

User's Manual

GARUDAN®

GF-116 Serie



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Safety rules for machines

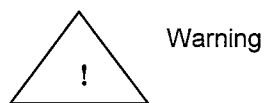
Safety labels in the manual are categorized into danger, warning and caution.
Failure to follow the safety rules may result in physical injuries or mechanical damages.
The safety labels and symbols are defined as follows.

[The meaning of the safety marks]



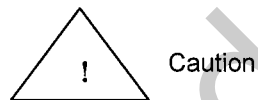
Danger

Instructions here shall be observed strictly.
Otherwise, the user will be killed or suffer severe physical injuries.



Warning

Instructions here must be observed, or the user could suffer fatal or severe physical injuries.



Caution

Instructions here should be observed, or the user could face physical injuries or mechanical damages.

[The meaning of the safety marks]



This mark means a 'must-not.'



This mark means a 'must' for safety.



This mark means that an electric shock may be caused if the instruction is not followed properly.

1-1) Machine mobilization:

Only personnel with a full understanding of the safety rules should move the machines. The following directions must be observed when delivering the machines.



Danger

- a. At least two or more people should move the machine.
- b. Before delivering the machine, thoroughly wipe off the oil on the machine to prevent accidents.

1-2) Machine installation:

Physical damages such as functional difficulties or breakdowns may occur depending on installation conditions of the machines. Be sure to heed the following conditions.



Caution

- a. Remove the packing from top to bottom.
- b. Install a climate controller and clean it regularly to prevent dust and moisture build-up from contaminating and corroding the machines.
- c. Keep the machines away from direct sunlight.

- d. Keep a minimum distance of 50cm between the machine at both sides and backside and the wall to secure sufficient space for repair.
- e. Do not operate the machine near areas with danger of explosion. Refrain from running the machine in the vicinity of risky places, e.g., where a large quantity of aerosol-spraying products or oxygen are handled, unless specific quarantees are given otherwise for the operation of the machine to prevent explosion at such places.
- f. The user should install an illuminator in the work area for the machine not come supplied with any lighting apparatus due to the specific features of the machine.

[Note] Details of the machine installation are laid out in section 2) Installation.

1-3) Troubleshooting: When the machine is in need of repair, only our authorized service technicians must handle it.



Danger

- a. Before cleaning and repairing the machine, shut off the power supply and wait four minutes for the machine to discharge completely.
- b. No part of the machine or specifications may be modified without prior consultation with our company. Any such modification could risk safe operation of the machine.
- c. In case of repair, replace only with original Garudan parts from Anita.
- d. After repair, put safety covers back on the machine.

1-4) Machine operation: GF-115 series are intended to be used for industrial purposes for sewing textiles and other similar materials. Carefully study the following instructions before operating the machine.



Caution

- a. Read the manual thoroughly and understand the instructions fully before use.
- b. Put on proper safety garments.
- c. While the machine is in motion, keep your hands or any part of your body away from moving parts, e.g., needle, hook, thread take-up spring and pulley, etc.
- d. Do not remove any form of safety covers while the machine is in use.
- e. Be sure to connect the ground (earth) wire.
- f. Before opening electric boxes such as the control box, shut down the power supply and make sure the power switch is in "off" mode.
- g. Stop the machine before threading the needle or checking after sewing work is finished.
- h. Never turn the power switch on with the pedal down.
- i. Do not use the machine if the cooling fan is clogged. Clean the air filter embedded in the control box at least once a week.
- j. Keep the machine away from strong electromagnetic fields such as high-frequency welding machines.



Caution

Always start the machine with safety covers in place since fingers or hands could be injured or cut off by the belt. Turn off the power switch when conducting a regular check on the machine.

1-5) Safety device:



Caution

- a. Safety label: Safety instructions for machine operations
- b. Thread take-up spring cover: A device designed to prevent the human body from coming in contact with the thread take-up spring
- c. Belt cover: A device intended to avoid potential risks of getting hands, feet or clothes jammed by the belt
- d. Finger guard: A device built to keep fingers away from the needle

1) Specifications

Model	Usage	Max speed (common speed)	Max stitch length	Needle system & size	Presser foot (manual/knee)
GF-115-103 L	light	2.500	4mm	134R(65-110)	5.5/14mm
GF-115-106 L	light	2.500	4mm	134R(65-110)	5.5/14mm
GF-115-107 L	light	2.500	4mm	134R(65-110)	5.5/14mm
GF-115-103 LM	light-medium	5.000	4mm	134R(65-110)	5.5/14mm
GF-115-106 LM	light-medium	5.000	4mm	134R(65-110)	5.5/14mm
GF-115-107 LM	light-medium	5.000	4mm	134R(65-110)	5.5/14mm
GF-115-143 H	heavy	3.500	7mm	134R(125-200)	5.5/14mm
GF-115-146 H	heavy	3.500	7mm	134R(125-200)	5.5/14mm
GF-115-147 H	heavy	3.500	7mm	134R(125-200)	5.5/14mm
GF-115-443 H	heavy	3.000	7mm	134R(125-200)	5.5/14mm
GF-115-446 H	heavy	3.000	7mm	134R(125-200)	5.5/14mm
GF-115-447 H	heavy	3.000	7mm	134R(125-200)	5.5/14mm
GF-116-143 LM	light-medium	4.000	5mm	134R(65-110)	5.5/14mm
GF-116-147 LM	light-medium	4.000	5mm	134R(65-110)	5.5/14mm
GF-117-103 LM	light-medium	4.000	4mm	134R(65-110)	5.5/13mm
GF-117-107 M	light-medium	4.000	4mm	134R(65-110)	5.5/13mm
GF-117-143 H	heavy	3.000	5mm	134R(125-200)	5.5/13mm
GF-117-147 H	heavy	3.000	5mm	134R(125-200)	5.5/13mm
GF-118-143 LM	light-medium	4.000	5mm	134R(65-110)	5.5/14mm
GF-118-147 LM	light-medium	4.000	5mm	134R(65-110)	5.5/14mm

Netto weight: 32 kg
Measurement: 65x32x62 cm

General description and usage:

GF-115,116 series - single needle high-speed industrial sewing machines with lower drop feed.
GF-117,118 series - single needle high-speed industrial sewing machines with needle feed.
The characteristic feature is pressure lubrication. Machines are designed for sewing clothes and garments.

2) Installation



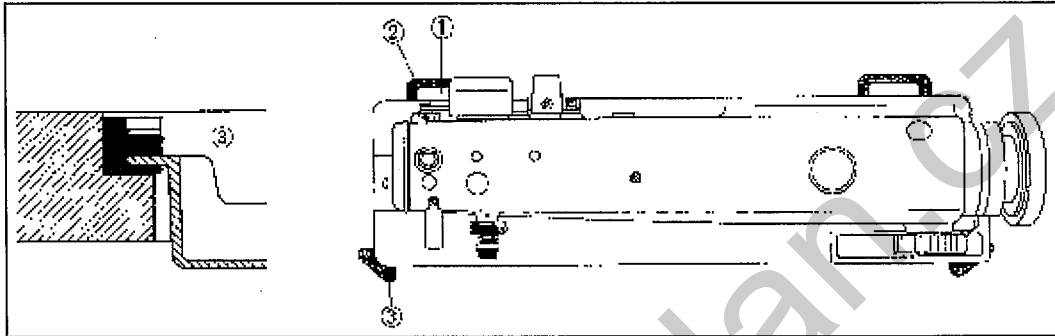
Warning

- ⇒ The machine must be installed by a trained technician only.
- ⇒ Any electrical wiring must be performed by a qualified technician or agent.
- ⇒ The machines weigh over 33 kg. As such, two or more people should carry out the installation.
- ⇒ Plug in only after the installation is complete. If the operator mistakenly steps down on the pedal with the plug in, the machine will start automatically and can cause physical injuries.

- ⇒ Connect the ground (earth) wire.
An unstable connection may result in an electric shock or a malfunction.
- ⇒ Use both hands when bending the machine backward or returning it to the normal position.
Using only one hand can lead to physical injuries due to the weight of the machine.

1) Machine head

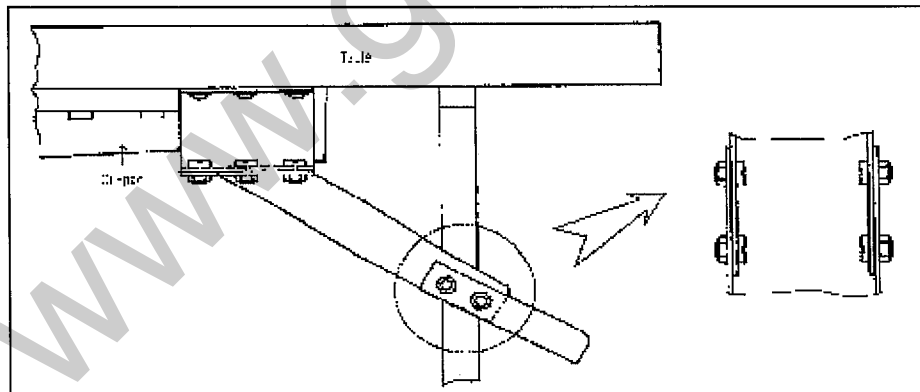
Insert the head hinge (1) into the bed holes and fit it to the rubber hinge (2). Then stand it on the rubber cushions (3) in the four corners.



