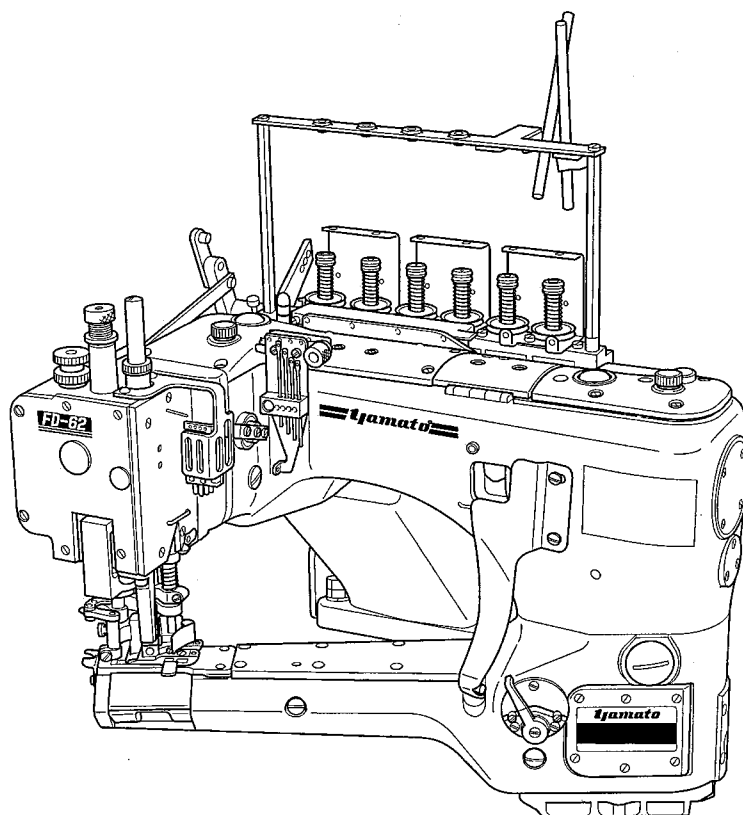


# ***Yamato***<sup>®</sup>

## Instruction Manual

HIGH SPEED FEED-OFF-THE-ARM MACHINE FOR FLAT SEAMING

# FD-62E



Thank you for purchasing the Model FD-62E.

Before using your FD-62E, 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.

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## **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.



# Safety instructions



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.
- (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) Do not modify the sewing machine by the customer's judgment.
- (5) 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** indicates potentially hazardous situations which, if not heeded, could result in death or serious injury to you and others.

**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.



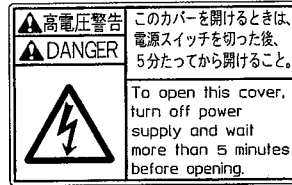
This mark indicates the warning which, if not heeded, could result in death or Serious injury.



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.

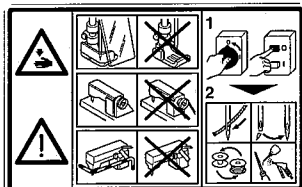


Stepping motor and solenoid may overheat if used continuously. To prevent a burn, take care not to touch.

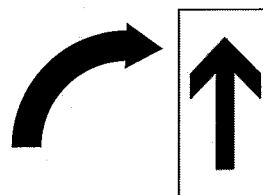


If not connected earth line, static electricity may be generated and inflict injury on person. In addition, the malfunction of electric system may cause injury to person.

## 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'.



# 1. Name of each part

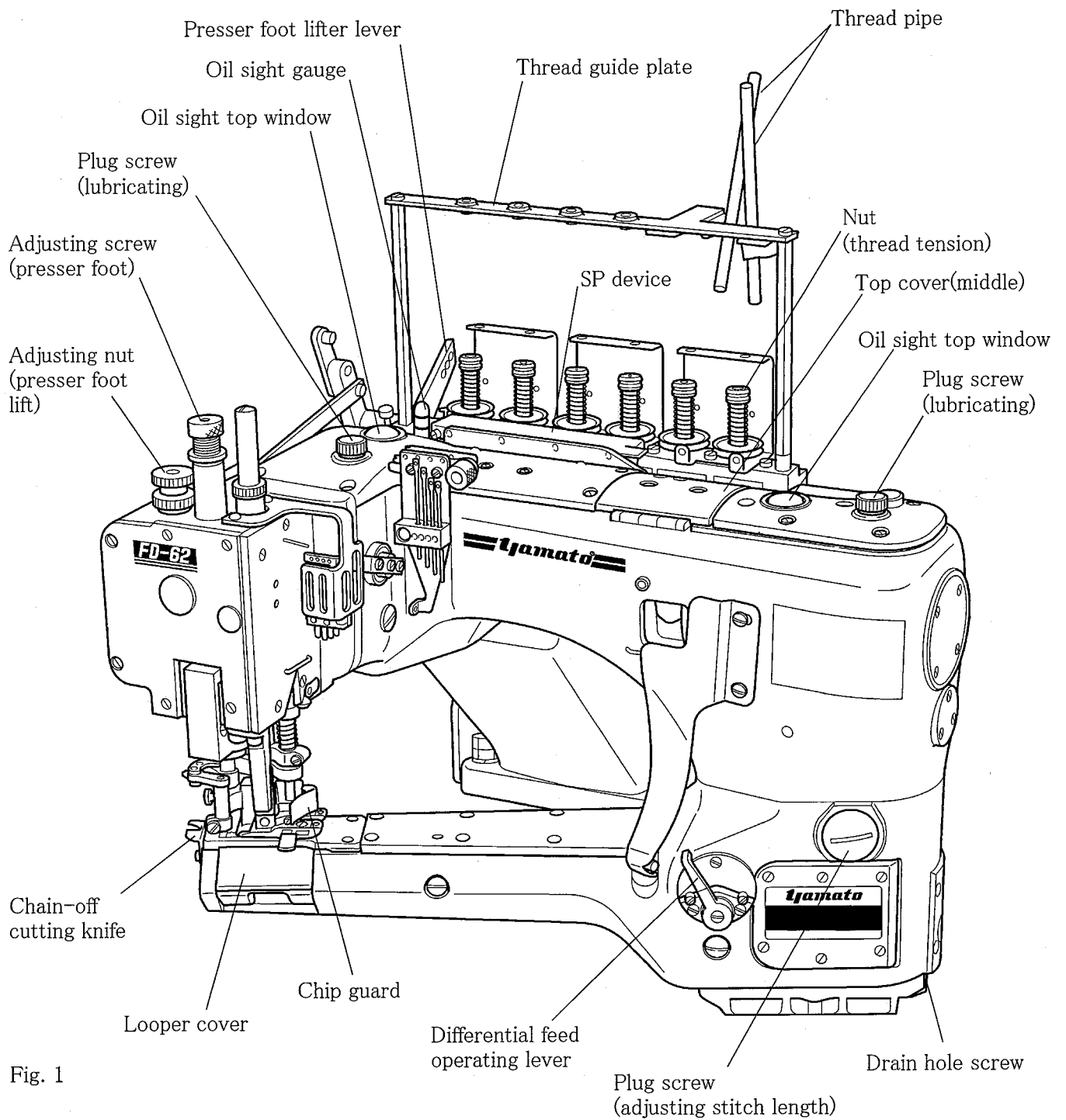


Fig. 1

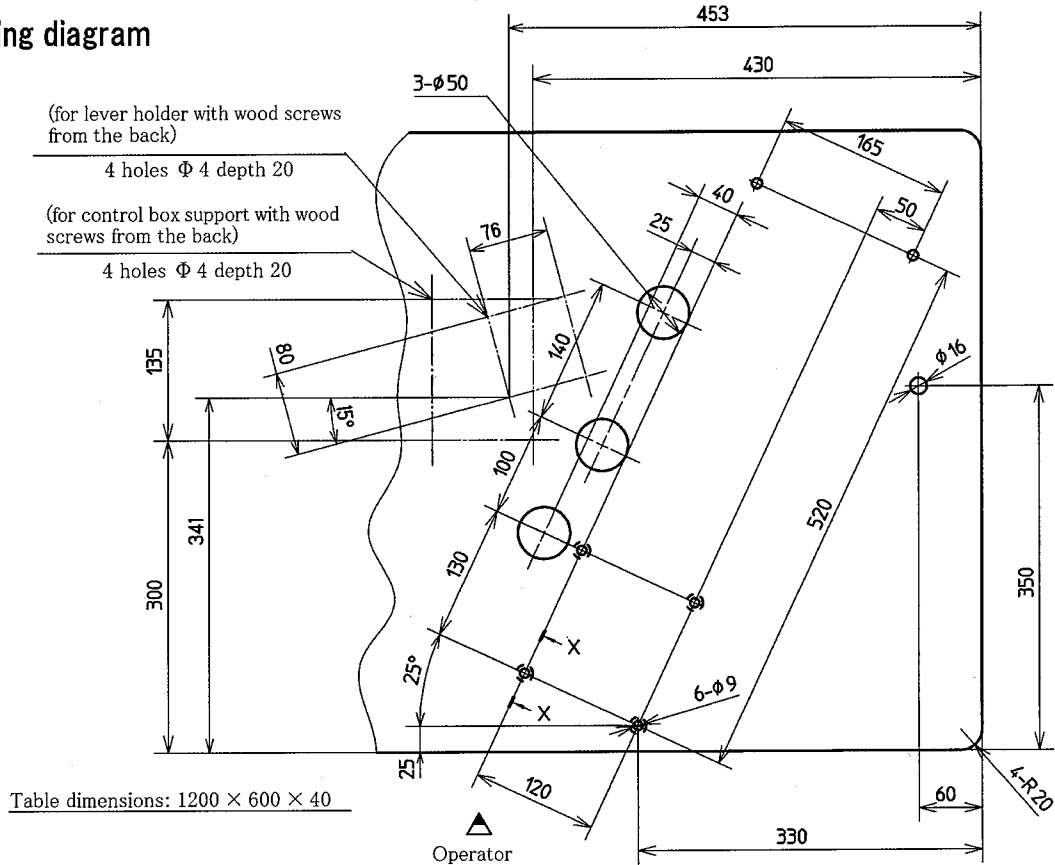


# 2. Installation

## 2.1 Installation

### 2.1.1 Motor table top type

Table cutting diagram



### ⑤ Motor support (lower)

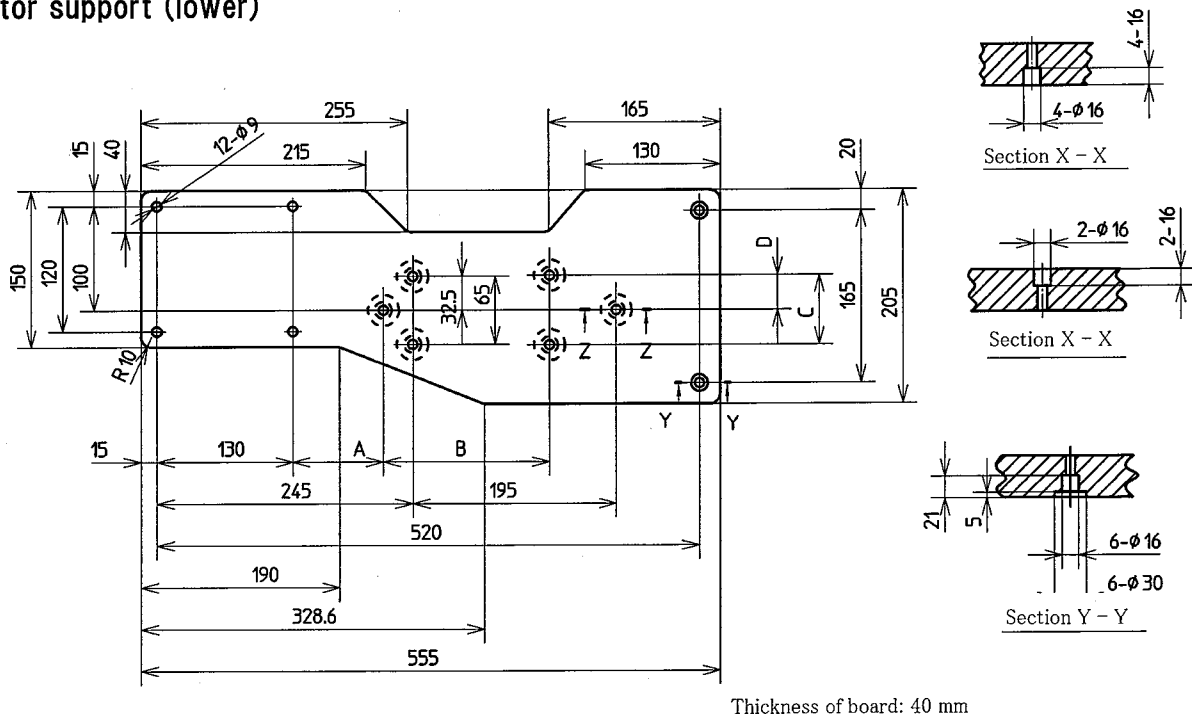


Fig. 2

### Installing motor

1. Install the pulley ① and handwheel ② onto the motor ③.
2. Install the motor ③ onto the motor support ④⑤.
3. Put the motor ③ and motor support ④⑤ on the machine table ⑥, install them and sewing machine supporting block ⑦ onto the machine table ⑥.
4. Install the belt cover bracket ⑧ onto the sewing machine supporting block ⑦.
5. Install the control box support ⑨ onto the bottom of the machine table. Then, install the control box ⑩ on the control box support ⑨.
6. Connect the motor ③ and the control box ⑩ with the extension cords ⑪⑫.

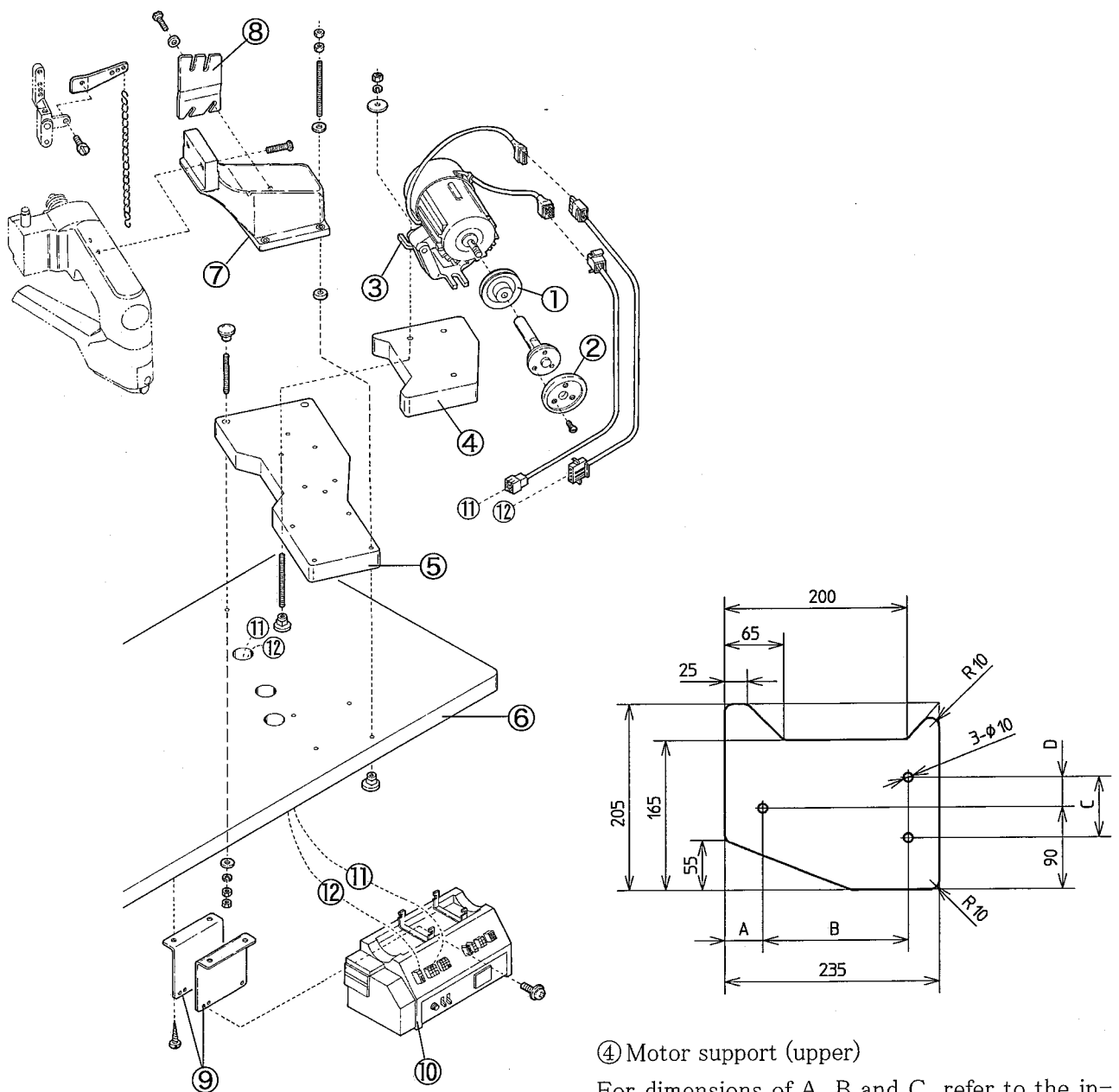


Fig. 3

## 2. Installation

### 2.1.2 Installing machine head

Install the sewing machine onto the sewing machine supporting block with two screws. (Fig. 4)

#### **WARNING**

If the machine falls down, it can occur injury to person and the machine can be damaged.

