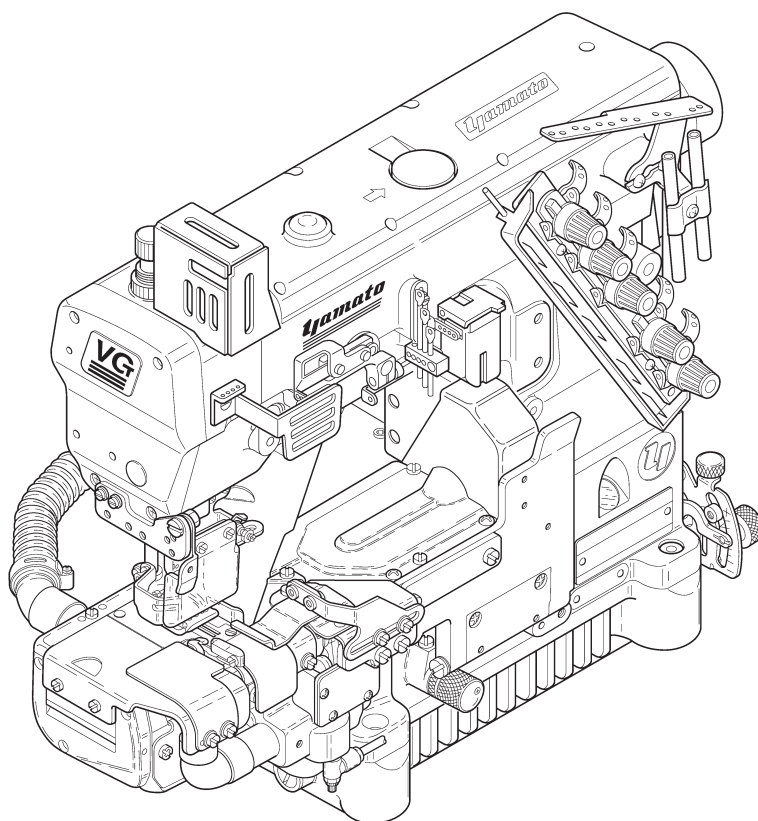


Yamato[®]

Instruction Manual

HIGH SPEED CYLINDER BED 3-NEEDLE
INTERLOCK STITCH MACHINE










VG3511-8F



Thank you for having purchased the Model VG3511-8F.
Before using your VG3511-8F, please read the instruction
manual and understand the contents well.
After reading the instruction manual, please keep it in a lo-
cation where it is easily accessible to the operator.




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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.

◇The numbers in lower left corners of figures are figure numbers. We use them in texts as needed for your reference.

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. To ensure safe use

Always observe the following instructions to ensure the safe use of the industrial sewing machines and devices.

1-1 Application and purpose

The sewing machine is designed to improve productivity in the sewing industry and must not be used for other applications and purposes. Do not use this sewing machine until it can be confirmed that safety measures for the drive units have been taken.

1-2 Before use

Read all instruction manuals thoroughly before starting the use of this machine and follow them.

Also, read the instruction manual for the installed drive unit.

1-3 Working environment

DO NOT WORK IN THE FOLLOWING ENVIRONMENTS:

- Place where atmosphere temperature and humidity give a bad influence the performance of sewing machines.
- Outdoors and place where the sewing machines are exposed to sunlight directly.
- Atmosphere containing dust, corrosive gases or flammable gases.
- Place where voltage fluctuation exceeds $\pm 10\%$ of the rated voltage.
- Place where power capacity necessary for the used motor specifications cannot be secured.
- Place where strong electric or magnetic fields are generated such as near large-output high frequency transmitters or high frequency welding machines.

1-4 Unpacking and transportation

- (1) Unpack from the top.
- (2) Never hold the parts near the needle or threading parts when removing the sewing machine head from the buffer of box.
- (3) When carrying the sewing machine head, have an assistant.
- (4) Pay attention not to get excessive impact or shock when moving the sewing machine head with a pushcart.

2. Installation and preparation

2-1 Instruction and training

Operators and workers, who supervise, repair or maintain the machine head and machine unit, are required to have the adequate knowledge and operation skills to do the job safely. In order to establish such necessary conditions, it needs for the employer to plan and enforce the safety education and training to those workers.

2-2 Sewing table and motor

- (1) Prepare a machine table that has enough strength to withstand the weight of the sewing head and any reaction while operating.
- (2) Maintain a comfortable working environment with considering the lighting and the arrangement of sewing machine so that the operators can work smoothly.
- (3) When installing the control box and the related parts on the sewing machine, take care about the posture of the worker.
- (4) Install the drive unit correctly according to the instruction manual.

2-3 Wiring

- (1) Never connect the plug for power supply until assembly is finished.
- (2) Fix the connectors securely to the sewing machine head, motor, and electric apparatus.
- (3) Do not apply excessive force to the connection cords.
- (4) Connect the cords away from the driving parts.
- (5) Place the ground wire securely to the designated position on the machine head.

2-4 Before operation

- (1) Take care not to attach lubricant, silicone oil, and grease on the eyes or skin. Keep them away from children.
- (2) Be sure to fill or drop lubrication oil before operating the sewing machine. Use the Yamato SF oil as specified.
- (3) Never put your hand under the needle or near the moving parts of the machine when turning on power supply switch.



Safety instructions



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

2-5 During operation

- (1) Be sure to operate the sewing machine with the safeguards such as belt cover, finger guard, and eye guard.
- (2) Never place the finger, hair or objects under the needle or close to the moving parts while operating the sewing machine.
- (3) Be sure to turn off the power supply switch when threading or replacing the needles.
- (4) Never place your hands close to the knives when operating the sewing machine with the trimming devices.
- (5) Be sure to turn off the power supply switch when terminating the sewing work or leaving the sewing machine.
- (6) If the sewing machine malfunctions, abnormal sound or smell something unusual while operating, be sure to turn off the power supply switch.

2-6 Removal

- (1) Turn off the power supply switch if removed or replaced any parts or during adjustment of sewing machine.
- (2) Do not pull the cord when removing the plug. Be sure to hold the plug itself.
- (3) A high voltage is applied inside the control box. Turn off the power supply switch and wait more than 5 minutes before opening the cover.

3. Maintenance, inspection, and repair

- (1) Follow the instruction manuals for maintenance, inspection, and repair.
- (2) Entrust the maintenance, inspection, and repair to specially trained personnel.
- (3) 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 using a clutch motor, take care that the motor keeps turning for a while even after turning off the power

supply switch.)

- (4) Be sure to remove the gasket too, when the cover removed at the maintenance, inspection, and repair. If not removed, may be injured at the edge of gasket.
- (5) Do not modify the sewing machine by the customer's judgment.
- (6) Be sure to use original replacement parts for repairs or maintenance.

4. Caution signs and alert pictorial markings

This instruction manual contains the following caution signs and alert pictorial markings to prevent you from injuring yourself or the sewing machine from being damaged. Please follow the instructions.

4-1 Meanings of caution signs

WARNING

WARNING indicates potentially hazardous situations which, if not heeded, could result in death or serious injury to you and others.

CAUTION

Caution indicates hazardous situations which, if not heeded, may result in minor or moderate injury to you and others, or may result in machine damage.

NOTE is used to emphasize essential information.



Safety instructions



4-2 Alert pictorial markings



This mark indicates the warning which, if not heeded, could result in death or Serious injury.



This mark indicates the caution for high temperature.



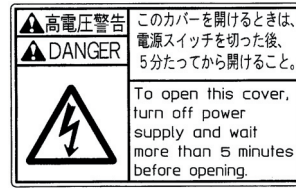
This mark indicates the warning which, if not heeded, could result in death or Serious injury.



High-voltage applies in the control box. This label indicates that electric shock may be caused.



This mark indicates the caution which, if not grounded, the machine or device could malfunction and could result in personal injury.



High-voltage applies in the control box. This label indicates that electric shock may be caused.



This label is affixed on the safeguards. Considering the operation, it is not affixed on the finger guard and eye guard. Be sure to operate with the finger guard and eye guard in position.

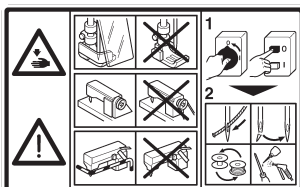


Stepping motor and solenoid may overheat if used continuously. To prevent a burn, take care not to touch.

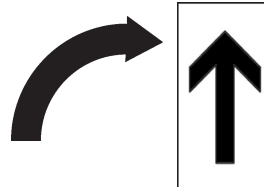


If not connected earth line, static electricity may be generated and inflict injury on person. In addition, the malfunction of electric system may cause injury to person.

5. Warning labels on sewing machines



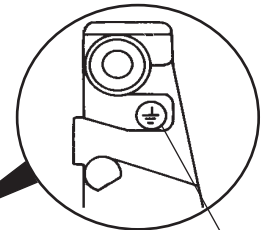
This label indicates that removal of the safeguards and works except for sewing performance while the power supply switch is on are prohibited. (For details, see the next page.)



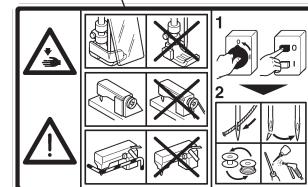
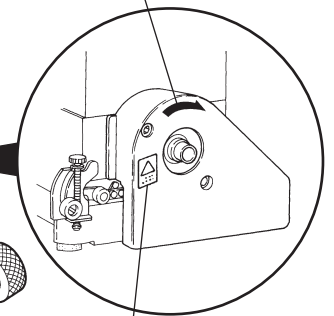
Check the rotating direction of machine pulley agrees with 'ROTATING-DIRECTION SYMBOL'.



Safety instructions



Rotating direction symbol



1. Name of each part

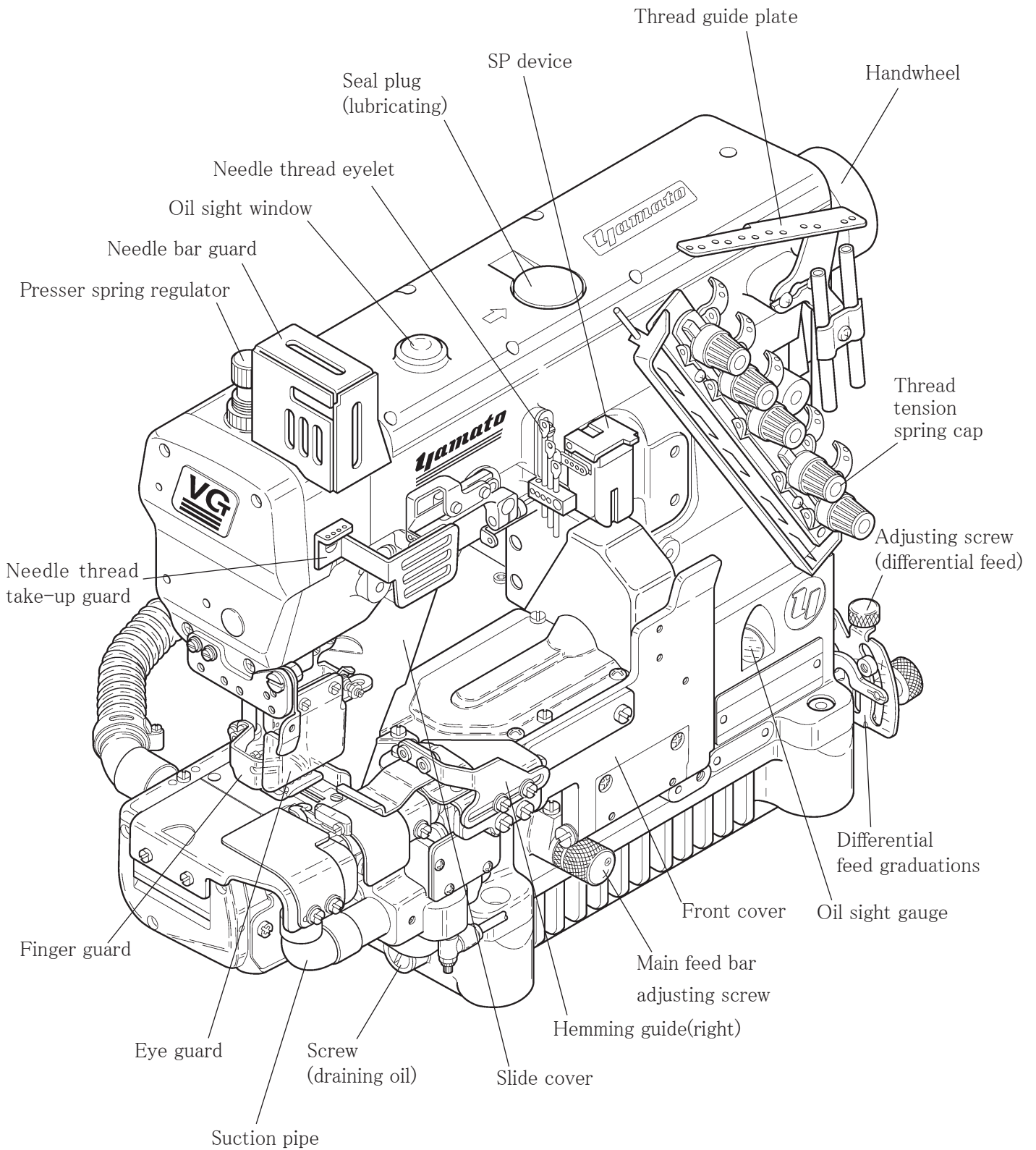


Fig. 1-1

2. Installation

2.1 Table cutting diagram

2.1.1 Table top type (Type A : standard)

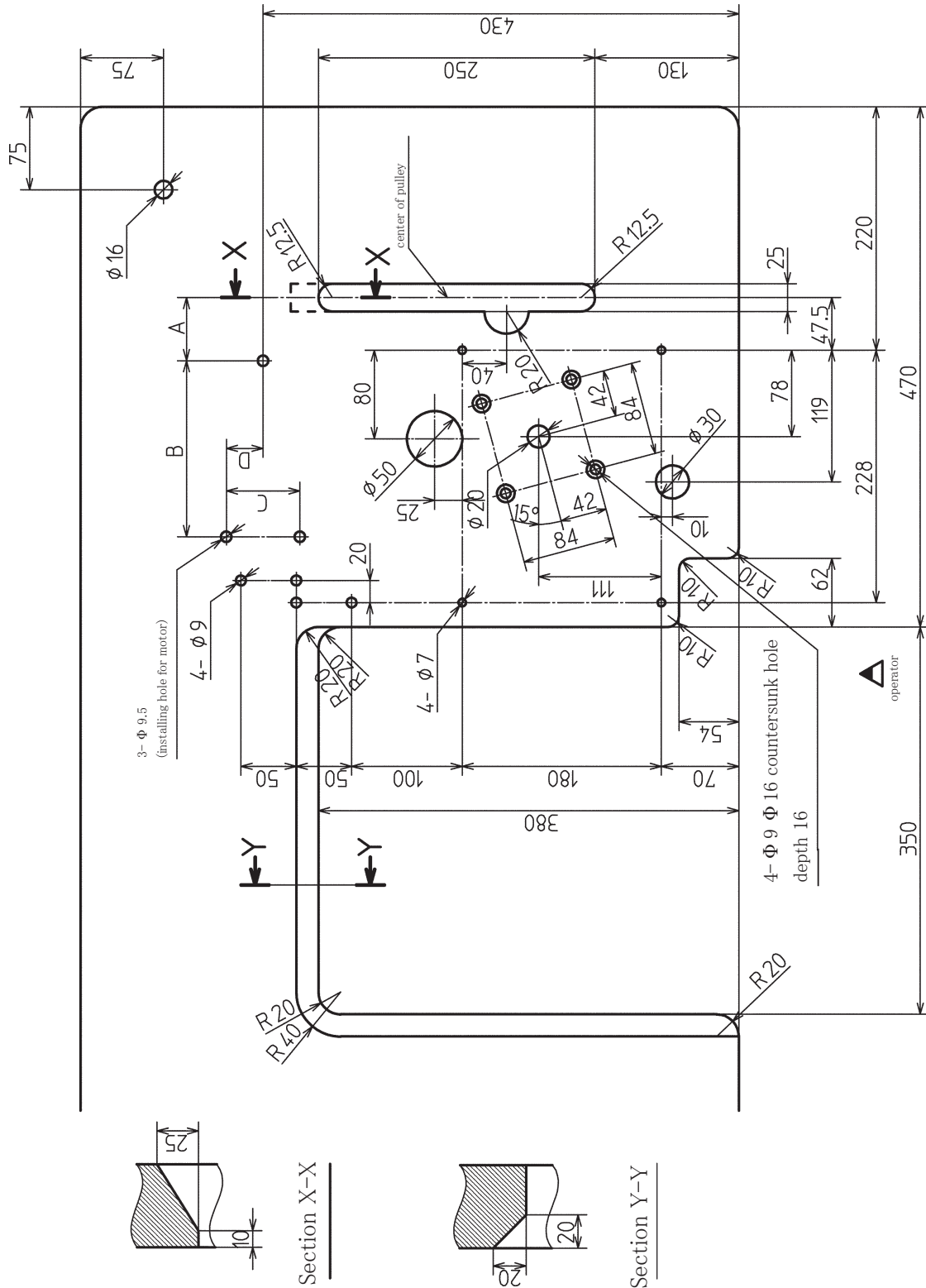


Table dimensions: 1200 × 595 × 50

Refer to the instruction of the motor for dimensions A, B, C, and D.

