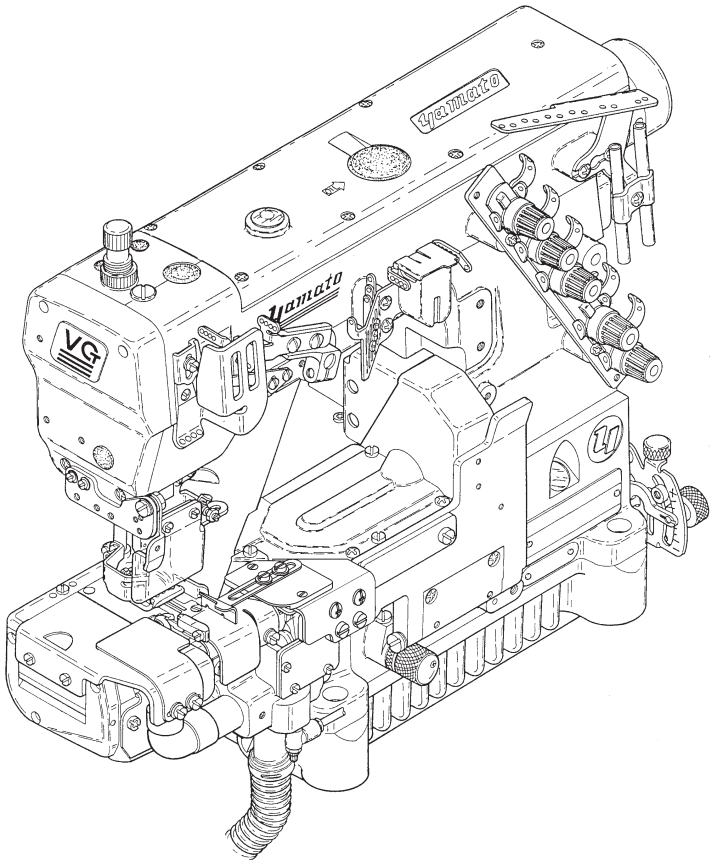
yamato®

Instruction Manual

HIGH SPEED CYLINDER BED INTERLOCK STITCH MACHINE
WITH LEFT HAND TRIMMING MECHANISM

VG3721-8 class

VG3721-8, VG3721-8F



Thank you for purchasing the VG3721-8 class. Before using your VG3721-8 class, please read the instruction manual and understand the contents well.
After reading the instruction manual, please keep it in a location where it is easily accessible to the operator.

YAMATO SEWING MACHINE MFG. CO.,LTD.

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CONTENTS

Attention

◇ This instruction manual is designed mainly for technicians, but it is advisable that also operators read the instructions with mark to use the machine properly.

Attention

The parts used for this product are subject to change without notice. If such a change is made, any part of the contents and illustrations of this instruction manual may not conform to this product.
In preparing the instruction manual, we have made our best efforts for making it free of any error or omission.
If any error or omission should yet be found, it might not be rectified immediately.

⚠SAFETY INSTRUCTIONS

1. Safety Instruction

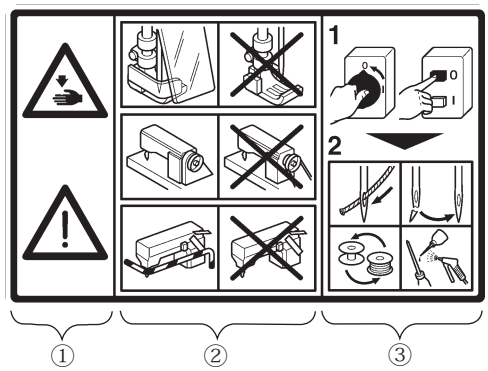
The sewing machine, automatic machine, and attachments (collectively called “the machine” below) involve sewing operations that require the operator to be near moving parts of the machine. Because of this, there is always a potential danger of unintentional contact with the moving parts. For this reason, the operators who actually use the machine and the maintenance staff who perform maintenance and repair must carefully read “2. Basic precautions” and “3. Precautions to be taken in various operating stage” below and fully understand this information before operating or maintaining the machine.
The information contained in the “Safety Instruction” of this manual also includes items not found in the product specifications.
To assist in better understanding this manual and the product warning labels, warning indicators are categorized as shown below. Be sure that you fully understand the contents and carefully follow the instructions.

1.1 Explanation of risk levels

⚠DANGER	This indication is given when there is a danger of death or serious injury if the person in charge or any third party mishandles the machine or does not avoid the dangerous situation when operating or maintaining the machine.
⚠WARNING	This indication is given when there is a potential for death or serious injury if the person in charge or any third party mishandles the machine or does not avoid the dangerous situation when operating or maintaining the machine.
⚠CAUTION	This indication is given when there is a potential danger of medium to minor injury or damage of the sewing machine if the person in charge or any third party mishandles the machine or does not avoid the dangerous situation when operating or maintaining the machine.

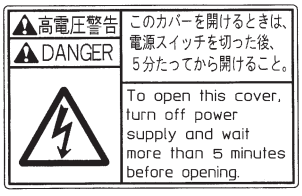
1.2 Explanation of pictorial warning indications and warning labels

	There is a risk of injury if contacting a moving section.
	There is a risk of a burn if contacting a high-temperature section.
	There is a risk of electrical shock if contacting a high-voltage section.
	Connection of an earth cable is indicated.
	The correct direction is indicated.



Explanation of safety label

①There is the possibility that slight to serious injury or death may be caused.
There is the possibility that injury may be caused by touching the moving part.
②Perform sewing work with safety cover.
Perform sewing work with safety protection device.
③Be sure to turn the power OFF before carrying out “threading,” “needle changing,” “bobbin changing” or “oiling and cleaning.”



Explanation of high-voltage warning label

High voltages are flowing inside the power supply of the control box. This indicates that there is a risk of electrical shock. When it is necessary to open the control box containing electrical parts, be sure to turn the power off, remove the power plug and wait for at least five minutes before opening the cover in order to prevent an accident resulting in electrical shock.

1.3 Explanation of symbols

Explains the symbols used in the instruction manual.

	Failure to follow the instructions can result in an injury or damage to the machine.
	Be sure to follow the instructions when you operate, check, adjust or repair the machine.
	Never do this.
	Be sure to remove the power plug from the source of the power supply, when checking, adjusting and/or repairing the machine or when there is the possibility that lightning may strike.
	Additional explanations and notes, etc., for operation or adjustment

2. Basic precautions

1. Be sure to read this instruction manual and all the other explanatory documents supplied with accessories of the machine before using the machine. Always keep the instruction manual where it is easily accessible for the operator and maintenance staff.
2. The content of this section includes items which are not contained in the specifications of your product.
3. Be sure to wear safety goggles to protect against accidents caused by needle breakage.

2.1 Applications, purpose

Our industrial sewing machines have been developed in order to increase quality and/or productivity in the sewing industry.
Accordingly, never use our products for other than the intended use as described above.

2.2 Working environment

The environment in which our industrial sewing machines are used may seriously affect their durability, functions, performance and/or safety. Do not use the machine in the circumstances below.

- Places of high ambient temperature and/or humidity that seriously affects sewing machines.
- Outdoors, places of high temperature or in direct sunlight.
- Environments containing dust, corrosive or flammable gases, or in contact with chemicals.
- Where the voltage fluctuation range is more than ± 10% of the rated voltage.
- Location where sufficient power is not available for the power supply capacity of the controllers and motors that is used.
- Near objects where strong electric or magnetic fields, such as high frequency welding machines which make noise, are generated.
- As dew condensation may occur when suddenly bringing the machine from a cold environment to a warm place, in order to prevent accidents caused by breakage or malfunction of the electrical components, be sure to turn the power on after waiting for a sufficient period of time until there is no sign of water droplets.
- When lightning occurs, be sure to stop operation and remove the power plug in order to prevent accidents caused by breakage or malfunction of the electrical components.

2.3 Safety devices and warning labels

- Be sure to operate the machine after verifying that safety device(s) are correctly installed in order to prevent accidents caused by lack of the device(s).
  With regard to safety device(s), please refer to page vi.
- If any of the safety devices is removed, be sure to replace it and verify that it works normally in order to prevent accidents.
- Be sure to keep the safety label and/or warning lables attached to the machine clearly visible in order to prevent accidents. If any of the labels has become stained or come unstuck, be sure to replace it with a new one.

2.4 Instruction and training

- ○ Operators and workers, who supervise, repair or maintain the machine head and/or machine unit, are required to have the adequate knowledge and operation skills to do the job safely.
- ○ The manager should plan and enforce the safety education and training of those operators and workers beforehand.

2.5 Modification

- Never modify and/or alter the machine in order to prevent accident that can result in personal injury or death. Yamato assumes no responsibility for damages or personal injury or death resulting from a machine which has been modified or altered.

⚠ WARNING

2.6 Items for which the power to the machine has to be turned off

Be sure to immediately turn the power off if any abnormality or failure is found or in the case of power failure in order to protect against accidents that can result in personal injury or death.

To protect against accidents resulting from abrupt starting of the machine, be sure to carry out the following operations after turning the power off.

- When threading to the parts such as the needle, looper, spreader, etc., or when changing the bobbin.
- When changing or adjusting all component parts of the machine.
- Adjusting the stitch length
- Adjusting the differential feed ratio
- When inspecting, repairing or cleaning the machine or leaving the machine.

○ Be sure to remove the power plug by holding the plug section instead of the cord section in order to prevent electrical shock, earth-leakage or fire accidents.

○ If the machine is using a clutch motor, to protect against accidents resulting from abrupt starting of the machine, be sure to carry out the above operations after verifying that the machine has stopped completely, since the motor continues turning for a while even after turning off the power supply switch.

3 PRECAUTIONS TO BE TAKEN IN VARIOUS OPERATING STAGES

3.1 Unpacking

⚠ Be sure to unpack the machine from the top. If the machine is packed in a wooden crate, be careful of the nails. Remove the nails from the board.

Never hold the parts near the needle or threading parts when removing the sewing machine head from the buffer of the box.

⚠ Removing and carrying the sewing machine head should always be carried out by two or more people.

⚠ Take out the machine very carefully while checking the position of the center of gravity.

ⓘ Preserve the cardboard box and packing material carefully in case secondary transport is needed in the future.

Disposal of the packaging

The packaging material of the machine consists of wood, paper, cardboard and polystyrene foam.
The proper disposal of the packaging is the responsibility of the customer, and must be properly disposed of in accordance with the locally valid environmental protection regulations.

Disposal of the machine waste

The proper disposal of the machine waste is the responsibility of the customer, and must be disposed of in accordance with the locally valid environmental protection regulations.
The materials used in the machines are steel, aluminum, brass and various plastics.
A specialist should be commissioned if necessary.

3.2 Transportation

⚠ Be sure to take sufficient safety measures to prevent falling or dropping when lifting or moving the machine.

⚠ If the machine and/or your hands are stained with oil, the machine may easily fall to the floor. Therefore, wipe off the oil carefully.

⚠ To prevent accidents during transportation, repackage in the same state as the original delivery packaging.
Be particularly sure to fully wipe off any oil adhering to the machine before repackaging.

⚠ The machine head should be carried by two or more people.
The machine should be carried by people only when moving to the table or transfer hand truck, and all other transportation operations should use a hand truck. When moving to the table or hand truck, be careful that the machine is not subjected to excessive impact or vibrations. Otherwise the sewing head could fall over.

3.3 Installation, preparation

3.3.1 Machine table

❗ Prepare a machine table (table board and legs) that has sufficient strength to withstand the weight of the sewing head and any reaction while operating.
Securely join the table and legs to ensure sufficient strength to withstand the weight of the sewing head and any reaction while operating.

○ Maintain a comfortable working environment with consideration of the lighting and the arrangement of sewing machine to enable the operators to work smoothly.

○ Adjust the height of the table according to the posture of the worker.
Also, when installing the control box and the related parts on the sewing machine, make sure not to affect the posture of the worker.
If casters are fitted to the table stand, be sure to use high-strength casters with a locking mechanism.

⚠ Lock the casters except when moving the machine.

3.3.2 Wiring and grounding

🚫 Never connect the plug for power supply until assembly is finished.
Also, be sure to avoid the usage of multiple-outlet extension cords in order to prevent electrical shock, earth-leakage or fire accident.

❗ Fix the connectors securely to the sewing machine head, motor, and electric apparatus.
Also, when unplugging the connectors, hold the connector part.

❗ When wiring the connection cords, please take care of the following.

○ Connect the cords away from the driving parts.

○ Do not apply excessive force to the connection cords.

○ Do not bend the cords excessively.

🚫 Never use staples to fasten the cables. Otherwise it may cause a short circuit and/or fire.

❗ Arrange the ground wire securely to the designated position on the machine head.
Also, wire separately from the grounding for other equipment.

3.3.3 Handling machine oil

⚠ Keep machine oil out of the reach of children.

❗ Be sure to fill or add lubrication oil to sewing machines before operating them.
Use “Yamato SF oil 28” as specified.

⚠ If machine oil gets in your eyes, it may cause eye inflammation. Always wear protective glasses to prevent the oil from getting in your eyes.
*Should machine oil get in your eyes, wash them with fresh water for 15 minutes and then consult a medical doctor.

⚠ If oil adheres to your eyes or body, be sure to immediately wash it off in order to prevent inflammation or irritation.

⚠ If oil is swallowed unintentionally, be sure to consult a medical doctor in order to prevent diarrhea or vomiting.

❗ Methods of disposing of waste oil and/or containers are specified by law. Dispose of it properly as required by law. If you have further questions on its disposal, consult the place of purchase.

❗ After opening the oil container, be sure to seal it to prevent dust and water from getting into the oil and keep it in the dark to avoid direct sunlight.

🚫 Do not store in high-temperature areas or areas exposed to an open flame.

⚠ WARNING

3.4 Before operation

○ Never put your hand under the needle or near the moving parts of the machine when turning on the power supply switch.

○ When operating a new sewing machine, make sure the rotating direction of the pulley agrees with the rotating-direction mark.

○ Before turning the power on, visually check the cables and connectors for conditions such as damage, disconnection and/or loosening.

○ If a table stand with casters is used, be sure to secure the table stand by locking the casters or securing the legs with adjusters, if provided, in order to prevent accidents caused by abrupt moving of the machine.

⚠ WARNING

3.5 During operation

○ Be sure to operate the sewing machine using the safeguards such as belt cover, finger guard, and eye guard.
○ Never place your finger, hair or objects under the needle or close to the moving parts while operating the sewing machine.
○ Be sure to turn off the power supply switch when threading or replacing the needles.
○ Never place your hands close to the knives (upper and lower knives) when operating the sewing machine with the trimming devices.
○ Be sure to turn off the power supply switch when terminating the sewing work or leaving the sewing machine.
○ In the event of the power failure, be sure to turn off the power.
Also, if the sewing machine malfunctions, makes abnormal sound or emits unusual odors while operating, be sure to turn off the power supply switch.
○ While operating the machine, wear clothing that cannot be caught in the machine.
○ Do not put any tools or other unnecessary objects on the machine table while running the machine.
○ If a clutch motor type is used, it will continue running for a while even after the power is turned off. Therefore, be careful because the machine could start running by pressing the machine pedal.
○ If a servomotor is used, the motor does not produce noise while the machine is at rest. Be sure not to forget to turn the power off in order to prevent accidents caused by abrupt starting of the machine or motor.
○ To prevent entanglement accidents in machines with a puller mechanism, keep your hands, hair, and clothing away from the machine.

⚠ WARNING

3.6 Maintenance, inspection and repair

○ Maintenance, inspection, and repair must be performed by staff that have received special training and fully understand and follow the information in the instruction manual.
○ Be sure to turn off the power supply switch and make sure the sewing machine and motor completely stop before the maintenance, inspection, and repair. (If the machine is using a clutch motor, take care that the motor keeps turning for a while even after turning off the power supply switch.)
○ Do not attempt to modify the machine at your own discretion. We are not responsible for accidents caused by such modification.
○ Use genuine Yamato parts when repairing the machine and/or replacing the parts. We are not responsible for accidents caused by any improper repair/adjustment and substituting other parts for those manufactured by Yamato.
○ Turn off the power supply switch if removing or replacing any parts or during adjustment of the sewing machine.
○ Be sure to also remove the gasket if the cover is removed for maintenance, inspection, and repair. If the gasket is not removed, the edge of gasket may cause injury.
○ Do not pull the cord when removing the plug. Be sure to hold the plug itself.
○ A high voltage is applied inside the control box. Turn off the power supply switch and wait for at least five minutes before opening the cover.
○ Be sure to replace the safety devices and/or safety covers if removed for maintenance, inspection and repair.
○ After performing maintenance, inspection and repair, make sure that turning on the power does not pose any danger to you.
When operating the machine for the first time after work is performed, run at low speed to check for abnormal sounds or other problems before performing high-speed operation.

4. Recommended check points for maintaining machine performance

(1) Perform regular cleaning of the machine parts by following the instruction manual.
(2) Perform regular inspection of the lubrication oil by following the instruction manual, and refill or replace the oil as required.
(3) Because the oil-proof parts use rubber, their oil-proof performance is reduced over time.
○ If the seals or other stationary parts fall off or begin to lose their sealing performance, replace them with new parts.
○ The replacement period for parts used in the movable sections varies depending on the machine operating conditions, environment, maintenance, and oil used, but replacement every several years is recommended.
(4) For details about the replacement procedure, please contact your local dealer or Yamato.

5. Safety devices and warning label affixing locations

Belt cover

⚠ The belt cover prevents entanglement with the belt.

⃠ Do not operate with the cover is removed.

Front cover, side cover, slide cover

⚠ These covers prevents contact with the moving parts inside the covers.

⃠ Do not operate with these covers opened.

Eye guard

⚠ The eye guard prevents injury to the operator's eyes due to breaking of needles during the sewing operation. This section also houses the needle thread take-up, upper knife, and other moving parts.

⃠ Do not operate with the eye guard opened.

Finger guard

⚠ The finger guard prevents the operator's fingers from going under the needle. However, there is some space at the top of the finger guard and other sections, and so there is a risk of finger insertion.

⃠ Do not operate when the finger guard is removed.

Chip receiver

⚠ The chip receiver prevents the operator's fingers from going between the knives.

⃠ Do not operate when the chip receiver is removed.

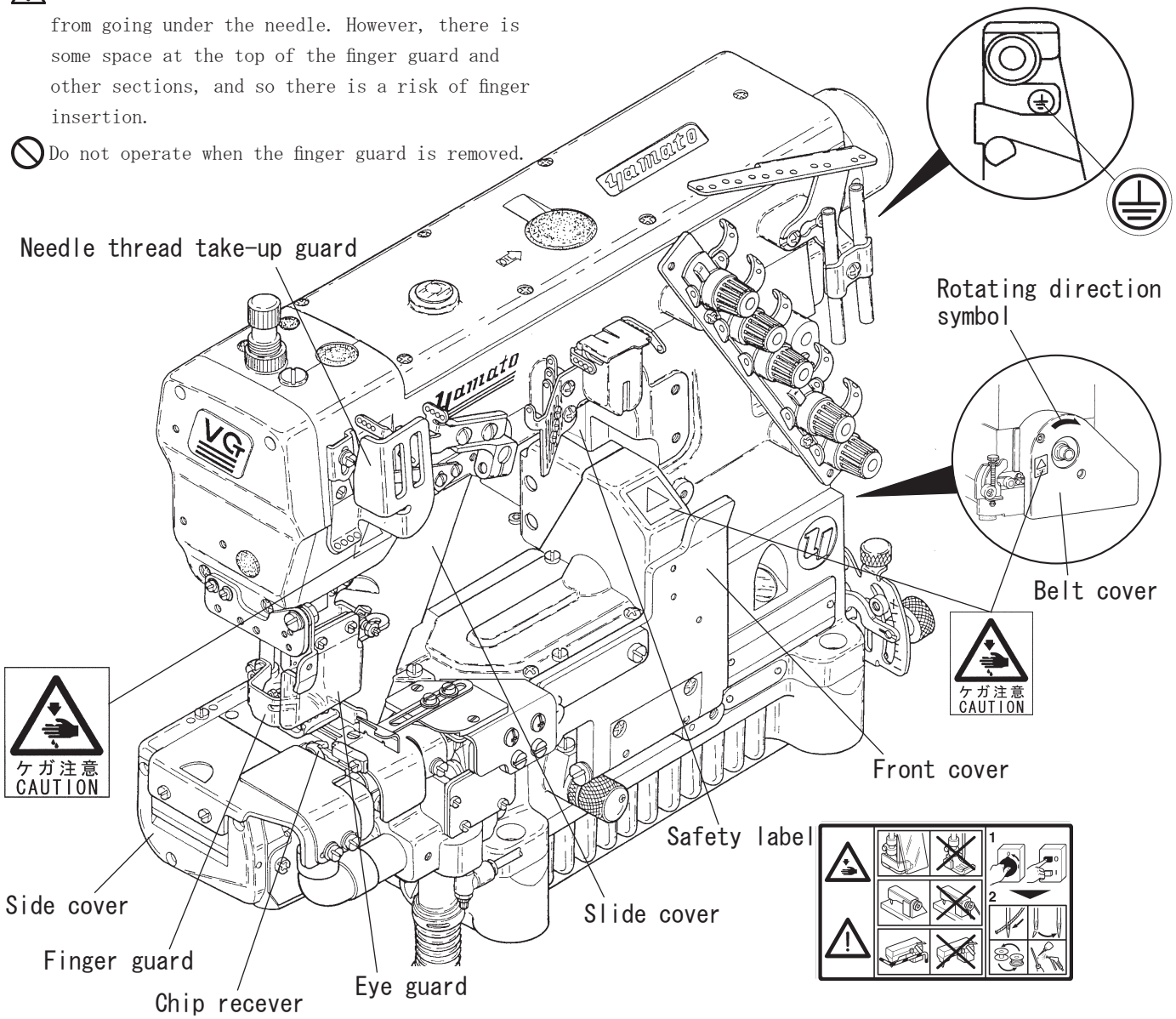
Needle thread take-up guard

⚠ The needle thread take-up guard prevents contact with the moving parts as the needle thread take-up. but it dose not completly cover the moving parts.

