



# USER'S MANUAL

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## SC 7900-Series

Direct Drive, 4-Needle Flat Seamer  
Feed off the Arm type

- 1) Read all instructions before using the machine to prevent trouble.
- 2) Keep the instructions and refer to it during machine failures.



**1. Thank you very much for buying a HIGH-SPEED OVERLOCK sewing machine.**

**SUNSTAR will satisfy you by manufacturing the industrial sewing machine with refined design, improved durability, great power, perfect performance, variable functions based on skills and experience.**

**2. Please read this manual thoroughly before use.**

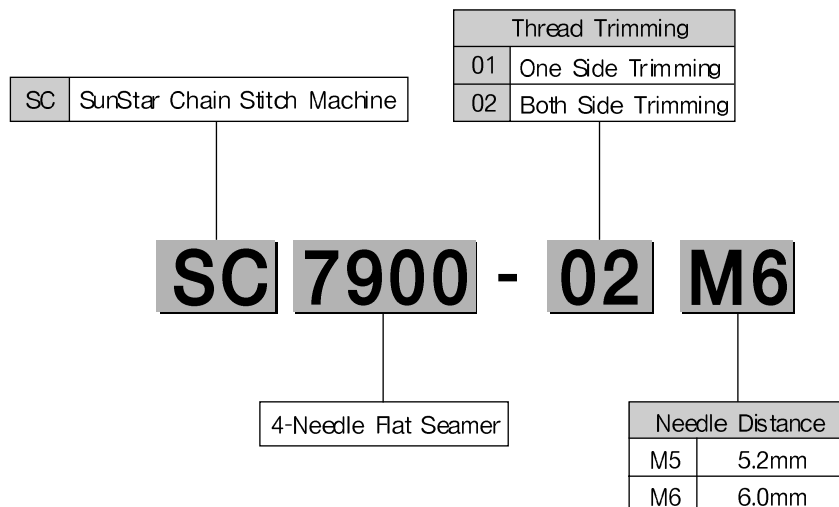
**3. This manual can be changed the contents without prior notice to improve the functions.**

**4. This is designed and manufactured as an industrial machine. Do not use this machine for other than its intended use.**



**SunStar CO., LTD.**

## MODEL CLASSIFICATION



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# 1




## SAFETY RULES

The following set of safety rules categorized as Danger, Warning and Caution indicates possibilities of physical or property damages if not fully observed.

**DANGER** : These safety instructions must be observed to be safe from danger when installing, delivering, or maintaining the machine.

**WARNING** : These safety instructions must be observed to be safe from machine injuries.

**CAUTION** : These safety instructions must be observed to prevent machine errors.

<p><b>1) Machine Delivery</b></p> 	<p>Only qualified technicians who are familiar with the safety instructions should carry the machine. Make sure to fully observe the following instructions when carrying the machine.</p> <ul style="list-style-type: none"> <li>Ⓐ The machine should be carried out by two or more people.</li> <li>Ⓑ Clean oil spots to prevent accidents when delivering.</li> </ul>
<p><b>2) Machine Installation</b></p> 	<p>Installation environment may incur machine malfunction or breakdown. Make sure to meet the following conditions.</p> <ul style="list-style-type: none"> <li>Ⓐ Undo a package from the top in order. Beware nails in wooden box.</li> <li>Ⓑ Dust and humidity can cause pollution and corrosion of the machine. Air conditioner should be equipped and cleaned regularly.</li> <li>Ⓒ Do not expose the machine directly to the sun.</li> <li>Ⓓ Allow at least 50cm of space on each side of the machine for convenient maintenance.</li> <li>Ⓔ Explosion hazard Do not operate machine in explosive atmospheres, where aerosol spray is used in large quantity or oxygen is controlled.</li> <li>Ⓕ The lighting is not offered because of the nature of the machine, the lighting should be install in the workspace by users. [Reference] details of the machine installation are illustrated in 4. INSTALLAION.</li> </ul>
<p><b>3) Machine Repair</b></p> 	<p>Only SUNSTAR MACHINERY Co.,Ltd-trained and selected repair engineers should go repair work.</p> <ul style="list-style-type: none"> <li>Ⓐ Turn off the power before cleaning or repairing the machine. Wait for 4 minutes so the machine electricity is completely discharged.</li> <li>Ⓑ Do not change the specifications or any parts on the machine without confirmation from SUNSTAR MACHINERY Co.,Ltd. Such change may cause safety accidents.</li> <li>Ⓒ Use only SUNSTAR MACHINERY Co.,Ltd parts when repairing machine.</li> <li>Ⓓ Put all safety cover on after repairing.</li> </ul>

#### 4) Machine Operation



SC 7900 Series is designed for applying sewing to knitwear and other similar materials. Read thoroughly the following instructions.

- Ⓐ Read thoroughly and fully understand the manual before operating the machine.
- Ⓑ Dress for safety.
- Ⓒ Keep your hands or head away from the moving parts of the machine such as needle, looper, spreader, take-up lever, and pulley when the machine is in operation.
- Ⓓ Do not remove the safety valve and all kinds of covers when the machine is in operation.
- Ⓔ Be sure to connect the ground wire
- Ⓕ Be sure the main power is turned off and the power switch is set to OFF before opening the cover of any electrical component or control box.
- Ⓖ Turn the machine off when threading needles or inspecting the finished sewing.
- Ⓗ Do not press the pedals when you turn on the power.
- Ⓘ Install the machine away from strong electromagnetic wave such as high frequency welder as far as possible.

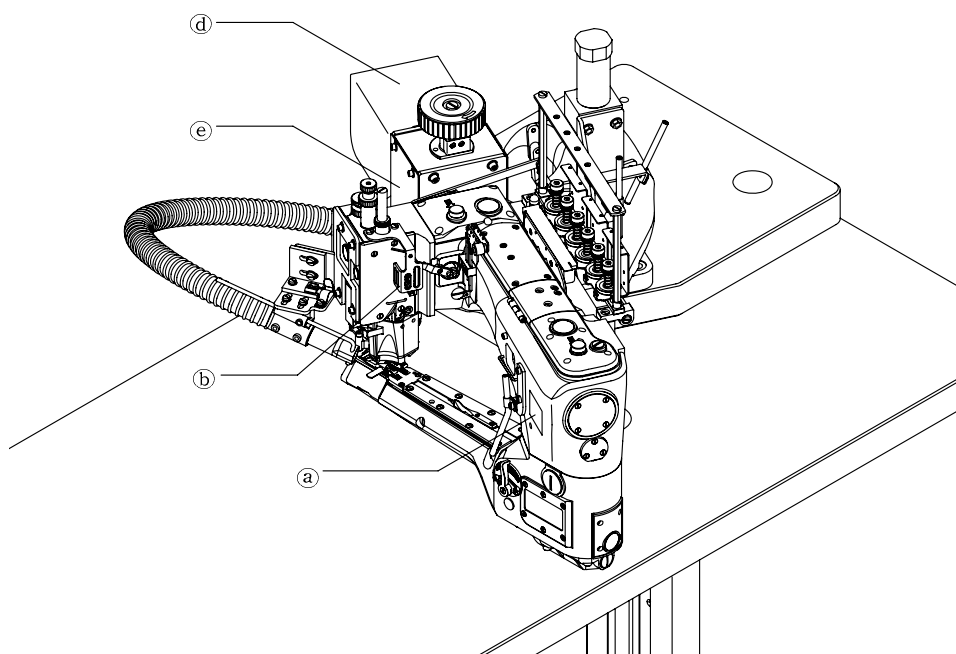
#### **[WARNING]**

When you operate machine, you should put the cover on to prevent physical injury by the gear or other parts. Turn off the power before inspecting or adjusting.

#### 5) Safety Device

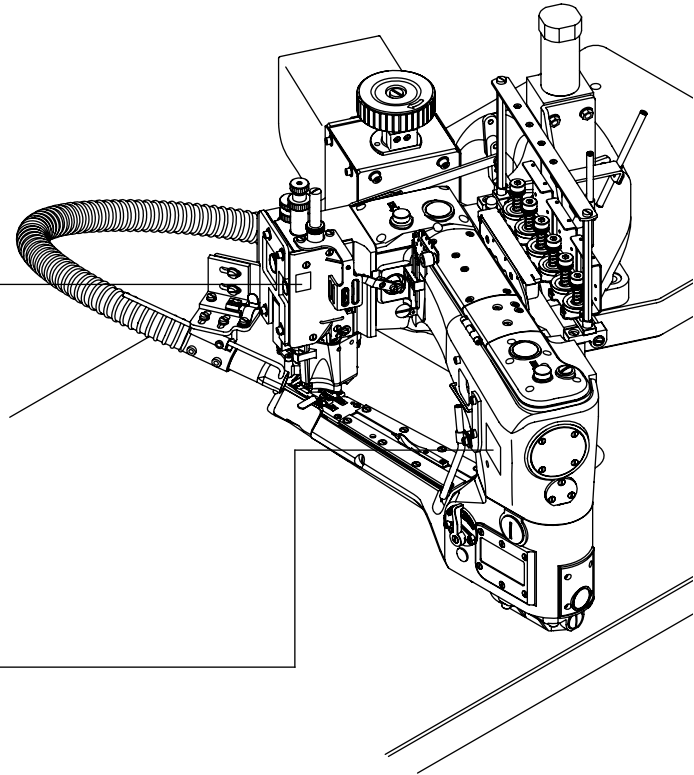


- Ⓐ Safety Label: Note directions for sewing machine use
- Ⓑ Thread take-up Cover: Device to prevent finger to come in contact with the thread take-up.
- Ⓒ Base cover: Device to prevent accidents during rotation of motor.
- Ⓓ Motor cover: Device to prevent accidents during rotation of motor.



6) Placement of  
Caution Sticker

CAUTION STICKERS is attached on the machine for the safety.  
Read thoroughly the manual before operating the machine.



7) Contents of  
Caution Sticker

Caution

(1)



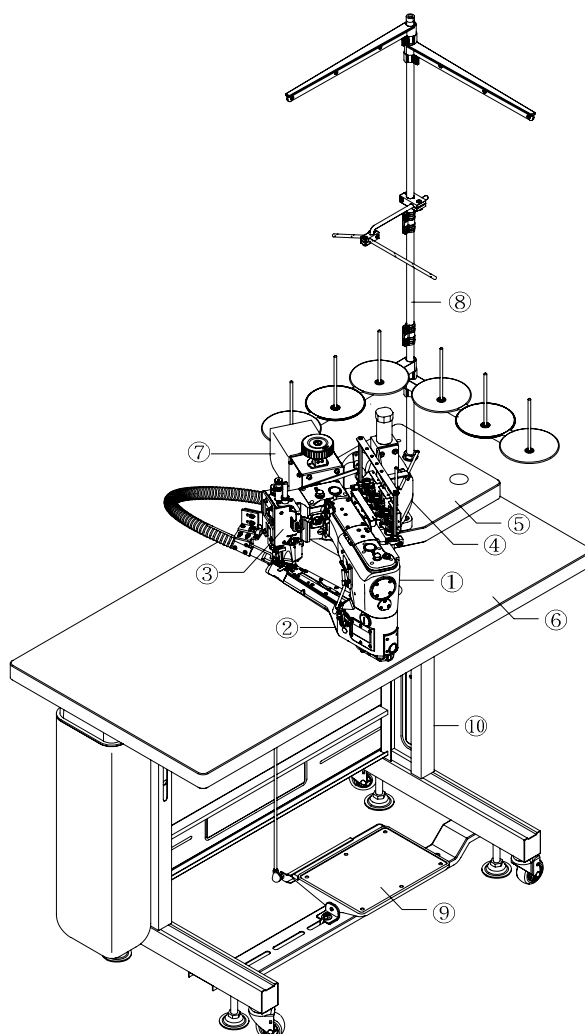
(2)