Fig. 2-1

2.1.2 Table top type (Type B)

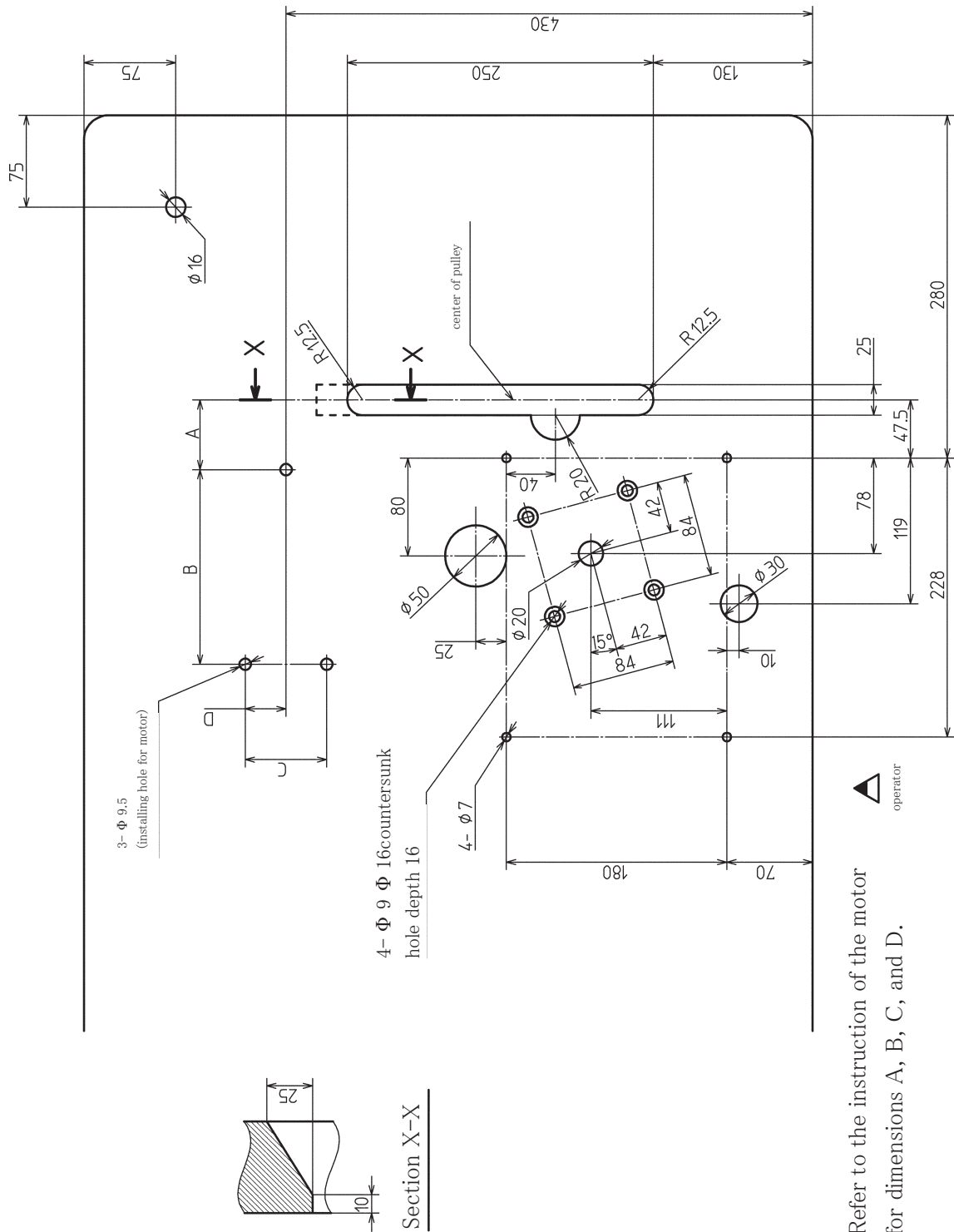


Fig. 2-2

2. Installation

2.2 Table top type

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

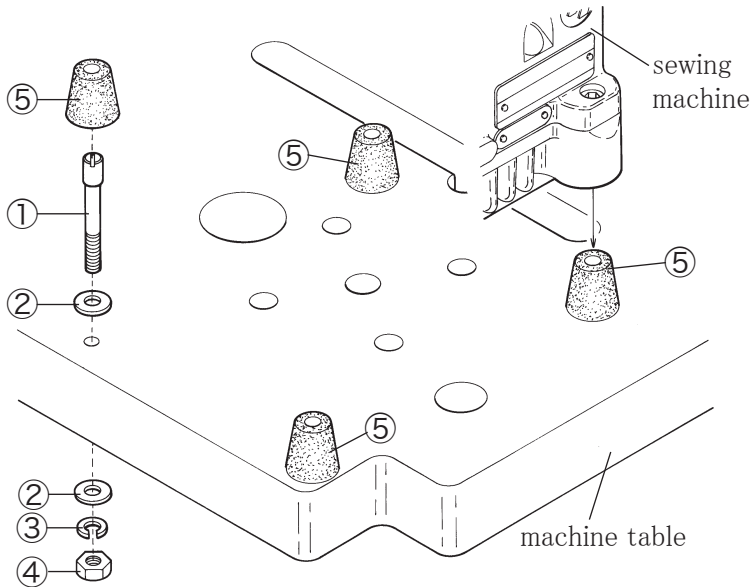


Fig. 2-3

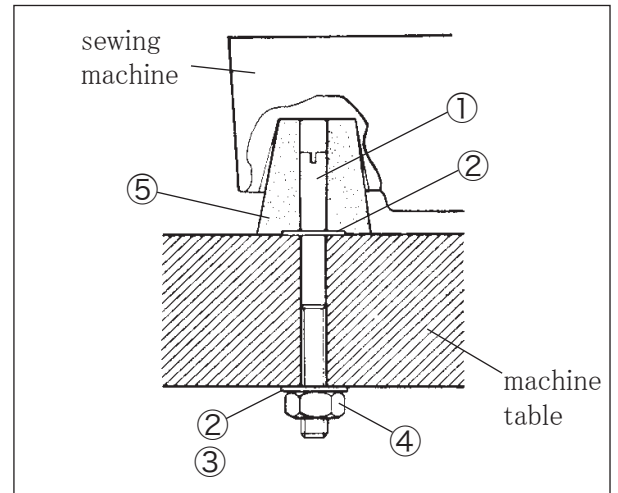


Fig. 2-4

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.

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, 400W(1/2HP).

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.

⚠ CAUTION

Use only those motor pulleys applicable to the machine. If not applicable, the sewing machine will be over maximum 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.

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

Belt

Use a V-belt of M type.

For belt size, refer to Table 1.

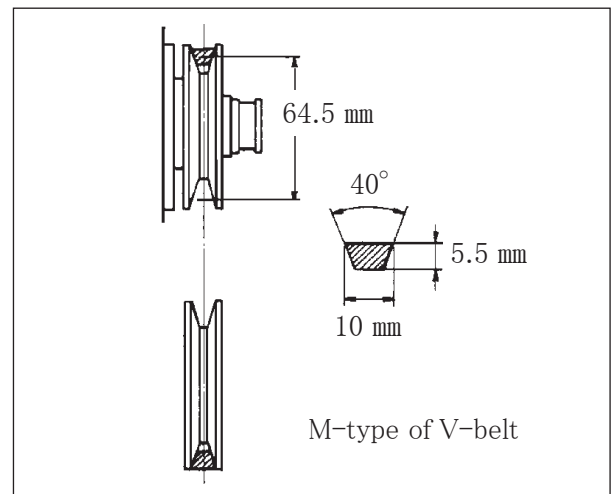


Fig. 2-5

| Outside diameter of pulley (mm) | Sewing speed of machine (sti/min) | | Size of belt | |
|---------------------------------|-----------------------------------|--------|----------------|-----------------|
| | 50 H z | 60 H z | Semi-submerged | Fully-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

| 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

2.4 Hanging belt

⚠ CAUTION

Before hanging belt, ALWAYS turn the power switch OFF and check that the machine 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 - 20 mm when its center is pushed with 10 N.
- (3) Lock the motor with the adjusting bar ④.

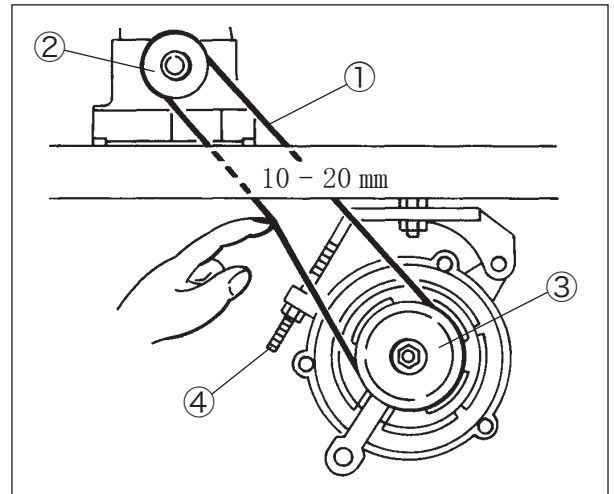


Fig. 2-6

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.
- (3) Fix the belt cover(lower) ⑦ on the machine table. (Fig. 2-9)

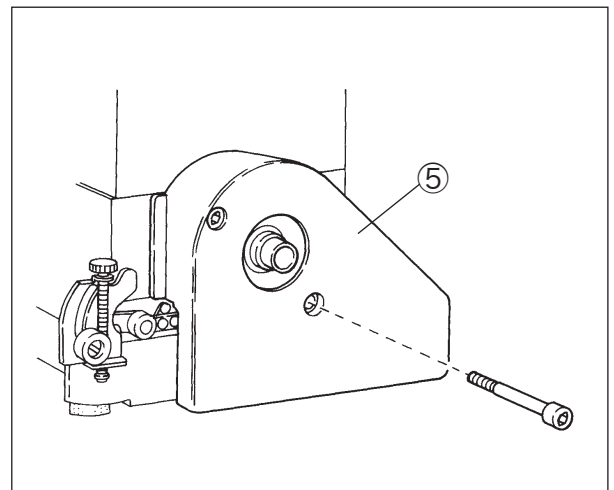


Fig. 2-7

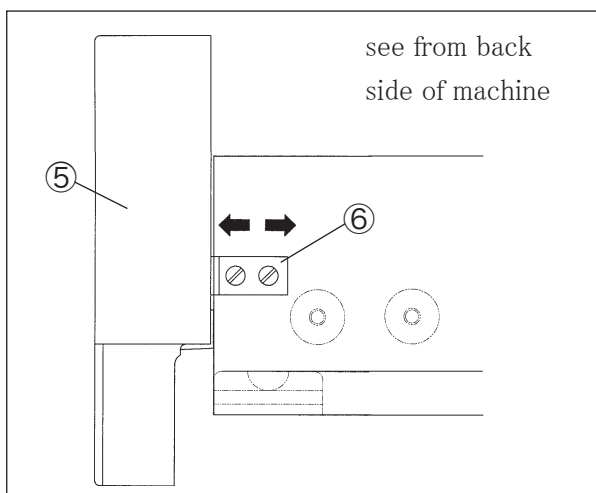


Fig. 2-8

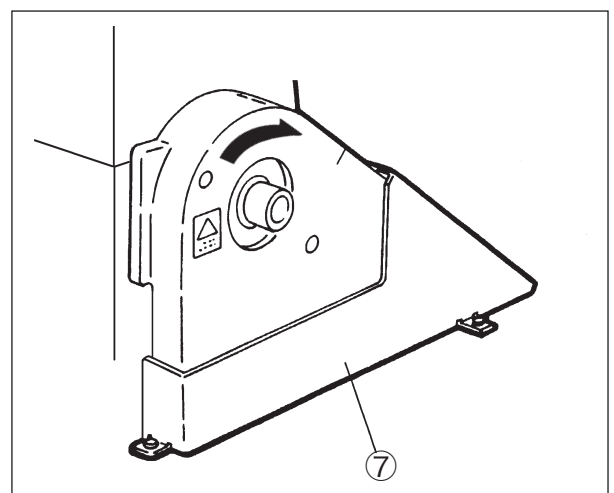


Fig. 2-9

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.

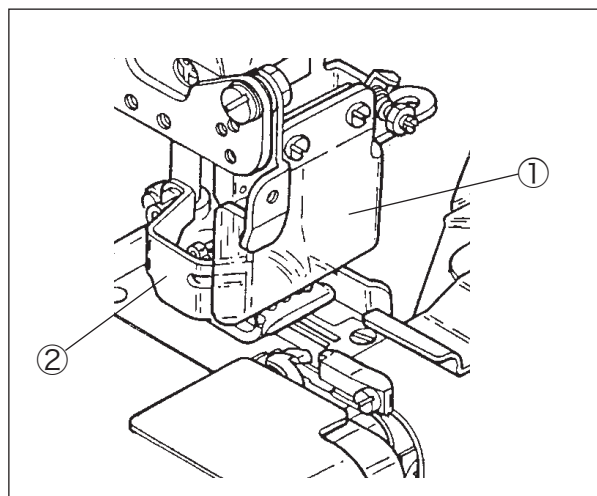



Fig. 2-10

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.

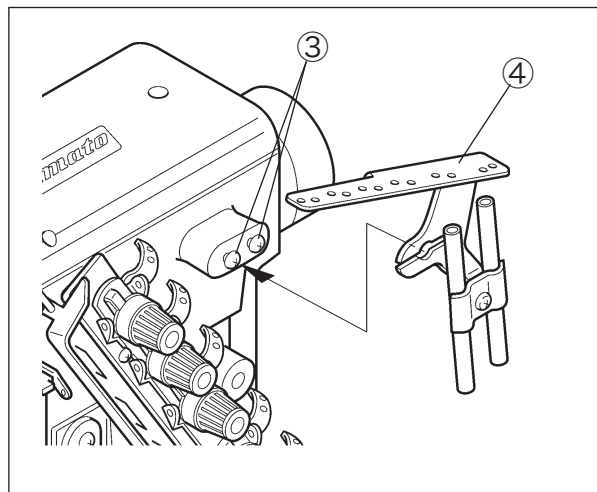


Fig. 2-11

2.8 Accessories

Install the accessories as the suction pipe(rear), the suction pipe support, the flexible hose and the speed controller on the machine as follows:

- (1) Install the speed controller ⑧ in the screw hole on the bottom of the lower knife holder.
- (2) Insert the suction pipe(rear) ① into the hole of the bottom of the lower knife holder bracket ② and fix them with the screw ③ .
- (3) Remove the screws ④ at the rear of the machine frame.
- (4) Install the suction pipe support ⑤ with the screws ④ at the place the screws ④ were located.
- (5) Install the suction pipe(rear) ① on the suction pipe support ⑤ .
- (6) Insert the flexible hose ⑦ fitted with the hose band ⑥ into the suction pipe(rear) ① . Then, fix them with the hose band ⑥.

