

Lubrication:

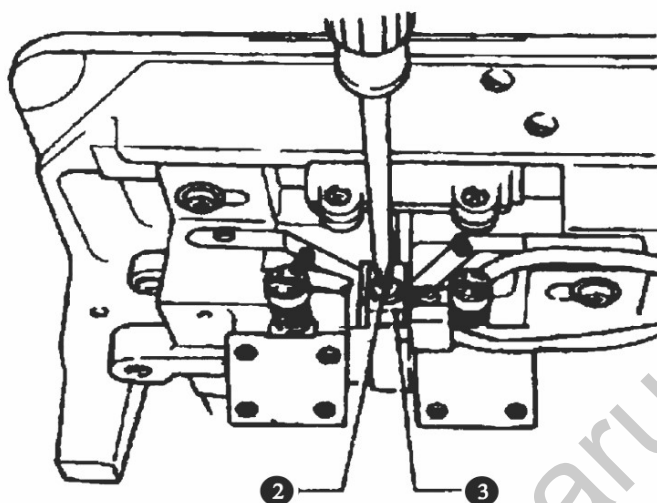
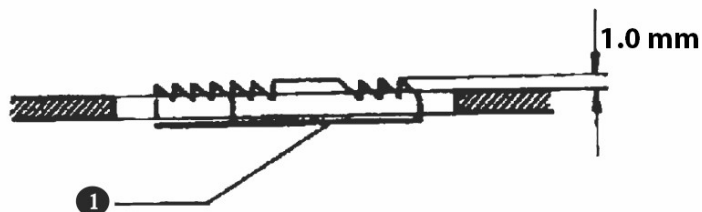
Lubrication the sewing machine according to the procedure on [page](#).



1. Check that the upper threads have been threaded correctly. (Refer to [page](#))
2. Check that the end of the needle is not broken.
* If the end of the needle is broken, the needle should be replaced.
3. Lower the finger guard (4).
4. Carry out a test sewing.

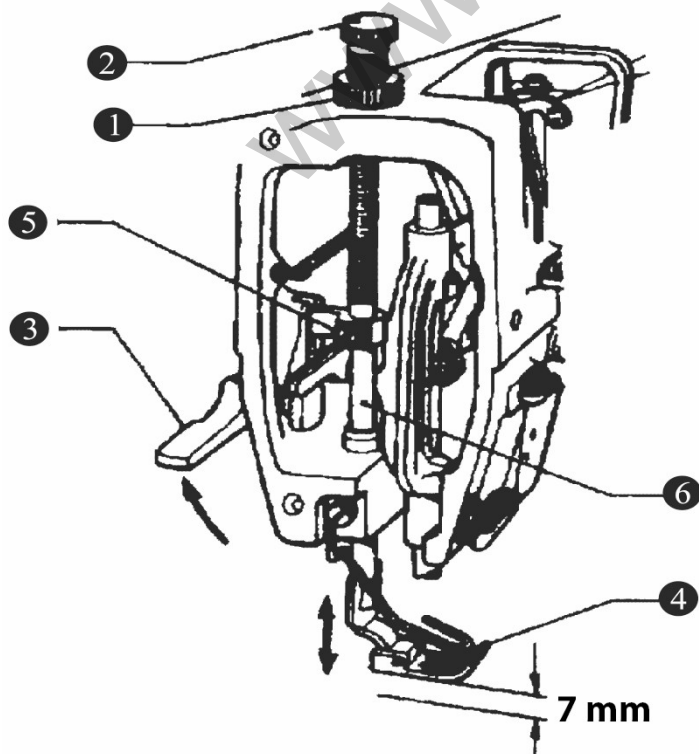
9. STANDARD ADJUSTMENTS

Adjusting of the feed dog height:



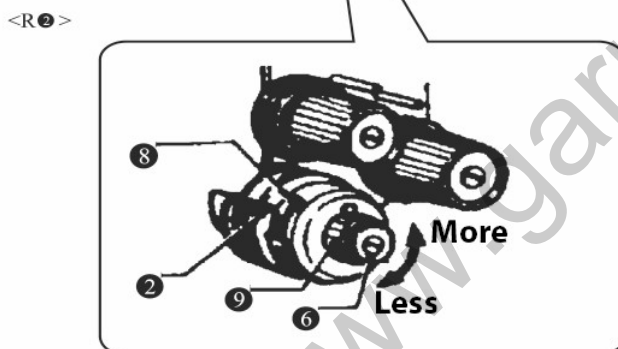
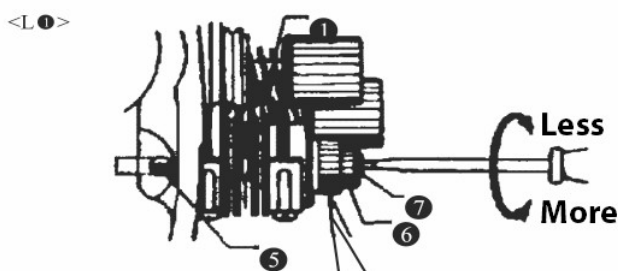
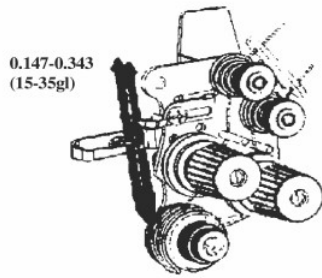
1. Turn the pulley until the feed dog (1) rises to the highest position.
2. Tilt back the machine head.
3. Loosen Screw (2) and raise or lower the feed dog holder (3) so that the feed dog (1) will raise to about 1.0mm above the needle plate.
4. Tighten the screw (4).

Adjusting the presser foot height:



1. Loosen the nut (1) and then loosen the presser foot adjustment screw (2).
2. Open the face plate.
3. Raise the presser foot (4) with the presser foot lifter (7).
4. Loosen the screw (5) and then move the needle bar up or down to adjust so that the presser foot (4) is approximately 7mm above the top of the needle plate. Note: Be careful not to rotate the needle bar (6).
5. Tighten the screw (5).
6. Adjust the presser foot pressure by turning the presser foot adjustment screw (2), and then tighten the nut (1). (Refer to page 24)

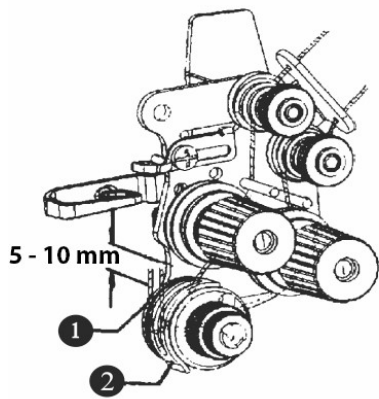
Adjusting the thread tension spring:



Thread take-up spring tension

The standard tension for thread take-up spring L (1) and thread take-up spring R (2) is 0.147-0.343N(15 - 35g)for both spring.(Thread take-up spring L (1))

1. Open the face plate.
2. Loosen the screw (5).
3. Loosen the knob (6), and then rum the thread tension stud (7) to adjust the tension.
4. Tighten the screw (5), and then tighten the knob (6). (Thread take-up sprig R(2))
1. Loosen the set screw (8).
2. Loosen the knob (6) and then turn the adjustment knob (9) to adjust the tension.
3. Tighten the screw (8), and then tighten the knob (6).

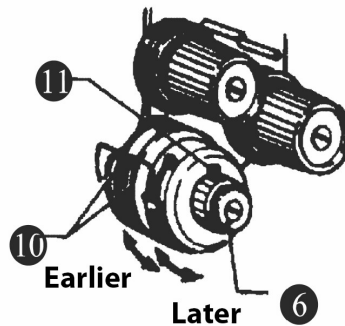
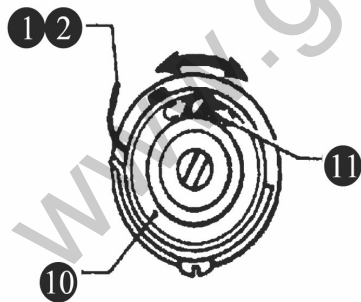
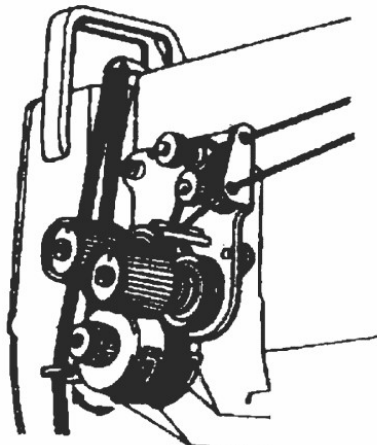


Operating range of thread take-up spring

The standard operating range for thread take-up spring L ① and thread take-up spring R ② is 5-10mm for both springs.

1. Loosen the left and right screws ③ and then turn the left and right thread take-up spring stoppers ④ to adjust the operating range.