(Fig. 1)

2) Chip discharge plate (GF-116/118 serie)

Use the chip discharge plate installation guidelines included in the accessory box to attach the plate to the bottom of the table as in the figure.

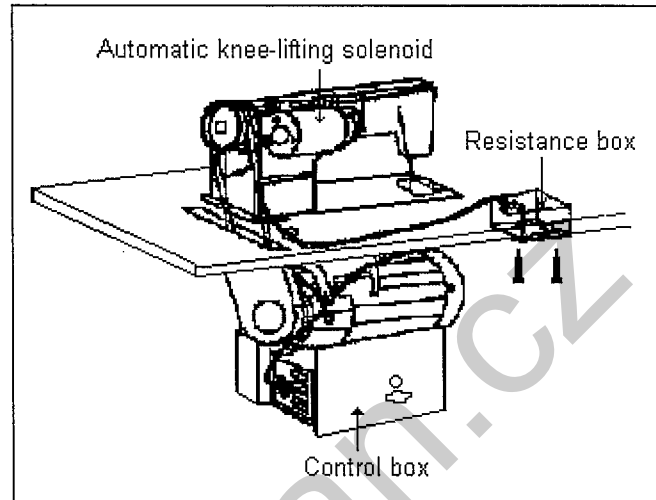


(Fig. 2)

3) Resistance box for knee-lifting solenoid

Installation:

- a) Attach the resistance box around the motor under the table.
- b) Connect the connector from the solenoid to the resistance box as shown in Fig. 3, and then connect the line from the resistance box to the control box.



(Fig. 3)



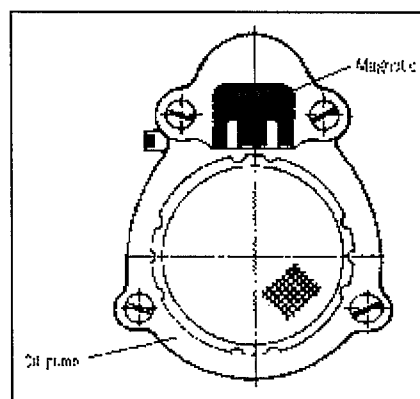
Caution

- ▶ Plug in only after oil supply is finished. If the operator mistakenly steps on the pedal with the plug in, the machine will start automatically and can cause severe injuries.
- ▶ When handling lubricants, wear protective glasses or gloves to avoid contact with your eyes or skin. Inflammation may be caused otherwise. Never drink lubricants since they can cause vomiting or diarrhea. Keep out of the reach of children.
- ▶ Operate the machine only after adding oil when the machine is being used for the first time or has been left unused for a long time.

4) Lubrication

1. Installing Magnetic Chip Remover

- A. Attach the magnetic chip remover that is in the accessory box to the oil pump inside the bed.

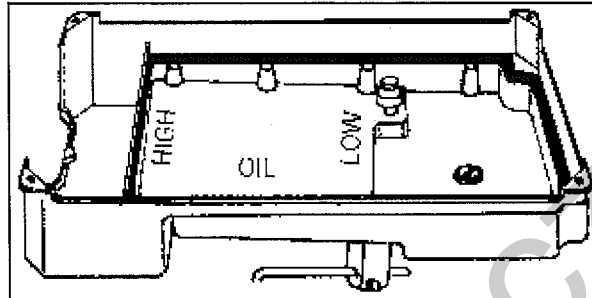


(Fig. 4)

- ▶ Do not use the magnet for other purposes. Use of the sewing machine without the magnet may cause malfunction and has a bearing on the machine's durability.

2. Lubricating the oil fan

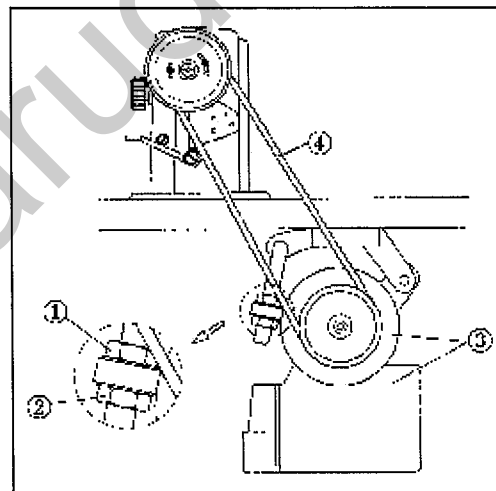
- A. Fill the lubricant up to the "HIGH" mark. (See Fig. 5)
- B. The lubricant must be Garudan's oil provided exclusively for industrial sewing machines or SHELL's Tellus C10.
- C. If the oil in use is down to the "LOW" mark, fill in to "HIGH" immediately.
- D. Once every two weeks is deemed the appropriate interval for oil refills.



(Fig. 5)

5) Belt Tension Adjustment

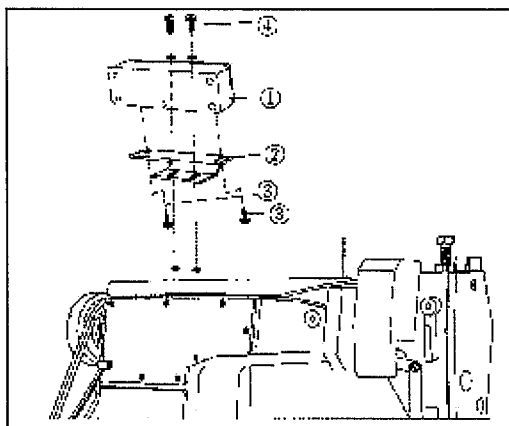
Sufficient loosening of the fixed nuts (1), (2) after motor (3) installation would create tension to the belt (4). Tighten the fixed nut (1) first and then tighten the fixed nut (2) to an unmovable position. (See Fig. 6)



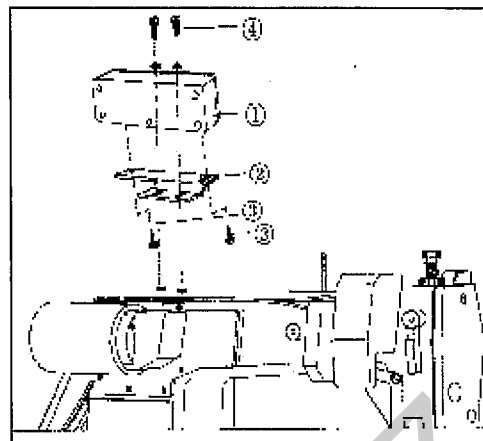
(Fig.6)

6) Program Unit

- A. Installing automatic knee-lifting solenoid on machine head
Use five fixing screws (4) to attach the solenoid on the back side of machine head. (See Fig. 7)
- B. Assembling of back cover
When the machine is equipped by manual knee-lifter, fasten the bracket tightly using the three fixing screws in the back lid of the machine. (See Fig. 8)
- C. Assembling of control panel
Use four fixing screws to fix the bracket (2) onto the control panel. Using the two screws (4) to attach the assembly on the top of machine head. (See Fig. 7, 8)



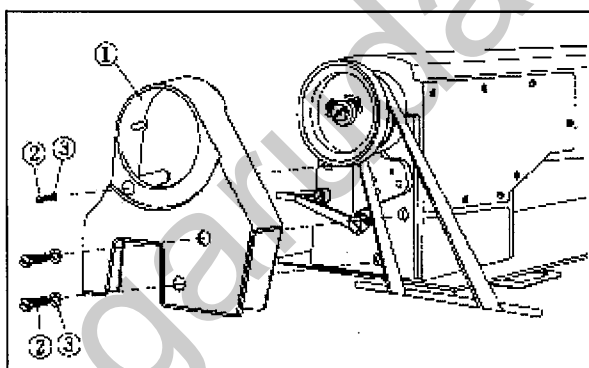
(Fig. 7)



(Fig. 8)

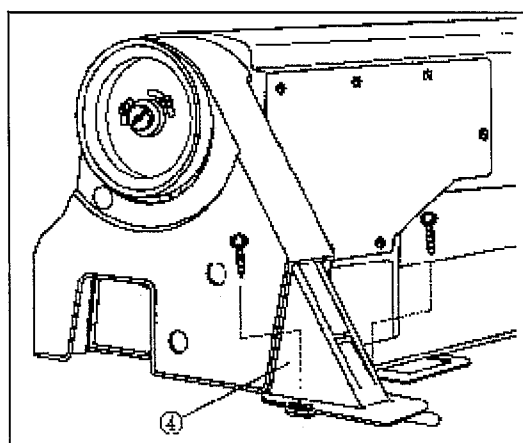
7) Belt Cover

1. Use the clamp screws (2) in the machine body and the washer (3) to fasten the belt cover "A" (1). Installation of the belt cover will be easier if the sewing machine is laid down to an appropriate degree. (See Fig. 9)



(Fig. 9)

2. Attach the belt cover "B" (4) to the table. Please exercise caution so that the belt does not get jammed inside the belt cover "B" (4). (See Fig. 10)



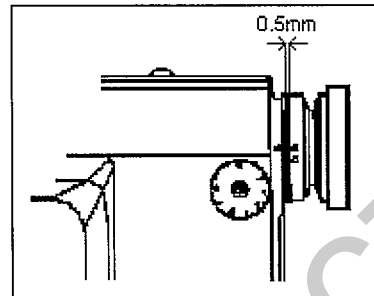
(Fig. 10)

8) Location Detector Assembly and Adjustment

Installing the location detector:

Installing on the servo motor (in-built location detector)