# 2

## ENTIRE STRUCTURES



[ Figure 1 ]

- ① Arm
- ② Bed
- ③ Head
- ④ Arm support
- ⑤ Arm support table
- ⑥ Table
- ⑦ Motor cover
- ⑧ Spool thread stand
- ⑨ Pedal
- ⑩ Table legs

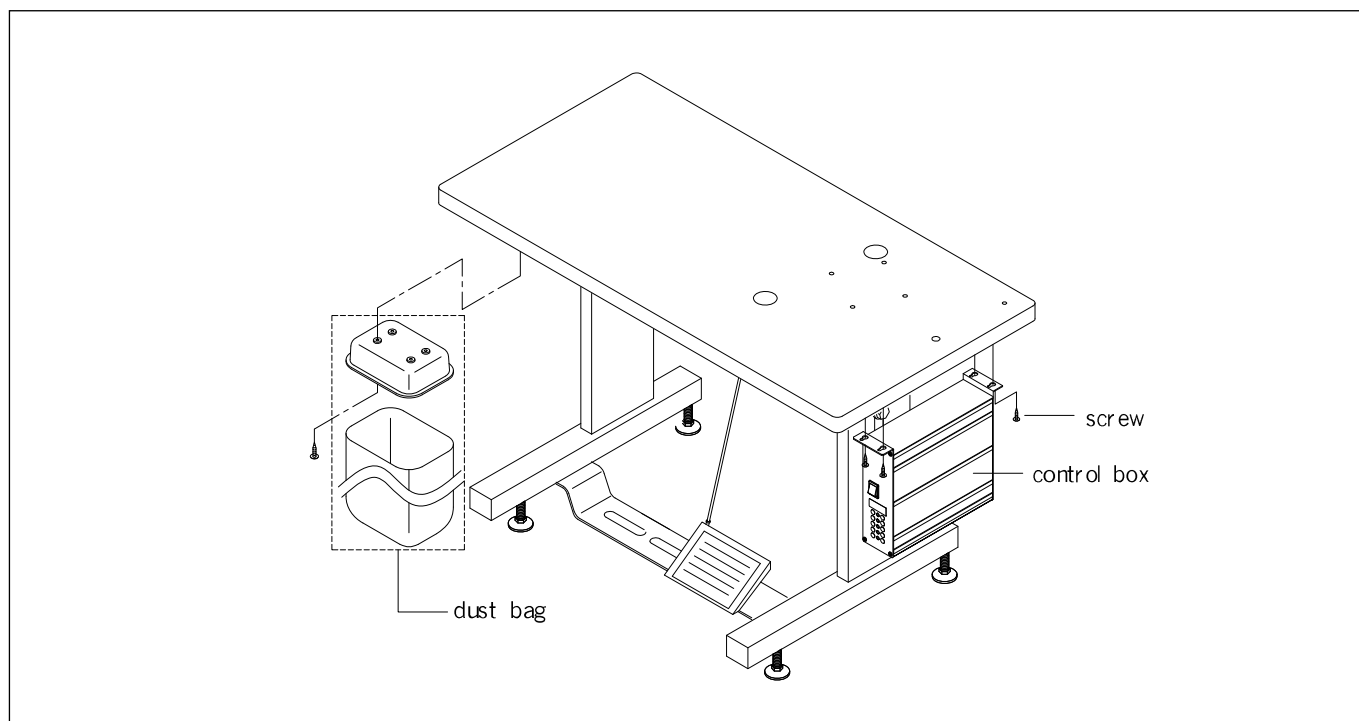
# 3

## SPECIFICATIONS

Model	SC 7900 Series
Explanation	High-speed Cylinder bed 4-needle interlock sewing machine (the Arm type)
Stitch form	ISO 406, 605, 608
Use	General sewing (knitwear)
Sewing speed	4,200 s.p.m (in case of intermittent operations)
Stitch width	1.6mm~2.5mm
	Stitches per 25.4mm: 10~16, stitches per 30mm: 12~19
Needle	Sewing machine needles: Groz-Beckert UY118GKS
	Retainer needles: Groz-Beckert UY36211
Needle distance	M5 : 5.2mm
	M6 : 6.0mm
Needle bar stroke	30mm
Presser foot lift	Type 01: 8mm, type 02: 6mm at the highest point
Feeding volume adjustment system	Adjustment link
Differential feed ratio	Max. Forward differential feed ratio=1.0:1.5
	Max. Reverse differential feed ratio=1.0:0.7
Differential feed ratio adjustment system	Adjustment lever
Lubrication system	Automatic lubrication by gear pump
Used oil	General sewing machine oil ISO VG 22
Oil pan capacity	The lower part of bed: 100cc
	The inner part of arm: 100cc

## 11

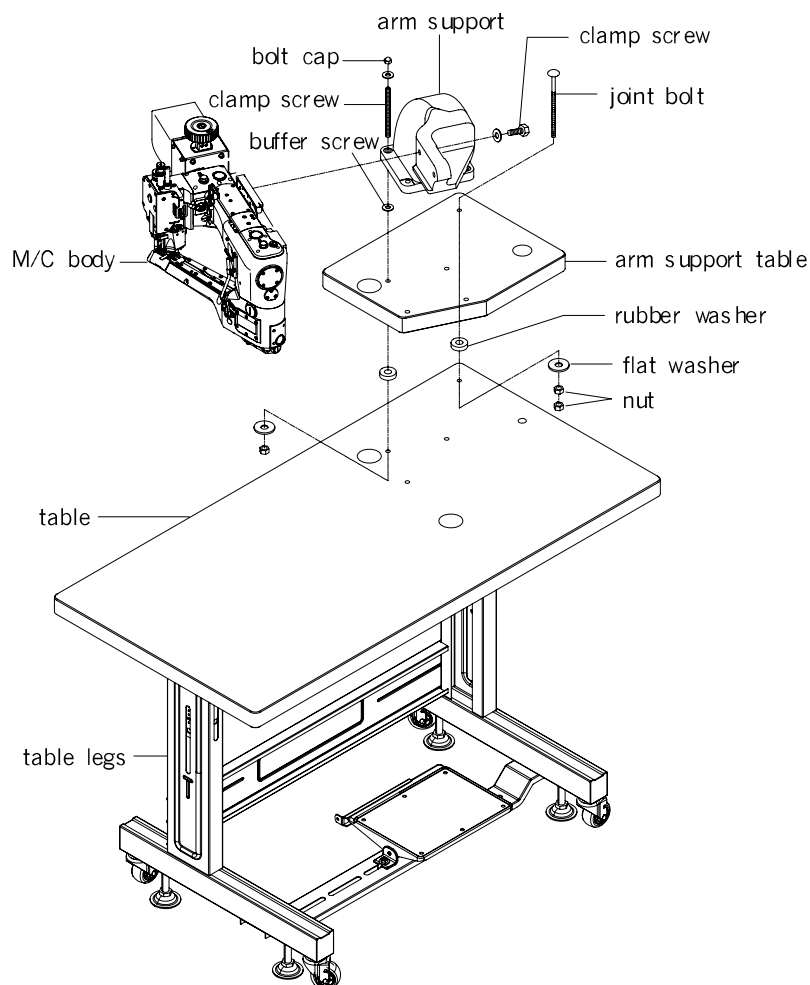
## (2) Table installation



[ Figure 4 ]

- ① Fix a dust bag with the screw like the figure 4.
- ② Assemble a control box like the figure 4.

## 2) M/C INSTALLATION

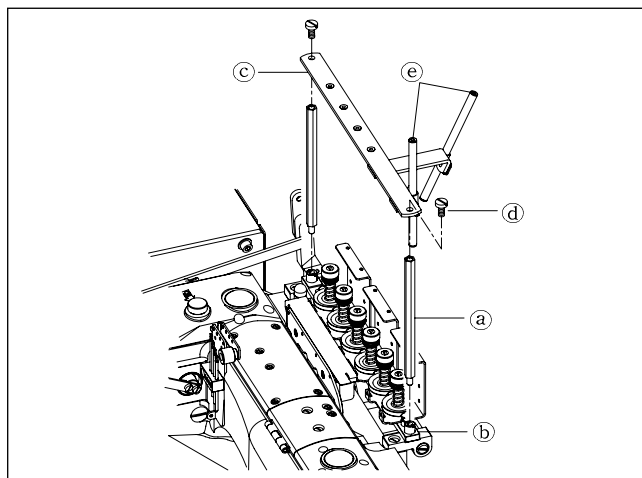


[ Figure 5 ]

- ① Assemble table legs.
- ② Put the assembled legs and a table together.
- ③ Place a rubber washer on the linking part of the table and put a arm support table on it.
- ④ Set a buffer rubber onto the arm support connection then lift a arm support up.
- ⑤ Combine a clamp screw for the arm support putting cap nut and a nut with the arm support.
- ⑥ Combine the arm support table with the table using joint bots and nuts.
- ⑦ Combine the M/C body with the arm support using the clamp screw.

### 3) THREAD GUIDE FOR STAND SUPPORT INSTALLATION

- ① Assemble a thread guide for stand support① onto a support bracket②.
- ② Put the thread guide plate③ on the thread guide for stand support① and then fix it with the screw④.
- ③ Assemble the thread guide pipe⑤.

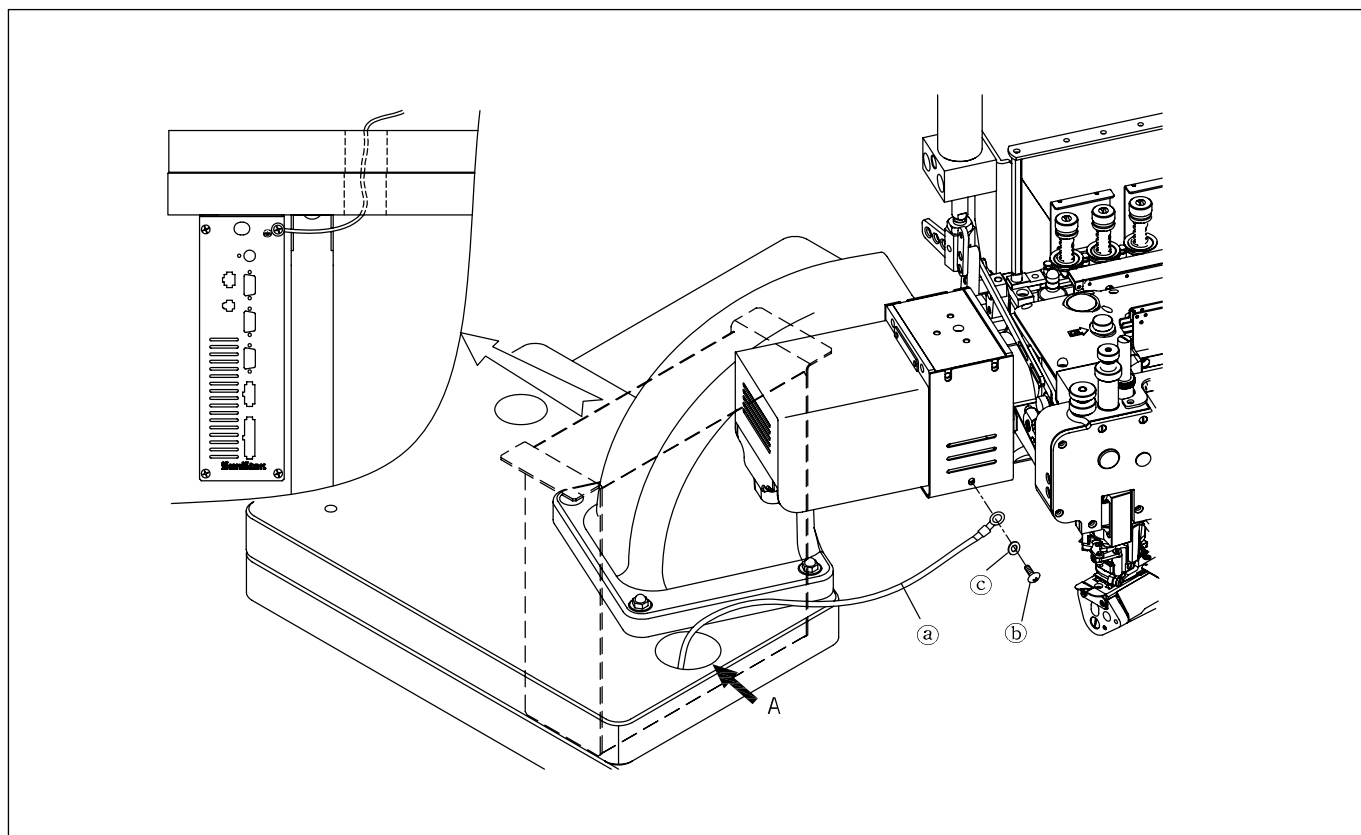


[ Figure 6 ]

### 4) GROUND WIRE CONNECTION

Connect a ground wire to the base cover and the control box.