When installing the machine, be sure to have an assistant.

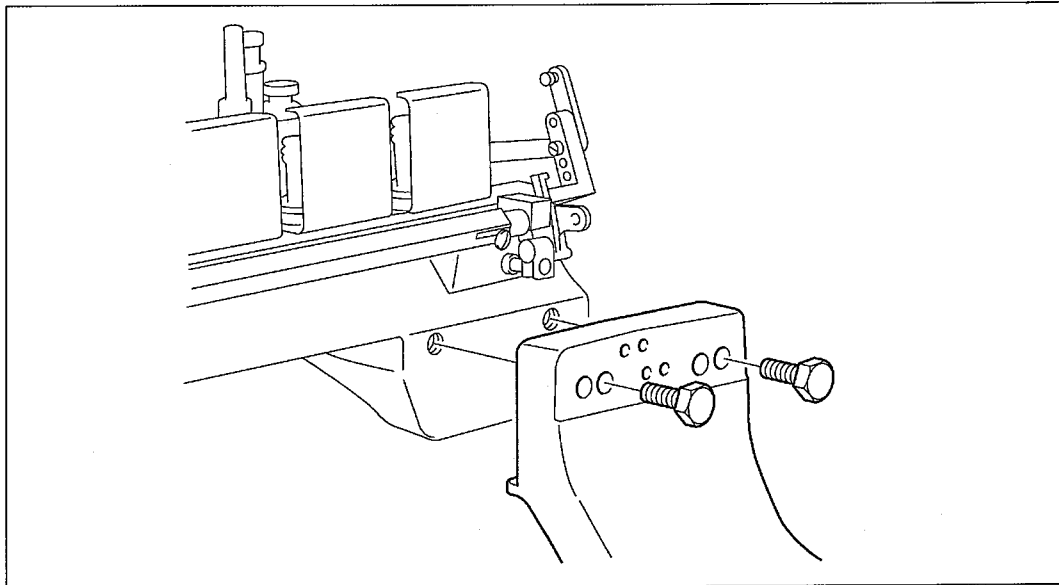


Fig. 4

When using the pedestal, install the sewing machine on the pedestal with two screws. (Fig. 5)

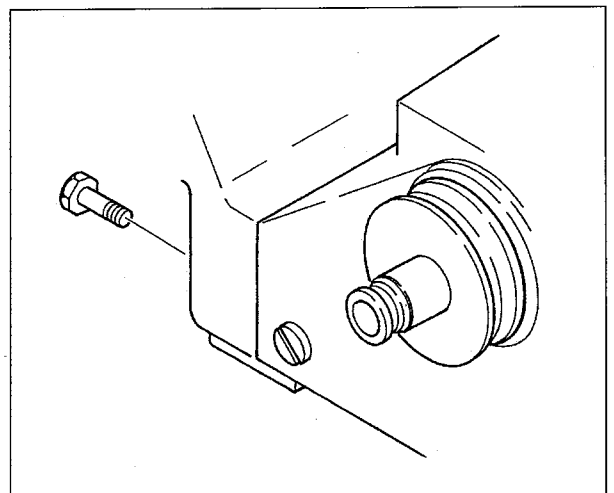


Fig. 5

**WARNING**

Before operation, unplug the motor's power cord from the outlet.

## 2.2 Adjusting presser foot lift

### 2.2.1 Presser foot connecting lever

Set the presser foot connecting lever ① with the screw ②.  
(Fig. 6)

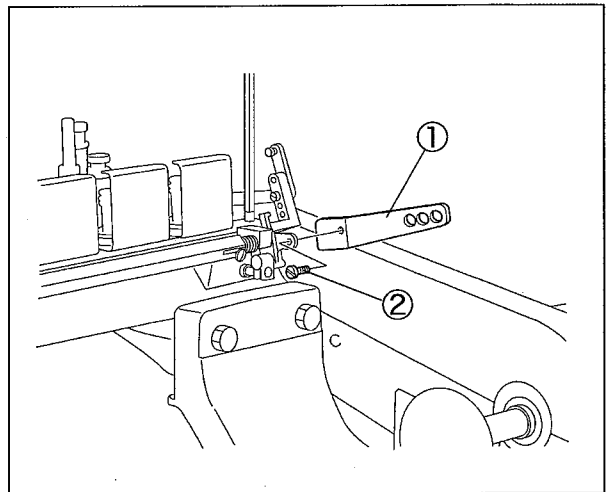


Fig. 6

When using the pedestal, set the presser foot lifting connector ③ with the screw ④.

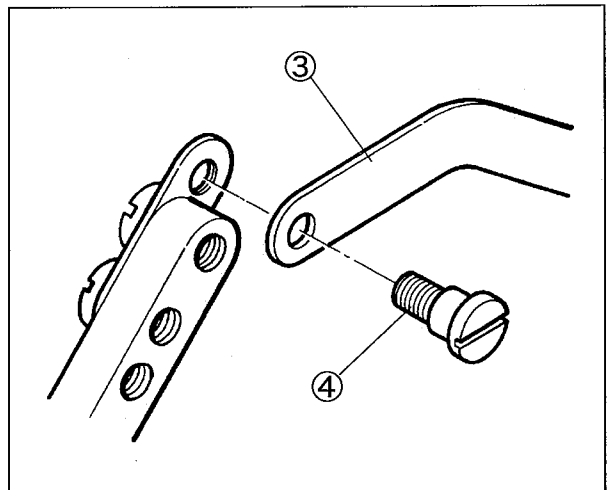


Fig. 7

## 2. Installation

### 2.2.2 Presser foot lift

1. As standard, make the clearance between the presser bar lifter lever ① and the presser bar connecting bracket ② to 1 mm when the presser foot touches the stitch plate closely.

Note: The clearance between the body of the presser foot and the presser foot spring plate is 0.3 mm.

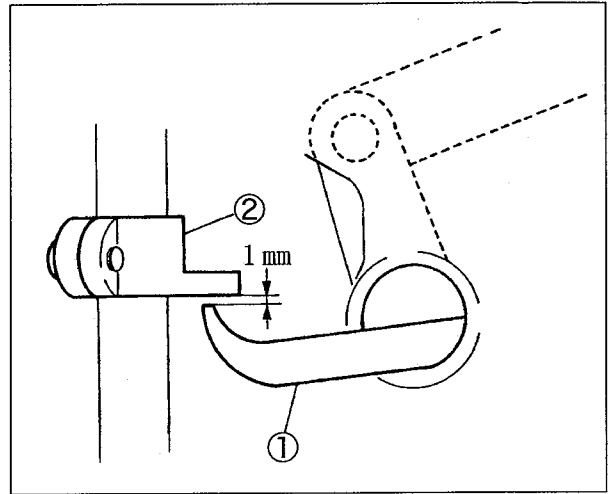


Fig. 8

#### Adjustment:

- (1) Remove the seal plugs ③④ to check the clearance.
- (2) Loosen the screws ⑤ of the presser foot lifter lever link (long).
- (3) Move the presser foot lifter lever link(short)⑥ right or left to adjust the clearance.

#### **⚠ CAUTION**

After adjusting the clearance of the presser bar lifter lever ①, adjust the presser foot lift at the lowest point of the presser bar. (See page 7.)  
If not adjusted, it can cause damage to the top cover thread hook.

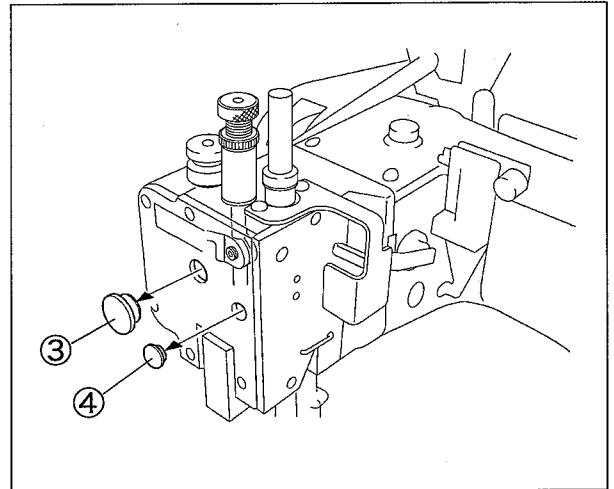


Fig. 9

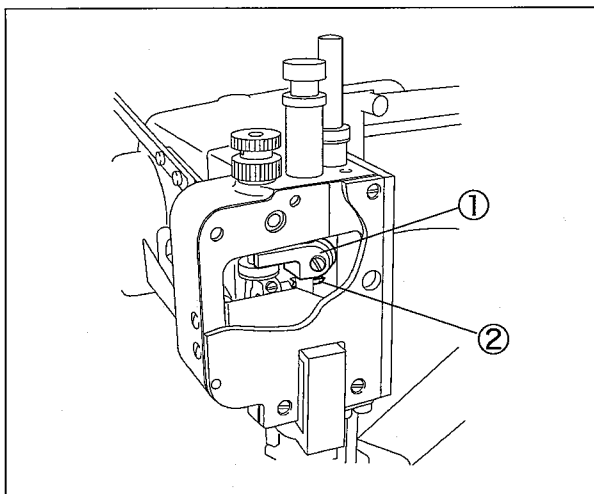


Fig. 10

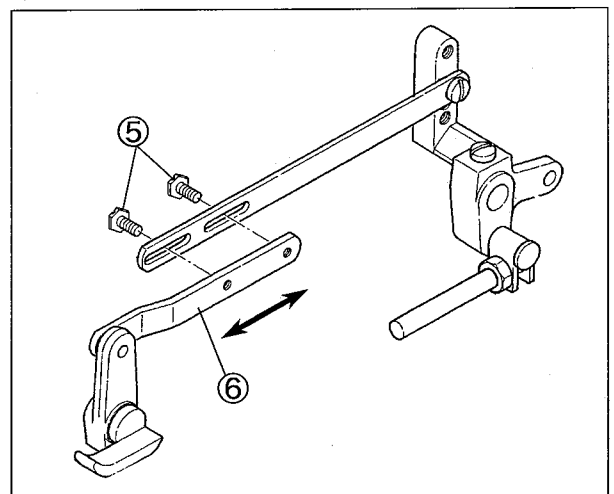


Fig. 11

2. As standard, make the clearance between the notch of the needle clamp ① and the top cover thread hook ② to 0.3 mm when the needle bar is at the lowest point and the presser foot is raised by pressing the presser foot pedal fully.

### Adjustment:

- (1) Loosen the lock nut ③.
- (2) Move the presser foot lifter stop plunger ④ in or out to adjust the clearance.

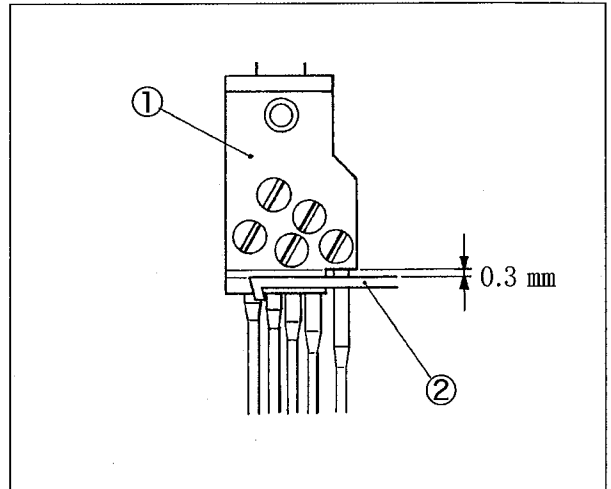


Fig. 12

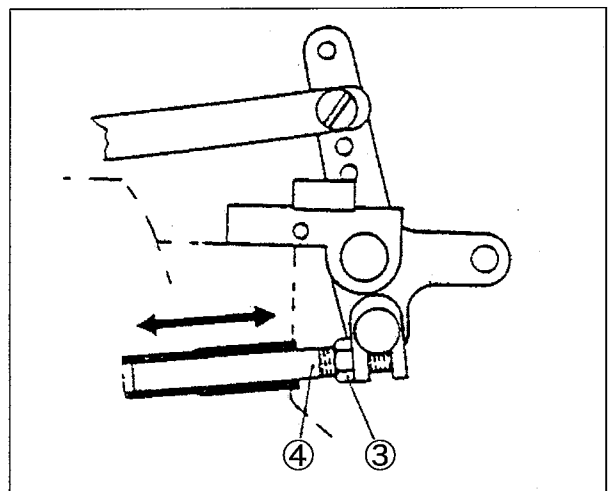


Fig. 13

## 2. Installation

### 2.2.3 Tension release unit

As standard, make the clearance between the tension release pins ① and the tension release shaft ③ to 0.5 mm when six tension release pins ① are pushed up slightly and the upper thread tension disc ② starts leaving from the lower thread tension disc without pressing the presser foot pedal.

#### Adjustment:

- (1) Loosen the screw ④ of the presser bar lifter lever (large).
- (2) Turn the tension release shaft ③ with a screwdriver.

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

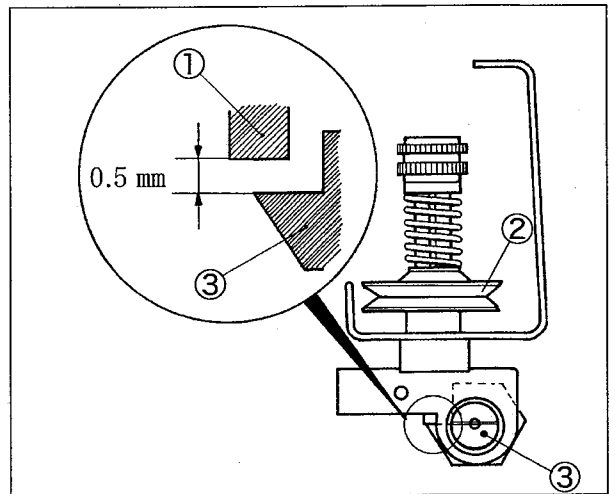


Fig. 14

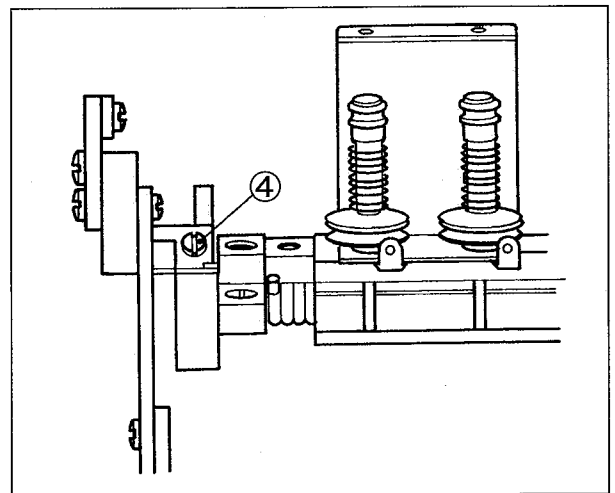


Fig. 15

## 2.3 Motor, belt and pulley

See the instruction manual for the motor to use and install the motor properly.