⃠ Do not operate when the needle thread take-up guard is removed.

Safety label, warning label

❗ Reaffix the labels if they start peeling off or become dirty and illegible.



1. Name of each part

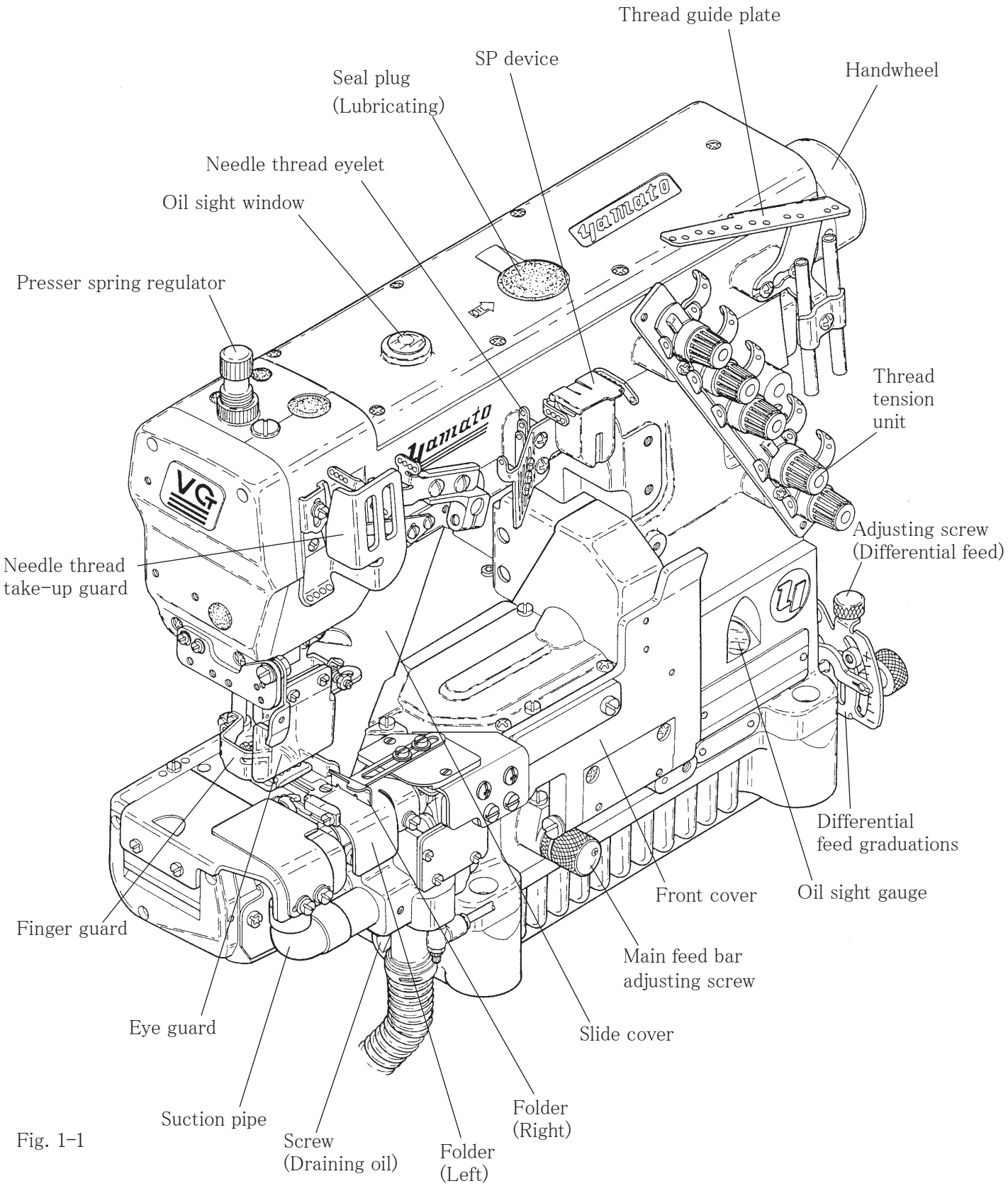


Fig. 1-1

2. Installation

2.1 Table cutting diagram

2.1.1 Table top type(Tyep A: standard)

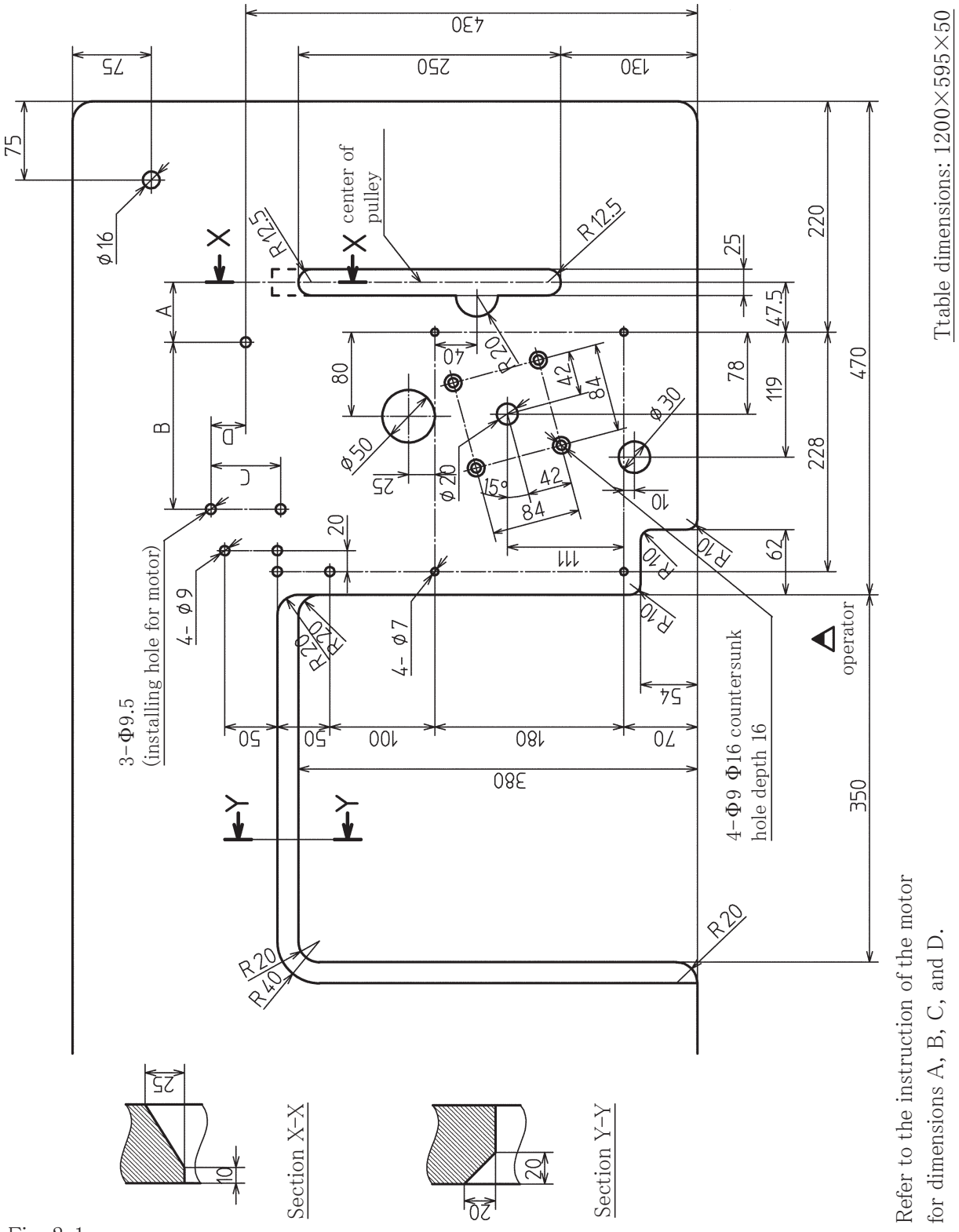


Fig. 2-1

2.1.2 Table top type (Type B)

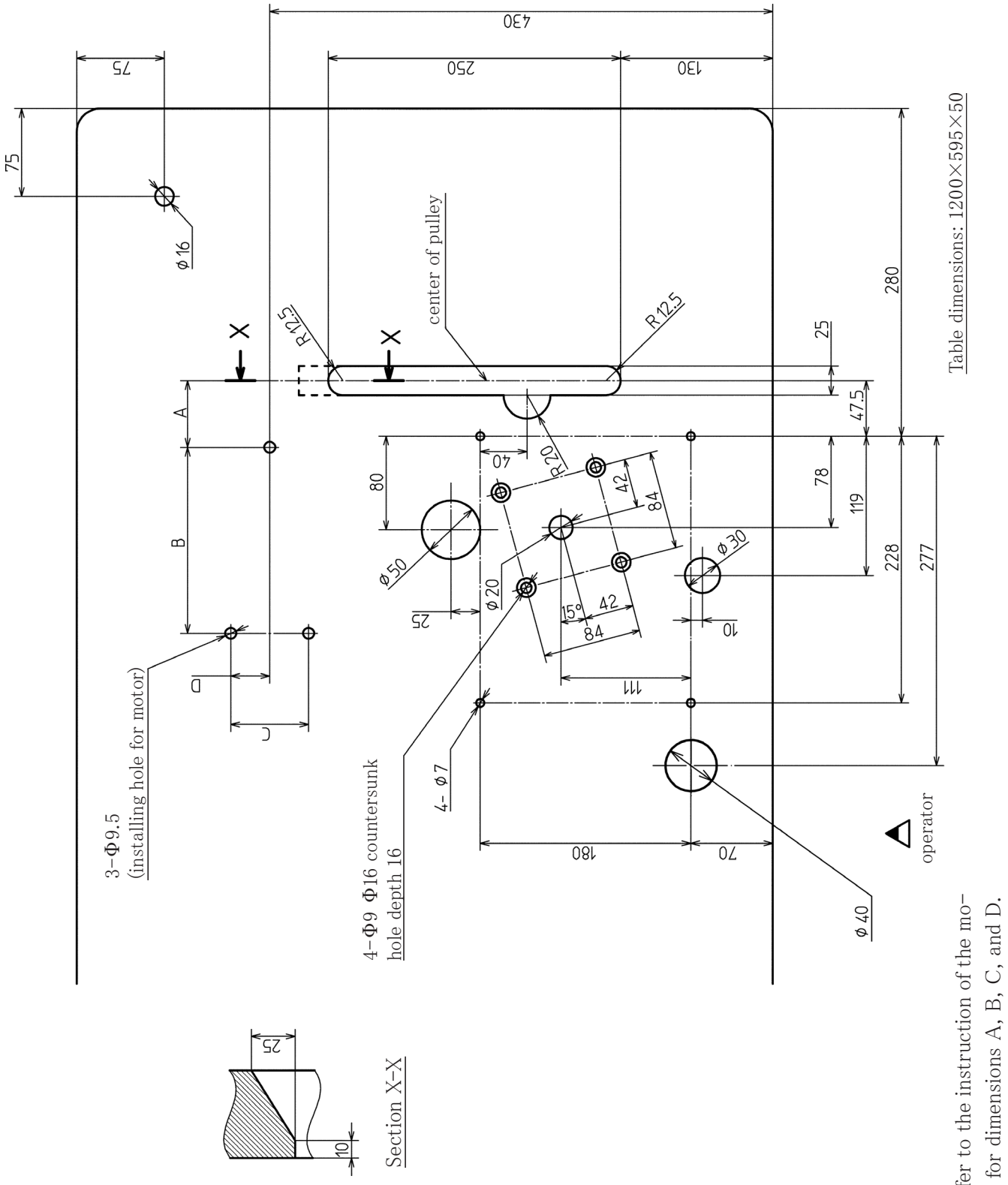


Fig. 2-2

2.2 Table top type

Install a machine correctly referring to Figs. 2-3 and 2-4.

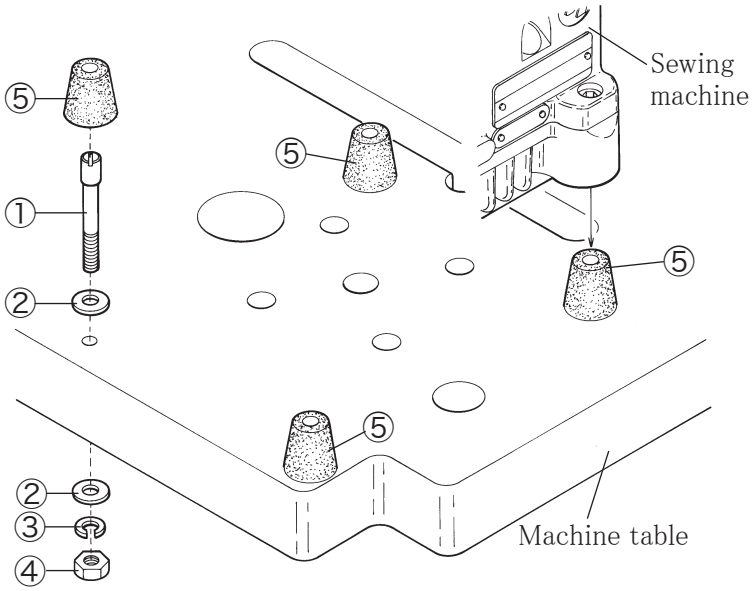


Fig. 2-3

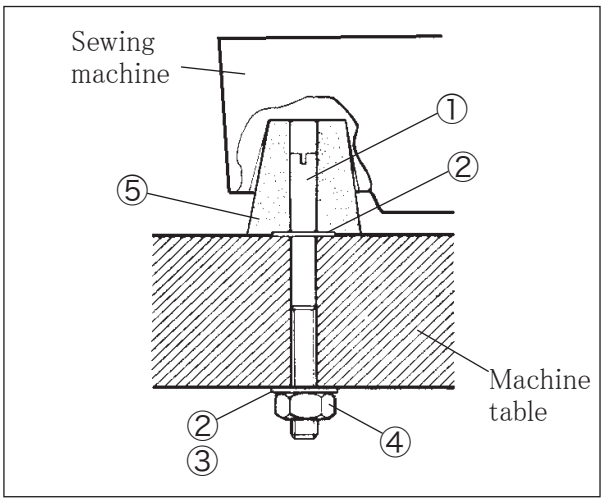


Fig. 2-4

2.3 Motor, belt and pulley

See the instruction manual for the motor used and install the motor properly.

Clutch motor

To install the clutch motor, align the center of the machine pulley with that of the motor pulley when the motor pulley shifts to the left with toeing down the pedal.

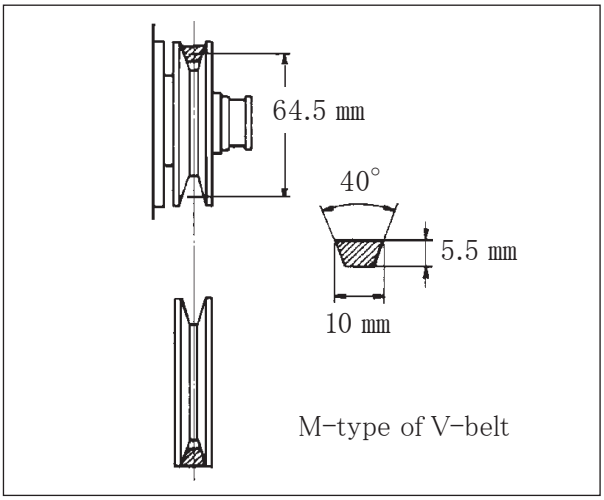


Fig. 2-5

Note: Table 1 shows the outside diameter of the motor pulley, rpm of the machine, and size of the belt when using the clutch motor of 3-phase, 2-pole, 550W(3/4HP).

The outside diameter on the table shows the nearest size to the calculated values based on the commercial available pulleys at intervals of 5 mm.

Outside diameter of pulley (mm)	Sewing speed of machine (sti/min)		Size of belt	
	50 Hz	60 Hz	Table top	Semi-submerged
90		4600	M40	M33
95		4850	M40	M34
100		5100	M41	M34
105	4550	5350	M41	M34
110	4750		M41	M35
115	5000		M42	M35
120	5200		M42	M35
125	5400		M42	M36

Table 1

⚠CAUTION

Use only those motor pulleys applicable to the machine. If not applicable, the sewing machine will be over maximum sewing speed and it can cause the damage to the machine.

Servomotor

Calculate the outside diameter of a motor pulley from the formula as below.
Or see Table 2 to select a proper motor pulley.

$$\text{Outside diameter of motor pulley} = \frac{\text{Usual sewing speed}}{\text{Servomoter speed}} \times 64.5 + 5 \text{ mm}$$

Sewing speed of machine (sti/min)	Outside diameter of motor pulley (mm)	
	rpm of servomotor	
	3000 rpm	3600 rpm
4200	95	80
4500	102	86
4700	106	89
5000	113	95
5500	117	98
5500	123	104

Table 2

Belt

Use a V-belt of M type.
For belt size, refer to Table 1.

2.4 Hanging belt

⚠CAUTION

Before hanging belt, ALWAYS turn the power switch OFF and check that the motor has already stopped.

Use the M-type of V-belt.

(1) Hang the belt ① on the machine pulley ②, and then on the motor pulley ③ while rotating the machine pulley.
(2) Adjust the belt tension so that the belt has a slack of 10 to 20 mm when its center is pushed with 10 N.
(3) Lock the motor with the adjusting bar ④.

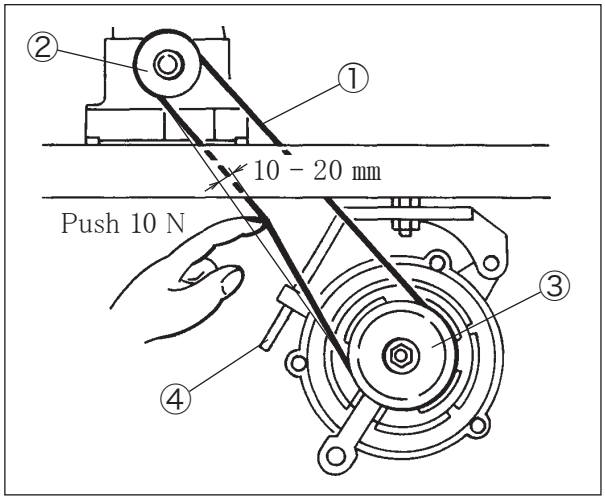


Fig. 2-6

2.5 Belt cover

⚠CAUTION

Be sure to install belt cover to prevent you from injuring and a material from being caught by the belt.

(1) Install the belt cover ⑤. (Fig. 2-7)
(2) Push the belt cover support ⑥ to the belt cover ⑤ to install it. (Fig. 2-8)
(3) Fix the belt cover (lower) ⑦ on the machine table. (Fig. 2-9)

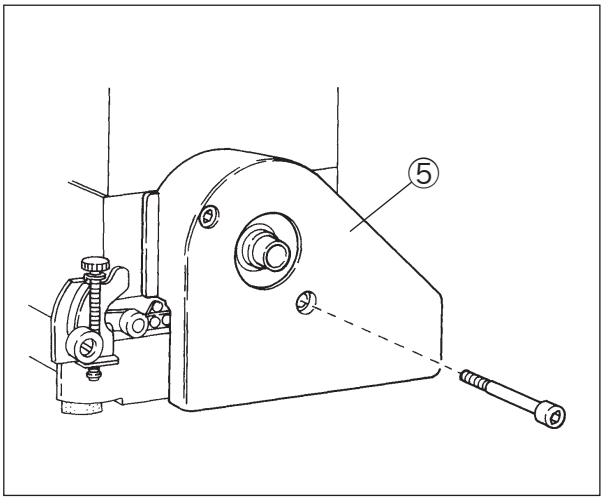


Fig. 2-7

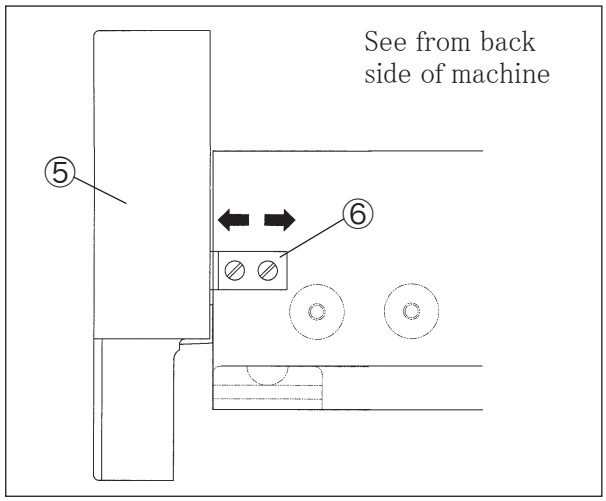


Fig. 2-8

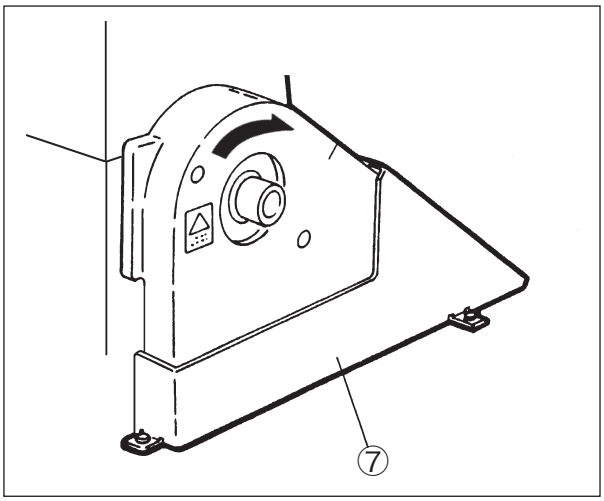


Fig. 2-9

2.6 Eye guard and finger guard

To ensure safe use, always install the eye guard ① and the finger guard ② on the prescribed position when operating.