- ① Connect the ground wire① to the base cover using a screw② and a washer③.
- ② Penetrate the ground wire① the hole A on the table.
- ③ Connect the ground wire① to the control box.

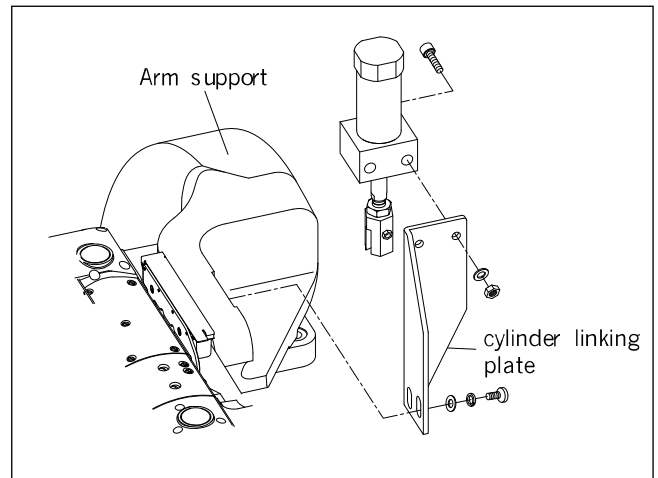


[ Figure 7 ]

## 5) AIR-COMPRESSED PRESSURE BAR LIFTER INSTALLATION

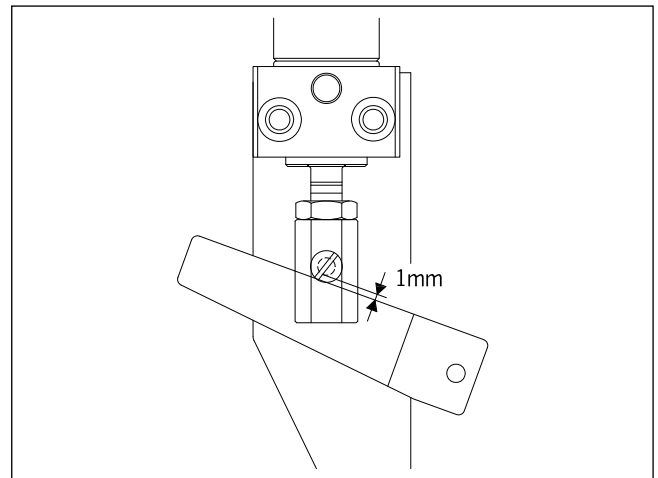
An air-compressed pressure bar lifter is composed of several parts.

- ① Assemble an air-compressed cylinder and an assembled device with cylinder knuckles to the cylinder linking plate.
- ② Assemble the cylinder linking plate with the arm support.



[ Figure 8 ]

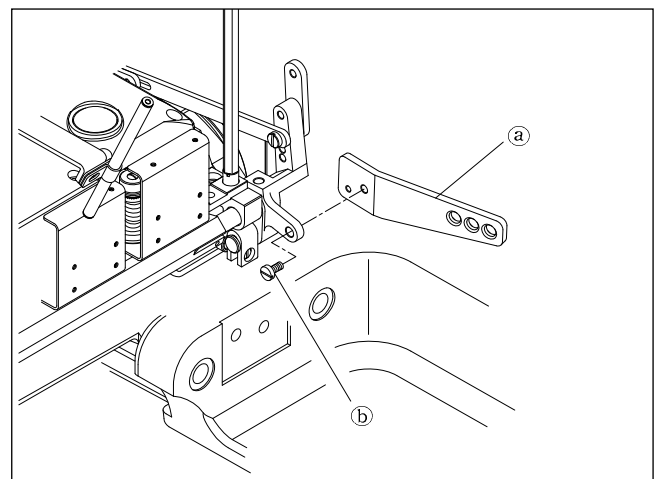
- ③ Adjust the cylinder knuckle to make the distance of 1mm between the cylinder knuckle short screw and the knee lifter connection lever. (Refer to the figure 9)



[ Figure 9 ]

### (1) Knee lifter connection leve

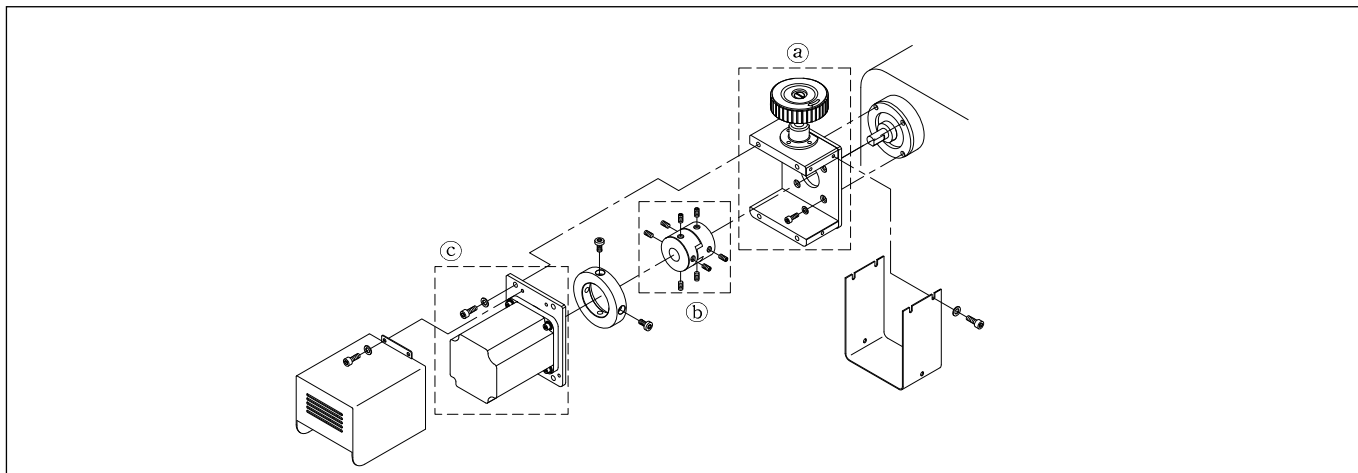
Assemble the knee lifter connection lever① with the screw②.



[ Figure 10 ]

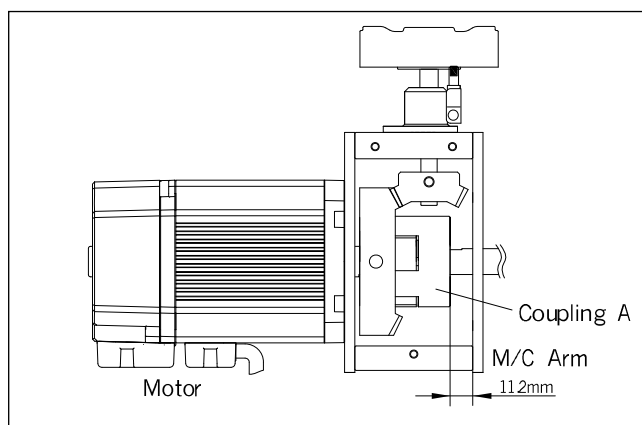
## 6) DIRECT MOTOR INSTALLATION

① Assemble the arm-fix bracket and the assembled part (a) with the arm. (Refer to the figure 11)



[ Figure 11 ]

② Assemble the coupling A to be 11.2mm in the arm-fix bracket. (Refer to the figure 12)



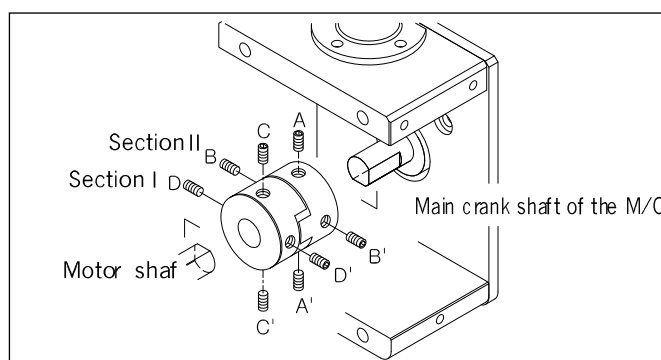
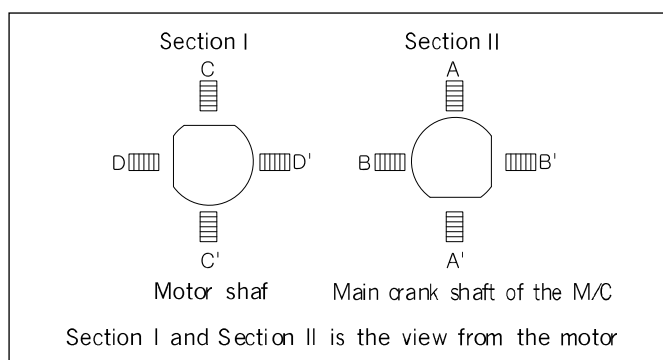
[ Figure 12 ]

③ Fix the coupling A (b) to the main crank shaft. (Refer to the figure 13)



The coupling A (b) should be assembled as follows.