A location detector sensor is attached to the back side of the arm. The appropriate clearance between the location detector and the pulley is 0,5mm. (See Fig. 11)

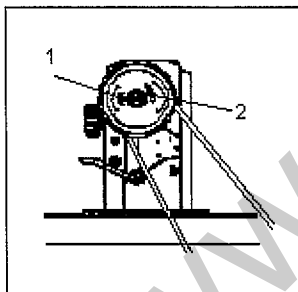


(Fig.11)

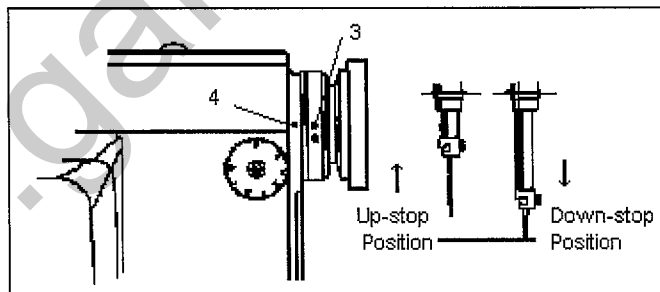
9) Location Adjustment of Location Detector

For in-built location detectors:

Adjust the up-stop position of the needle such that the white carved sign on the pulley (3) is in a straight line with the carved sign on the arm (4) when the needle has stopped in the air. That adjustment can be made by loosening the pulley's clamp screw (1) on the side with N . U carved signs and moving it sideways. Adjust the down-stop position of the needle such that the needle is on the point of moving up when the needle bar is at the lowest point. This adjustment can be made by loosening the pulley's clamp screw (2) on the side with N . D carved signs and moving it sideways. (See Fig. 12 & 13)



(Fig. 12)



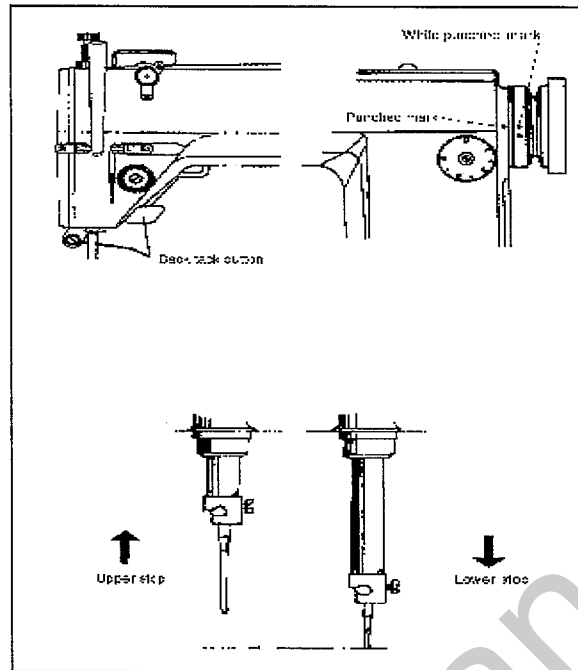
(Fig. 13)

10) Check for Stop Position of Sewing Machine

Check for the machine stop position after moving the needle up and down by pushing the reverse button. See whether the carved sign on the arm and the white carved sign on the pulley are aligned when the needle is in an up position. If not, adjustment to the photo film of the location detector or to the location of the magnetic holder will be necessary since there may be problems with the trimming. In other words, the needle's up-stop position should be identical with the stop position of the needle bar after the trimming operation, which would signify that there is nothing wrong with the operation timing of the trimmer.

(See Fig. 14)

(Refer to the explanation about the Adjustment of Location Detector on this page no. 11)



(Fig. 14)

11) Back Tack Button

Pressing the back tack button of reverse button (1) during forward sewing will start reverse sewing immediately. When you stop the machine and restart it by stepping down on the pedal with the reverse button (1) already pressed down, you can perform reverse sewing from the beginning. When the machine is in a "stop" mode, you can change the up-down position of the needle bar by pressing the reverse button. Lightly pressing the button once when the needle is in a down-stop position will stop the needle bar in a high position. Pressing the reverse button twice within less than a second when it is in an up-stop position will stop the needle bar in a low position. In short, the button delivers two functions: one for reverse sewing and the other for converting vertical position of the needle. (See Fig. 14)

3) Control and Adjustment of the Sewing Machine

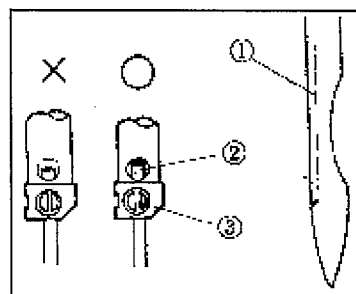


Caution

Always turn off the power when mounting a needle. If the operator mistakenly steps on the pedal while the power is on, the machine will start automatically and can result in physical injuries. When using clutch motor, be aware that the motor will continue to rotate for a while even after the power is switched off due to inertia. Start to work on the sewing machine only after the motor has come to a complete stop.

1) Needle Insertion

With the needle groove (1) facing left, insert the needle tip into the upper end of the stopper hole (2) and fasten the needle with the clamp screw (3).



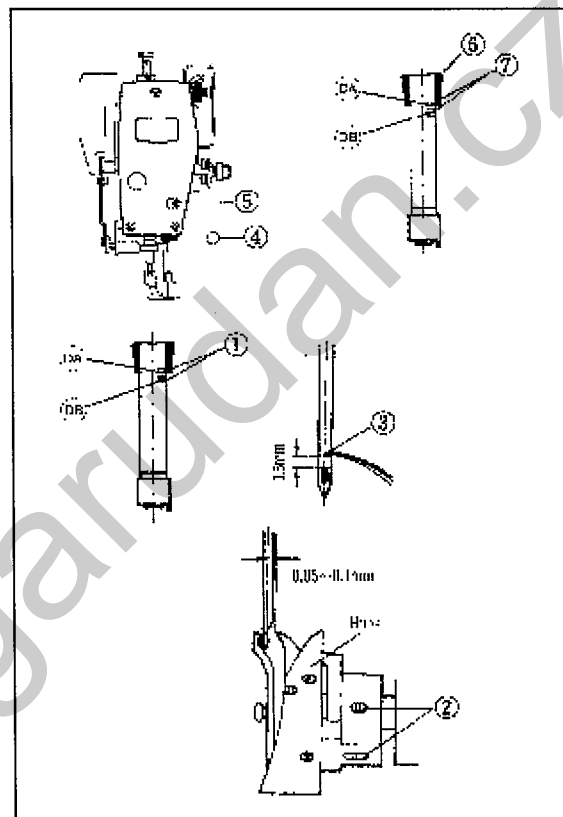
(Fig. 15)

2) Needle Bar Adjustment

As is shown in Fig. 16, unscrew the rubber plugs (4) in the needle bar adjustment hole that is on the face plate and turn the pulley so that the needle bar is in a down-stop position. Then turn loose the clamp screws (5) on the needle bar handle, move the needle bar such that the lowest carved sign on the needle bar (7) is in line with the bottom of the needle bar lower bushing (6), and tighten the clamp screws of the needle bar handle. Lastly, plug in the rubber plugs (4).

3) Timing Adjustment of Needle and Hook

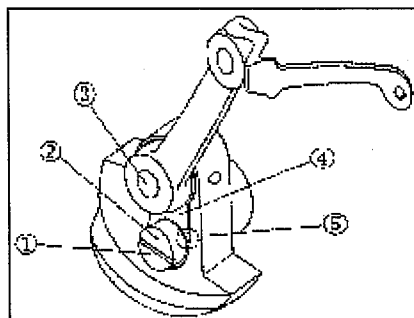
As can be seen in Fig. 16, align the bottom of the needle bar bushing (6) with the hook fixed position sign (1) marked on the needle bar and loosen the three hook fixing screws (2). Turn the hook so that the edge of the hook (3) is in line with the needle center. Adjust such that the distance between the inside of the groove on the needle side and the edge of the hook (3) is 0,05 - 0,1mm, then tighten the three fixing screws (2) again.



(Fig. 16)

4) Lubrication Adjustment of Thread Take-Up Lever

As in Fig. 17, oil flow is at its maximum when the mark (2) on the head of the oil flow control pin (1) and the center of the hole (3) on the thread take-up lever crank shaft is directly aligned. In contrast, oil flow decreases when the mark is turned closer to the corner (5) of the link cam washer (4). Furthermore, if the mark passes the corner of the link cam washer, oil will not flow at all.



(Fig. 17)



Caution When checking the oil level in the hook, keep your hands or oil flow checking paper away from any moving parts including transfer tools, to avoid injury.