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.

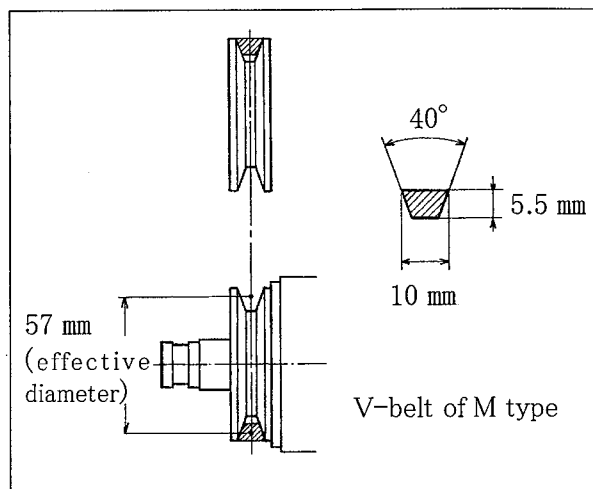


Fig.16

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, 400 W (1/2 HP).

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

### ⚠ CAUTION

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

Outside diameter of pulley (mm)	rpm of machine		Size of belt	
	50Hz	60Hz	Table top type	Hanging type
45	/	2600	M31	M57
50	/	2900	M31	M57
55	2700	3200	M31	M57
60	2900	3500	M32	M57
65	3150	3800	M32	M58
70	3400	4100	M32	M58
75	3650	/	M33	M58
80	3900	/	M33	M59
85	4150	/	M33	M59

Table 1

### Servomotor

Calculate the outside diameter of a motor pulley from the following formula.

Or see Table 2 to select a proper motor pulley.

$$\text{Outside diameter of motor pulley} = \frac{\text{Usual sewing speed}}{\text{Servomotor speed}} \times 57 + 5 \text{ mm}$$

### Belt

Use a V-belt of M type.

For belt size, refer to Table 1.

rpm of machine (rpm)	Outside diameter of motor pulley (mm)	
	rpm of servomotor	
	3000rpm	3600rpm
2700	57	48
3000	62	53
3200	66	56
3500	72	61
3700	76	64
4000	81	69
4200	85	72

Table 2



## 2. Installation

### 2.4 Hanging belt

#### WARNING

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

Use the V-belt of M type.

- (1) Hang the belt ① on the machine pulley ②, and then on the motor pulley while rotating the machine pulley.
- (2) Adjust the belt tension so that the belt has 10 – 20 mm slack when its center is pushed with 10 N (1.02 kgf).
- (3) Fix the motor with the adjusting bar.

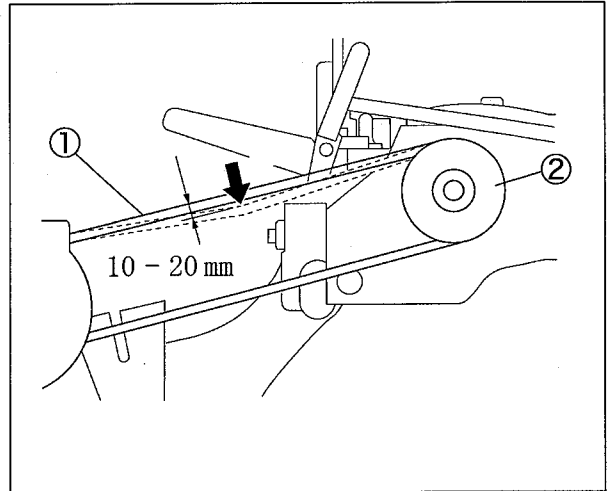


Fig. 17

### 2.5 Belt cover

#### WARNING

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

#### Table top type

- (1) Set the belt cover(lower) ① on the belt cover bracket ② with two screws ③ and two washers ④.
- (2) Fix the belt cover(lower) ① on the sewing machine supporting block with the screw ⑤ and the washer ⑥.
- (3) Set the belt cover(upper) ⑦ on the belt cover(lower) ① with four screws ⑧ and four washers ⑨.

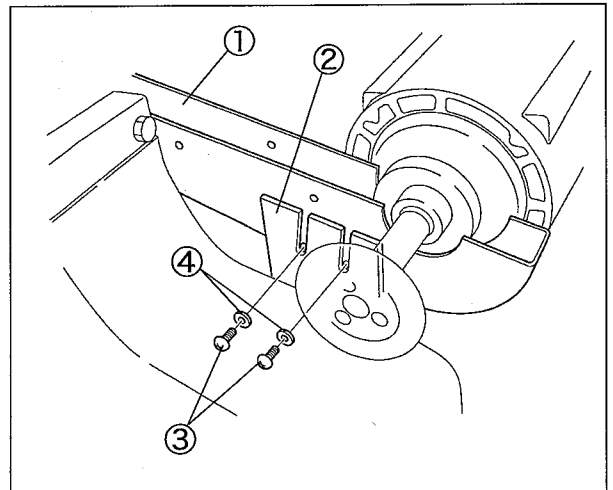


Fig. 18

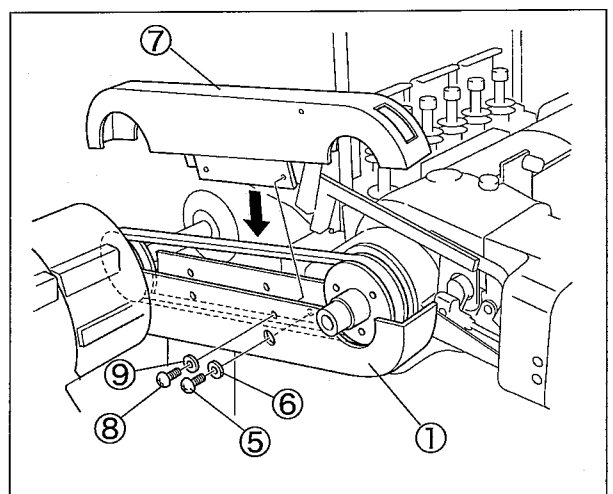


Fig. 19

## 2.6 Other parts

### Setting thread eyelets:

Stand the thread guide plate supports① on the thread tension support⑤ and fix the thread guide plate② on the supports ① with the screws ③ .

Adjust the thread pipes ④ to thread smoothly without entangling.

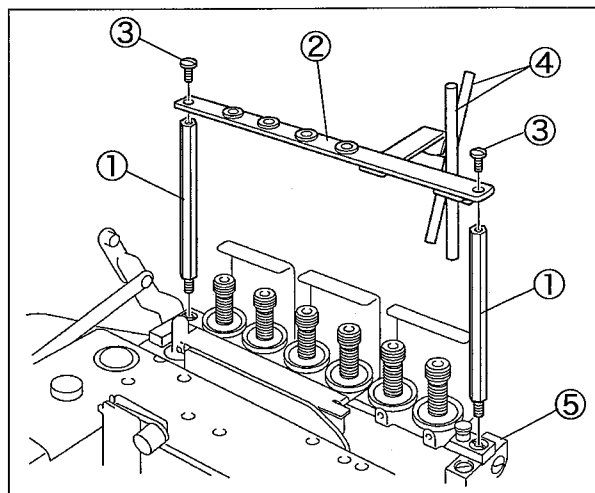


Fig. 20

### Handwheel

Fix the motor pulley ⑥ with the handwheel shaft ⑦ . Fix the handwheel ⑧ to the handwheel shaft ⑦ with the screw ⑨ .

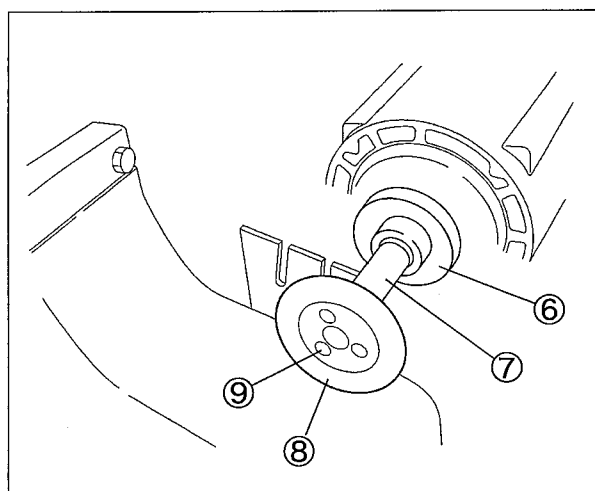


Fig. 21

### Rotation detector unit

Set the rotation detector unit⑩ including the servomotor as bellow.

Set the rotation detector unit⑩ on the belt cover(upper). Set the collar ⑪ and magnet collar, c. set on the machine pulley. Make the clearance between the magnet collar, c. set and the rotation detector unit to 1mm.

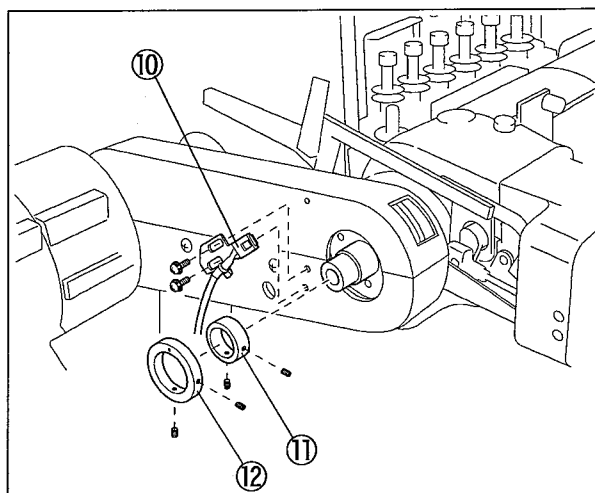


Fig. 22

# 3. Sewing speed and rotating direction of pulley

The sewing speed is 4200 rpm at the maximum and 3800 rpm in usual.

Run a new machine at a speed of 15 – 20% lower than maximum sewing speed during the first 200 hours (for about one month) so that the machine can offer a long service life in good condition.

The rotating direction of the motor pulley ① and the machine pulley ② is clockwise from the operator side.

## ⚠ CAUTION

If rotating in reverse direction, oil can not be supplied properly. It can cause the machine damage.

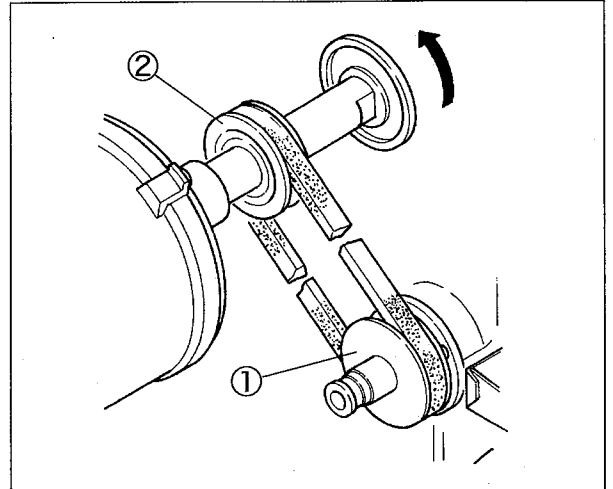


Fig. 23

# 4. Lubrication

## 4.1 Lubricating oil

Use YAMATO SF OIL No. 68.

### ⚠ CAUTION

NEVER add additives to the oil.

If added, it can cause the deterioration of the oil and the machine damage.

## 4.2 Lubricating

Remove the plug screws ① and ② indicated “OIL” and supply oil.

From the plug screw ①, supply oil until the oil level indicator top reaches the upper line in the oil sight gauge ③.

From the plug screw ②, supply oil to the upper line in the oil sight gauge ④.

Check the oil level between the lines in the oil sight gauges ③ and ④ before running a machine.

If it is under the lines, supply oil.

Check the oil splashes from the nozzle inside the oil sight top windows ⑤ and ⑥ when starting to run a machine.

### ⚠ CAUTION

Too much oil or not enough oil can cause oil leakage and machine trouble. Be sure to keep the oil level between the lines.

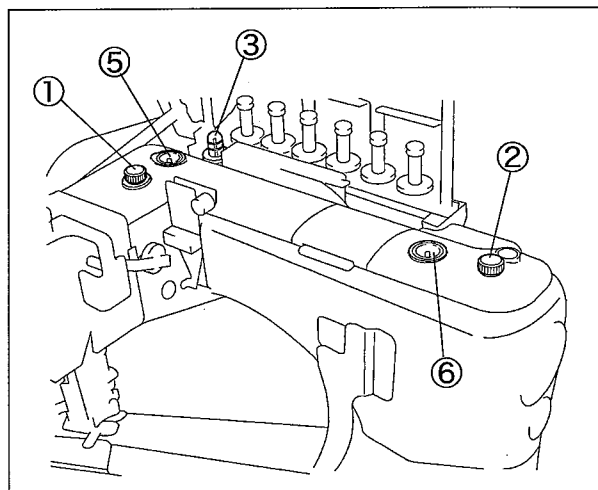


Fig. 24

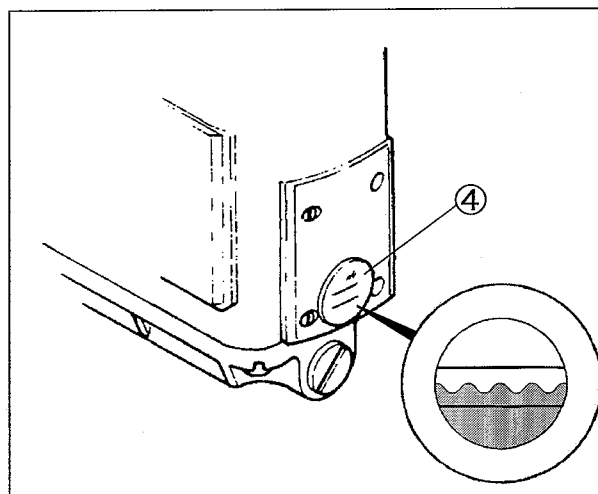


Fig. 25

## 4. Lubrication

### 4.3 Priming oil

Prime oil if oil does not circulate completely when installing a new machine or running a machine which has not been used for a while.

Remove the plug screws ① of the pump driven gear to prime oil. Run a machine after resetting them ①.

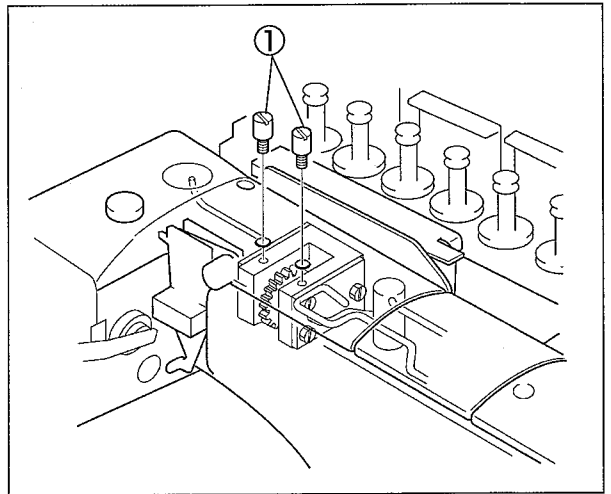


Fig. 26

### 4.4 Replenishing oil

Replenish a drop of oil from the points indicated arrows with an oiler (accessories) if needed.