1. Put the needle bar to the highest point.
2. When the needle bar is on the highest point, the main crank shaft of M/C and the motor shaft will become like the [Figure 13]



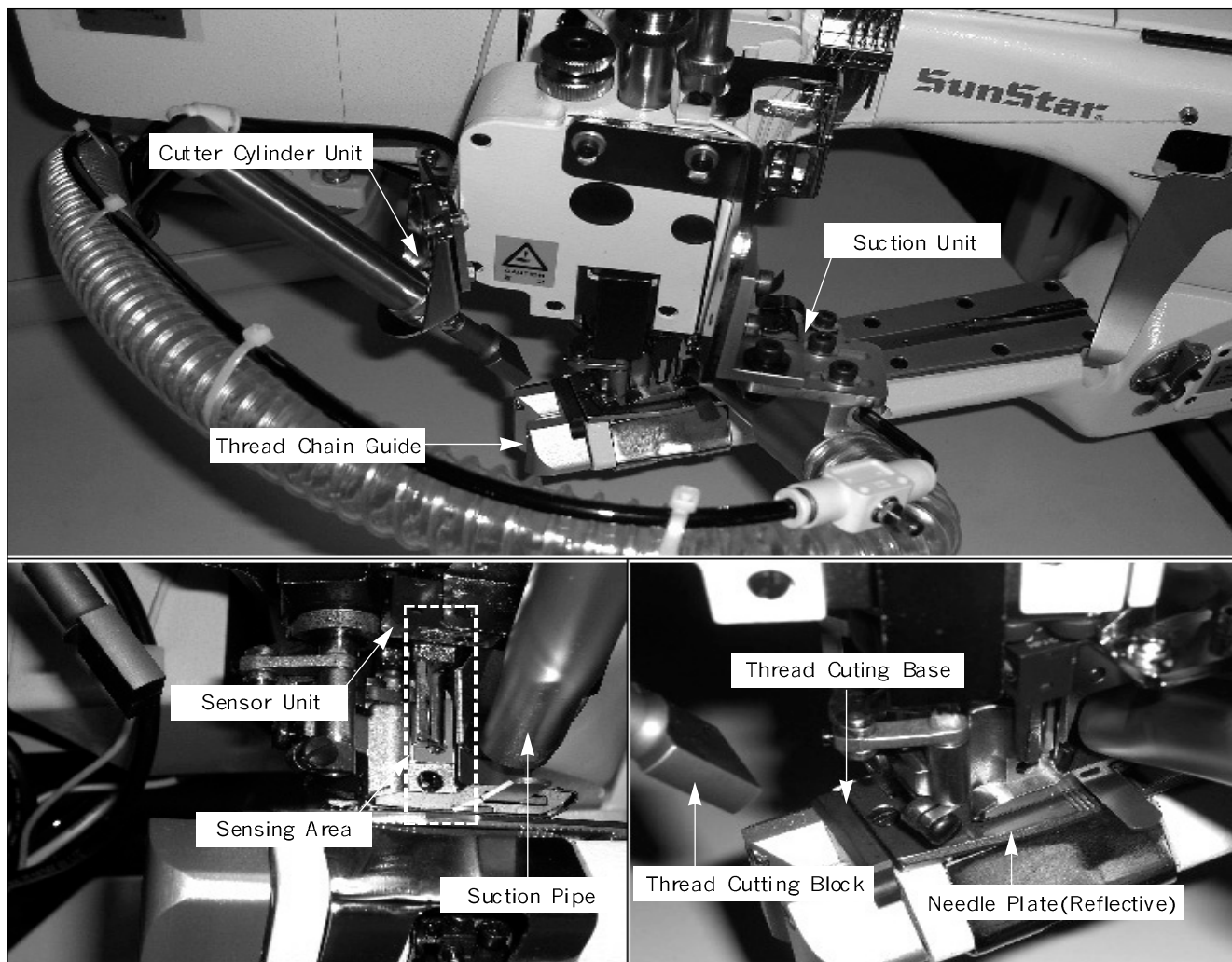
[ Figure 13 ]

④ Assemble the motor parts (c) and the motor cover. (Refer to the figure 11)



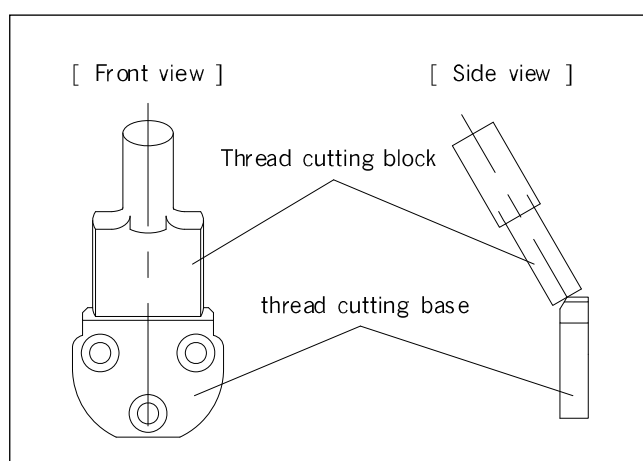
## 7) AIR-COMPRESSED THREAD TRIMMING DEVICE (OPTIONAL) INSTALLATION

An air-compressed thread trimming device is composed of several parts. (G-CT-0002)



[ Figure 14 ]

- ① Assemble the thread cutting block and the thread cutting base at the center of the front and the side. (Refer to the figure 15)

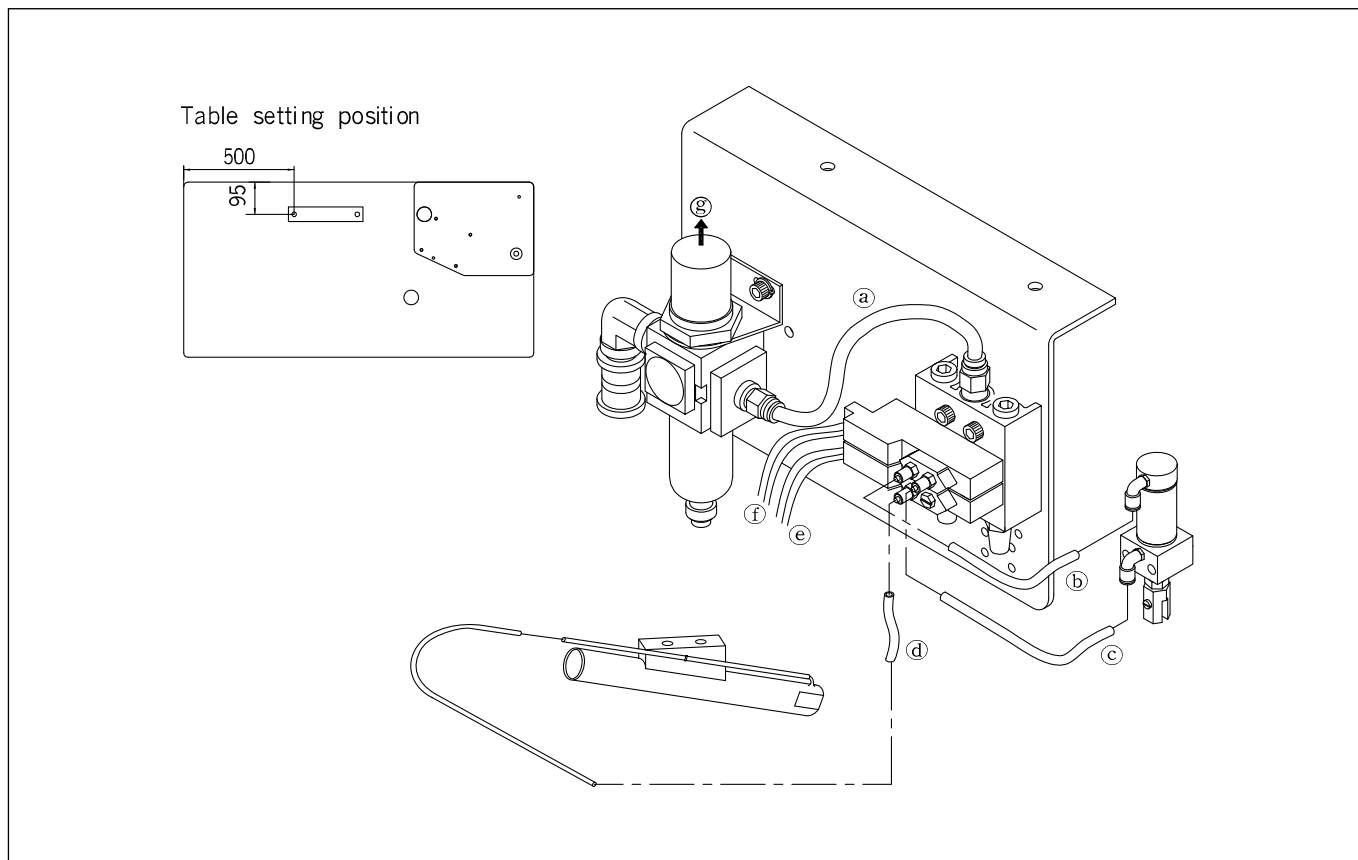


[ Figure 15 ]

- ② You should be careful no to intrude into the sensor part when setting the suction pipe.

## 8) AIR-COMPRESSED DEVICE INSTALLATION

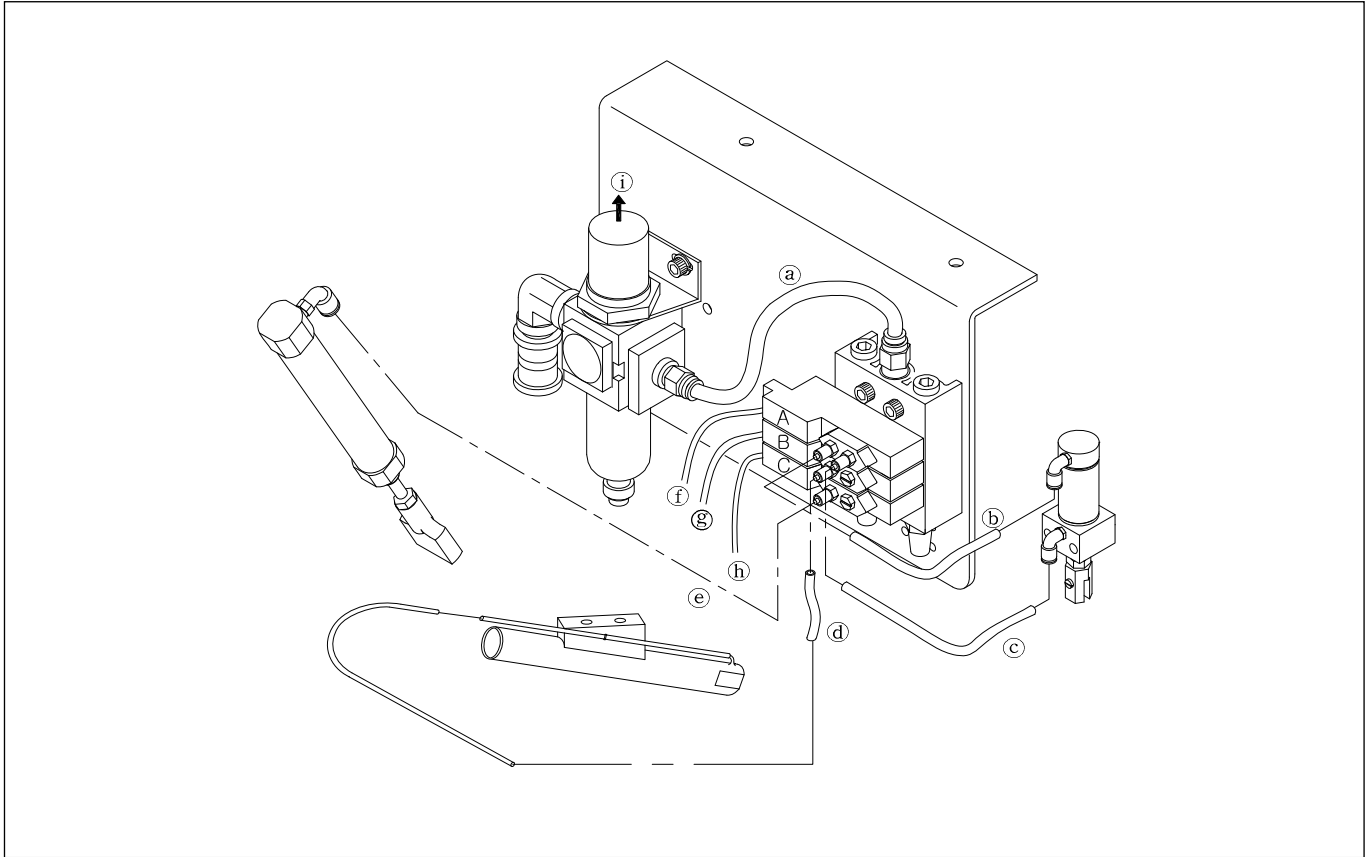
### (1) Specification



[ Figure 16 ]

- ① Connect the air hose ② to the manifold block of the filter regulator and solenoid valve.
- ② Connect the air hose ③ to the upper fitting of the air-compressed cylinder and the left side of the upper solenoid valve.
- ③ Connect the air hose ④ to the lower fitting of the air-compressed cylinder and the right side of the upper solenoid valve.
- ④ Connect the air hose ⑤ to the suction pipe and the lower solenoid valve.
- ⑤ Connect the cable ⑥ which is written in 'PF' linking to the control box to the upper solenoid valve.
- ⑥ Connect the cable ⑦ which is written in 'CL' linking to the control box to the lower solenoid valve.
- ⑦ After installing to the table, open the air-compressed regulator ⑧ of the filter regulator and set the compressed air at the 0.4~0.5 bar.