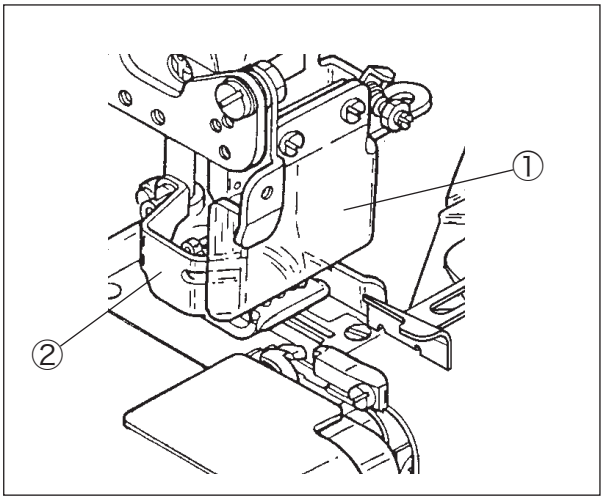


Fig. 2-10

2.7 Thread guide plate

(1) Put the screws ③ into the hole ⊃ of the thread guide plate ④ and push it to the left.
(2) Fix the thread guide plate ④ with the screws ③.

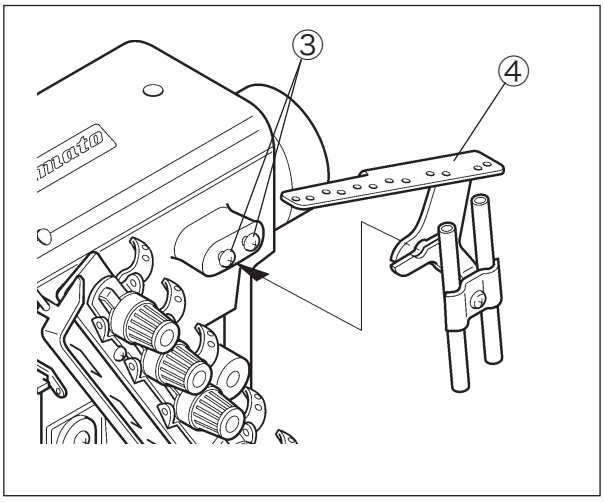


Fig. 2-11

2.8 Accessories

(1) Install the speed controller ① in the screw hole on the bottom of the lower knife holder.
(2) Insert the suction pipe (lower) ② into the hole of the bottom of the lower knife holder bracket ③ and fix them with the screw ④.
When fix the suction pipe (lower) ②, the arrow ⑤ face to the front direction.
(3) Insert the flexible hose ⑦ fitted with the hose band ⑥ into the suction pipe (lower) ② Then, fix them with the hose band ⑥.

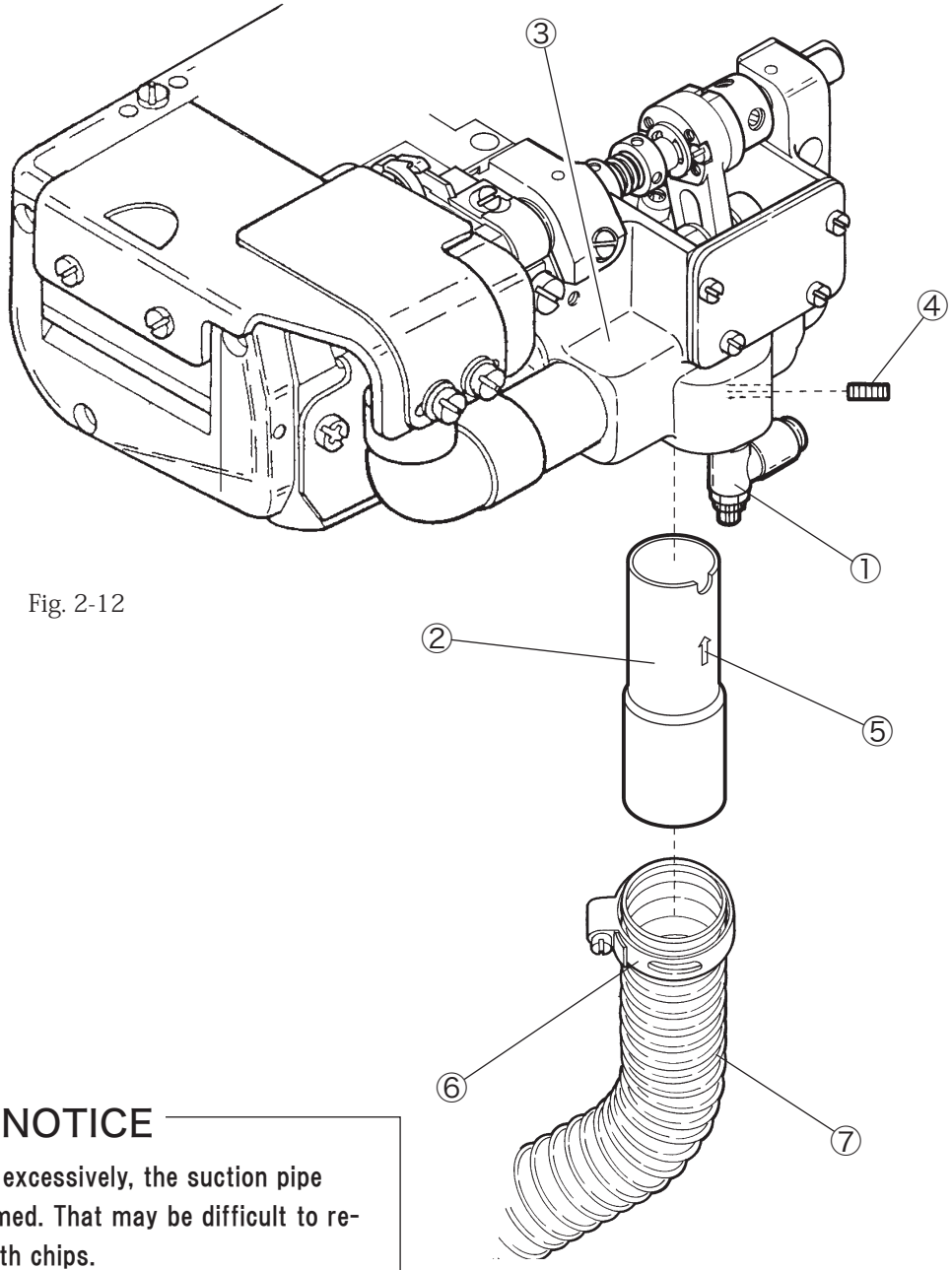


Fig. 2-12

NOTICE

If tightened the screw④ excessively, the suction pipe (lower) ② may be deformed. That may be difficult to remove it when clogged with chips.
The direction of the suction pipe (lower) ② correctly, otherwise it will be lacking in suck.

3. Sewing speed and rotating direction of pully

The maximum sewing speed is 5500 sti/min and usually sewing speed is 5000 sti/min (during intermittent operation).
Run a new machine at speed about 15 to 20% lower than maximum speed during the first 200 hours (for about one month) so that a machine can offer a long service life in good condition.

The rotating directions of the machine pulley ① and the handwheel ② are clockwise as shown in the figure.

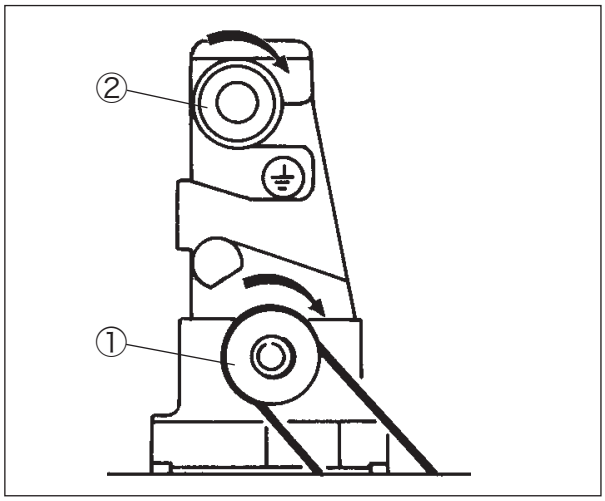


Fig. 3-1

⚠CAUTION

If rotated in reverse direction, oil cannot be supplied properly. It can cause the damage to the machine.

4. Lubrication

⚠CAUTION

Before lubricating, ALWAYS turn the power switch OFF and check that the motor has already stopped.

4.1 Lubricating oil

Use YAMATO SF OIL No. 28.

⚠CAUTION

Never add additives to the oil.
If added, it can cause the deterioration of the oil and the damage to the machine.

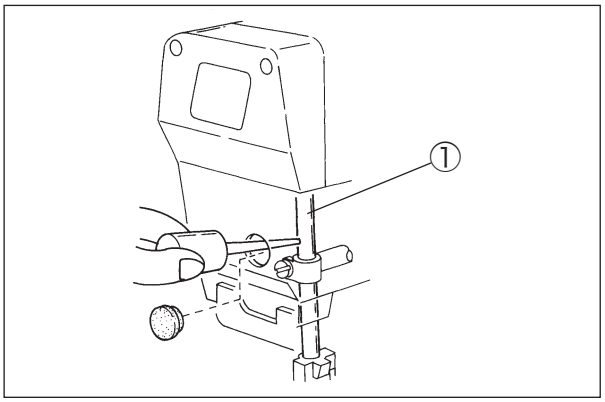


Fig. 4-1

4.2 Lubricating

When using a new machine, or a machine which has not been run for a while, supply a few drops of oil to the needle bar ① and the looper bar ②.

Remove the seal plug ③ indicated "OIL" and supply oil to the upper line of the oil sight gauge ④.

Check that oil splashes from the nozzle inside the oil sight window ⑤ while running a machine.
If oil does not splash from the nozzle, see "4.4 Checking and replacing oil filter" on page 11.

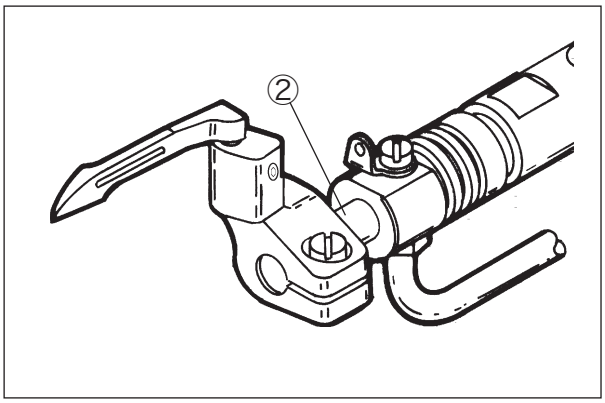


Fig. 4-2

⚠CAUTION

1. **Too much oil or insufficient oil can cause oil leakage and machine trouble. Be sure to keep the oil level between the lines. Also too much lubrication can cause the oil scatter and material stain.**
2. **Supply with a few amount of oil into the hole ⑥ periodically.**

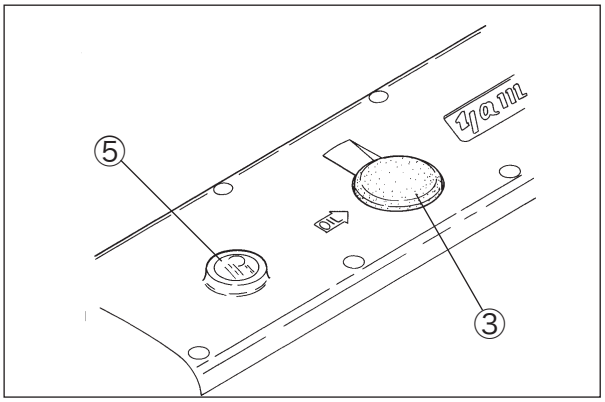


Fig. 4-3

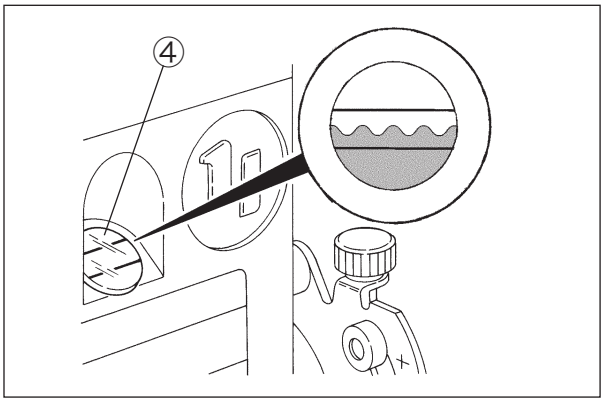


Fig. 4-4

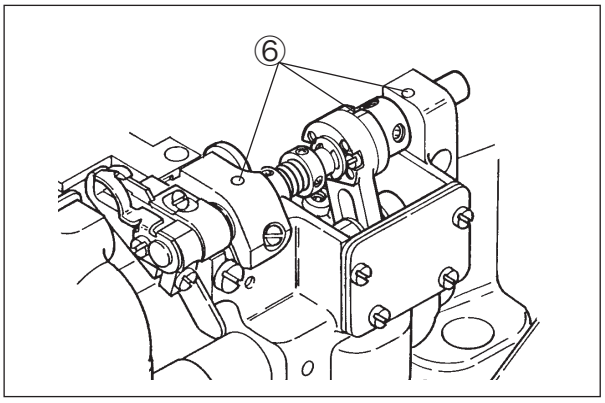


Fig. 4-5

⚠CAUTION

Before lubricating, ALWAYS turn the power switch OFF and check that the motor has already stopped.

4.3 Changing oil

Period of changing

When using a new machine, change the lubricating oil after running a machine for 200 hours (for about one month). After that, change the oil once or twice a year.

Procedure for changing

(1) Remove the belt cover. (See page 6.)
(2) Remove V-belt from the motor pulley. (See page 6.)
(3) Remove the machine from the machine table.
(4) Set a container received the oil under the screw ①.
(5) After removing screw ①, oil is drained.

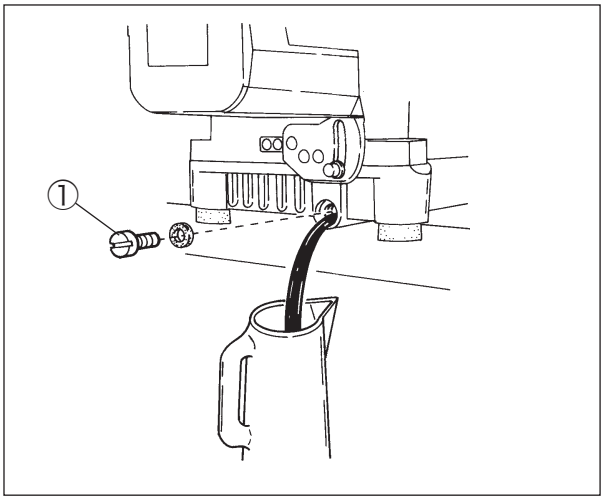


Fig. 4-6

❗ATTENTION

Be careful not to soil the V-belt and the machine pulley with the oil.

(6) Reset the screw ①.
(7) Change the oil. (See "4.2 Lubricating" on page 10.)
(8) Reset the machine on the machine table.
(9) Hang V-belt on the motor pulley and reset the belt cover. (See page 6)

4.4 Checking and replacing oil filter

- ◆ If the oil filter ② is clogged with dust, lubrication cannot be done properly.
- ◆ Remove the oil filter cap ③ and the oil filter ② to check them every six months. If clogged or cracked, clean or replace the oil filter.
- ◆ If oil is splashed from the nozzle insufficiently or includes many bubbles though the oil is sufficiently kept, check or replace the oil filter.

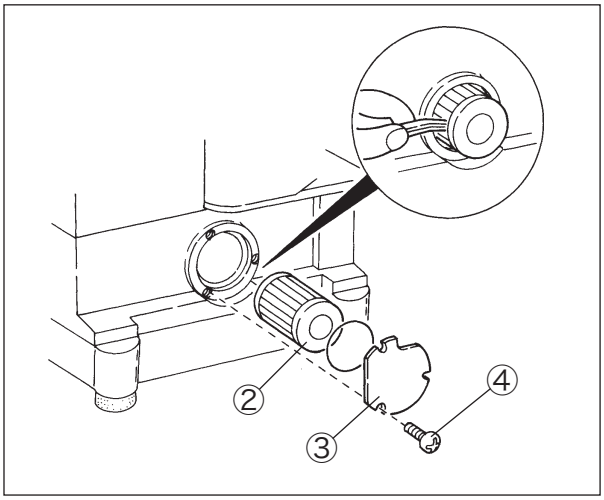


Fig. 4-7

ⓘNOTICE

Carefully check and replace them without spilling oil stagnant in the oil filter ② when loosening screws ④.

5. Proper operation

5.1 Needle system

Use UY×128GAS (UY128GAS).
Select a proper needle in size depending on the thickness and type of fabric.

Japanese standard	9	10	11	12	13	14
Metric standard	65	70	75	80	85	90

Table 3

5.2 Installing needles

⚠CAUTION

Before installing, ALWAYS turn the power switch OFF and check that the motor has already stopped.

(1) Loosen the screws ① with a screwdriver. (Fig. 5-1)
(2) Remove an old needle with a pair of tweezers.
(3) Insert a new needle into the needle clamp ② as far as it will go with facing its scarf to the right back. (Figs. 5-2 and 5-3)
(4) Tighten the screws ① with a screwdriver.

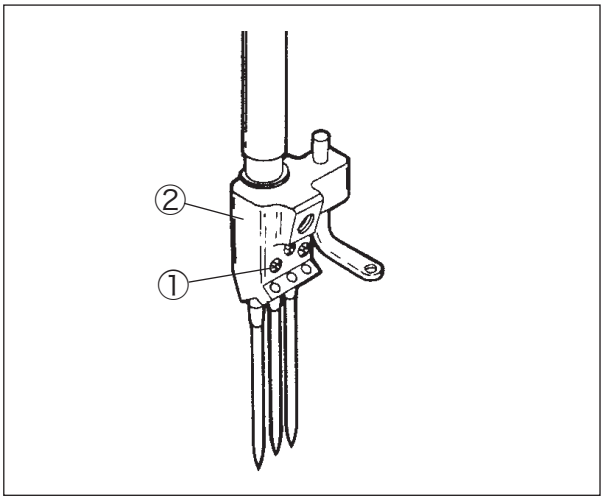


Fig. 5-1

❗ATTENTION

Tighten the screws ① with a tightening torque of 0.6 N•m.

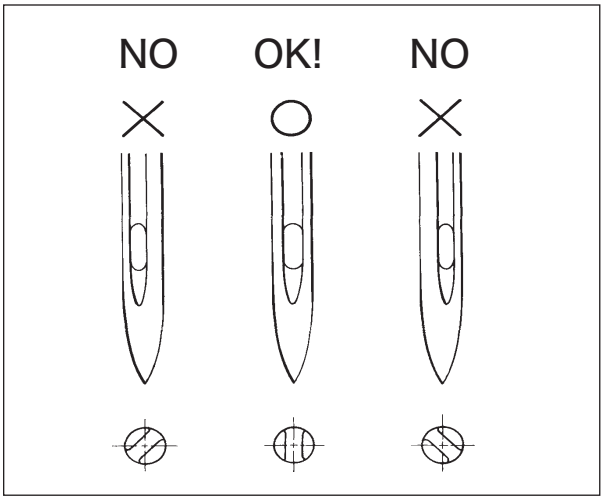


Fig. 5-2

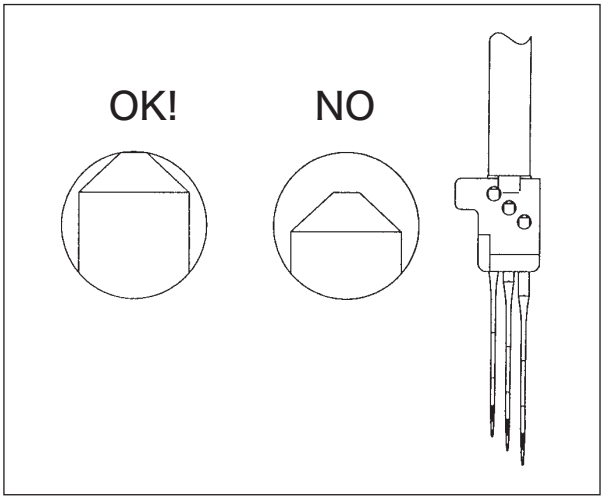


Fig. 5-3

5.3 Threading

When not threaded, thread correctly as shown in Fig. 5-4.

When had been threaded, knot the preset thread and new one together to rethread.

A: Needle thread

Pull out the threads until they come to the front of the needles. Then, cut off the knots before passing them through the needle eyes.

Thread correctly for the left needle which is in the inmost position as shown in the figure.

B: Spreader thread

Pull the thread until the knot comes out. Then, cut off the knot.

C: Looper thread

Pull the thread until the knot comes out. Then, cut off the knot.