5) Lubrication Adjustment of Hook

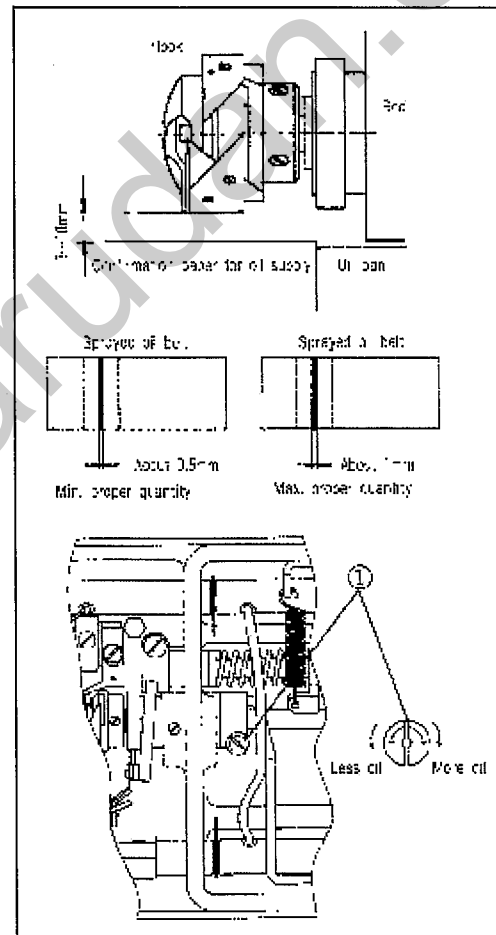
1. Checking the oil supply level of hook

A. After racing the sewing machine for three minutes (at an appropriate speed), secure the oil flow checking paper as shown in Fig. 18 and run the machine for about five seconds. Then check the oil tape marked on the paper.

B. Check the oil supply level three times. The appropriate level of oil is when the oil level neither exceeds the maximum amount nor falls below the minimum level. (Insufficient oil would jam the hook, whereas excessive oil would contaminate the sewing material with oil.)

2. Adjustment of the Oil Supply Level

Turn the oil flow adjusting screw (1) in the lower shaft front bushing in a clockwise direction for more oil flow. Turn it counterclockwise for less oil.



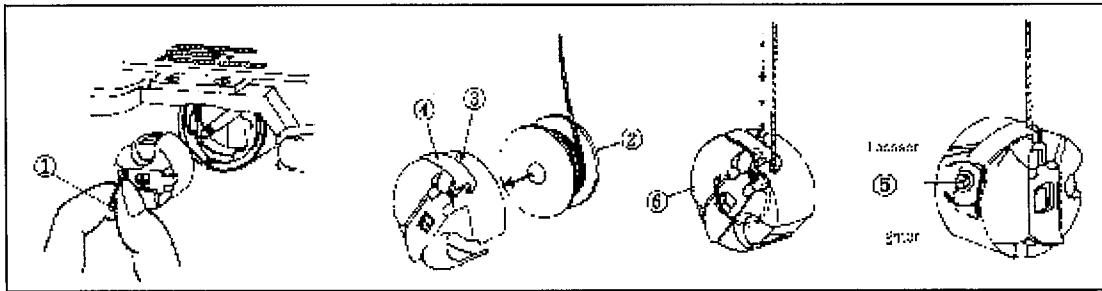
(Fig. 18)



Caution

Turn off the power when adjusting the lower thread tension. If the operator mistakenly steps down on the pedal while switched on, the machine will start automatically and can cause physical injuries. When using the clutch motor, be aware that the motor will continue to rotate for a while after the power is switched off. Start to work only after the motor has come to a complete stop.

6) Inserting Lower Thread and Tension Adjustment



(Fig. 19)

A. After placing a bobbin (2) in a bobbin case (1), push the thread through the thread groove (3) and hook it under the tension adjusting plate spring (4). To tighten the lower thread, turn the tension adjusting screw (5) clockwise; turn it counterclockwise to loosen. Adjust the tension of the lower thread so that it will fall slowly by gravity when the bobbin case (1) is dropped while holding the end of the thread. (See Fig. 19)

B. Inserting and Removing the Bobbin Case

Hold the bobbin case handle (6) and insert it into the hook. Pull the handle (6) to remove. (The bobbin (2) will fall out if the handle is let go.) (See Fig. 19)

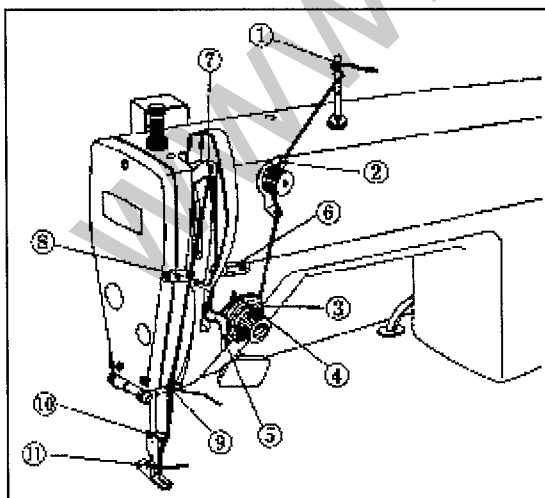


Caution

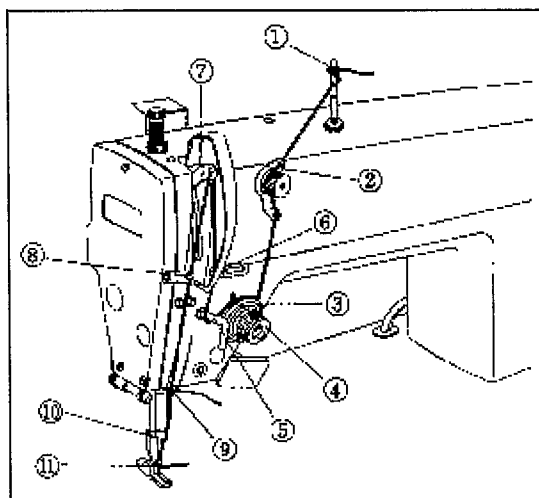
Turn off the power switch when routing the upper thread. If the operator mistakenly presses down on the pedal while switched on, the machine will start automatically and can cause physical injuries. When using the clutch motor, be aware that the motor will continue to rotate for a while after the power is switched off. Start to work on the sewing machine only after the motor has come to a complete stop.

7) Routing Upper Thread

Place the thread take-up lever at the highest position and route the upper thread in the order indicated in Figures 20 & 21.



(Fig. 20)

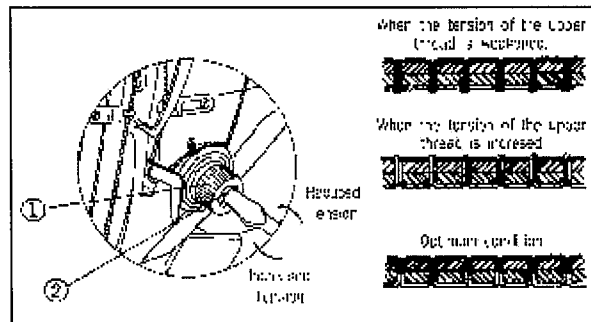


(Fig. 21)

8) Upper Thread Adjustment

1. Main thread adjustment device

The tension of the upper thread gets tighter if the tension adjusting nut (1) as in Fig. 22 is turned in a clockwise direction and it gets looser when turned in the opposite direction. The tension of the thread should differ according to the sewing conditions which depend on the material, thread, stitch length, etc. So the tension should be adjusted as seen fit for the conditions.



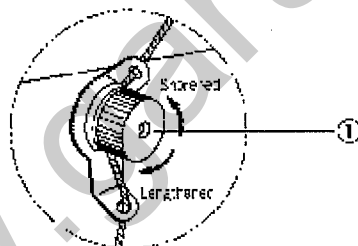
(Fig. 22)

2. Tension adjustment of thread take up lever spring

As in Fig. 22, use a driver in the thread adjustment shaft groove (2) to adjust the spring tension. The thread take up lever spring grows tighter when the driver is turned clockwise and looser when turned counter clockwise.

3. Auxiliary thread adjuster

Turn the auxiliary thread tension adjusting nut (1) in clockwise direction to make the remaining thread length on the needle after trimming shorter and in counterclockwise direction to make it longer, as shown in Fig. 23. The appropriate length of the upper thread remaining after trimming is 30~40mm.



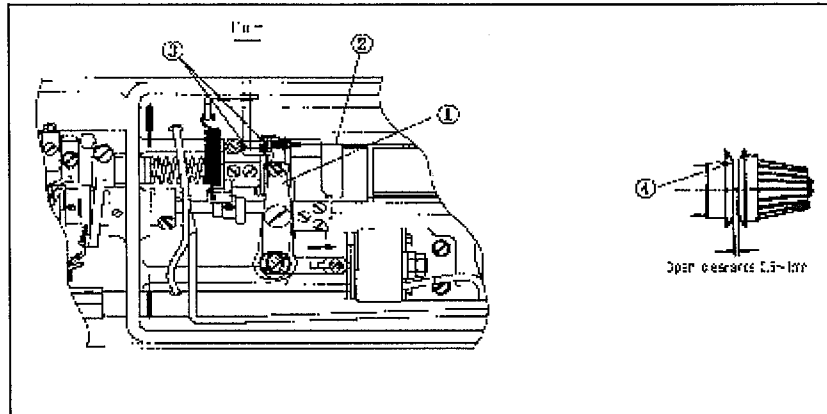
(Fig. 23)

4. Thread release control

The thread release takes place simultaneously with the movement of the trimming solenoid. As seen in Fig. 24, the amount of thread release is controlled by moving the fixed position of the thread release wire (2), which is connected with the clutch lever (1), left and right. Loosen the two fixing nuts (3) and pull the cable wire (2) to the left. Then fasten the nuts (3) to release the thread to a large extent. If the cable wire is pushed to the right and the nuts (3) tightened, the thread release happens on a lesser scale.