## (2) Air-compressed device (optional) installation



[ Figure 17 ]

- ① Connect the air hose (a) to the manifold block of the filter regulator and solenoid valve.
- ② Connect the air hose (b) to the upper fitting of the air-compressed cylinder and the left side of the solenoid valve A.
- ③ Connect the air hose (c) to the lower fitting of the air-compressed cylinder and the right side of the solenoid valve A.
- ④ Connect the air hose (d) to the suction pipe and the solenoid valve B.
- ⑤ Connect the air hose (e) to the cutter cylinder and the solenoid valve C.
- ⑥ Connect the cable (f) which is written in 'PF' linking to the control box to the solenoid valve A.
- ⑦ Connect the cable (g) which is written in 'CL' linking to the control box to the solenoid valve B.
- ⑧ Connect the cable (h) which is written in 'TT' linking to the control box to the solenoid valve C.
- ⑨ After installing to the table, open the air-compressed regulator (i) of the filter regulator and set the compressed air at the 0.4~0.5 bar.

# 5

## LUBRICATION



Check the OFF-status condition of a power switch before lubricating.

### 1) OIL

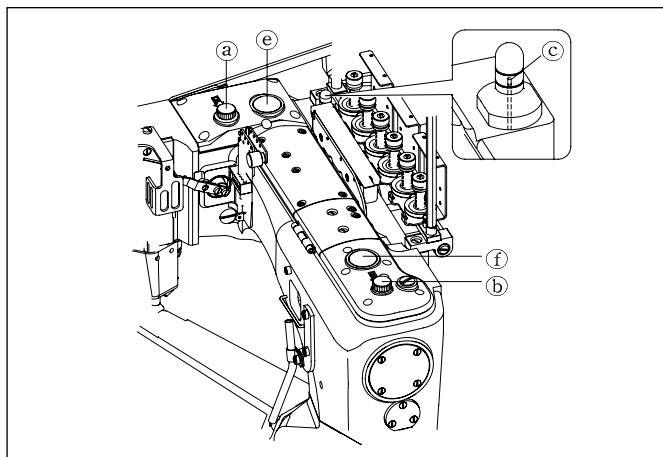
Use the industrial sewing machine oil which is provided by SUNSTAR or SF oil from YANASE.



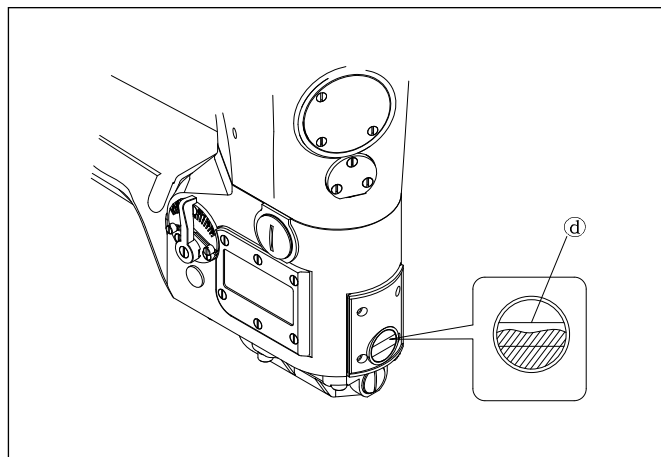
Do not put foreign substances into the lubricating oil to prevent oil from aging of and breaking down.

### 2) LUBRICATING OIL

This sewing machine is shipped without oil. To use the machine without breakdown, remove the oil cap screw<sup>Ⓐ</sup>, <sup>Ⓑ</sup> and then lubricate oil to the top limit of the oil gauge<sup>Ⓒ</sup>, <sup>Ⓓ</sup>.



[ Figure 18 ]



[ Figure 19 ]



Small quantity of lubricating oil cause the machine breakdown and large quantity of lubricating oil cause the quality deterioration because of the spattering of the oil .

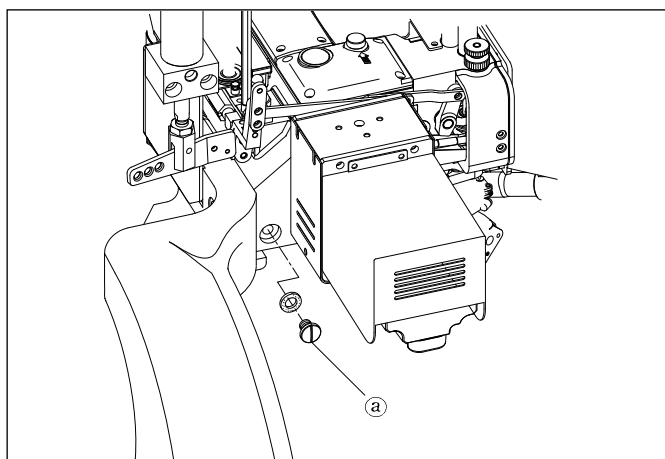
### 3) OIL GAUGE/OIL WINDOW

Check the oil gauge<sup>Ⓒ</sup>, <sup>Ⓓ</sup> before operating the sewing machine. Lubricate oil when the oil indicator or the oil surface (refer to the figure 18, 19) is under the 2 lines. Check the spattering of the oil through the oil window<sup>Ⓔ</sup>, <sup>Ⓕ</sup> when operating the sewing machine.

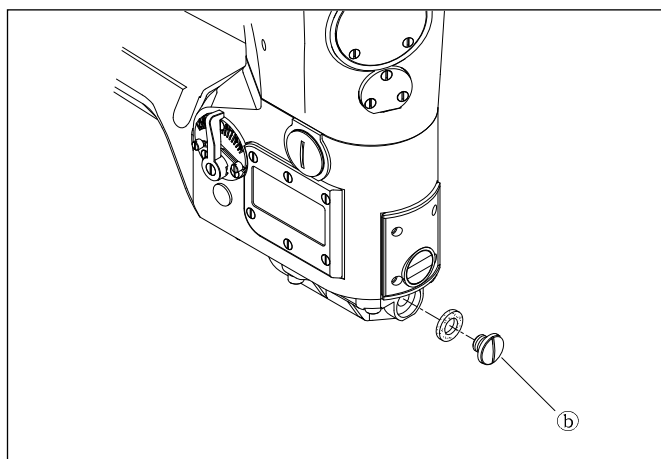
#### 4) LUBRICATING OIL EXCHANGE

Change the oil during the first month every 200 hours and then change it two times per year. If not, the life of the sewing machine is going down.

- ① Discharge the lubricating oil by loosening the oil outlet screw (a), (b).
- ② After discharging, fix the oil outlet screw (a) and (b) firmly.
- ③ Refer to the 2) LUBRICATING OIL for lubricating.



[ Figure 20 ]



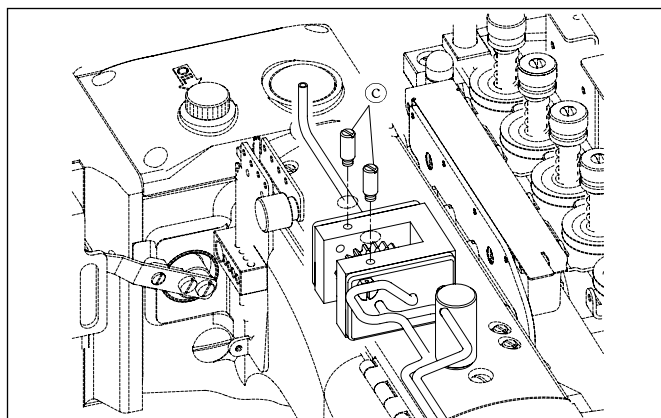
[ Figure 21 ]

#### 5) OIL PRIMING

Prime the oil before operating new machine or the machine not to use for a long time.

After remove the upper screw (c) of oil pump housing and oil priming, then fix it again with the screw (c).

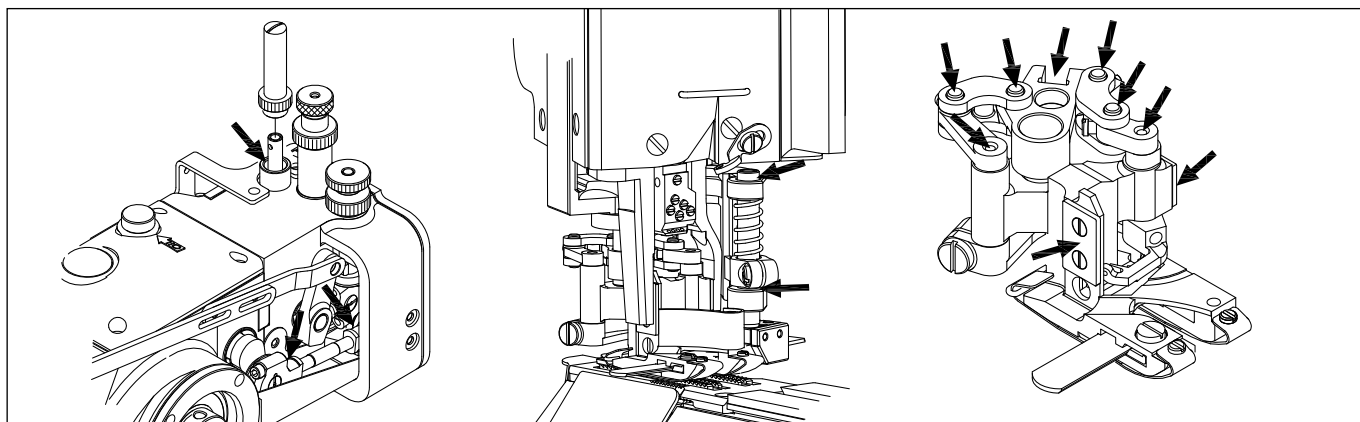
(Refer to the figure 22)



[ Figure 22 ]

#### 6) LUBRICATING OIL REPLENISHMENT

Lubricate about 3~4 drops of oil into the oil hole [Figure 23] every one time a month. If the oil leaks out, the oil spots could be occurred on the parts. Therefore wipe out after replenishing oil.



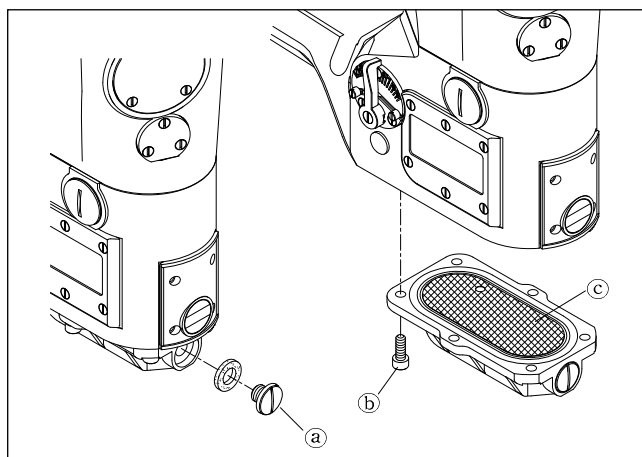
[ Figure 23 ]

## 7) OIL FILTER CLEANING

Clean the suction filter and the oil filter 2~3 times a year. Clean as followings.