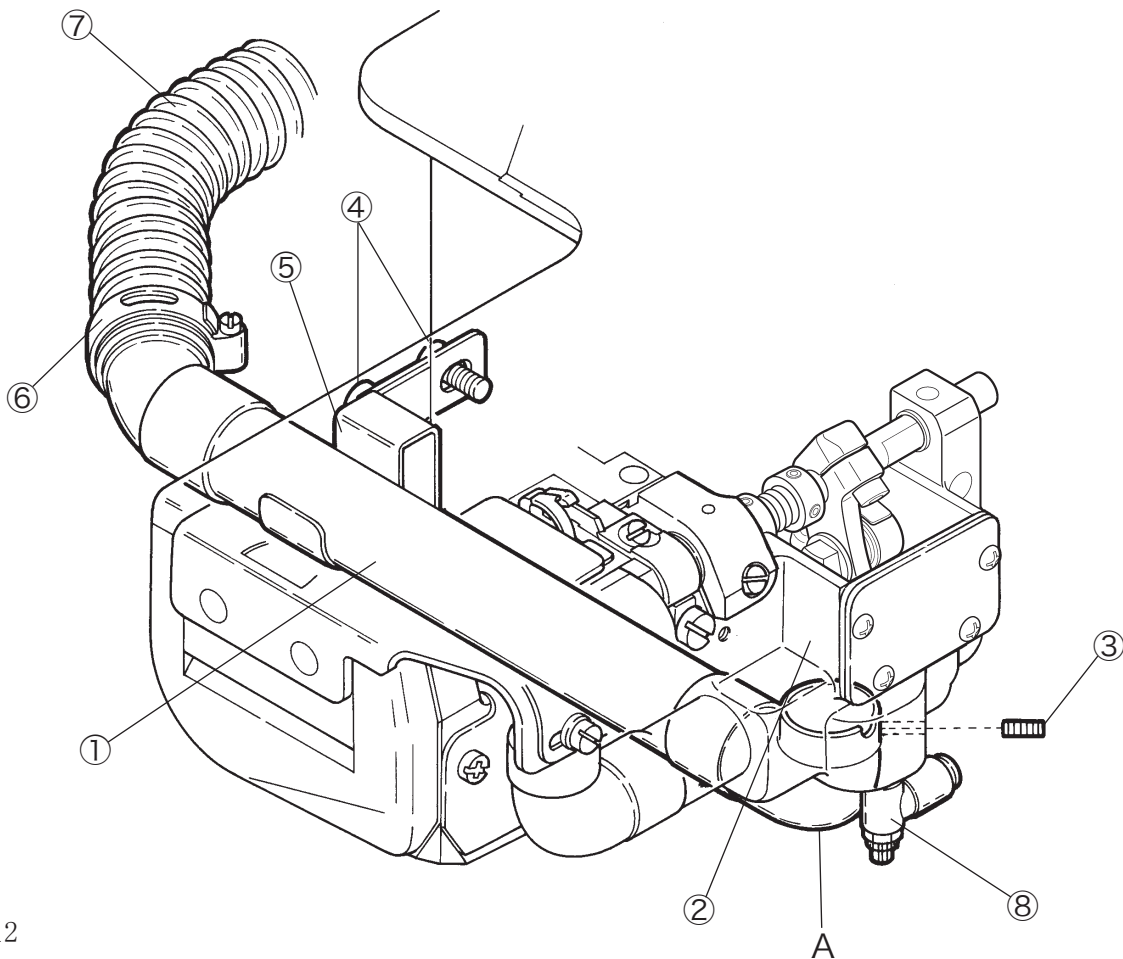


Fig. 2-12

NOTICE

If tightened the screw ③ excessively, the suction pipe(rear) ① may be deformed. That may be difficult to remove it when clogged with chips.

3. Sewing speed and rotating direction of pulley

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 - 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.

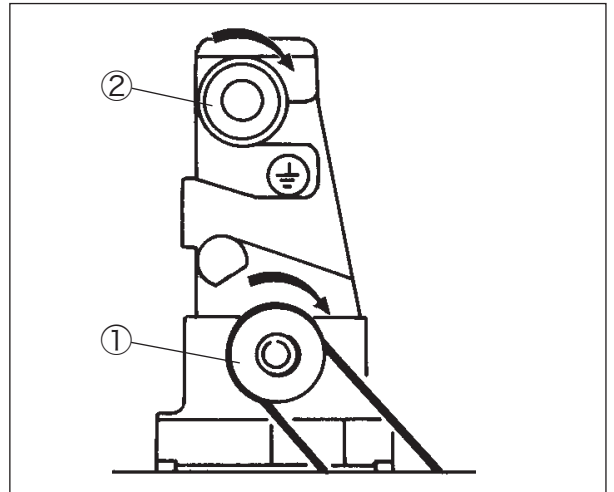


Fig. 3-1

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 machine 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.

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.

⚠ 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.
2. Supply with a few amount of oil into the hole ⑥ periodically.

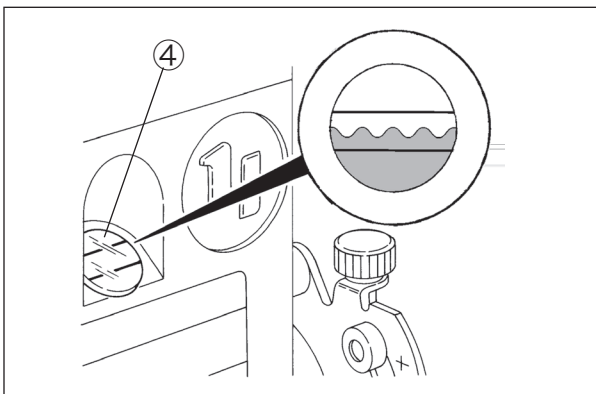


Fig. 4-4

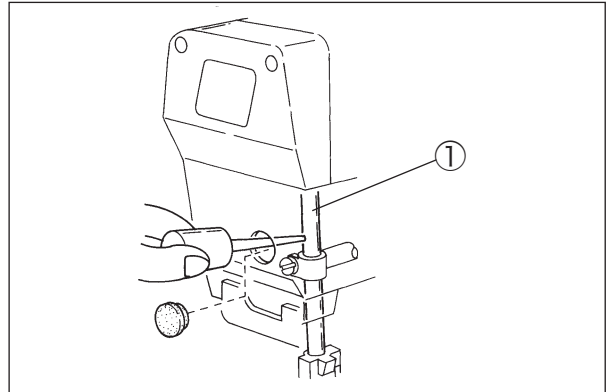


Fig. 4-1

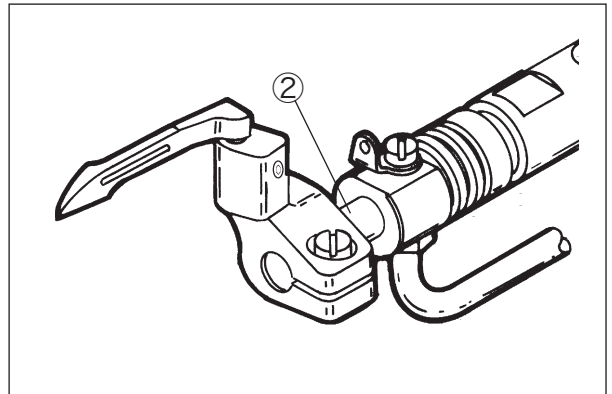


Fig. 4-2

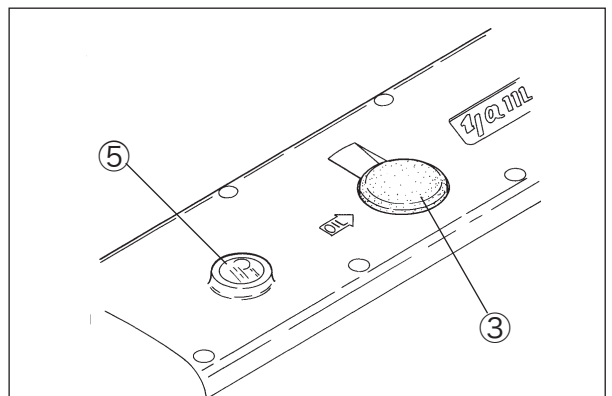


Fig. 4-3

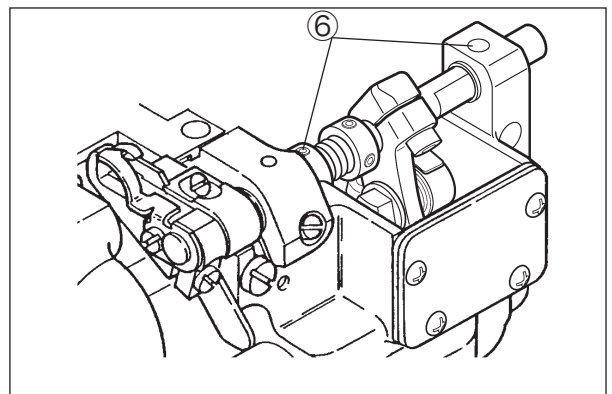


Fig. 4-5

⚠ CAUTION

Before lubricating, ALWAYS turn the power switch OFF and check that the machine 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.

! 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.

i NOTICE

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

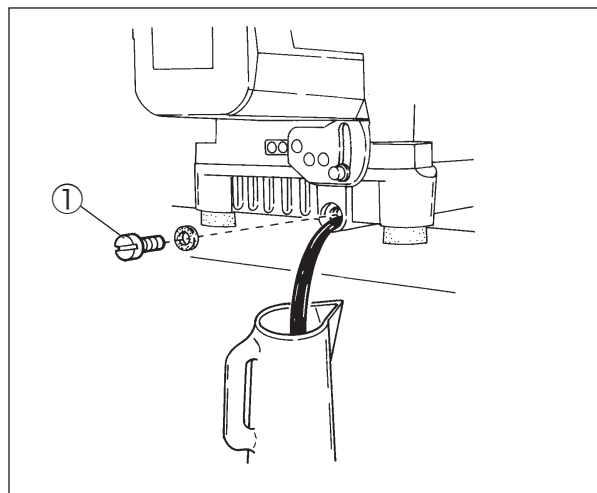


Fig. 4-6

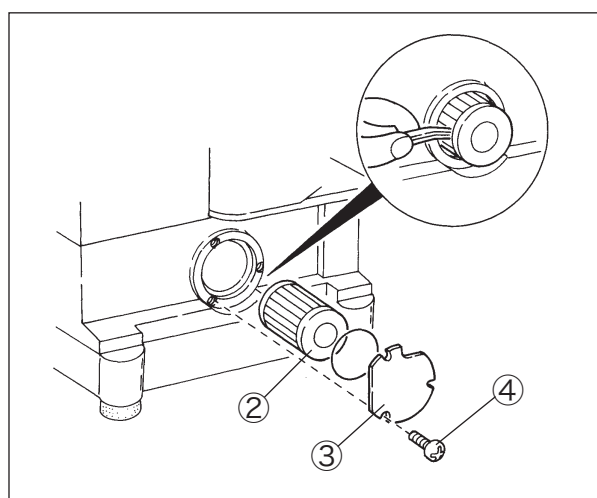


Fig. 4-7

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 machine 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.

! ATTENTION

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

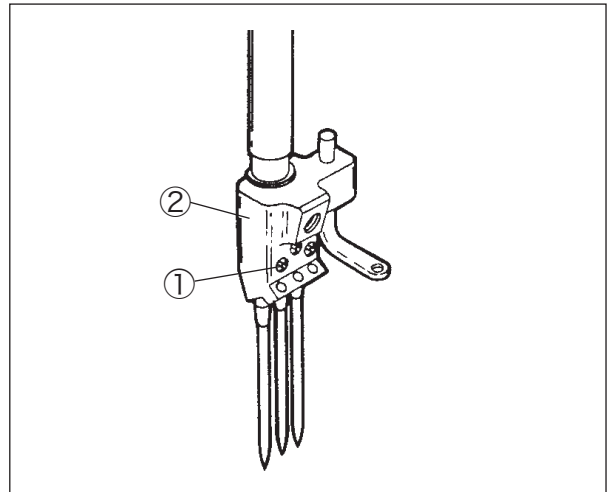


Fig. 5-1

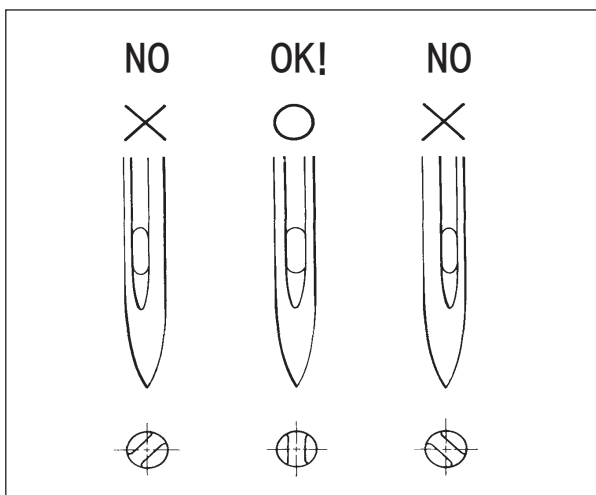


Fig. 5-2

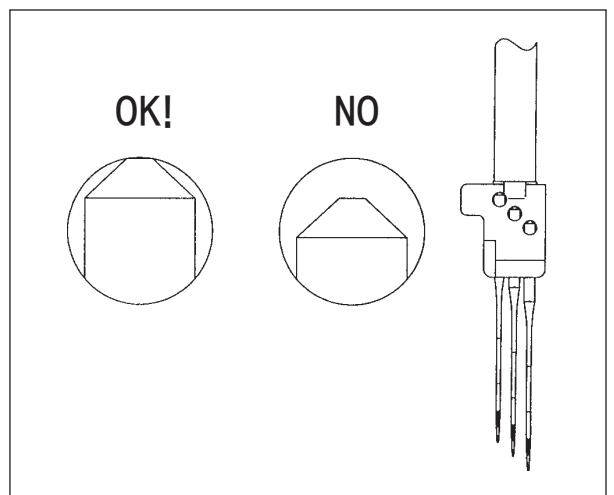


Fig. 5-3

5.3 Threading



When threaded, rethread by tying new threads with the preset threads.

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

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: Looper thread

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

C: Spreader thread

Pull the thread until the knot comes out.

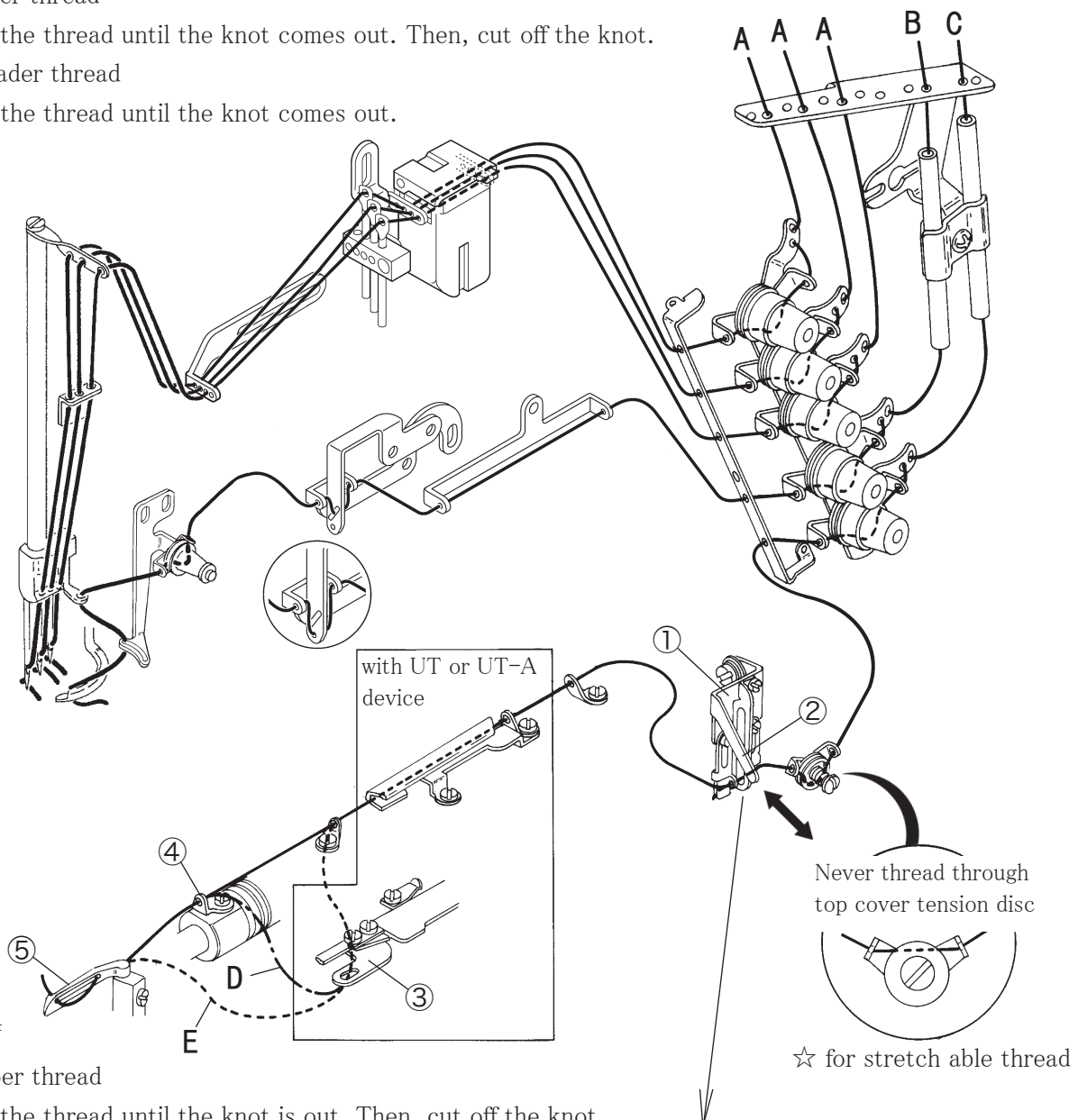


Fig. 5-4

☆ Looper thread

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

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

- * For standard type of thread, thread through the looper thread eyelet(left) ④ via the looper thread release ③ . (Thread D)

- * For stretchless thread, thread directly to the looper ⑤ through the looper thread release 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. Proper operation

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 counterclockwise.