2. Tighten the screws ③.



Thread take-up spring operation timing

The standard operation take-up spring L ① and thread take-up spring R ② is the middle position within the operating range of the thread take-up spring guide ⑩,

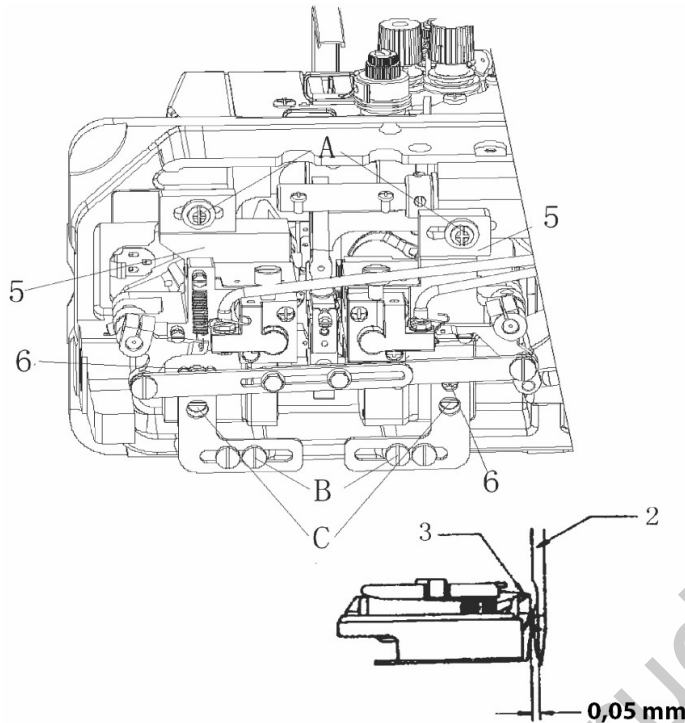
1. Loosen the screw ⑪

2. Loosen the knob ⑥, and then turn the left and right thread take-up spring guided ⑩ to adjust the tension.

3. Tighten the screw ⑪, and then tighten the knob ⑥.

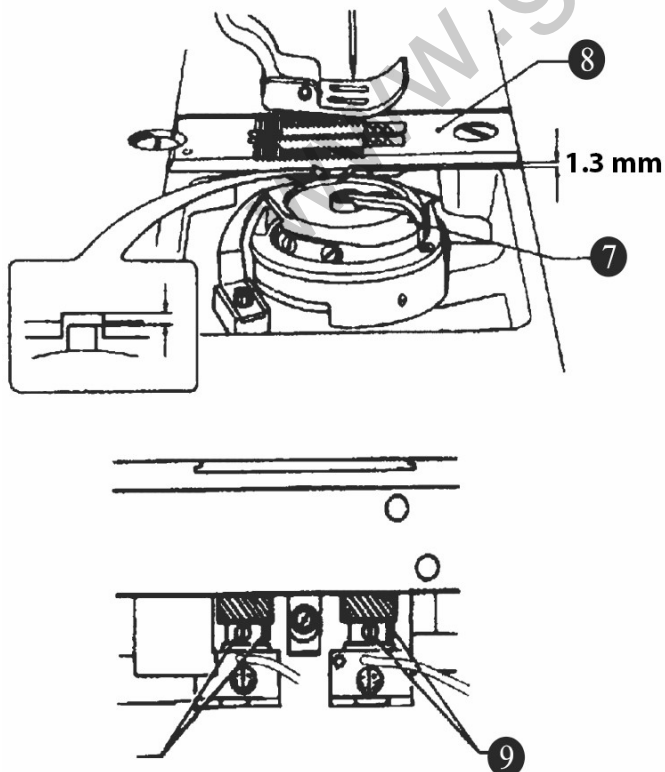
Adjusting the needle and rotary hook timing:

Needle rotary hook point gap



1. Tilt back the machine head.
2. Loosen screws (A), (B), (C).
3. Move the rotary hook base (1) to the left or right so that the clearance between the needle and the rotary hook tip (3) is 1-3mm.
4. Then turn the adjusting screw 6 to adjust so that the clearance between the needle (2) and the rotary hook tip 3 is 0.05mm.
5. After adjusting, securely tighten screws (A), (B), and (C).

Needle bar height and lift amount

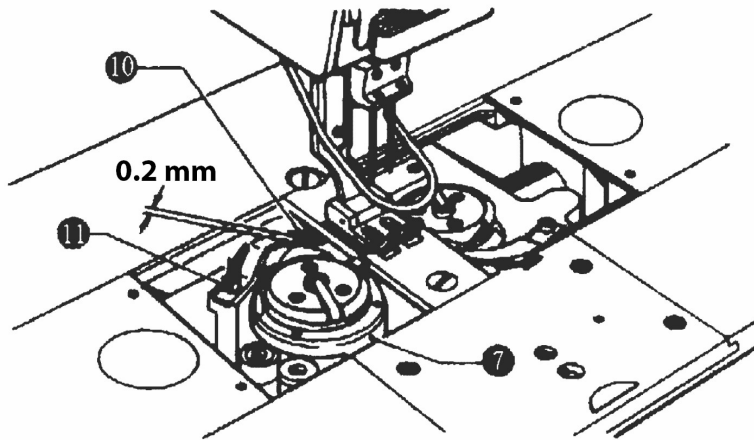


1. Remove the left and the right suite plates.
2. Tilt back the machine head.
3. Tilt screw (9) and move rotary hook (7) so that the clearance between the rotary (7) hook and needle plate is 1.3mm.

NOTE: Loosen screw (9), Rotary hook will cause the position of the needle and Rotary hook.

4. Tighten screw (9).

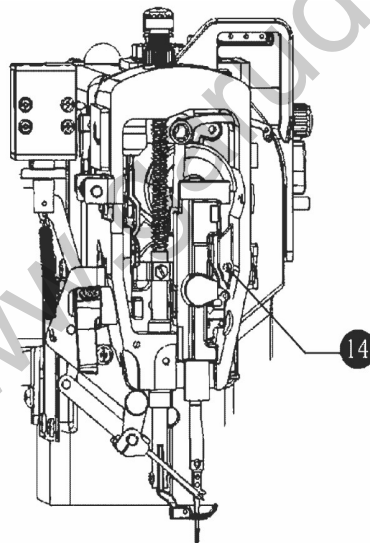
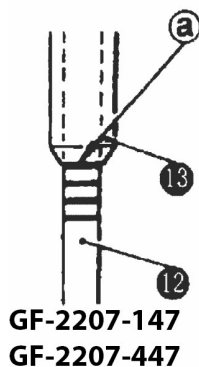
Clearance between rotary hook and opener



1. Loosen the setscrew (11) and move the opener (1) to the left or right to adjust so that the clearance between the rotary hook (7) and the opener (10) is 0.2mm when the opener (10) is pulled as far as it will go in the direction of the arrow.
2. Tighten the set screw (11).

Needle bar height and lift amount

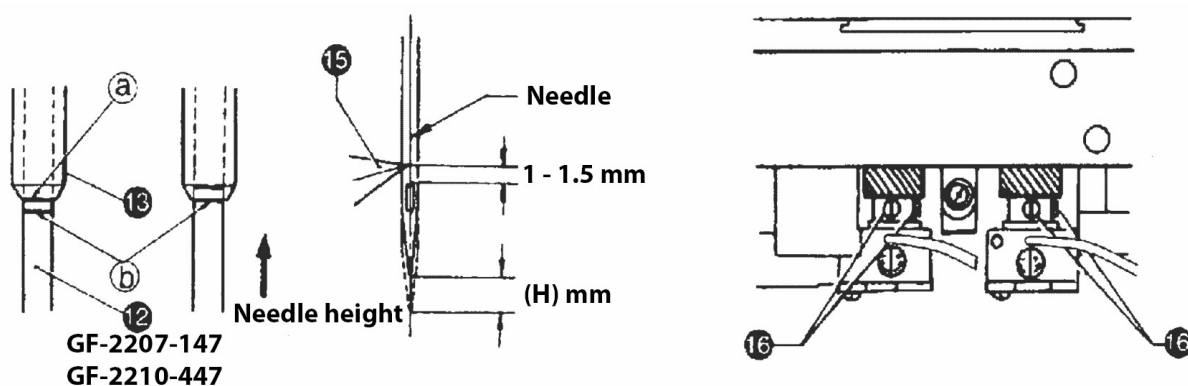
[GF-2207-147, GF-2207-447]



Needle bar height

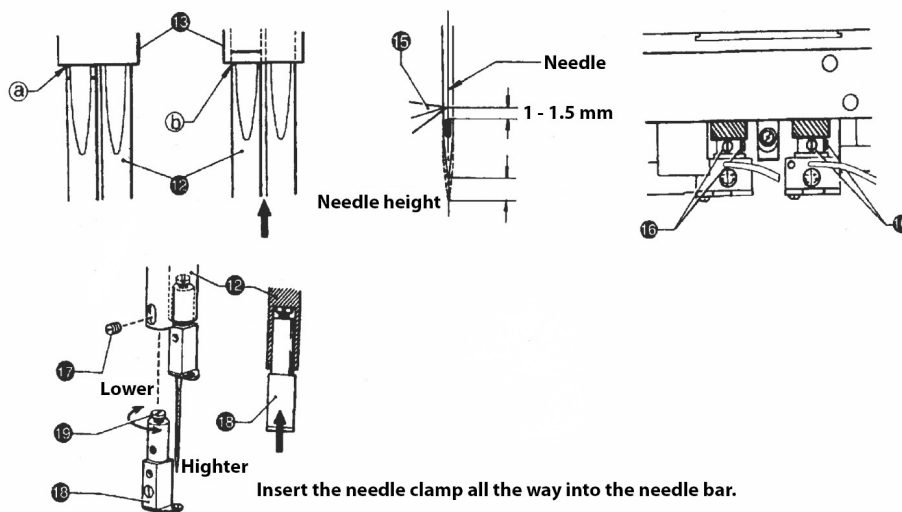
1. Change the stitch length to the smallest possible setting.
2. Open the face plate.
3. Turn the machine pulley to move the needle bar (12) to its lowest position. (a) Reference line (12) at the top of the needle bar must be aligned with the lower edge of the needle bar supporter (13) at this time.
4. Loosen the screw (14) and move the needle bar (12) up and down to adjust the height.
5. Tighten the Screw (14).
6. Turn the machine pulley and check that the needle goes into the middle of the needle hole in the feed dog.