If oil leaks around the presser foot and the upper knife, it can cause oil stain on the material. Be sure to wipe it completely.

#### **⚠ CAUTION**

Too much lubrication can cause oil scatter and material stain.

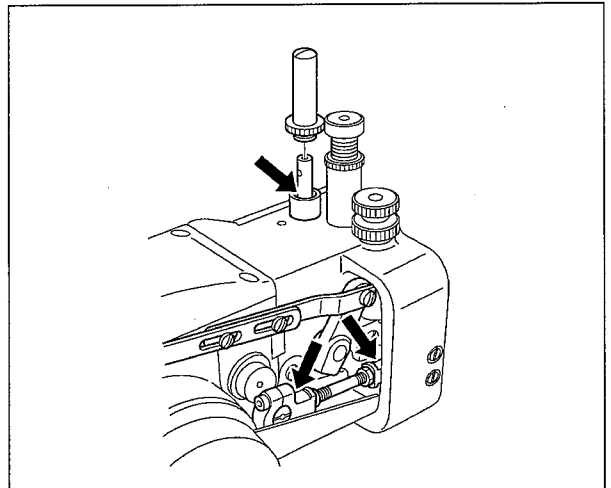


Fig. 27

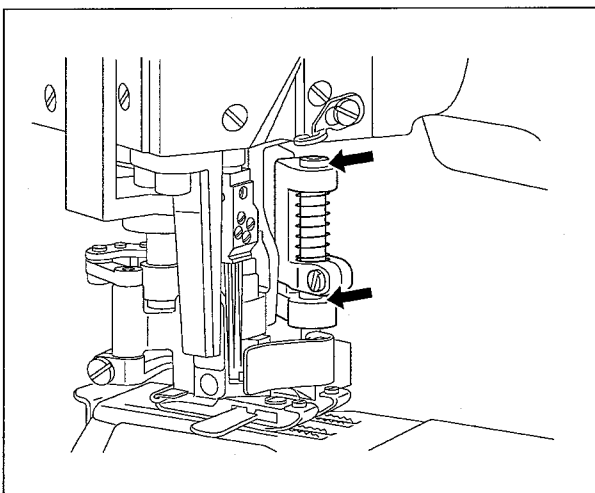


Fig. 28

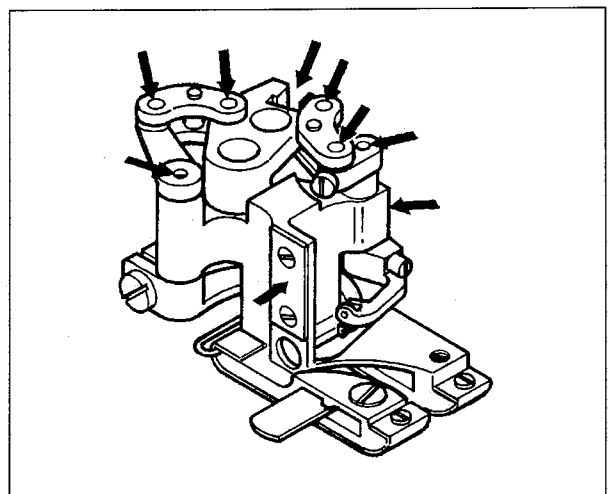


Fig. 29

## 4.5 Changing oil

### Timing:

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

### Procedure:

- (1) Remove the belt cover. (See page 10)
- (2) Set containers received the oil under the screws ① and ② respectively.
- (3) After removing screws ① and ②, the oil is drained.

### NOTE

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

- (4) Reset the screws ① and ②.
- (5) Change the oil. (See “4.2 Lubrication” on page 12.)
- (6) Reset the belt cover. (See page 10.)

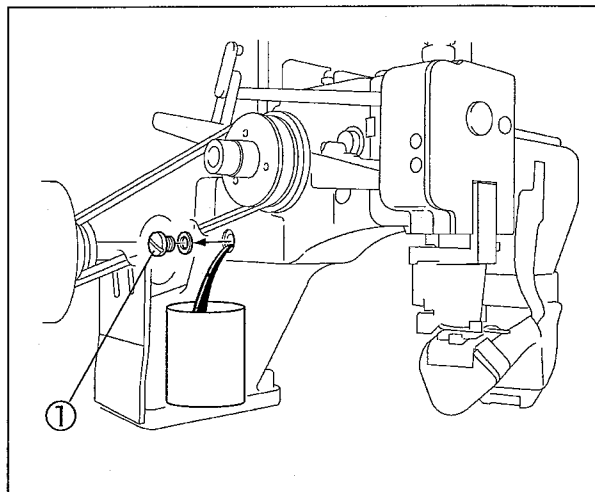


Fig. 30

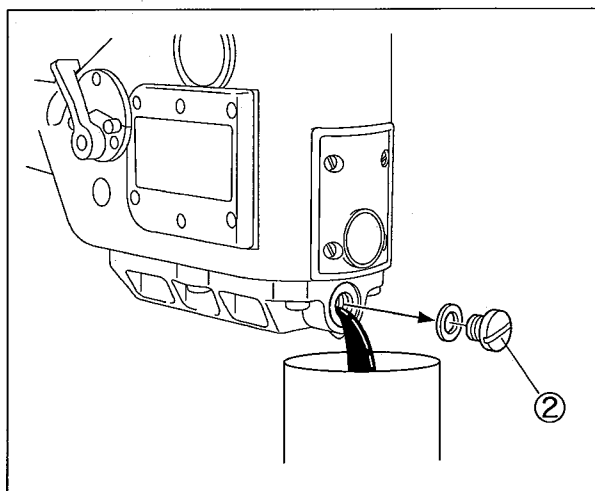


Fig. 31

# 5. Proper operation

## 5.1 Needle system

### Sewing needle:

Groz-Beckert UY118GKS

Organ FL × 118GCS

Select the proper sewing needle in size according to the thickness and type of material.

### Retainer needle:

One retainer needle is used with four sewing needles.

Groz-Beckert 36211, 36211A (with scarf)

Organ FLG-1, FLG-8 (with scarf)

Select the proper retainer needle in size according to the thickness and type of material.

Japanese standard	8	9	10	11	12	-	14
Metric standard	60	65	70	75	80	-	90

Table 3

Note: Some size of the needles are not available . Check the size in a manufacturer' s catalog.

Japanese standard	8	9	10	11	12
Metric standard	60	65	70	75	80

Table 4

Note: Some size of the needles are not available . Check the size in a manufacturer' s catalog.

## 5.2 Installing needle

### ⚠ WARNING

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

The shank of the needle includes the flat parts. Insert needles into the inmost point of the needle clamp, and tighten them with the screws ① .

### Replacing needle:

- (1) Rotate the handwheel to raise the needles at the highest point.
- (2) Loosen the screws ① and pull the needles down.
- (3) Face the flat parts front, insert new needles into the needle clamp ② as far as they will go. Tighten them with the screws ① securely.

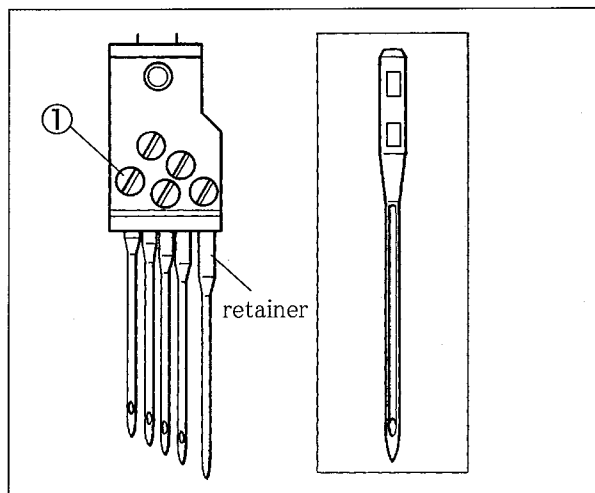


Fig. 32





## 5. Proper operation

### 5.4 Thread tension

Adjust the thread tension with the tension adjusting nuts ① - ⑥ according to fabric type, thread type, seam width, stitch length, and other sewing conditions.

① - ④: needle threads

(①:right needle, ④:left needle)

⑤: top cover thread

⑥: looper thread

- To tighten the thread tension, turn the nuts clockwise.
- To loosen the thread tension, turn the nuts counterclockwise.

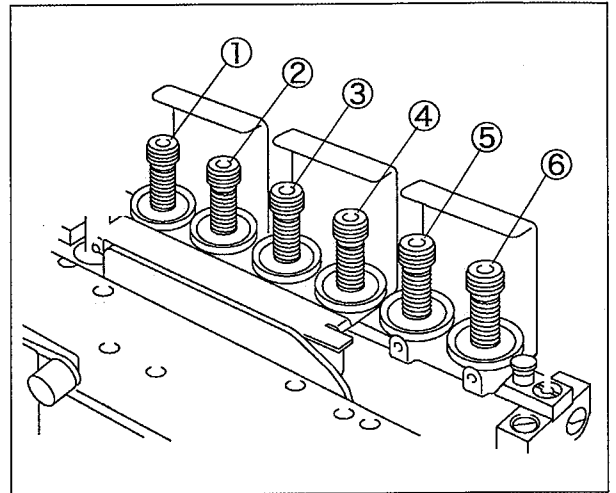


Fig. 34

### 5.5 Pressure of presser foot

Loosen the lock nut ⑦ and turn the adjusting screw ⑧ to adjust the pressure.

- To increase the pressure, turn the adjusting screw ⑧ clockwise.
- To decrease the pressure, turn the adjusting screw ⑧ counterclockwise.

Keep the pressure as low as possible for stable stitches.

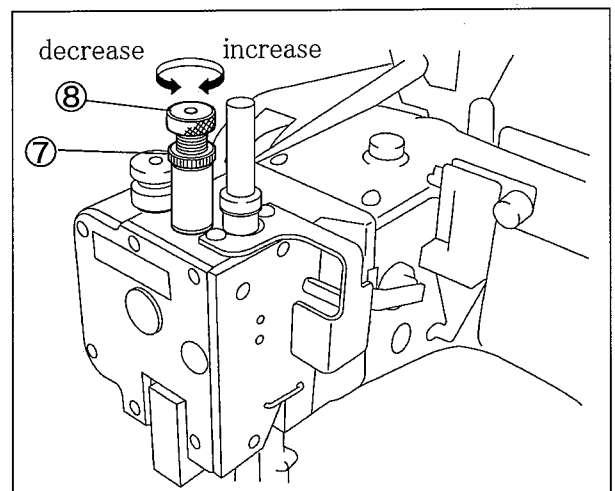


Fig. 35

## 5.6 Up-and-down position of presser foot

The following effective points can be obtained by raising the presser foot slightly.

- Prevention of fabric jam
- Prevention of feed scratch mark
- Improvement of durability of presser foot spring plate
- Reduction of vibration and noise
- Available for fine adjustment of lapped fabric width

- (1) Position the needle at the lowest point.
- (2) Loosen the lock nut ① and turn the adjusting nut ② counterclockwise to raise the presser foot.
- (3) Adjust the clearance between the bottom ④ of the presser foot and the presser foot spring plate ③ to 0.3 - 0.5 mm.
- (4) Tighten the lock nut ① securely.

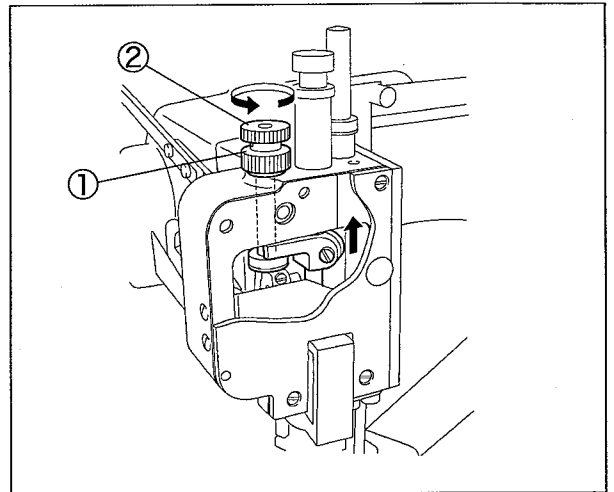


Fig. 36

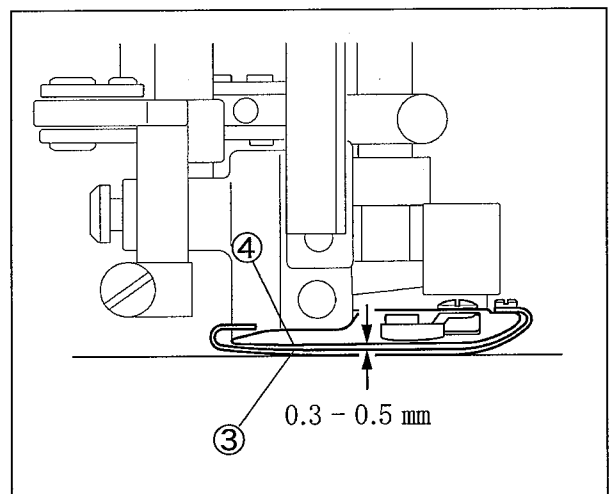


Fig. 37

## 5.7 Adjusting differential feed dog

Move the differential feed operating lever ⑤ right or left to adjust differential feed dog.

The lever ⑤ between the graduations “4” and “5” makes the equal movement of the main and the differential feed dogs.

- To make normal differential, move the lever ⑤ to “9”.
- To make reverse differential, move the lever ⑤ to “1”.

\* The screw ⑥ is for fixing the lever ⑤ and keeping the differential movement adjusted.

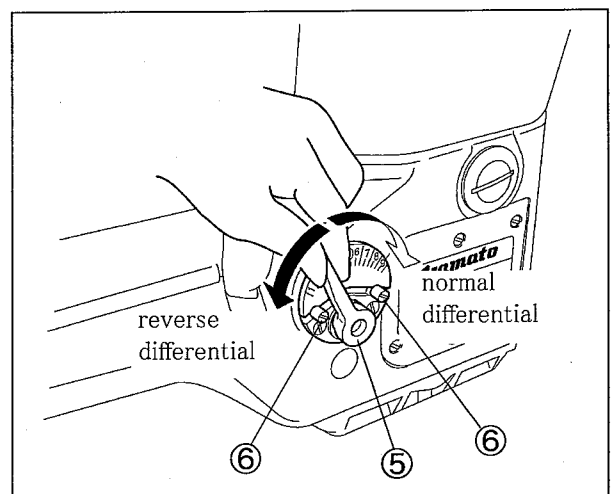


Fig. 38

## 5. Proper operation

### **⚠ WARNING**

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

## 5.8 Adjusting stitch length

Stitch length range is 1.6 – 2.5 mm as standard, and can be adjusted infinitely.

### Adjusting:

(1) Loosen the screw ① and move the needle guard(rear)② most rearward. Then tighten it slightly.

\* This can be skipped when decreased the stitch length.

(2) Remove the plug screw ③ .

(3) Loosen the screw ④ to adjust the stitch length.

- To increase stitch length, move the screw ④ upward.
- To decrease stitch length, move the screw ④ downward.

(4) Tighten the screw ④ securely and reset the plug screw ③ .

### **⚠ CAUTION**

Tighten the plug screw ③ securely to prevent oil leakage.

(5) Adjust the position of the needle guard(rear)② and tighten the screw ① securely. See “6.8 Needle guard(rear)” on page 32.

Table 5 shows the relationship between stitch length and stitch number per inch (25.4 mm) and every 30 mm.

### **⚠ CAUTION**

Be sure to adjust the needle guard(rear) after changing stitch length to prevent breakage of the parts.

### **i Advice on adjustment**

Be sure to adjust the stitch length after changing differential feed dog.