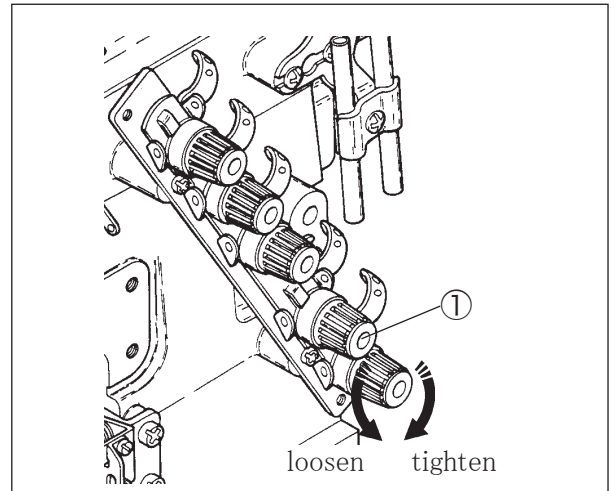


Fig. 5-5

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.

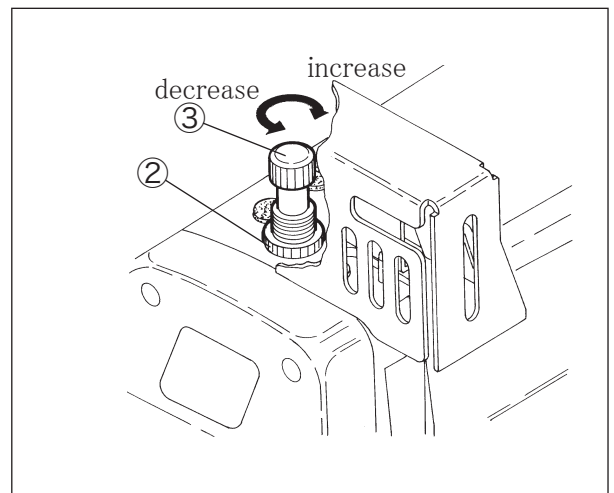


Fig. 5-6

5.6 Adjusting position of presser foot

⚠ CAUTION

Before adjusting, ALWAYS turn the power switch OFF and check that the machine 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.

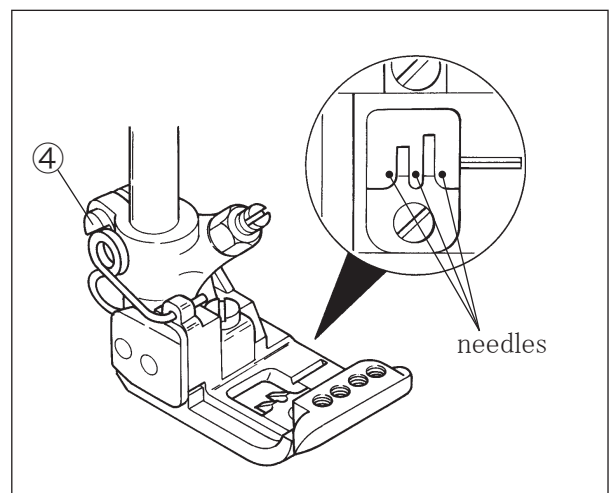


Fig. 5-7

⚠ CAUTION

Before operating, ALWAYS turn the power switch OFF and check that the machine 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.

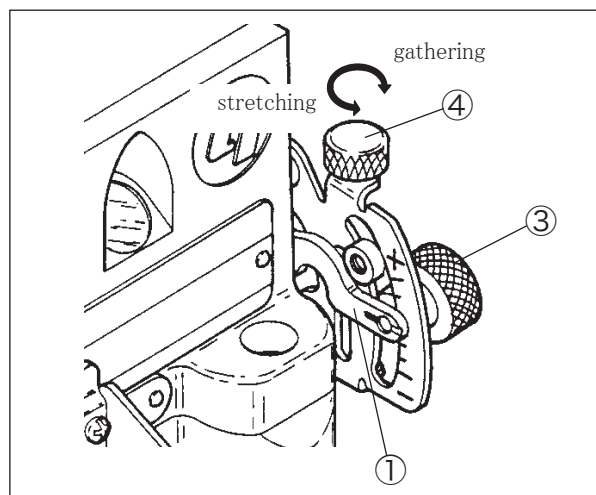


Fig. 5-8

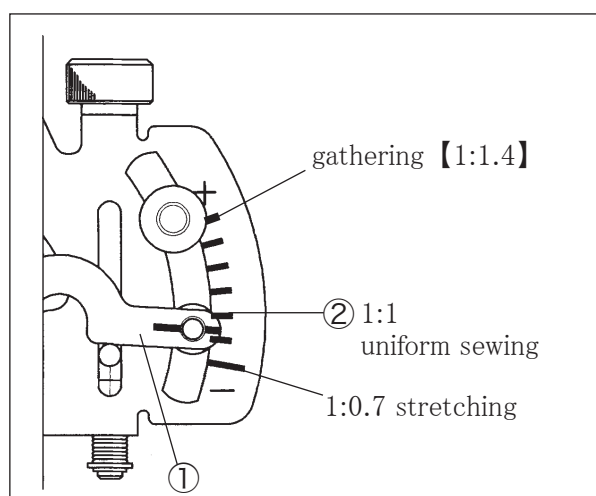


Fig. 5-9

5.8 Adjusting stitch length



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

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

| Stitch length (mm) | Number ou stitch (per 1 inch) | Number of stitch (per 30 mm) |
|-------------------------|----------------------------------|----------------------------------|
| 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.

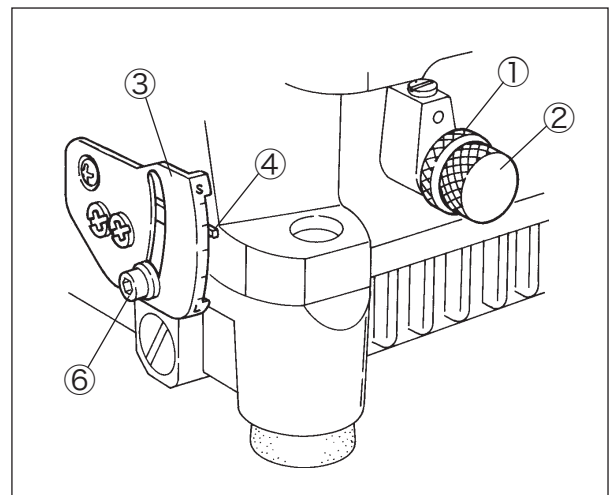


Fig. 5-10

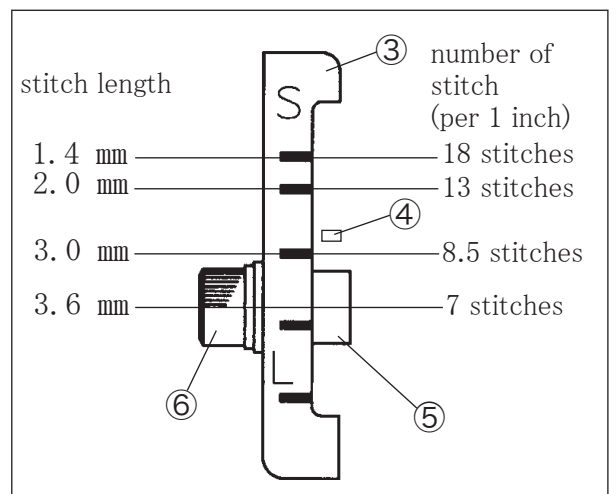


Fig. 5-11

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.

i SUPPLEMENT

See “7.1 Adjusting trimming position of fabric ” to adjust the right-and-left position of lower fabric.

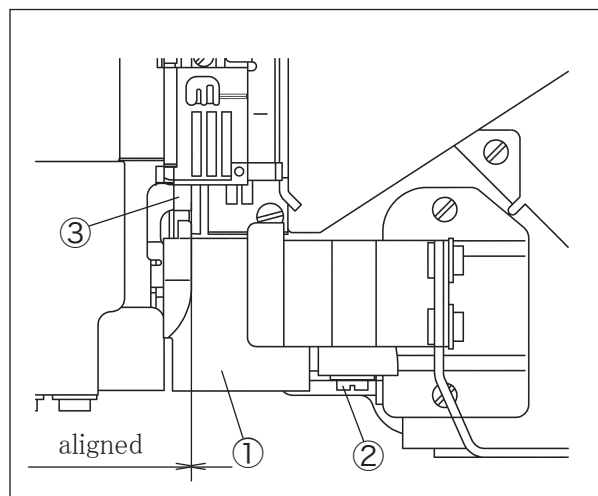


Fig. 5-12

5.10 Trimming width of fabric

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

When sewing with the folder spacer ⑤ , the trimming width is 3.0 mm .

When sewing without it, the trimming width is 5.0 mm .

Remove the screw ④ to remove the folder spacer ⑤ .

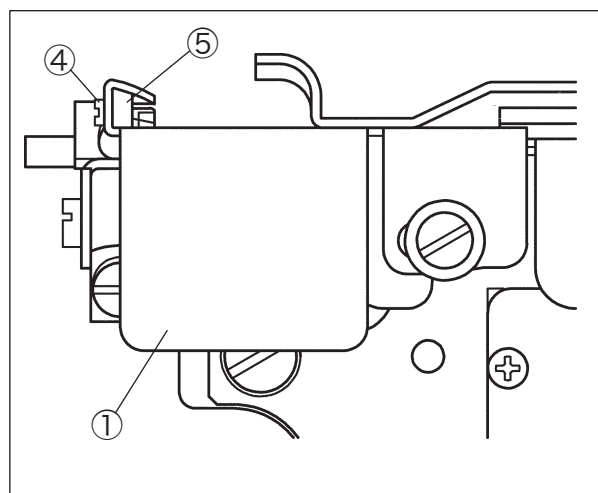


Fig. 5-13

5. Proper operation

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.

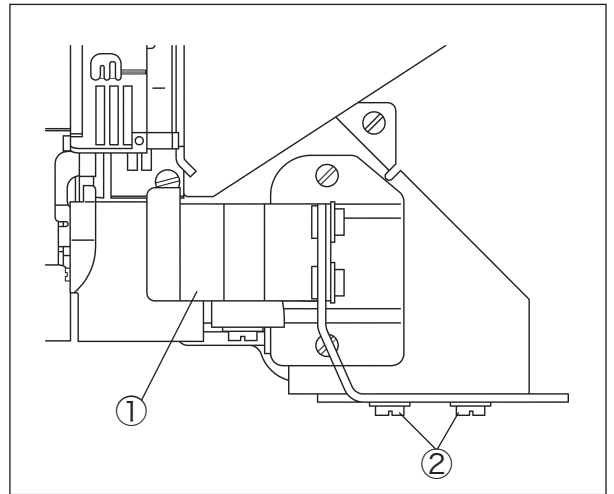


Fig. 5-14

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.

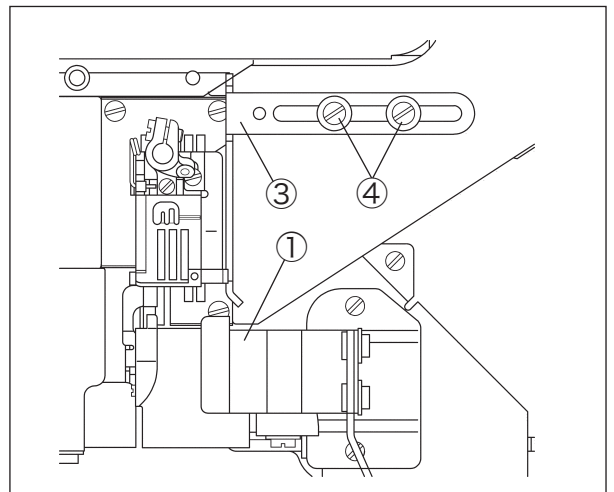


Fig. 5-15

⚠ CAUTION

Before operating, ALWAYS turn the power switch OFF and check that the machine has already stopped.

5.13 Raising upper feed roller (with puller mechanism)

Move the upper feed roller lifting lever ② up or down to raise the upper feed roller ① when pulling out a fabric due to fabric jam.

Raising the upper feed roller lifting lever ② keeps raising the upper feed roller ①.

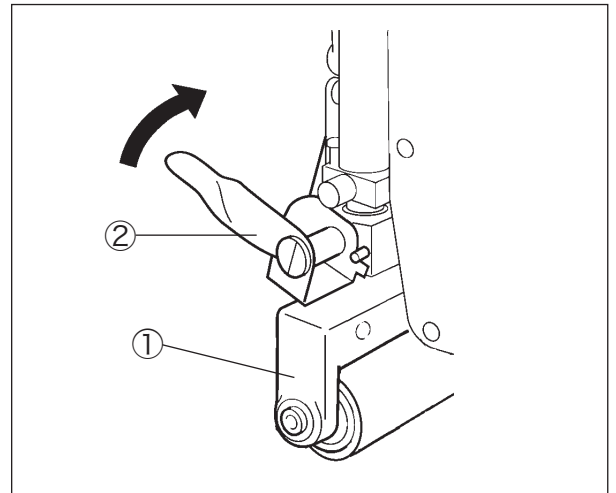


Fig. 5-16

5.14 Pressure of upper feed roller (with puller mechanism)

Adjust the pressure of the upper feed roller as low as possible to feed a fabric 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.

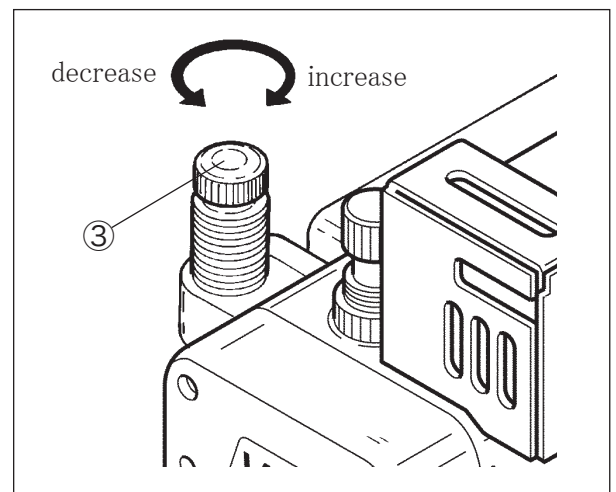


Fig. 5-17

5. Proper operation

⚠ CAUTION

Before operating, ALWAYS turn the power switch OFF and check that the machine has already stopped.