[GF-2207-147, GF-2207-447]

Needle bar lift amount

	GF-2207-147			GF-2210-447	
	F	(L)	M	(L)	M
Stitch Length	2 mm	2 mm	3 mm	3 mm	
Needle bar height (H)	2.4 mm	2.4 mm		2.4 mm	

7. Remove the needle plate.
8. Remove the feed dog.
9. Set the stitch length to either 2 (approx 2mm) or 3 (approx 3mm) on the scale, depending on the model and specifications of the machine (Refer to the table).
10. Turn the machine pulley to raise the needle bar (12) by H mm from its lowest Position (refer to the table below for the value for H).
11. The reference line (b) on the needle bar (12) will be aligned with the lower edge of the needle bar supporter (13). The rotary hook tip (15) must be aligned with the center of the needle at this time.
12. Tilt back the machine head, loosen the three screws (16), and then align the rotary hook tip (16) with the center of the needle.
13. Tighten the screws (16).
14. The distance from the upper edge of the needle hole to the rotary hook tip (15) must be 1-1.5mm when the rotary hook tip (15) is aligned with the center of the needle.
15. Install the feed dog.
16. Install the needle plate.



	GF-2210-147			GF-2210-447		
	(L)	M	H	(L)	M	H
Stitch length	2 mm			2 mm		
Needle bar height (H)	2.4 mm			2.4 mm		

1. Remove the needle plate.
2. Remove the feed dog.
3. Set the stitch length to eighter 2(approx. 2mm) on 3(approx. 3mm) or the scale, depending on the model and specifications of the machine (refer to the table).
4. Turn the machine pulley to raise the needle bar by Hmm from its lowest position (refer to the table for the value for H).
The reference line (b) on the needle bar (12) will be aligned with the lower edge of the needle bar supporter.
The rotary hook tip (15) must be aligned with the center of the needle at this time.
5. Till back the machine head, loosen the three screws (16), and then align the rotary hook tip with the center of the needle.
6. Tighten the screws (16).
7. The distance from the upper edge of the needle hole to the rotary hook tip (15) must be 1-1.5mm when the rotary hook tip is aligned with the center of the needle.
8. Loosen the set screw (17) to adjust so that the upper edge of the needle hole to the rotary hook, tip is 1 - 1.5mm.
9. Turn the screw (19) to adjust so that the distance from the upper edge of the hole of the needle hole to the rotary hook tip (15) is.
10. After adjustment is completed, insert the needle bar clamp (18) into the hole of the needle bar bar (12) as it will go, and check that the distance is 1 - 1.5mm.
Secure it by tightening the set screw (17).
11. Install the feed dog.
12. Install the needle plate.

Adjusting the rotary hook lubrication amount:

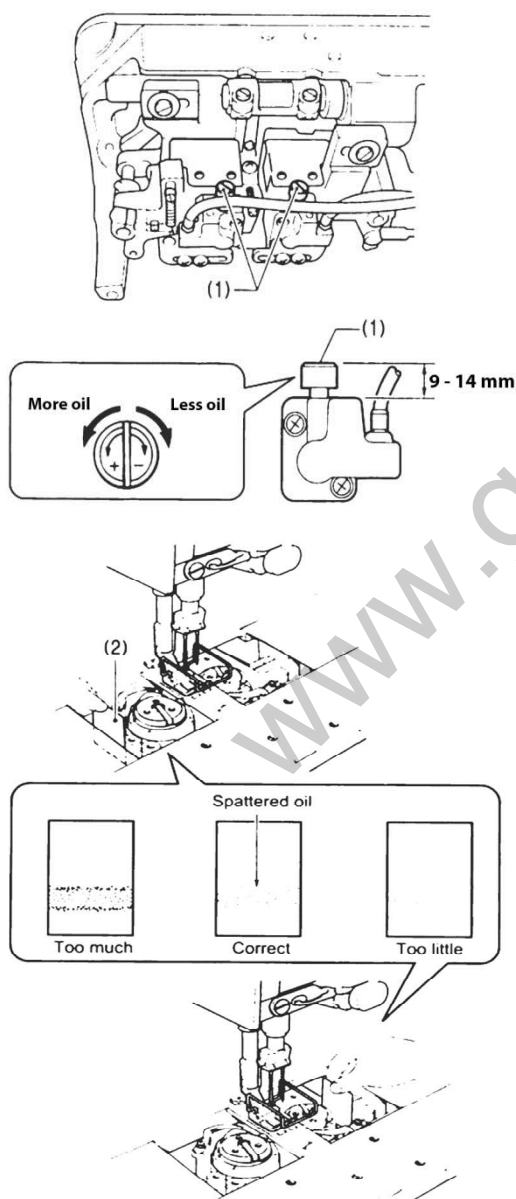


CAUTION



Be careful not to touch your fingers or the lubrication amount check sheet against moving parts such as the rotary hook or the feed mechanism when checking the amount of oil supplied to the rotary hook, otherwise injury may result.

Use the following procedure to check the amount of oil being supplied to the rotary hook when replacing the rotary hook or when changing the sewing speed.



Guide to lubrication adjustment

1. Tilt back the machine head.
2. Turn the oil adjusting screw (1) to adjust the height to within 9-14 mm.

Checking the lubrication amount

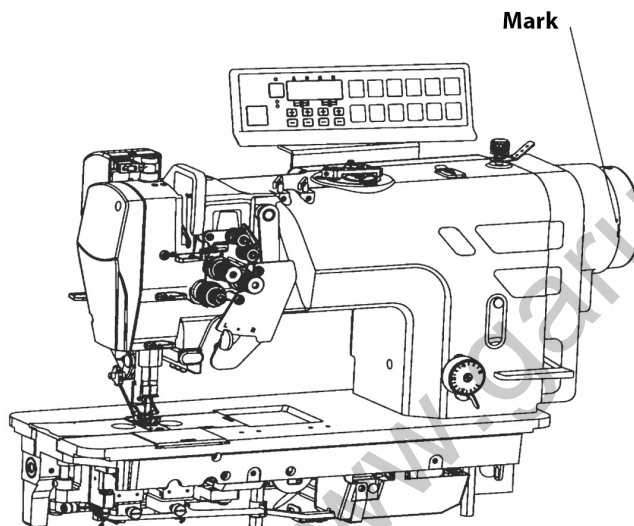
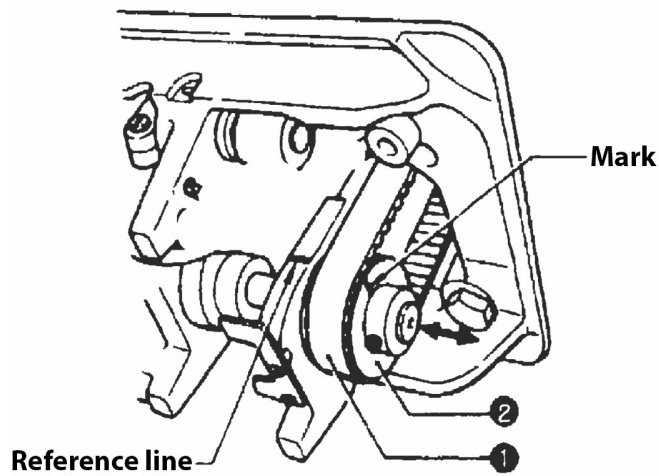
1. Turn off the power switch.
2. Remove the thread from all points from the thread take-up to the needle.
3. Remove the needle and the bobbin.
4. Use the lifting lever to lift the presser foot.
5. Turn on the power switch.
6. Run the machine at the normal sewing speed for approximately 1 minute without sewing any material (following the same start/stop pattern as when actually sewing).
7. Place the lubrication amount check sheet (2) to the left of the rotary hook (the right side is the right side of the rotary hook), and hold it in place while running the sewing machine at the normal sewing speed for approximately 8 seconds. (Any type of paper can be used as the lubrication amount check sheet (2).)
8. Check the amount of oil which has spattered onto the sheet.