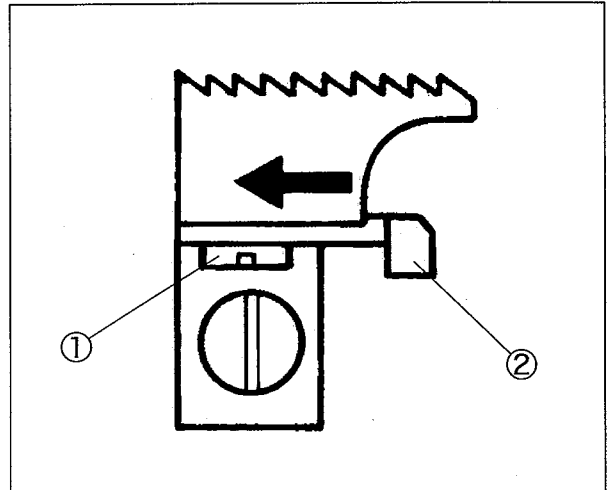


Fig. 39

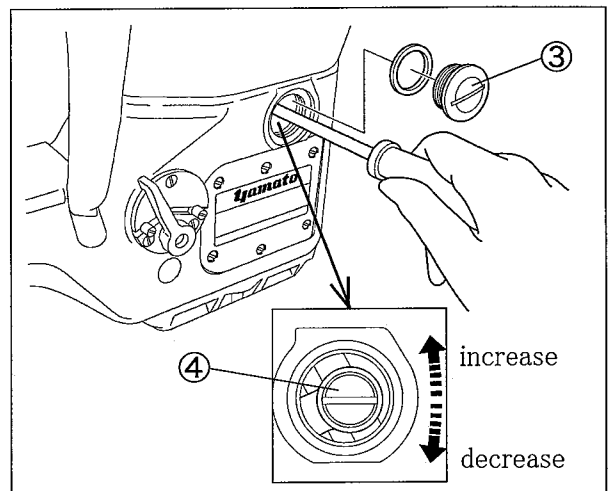


Fig. 40

Stitch length (mm)	Number of stitch (per 1 inch (25.4 mm))	Number of stitch (per 30 mm)
2.5	10	12
2.1	12	14
1.8	14	16.5
1.6	16	19
1.2	21	25
1	25	30

Table 5

## ⚠ WARNING

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

### 5.9 Adjusting lapped width of upper fabric

For the standard position of the lower knife ①, make the distance between the lower knife ① tip and the lower knife clamp ② to 0 - 0.5 mm.

For the standard position of the upper knife ③, engage between the upper knife ③ and lower knife ① to 0.5 mm when the upper knife ③ is at the extreme left.

To move the fabric edge right or left, position the lower knife ①, and then move the upper knife to engage between the knives to 0.5 mm.

Loosen the screws ④ and ⑤ to adjust the lower and upper knives respectively.

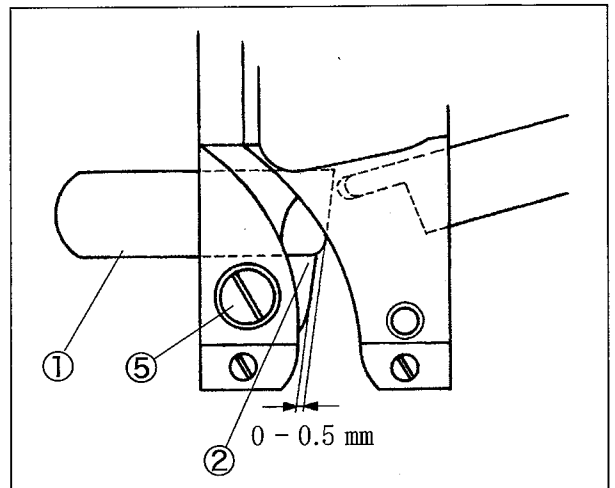


Fig. 41

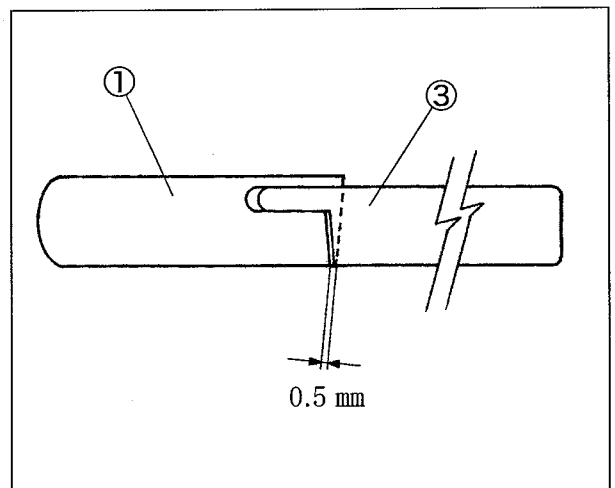


Fig. 42

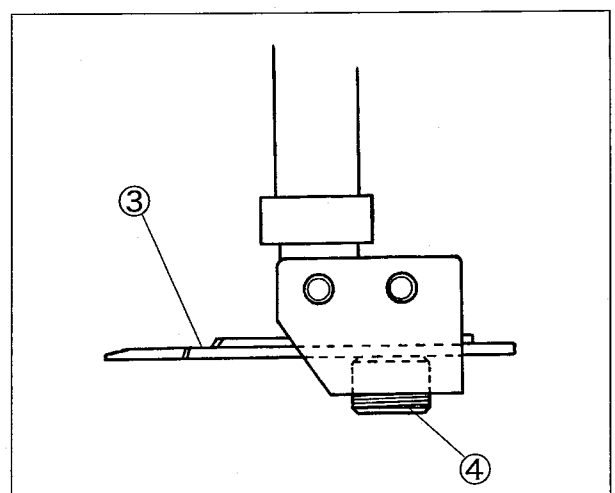


Fig. 43

## 5. Proper operation

### 5.10 SP device

SP device (needle thread oiling) is 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.

Fix the felts ① which is included in the accessories into the SP tank ② during use.

#### CAUTION

1. When not using SP device, remove the felts ①. If not, it may occur irregular condition during sewing.
2. If the silicone oil is stuck onto the parts other than SP device, it can cause the machine damage. Be sure to wipe it away.

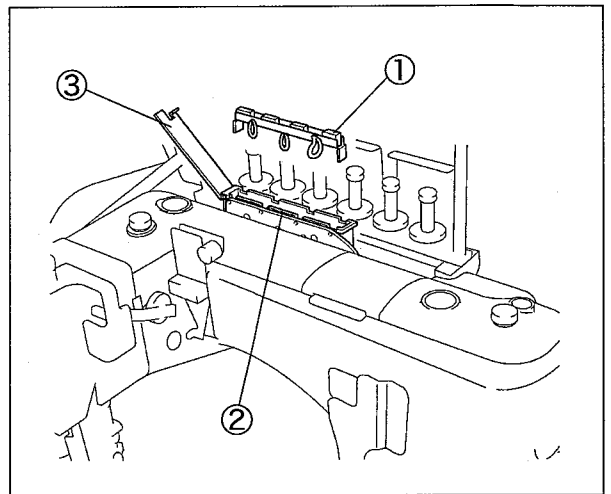


Fig. 44

Use dimethyl silicone oil.

Open the oil cup lid ③ and check the oil amount.

If not enough, supply oil into the SP tank ②.

## 5.11 Use of lap former

### Standard left-and-right position:

Align the point A of the lap former ① with the center of four needles.

According to the lapped edges of the fabrics or fabric feeding, loosen the screws ④ and adjust the position.

### Standard front-and-rear position:

Set the position where the lap former slide block ② touches and stops in the front of the stitch plate ③.

According to the fabric thickness, adjust the position slightly toward the operator.

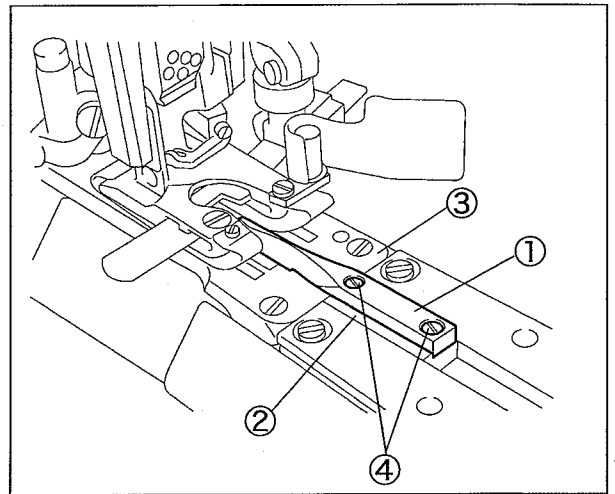


Fig. 45

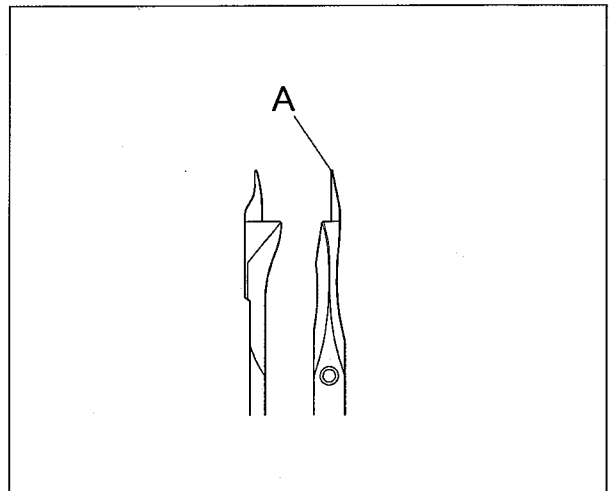


Fig. 46

## 5. Proper operation

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### 5.12 Setting tape (FD-62E-03)

Set the tape correctly by referring to Fig. 47.

Pull the tape out after setting it under the presser foot through the folder ①.

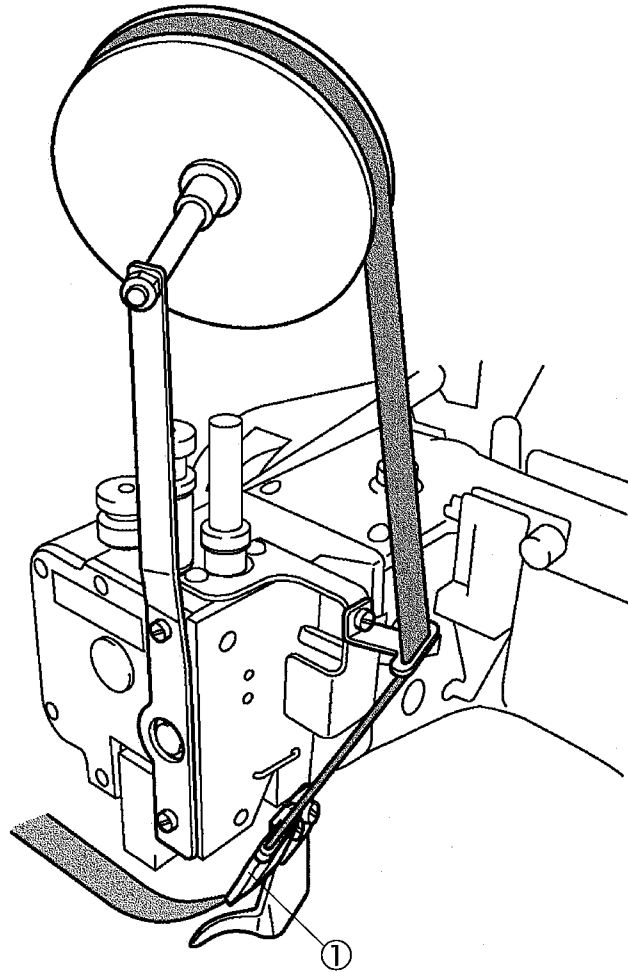


Fig. 47

# 6. Adjustments

## WARNING

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

### 6.1 Needle thread tension

#### Needle thread strike-off pin:

Each of four needles has the needle thread strike-off pin which can adjust the thread tension respectively.

- (1) Position the needle thread take-up ① at the lowest point.
- (2) Set the top of pin ② even with the needle thread as the fourth right needle.
- (3) Set the pin ③ 3.2 mm higher than the pin ②.
- (4) Set the pin ④ 1.6 mm higher than the pin ②.
- (5) Set the pin ⑤ even with or 0.8 mm higher than the pin ②.
- (6) Tighten the screws ⑥ securely.

Note: Check the tops of the pins are horizontal.

Loosen the screws ⑥ and move the pins up or down to adjust the needle thread loop.

- To make the loop larger, move the pins in the direction "L".
- To make the loop smaller, move the pins in the direction "S".

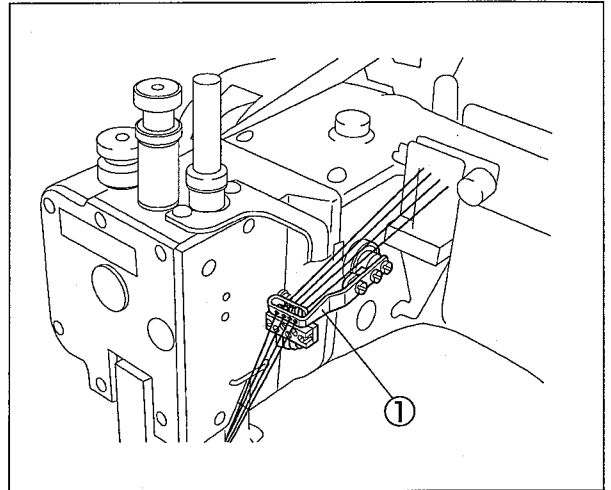


Fig. 48

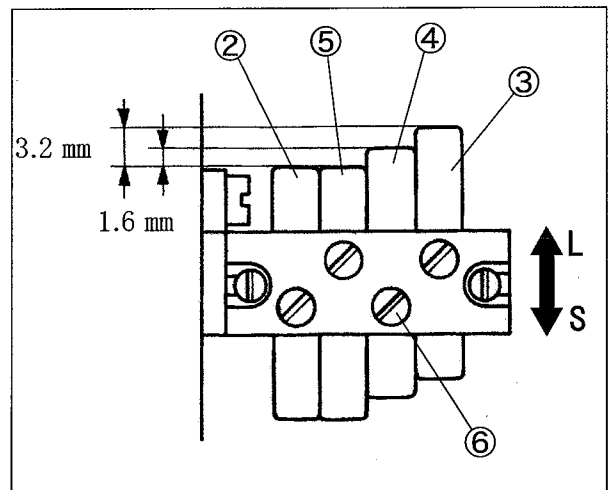


Fig. 49



## 6. Adjustments

### WARNING

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

#### Needle thread eyelet:

- (1) Make the height of the right needle thread eyelets ① to align their eyes with the eyes ③ of the needle thread eyelet holder ②.
- (2) Set the eyelet ④ 5 mm lower than the eyelet ①.
- (3) Set the eyelet ⑤ 9 mm lower than the eyelet ①.
- (4) Set the eyelet ⑥ 15 mm lower than the eyelet ①.

Loosen the screws ⑦ to adjust the needle thread tension.

- To tighten needle thread, move the eyelets in the direction "T".
- To loosen needle thread, move the eyelets in the direction "L".