5.15 SP device and HR device

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

Also use HR device (needle point cooling) as an extra.

Use dimethyl silicon oil.

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

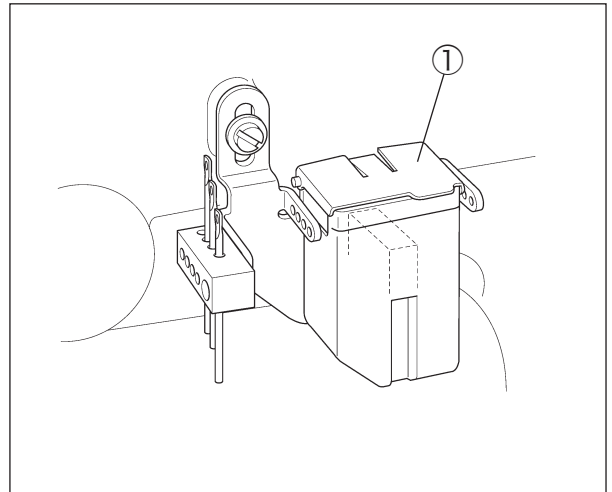


Fig. 5-18

⚠ 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.

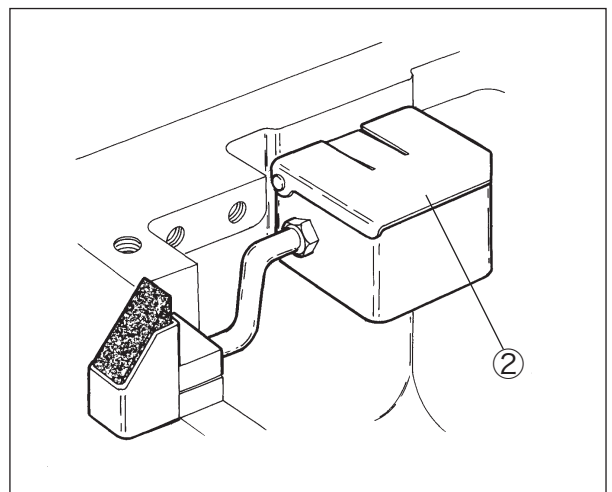


Fig. 5-19

5.16 Cleaning the machine



Clean waste thread and dust inside the machine at the end of work a day.

Remove the seal plug ③ at the back of the machine and clean the grooves in the stitch plate, feed dog area, and oil filter screen area once a week.

ⓘ NOTICE

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.

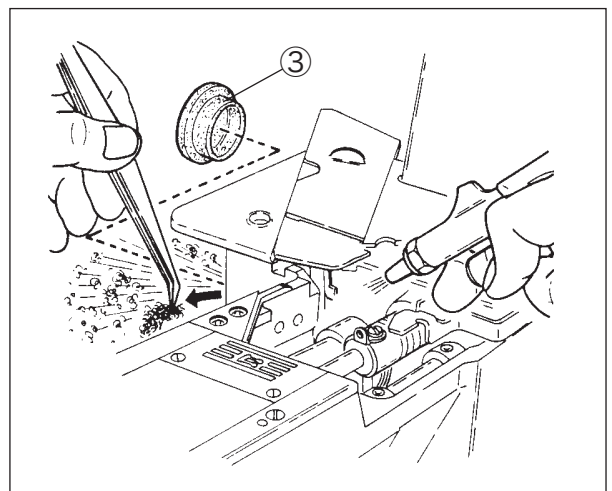


Fig. 5-20

6. Adjustments

⚠ CAUTION

Before operating, ALWAYS turn the power switch OFF and check that the machine has already stopped.

6.1 Needle thread tension

Needle thread take-up

Procedure:

- (1) Loosen the screws ② and ③ .
 - To tighten the needle thread, move the needle thread take-up ① in the direction T.
 - To loosen the needle thread, move the needle thread take-up ① in the direction L.
- (2) Tighten the screws ② and ③ securely.

As standard, set the part “a” horizontally, and make the distance between the screw ② the needle thread take-up ① tip to 34.5 mm when the needle bar is at the highest point.

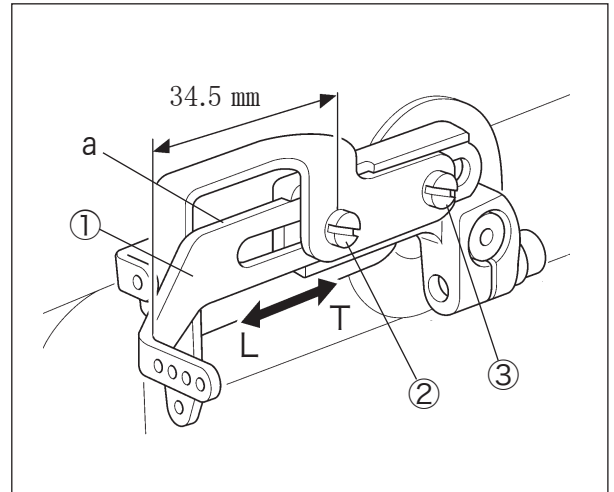


Fig. 6-1

Needle thread eyelet

If the above mentioned adjustments are not enough or want to make adjustment for each needle thread, perform the following steps.

Procedure:

- (1) Loosen the screws ⑤ .
 - To tighten the needle thread, move each eyelet ④ in the direction T.
 - To loosen the needle thread, move each eyelet ④ in the direction L.
- (2) Tighten the screws ⑤ securely.

As standard, make the distance between the needle thread eyelet holder ⑥ and each eye of the needle thread eyelet ④ as below.

- Left needle: 25 mm
- Middle needle: 17.5 mm
- Right needle: 10 mm

Adjusting all eyelets together:

- (1) Loosen the screw ⑦ of the SP device.
 - To tighten the needle thread, move the SP device ⑧ in the direction T.
 - To loosen the needle thread, move the SP device ⑧ in the direction L.
- (2) Tighten the screw ⑦ securely.

As standard, set the SP device at the highest point.

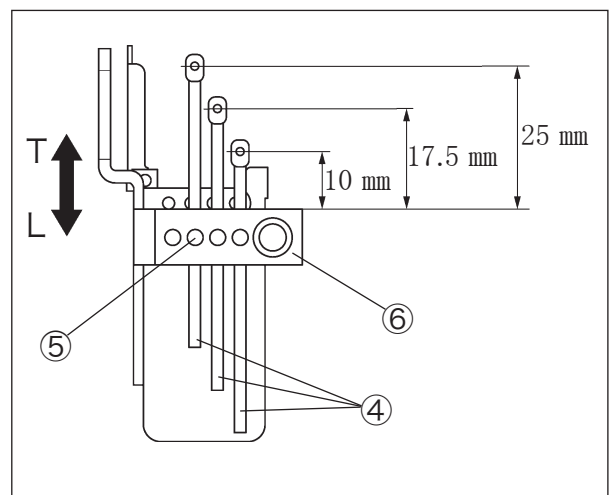


Fig. 6-2

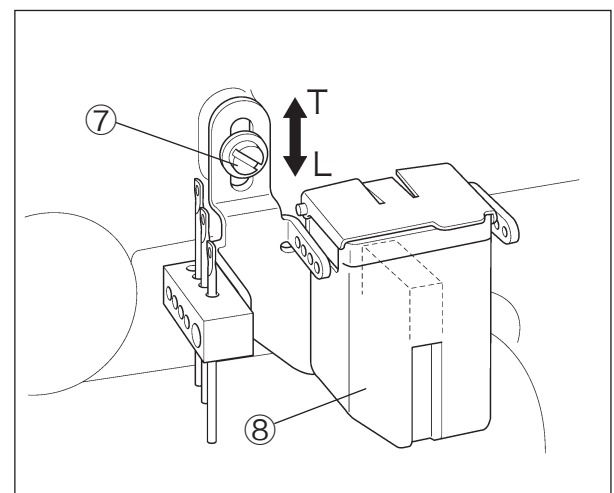


Fig. 6-3

6. Adjustments

CAUTION

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

As the needle thread loop may difficult to be formed depending on the type of thread, the looper can not catch the needle thread. This can cause skip stitch.

In this case, thread the needle thread through the needle thread retainer disc ① and the needle thread retainer support which has been attached with the machine as accessories.

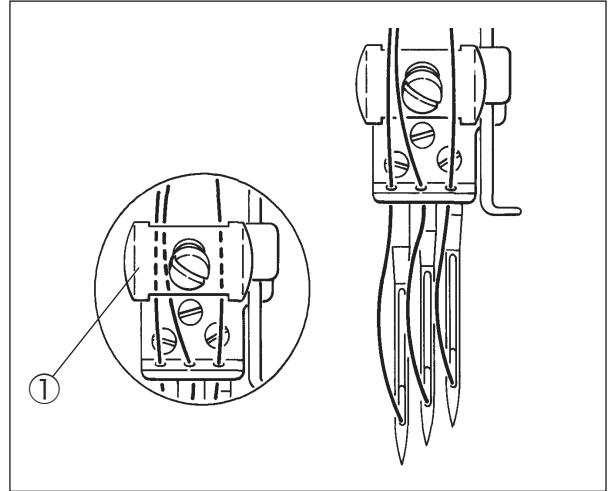


Fig. 6-4

Use the needle thread guide when the needle thread forms loop unstably with stretchable thread like synthetic thread.

As standard, align the center of the eye of the needle bar thread eyelet ② with the top of the needle thread guide ③, and make them parallel when the needle bar is at the lowest point.

Loosen the screw ④ to adjust the height and right-and-left position of the needle thread guide ③.

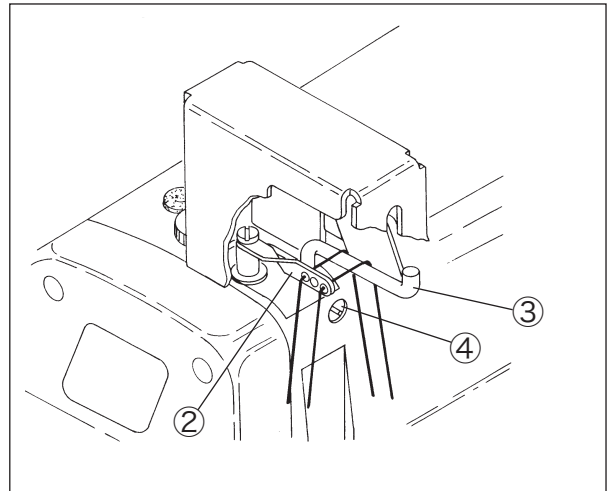


Fig. 6-5

6.2 Top cover thread tension

Loosen the screws ② and move the top cover thread eyelet(left) ① to adjust it.

- To decrease take-up amount, turn the eyelet(left) ① in the direction T.
- To increase take-up amount, turn the eyelet(left) ① in the direction L.

The part “a” on the top cover thread eyelet(left) ① is horizontal as standard.

When using stretchable thread like stretchable thread, turn the top cover thread eyelet(left) ① in the direction L.

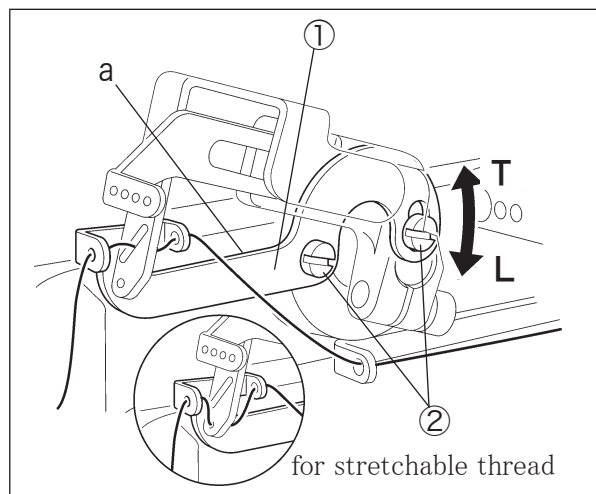


Fig. 6-6

ADVICE

Thread stretchable thread through the lower eye.

6.3 Looper thread tension

Align center of the eyes of the thread take-up eyelets(left) ④ and (right) ⑤ 3.0 mm under the lines ③ on the thread take-up eyelet holder as standard.

Loosen the screws of both thread take-up eyelets to adjust them.

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

ADVICE

When using stretchable thread, move the thread take-up eyelets ④ and ⑤ to the lowest points. Do not thread through the top cover tension disc ⑥.

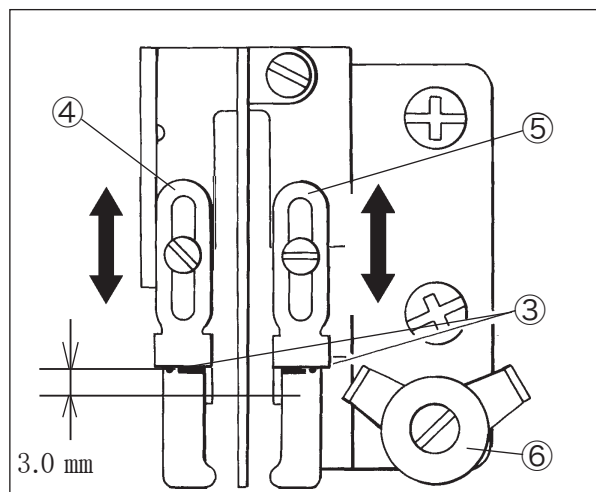


Fig. 6-7

6.4 Needle and spreader

6.4.1 Spreader

- (1) Loosen the screws ③ and ④ of the spreader holder. (Fig. 6-10)
- (2) Make the clearance between the left needle and the hook ② of the spreader ① to 0.5 - 0.8 mm. (Fig. 6-8)
- (3) Make the clearance between the center of the left needle and the hook ② to 4.5 - 5.5 mm when the spreader ① is at the extreme left. Then tighten the screw ④ securely. (Figs. 6-8 and 6-10)
- (4) Make the height from the top of the stitch plate to the bottom of the spreader ① to 8.5 - 9.5 mm. Then tighten the screw ③ securely. (Figs. 6-9 and 6-10)

! ATTENTION

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

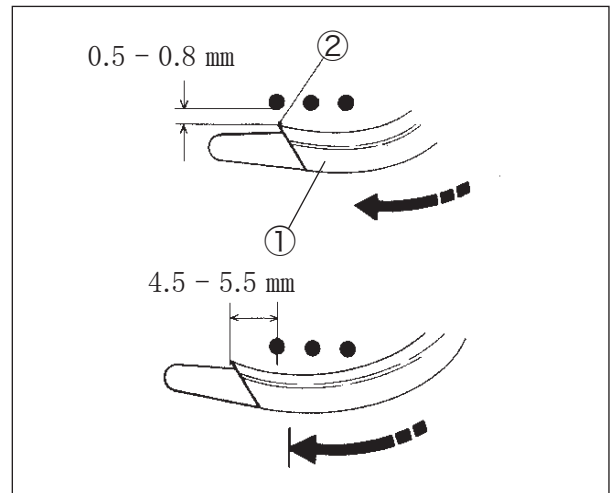


Fig. 6-8

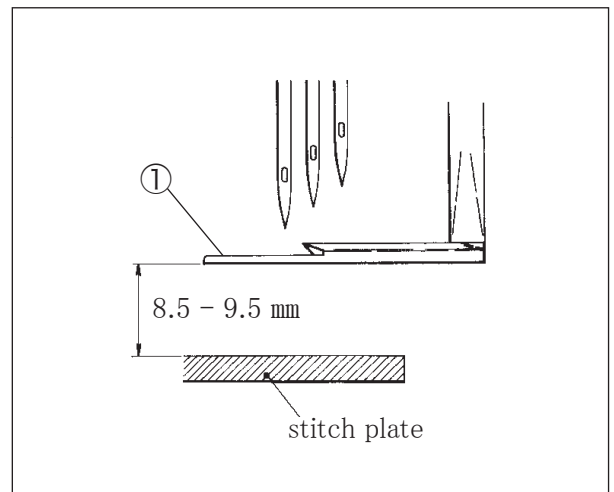


Fig. 6-9

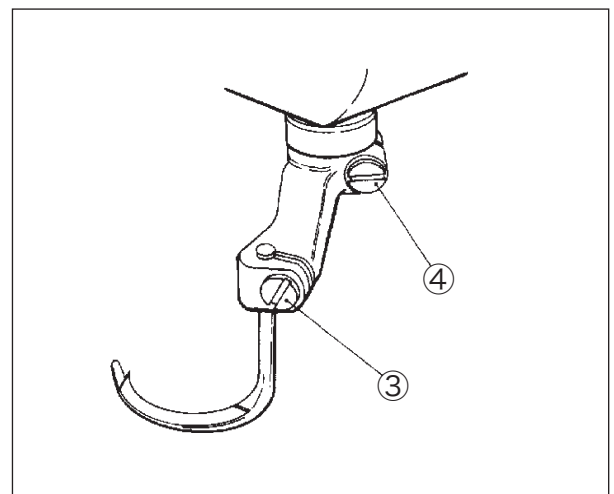


Fig. 6-10

6.4.2 Top cover thread guide

- (1) Loosen the screws ② of the top cover thread guide ① . (Fig. 6-11)
- (2) Make the clearance between the top of the spreader ③ and the bottom of the top cover thread guide ① to 0.5 mm . (Fig. 6-11)
- (3) Set the hook ④ in the center of the slot of the top cover thread guide ① when the spreader ③ is at the extreme right. Then, tighten the screws ② securely. (Figs. 6-11 and 6-12)