Adjusting the lubrication amount

1. Tilt back the machine head.
2. Turn the adjusting screw (1) to adjust the lubrication amount. If the rotary hook adjusting screw (1) is turned counterclockwise, the lubrication amount becomes greater. If the rotary hook adjusting screw (1) is turned clockwise, the lubrication amount becomes smaller.
3. Check the lubrication amount again according to the procedure given in "Checking the lubrication amount"

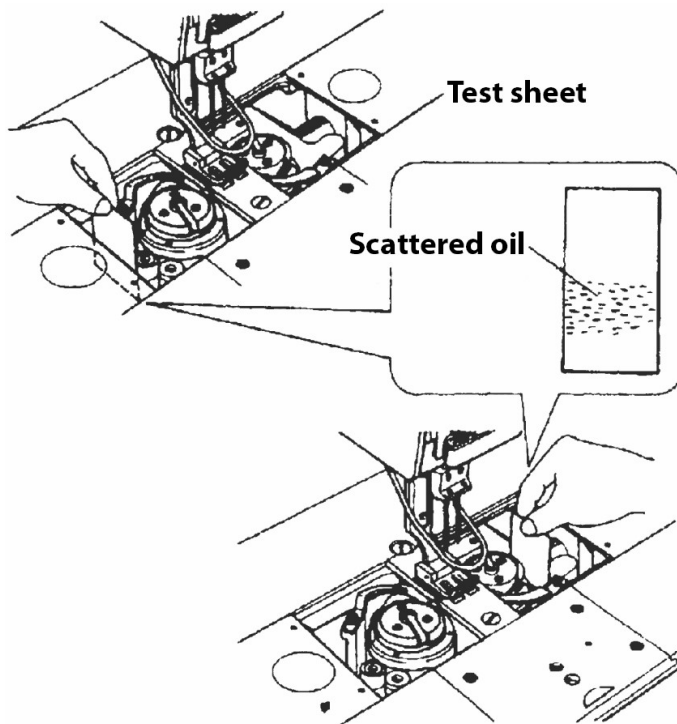
above. Turn the adjusting screw (1) and check the lubrication amount repeatedly until the lubrication amount is correct. 4. Check the lubrication amount again after the sewing machine has been used for approximately two hours.

Adjusting of the needle and feed timing:



1. Remove the needle.
2. Remove the belt cover.
3. Tilt the machine head back and remove the timing belt (1).
4. Turn the machine pulley until the A mark is aligned with the red dot.
5. While holding the upper shaft so that it won't move align the mark in the lower belt pulley (2) with the reference line in the arm bed and attach the timing belt (1).
6. Check the position of the A mark on the machine pulley.
7. Replace the belt cover.
8. Install the needle.

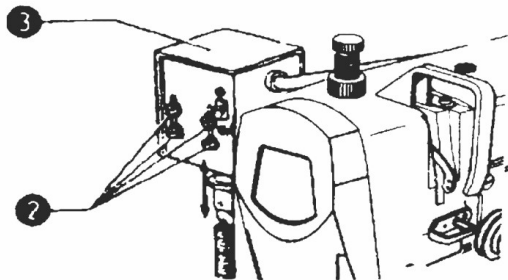
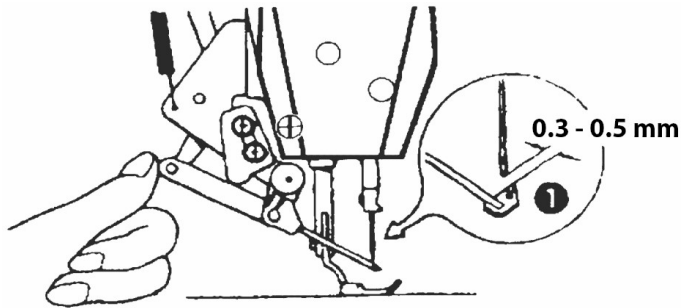
Checking the lubrication amount:



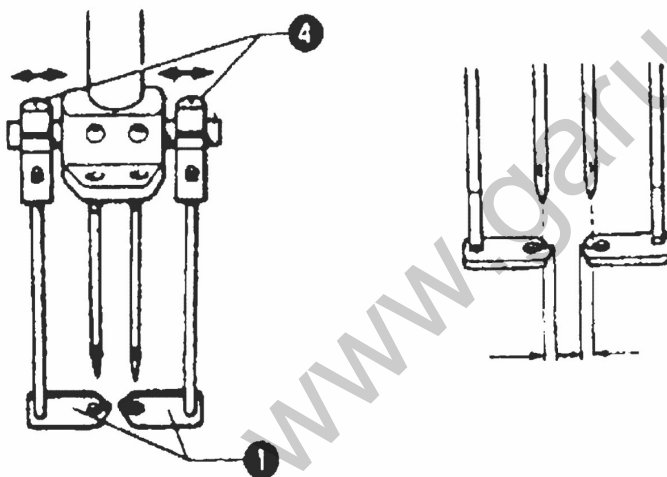
After turning the lubrication adjustment screw to adjust the lubrication amount operate the machine for 5-10 minutes before checking the lubrication amount.

1. Remove the needle.
2. Remove the bobbin or the cap.
3. Turn on the power.
4. Insert a piece of white paper into the left side of the rotary hook (into the right side for the right rotary hook) and depress the treadle fully to operate the machine at maximum speed for approximately 10 seconds.
5. Stop the machine and check the amount of oil shown is scattered on the paper. (The adjustment is good if the amount of oil shown at left is scattered during approximately 10 seconds.)

Thread Wiper Adjustment:



5. Securely tighten the screw.



1. Stop the machine while needle bar is at its highest position.

2. Turn off the power switch.

3. Set the stitch length to 2 on the scale.

- Adjusting the forward and back position

4. Loosen the screws (2) and move the solenoid (3) up and down to adjust so that the tips of the thread wiper (1) are 0.3-0.5mm forward of the thread wiper (1) is pressed by hand as shown in the illustration.

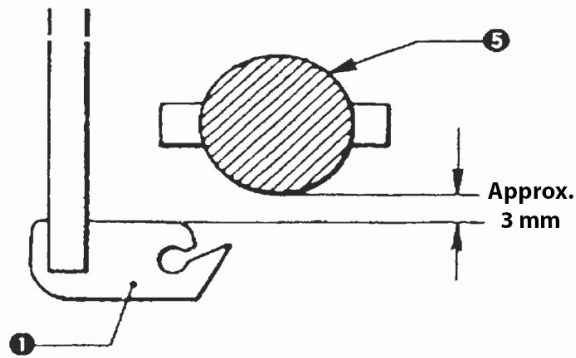
- Adjusting the vertical position

The tip of the thread wiper will travel as indicated by the dotted lines.

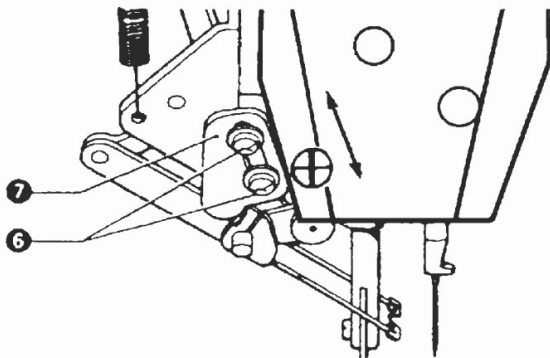
6. Loosen the screws (4) and move the thread wiper (1) to the left and right to adjust so that the tips of the thread wiper (1) are 0.3-0.5mm to the inside of the needle center lines.

7. Securely tighten the screw (4).

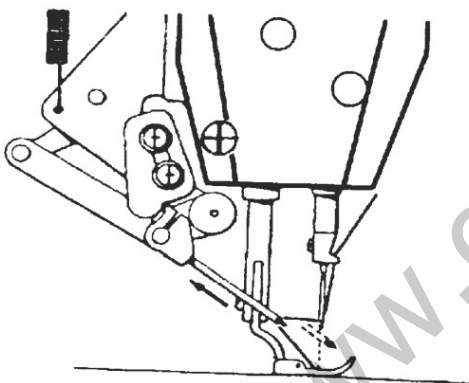
- Adjusting the return position.



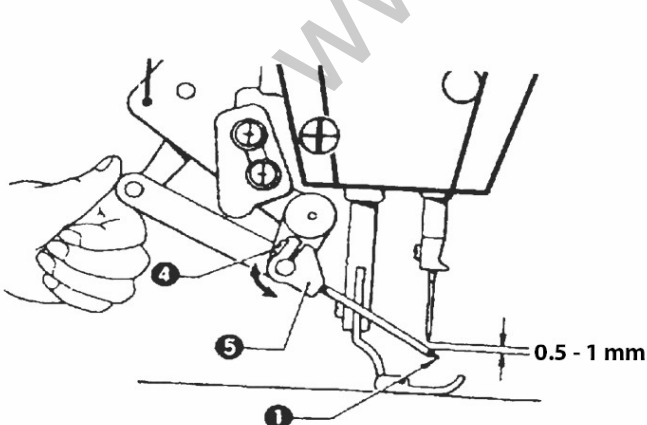
8. Loosen the screws (6) and raise or lower the Stopper (7) until the clearance between the tip of thread wiper (1) and the presser bar (5) is about 3mm when the thread wiper (1) returns to its original position.