After adjustment, tighten the nuts (3) once again and check whether the opening of the thread guide plate (4) of the thread adjuster is about 0,5 - 1mm when the thread releaser is in operation. There should be no opening when the thread releaser is not in operation; the thread guide plates (4) should be touching back to back. The moving stroke of the thread release lever (1) is 11mm. Adjust such that the thread guide plate (4) do not open when the cable wire is pulled about 0-8mm and that the plates open when the cable wire is pulled about 8-11mm.

(See Fig. 24)



(Fig. 24)

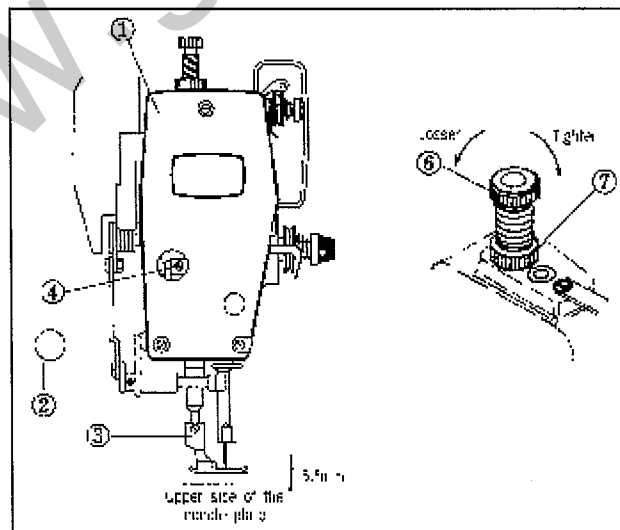


Caution

- ▶ After disassembling and adjusting a safety device, always place it back to the original position and check whether it functions as intended.
- ▶ Use both hands when pushing the machine backward or returning it to the original position. Due to the weight of the machine your hand can get stuck in the machine if you should slip.
- ▶ When adjusting the machine with the switch on, be sure to pay extreme caution.
- ▶ Only trained engineers must perform troubleshooting or inspection of the machine.
- ▶ For electrical repair or inspection, consult with qualified technicians or agent.

9) Height and Tension Adjustment of Presser Foot

1. As in Fig. 25, remove the rubber plug (2) in the face plate and place the presser foot (3) on the needle plate. Then, loosen the presser bar fixing screw (4) and adjust the height of the presser bar. The presser foot (3) will fall when the presser bar is lifted and rise when the presser bar is moved down. Move the presser foot lifter (5) manually to place the bottom face of the presser foot 5,5mm above the top face of the needle plate and tighten the presser bar fixing screws firmly.



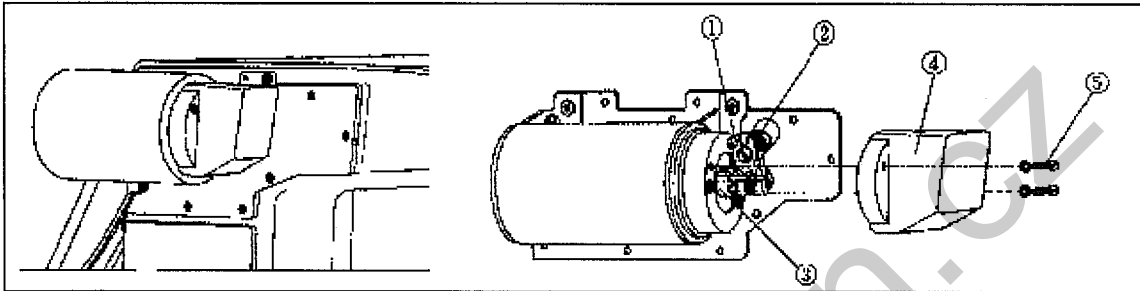
(Fig. 25)

2. Tension adjustment

As described in Fig. 25, the tension of the presser foot will grow stronger when the tension adjusting screw (6) is turned clockwise and weaker when turned counterclockwise. Make sure to screw in the fixing nut (1) after adjustment.

10) Adjustment of Automatic Knee-Lifter (Optional)

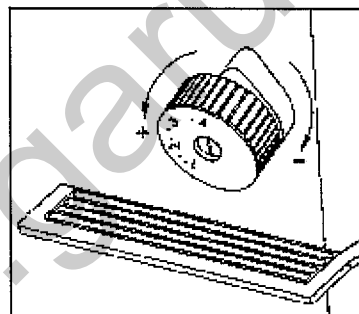
An automatic knee-lifter will be attached to the sewing machine at point of delivery. The lifting amount of the presser foot when automatically lifting the knee is controlled by the automatic knee-lifting solenoid shaft crank (1). First, loosen the solenoid cover fixing screw (3) and remove the solenoid cover (2). If the solenoid shaft (5) is moved left and the fixing screw (4) is tightened when the solenoid crank shaft fixing screw (4) is loose, the lifting amount of the presser foot grows smaller. If the solenoid shaft (5) is moved to the right, the lifting amount will grow bigger. Assemble the cover back after the adjustment is completed. (The presser foot lifting amount for the automatic knee-lifter will be set to 13mm by default at point of delivery.)



(Fig. 26)

11) Stitch Length Adjustment

As is shown in Fig. 27, the number marked by the stitch adjusting dial (1) signifies the stitch length in mm units. Move the dial sideways to set it to the desired stitch length (Turn it in clockwise direction and the stitch length will decrease while turning it counterclockwise will increase the stitch length.)



(Fig. 27)

12) Height and inclination Adjustment of Feed Dog

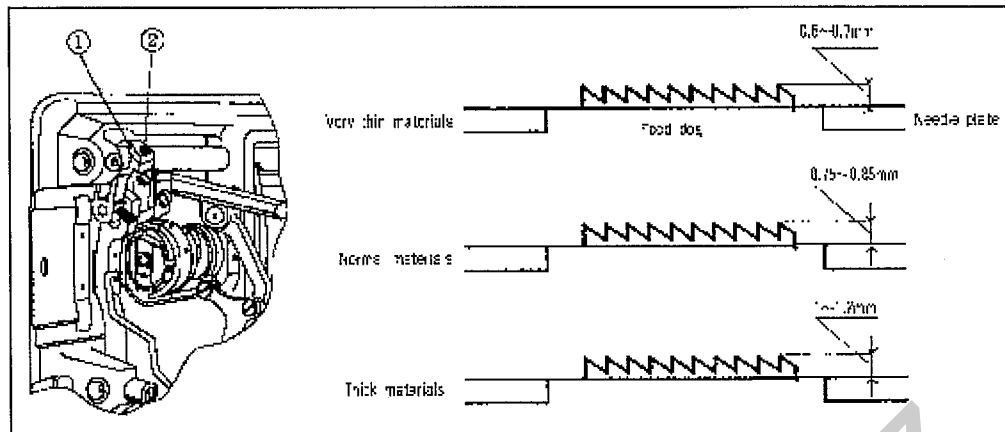
1. Height adjustment of the feed dog

(* For GF-117/GF-118 series users, the stitch length adjusting dial must be set to "0" here.)

The height of the feed dog is adjusted by moving the lifter crank (1) after the lifter crank fixing screw (2) is loosened. The standard height from the top face of the needle plate to the top of the feed dog when the stitch length dial is at its maximum and the feed dog is at its highest point is:

- 0,60 ~ 0,70mm for very thin materials,
- 0,75 ~ 0,85mm for general materials,
- 1,00 ~ 1,20mm for heavy materials.

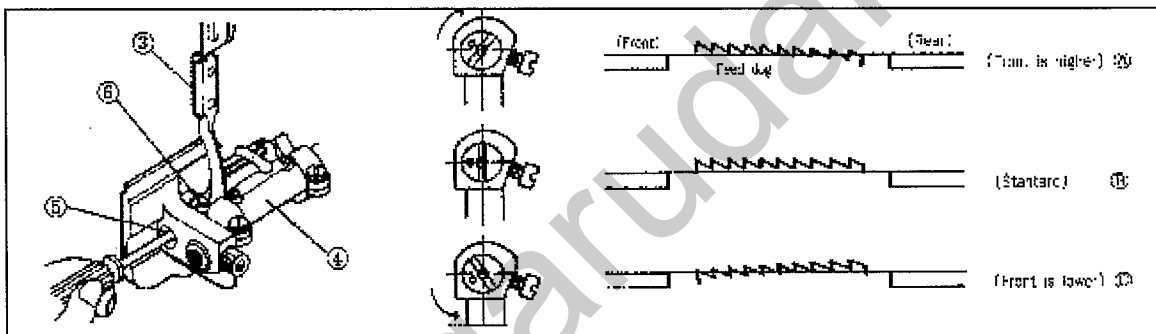
(See Fig. 28)



(Fig. 28)

2. Inclination adjustment of the feed dog

A. To adjust the inclination of the feed dog, first loosen the feed dog support shaft fixing screw (6) in the horizontal pushing crank (4) and adjust by turning feed dog support shaft (5) up and down in the direction of the arrow with a driver. Turning the feed dog support shaft (5) clockwise will raise the front part of the feed dog, while turning it counterclockwise will lower the front part of the feed dog.



(Fig. 29)

B. The standard inclination of the feed dog is when the carved sign on the feed dog support shaft is horizontally in line with the horizontal pushing crank as in picture (B) in Fig. 29. Also, to prevent material jamming, lower the front of the feed dog as in picture (C) in Fig. 29.

C. Adjustment of the inclination of the feed dog (3) will result in a change in the height of the feed dog, so recheck the height.