### - Oil filter cleaning

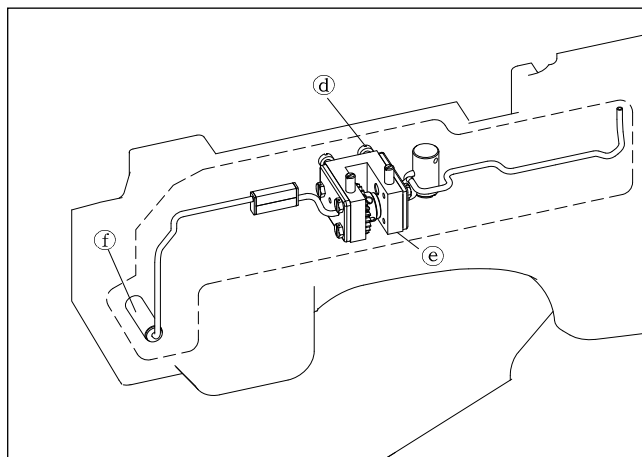
- ① Discharge the lubricating oil by loosening the oil outlet screw ㉑
- ② After discharging, fix the oil outlet screw ㉑ firmly.
- ③ Separate the oil pan from the bed by loosening the oil pan clamp screw ㉒.
- ④ Remove the foreign substances by pulling out a oil filter ㉓.
- ⑤ Assemble it again in reverse order.
- ⑥ Refuel referring to the 2) LUBICATING OIL.



[ Figure 24 ]

### - Suction filter cleaning

- ① Separate the oil pump ㉔ by loosening the oil pump fixation screw ㉕.
- ② Remove the foreign substances of the suction filter ㉖.
- ③ Assemble it again in reverse order



[ Figure 25 ]

# 6

## STANDARD ADJUSTMENTS

### 1) NEEDLE

#### (1) Sewing needle

This sewing machine uses the UY118GKS sized needles made by from Groz-Beckert.

Select the proper needle according to the thickness and type of the sewing materials because of the various size of needle.

Japanese Standard	8	9	10	11	12	–	14
Metric Standard	60	65	70	75	80	–	90



Caution

There may not be the sewing needles at the table, check the catalogue

#### (2) Retainer needle

This sewing machine uses the UY36211 sized needles made by from Groz-Beckert.

Select the proper needle according to the thickness and type of the sewing materials because of the various size of needle.

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



Caution

There may not be the retainer needles at the table, check the catalogue.

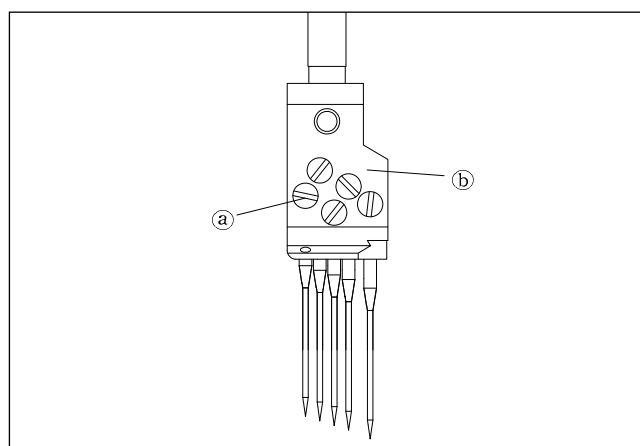
### 2) NEEDLE INSTALLATION



Warning

Check the OFF-status condition of a power switch before setting the needle. Or you may get injured by the malfunction of the pedal.

- ① Loosen the clamp screw (a).
- ② Remove the old needle using the tweezers.
- ③ Lift the needle to the end of needle hole (b) and then fix it firmly by tightening the clamp screw (a).



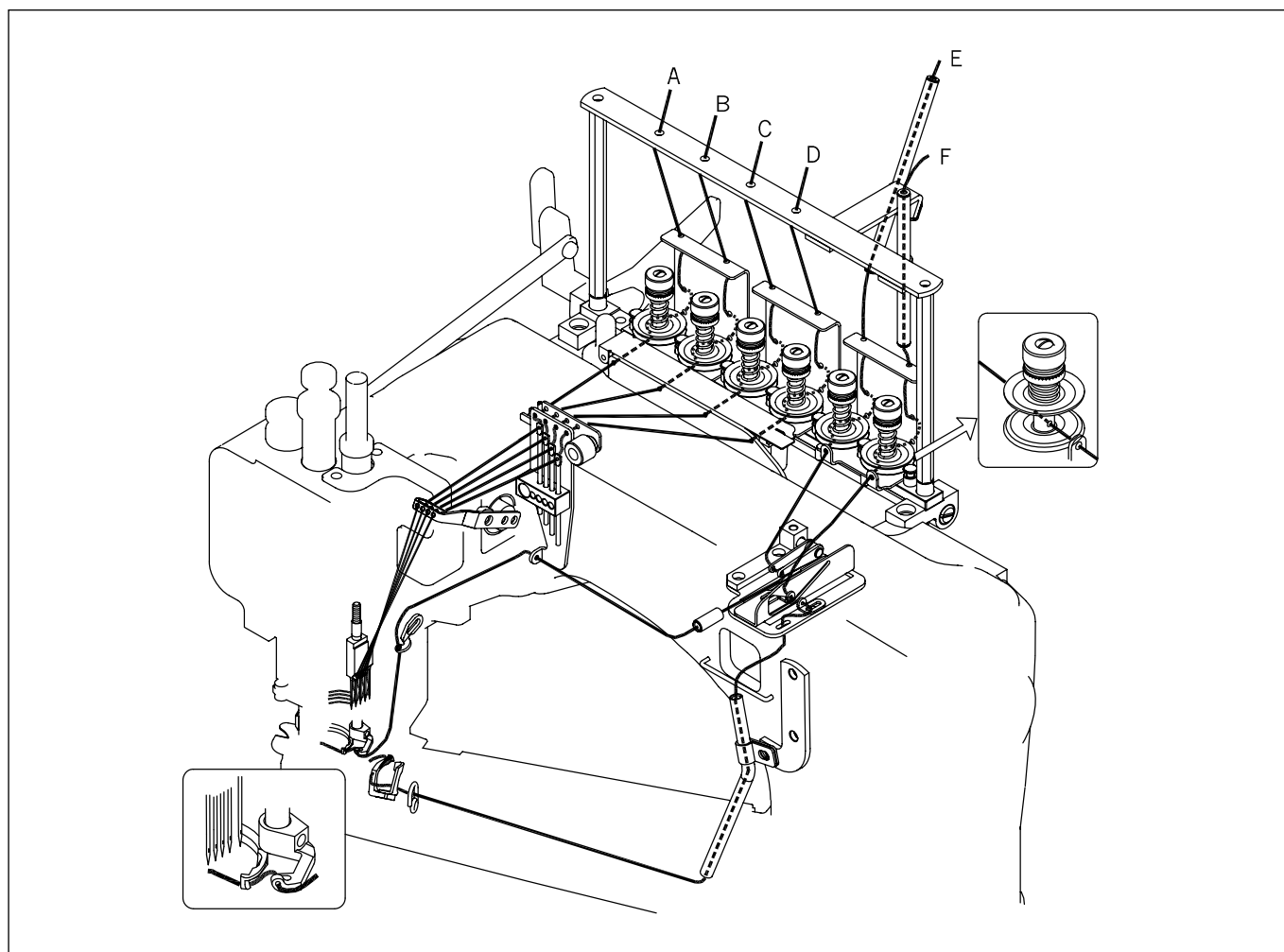
[ Figure 26 ]



Caution

The sewing needle and the retainer needle has the cutting part on their upper part. Insert the needle to tighten the clamp screw.

### 3) THREADING



[ Figure 27 ]

Thread a needle referring to the [Figure 27].

If not, the problems can be happened such as stitch skip, thread cutting, irregular tension etc. A, B, C and D are the needle thread, E is the fancy thread, F is the looper thread.

After threading, cut the scrap of thread before stitching. Do the same for the looper thread and the fancy thread.

Tip) The thread tension is loosened when lifting the presser foot then you can draw the thread.



Check the OFF-status condition of a power switch before threading a needle. Or you may get injured by the malfunction of the pedal.

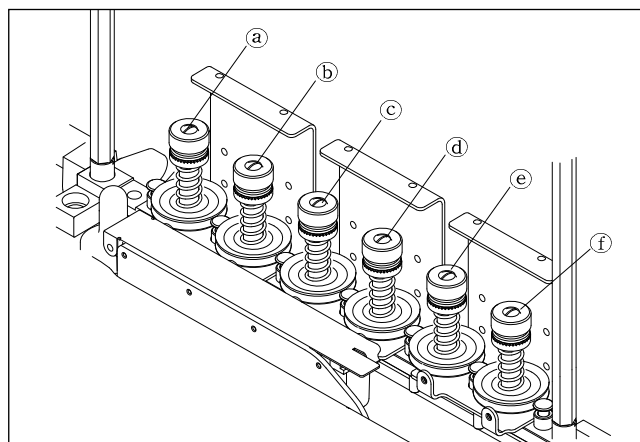


#### 4) THREAD TENSION ADJUSTMENT

Adjust differently the thread tension by the thread, fabric, stitch width and other sewing conditions.

The thread tension is adjusted by rotating nuts (a~f). When rotating clockwise, the tension is stronger. When rotating counterclockwise, the tension is weaker. (Refer to the Figure 28)

- a~d : needle thread
- e : upper thread
- f : looper thread



[ Figure 28 ]

#### 5) PRESSER FOOT ADJUSTMENT



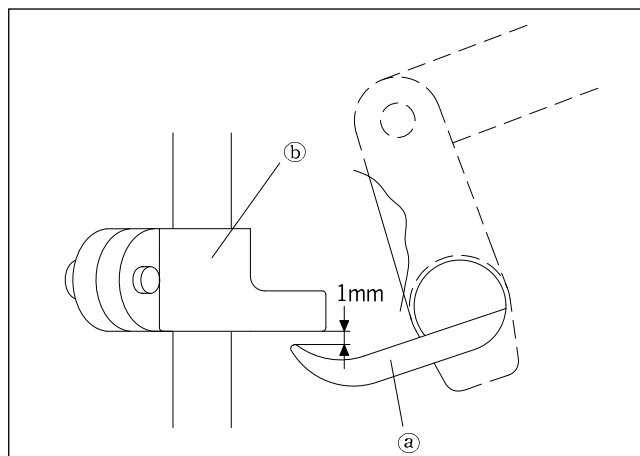
Check the OFF-status condition of a power switch before adjusting.

##### (1) Presser foot lifting adjustment

- ① Set the distance between the presser bar lifting lever (a) and the presser bar linking bracket (b) to 1mm when the presser foot is near the needle plate (Refer to the 6, 7 VERTICAL ADJUSTMENT OF PRESSER FOOT). This is the standard.