9. Securely tighten the screws (6). If the clearance is too little, the thread wiper (1) may not be able to hook the threads depending on the kind of thread. Set the thread wiper (1) 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.

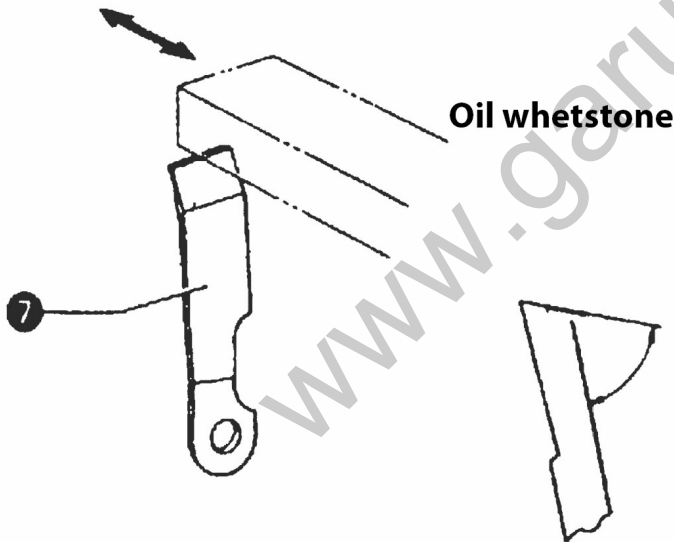
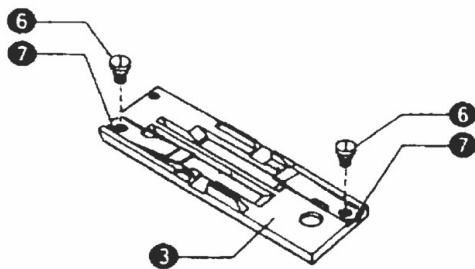
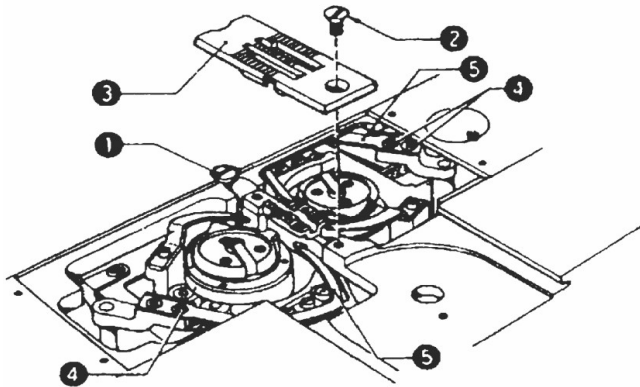


10. Loosen the screw (4) and turn the thread wiper supporter (5) to adjust so that the clearance between the tip of the needle and the thread wiper (1) is 0.5-1 mm when the thread wiper (1) is pressed by hand as shown in the illustration.



11. Securely tighten the screw (4). After adjustment, carry out a test sewing to check that the thread wiper operates correctly.

Movable and Fixed Knife Adjustment:

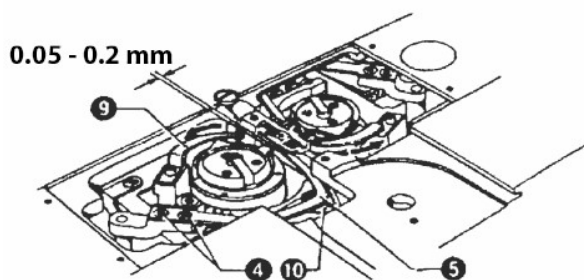


Removing to movable and fixed knives

1. Remove the needles and raise the presser foot.
2. Loosen the screws (1) and (2), and then remove the needle plate (3).
3. Remove the holed screws (4) and remove the movable knife (5).
4. Remove the screws (6) and remove the fixed knife (7).

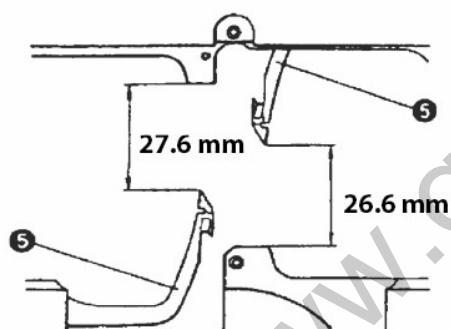
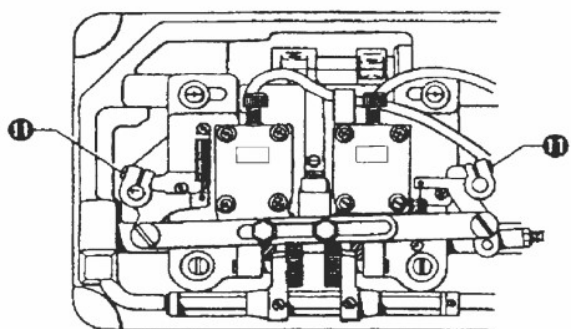
Sharpening the fixed knife

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

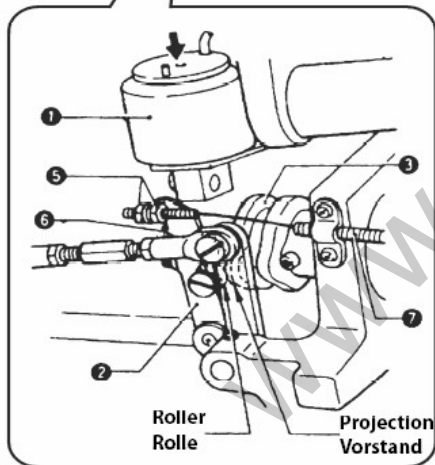
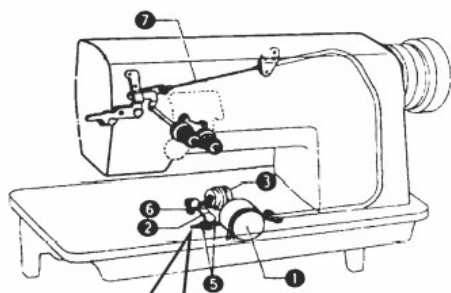
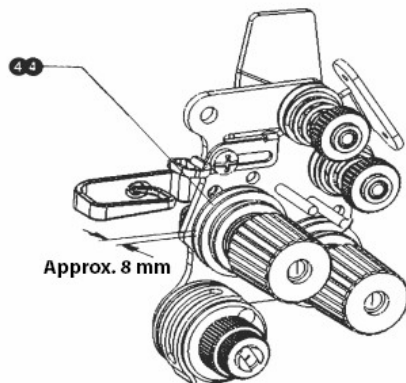


Installing the movable and fixed knives

1. Turn the machine pulley by hand until the **oedres** are pulled the way in the arrow direction.
2. Lightly secure the movable knife with screw. Install the movable knife on the top of the bobbin thread clamp spring.
3. Press down on the top of the movable knife and slide the movable knife (Firmly tighten screw so that the gap between the tip of the movable knife and the rotary hook position bracket is 0.05 to 0.2mm)
4. Tilt back the machine head.
5. Loosen the screws (11).
6. Move the movable knife with your finger so that they are at the positions shown in the illustration.
7. Tighten the screw (11).



Tension Release:



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

A. If the thread slips out of the needle hole (The tension release lever is not working properly during thread cutting)

1. Press the thread trimming solenoid ① and turn the sewing machine pulley.
2. The tension disc ④ should be open 0.8mm when the tension release lever ② roller reaches the top of the tension release cam ③.
3. Make sure the tension disc is open when the tension release lever ② roller is at the top of the tension release cam ③, and closed when the lever roller is on the lever.

B. If the tension disc remain open.

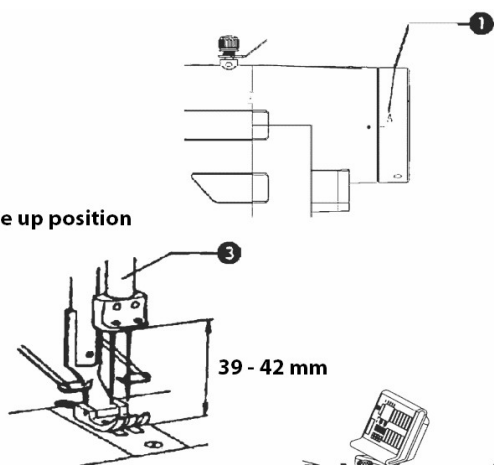
1. Make sure the tension release lever ② is returned.
2. Make sure the return spring ⑥ is not disengaged.

Check the above and adjust with nut ⑤ as necessary.

If adjustment is not possible, replace the tension release wire ⑦.