13) Feed Cam Adjustment

The timing of the feed dog and needle is adjusted by turning the feed cam (1) up and down. When the pulley is turned such that the feed dog is lowered so that the top of the feed dog is aligned with the top of the needle plate, the lower needle hole will come in direct line with the top of the feed dog. This is the standard position.

(For the GF-117/GF-118 series, the standard is when the end of the needle is in line with the top of the feed dog when the top of the feed dog is aligned in height with the top of the needle plate.)

(*For GF-117/GF-118 series users, the stitch length adjusting dial must be set to "0" here.)

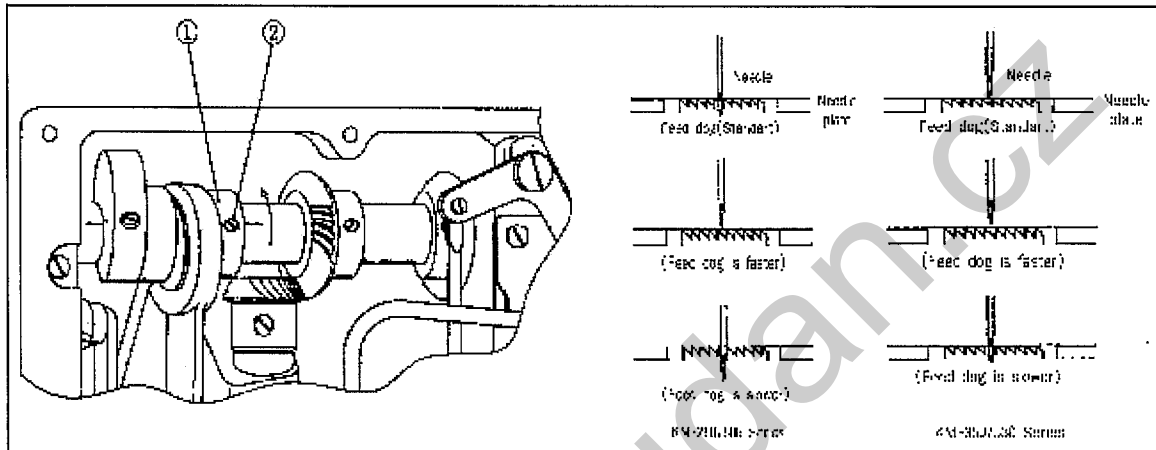
GF-115/GF-116 series

A. To have the appropriate amount of tension in the thread, make the feed dog movement a little slower than the needle movement. To do this, loosen the feed cam fixing screw (2) and turn the feed cam (1) in the opposite direction of the arrow. Then, tighten the feed cam fixing screw (2).

- B. To prevent material jam, make the feed dog movement a little faster than the needle movement.
To do this, loosen the feed cam fixing screw (2) and turn the feed cam (1) in the arrow direction and then tighten the feed cam fixing screw (2).

GF-117/GF-118 series

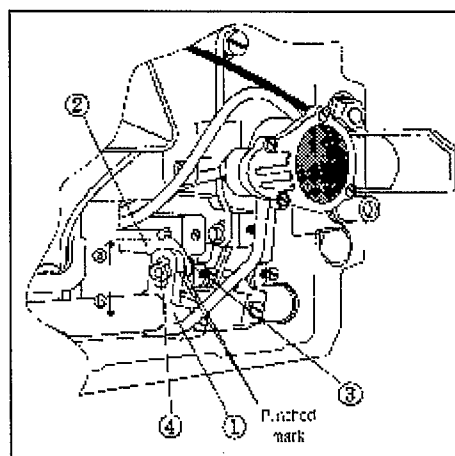
- A. If the feed dog movement is faster than the needle movement, loosen the feed cam fixing screw (2) and turn the feed cam (1) in the arrow direction and then tighten the feed cam fixing screw (2).
B. On the other hand, if the feed dog movement is slower than the needle movement, loosen the feed cam fixing screw (2) and turn the feed cam (1) in the opposite direction of the arrow and then tighten the feed cam fixing screw (2).



(Fig. 30)

14) Adjustment of Needle Movement (GF-117/GF-118 series)

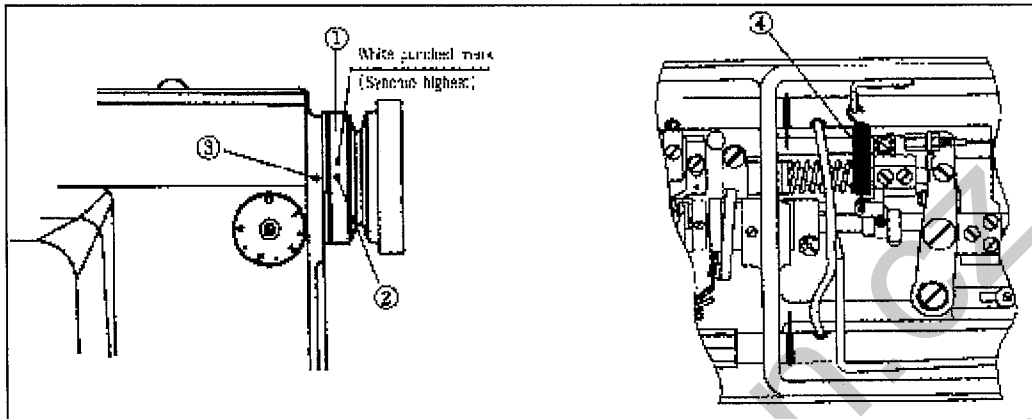
- The standard position is when the needle feed connecting rod (2) is positioned at the carved sign marked on the horizontal pushing crank (back)(1).
- To increase the feed dog movement over the needle movement, loosen nut (3) and adjust the needle feed connecting rod (4) in (a) direction and then tighten nut (3). The feed dog movement can increase about 20% in excess of the needle movement and this adjustment is especially effective for slippery material or thick material, which are susceptible to jams.
- In contrast, turning the needle feed connecting rod (2) in (b) direction would decrease needle movement such that it would be smaller than the feed dog movement.



(Fig. 31)

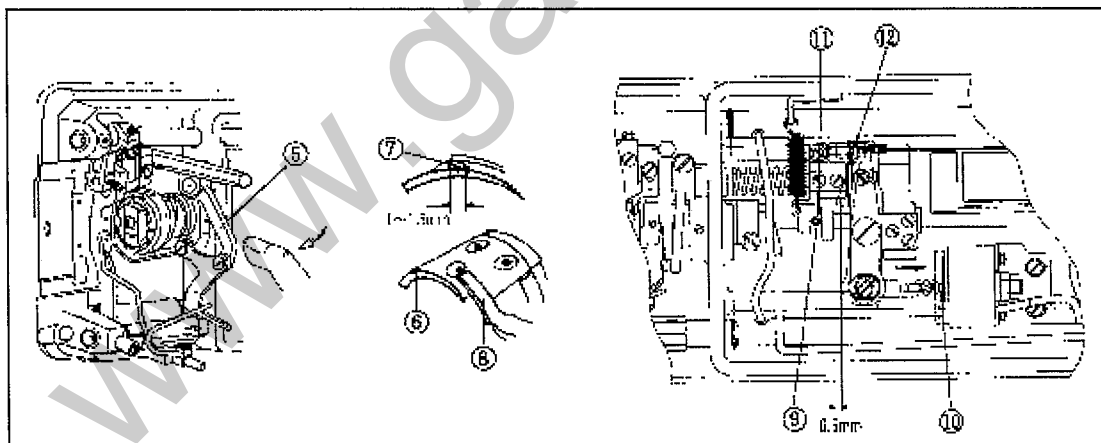
15) Timing Adjustment of Trimmer

1. Turn the pulley (1) manually and align the red carved sign (2) on the pulley and the carved sign (3) on the arm.
2. Separate the return spring (4).



(Fig. 32)

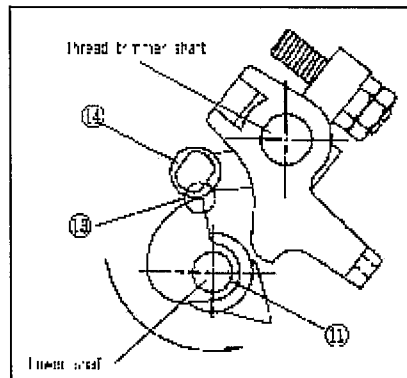
3. Push the trimming lever (5) so that the thread trimming knife (7) on the hill of the movable knife (6) is about 1~1,5mm more protruded than the end point of the fixed blade (8).
4. Push the trimming solenoid shaft (10) manually while the trimming cam fixing screw (9) is loose. (At this point, the appropriate distance between the initial trimming cam (11) and the roller single screw (12) is 0,5mm.)



(Fig. 33)

5. Turn the trimming cam (11) manually so that the edge (13) of the roller driving part on the trimming cam (11) touches the roller (14). Then tighten the trimming cam fixing screw (9).

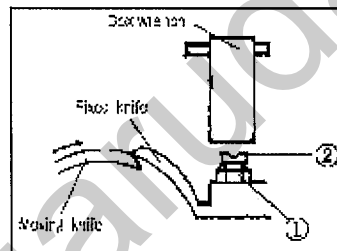
6. Connect the return spring (4).