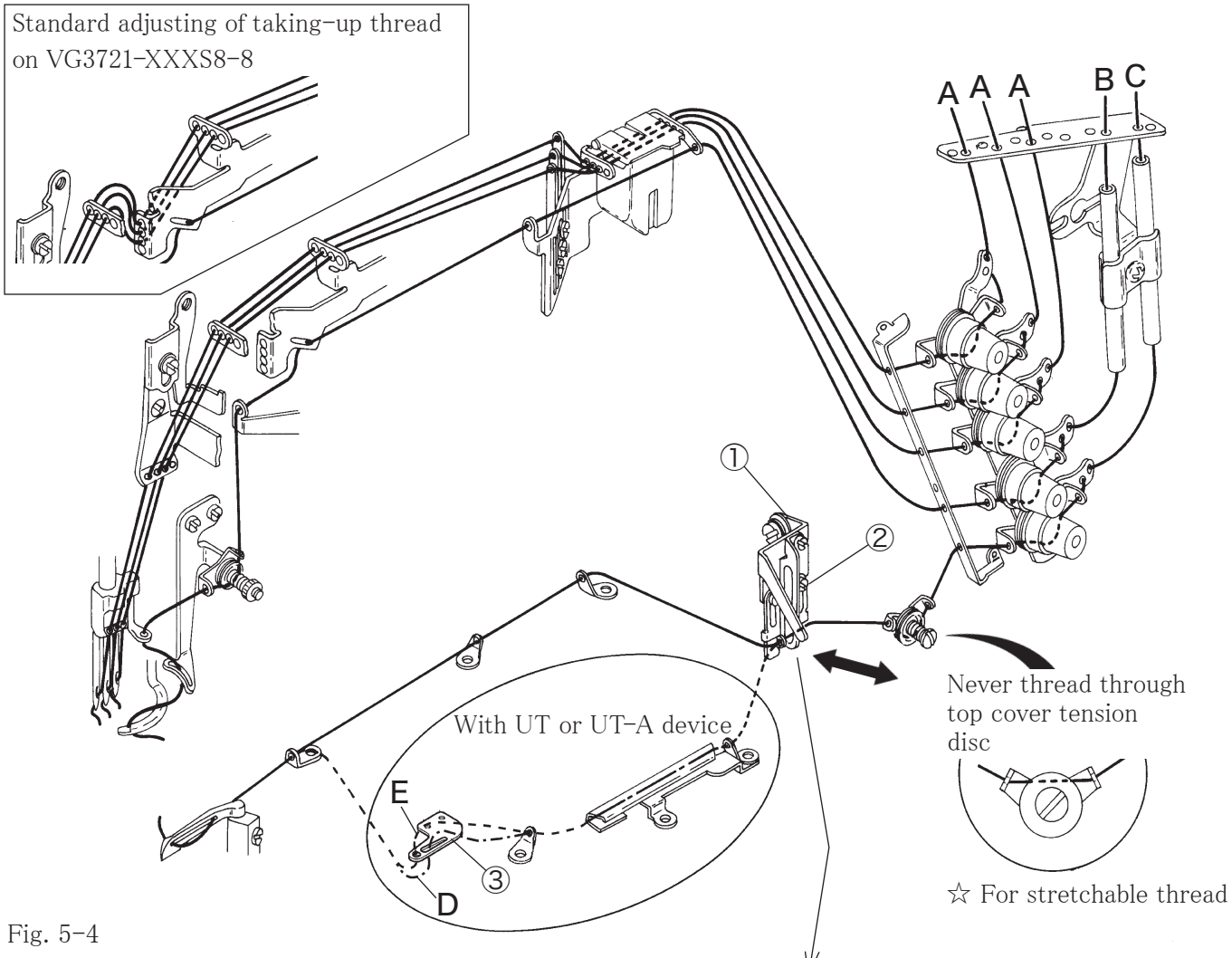


Fig. 5-4

Note: Threading for model with UT or UT-A device

* For non-stretchable thread, thread through the slot of the looper thread pull-off ③. (Thread D)
* For stretchable thread, thread through the round hole of the looper thread pull-off ③. (Thread E)

Note: For easy threading, pull the lever ② of the thread take-up eyelet holder ①.

After threading, push the lever ② to reset the thread take-up eyelet holder ① to the original position.

5.4 Adjusting thread tension

Adjust the thread tension with the thread tension spring caps ① depending on fabric type, thread type, seam width, stitch length, and other sewing conditions.

- To tighten the thread tension, turn the caps clockwise.
- To loosen the thread tension, turn the caps counter-clockwise.

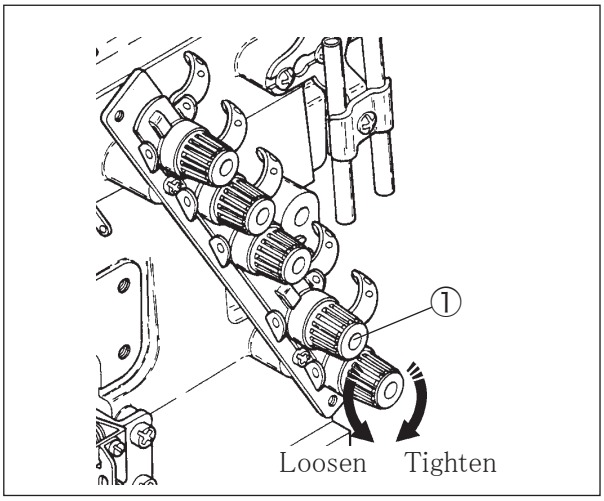


Fig. 5-5

5.5 Pressure of presser foot

Loosen the lock nut ② and turn the adjusting screw ③ to adjust the pressure.

- To increase the pressure, turn it clockwise.
- To decrease the pressure, turn it counterclockwise.

Keep the pressure to a minimum for stable sewing performance.

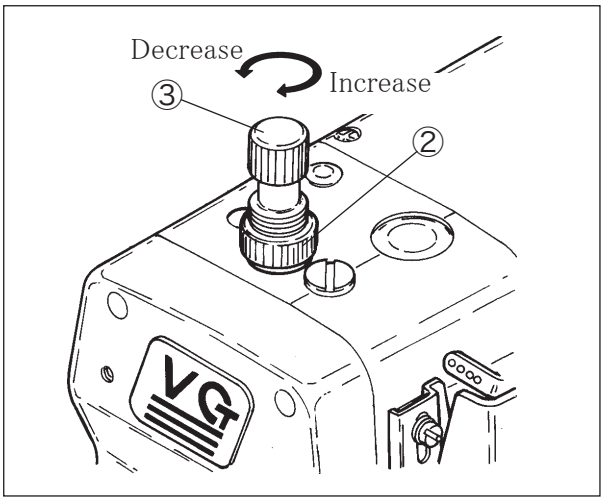


Fig. 5-6

5.6 Adjusting position of presser foot

⚠CAUTION

Before adjusting, ALWAYS turn the power switch OFF and check that the motor has already stopped.

Adjust right and left position of the needle holes of the presser foot.
Loosen the screw ④. Move the front of the presser foot right or left so that the needle drops in the center of the needle drop.
Then, tighten the screw ④ securely.

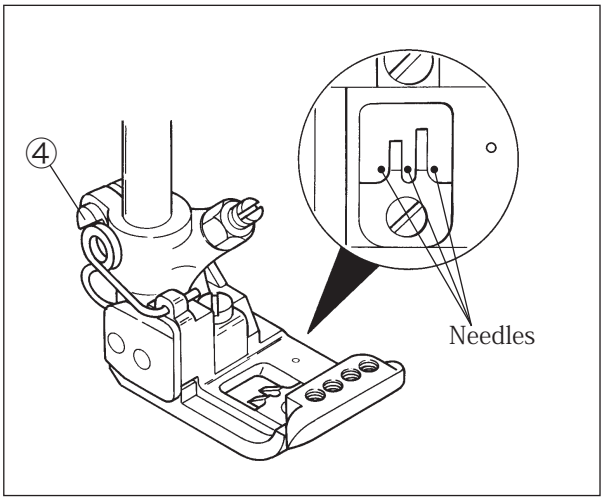


Fig. 5-7

⚠CAUTION

Before lubricating, ALWAYS turn the power switch OFF and check that the motor has already stopped.

5.7 Adjusting movement of differential feed dog

The differential ratio has been set from 1:0.7 to 1:1.4 at shipment.
When aligned the differential feed lever (right) ① with the line ② of the differential feed graduations, the movement of the differential feed dog is the same as that of the main feed dog (differential ratio 1:1), resulting in uniform sewing.

(1) Loosen the lock nut ③.
(2) Turn the adjusting screw ④ to adjust the movement of the differential feed dog.
- ● To increase the movement for gathering, turn it clockwise.
- ● To decrease the movement for stretching, turn it counterclockwise.

(3) Tighten the lock nut ③ securely.

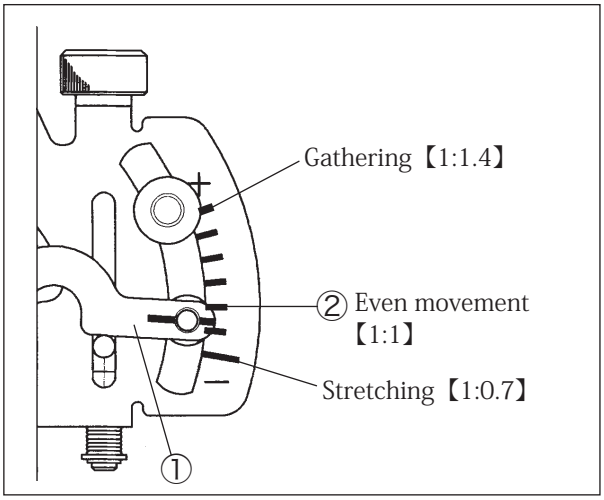


Fig. 5-8

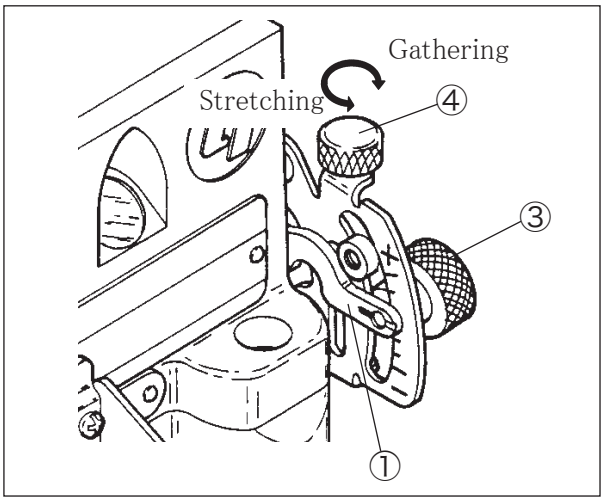


Fig. 5-9

5.8 Adjusting stitch length

Stitch length is adjustable from 1.4 to 3.6 ㎜. Table 4 shows the number of stitches per inch (25.4 ㎜) and 30 ㎜ converted to the stitch length.

The main feed lever stopper ⑤ has been adjusted so as to stop at 3.6 ㎜ at the maximum with the screw ⑥ at shipment.

Stitch length (㎜)	Number ou stitch (per 1 inch)	Number of stitch (per 30 ㎜)
1.4	18	21
2.0	13	15
3.0	8.5	10
3.6	7	8

Table 4

Adjusting procedure

(1) Loosen the lock nut ①.

(2) Align the end of the main feed lever ④ with the required position on the main feed graduations ③. Turn the main feed bar adjusting screw ② to adjust it.

- To make the stitch length smaller, turn it clockwise.
- To make the stitch length larger, turn it counterclockwise.

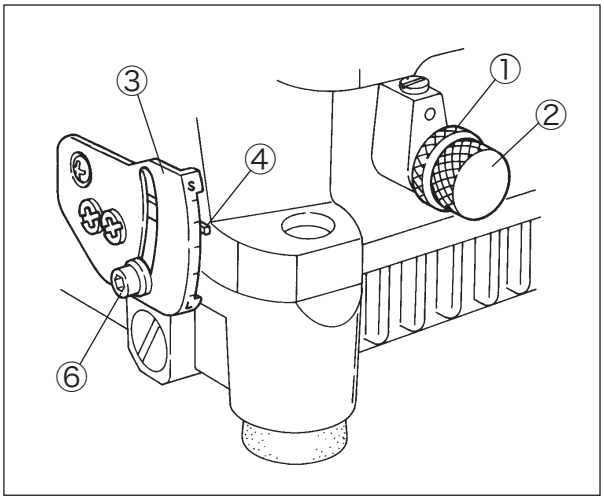


Fig. 5-10

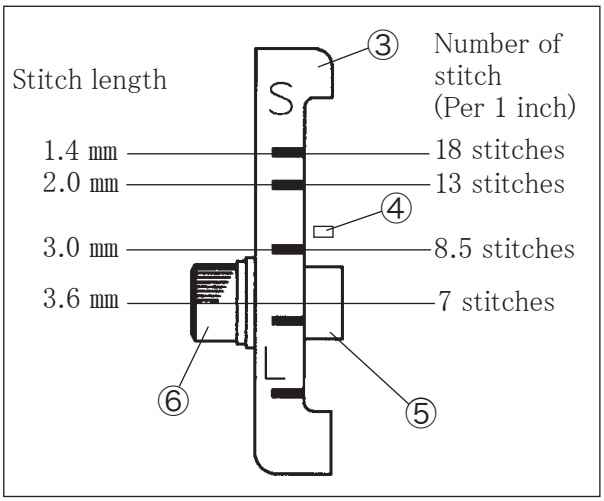


Fig. 5-11

5.9 Hemming guide (left)

(1) Loosen the screw ② of the hemming guide (left) ①.
(2) Align the right on the guiding part of the hemming guide (left) ① with that of the upper knife ③.
(3) Tighten the screw ② securely.

SUPPLEMENT

See "7.1 Adjusting trimming position of material" to adjust the right and left position of lower material.

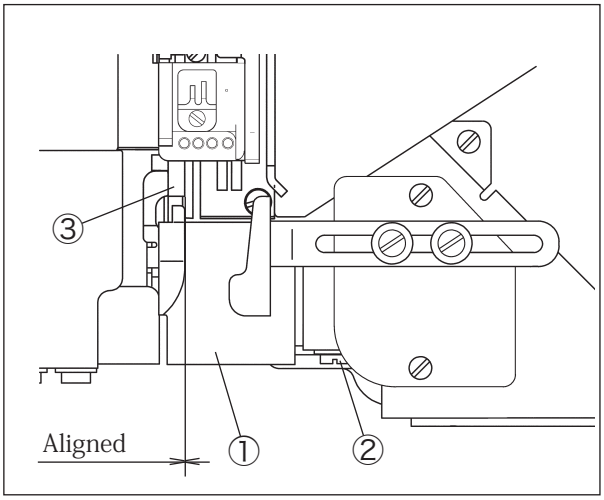


Fig. 5-12

5.10 Trimming width of material

Install or remove the folder spacer ⑤ on the guiding part of the hemming guide (left) ① to change the trimming width of a material.

When sewing with the folder spacer ⑤, the trimming width is 3.0 ㎜.
When sewing without it, the trimming width is 5.0 ㎜.

Remove the screw ④ to remove the folder spacer ⑤.

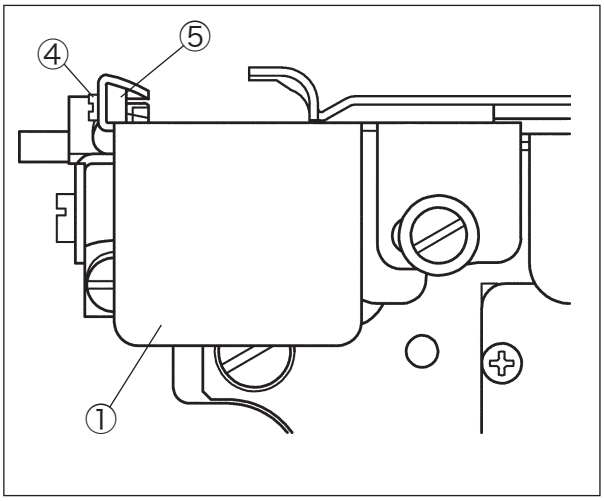


Fig. 5-13

5.11 Hemming guide (right)

(1) Loosen the screws ② of the hemming guide (right) ①.
(2) Align the right end of the hemming guide (right) ① with that of folded fabric set for hem width.
(3) Tighten the screws ② securely.

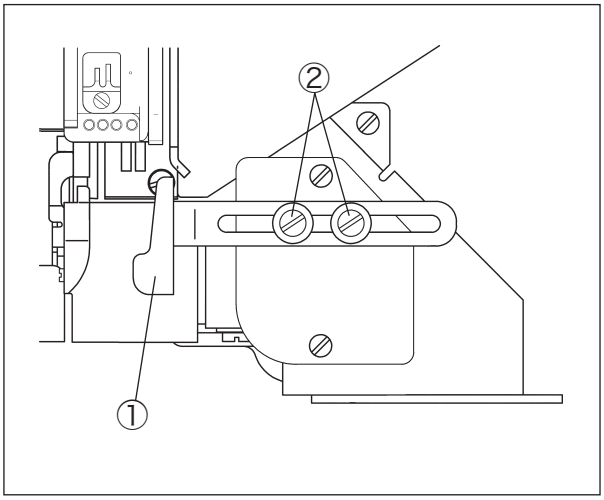


Fig. 5-14

5.12 Fabric guide (right)

(1) Loosen the screws ④ of the fabric guide (right) ③.
(2) Align the left end of the fabric guide (right) ③ with the guiding part of the hemming guide (right) ①.
(3) Tighten the screws ④ securely.

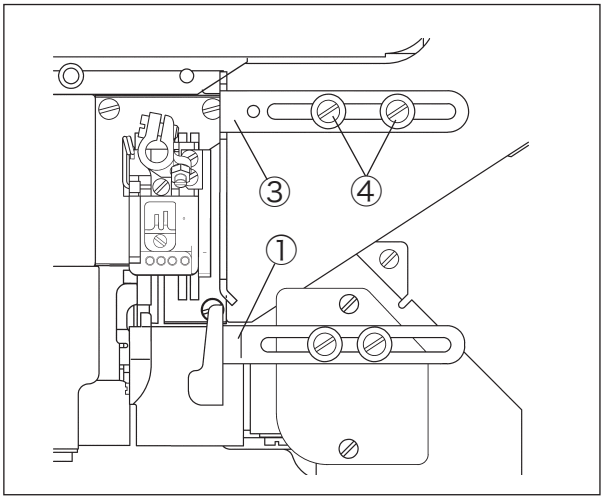


Fig. 5-15

5.13 Pressure of walking presser foot

The walking presser foot can effect on prevention of ply shift between upper and lower materials for hemming operation, also can feed materials smoothly even if running at high speed of 5500 sti/min and over.
Increase the pressure if fed a lower material too much and decrease the pressure if fed a upper material too much.

Loosen the screw ① and turn the nut ② to adjust the pressure.

- To increase the pressure, turn it clockwise.
- To decrease the pressure, turn it counterclockwise.

After adjusting, turn the screw ① clockwise and tighten the nut ② securely.

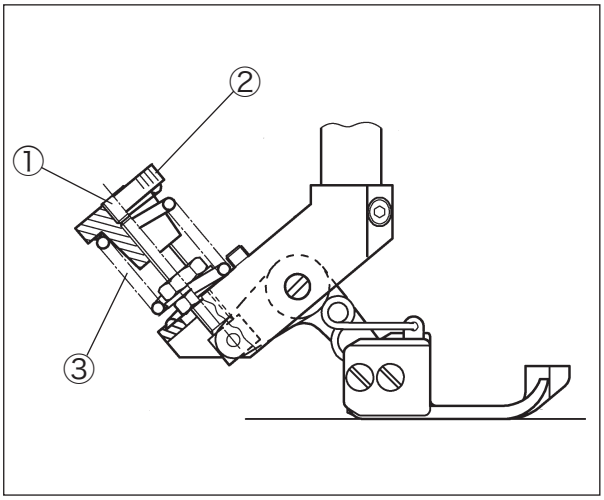


Fig. 5-16

Supplement

Too high pressure of the walking presser foot ③ reduces ply shift prevention.

⚠CAUTION

Before adjusting, ALWAYS turn the power switch OFF and check that the motor has already stopped.

5.14 Raising upper feed roller (with puller mechanism)

Move the upper feed roller lifting lever ② up to raise the upper feed roller ① when pulling out a material due to material jam.
Move up the upper feed roller lifting lever ② to the right above to make the upper feed roller ① stay at the up position.

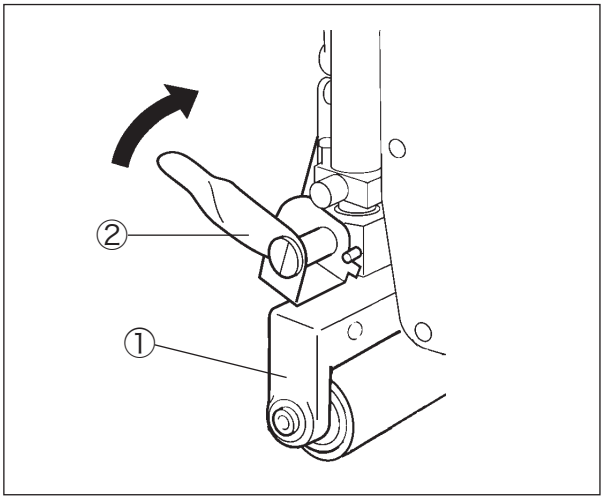


Fig. 5-17

5.15 Pressure of upper feed roller (with puller mechanism)

Adjust the pressure of the upper feed roller as low as possible to feed a material while putting between the upper and lower feed rollers.
Turn the adjusting screw ③ to adjust it.

- To increase the pressure, turn it clockwise.
- To decrease the pressure, turn it counterclockwise.