Synchronizer Adjustment:

Needle up position



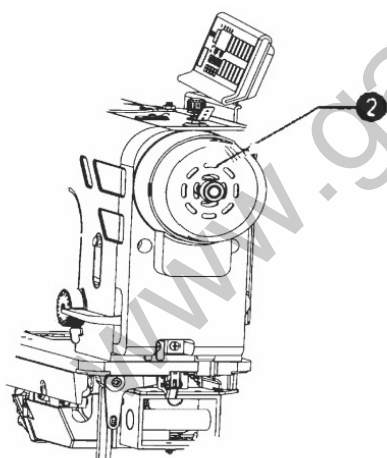
Needle up position stop adjustment

1. Turn on the power.
2. Stop the machine while the needle bar is at its highest position.
3. The pulley reference line should be visible in the windows ① of the belt cover when the machine is stopped.

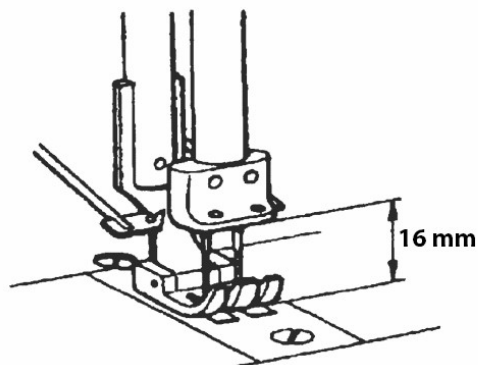
Check that the distance from the top of the needle plate to the bottom of the needle clamp is 39-42mm at this time.

<Adjustment method>

1. Turn the machine pulley until the A mark is in line with the red dot.
2. Turn the glisten parcel ② until the guild light is turned on.
3. Turn the glisten parcel ② a little, make sure the A mark is in line with the red dot, when the needle is up stop position.



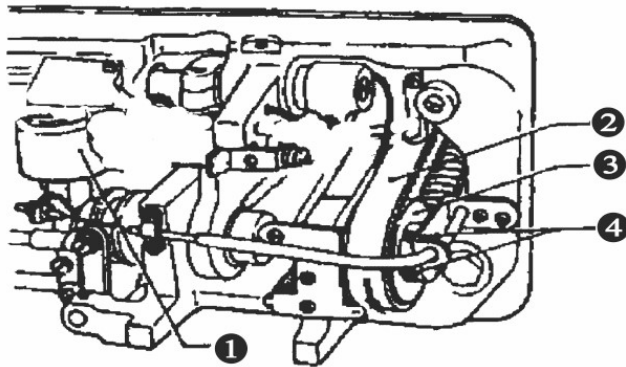
Needle down position



Needle down and thread cutter signals

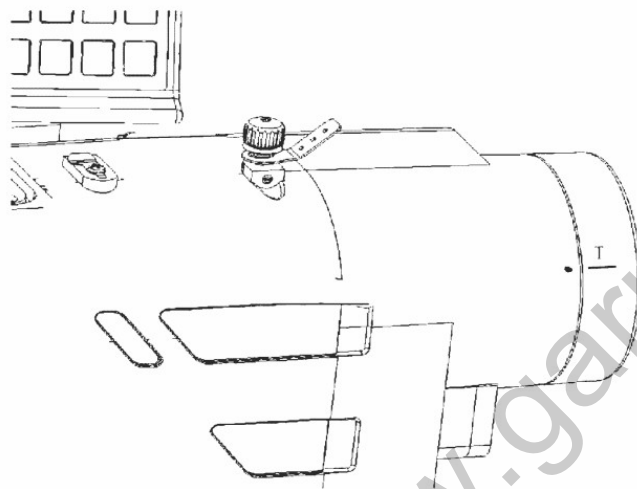
1. Turn the power on.
2. Press the treadle, and then release the treadle to neutral.
3. Make sure the gap from the top of the needle plate to the bottom of the needle clamp is approximately 16mm.

Thread trimmer timing adjustment:



Thread Trimmer Timing Adjustment

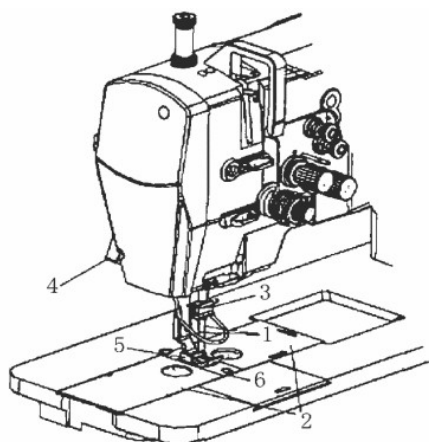
1. Remove the needles.
2. Hold the thread trimming solenoid ① depressed and turn the sewing machine pulley in its normal direction of rotation until the pulley become hard to turn(the movable knife will begin to move).
3. The T mark on the machine pulley scale must be in line with the red dot on the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



Upper and Lower Shaft Timing Adjustment [GF-2207-147, GF-2210-447, GF-2207-447, GF-2210-447]

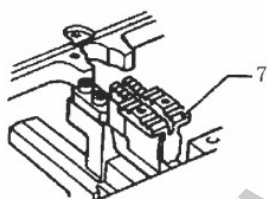
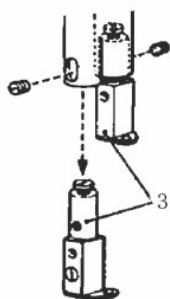
1. Remove the timing belt ②.
2. Turn the machine pulley until the T mark is in line with the red dot.
3. With the thread trimming solenoid ① depressed turn the lower belt wheel in the arrow direction until it is hard to turn.
4. Keep the machine pulley and lower belt wheel ③ still and put the timing belt ② on.
* Never loosen the screw ④.

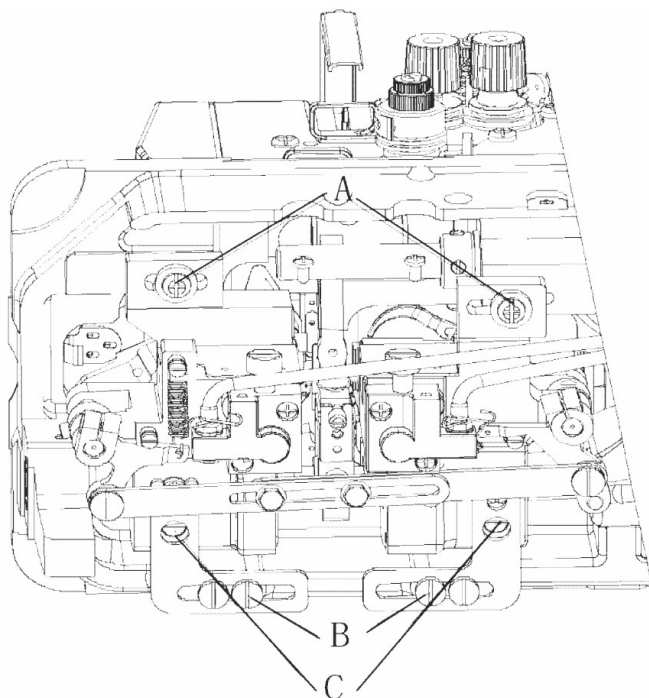
10. REPLACING GAUGE PARTS (CHANGING THE NEEDLE WIDTH)



How to change gauges

1. Turn the machine pulley to move the needle bar to its highest position.
2. Remove the needle ①.
3. Remove the slide plate ②.
4. Remove the needle clamp ③.
5. Raise the presser foot by using the presser foot lifter ④.
6. Remove the presser foot ⑤.
7. Remove the needle plate ⑥.
8. Remove the feet dog ⑦.
9. Tilt back the machine head.

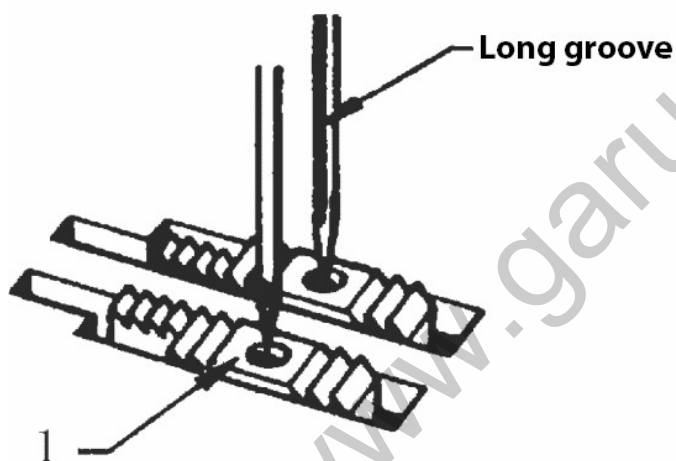




Adjust the rotary hook base

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 screw ①, ②, ③ and shift the rotary hook base right or left.