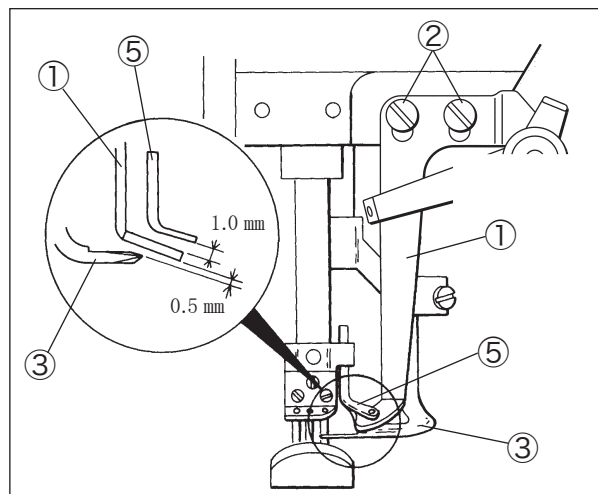


Fig. 6-11

6.4.3 Top cover thread eyelet

- (1) Loosen the screw ⑥ of the top cover thread eyelet ⑤ . (Fig. 6-12)
- (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. 6-11)
- (3) Set the eye of the top cover thread eyelet ⑤ along the extending line from the slot of the top cover thread guide ① . (Fig. 6-12)
- (4) Tighten the screw ⑥ securely. (Fig. 6-12)

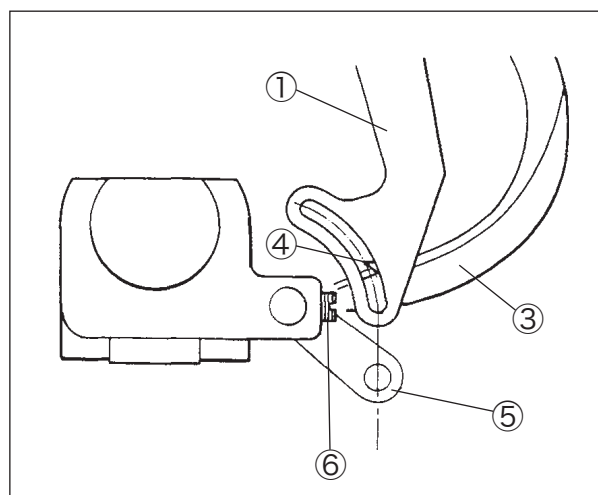


Fig. 6-12

6. Adjustments

6.5 Distance between needle and looper

The distance “L” between the looper tip and the center of the right needle depends on 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 adjust the distance.

① 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 "L" |
|---------------------------|------------|--------------------------|
| 3.2 mm (32) | A | 4.4 mm |
| 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 timing gauge (No. 95220) makes it possible to adjust the distance easily.

The gauge is an extra part. Place an order with our agents or directly with us, if needed.

6.6 Using timing gauge

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

Move the looper at the extreme right. Keep fitting the right needle into the groove “V” corresponding needle distance, and fit the looper tip to the gauge.

Then, tighten the screw ② securely.

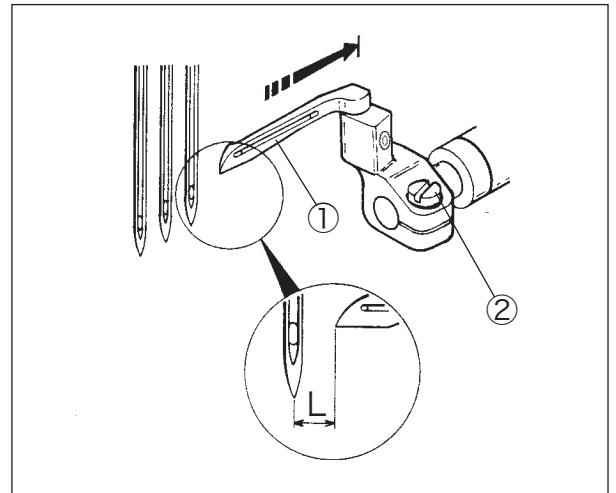


Fig. 6-13

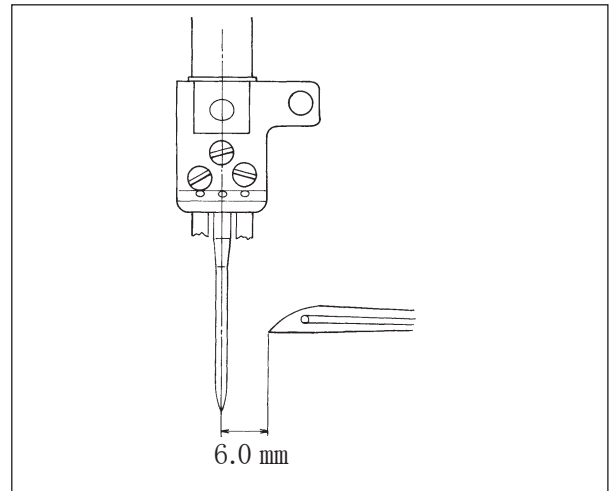


Fig. 6-14

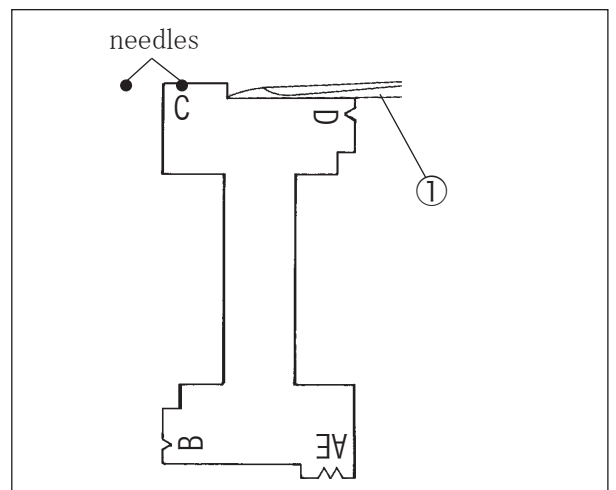


Fig. 6-15

6.7 Height of needle

- (1) Install the needle to the left hole in the needle clamp.
- (2) Check the looper is 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. Adjust the looper tip to pass 0.8 - 1.3 mm above the top of the needle eye.
- (5) Tighten the screw ① securely. Check that the needle drops in the center of the needle hole of the stitch plate respectively.

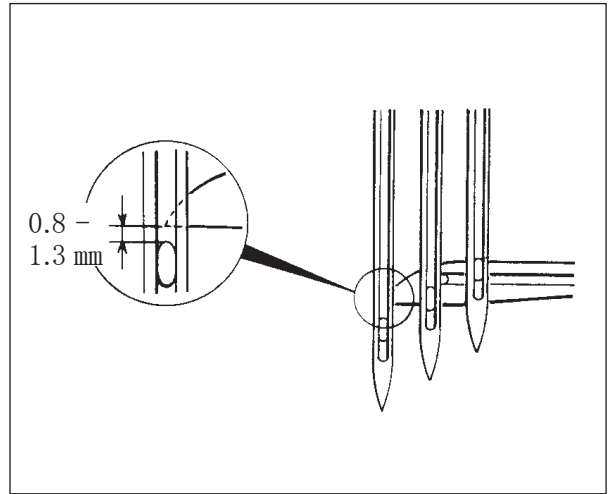


Fig. 6-16

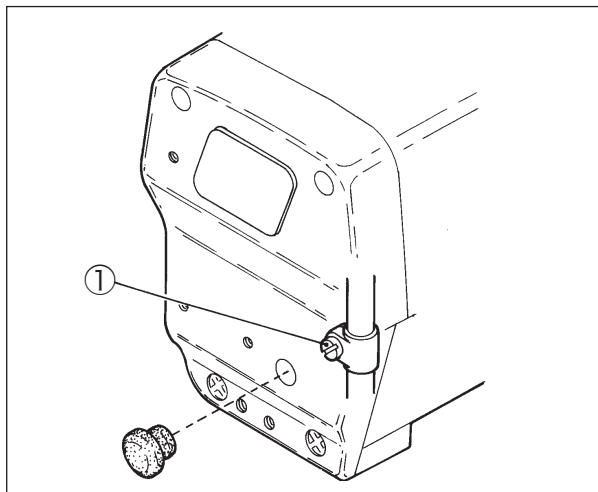


Fig. 6-17

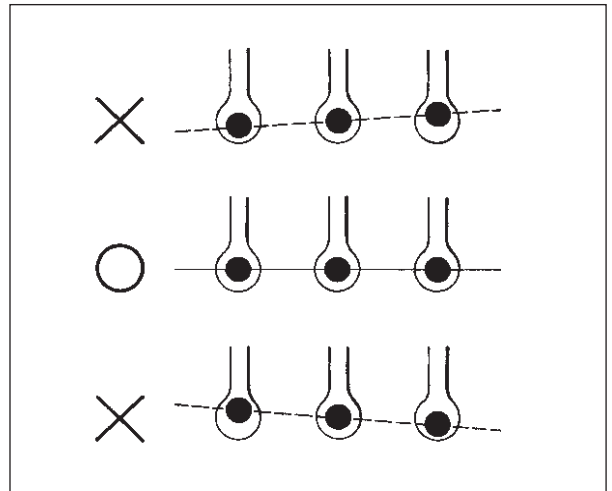


Fig. 6-18

6.8 Needle and back-and-forth position of 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 - 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.

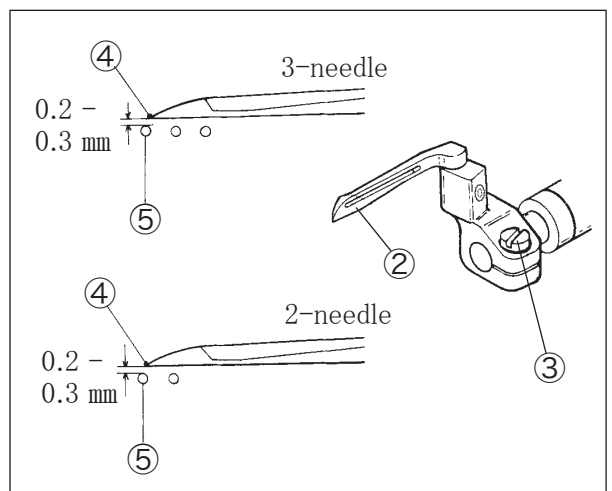


Fig. 6-19

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 ① and ④ , and move the needle guard(rear) ② back or forth. Make the clearance between the right needle and the looper tip to 0 - 0.05 mm .
- (7) Check the clearance between the left needle and the needle guard(rear) ② is 0 - 0.05 mm with keeping (6).
- (8) Tighten the screws ① and ④ securely.

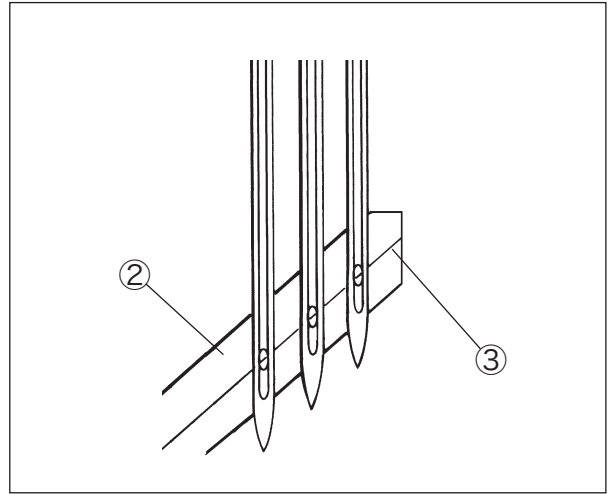


Fig. 6-20

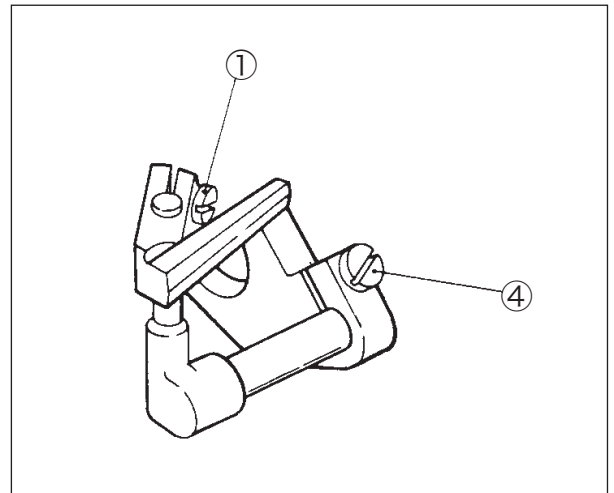


Fig. 6-21

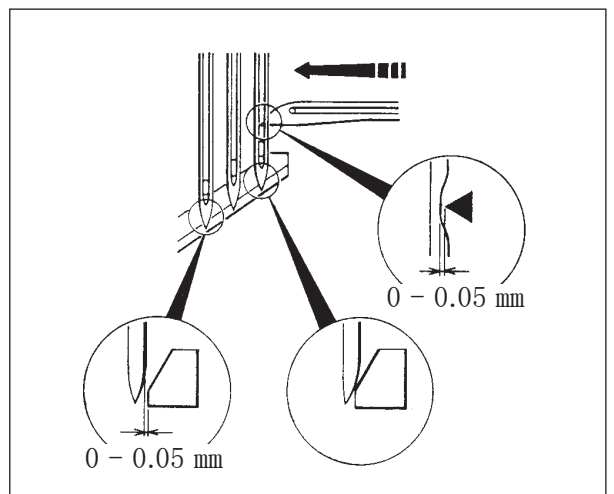


Fig. 6-22

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 - 2.0 mm.
- (3) Tighten the screw ① securely.
- (4) Loosen the screws ① and ③. Adjust the clearance between the needle guard(front) ② and the left, or right needles to 0 - 0.3 mm respectively.
- (5) Tighten the screws ① and ③ securely.