(Fig. 34)

16) Tension Adjustment of Fixed Blade

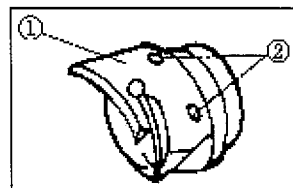
First, loosen the fixed blade tension adjusting nut (1) with a wrench box and then loosen the tension adjusting screw (2). As in Fig. 35, adjust the tension adjusting screw of the fixed blade when the movable knife-edge meets the fixed knife-edge. Adjust just enough so that the knife edges meet without too much tension. After adjustment, make sure to tighten the tension adjusting nut (1) using the wrench box in the accessory box.



(Fig. 35)

17) Replacement of Movable Knife

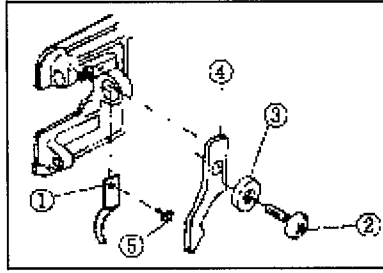
To change the movable knife (1), turn the pulley manually to place the needle at the highest point. Then, remove the needle plate by unfastening the two movable knife fixing screws (2) as seen in Fig. 36. Follow these instructions in reverse order to assemble.



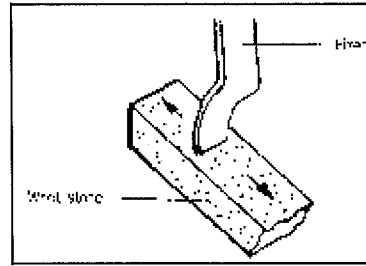
(Fig. 36)

18) Replacement of Fixed Blade

A. To change the fixed knife (1), loosen the inner spindle stopper fixing screw (2) as in Fig. 37, remove the washer (3) and inner spindle stopper (4), then unfasten the fixed knife fixing screw (5). Follow these instructions in reverse order to assemble.



(Fig. 37)



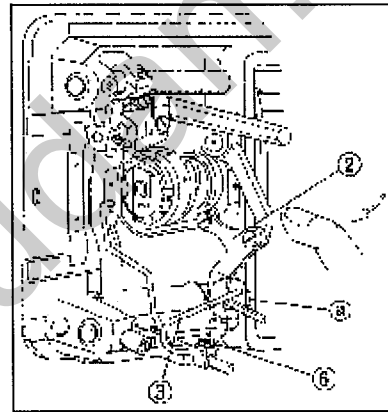
(Fig. 38)

B. If the edge of the fixed blade is worn, make sure to grind the knife edge with an oil grindstone as shown in Fig. 38.

19) Adjustment of Bobbin Catcher

1. Adjusting the operation lever of the bobbin catcher

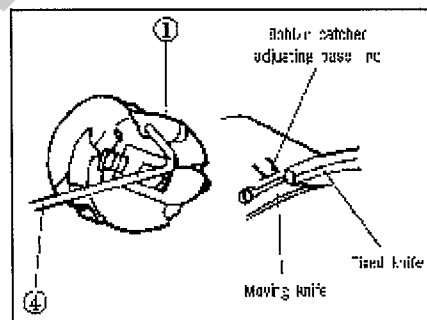
If the bobbin catcher operation lever (3) is not working as in Fig. 39, adjust the end of the bobbin catcher lever (3) so that it is placed like (a) at the end of the connecting link (2). Then, loosen the operation lever fixing screw (6) and adjust.



(Fig. 39)

2. If the trimming was done manually, stop the machine when the edge of the fixed knife meets the

bobbin catcher adjustment baseline that is marked on the top. Loosen the bobbin catcher fixing screw (5) and adjust the bobbin catcher so that the contact surface of the bobbin catcher (4) lightly touches the center of the protruding part of the bobbin (1). Once the operation is completed, check to see whether the bobbin catcher springs back lightly.



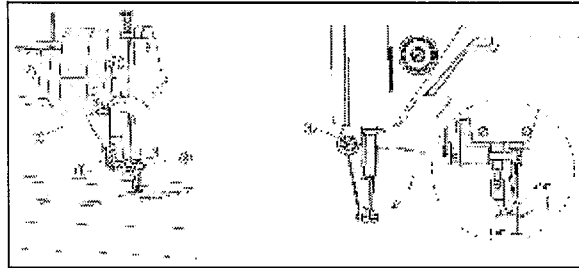
(Fig. 40)

20) Wiper Adjustment

1. GF-115-xx7 / GF-117-xx7 series

Turn the pulley manually and stop when the white carved signs on the arm and the pulley are aligned. (Highest point of the thread take up lever.) Loosen the two wiper shaft fixing screws (1) on the wiper base and press the connecting link (2) with the hand. Then adjust the wiper shaft (3) so that the gap between the wiper and the needle is about 2mm and tighten the wiper shaft fixing screw (1).

Next, loosen the wiper fixing screw (4) and adjust so that the gap between the lower end of the wiper and the end of the needle is about 2mm, after which the wiper fixing screw (4) must be tightly fastened.

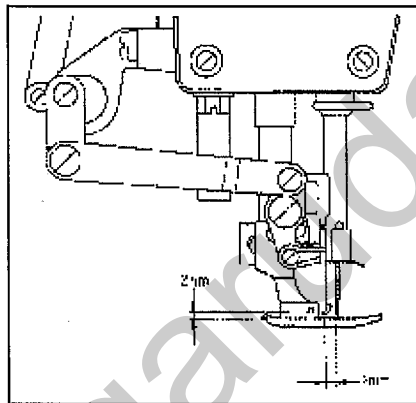


(Fig. 41 & 42)

2- GF-116-xx7 / GF-118-xx7 series

Set the stitch length adjusting dial to "2".

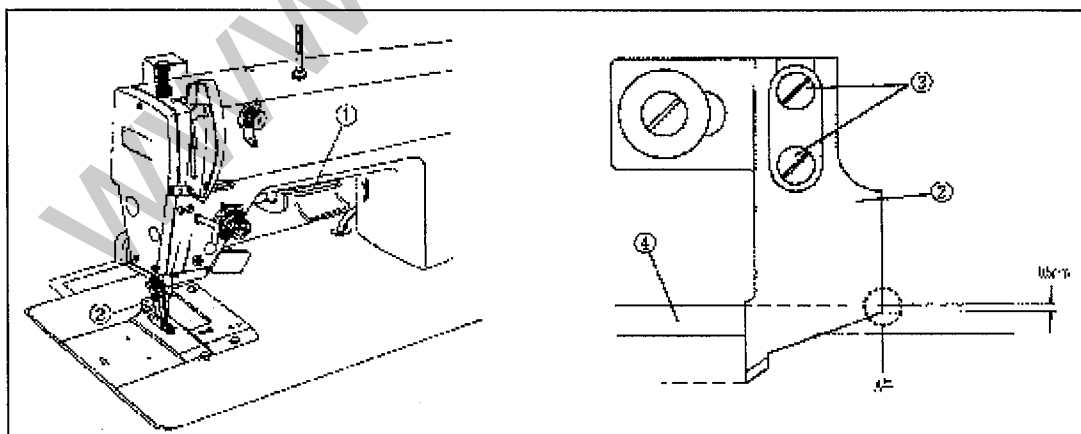
Turn the pulley manually and stop when the white carved signs on the arm and pulley are in a straight line. (Highest point of the thread take up lever). At this point, position the wiper so that the needle and the presser foot are about 2mm apart and then fix the position.



(Fig. 43)

21) Knife Adjustment (GF-116-xx7 / GF-118-xx7 series)

1. Adjusting the height of the knife

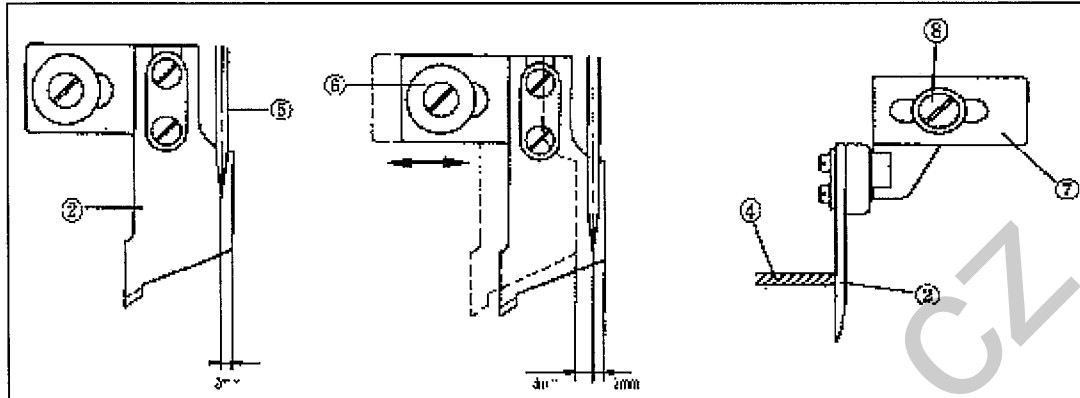


(Fig. 44)

A. The knife (2) is operated by the lever (1) at the center of the sewing machine. If the lever (1) is pulled down, the cutting and sewing of the material can be done simultaneously. If the lever (1) is pulled up, sewing is done without cutting.

B. Loosen the knife fixing screw (3) when the lever (1) is pulled down and adjust so that Area A of knife (2) is about 0,5mm above the top face of the needle plate (4). Then, tighten the knife fixing screw (3).

2. Adjusting the front-back position of the knife



(Fig. 45)

A. Set the stitch length adjusting dial to "0".

B. The standard position of the knife is when the edge of the knife (2) is about 2mm in front of the needle (5) center.

* For GF-116 series, the end of the knife (2) and the center of the needle (5) should match.