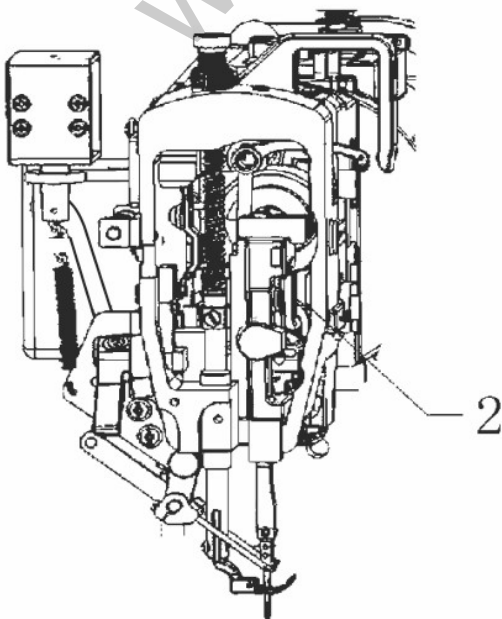


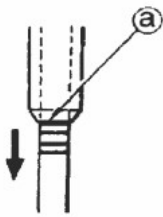
Installation

1. Attach the needle clamp.
2. Attach the needle.
3. Attach the feed dog.

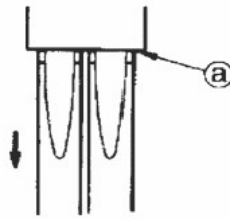
[GF-2207-147, GF-2210-147]

- 1) Turn the machine pulley and check that the needle goes into the middle of the needle hole in the feed dog.
- 2) Loosen ② and align the needles so that the needles will fall in the centers of the needle holes in the feed dog.

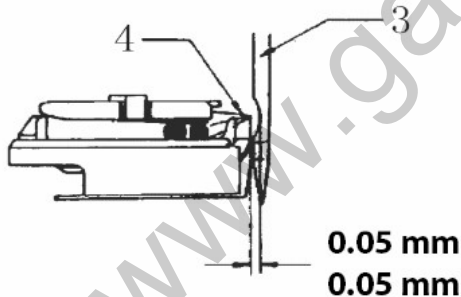
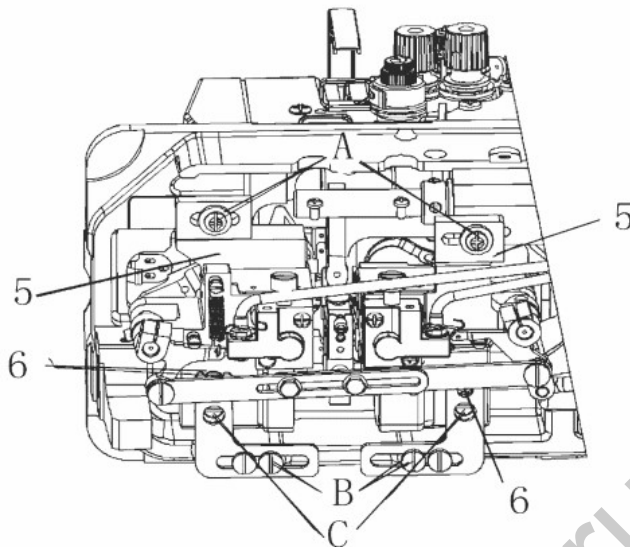




GF-2207-147
GF-2207-447



GF-2210-147
GF-2210-447



4. Check the needle bar height.
Turn the machine pulley to move the needle bar to its lowest position and adjust so that reference line is aligned as shown in the machine head.

5. Tilt back the machine head.

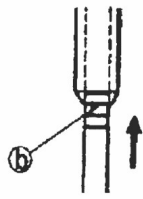
6. Adjust the clearance between the needle ③ and the rotary hook tip ④.

1) Loosen screws A, B, C.

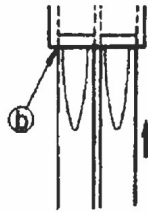
2) Move the rotary hook base ⑤ to the left or right so that the clearance between the needle ③ and the rotary hook tip ④ is 1-3mm.

3) Tighten screw C, and then turn the adjusting screw ⑥ to adjust so that the clearance between the needle ③ and the rotary hook tip ④ is 0.05mm.

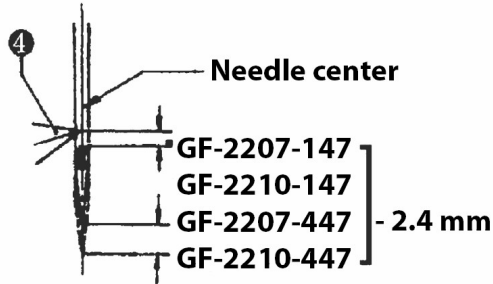
After adjusting, securely tighten screws and A, B, C.



GF-2207-147
GF-2207-447] - 2.4 mm



GF-2210-147
GF-2210-447] - 2.4 mm



position.

9. Attach the needle plate.
10. Attach the presser foot.

7. Adjust the needle bar lift amount.

1) Set the stitch length to eight 2 (approx. 2 mm) or 3 (approx. 3 mm) on the scale, depending on the model and specifications of the machine. (Refer to the table on page 17.)

2) Turn the machine pulley to move the needle (b) or to its lowest position and adjust so that reference line b is aligned as shown in the illustration.

Check that the rotary hook tip (4) is aligned with the center of the needle and that the distance from the upper edge of the needle hole to the rotary hook tip (4) is 1-1.5mm at this time.

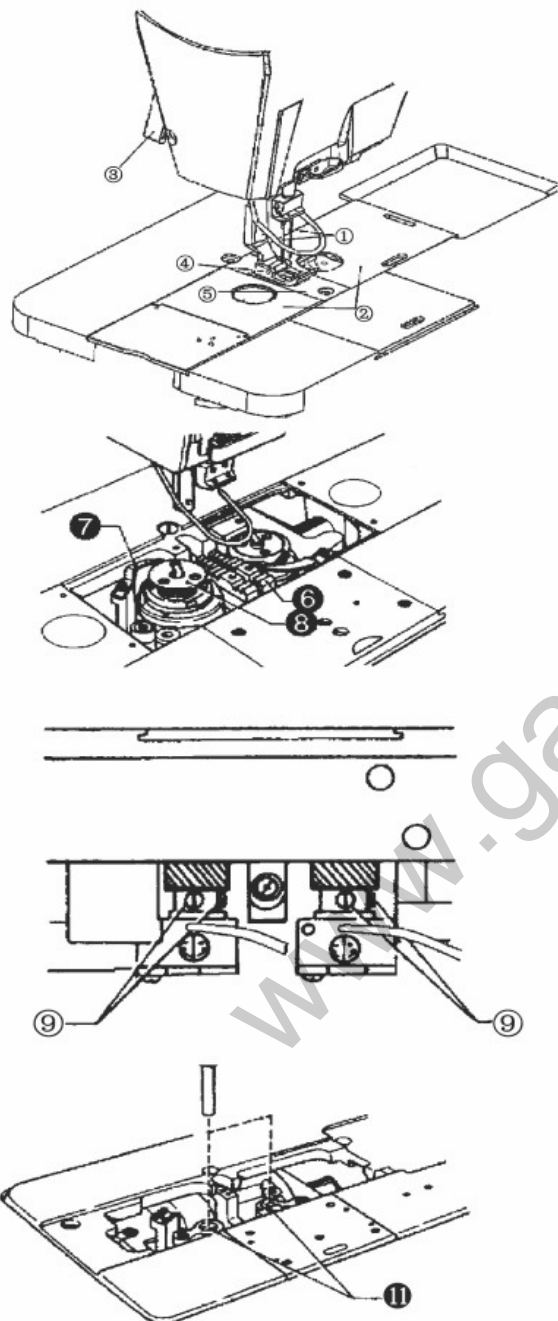
(Refer to pages 33 and 34 for the adjustment procedures.)

8. Return the head to its original

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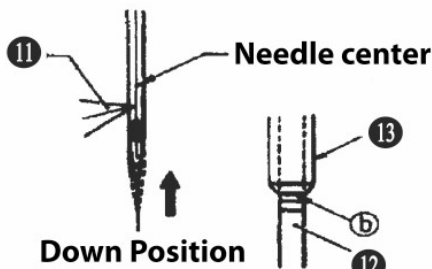
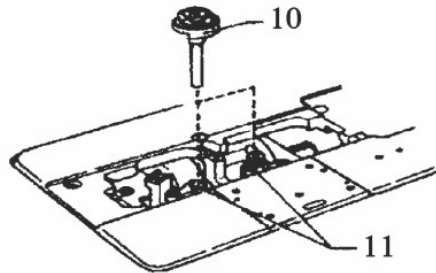
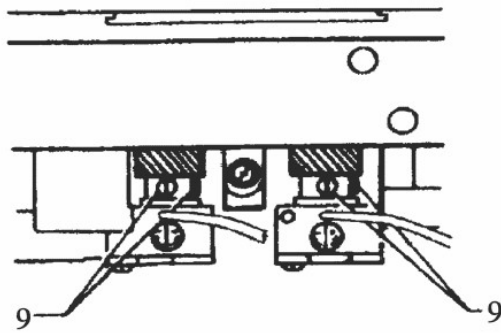
11. INSTALLING OPTIONAL PARTS

Replacing the rotary hook:

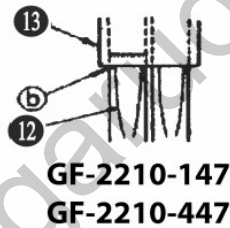


Removal

1. Turn the machine pulley to move the needle bar to its highest position.
2. Remove the needle ①.
3. Remove the slide plates ②.
4. Raise the presser foot ④ with the presser foot lifter ③.
5. Remove the needle foot ④.
6. Remove the needle plate ⑤.
7. Remove the feed dog ⑥.
8. Remove the opener ⑦.
9. Remove the bobbin ⑧ or the cap.
10. Tilt back the machine head.
11. Loosen the three set screws ⑨.
12. Turn the machine pulley to move the needle bar to its highest position.
13. Remove the rotary hook ⑩.