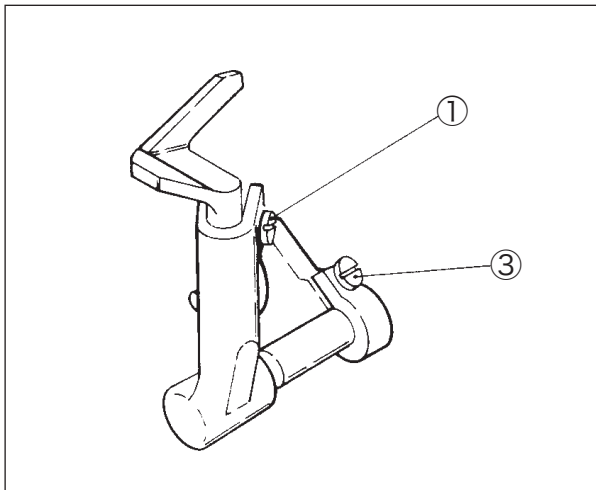


Fig. 6-24

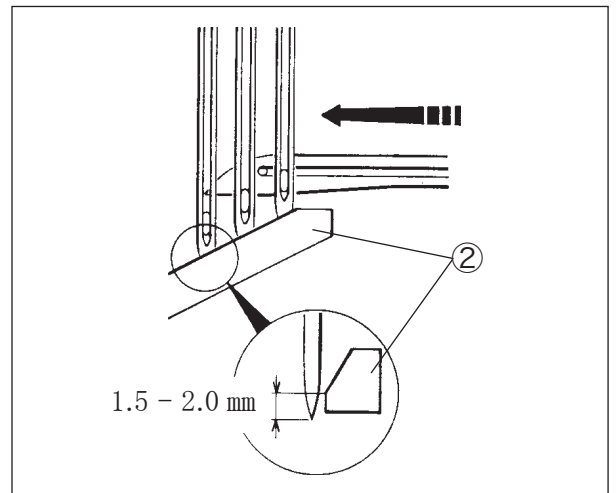


Fig. 6-23

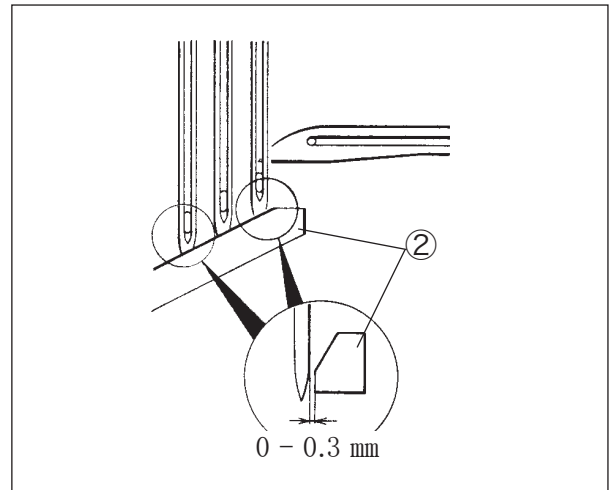


Fig. 6-25

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 - 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 ⑥ and ⑦ to adjust them.

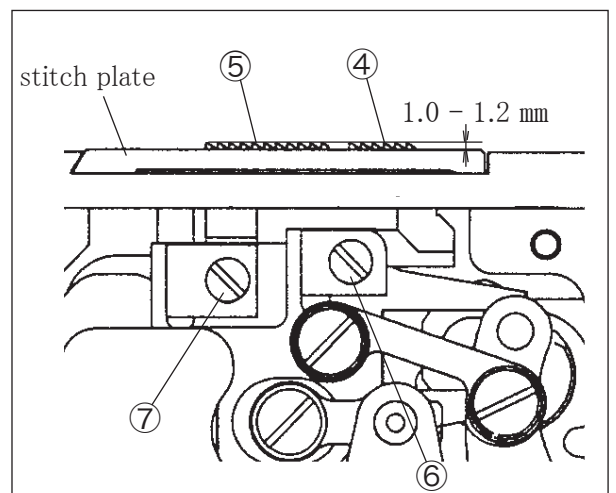


Fig. 6-26

6.12 Changing range of differential ratio

Differential ratio 1:1.1 - 1:2

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

NOTE

Max. stitch length of the main feed dog is 2.3 mm in a differential ratio of 1:2, and 3.0 mm in 1:1.5 respectively.

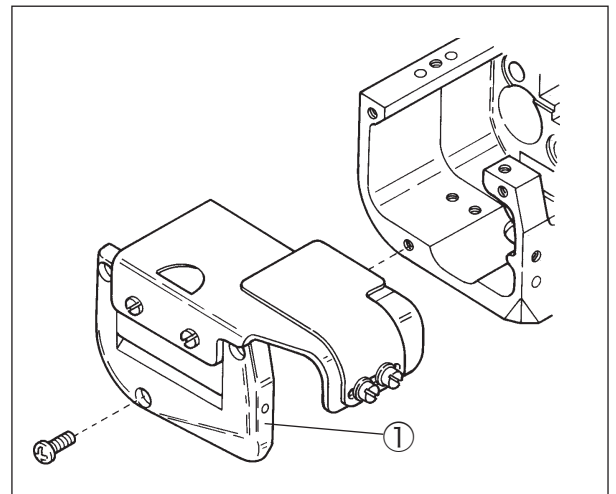


Fig. 6-27

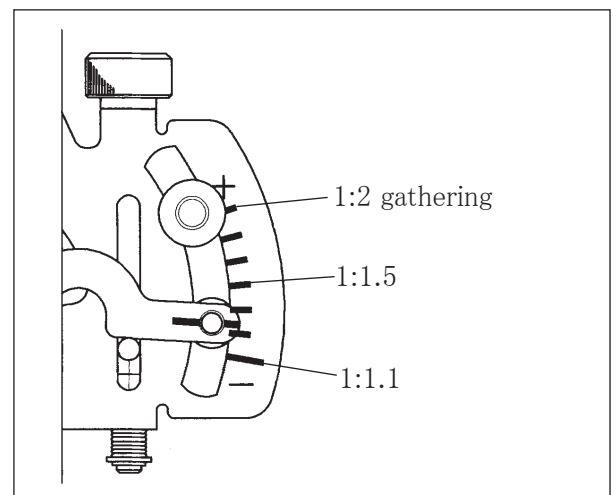


Fig. 6-28

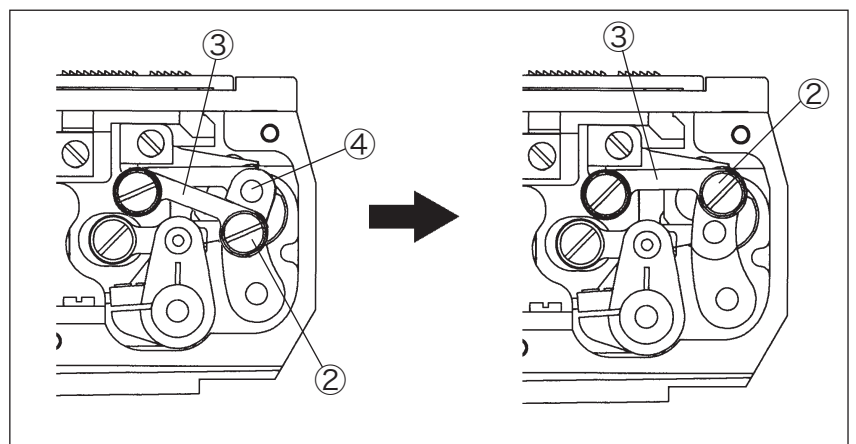


Fig. 6-29

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) Push down the lifter lever ② to make the lift between the top of the stitch plate and the bottom of the presser foot to 5.5 mm (7.0 mm).
- (3) Apply the screw ③ to the lifter lever ② when the presser foot is raised by 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 by 5.5 mm (7.0 mm).
- (7) Tighten the screws ⑤ securely.

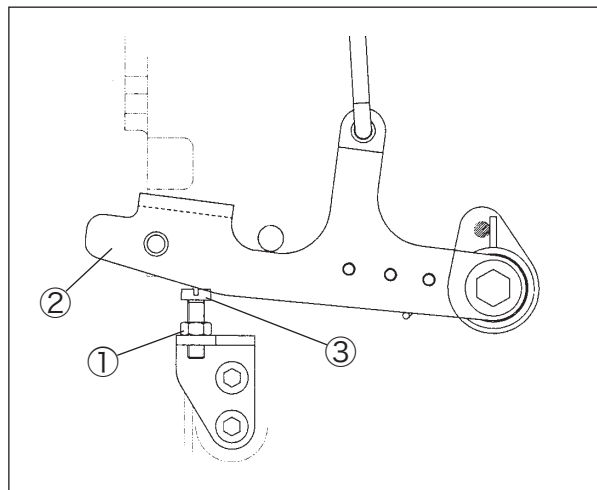


Fig. 6-30

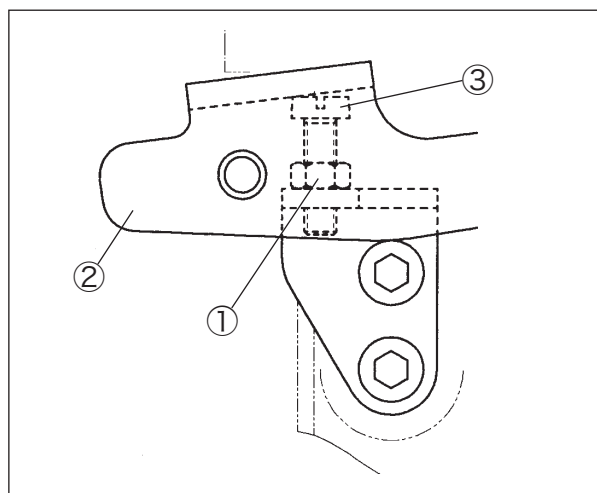


Fig. 6-31

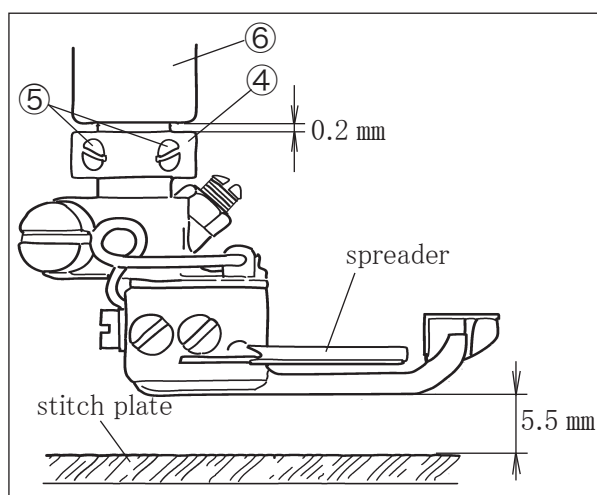


Fig. 6-32

6.14 Replacing fabric presser

The fabric presser ② for hem width 19.1 mm (3/4 inches) has been set on the right of the presser foot ① 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 screw ③ of the presser foot ①.

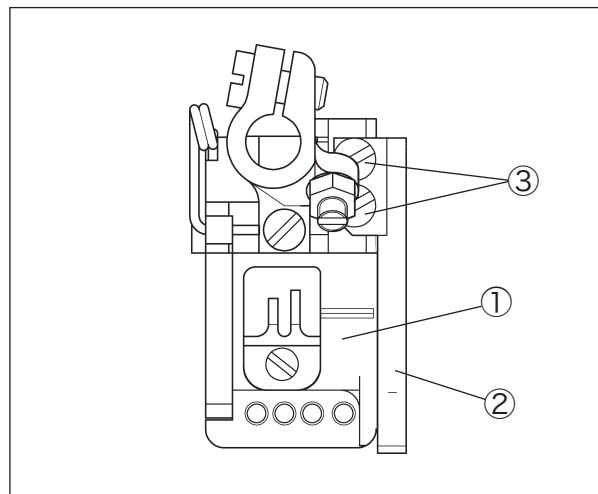


Fig. 6-33

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 screwdriver.
- (3) Rotate the handwheel until the adjusting screw ③ comes right above. (Fig. 6-34)
- (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.

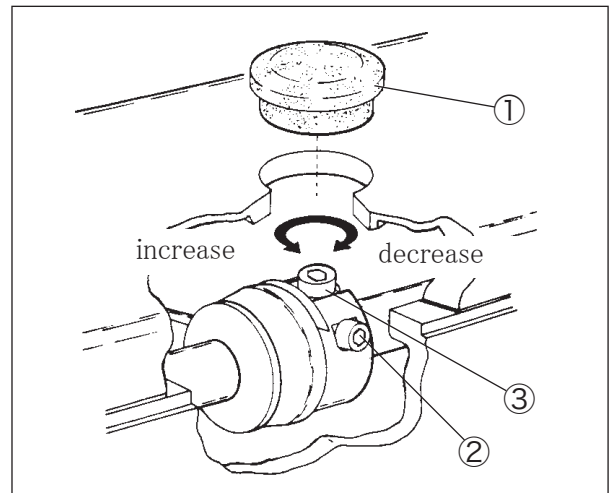


Fig. 6-34

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.

! ATTENTION

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

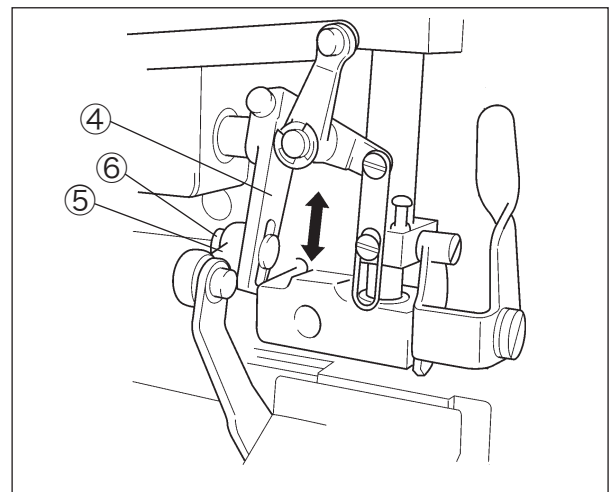


Fig. 6-35

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.

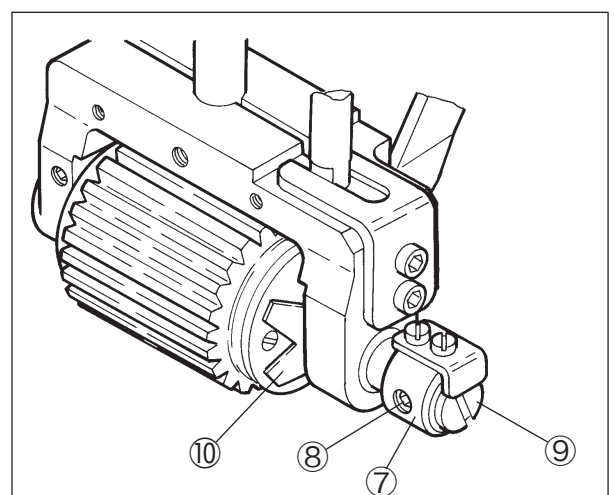


Fig. 6-36

7. Trimming mechanism

⚠ CAUTION

Before operating, ALWAYS turn the power switch OFF and check that the machine has already stopped.

7.1 Adjusting trimming position of fabric

Loosen the screw ① of the lower knife bracket to move the lower knife holder ② right and left.

Adjust it as follows:

- (1) Loosen the screw ① .
- (2) Move the lower knife holder ② at required position.
- (3) Tighten the screw ① with a tightening torque of 1.5 – 2 N·m.
- (4) Rotate the handwheel to check the sharpness of the blades by setting a thread between the upper knife ③ and the lower knife ④ .
- (5) Set the top of the lower knife ④ 7.0 mm apart from the upper knife ③ tip (at the base of the blade). Then, tighten the screw ⑤ of the collar(left) ⑥ .
- (6) Recheck the knives cut properly.

! ATTENTION

Refer to “7.2 Adjusting suction pipe(front)” and “7.3 Adjusting suction pipe cover” after changing trimming position of a fabric.

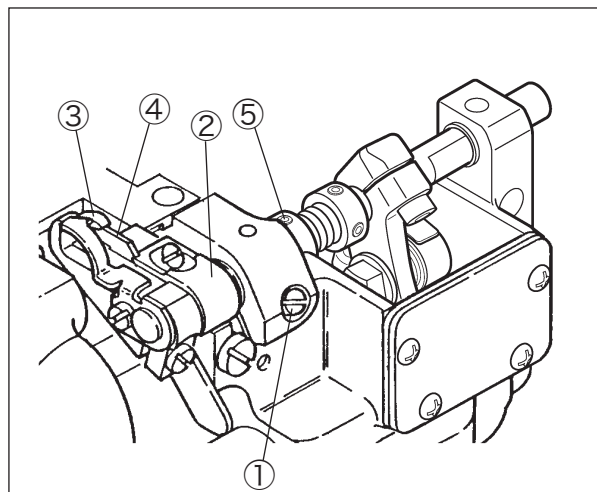


Fig. 7-1

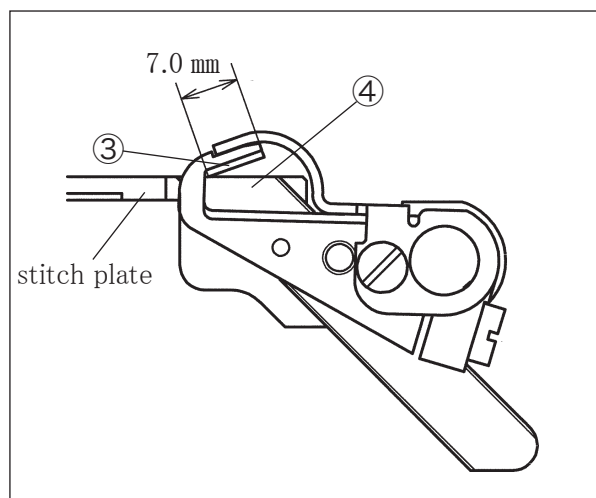


Fig. 7-2

7.2 Adjusting suction pipe (front)

Set right-and-left position of the suction pipe(front) ② about 5 mm 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.