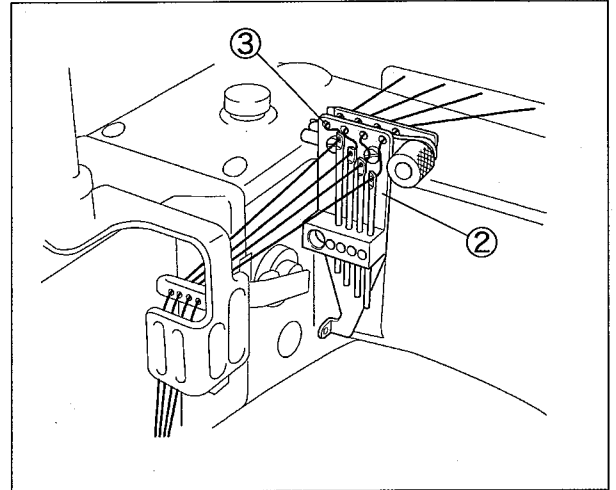


Fig. 50

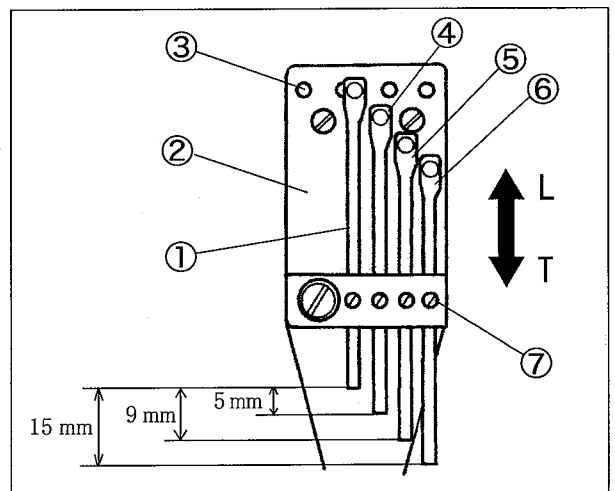


Fig. 51

## ⚠ WARNING

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

### 6.2 Looper thread tension

Fig. 52 indicates the looper thread take-up which is seen from the front.

#### Position of looper thread take-up guide:

Align the right of the looper thread take-up guide ① with that of the eyelet supporting plate ②.

#### Timing of looper thread take-up:

Position the looper thread take-up ④ as standard so that looper thread passes at the point A when the needle bar ③ is lowered 2.8 mm from the highest point. Loosen the screws ⑤ to adjust it.

- To increase the looper thread take-up amount, hasten the timing.
- To decrease the looper thread take-up amount, delay the timing.

Note: When adjusting take-up ④, face both bosses of the take-up ④ and the top cover thread take-up without shifting the front-and-rear position.

## ⚠ CAUTION

If the timing of the looper thread take-up exceeds the adjustable range, it may occur skip stitch.

#### Position of looper thread take-up eyelet:

Set the looper thread take-up eyelets ⑥ and ⑦ at the extreme right as standard.

Loosen the screws ⑧ and ⑨, and move them right or left to adjust it.

- To increase the looper thread take-up amount, move them in the direction "L".
- To decrease the looper thread take-up amount, move them in the direction "S".

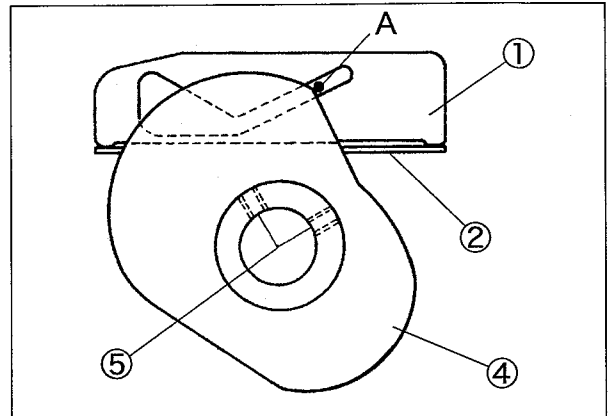


Fig. 52

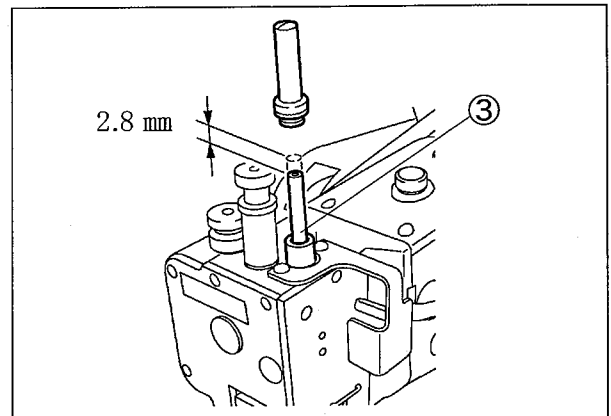


Fig. 53

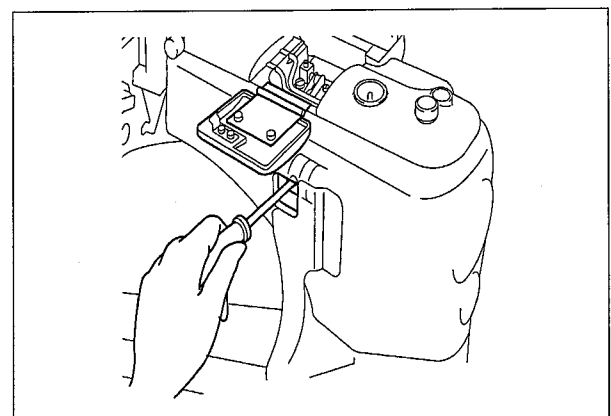


Fig. 54

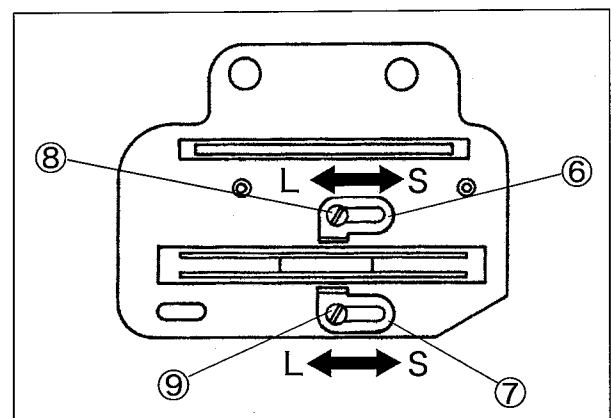


Fig. 55

## 6. Adjustments

### WARNING

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

## 6.3 Top cover thread tension

The top cover thread take-up which is seen from the front is shown in Fig. 56.

### Position of thread take-up eyelet:

Make the standard distance from the top of the eyelet supporting plate ② to the thread take-up eyelet ① eye to 4.4 mm.

Loosen the screw ③ and move the eyelet ① up or down to adjust it.

- To increase the top cover thread take-up amount, move the eyelet ① downward.
- To decrease the top cover thread take-up amount, move the eyelet ① upward.

### Timing of top cover thread take-up:

At the moment the top cover thread is hooked with the top cover thread hook ④ (Fig. 57), the thread is held at the point 0 - 1.0 mm apart from the top of the take-up ⑤.

Loosen the screws ⑥ to adjust it.

Note: When adjusting take-up ⑤, face both bosses of the take-up ⑤ and the looper thread take-up without shifting the front-and-rear position.

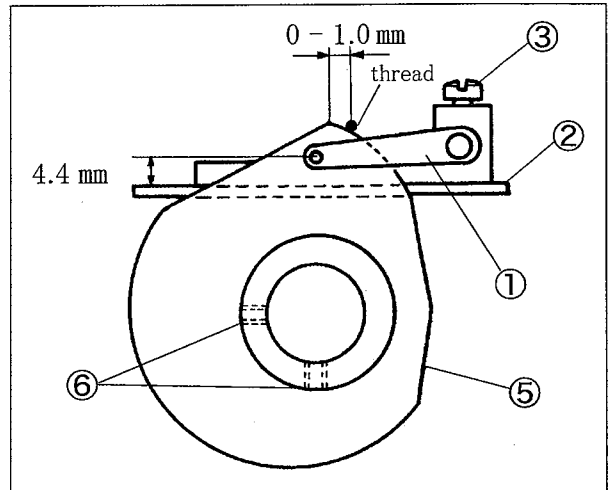


Fig. 56

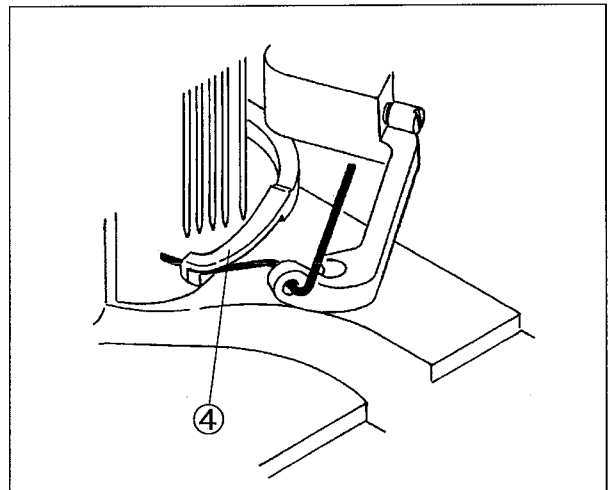


Fig. 57

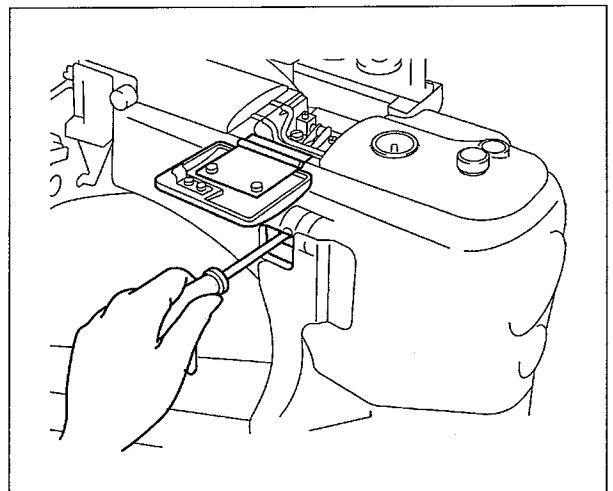


Fig. 58

## ⚠ WARNING

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

### 6.4 Height of needle

Make height "N" of the needle from the top of the stitch plate to the tip of the fourth needle from the left when the needle is at the highest point.

Needle distance	Height(N)
R: 5.2 mm	13.49 mm
S: 6.0 mm	12.7 mm

#### Adjusting height:

- (1) Remove the seal plug ①.
- (2) Loosen the screw ②.
- (3) Move the needle bar ③ up or down to adjust the height.  
Check the alignment in Fig. 61.
- (4) Tighten the screw ② securely.
- (5) Reset the seal plug ①.

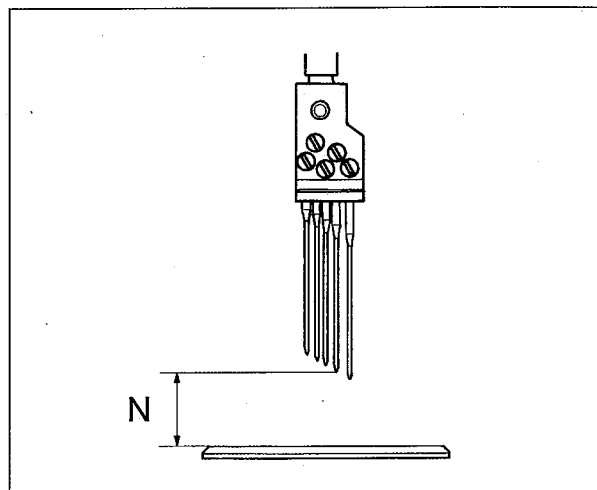


Fig. 59

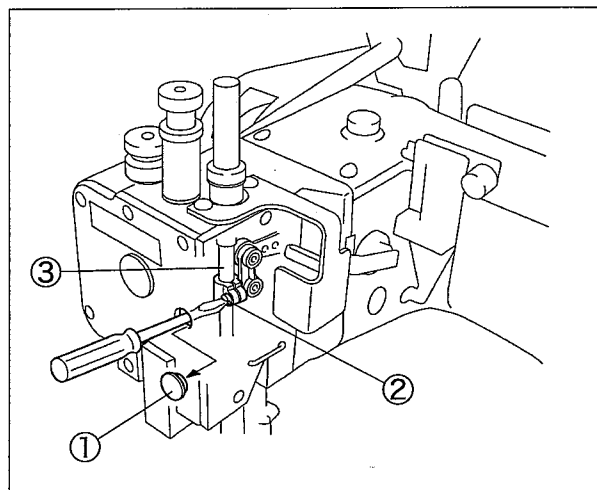


Fig. 60

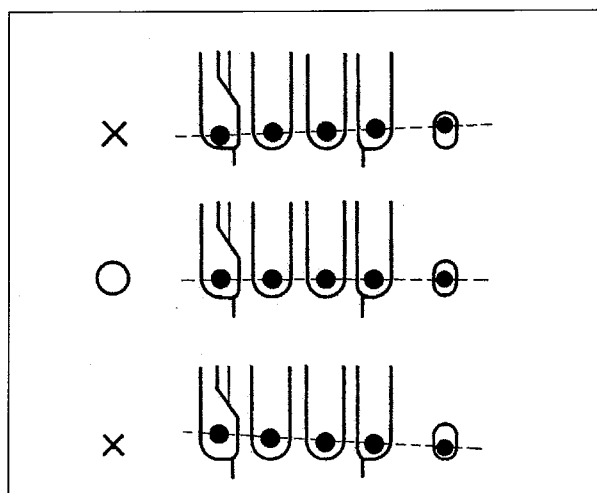


Fig. 61

## 6. Adjustments

### WARNING

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

## 6.5 Top cover thread carrier and hook

### Top cover thread carrier:

Position the top cover thread carrier ① so that the top cover thread loop formed with the hook passes behind the first and the second needles from the left when the carrier ① comes most nearly to the needle.

Loosen the screw ⑤ to adjust it.

### Top cover thread hook:

When the top cover thread hook ② comes most nearly to the top cover thread carrier ③, make the clearance between them to 0.4 - 0.7 mm during one rotation.

When the hook ② moves at the extreme right, make the clearance between the hook ② and the retainer ③ to 0.5 mm.

Loosen the screw ⑥ to adjust them.

Note: Be sure to adjust them without playing up and down.

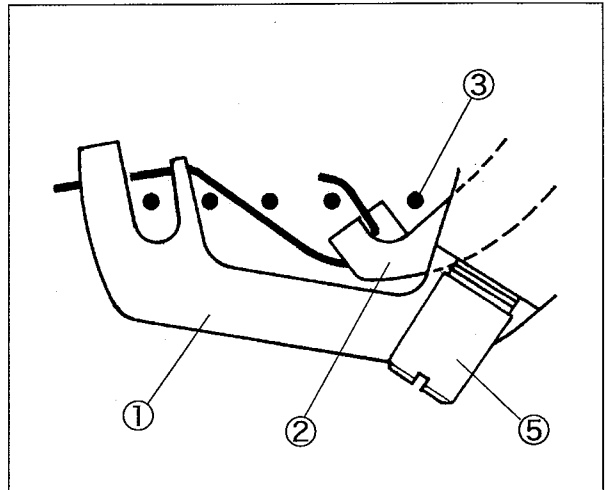


Fig. 62

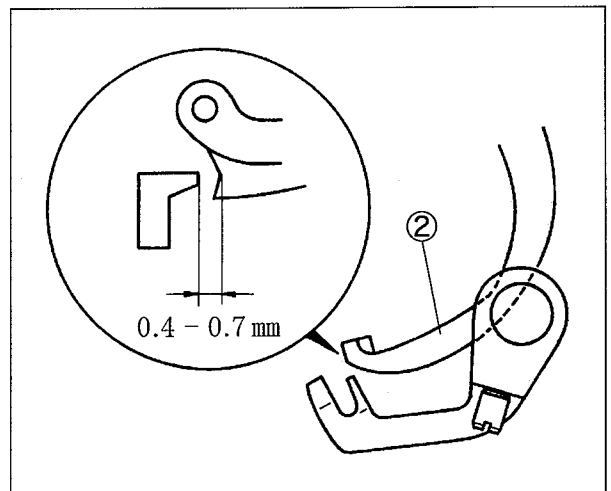


Fig. 63

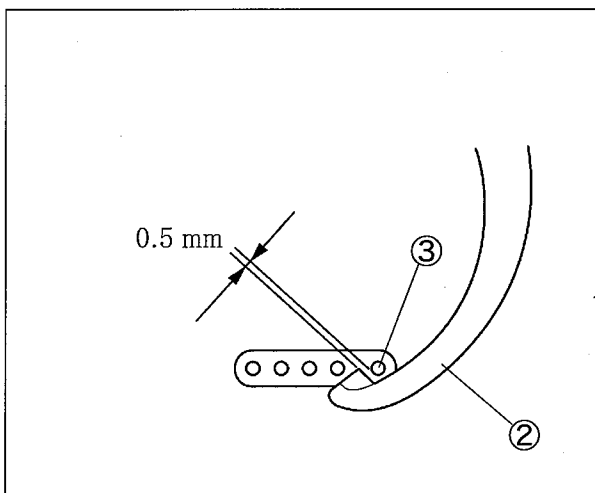


Fig. 64

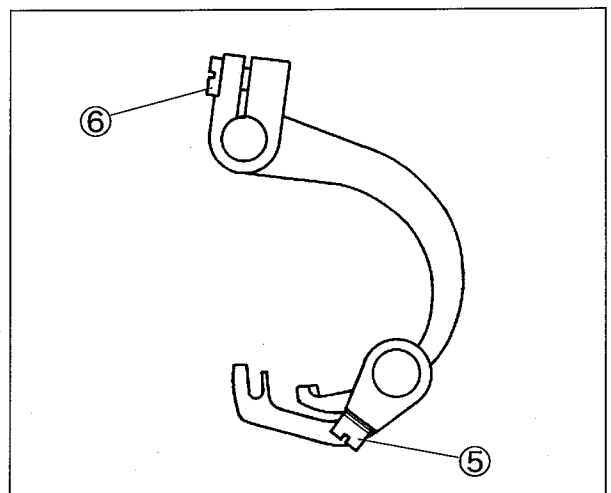


Fig. 65

## ⚠ WARNING

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

### 6.6 Looper

#### Height:

Insert the looper ① into the hole of the looper holder ⑥ in most position and tighten the screw ② securely.