GF-2207-147
GF-2210-447



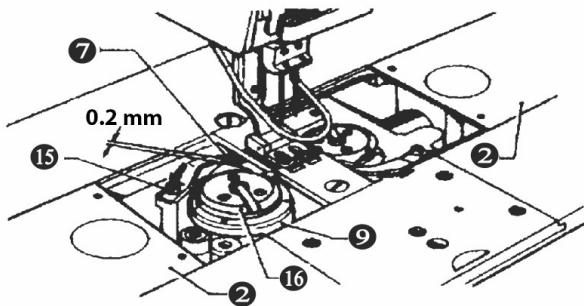
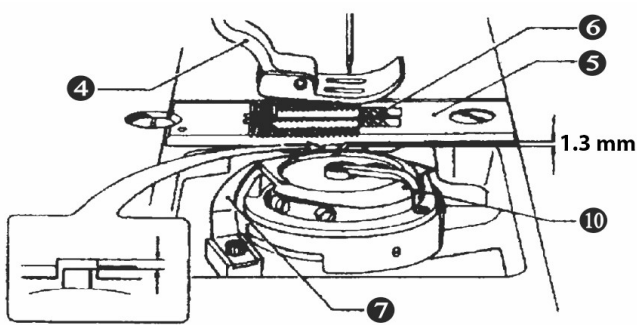
GF-2210-147
GF-2210-447

Installation

1. Insert the new rotary hook into the mounting hole ⑪.
2. Install the needles ①.
3. While referring to pages 34, adjust so that the rotary hook tip ⑭ is aligned with the center of the needle ① when the needle bar is raised from its lowest position until reference line ⑥ at the bottom of the needle bar ⑫ is aligned with the lower edge of the needle bar supporter ⑬ tighten the three screws ⑨.

NOTE:

In order to prevent the torque from becoming too high, tighten all three screws ⑨ less than fully, and then turn them all again to tighten them fully.



4. Return the machine head to its original position.
5. Install the opener (7).
6. Install the feed dog (6).
7. Install the needle plate (5).
8. Install the presser foot (4).
9. Loosen the set screws (9) and move the rotary hook (10) up and down to adjust so that the clearance between the rotary hook (10) and the needle plate (5) is 1.3mm.

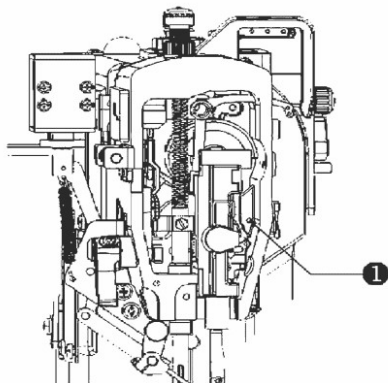
NOTE Do not turn the rotary hook while the set screws (9) are loosened, otherwise it will change the timing between the needle and the rotary hook.

10. Tighten the set screws (9).
11. Loosen the set screws (15) and move the opener (7) to the left or right to adjust 50

that the clearance between the rotary hook (10) and the opener (7) is 0.2mm when the opener (7) is pulled as far as it will go in the direction of the arrow.

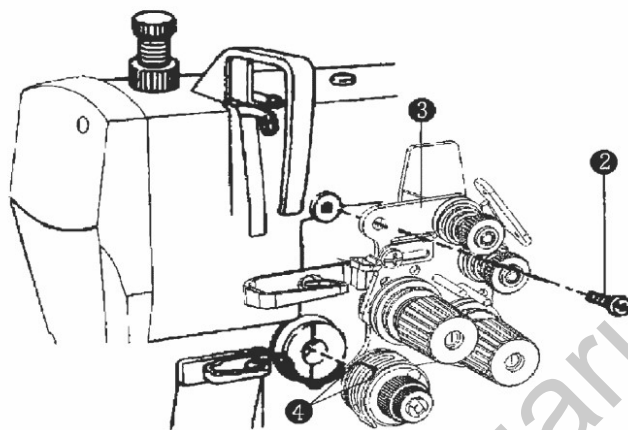
12. Tighten the set screw (15).
13. Install the slide plates (2).
14. Add 1-2 drops of oil to the left and right rotary hook races (16).
15. Adjust the rotary hook lubrication amount while referring to page 34.

Replacing the upper thread tension assembly:



Removal

1. Open the faceplate.
2. Loosen the screw ①.
3. Loosen the screw ② and then remove the upper thread tension assembly ③.

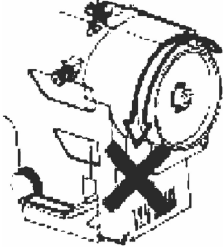
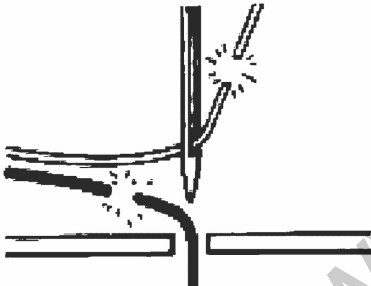






Installation

1. Install the new upper thread tension assembly ③ and tighten it with the screw ②.
2. Adjust the tension of the thread take-up spring ④ (Refer to page 28)
3. Tighten the screw ①.
4. Close the face plate.

12. TROUBLESHOOTING GUIDE

Be sure to check the following before calling an authorized service station.

Problem	Where to check	Page
<p>1. Sewing machine pulley doesn't turn.</p> 	<ul style="list-style-type: none"> • Is a breaker or fuse blown? • Is the power cord disconnected? 	10
<p>2. Needle thread and bobbin thread break.</p> 	<ul style="list-style-type: none"> • Is the needle tip bent? Is the needle tip blunt? If the needle tip is bent or broken, replace the needle. • Is the needle properly installed? If it is incorrect, install the needle correctly. • Is the machine properly threader? If it is incorrect, thread the thread correctly. • Is the rotary hook properly lubricated? If the oil level is below the lower reference line in the oil sight glass, add more oil. • Is dust or thread in the rotary hook? Clean the rotary hook. • Is the upper thread tension too strong or too weak? Adjust the upper thread tension. • Is the rotary hook, feed dog or other part damaged? If they are damaged, smooth them with an oiled grindstone or replace the damaged parts. 	13 13 14 12 19 19
<p>3. Seams don't match.</p> 	<ul style="list-style-type: none"> • Is the presser foot pressure too weak? Adjust the presser foot pressure. • Is the feed dog too low? Adjust the feed dog height. • Is the bobbin scratched? If the bobbin is damaged, smooth it with an oiled grindstone or replace it. 	19 20 13

Problem	Where to check	Page
<p>4. Skipped stitches.</p> 	<ul style="list-style-type: none"> • Is the needle tip bent? Is the needle tip blunt? If the needle tip is bent or broken, replace the needle. • Is the needle properly installed? If it is incorrect, install the needle correctly. • Is the machine properly threaded? If it is incorrect, thread the thread correctly. • Is the presser foot pressure too weak? Adjust the presser foot pressure. 	<p>13 13 14 17</p>
<p>5. Poor thread tightening.</p> 	<ul style="list-style-type: none"> • Is the machine properly threaded? If it is incorrect, thread the thread correctly. • Is the thread take-up spring operation range too small? Adjust the operation range of the thread take-up spring. • Is the needle thread tension and bobbin thread tension too low? Adjust the upper and lower thread tension. • Is the bobbin scratched? If the bobbin is damaged, smooth it with an oiled grindstone or replace it. 	<p>14 22 17-18</p>
<p>6. Broken needles.</p> 	<ul style="list-style-type: none"> • Is the material being pushed with excessive force during sewing? If the needle tip is bent or broken, replace the needle. • Does the needle pass the center of the needle hole in the feed dog? Check the needle down position. If the needle does not drop into the middle of the needle hole in the feed dog re-install the feed dog. [GF-2207-147, GF-2207-447] If the needle bar has been ruined, turn it again to set it to the correct position. <p>Caution</p> <ul style="list-style-type: none"> • It is extremely dangerous to leave any pieces of broken needle sticking in the material. If the needle breaks, search for all places until the whole of the needle is found again. 	<p>27-28</p>

Caution

- If problems 2 to 6 above are not due to the cause on the right, check the needle and feed timing, or the needle and rotary hook timing.
- If the above suggestions do not remedy the problem, turn off the power and contact the of purchase.