##### ► Adjustment order

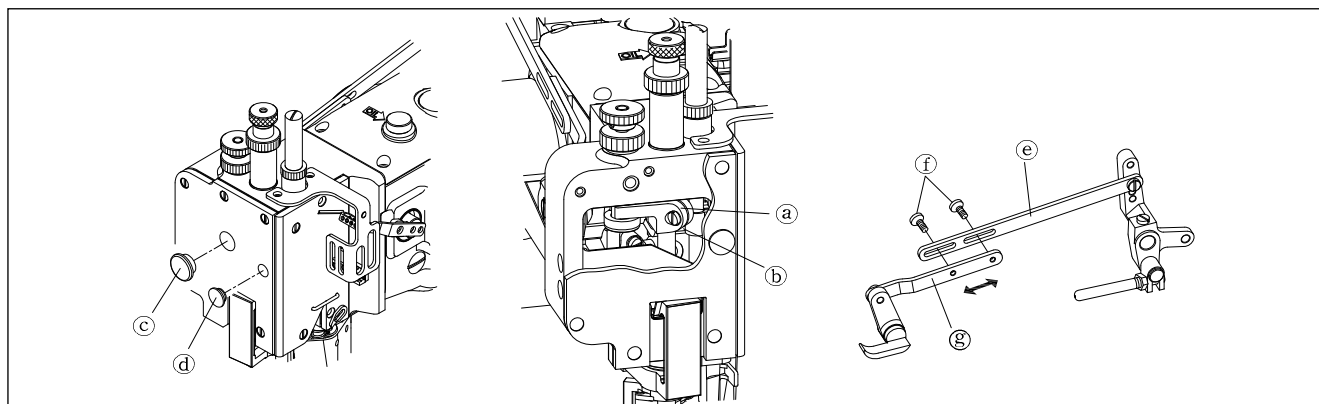
- a. Remove the rubber cap (c, d),
- b. Undo the screw (f) in the presser bar lifting lever link (large size) (e).
- c. Adjust the distance by moving the presser bar lifting lever link (small size) (g) to left or right, then fix it by tightening the screw (f).



[ Figure 29 ]



Adjust the distance of the presser bar lifting lever (a), then adjust the presser foot position at the lowest point of needle bar. (Refer to the Figure 31)  
Without adjusting properly, the upper thread holder can be tampered.

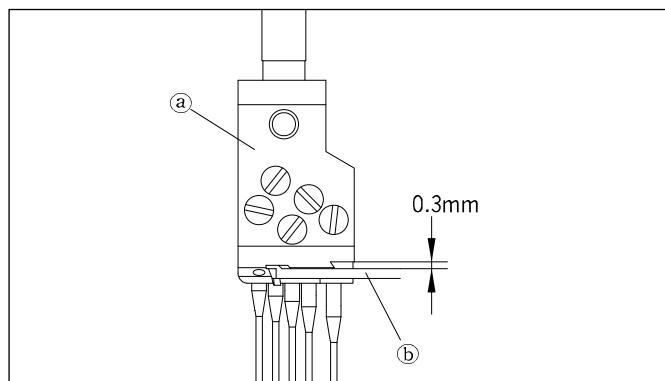


[ Figure 30 ]

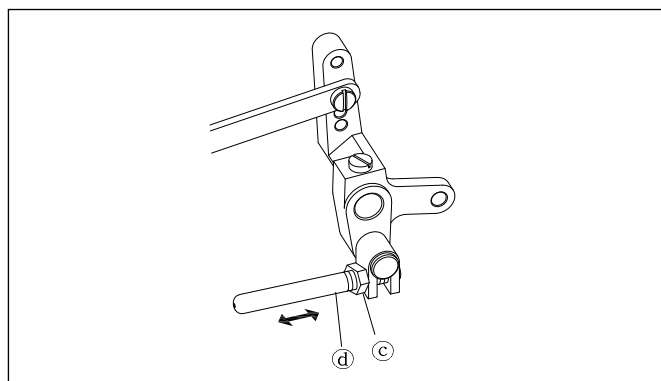
② Set the distance between the needle holder (a) at the lowest of the needle bar and the upper thread holder (b) to 0.3mm. This is the standard. The presser foot is lifted when pressing the pedal backward.

► **Adjustment order**

- Loosen the fixing nut (c).
- Adjust the distance by moving the presser bar lifting fixed plunger (d) back and forth.



[ Figure 31 ]



[ Figure 32 ]

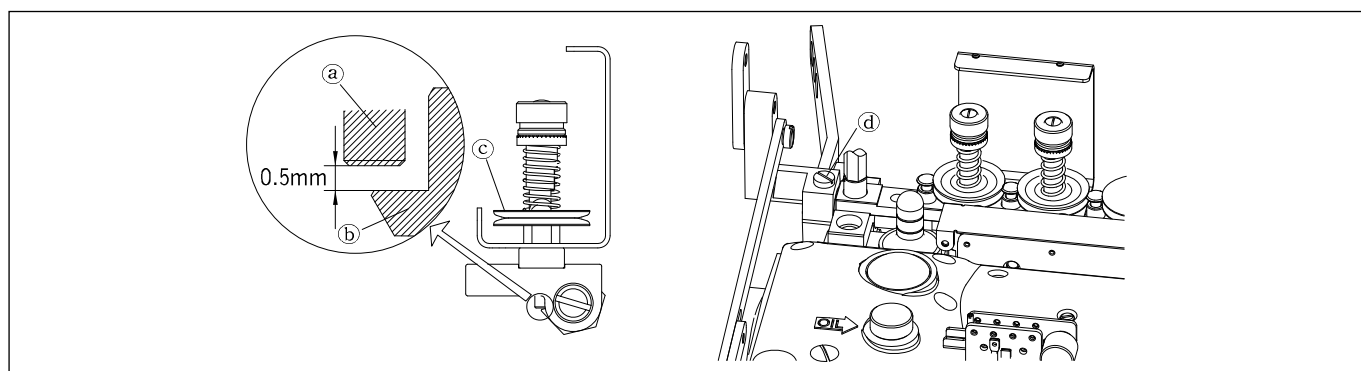
**(2) Thread release shaft adjustment**

Without pressing the presser bar pedal, set the distance between the thread release pin (a) and the thread release shaft (c) to 0.5mm when six thread release pins (a) are separated a little and the upper and lower plate of the thread adjusting device plate (b) are attached together.

► **Adjustment order**

- Loosen the clamp screw (d) in the presser bar lifting lever (large size).
- Adjust the thread release shaft (c) by rotating with a driver.

Tip) The distance becomes narrow when rotating clockwise the thread release shaft, the distance becomes wide when rotating counterclockwise it.



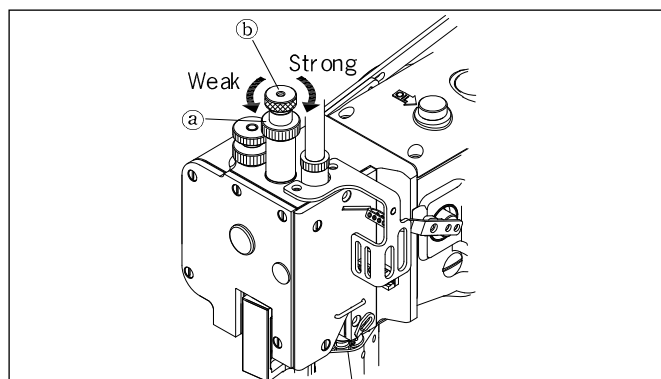
[ Figure 33 ]

**6) PRESSER FOOT PRESSURE ADJUSTMENT**

To make the presser foot pressure lower is better as far as the sewing material is moved well and the stitch is formed.

Loosen the presser bar adjustment screw nut (a) and regulate the presser bar pressure with rotating the presser bar adjustment screw (b) then fix it by tightening the nut (a).

When rotating the presser bar adjustment screw (b) clockwise, the pressure is stronger. When rotating counterclockwise, the tension is weaker. (Refer to the Figure 34)



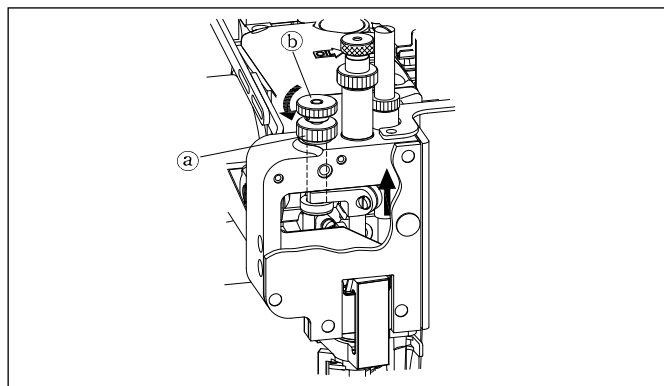
[ Figure 34 ]

## 7) VERTICAL ADJUSTMENT OF PRESSER FOOT

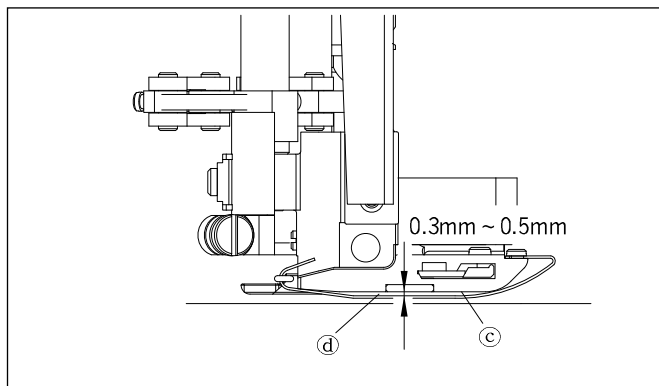


Check the OFF-status condition of a power switch before adjusting the presser foot position.

- ① Set the needle bar to the lowest point.
- ② Loosen the pressure adjustment fixation nut<sup>Ⓐ</sup> and adjust it by rotating the pressure adjustment nut<sup>Ⓑ</sup>.  
(When rotating the pressure adjustment nut counterclockwise, the presser foot is lifting.)
- ③ Adjust the distance between the presser foot base<sup>Ⓒ</sup> and the presser foot spring plate A<sup>Ⓓ</sup> to 0.3~0.5mm.  
(It is better for the presser foot to float a little bit to make adjustment of sewing material overlapping width easily, reduce the noise and vibration, improve the durability of the presser foot spring plate, prevent the feed dog damage.)
- ④ Fix it by tightening the pressure adjustment fixation nut<sup>Ⓐ</sup> firmly.



[ Figure 35 ]



[ Figure 36 ]

## 8) MAIN FEED ADJUSTMENT



Check the OFF-status condition of a power switch before adjusting the main feed adjustment.

The stitch length can be regulated from 1.6mm to 2.5mm basically and it is able to be regulated more or less than the value. The following table indicates the stitches per 25.4mm and the stitches per 30mm.

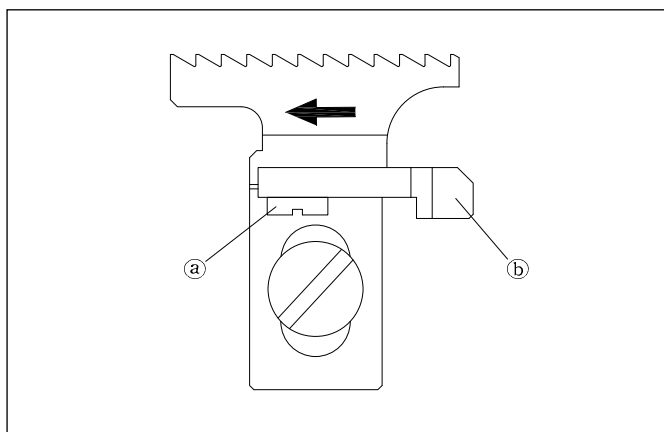
Stitch length(mm)	Stitches per 25.4mm	Stitches per 30mm
2.5	10	12
2.1	12	14
1.8	14	16.5
1.6	16	19
1.2	21	25
1	25	30

- ① Loosen the needle guard(back) clamp screw<sup>Ⓐ</sup> and move the needle guard<sup>Ⓑ</sup> to the very end then tighten the screw lightly.  
(Refer to the Figure 37)  
(This process is not necessary when narrowing the stitch length.)
- ② Remove the left screw<sup>Ⓒ</sup> of the bed. (Refer to the Figure 38)
- ③ Loosen the feed rocker link shaft screw<sup>Ⓓ</sup> and adjust the stitch length.  
(Move the screw<sup>Ⓓ</sup> upward for increasing the stitch length and move the screw<sup>Ⓓ</sup> downward for decreasing the stitch length.)