#### Angle:

Fix the surface A of the looper at  $90^\circ$  to the looper rocker shaft ③.

Loosen the screw ② to adjust it.

#### Distance between looper and needle:

Make the standard distance between the looper tip and the center of the left needle to 4.2 – 4.8 mm when the looper ① is at the extreme left.

Loosen the screw ④ to adjust it.

#### Front-and-rear position of looper and needle:

When the looper ① moves from the left to the right, it passes behind the needle.

Adjust the position so that the looper comes closely to the needle with the clearance of 0 – 0.05 mm but without touching them when the looper tip comes at the center of the left needle.

Loosen the screw ④ and turn the adjusting screw ⑤ to adjust it.

- To move forward, turn the screw ⑤ clockwise.
  - To move backward, turn the screw ⑤ counterclockwise.
- After adjustment, check the distance and tighten the screw ④ securely.

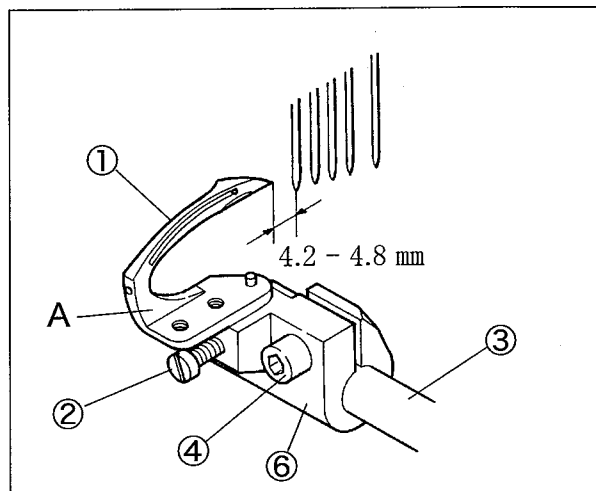


Fig. 66

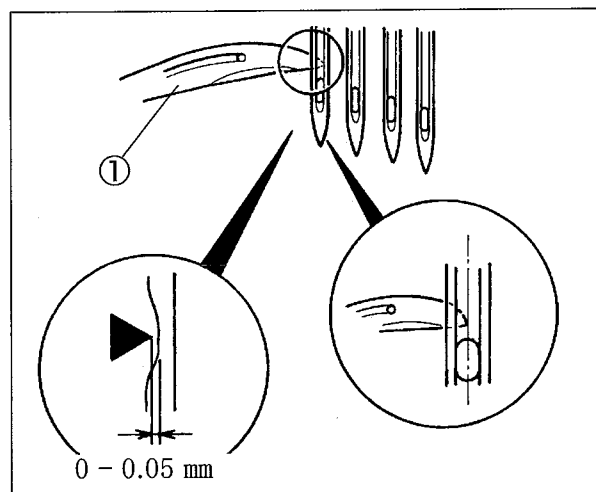


Fig. 67

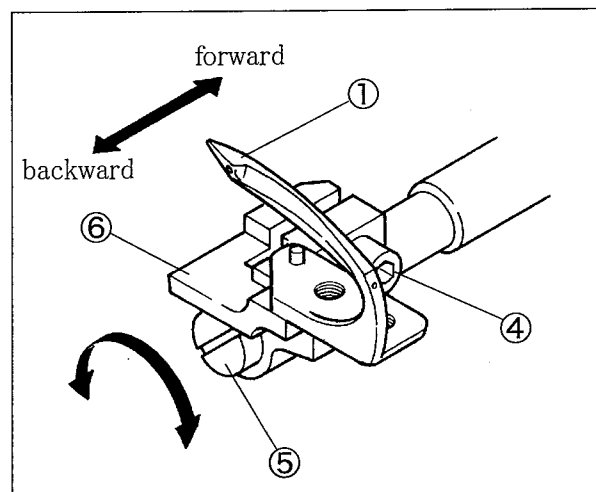


Fig. 68

## 6. Adjustments

### WARNING

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

## 6.7 Needle guard (front)

Push the needle guard(front)① so that the clearance between the needle and the looper is 0 mm when the looper tip comes at the center of the left needle.

Loosen the screw ② to adjust it.

Check the looper tip touches the back of the needle and the needle does not swing to the right when the looper③ moves from the left to the right while rotating the handwheel.

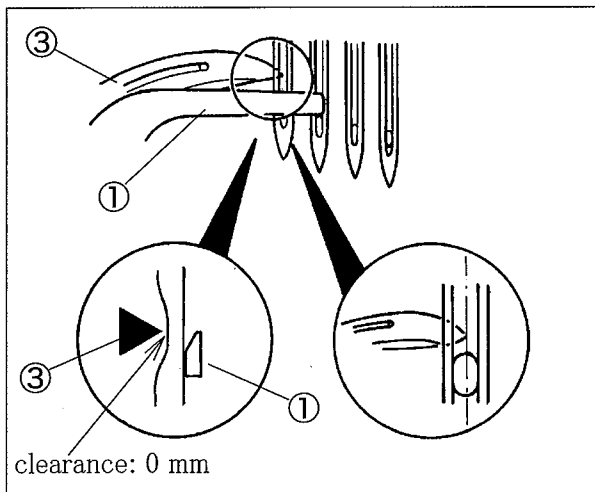


Fig. 69

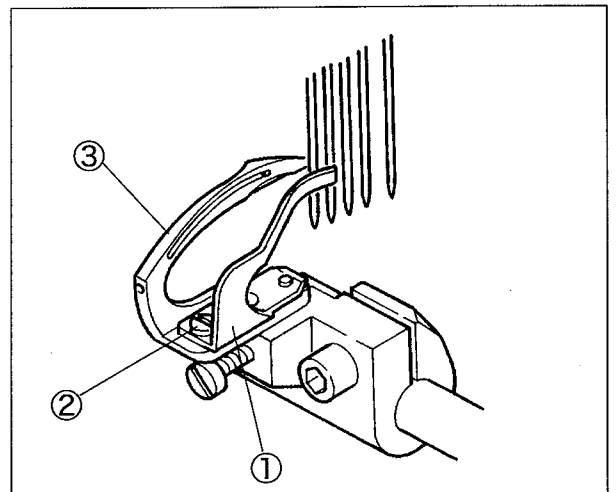


Fig. 70

## 6.8 Needle guard (rear)

Make the standard clearance between the needle guard(rear) ④ and the left needle to 0.05 - 0.1 mm when they meet most closely.

Open the looper cover and loosen the screw ⑤ to adjust it.

Check the needle does not swing to the right when the looper moves from the left to the right while rotating the handwheel.

### CAUTION

After changing stitch length, the clearance changes between the needle guard(rear)③ set on the main feed dog and the needle.

Readjust the position of the needle guard(rear)③ after changing stitch length.

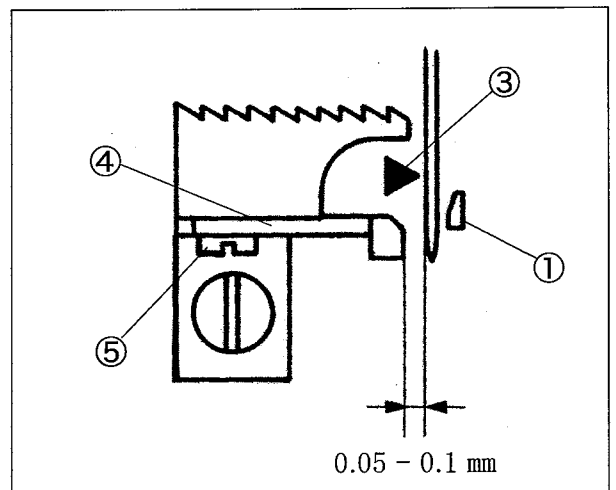


Fig. 71

## ⚠ WARNING

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

### 6.9 Height of feed dog

#### Fixing:

Fix the differential feed dog① and main feed dog③ with the screws② and ④ respectively.

Fix the needle guard(rear)⑤ on the main feed dog and tighten it at the most rear position with the screw⑥ slightly.

Note: See “6.8 Needle guard(rear)” to adjust it.

#### Height:

Adjust the height from the top of the stitch plate to the part A of the main feed dog③ to 1.2 – 1.5 mm when the feed dog is at the highest point.

Align the differential feed dog even with the main feed dog.

#### Fine adjustment of height:

Make fine adjustment of height of the main and differential feed dogs with the feed bar eccentric pin⑧ near the center of the cylinder.

Loosen the screw⑦ and move the pin⑧ to adjust it.

- To raise the feed dog, turn the pin⑧ clockwise.
- To lower the feed dog, turn the pin⑧ counterclockwise.

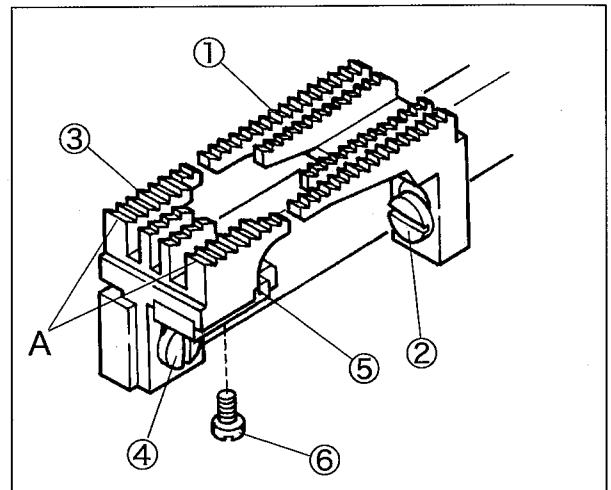


Fig. 72

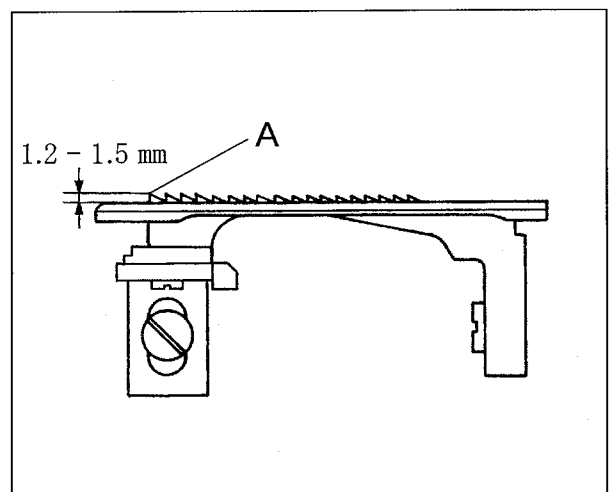


Fig. 73

#### ⓘ Advice on adjustment

Set the groove of the feed bar eccentric pin⑧ horizontally with the screw⑦ before fixing the main and differential feed dogs.

This is to adjust the equal movement of them.

#### ⓘ Easy to use

When only removing the stitch plate, turn the feed bar eccentric pin⑧ to the left to lower the feed dogs.

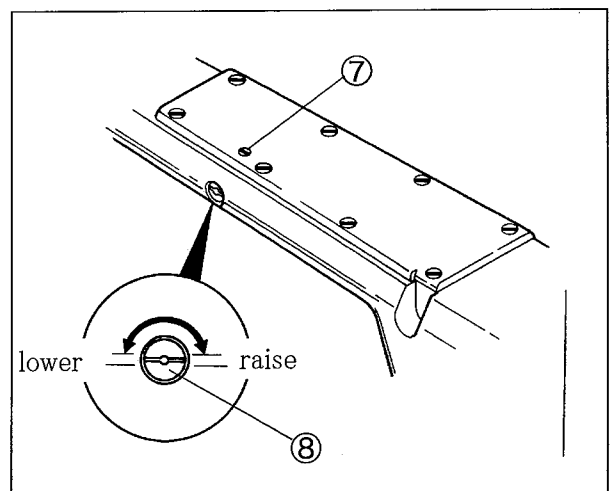


Fig. 74



## 6. Adjustments

### WARNING

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

## 6.10 Replacing presser foot

### Removing:

- (1) Remove all needles and the seal plug ①.
- (2) Loosen the adjusting screw ② and then the screw ③ of the presser bar connecting bracket.
- (3) Loosen the screw ④ of the knife holder guide collar to be free the complete set including the upper knife, the knife holder, and the knife holder shank.
- (4) Loosen two screws ⑦ of the knife holder bracket ⑥ to remove the knife holder guide collar, c. set ⑤ and the upper knife.
- (5) Loosen the screw ⑧ on the back of the presser foot. (on the left side of model “-12”: Fig. 78)