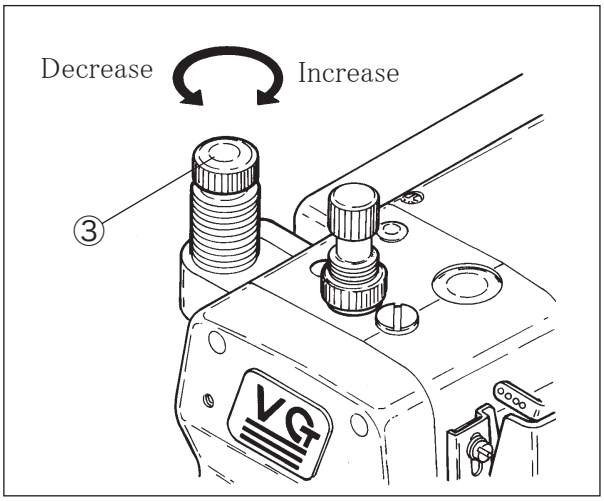


Fig. 5-18

⚠CAUTION

Before adjusting, ALWAYS turn the power switch OFF and check that the motor has already stopped.

5.16 SP device and HR device

Use SP device (needle thread oiling) and HR device (needle point cooling) equipped as standard to prevent thread breakage and skip stitch when running a machine at high speed or using synthetic thread and/or synthetic material.

Use dimethyl silicon oil.
Open the lid ① of SP container and the lid ② of HR container to check the oil level.

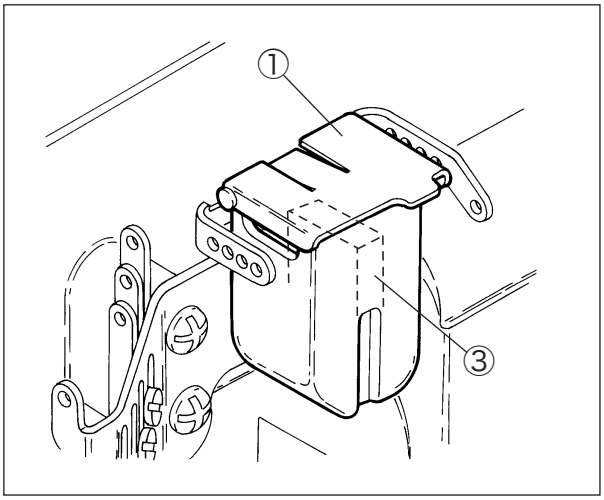


Fig. 5-19

⚠CAUTION

1. **When not using SP device and HR device, remove the felts. If not removed, it may occur irregular condition during sewing.**
2. **If silicone oil is attached to the parts other than SP and HR devices, it can cause the machine trouble. Be sure to wipe it away.**

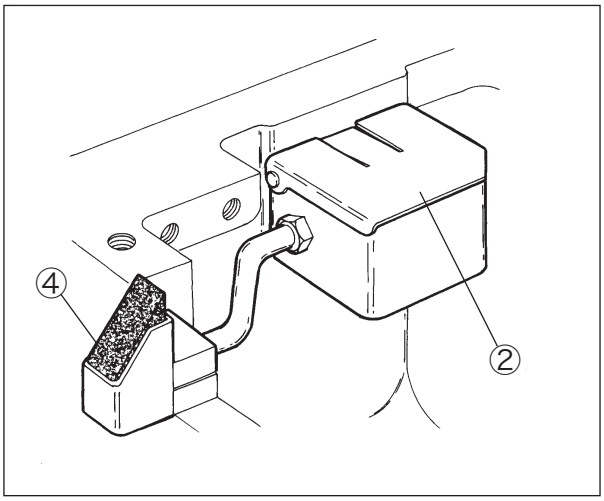


Fig. 5-20

5.17 Cleaning the machine

⚠CAUTION

Before cleaning, ALWAYS turn the motor switch OFF and check that the motor has already stopped.

The sewing machine should be cleaned at the end of every working day.
Grooves of stitch plate and the area around feed dogs, looper thread take-up and oil filter screen should be cleaned once a week.

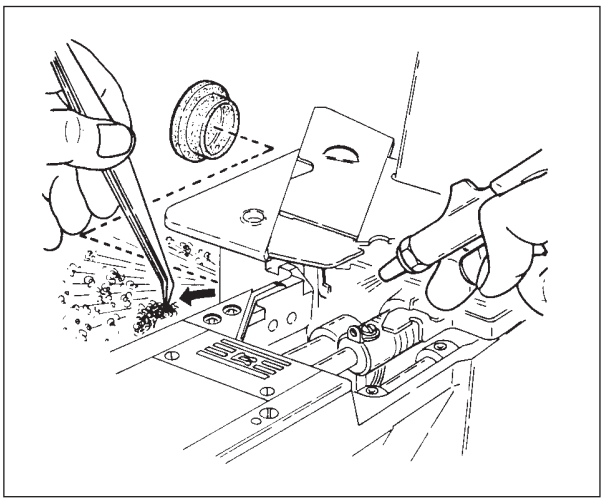


Fig. 5-21

ⓘADVICE

If the oil filter screen is clogged with dust, oil in the cylinder does not return to the oil reservoir. It can cause oil leakage.
Clogged dust can cause breakage to parts and oil leakage.

Checking at sewing factory (maintenance by technician)

Daily maintenance

(1) Before operation, remove the machine cover and re-thread correctly. Make sure there is no slack. Check that the thread hanger is right above the spool seat discs of the thread stands (the thread stands should be fixed securely).
(2) Check the lubricating and silicone oil amount. Supply them if necessary.
(3) Check the order of threads.
(4) Check bend of needles, damage to tips, and the setting positions respectively.
(5) Check the sharpness of knives.
(6) Check the seam by that sewing the material for test.
- ◆ stitch length, differential feeding
- ◆ adjusting thread tension

(7) Check the existence of seal plug.

Weekly maintenance

(1) On weekends, clean the machine carefully after removing the presser foot and the stitch plate.
(2) Check the tension of the V-belt.
(3) Check and supply the lubricating oil.
(4) Check oozed oil due to looseness of the seal plug and change it if necessary.

6. Adjustments

⚠CAUTION

Before adjusting, ALWAYS turn the power switch OFF and check that the motor has already stopped.

6.1 Needle thread tension

Needle thread eyelet

As standard align the center of the screws with the lines on the needle thread eyelet bracket ④ as below.

Right needle thread eyelet ① : top line
Middle needle thread eyelet ② : middle line
Left needle thread eyelet ③ : bottom line

- To tighten the needle thread, raise the needle thread eyelet.
- To loosen the needle thread, lower it.

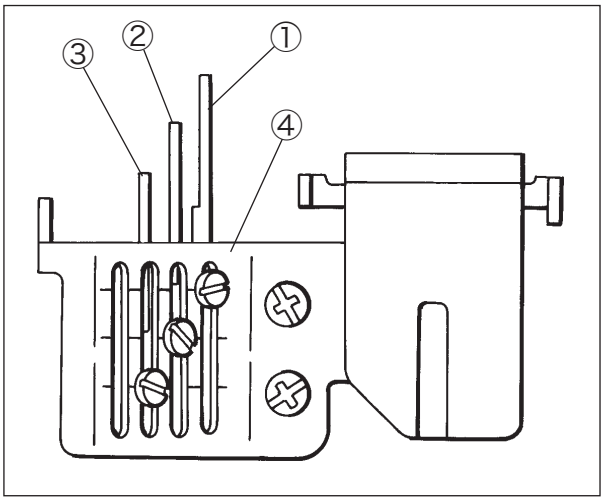


Fig. 6-1

Needle thread guide

For standard position of needle thread guide ⑤, make the distance between the center of the eye in the needle thread take-up ⑥ and the top of the needle thread guide ⑤ to 4.0 mm when the needle thread take-up ⑥ is at the lowest point.
Make adjustment by loosening the screw ⑦.

- To make the needle thread loop larger or when using stretchable thread, raise the needle thread guide ⑤.
- To make the loop smaller, lower it.

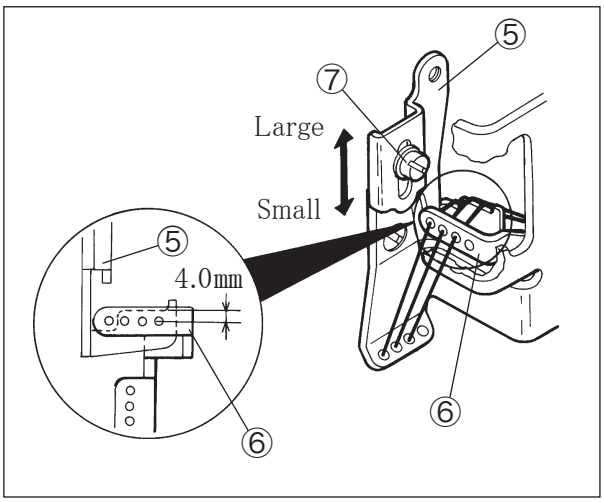


Fig. 6-2

6.2 Top cover thread tension

Align the center of the slot of the top cover thread eyelet (upper) ① with the center of the screw ② as the standard position.
Make adjustment by loosening the screws ②③.

- To increase the feeding amount of the top cover thread, raise the top cover thread eyelet (upper) ①.
- To decrease the feeding amount of the top cover thread, lower the top cover thread eyelet (upper) ①.

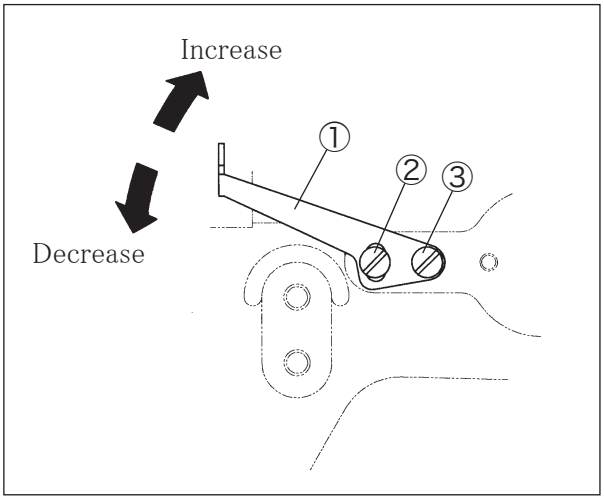


Fig. 6-3

ADVICE

When using stretchable thread like woolly, make the top cover thread eyelet (upper) ① a little higher than the standard.

6.3 Looper thread tension

The standard position is that the eye centers of the thread take-up eyelets (left) ⑤ and (right) ⑥ are 3.0 mm lower than the lines ④ on the thread take-up eyelet holder.
Loosen the screws of both thread take-up eyelets ⑤⑥ to adjust them.

- To tighten the looper thread, raise both eyelets.
- To loosen the looper thread, lower both eyelets.

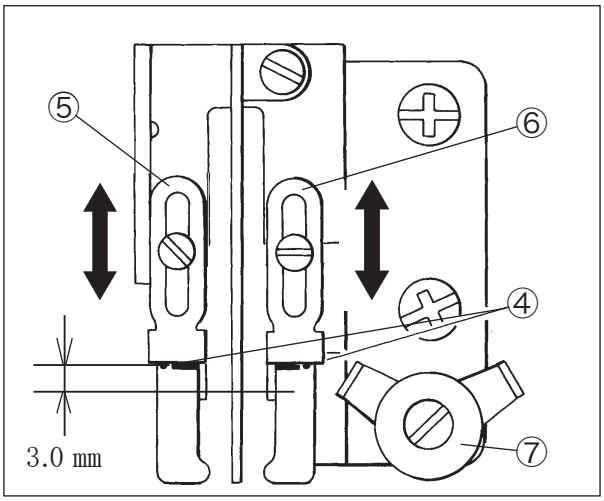


Fig. 6-4

ADVICE

When using stretchable thread, move the thread take-up eyelets ⑤⑥ to the lowest points. Do not thread through the top cover tension disc ⑦.

6.4 Relation between needle and spreader

6.4.1 Spreader

(1) Loosen the screws ③④ of the spreader holder. (Fig. 6-7)
(2) Make the clearance between the left needle and the hook ② of the spreader ① to 0.5 to 0.8 mm. (Fig. 6-5)
(3) Make the distance between the center of the left needle and the hook ② to 4.5 to 5.5 mm when the spreader ① is at the extreme left. Then tighten the screw ④ securely. (Fig. 6-5, 6-7)
(4) Make the height from the surface of the stitch plate to the bottom of the spreader to 8.5 to 9.5 mm. Then tighten the screw ③ securely. (Fig. 6-6, 6-7)

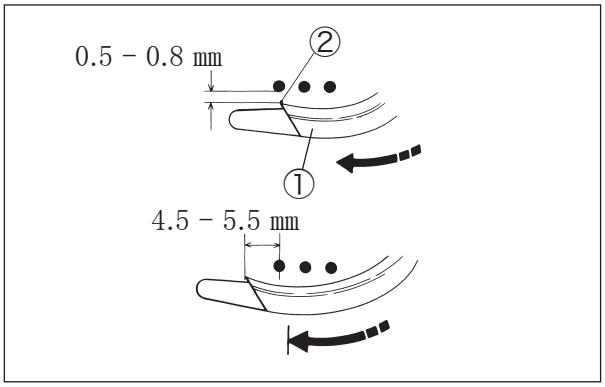


Fig. 6-5

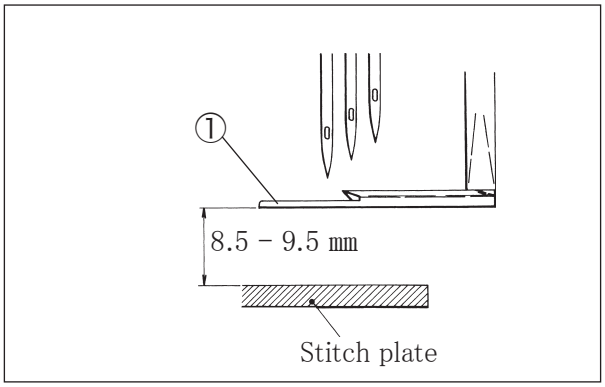


Fig. 6-6

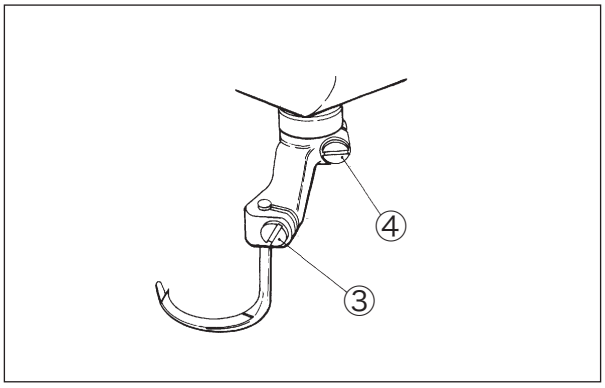


Fig. 6-7

HINT

Adjust the height of the spreader so that the top cover thread can pass behind the right needle and be caught by the left needle within adjustable range based on the needle distance.

6.4.2 Top cover thread guide

(1) Loosen the screws ② of the top cover thread guide ①. (Fig. 6-8)
(2) Make the clearance between the top surface of the spreader ③ and the bottom of the top cover thread guide ① to 0.5 mm. (Fig. 6-8)
(3) Rotate the handwheel to make the spreader ③ to extreme right. (Fig. 6-9)
(4) Adjustment the top cover thread guide ① to make the center of slot of the top cover thread guide ① on the hook ④. (Fig. 6-9)
(5) Tighten the screws ② securely. (Fig. 6-8)

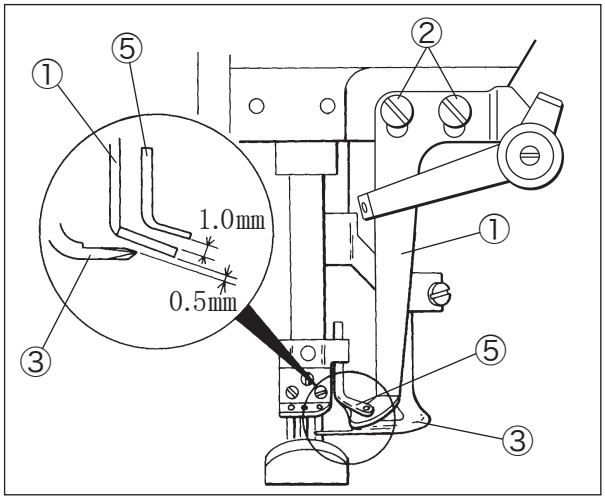


Fig. 6-8

6.4.3 Top cover thread eyelet

(1) Loosen the screw ⑥ of the top cover thread eyelet ⑤. (Fig. 6-9)
(2) Make the clearance between the top of the top cover thread guide ① and the top cover thread eyelet ⑤ to 1.0 mm when the needle bar is at the lowest point. (Fig. 6-8)
(3) Set the eye of the top cover thread eyelet ⑤ on the extending line from the slot of the top cover thread guide ①. (Fig. 6-9)
(4) Tighten the screw ⑥ securely. (Fig. 6-9)

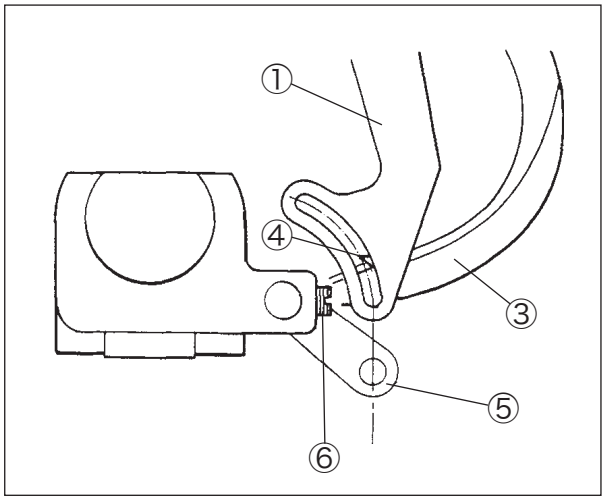


Fig. 6-9

6.5 Distance between needle and looper

The distance between the looper tip and the center of the right needle changes according to the needle distance when the needles are at the lowest points and the looper ① is at the extreme right.

See Table 5 and loosen the screw ② of the looper holder to make adjustment of the distance.

SUPPLEMENT

The distance between the center of the needle bar and the looper ① tip is 6.0 mm even if the needle distance changes.

needle distance(mark)	gauge mark	looper's distance
3.2 ㎜ (32)	A	4.4 ㎜
4.0 ㎜ (40)	B	4.0 ㎜
4.8 ㎜ (48)	C	3.6 ㎜
5.6 ㎜ (56)	D	3.2 ㎜
6.4 ㎜ (64)	E	2.8 ㎜

Table 5

The distance can be adjusted easily by using timing gauge (No. 95220).
The gauge is a special order part. Place an order with our agents or directly with us, if needed.

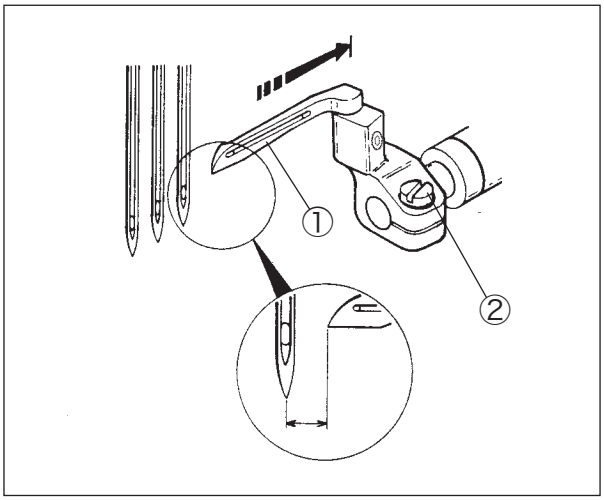


Fig. 6-10

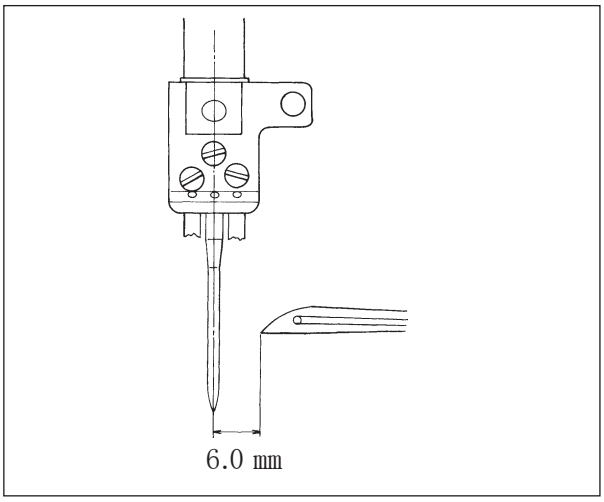


Fig. 6-11

6.6 Using timing gauge

The gauge has the marks (A, B, C, D, E) for each needle distance. (Table 5)

Move the looper to the extreme right. Keep fitting the right needle into the groove "V" according to the needle distance, and fit the looper tip to the gauge. Then, tighten the screw ② securely.

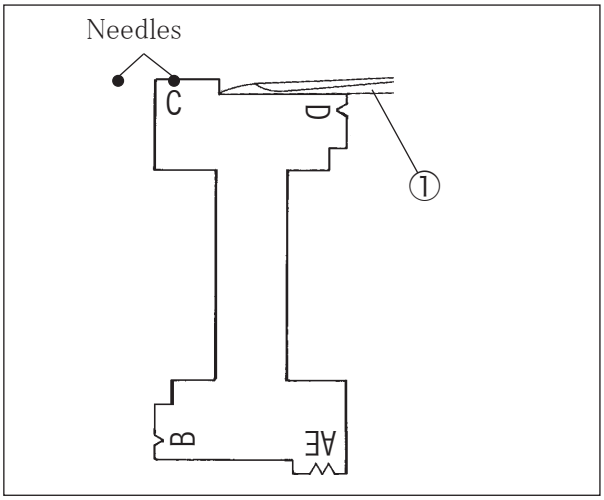


Fig. 6-12

6.7 Height of needle

(1) Install the needle into the left hole of the needle clamp.
(2) Make sure the looper has been inserted into the looper holder fully.
(3) Turn the handwheel until the looper tip meets the center of the left needle.
(4) Loosen the screw ① of the needle bar bracket and move the needle bar up and down. Make the looper tip pass the position that 0.8 to 1.3 mm above the top of the needle eye.
(5) Tighten the screw ① securely. Make sure that the needle drops in the center of the needle holes on the stitch plate.