To adjust the front-back position of the knife, loosen the knife plate fixing screw (6) and move the knife plate back and forth. The adjustable width range of the knife edge is from 2mm forward to 3mm backward from the needle center.

3. Adjusting the left-right position of the knife

A. To adjust the left-right position of the knife (2), loosen the knife frame fixing screw (7) and move the knife frame (7) sideways.

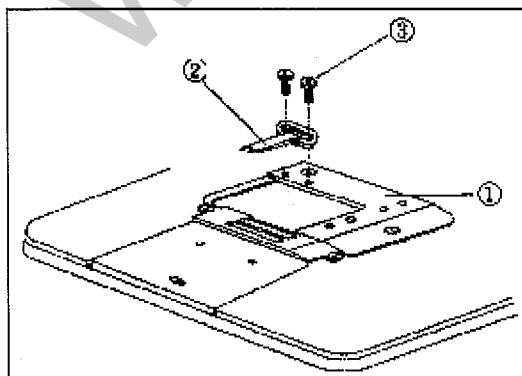
B. After loosening the knife frame fixing screw (7) and adjusting the knife side so that it would touch the side of the needle plate (4), tighten the fixing screw (7),

C. If the knife (3) is too close to the needle plate (4), there may be an overload on the knife when in operation; on the other hand, if the adhesion is too weak, there may be problems when cutting the material. Therefore, the lever (1) must always be operated after adjustment to check whether the knife (2) movement is smooth.

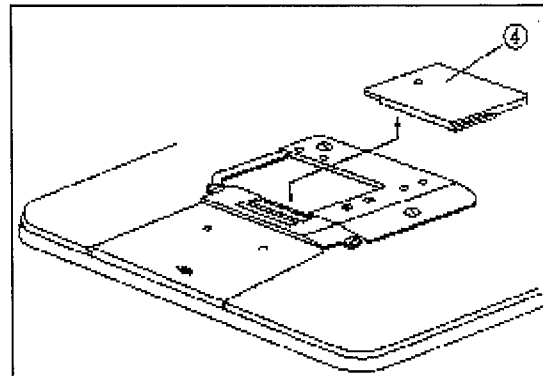
22) Use of Chip Discharge Guide and Auxiliary Needle Plate (GF-116/GF-118 series)

1. When Cutting and Sewing Simultaneously

When cutting and sewing are done at the same time, attach the chip discharge guide (2), which is provided in the accessory box, to the auxiliary needle plate (1) with fixing screws (3).



(Fig. 46)



(Fig. 47)

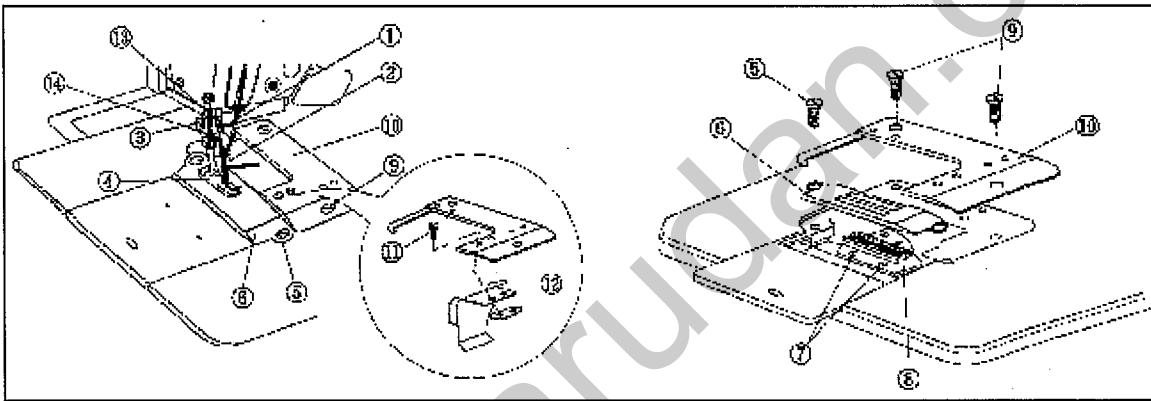
2. When Sewing Only

When sewing is done alone without cutting, remove the chip discharge guide (upper) (2) and the insert the auxiliary needle plate cover (4), which is provided in the accessory box, into the chip discharge groove in the auxiliary needle plate.
(See Fig. 47 on page no. 25)

23) Change of Cutting Width

1. Disassembly

- A. Loosen the needle fixing screw (1) and remove the needle (2).
- B. Loosen the presser foot fixing screw (3) and separate the presser foot (4).
- C. Loosen the needle plate fixing screw (5) and separate the needle plate (6).
- D. Loosen the feed dog fixing screw (7) and separate the feed dog (8).
- E. Loosen the auxiliary needle plate fixing screw (9) and separate the auxiliary needle plate (10).
- F. Loosen the chip discharge guide (lower) fixing screw (11) from the separated auxiliary needle plate (9) and separate the chip discharge guide (12).
- G. Loosen the knife fixing screw (13) and separate the knife (14).



(Fig. 48)

2. Assembly

- A. Replace the chip discharge guide (lower) (12) with the one fit for the desired cutting width and fix it with the auxiliary screw (11) on the auxiliary needle plate (10).
- B. Fix the auxiliary needle plate (10) using two fixing screws (9) on the bed.
- C. Fix the feed dog (8) using the fixing screw (7).
- D. Fix the needle plate (6) on the bed using two fixing screws (5).

* Turn the pulley manually to check whether the space between the feed dog and needle plate during feed dog movement is equal in all directions. Then, adjust the knife frame to adjust the knife position.

* Move the chip discharge guide (lower) (12) to the left and right so that it is placed 0,05mm from the knife plate side (6). Then, use the fixing screw (11) to fix the position.

- E. Adjust the knife frame so that the pressure of the knife (14) and the needle plate side (6) is appropriate. Then, tighten the fixing screw. (Refer to the explanation about knife position adjustment.)
- F. Attach the presser foot (4) and tighten the fixing screw (3).
- G. Fix the needle (2) with the fixing screw (1).
- H. Adjust the knife position adjusting plate (7) to get the desired cutting width and tighten the fixing screw (8) after adjustment.

* After assembly, refer to the knife position adjustment instructions on page 22 and readjust.

4) Cause of troubles and troubleshooting

1) Sewing machine troubleshooting

No	Symptom	Checkpoints	Root cause	Corrective action
1	Needle breaks	Direction and height of needle	Needle is inserted into wrong position.	Reinsert the needle correctly.
		Needle	Needle is bent.	Change the needle.
			Bad timing of feed dog.	Adjust the timing of feed dog.
		Ascending level of needle bar	Bad timing of needle and hook.	Adjust the timing of needle and hook.
		Height of needle	Bad timing of needle and hook.	Adjust the timing of needle and hook.
	Gap between needle and hook	Bad timing of needle and hook.	Adjust the timing of needle and hook.	
2	Thread breaks	Threading method	Wrong threading.	Thread the needle correctly.
		Needle	Bent needle or broken needle tip.	Change the needle.
		Direction and height of needle	Needle inserted in the wrong position.	Insert the needle correctly.
		Upper thread tension	Too tight upper thread tension.	Reduce tension of upper thread.
		Lower thread tension	Too loose lower thread tension.	Reduce tension of lower thread.
	Working capacity of take-up lever spring	Loose upper thread.	Adjust take-up lever spring.	
3	Stitch skips	Direction and height of needle	Needle inserted in the wrong position.	Reinsert the needle in the right direction.
		Needle	Bent needle or broken needle tip.	Change the needle.
		Threading	Thread passing at wrong position.	Change the needle.
		Ascending level of needle bar	Wrong timing of needle and hook.	Adjust the timing of needle and hook.
		Height of needle bar	Wrong timing of needle and hook.	Adjust the timing of needle and hook.
		Gap between needle and hook	Wrong timing of needle and hook.	Adjust the timing of needle and hook.
			Remaining length of upper thread is short.	Adjust the thread adjusting device.
			Racing-proof spring of bobbin case	Due to bobbin racing during trimming, lower thread dropping from bobbin case becomes too short to go up.
	Take-up lever spring	Unable to lift lower thread due to weak take-up lever spring.	Adjust the working capacity of take-up lever spring.	
4	Upper thread does not sink.		Too tight upper thread tension.	Reduce tension of upper thread.
			Too loose lower thread tension.	Increase tension OF lower thread.
5	Lower thread does not sink.		Too tight upper thread tension.	Too strong lower thread tension.
			Increase tension of upper thread.	Decrease tension of lower thread.
	Trimming errors	Tension of fixed blade	Tension not aligned between movable and fixed blade.	Adjust tension of movable and fixed blade.
		Edge of movable and fixed blades	Abrasion in blade groove of movable and fixed blade.	Replace movable and fixed blade.
		Direction of needle	Wrong needle insertion.	Reinsert the needle correctly.
		Check the crossing of trimmer cam notch mark and blade	Insufficeient crossing quantity of movable and fixed blade.	Adjust the stroke of movable and fixed blade.
7	Upper thread is pulled out when sewing commences.		Too strong upper thread tension.	Adjust tension of upper thread.
			Too thick a needle for thread.	Check thickness of needle.
		Check th up-stop position of needle	Take-up lever pulls out the upper thread because the needle up and down position is too high.	Adjust the up-stop position of needle.

5) Notes

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