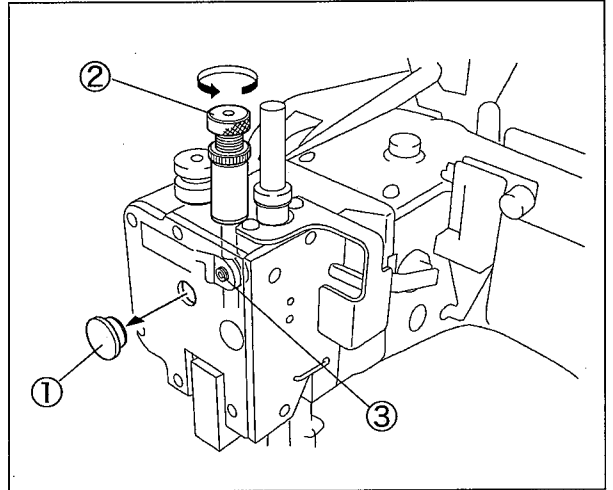


Fig. 75

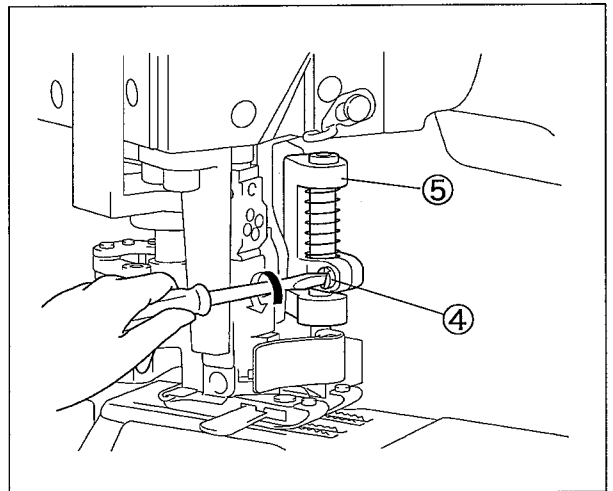


Fig. 76

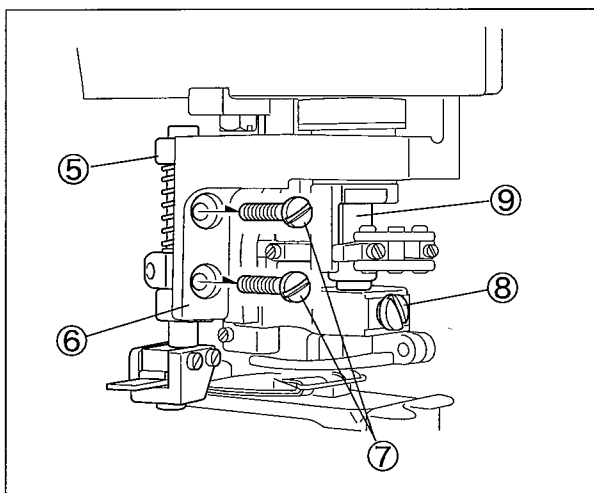


Fig. 77

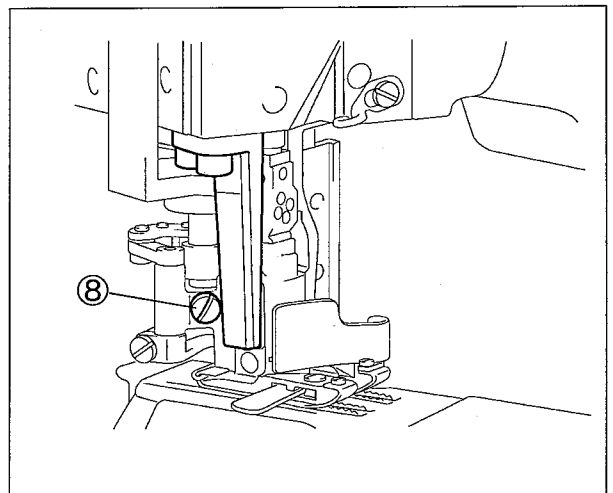


Fig. 78

 **WARNING**

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

- (6) Rotate the handwheel to raise the needle to the highest point. Remove the adjusting screw ② and keep the presser bar ⑨ and the presser spring ⑩ upward as they come off from the presser foot.

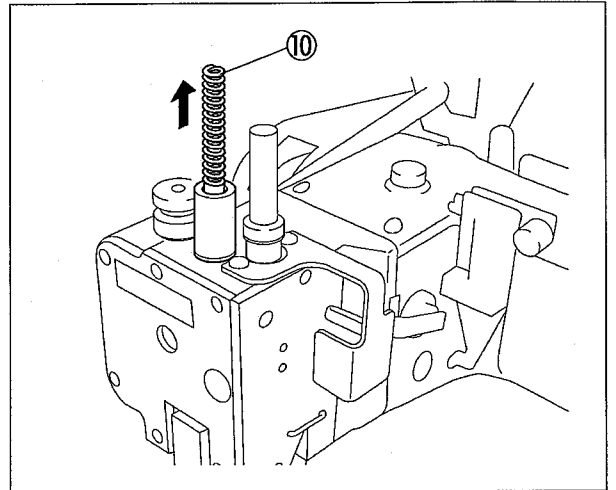


Fig. 79

- (7) Remove the carrier/hook driving segment ⑪ from the lever ⑫ on the carrier/hook driving sleeve.
- (8) Turn the presser foot, c. set to the left and remove it through the presser foot guides (left) and (right) backward.

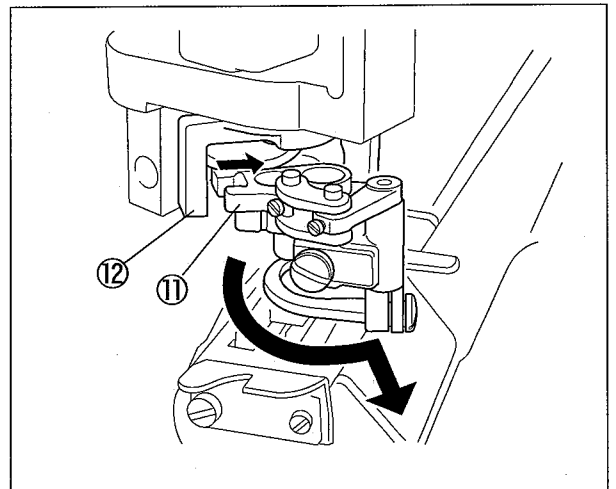


Fig. 80

## 6. Adjustments

### WARNING

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

#### Resetting:

Refer to Fig. 75 - 81 for resetting.

- (1) Remove all needles. Reset the presser foot, c. set between the presser foot guides(left) and (right) while turning it to the right diagonally from the back.
- (2) Reset the carrier/hook driving segment ⑪ on the lever ⑫ on the carrier/hook driving sleeve.
- (3) Insert the presser bar into the carrier/hook driving segment ⑪ and tighten the screw on the back of the presser foot. (on the left side on “-12” model)
- (4) Check the presser foot moves smoothly without play right and left. If not, loosen the screw ⑭ of the presser foot guide(left)⑬ to adjust it.
- (5) Reset the knife holder guide collar, c. set ⑤ and the upper knife on the knife holder bracket⑥ with two screws.
- (6) Adjust the positions of the knife holder guide collar and the upper knife when the needle is at the lowest point. (See “6.12 Replacing and adjusting knives” .)
- (7) Reset the adjusting screw ② when the needle is at the lowest point and the presser foot touches closely on the stitch plate. Then tighten the screw ③ of the presser bar connecting bracket while pushing slightly down.
- (8) Reset the seal plug ① .
- (9) Reset all needles.

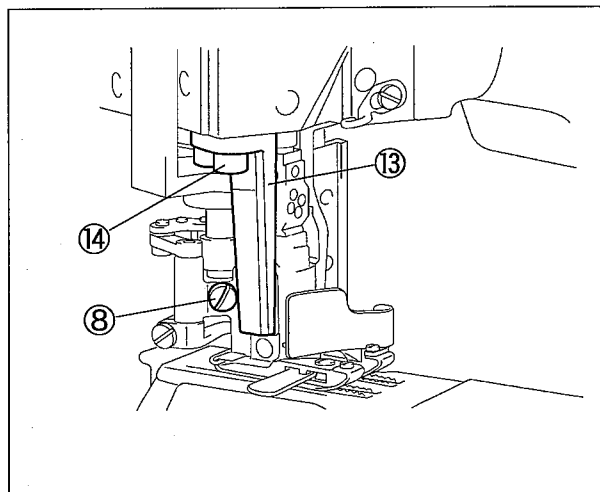


Fig. 81

**⚠ WARNING**

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

**6.11 Replacing presser foot spring plate****Removing:**

- (1) Remove the screws ①.
- (2) Remove the presser foot spring plates ② from the presser foot.
- (3) Remove each plate ② from the spring plate holder ③.

**Resetting:**

- (1) Reset each presser foot spring plate ② with the spring plate holder ③.
- (2) Reset the plates ② parallel each other on the presser foot ②.
- (3) Tighten the screws ① securely.

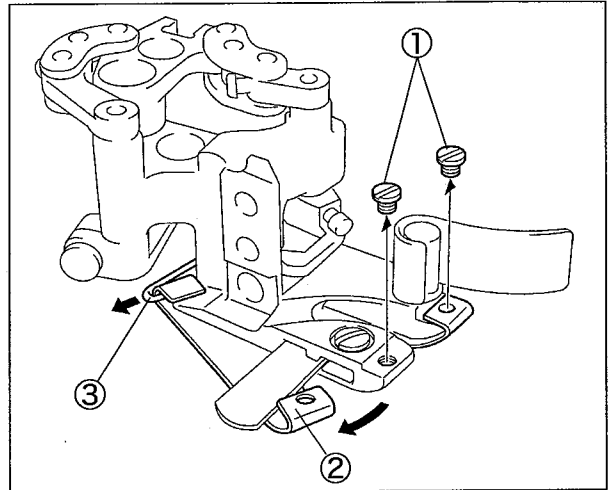


Fig. 82

## 6. Adjustments

### WARNING

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

## 6.12 Replacing and adjusting knives

### Pressure of upper knife:

When the needle is at the highest point and the upper knife ① is at the extreme left, the presser foot touches the stitch plate, and the upper knife ① touches the lower knife ② closely.

The standard clearance between the bearing of the knife holder shank support ③ and the knife holder guide collar ④ is 1.0 mm.

Loosen the screw ⑤ and move the knife holder guide collar ④ to adjust the pressure.

- To increase the pressure, move the collar ④ upward.
- To decrease the pressure, move the collar ④ downward.

Note: Align the front sides of the upper ① and lower ② knives without touching the upper knife to the presser foot.

After check them, fix the knife holder guide collar ④ with the screw.

### Removing:

- (1) Loosen the screws ⑤ and ⑥ to remove the upper knife ①.
- (2) Loosen the screw ⑦ to remove the lower knife ②.

### Resetting:

- (1) Reset the lower knife ② with the screw ⑦.
- (2) Reset the upper knife ① with the screw ⑥.  
See "5.9 Adjusting lapped width of upper fabric" for engagement of the knives.
- (3) Adjust the knife holder guide collar ④, referring to above "Pressure of upper knife".

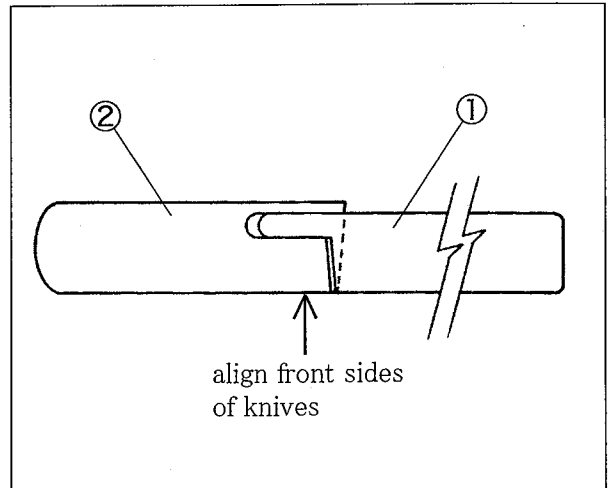


Fig. 83

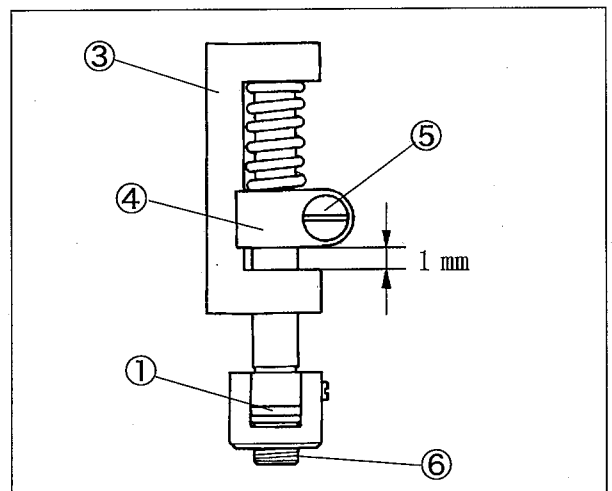


Fig. 84

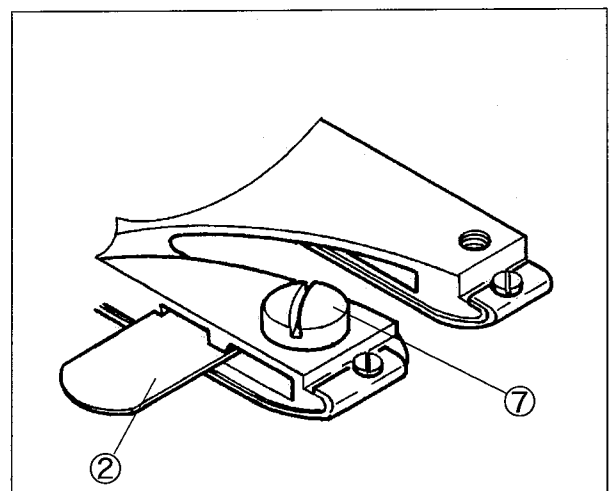


Fig. 85

**WARNING**

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

**Engaging angle of upper knife to lower knife**

Remove the parts ① - ⑤ in order and turn the screw ⑥ to adjust it.

When resetting, check the screw ⑦ is not out from the bottom of the knife support ⑤. Then insert it into the bracket hole ⑧ to tighten.

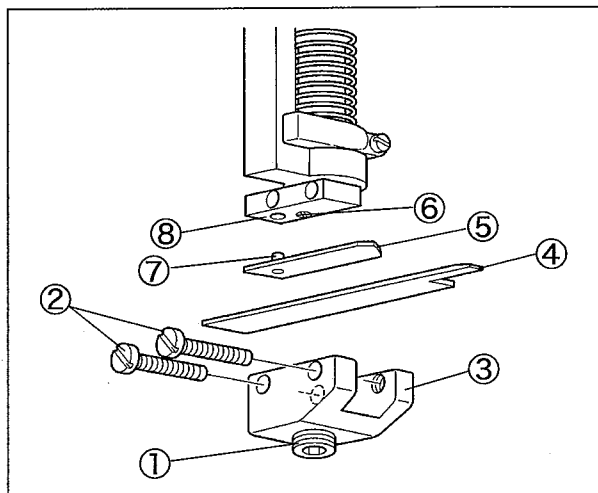


Fig. 86

# 7. Specifications

Model	FD-62E
Description	High speed feed-off-the-arm machine for flat seaming (oil-free)
Dimensions	420 mm (L) × 300 mm (W) × 410 mm (H)
Circumference of Cylinder	148 mm at needle drop
Working Space	Cylindrical shape of 210 mm in front of needle drop
Weight	23 kg (machine head only)
Stitch Type	ISO 406, 605, 608
Application	Refer to below table
Sewing Speed	Up to 4200 rpm, 3800 rpm in usual
Stitch Length	1.6 - 2.5 mm The number of stitches 10 - 16 stitches per inch (25.4 mm) 12 - 19 stitches per 30 mm
Needle System	Sewing needle: Organ FL×118GCS, Groz-Beckert UY118GKS Retainer needle: Organ FLG-1, FLF-8 (with scarf) Groz-Beckert 36211, 36211A (with scarf)
Needle Distance	R: 5.2 mm (13/64 inches) S: 6.0 mm (15/64 inches)
Presser Foot Lift	01, 03, 15: Max. 8 mm, 06, 07, 12: Max. 6 mm at the highest point of needle clamp
Feed Regulation	By lever
Differential Ratio	Max. normal differential: 1.0:1.5 Max. reverse differential: 1.0:0.7
Differential Feed Regulation	By dial
Knives of Fabric Cutting	Both upper and lower knives made of special steel
Lubrication	Automatically by gear pump
Lubricating Oil	YAMATO SF OIL No.68
Capacity of Oil Reservoir	Frame: about 100 cc Cylinder: about 100 cc
Compliance with Regulation	Compliant with the PL Law and the CE Marking

Model	Application
-03	4-needle 5-thread lapping sewing for attaching tape on front placket of brief, cutting one side fabric edge, without spreader
-06	4-needle 6-thread flat seaming on crotch of brief (with stepped gauge on knife apart), cutting both sides fabric edges
-12M	4-needle 6-thread flat seaming for knitted or woven fabric on light weight, cutting both sides fabric edges

***Yamato***

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