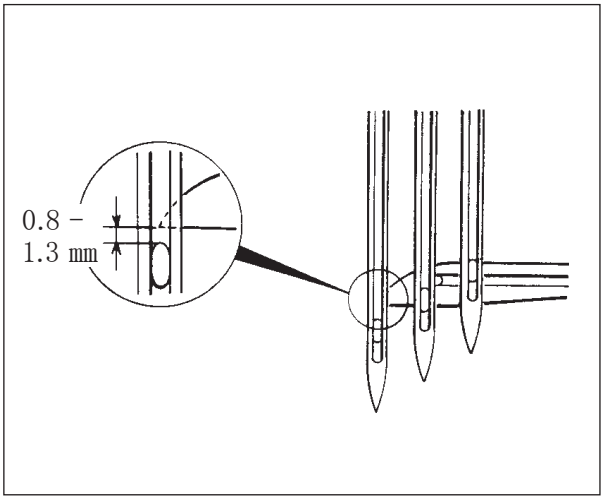


Fig. 6-13

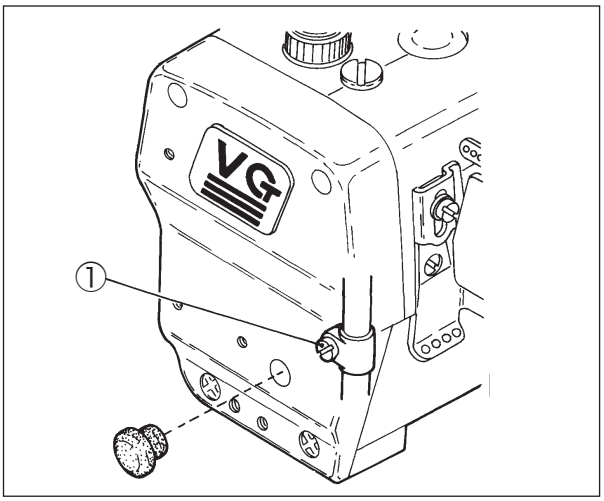


Fig. 6-14

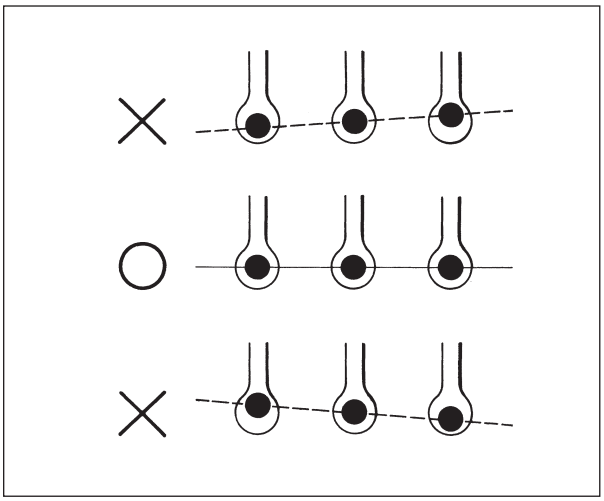


Fig. 6-15

6.8 Back and forth position of needle and looper

(1) Turn the handwheel until the looper tip ④ meets the center of the left needle ⑤.
(2) Loosen the screw ③ and move the looper holder back or forth. Make the clearance between the back of the left needle ⑤ and the looper tip to 0.2 to 0.3 mm. Then, tighten the screw ③ securely.

ATTENTION

When tightening the screw ③, back and forth position of the looper may be shifted. Recheck the position after tightening it.

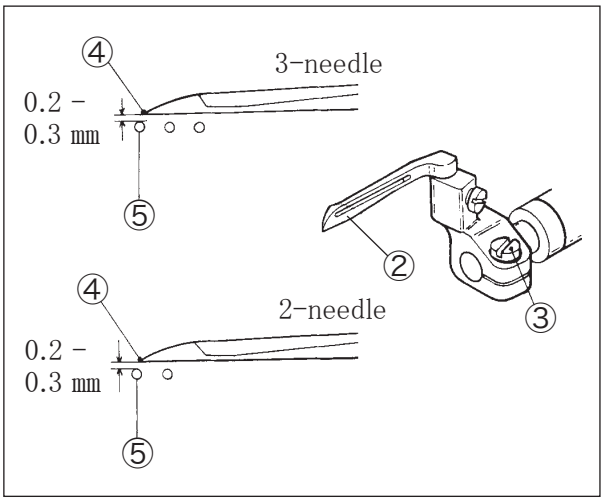


Fig. 6-16

6.9 Needle and needle guard (rear)

(1) Turn the handwheel clockwise to lower the needles at the lowest points.
(2) Loosen the screw ①.
(3) Align the line ③ on the needle guard (rear) ② with the centers of the needle eyes.
(4) Tighten the screw ① securely.
(5) Turn the handwheel until the looper tip meets the center of the right needle.
(6) Loosen the screws ①④, and move the needle guard (rear) ② back and forth. Make the clearance between the right needle and the looper tip to 0 to 0.05 mm.
(7) Check the clearance between the left needle and the needle guard (rear) ② is 0 to 0.05 mm with keeping (6).
(8) Tighten the screws ①④ securely.

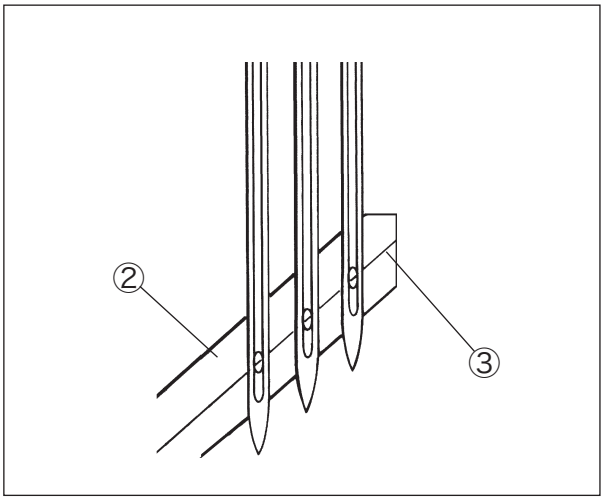


Fig. 6-17

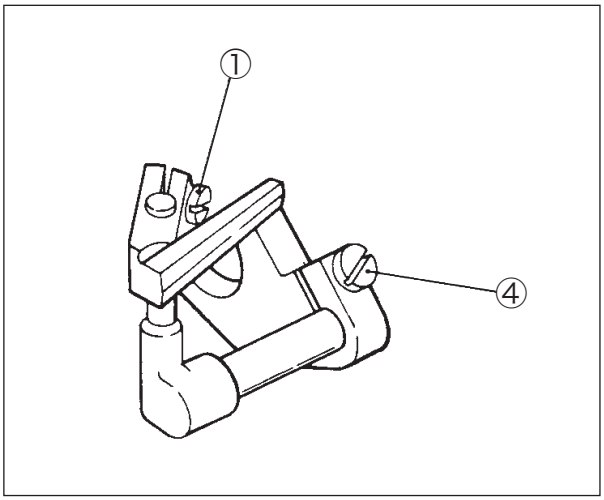


Fig. 6-18

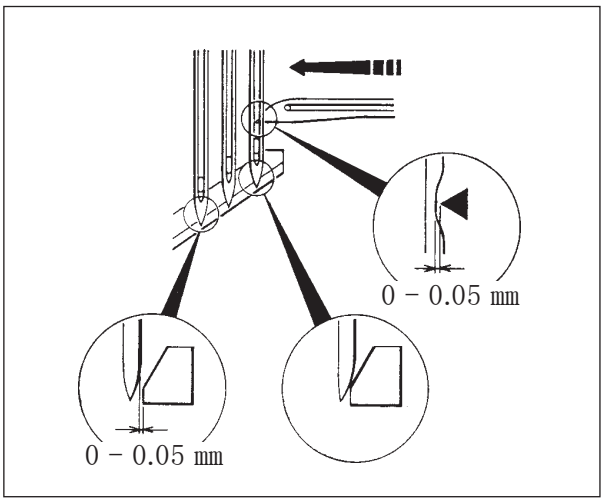


Fig. 6-19

6.10 Needle and needle guard (front)

(1) Turn the handwheel clockwise until the looper tip meets the center of the left needle.
(2) Loosen the screw ①. Adjust the height from the needle point to the angular part of the needle guard (front) ② to 1.5 to 2.0 mm.
(3) Tighten the screw ① securely.
(4) Loosen the screws ①③. Adjust the clearance between the needle guard (front) ② and the left, or right needles to 0 to 0.3 mm respectively.
(5) Tighten the screws ①③ securely.

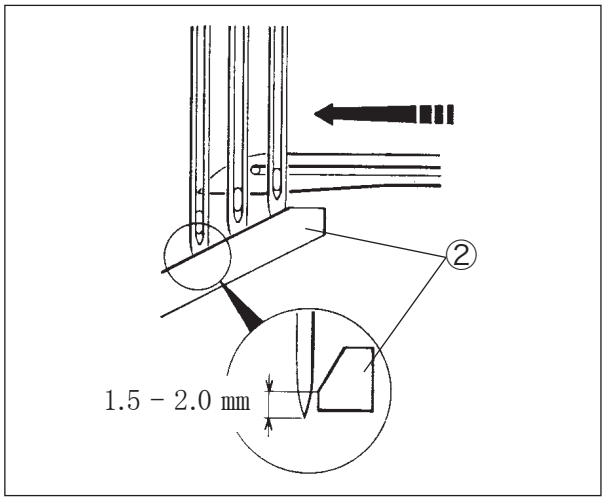


Fig. 6-20

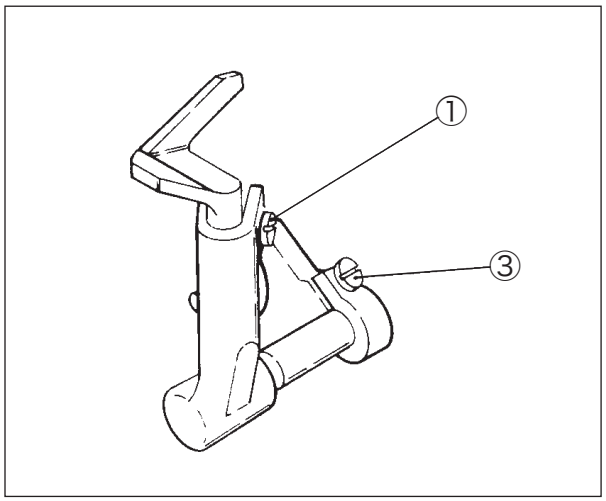


Fig. 6-21

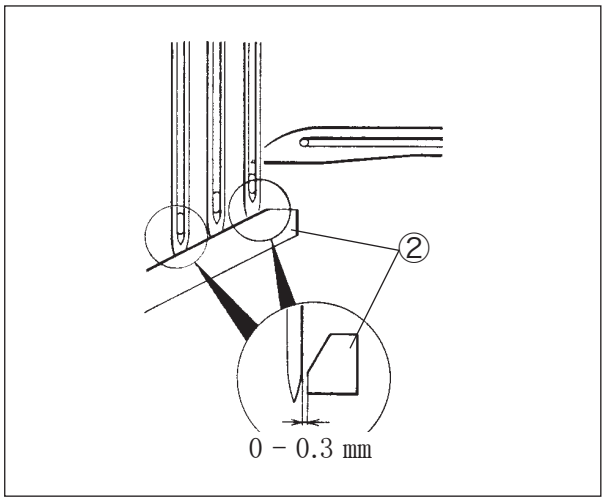


Fig. 6-22

6.11 Height of feed dog

Adjust the height from the top of the stitch plate to the tops of the differential feed dog ④ and the main feed dog ⑤ to 1.0 to 1.2 mm when the feed dogs are at the highest points as standard. Also they are parallel to the top of the stitch plate.
Loosen the screws ⑥⑦ to adjust them.

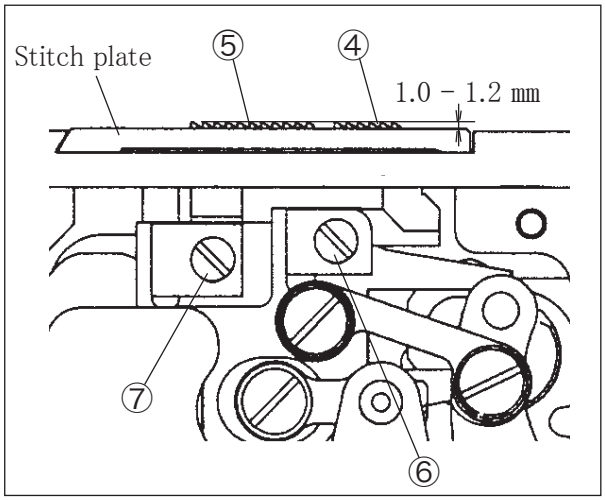


Fig. 6-23

6.12 Changing range of differential ratio

Differential ratio 1:1.1 to 1:2.0

(1) Remove the side cover ① (three pcs. of screws).
(2) Remove the screw ③ of the differential feed bar connection ②.
(3) Fix the differential feed bar connection ② in the hole ④ with the screw ③.

NOTICE

Max. stitch length of the main feed dog is 2.3 mm in a differential ratio of 1:2.0, and 3.0 mm in 1:1.5 respectively.

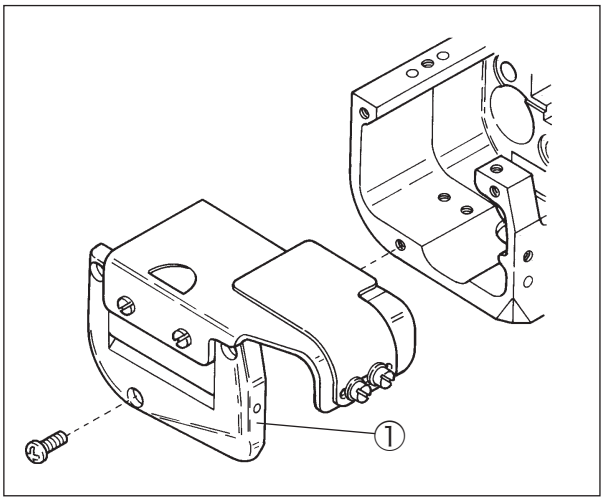


Fig. 6-24

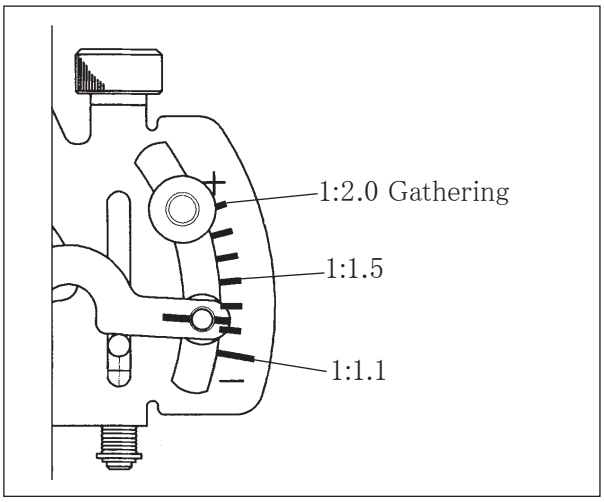


Fig. 6-25

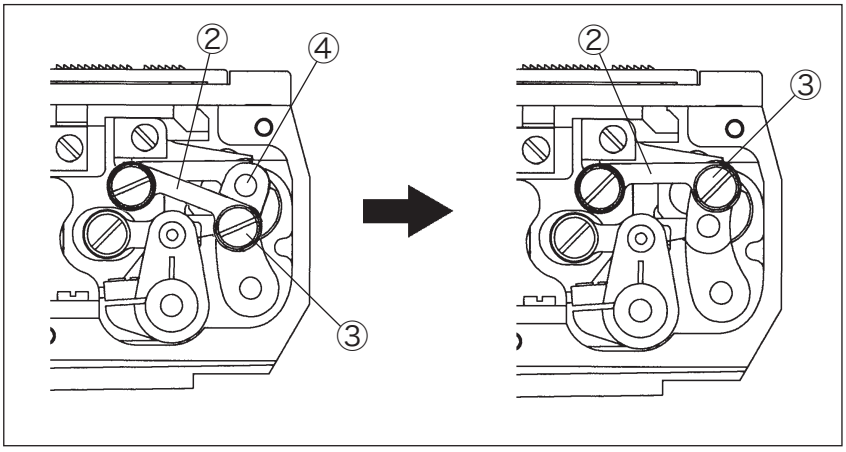


Fig. 6-26

6.13 Presser foot lift

The presser foot lift for the needle distance 5.6 mm is as follows:

- with spreader: 5.5 mm
- without spreader: 7.0 mm

(1) Loosen the lock nut ①.
(2) Lower the lifter lever ② to make the clearance between the top of the stitch plate and the bottom of the presser foot to 5.5 mm (7.0 mm).
(3) Adjust the screw ③ to make it touch the lifter lever ② when the presser foot is raised up 5.5 mm (7.0 mm).
(4) Tighten the lock nut ① securely.
(5) Loosen the screws ⑤ of the collar ④.
(6) Make the clearance between the presser bar bushing ⑥ and the collar ④ to 0.2 mm when the presser foot is raised up 5.5 mm (7.0 mm).
(7) Tighten the screws ⑤ securely.

Except for needle distance of 5.6 mm, adjust the presser foot lift by referring to that for the needle distance of 5.6 mm as a standard.
For a model with spreader, adjust the presser foot lift so that a clearance of 0.5 mm is made between the spreader and the presser foot under horizontal condition.
For a model without spreader, adjust the presser foot lift so that the tip of the left needle does not stick out from the base of the presser foot under horizontal condition.

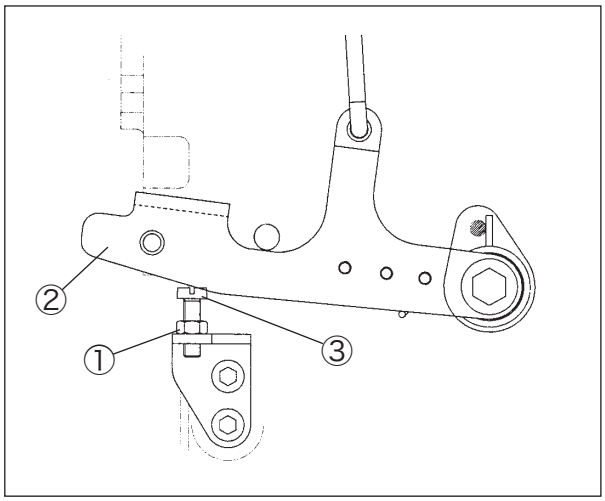


Fig. 6-27

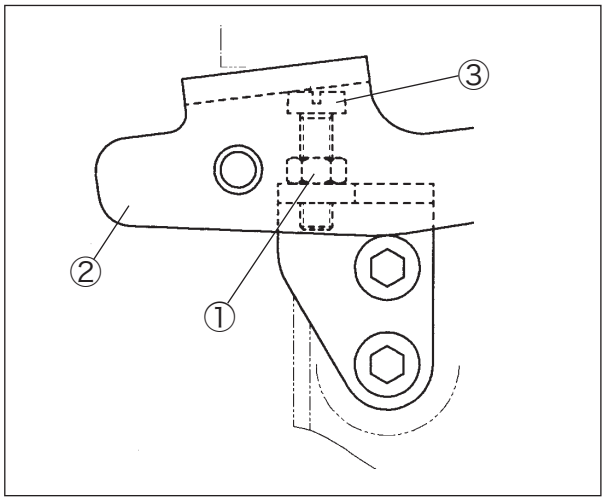


Fig. 6-28

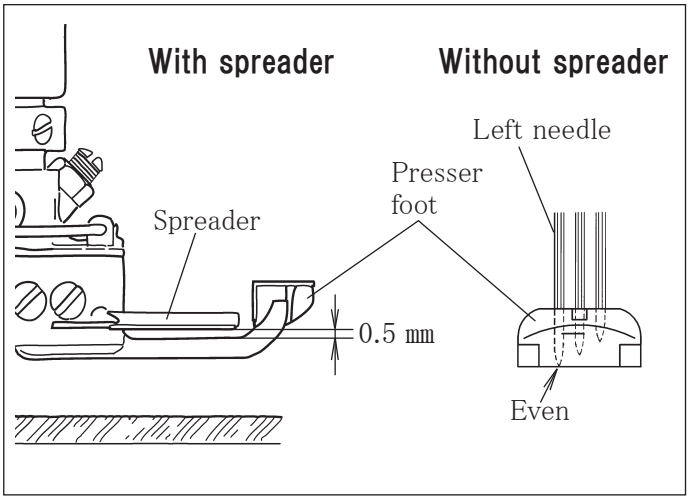


Fig. 6-29 In case of expect needle distance of 5.6 mm

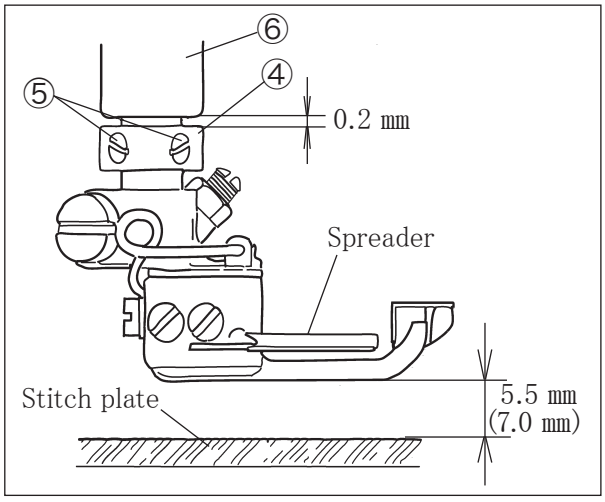


Fig. 6-30 In case of needle distance of 5.6 mm

6.14 Replacing fabric presser

The fabric presser ② for hem width 19.1 ㎜ (3/4 inches) has been set on the right of the presser foot① at shipment. Also packed for 25.4 mm (one inch). Use the fabric presser depending on hem width.
To remove the fabric presser ②, loosen the screws ③ of the presser foot ①.