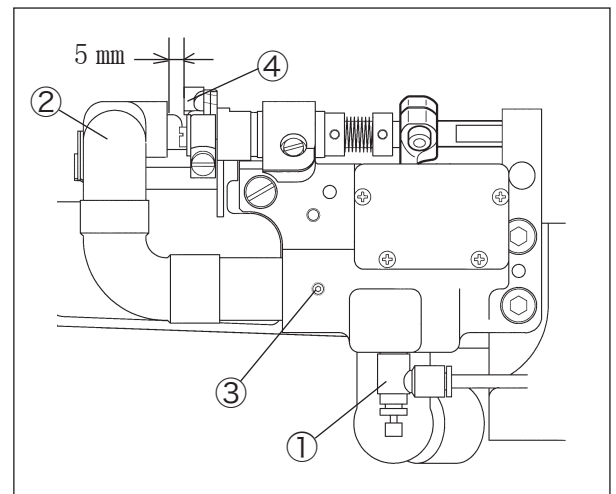


Fig. 7-3

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.

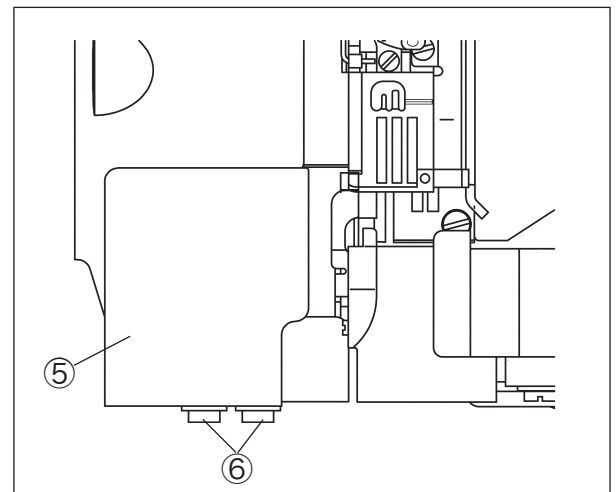


Fig. 7-4

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.

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 mm 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.

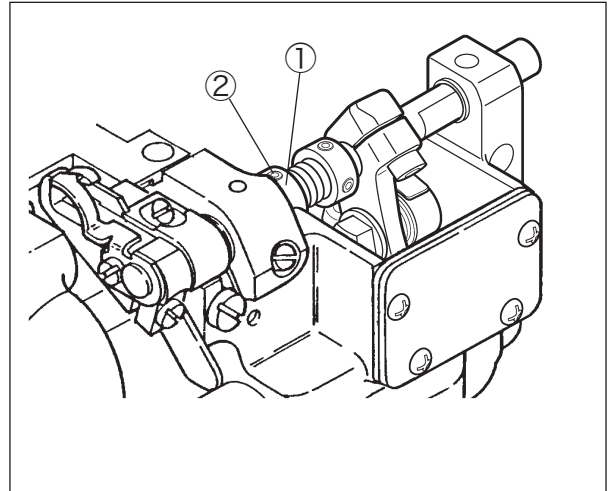


Fig. 7-5

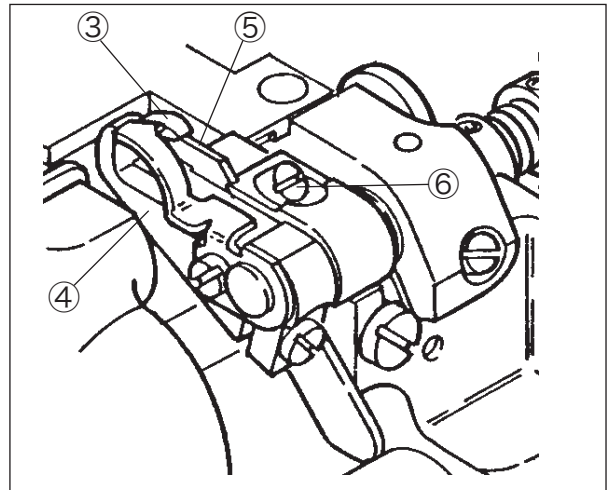


Fig. 7-6

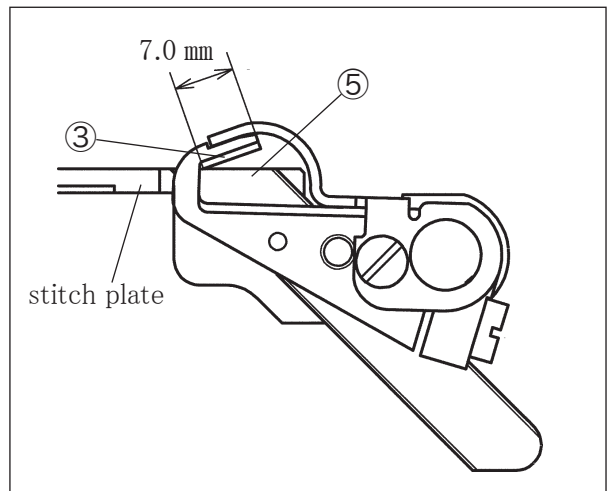


Fig. 7-7

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 mm apart from the upper knife ③ tip (at the base of the blade). Then, tighten the screw ② securely. (See Fig. 7-7)
- (7) Recheck the knives cut properly.

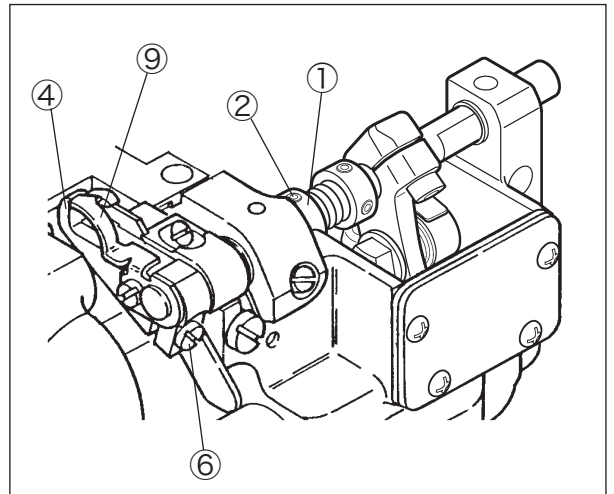


Fig. 7-8

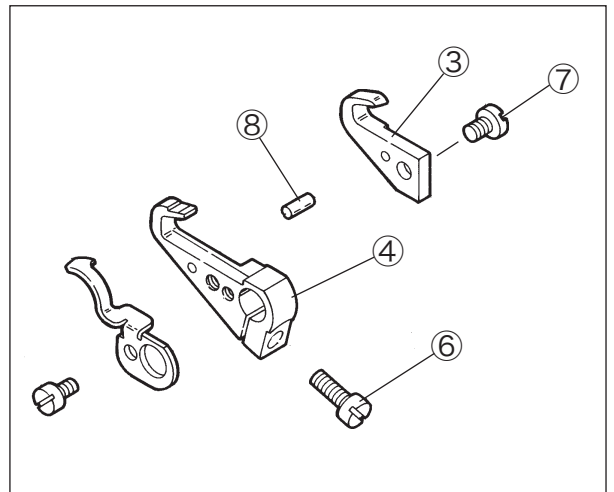


Fig. 7-9

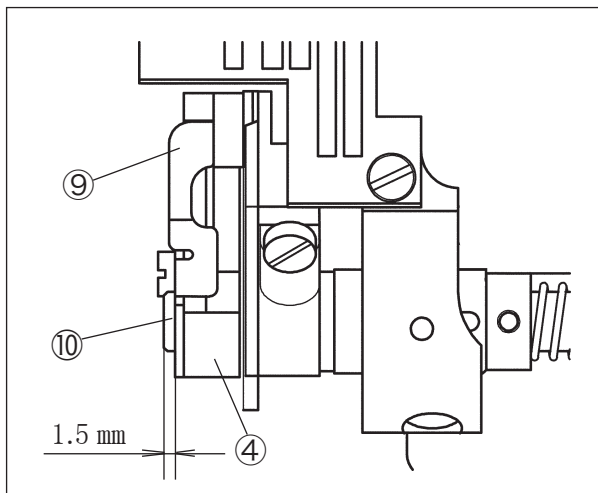


Fig. 7-10

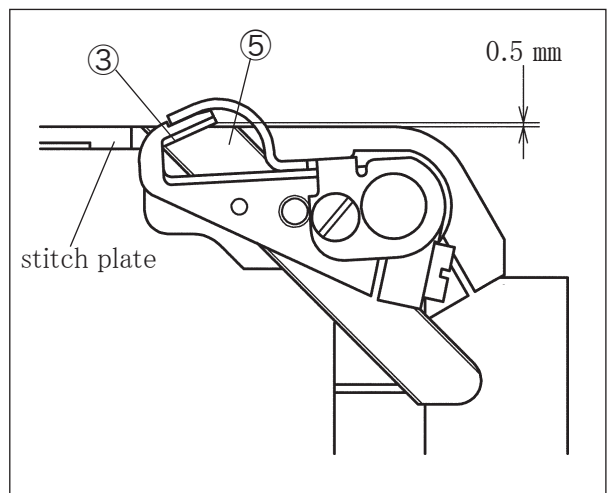


Fig. 7-11

7.6 Adjusting upper knife stroke

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

- (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.
 - 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 mm above the top of the lower knife. Then, tighten the screw ⑦ securely. (See Fig. 7-12)
- (6) Loosen the screw 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 mm apart from the upper knife ⑩ tip (at the base of the blade). Then, tighten the screw ⑨ securely. (See Fig. 7-12)
- (9) Recheck the knives cut properly.
- (10) Reset the bracket cover ② and the bracket cover gasket ③ with the screws ① .

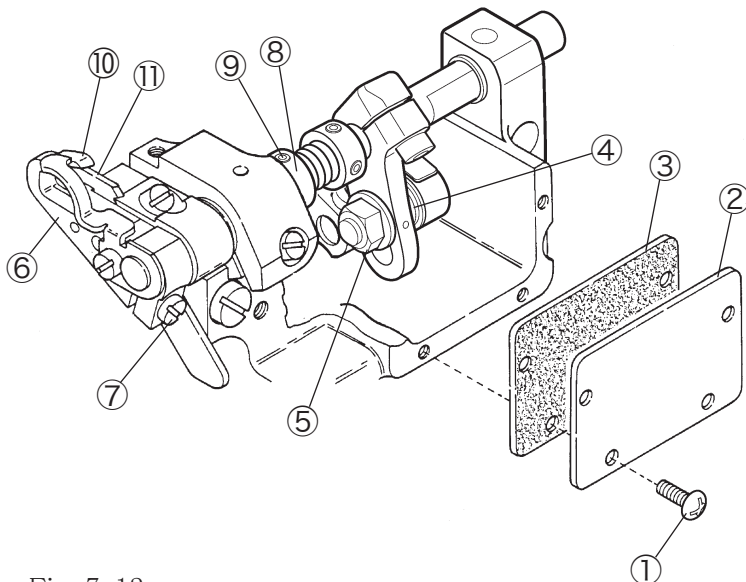


Fig. 7-12

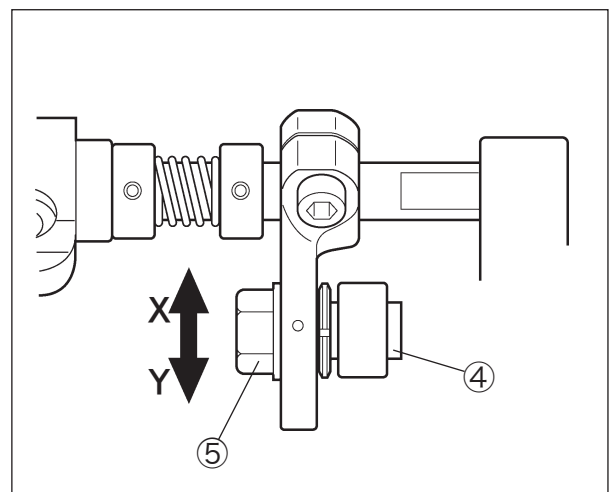


Fig. 7-13

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.

i 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.

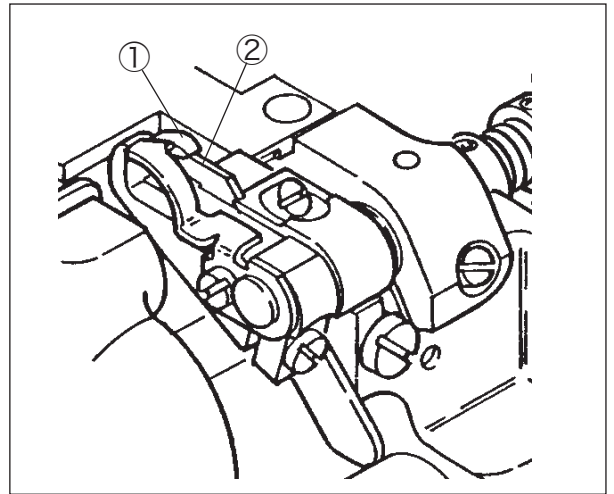


Fig. 7-14

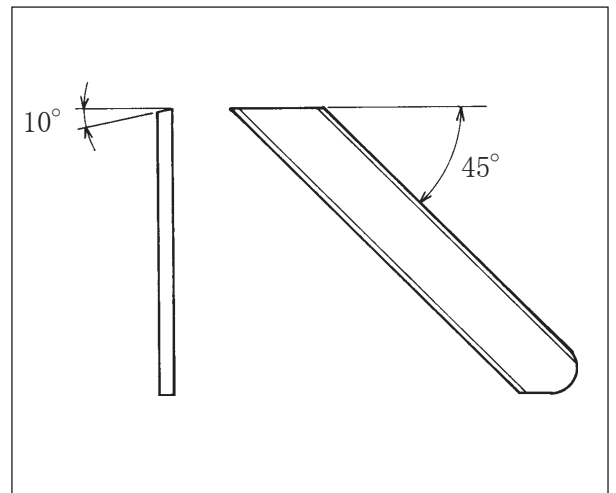


Fig. 7-15

8. Specifications

| | |
|------------------------------|---|
| Model | VG3511-8F |
| Description | High speed cylinder bed 3-needle interlock stitch machine with left hand trimming mechanism |
| Dimensions | 470 mm (L) × 220 mm (W) × 405 mm (H) |
| Circumference of Cylinder | 340 mm |
| Weight | 41.5 kg |
| Stitch Type | ISO 406, 407, 602, 605 |
| Application | Hemming operation of knitted fabric for lightweight material |
| Sewing Speed | Up to 5500 rpm (during intermittent operation) |
| Stitch Length | 1.4 - 3.6 mm Number of stitches per inch(25.4 mm) 7 - 18 stitches per 30 mm 8 - 21 stitches |
| Needle System | UY × 128GAS #10 - #14 (standard: #10) |
| Needle Distance | 3-needle: 4.8 mm , 5.6 mm , 6.4 mm |
| Needle Stroke | 31 mm |
| Upper knife stroke | 3.0 - 4.0 mm |
| Suctioning chips | Ventury or vacuum system |
| Presser Foot Lift | For 5.6 mm of needle distance with spreader: 5.5 mm , without spreader: 7.0 mm |
| Feed Regulation | By adjusting screw (available for micro adjustment) |
| Differential Ratio | Standard: 1 : 0.7 - 1 : 1.4 1 : 1.1 - 1 :2 (stitch length is 2.5 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 | CE Marking |
| Noise declaration | $L_{pA}=83.6\text{dB}$ (5,500sti/min) according to ISO 10821-C6.2-ISO 11204 GR2 |

Table 6







Yamato

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