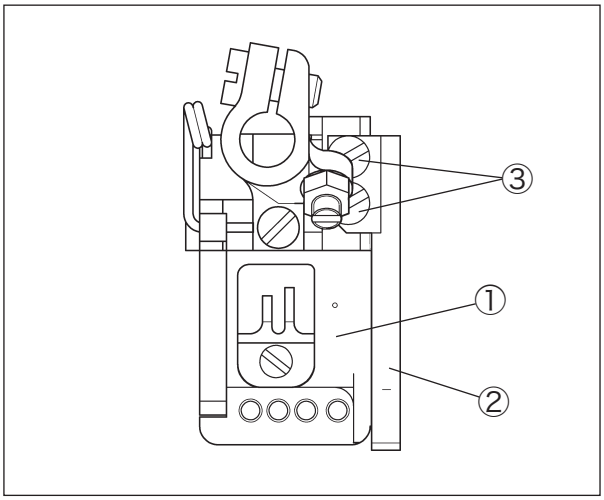


Fig. 6-31

6.15 Feeding amount of puller (with puller mechanism)

(1) Remove the top cover seal plug ①.
(2) Rotate the handwheel until the screw ② of the upper feed roller regulator comes right above.
Loosen the screw ② with a hexagon socket screw-driver.
(3) Rotate the handwheel until the adjusting screw ③ comes right above. (Fig. 6-32)
(4) Turn the adjusting screw ③ to adjust the feeding amount.

- To decrease the amount, turn it clockwise.
- To increase the amount, turn it counterclockwise.

(5) Tighten the screw ② with a tightening torque of 2.5 N·m securely.

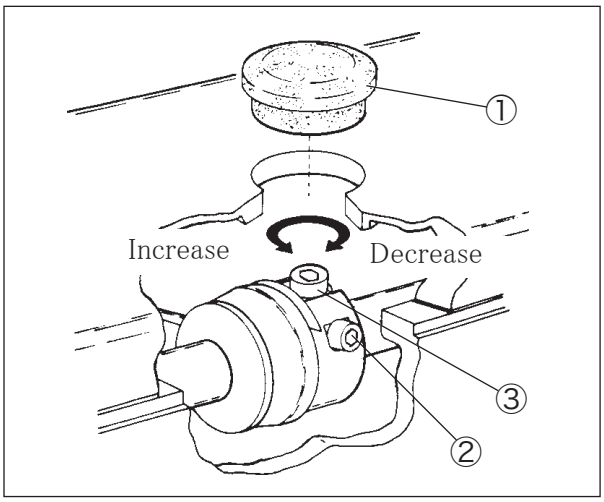


Fig. 6-32

To make fine adjustment, loosen the nut ⑥ of the upper feed roller lever rod ⑤ for the upper feed roller lever ④. And move the nut ⑥ up or down to adjust it.

- To decrease the amount, move it up.
- To increase the amount, move it down.

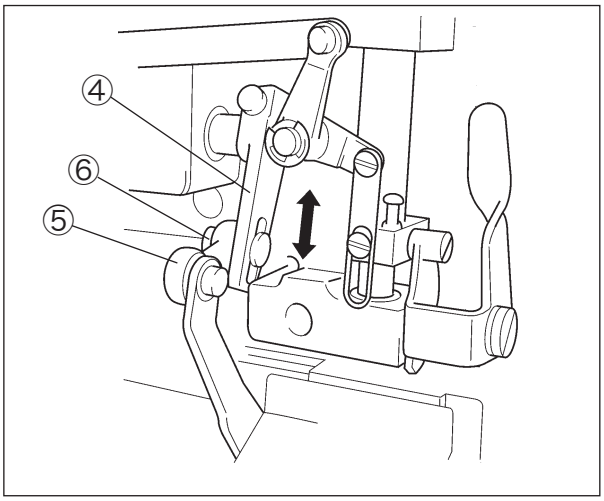


Fig. 6-33

ATTENTION

Before adjusting, supply oil into two holes on the upper feed roller lever rod ⑤.

6.16 Pressure of clutch tension spring (with puller mechanism)

(1) Loosen two screws ⑧ to tighten the collar ⑦ slightly.
(2) Turn the adjusting screw ⑨ to adjust the pressure of the clutch tension spring ⑩.

- To increase the pressure for stretching, turn it clockwise.
- To decrease the pressure for gathering, turn it counterclockwise.

Keep the pressure as to turn the spring ⑩ manually.
(3) Tighten two screws ⑧ securely.

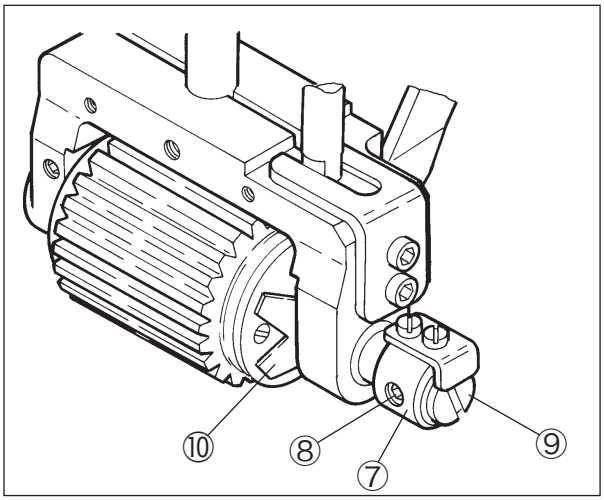


Fig. 6-34

6.17 Adjustment of walking presser foot

Correct balance between the presser bar spring ① and the walking presser foot spring ② is required to operate the walking presser foot properly.

(1) Make the height of the walking presser foot spring ② to 20 mm. See "5.13 Pressure of walking presser foot".
(2) Remove the head cover.
(3) Loosen the adjusting screw ⑤ to set the presser bar connecting bracket ③ 2.7 mm below the top of the presser bar ④.
(4) Tighten the screw ⑦ of the presser bar stopper ⑥ in the center of the slot slightly.
(5) Make the height from the top of the arm to the top of the presser spring regulator ⑧ to 11 mm. (Standard presser spring regulator ⑬ # 77270: 33 mm)
(6) Check the bottom of the presser foot touches the stitch plate closely when the feed dog lowers under the stitch plate.
If not closely, readjust (3) to (5).
(7) Rotate the handwheel clockwise to raise the needle at the highest point. Place two materials to be sewn under the presser foot.
(8) Lower the needle tip to the anterior of the material. Loosen the screw ⑦ to adjust the height of the presser bar stopper ⑥ so that the center of the needle is aligned with that of the mark "a".
(9) Check only bottom ⑩ of the presser foot synchronized with the feed dog up and down.
If not synchronized or whole presser foot moves, readjust it.
(10) Raise the needle to the highest point. Set the bottom of the presser foot to move about 1 mm backward when raising the presser foot.
Turn the adjusting screw ⑨ to adjust it.

- To move frontward, turn it clockwise.
- To move backward, turn it counterclockwise.

Reference: For screw ⑨, make the distance from the bottom of the washer ⑪ to the hinge pin ⑫ to 9.7 mm as standard.

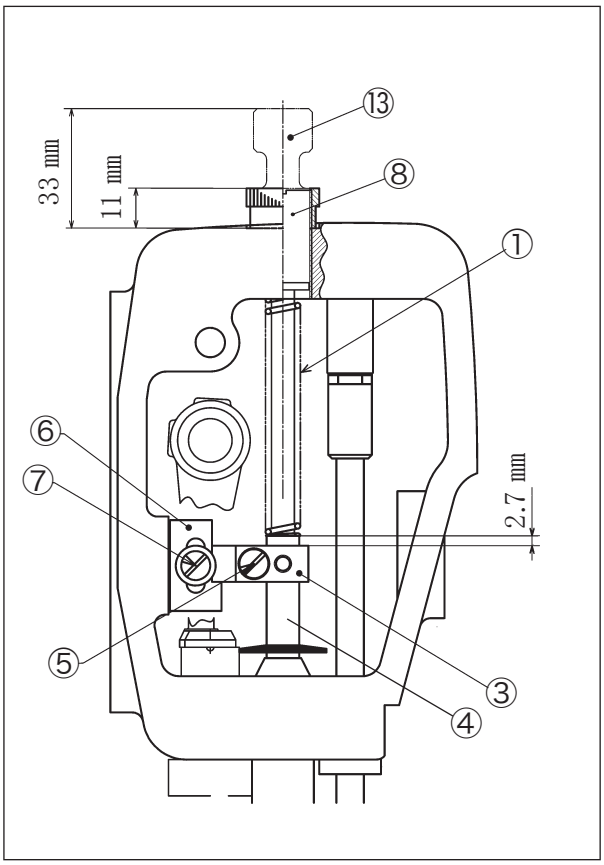


Fig. 6-41

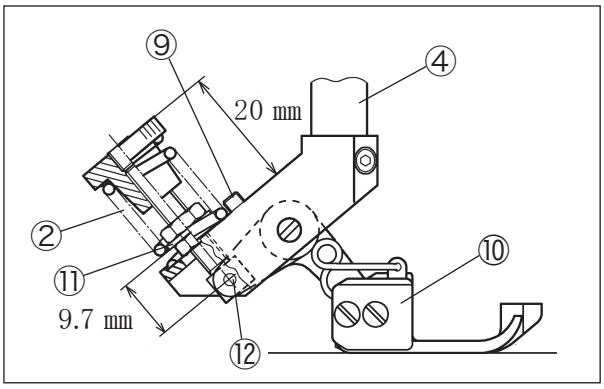


Fig. 6-42

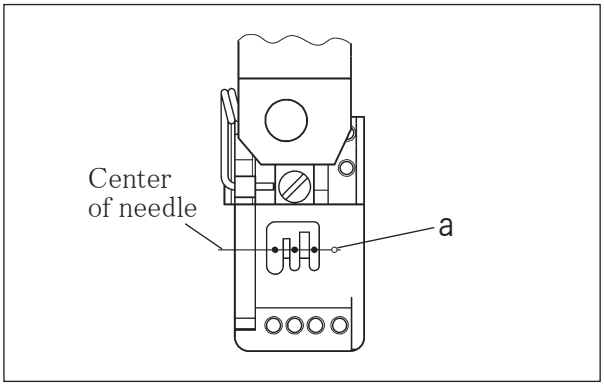


Fig. 6-43

7. Trimming mechanism

⚠CAUTION

Before adjusting, ALWAYS turn the power switch OFF and check that the motor has already stopped.

7.1 Adjusting trimming position of material

Loosen the screw ① of the lower knife braket to move the lower knife holder ② right and left. Adjust it as follows.

(1) Loosen the screw ①.
(2) Turn the adjusting screw ③ to move the lower knife holder ② at required position.
- To move it ② to the left, turn it ③ clockwise.
- To move it ② to the right, turn it ③ counterclockwise.

(3) Tighten the screw ① with a tightening torque of 1.5 to 2 N·m.

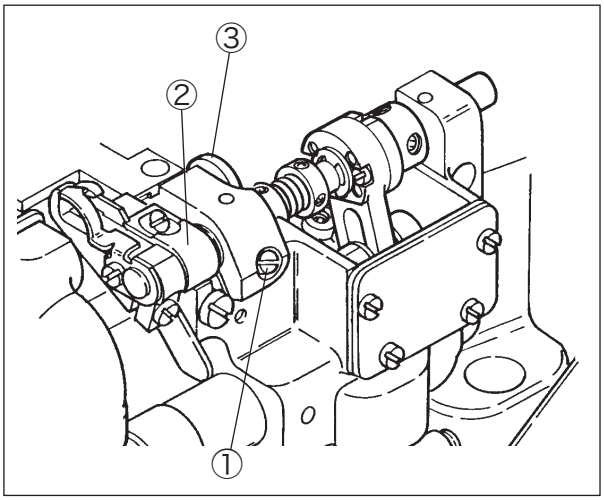


Fig. 7-1

❗ATTENTION

Refer to "7.2 Adjusting suction pipe (front)" and "7.3 Adjusting suction pipe cover" after changing trimming position of a material.

7.2 Adjusting suction pipe (front)

Set right and left position of the suction pipe (front) ② about 5 ㎜ apart from the left side of the chip receiver ④. Loosen the screw ③ to adjust the position of the suction pipe (front) ② or remove it.

☆ Suction by compressed air
Adjust the suction power with the speed controller ①. Keep the pressure to a minimum for suctioning the chips.

☆ Suction by vacuum system
Connect the flexible hose to the vacuum dust collector to adjust the suction power.
Keep the pressure to a minimum for suctioning the chips.

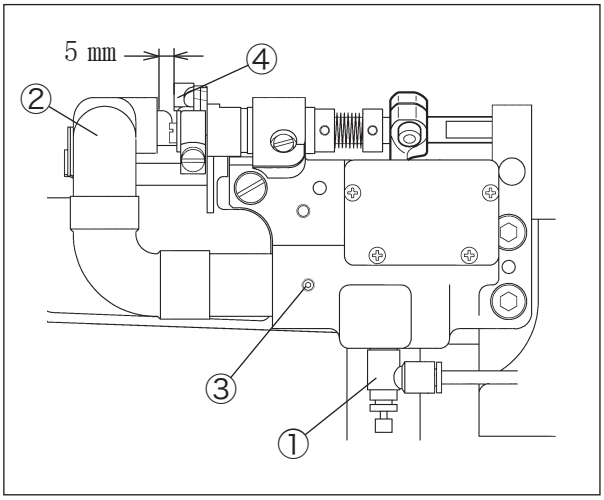


Fig. 7-2

ADVICE

If tightened the screw ③ excessively, the suction pipe (front) ② may be deformed. That may be difficult to adjust or remove it.

7.3 Adjusting suction pipe cover

Adjust the position of the suction pipe cover ⑤ after changing the position of the suction pipe (front) ②.

(1) Loosen the screws ⑥ on the suction pipe cover ⑤.
(2) Align the right side of the suction pipe cover ⑤ with the inlet of the suction pipe (front) ②.
(3) Tighten the screw ⑥ securely.

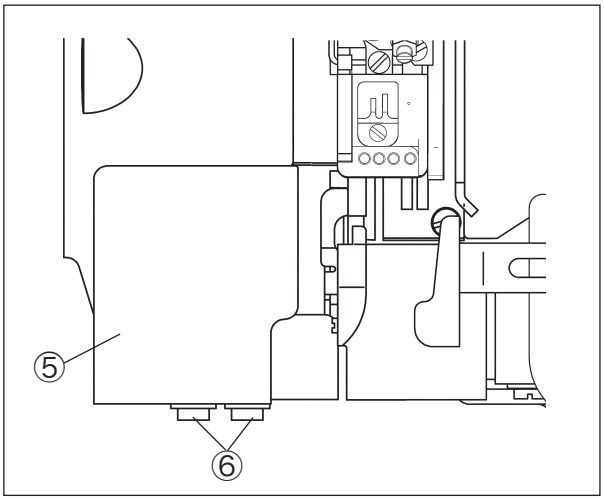


Fig. 7-3

7.4 Removing and resetting lower knife

Removing the lower knife

(1) Loosen the screw ② of the collar (left) ①.
(2) Move the upper knife holder ④ to the left and make the clearance between the upper knife ③ and the lower knife ⑤.
(3) Tighten the screw ② slightly.
(4) Loosen the screw ⑥ of the lower knife ⑤ and pull out the lower knife ⑤ downward.

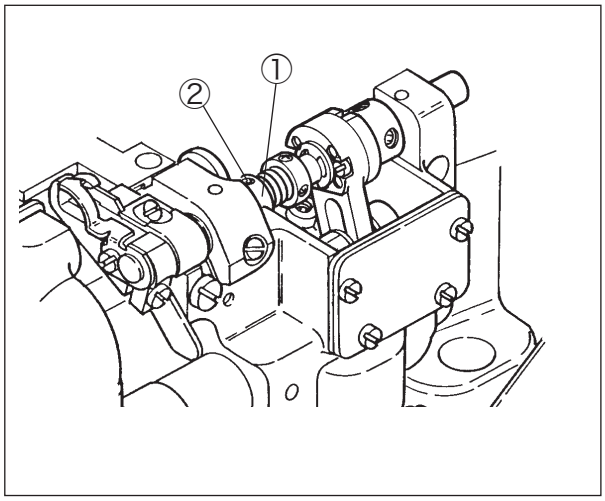


Fig. 7-4

Resetting the lower knife

(1) Make the lower knife ⑤ blade even with the top of the stitch plate. Then, tighten the screw ⑥ securely.
(2) Loosen the screw ②. The upper knife ③ touches the lower knife ⑤ with its spring.
(3) Rotate the handwheel manually to check the sharpness of the blades by setting a thread between the upper knife ③ and the lower knife ⑤.
(4) Set the top of the lower knife ⑤ 7.0 ㎜ apart from the upper knife ③ tip (at the base of the blade). Then, tighten the screw ② securely.
(5) Recheck the knives cut properly.

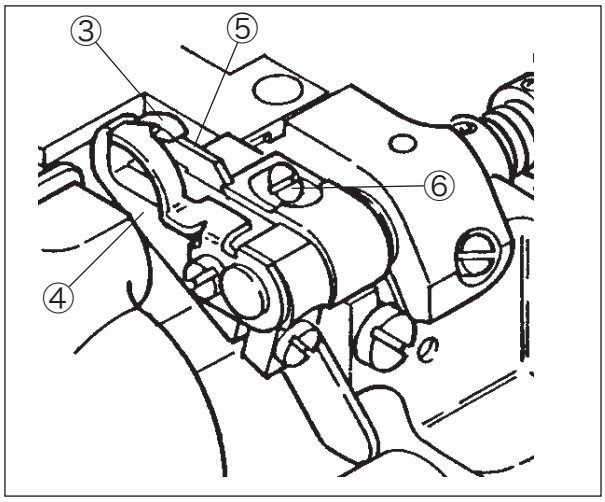


Fig. 7-5

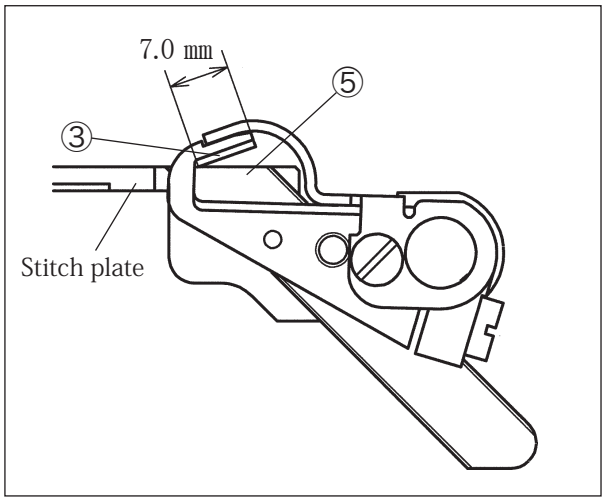


Fig. 7-6

7.5 Removing and resetting upper knife

Removing the upper knife

(1) Loosen the screw ⑥ on the upper knife holder ④.
(2) Remove the upper knife holder ④.
(3) Remove the screw ⑦ on the upper knife ③.
(4) Remove the upper knife ③.

Resetting the upper knife

(1) Attach the upper knife ③ to the pin ⑧ in the upper knife holder ④ and tighten the screw ⑦ securely.
(2) Set the left end of the chip receiver ⑨ fixed on the left of the upper knife holder ④ 1.5 mm apart from the left end of the upper knife shaft ⑩.
(3) Rotate the handwheel manually to lower the upper knife ③ at the lowest point. Move the upper knife holder ④ to place the upper knife tip 0.5 mm above the top of the lower knife. Then, tighten the screw ⑥ securely.
(4) Loosen the screw ② on the collar (left) ①. The upper knife ③ touches the lower knife ⑤ with its spring.
(5) Rotate the handwheel manually to check the sharpness of the blades by setting a thread between the upper knife ③ and the lower knife ⑤.
(6) Set the top of the lower knife ⑤ 7.0 ㎜ apart from the upper knife ③ tip (at the base of the blade). Then, tighten the screw ② securely. (See Fig. 7-6)
(7) Recheck the knives cut properly.

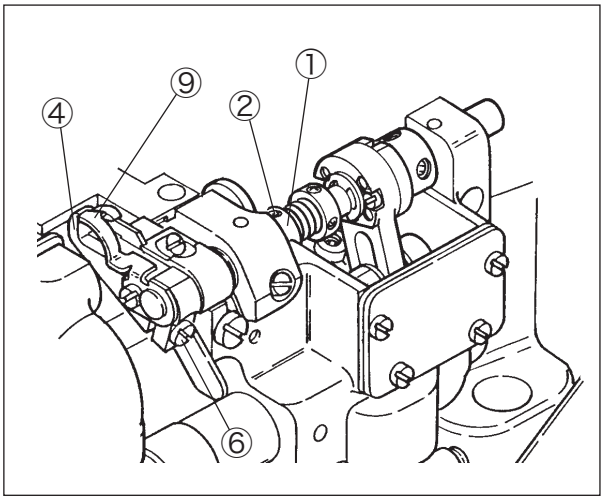


Fig. 7-7

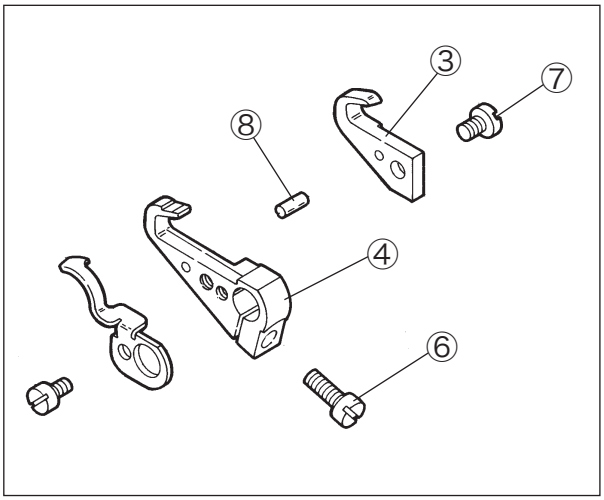


Fig. 7-8

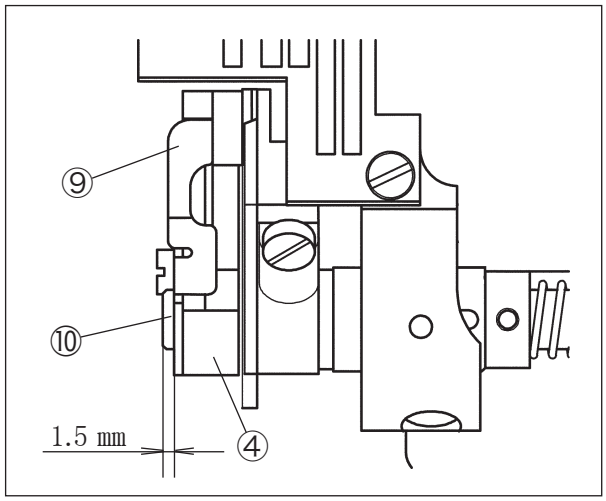


Fig. 7-9

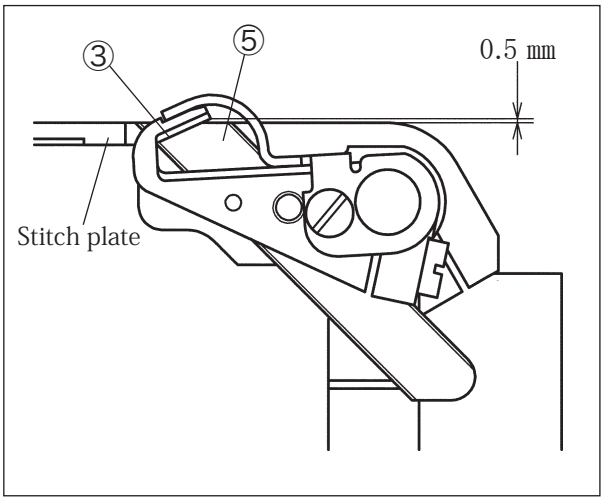


Fig. 7-10

7.6 Adjusting upper knife stroke

Adjust the stroke of the upper knife to 3.0 to 6.5 ㎜. It has been adjusted 4.0 ㎜ at shipment.

(1) Loosen the screws ① to remove the bracket cover ② and the bracket cover gasket ③.
(2) Loosen the nut ⑤ on the upper knife adjusting lever pin ④ to adjust it. (Fig. 7-12)
- To make stroke smaller, move it in the direction Y.
- To make stroke larger, move it in the direction X.

(3) Tighten the nut ⑤ securely.
(4) Loosen the screw ⑦ on the upper knife holder ⑥ to tighten it slightly.
(5) Rotate the handwheel manually to lower the upper knife ⑩ at the lowest point. Move the upper knife holder ⑥ to place the upper knife tip 0.5 ㎜ above the top of the lower knife. Then, tighten the screw ⑦ securely. (See Fig. 7-10)
(6) Loosen the screws ⑨ on the collar (left) ⑧. The upper knife ⑩ touches to the lower knife ⑪ with its spring.
(7) Rotate the handwheel manually to check the sharpness of the blades by setting a thread between the upper knife ⑩ and the lower knife ⑪.
(8) Set the top of the lower knife ⑪ 7.0 ㎜ apart from the upper knife ⑩ tip (at the base of the blade). Then, tighten the screws ⑨ securely. (See Fig. 7-6)
(9) Recheck the knives cut properly.
(10) Reset the bracket cover ② and the bracket cover gasket ③ with the screws ①.

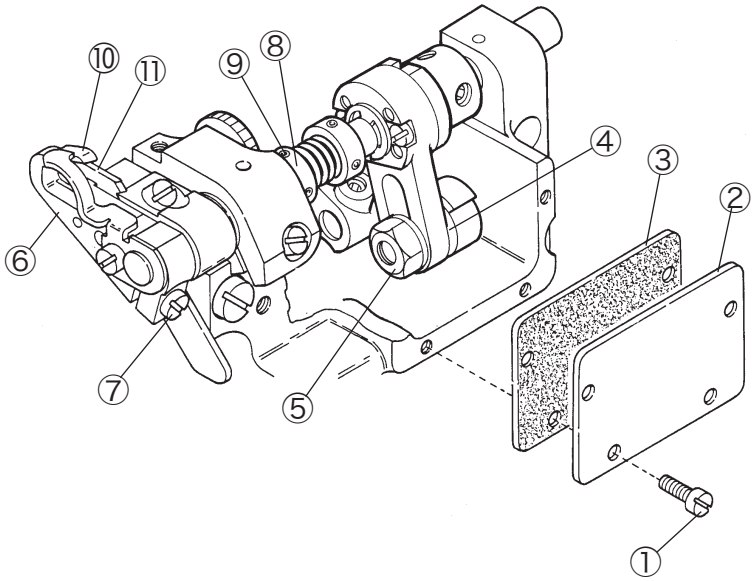


Fig. 7-11

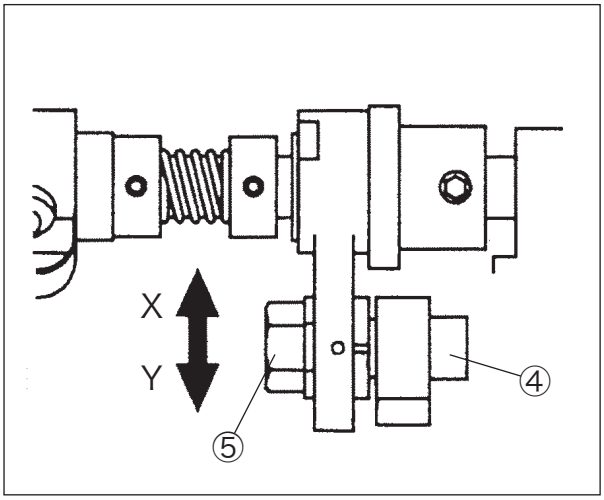


Fig. 7-12

7.7 Sharpening knives

If the knives cut badly, re-sharpen the lower knife ②.
Prepare the cold water and re-sharpen the lower knife with keeping it cool.
Re-sharpen the correct angle as in the figure.

ADVICE

Normal grinder is not useful to sharpen the upper knife ① made of super hard alloy. Contact us directly or the dealer for re-sharpening it.

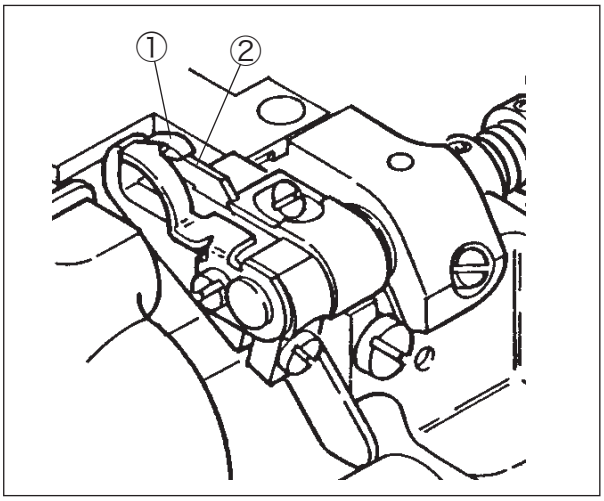


Fig. 7-13

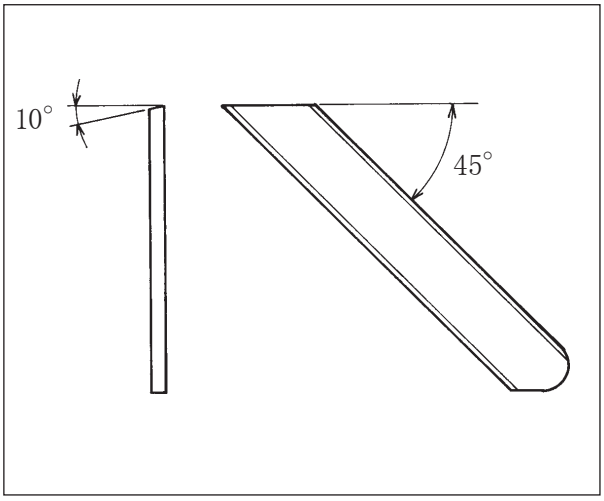


Fig. 7-14

7.8 Stop the movement of left knife

(1) Loosen the two screws ② 2 mm or more from the knife drop collar ① to adjust following procedure. The knife drop collar ① moves to the right with the spring. (Fig. 7-15, 7-16)
(2) With an Allen wrench inserted in the lower one of the screws ②, turn the collar ① until an Allen wrench touches on the top of the bracket cover ③.
(3) With keeping it, push down the upper knife holder ④ tip slightly to the chip guard ⑤. Then, tighten the two screws ② securely.
(4) Close the side cover ⑥ and the front cover ⑦. (Fig. 7-17)
(5) Loosen the screws ⑨ on the suction pipe cover ⑧.
(6) Move the suction pipe cover ⑧ to the right to fill the clearance. (Fig. 7-18)
(7) Tighten the screws ⑨ securely.

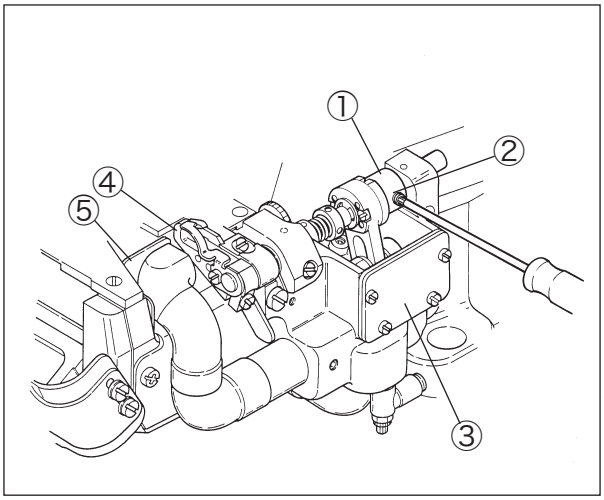


Fig. 7-15

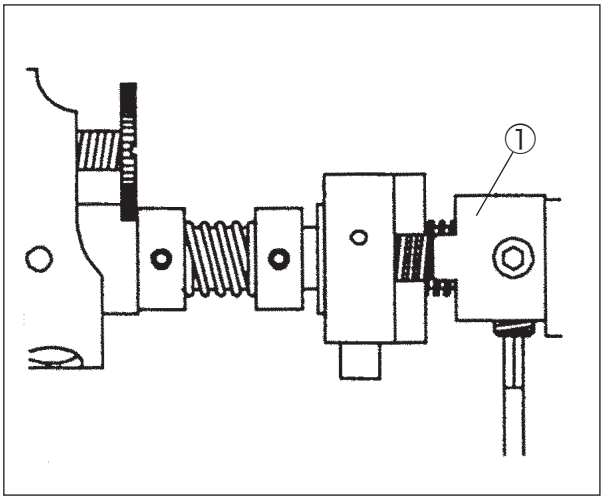


Fig. 7-16

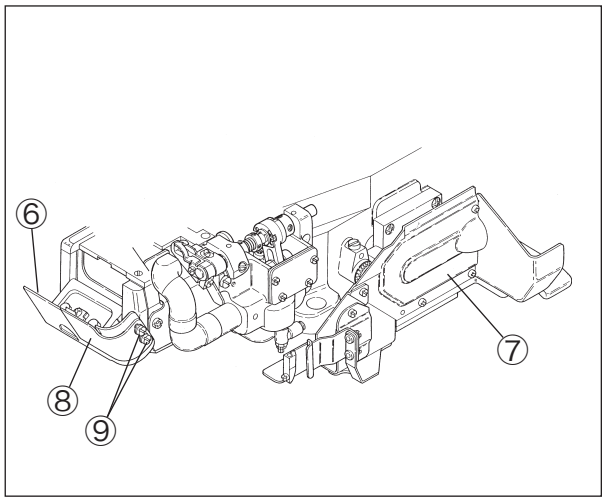


Fig. 7-17

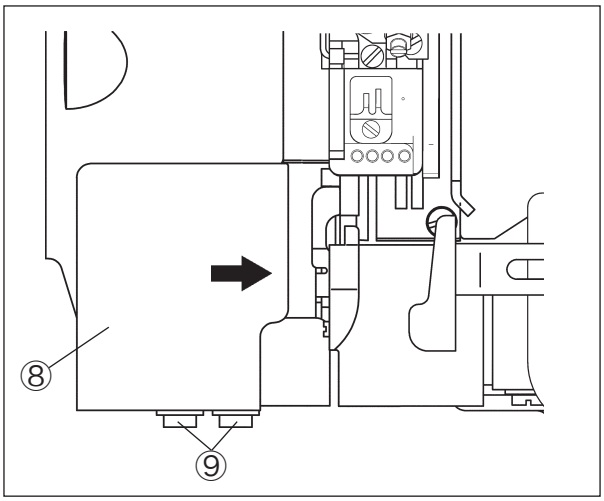


Fig. 7-18

7.9 Cancellation of left knife

(1) Loosen the screws ② on the suction pipe cover ①.
(2) Move the suction pipe cover ① at the extreme left.
(3) Tighten the screws ② slightly.
(4) Open the front cover ③ and side cover ④. (Fig 7-20)
(5) Loosen two screws ⑥ on the knife drop collar ⑤.
(6) With an allen wrench inserted in lower one of screws ⑥, set the convex part of the knife drop collar ⑤ on the concave part of the upper knife adjusting lever ⑦ without clearance between them.
(7) Tighten two screws ⑥ securely.
(8) Rotate the handwheel manually to lower the upper knife ⑧ at the lowest point. Check the upper knife ⑧ tip is 0.5 mm above the top of the lower knife ⑨. (See Fig. 7-21)
(9) Rotate the handwheel manually to check the sharpness of the blades by setting a thread between the upper knife ⑧ and the lower knife ⑨.
(10) Close the front cover ③ and the side cover ④.
(11) Loosen the screws ②.
(12) Align the right side of the suction pipe cover ① with the inlet of the suction pipe (front) ⑩ in on line. (Fig. 7-19, 7-20)
(13) Tighten the screws ② securely.

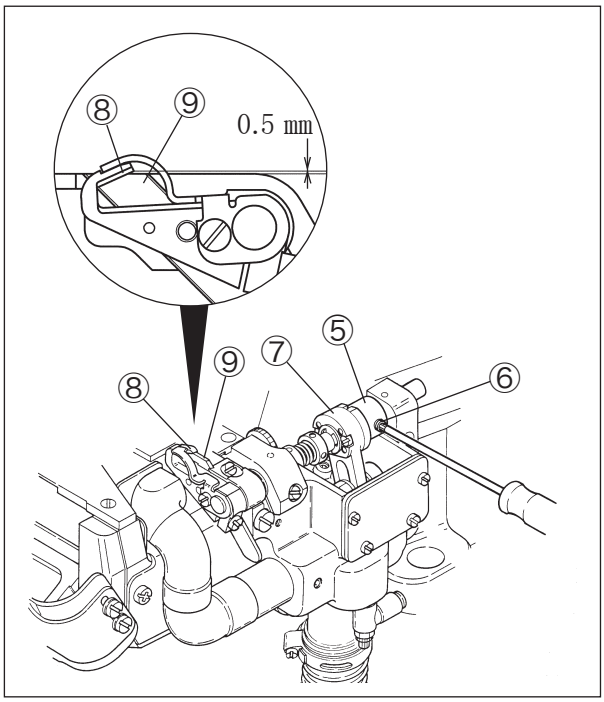


Fig. 7-21

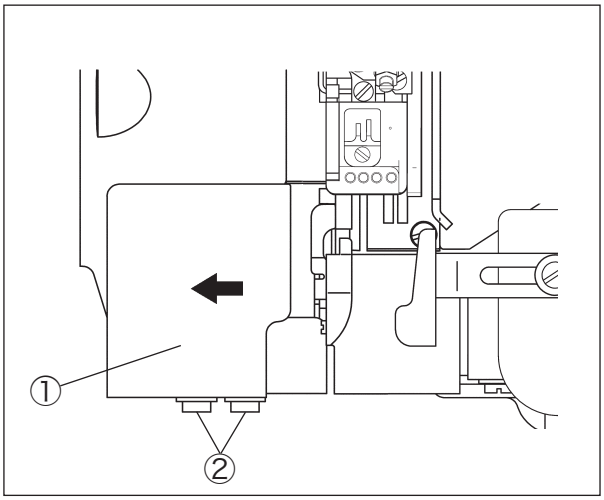


Fig. 7-19

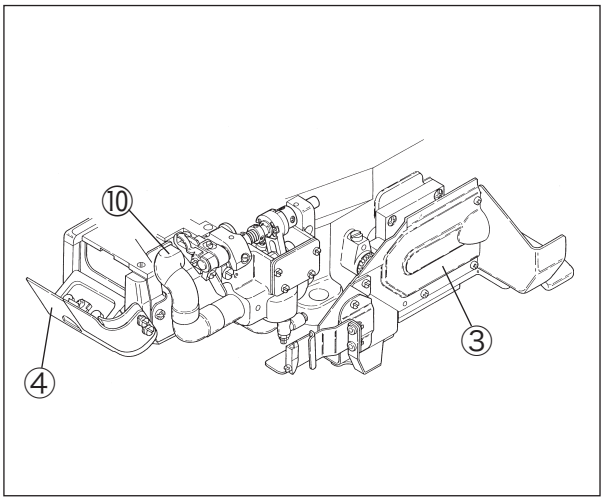


Fig. 7-20

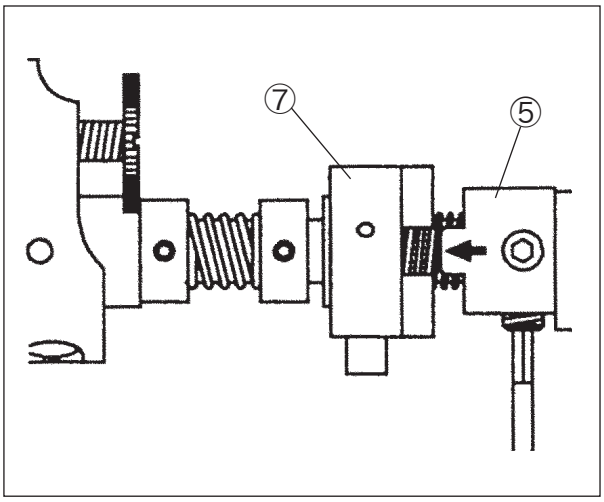


Fig. 7-22

8. Specifications

Model	VG3721-8
Description	High speed cylinder bed interlock stitch machine with left hand trimming mechanism
Dimensions	470 ㎜（L）× 237 ㎜（W）× 415 ㎜（H)
Circumference of Cylinder	340 ㎜
Weight	41.5 kg
Stitch Type	ISO 406, 407, 602, 605
Application	Hemming operation of knitted fabric for lightweight material
Sewing Speed	Up to 5,500 sti/min (during intermittent operation)
Stitch Length	1.4 - 3.6 ㎜ Number of stitches per inch(25.4 ㎜) 7 - 18 stitches per 30 ㎜ 8 - 21 stitches
Needle System	UY × 128GAS #10 - #14 (standard: #10)
Needle Distance	3-needle: 4.8 ㎜ , 5.6 ㎜ , 6.4 ㎜ (2-needle: 3.2 ㎜ , 4.0 ㎜)
Needle Stroke	31 ㎜
Upper knife stroke	3.0 - 6.5 ㎜
Suctioning chips	Ventury or vacuum system
Presser Foot Lift	For 5.6 ㎜ of needle distance with spreader: 5.5 ㎜ , without spreader: 7.0 ㎜
Feed Regulation	By adjusting screw (available for micro adjustment)(applicable to condense stitching)
Differential Ratio	Standard: 1 : 0.7 - 1 : 1.4 1 : 1.1 - 1 :2 (stitch length is 2.3 mm or less in max. normal differential)
Differential Feed Regulation	Micro adjustment by adjuster Adjustable by moving external lever even during operation
Lubrication	Lubrication automatically by trochoid-shaped pump
Lubricating Oil	YAMATO SF OIL No.28
Capacity of Oil Reservoir	800 ml
Installation	Table top type
Compliance with Regulator	Machinery directive, RoHS directive
Noise declaration	Lp_A=83.6dB（5,500sti/min) according to ISO 10821-C6.2-ISO 11204 GR2

Table 6

yamato
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530-0047 TEL：81-6-6364-5621 FAX：81-6-6364-7185
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