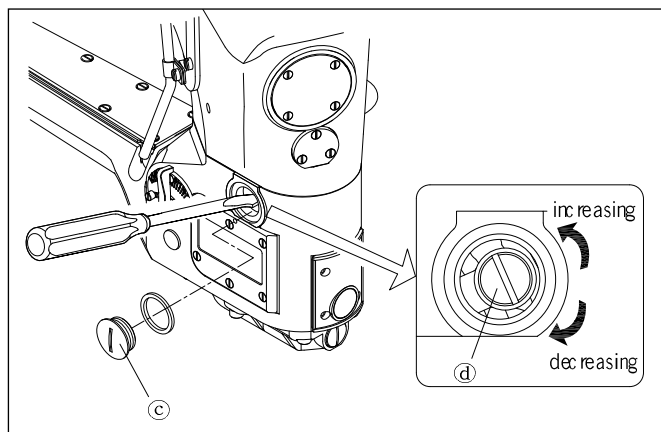
- ④ After adjusting the stitch length, fix it firmly by tightening the feed rocker link shaft screw ④ then fill the left screw ③ of the bed.  
(The left screw ③ of the bed is to prevent oil leakage so tighten it firmly.)
- ⑤ After adjusting the needle guard(back) ⑥ to the proper position and tighten the needle guard(back) clamp screw ⑤ firmly.



Reset the needle guard(back) ⑥ to prevent the breakdown of parts after adjusting the stitch length.



[ Figure 37 ]



[ Figure 38 ]



Adjust the main feed all the time after adjusting the differential feed.

## 9) DIFFERENTIAL FEED ADJUSTMENT



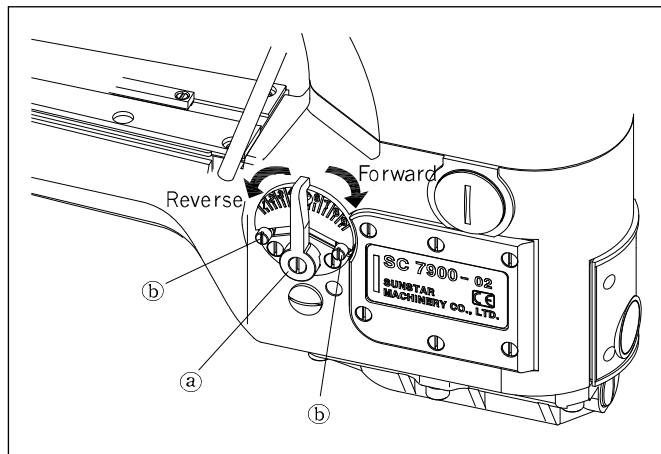
Check the OFF-status condition of a power switch before adjusting the differential feed adjustment.

To adjust the differential feed dog, rotate the differential feed operating lever ① to the left or the right.

If the differential feed operating lever ① is on the 4 or 5, the momentums of the main feed dog and the differential feed dog will be the same.

For the forward differential, turn the differential feed operating lever ① to the scale of 9. For the reverse differential, turn the differential feed operating lever ① to the scale of 1.

Tip) The differential operating lever stopper screw ② can be used when fixing the differential feed operating lever ① or retaining the adjustment range of the differential motion.



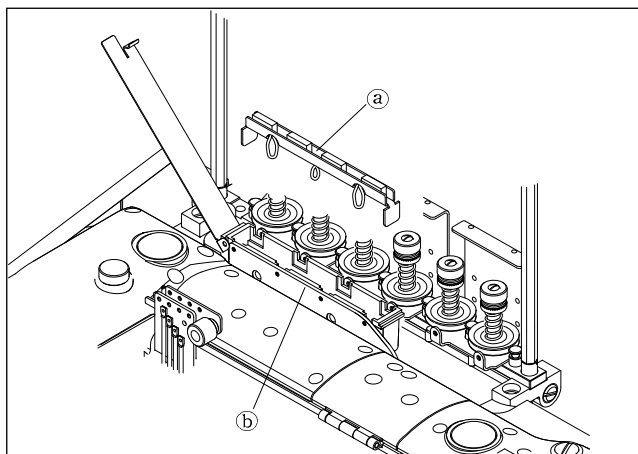
[ Figure 39 ]

## 10) THREAD LUBRICATING DEVICE

When sewing at a high speed or using synthetic fiber thread and sewing material, it causes the skipped stitches and thread breakage.

This sewing machine basically has the thread lubricating device to handle this problem.

Fix the silicone oil felt bracket (a) to the silicone oil tank (b).



[ Figure 40 ]



Caution

1. When you do not use the thread lubricating device, it may cause problems to the sewing. Therefore draw the silicone oil felt bracket and use it.
2. If besides the thread lubricating device is stained with silicone oil, the M/C could be broken. Wipe out the silicone oil after lubricating.

Ethane silicone oil should be used and check the amount of oil on occasion opening the silicone oil cap.

## 11) OVERLAP WIDTH ADJUSTMENT OF UPPER SEWING MACHINE

### (1) Standard position of the lower knife

Set the distance between the lower knife (a) and the lower knife holder (b) to 0~0.5mm. (Refer to the Figure 41)

### (2) Standard position of the upper blade

Set the distance between the upper knife (c) and the lower knife (a) to 0.5mm when the upper knife (c) is on the most left.

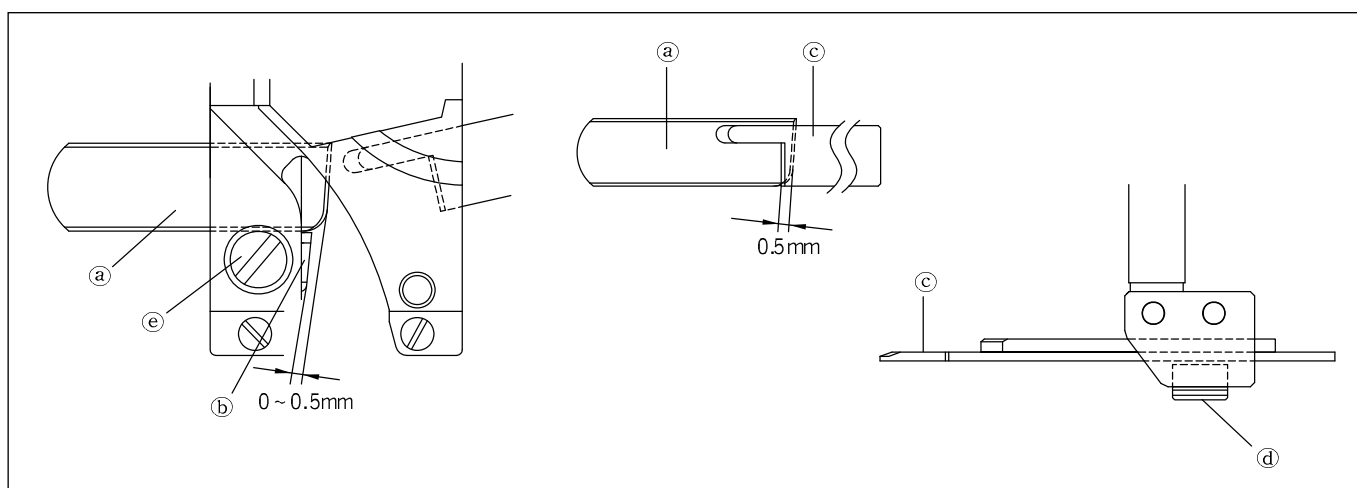
### (3) Sewing material overlap position adjustment

To move the end of the sewing material to the left or the right, move the lower knife (a) to the left or the right.



Warning

Reset the position of the knife (upper) (c) by loosening the clamp screw (d) according to the '(2) Knife (upper) standard position' after adjusting the lower knife position. After resetting, fix by tightening the clamp screw.



[ Figure 41 ]

## 12) USING A LAP FORMER

### (1) Left / Right standard position

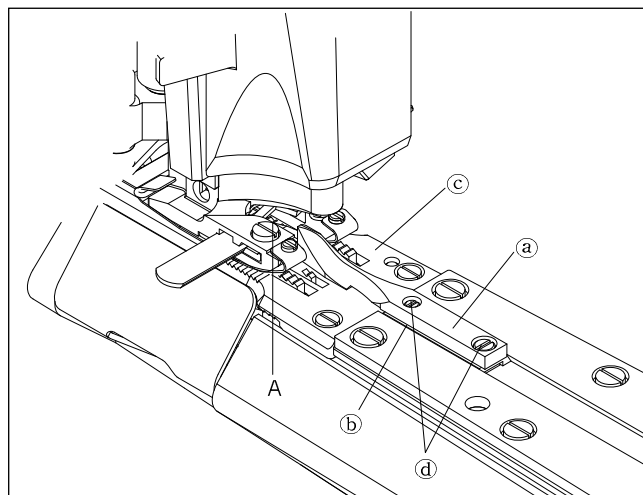
Make an array of the lap former A point at the center of the 4 sewing needles.

Loosen the clamp screw④ and adjust the position of the lap former③ according to the edge of the overlapping sewing materials or the feed direction of the fabric.

### (2) Front / Rear standard position

Set the lap former③ at the position which the lap former slide block② and the needle plate① are attached.

Adjust the lap former③ front and rear depends on the thickness of the cloth.



[ Figure 42 ]

# DETAILED ADJUSTMENTS

## 1) THREAD TENSION ADJUSTMENT

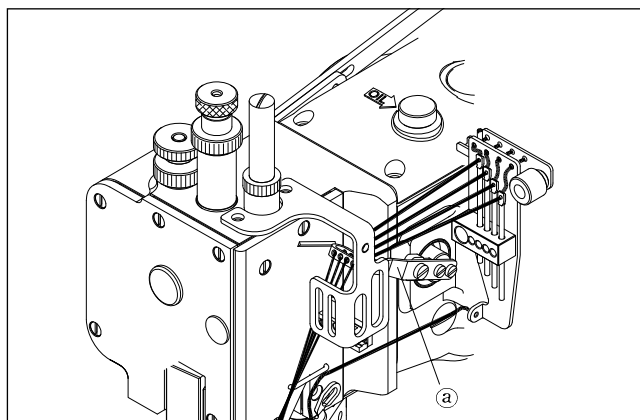


Check the OFF-status condition of a power switch before adjusting the tension.

### (1) Thread pin adjustment

4 sewing needles have the thread pins that adjust each thread tension.

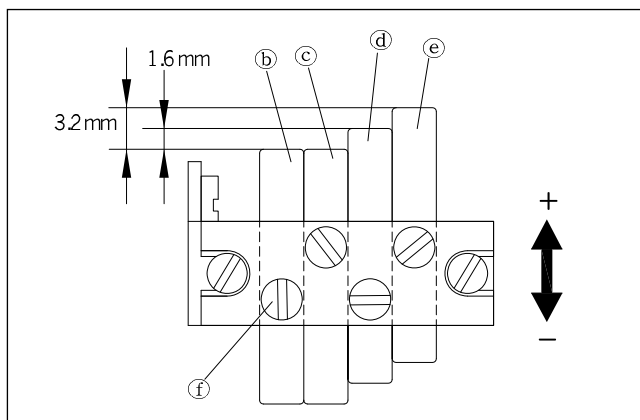
- ① Put the thread take-up lever **a** to the lowest point.
- ② Loosen the thread pin clamp screw **f** and set the height of the thread pin **b** to the first on the left of the take-up lever **a**, then fix it by tightening the thread pin clamp screw **f**.
- ③ Loosen the thread pin clamp screw **f**. Set the height of the thread pin **b** and the thread pin **c** equally or 0.8mm above. Then fix it by tightening thread pin clamp screw **f**.
- ④ Loosen the thread pin clamp screw **f**. Set the height of the thread pin **d** and the thread pin **b** 1.6mm above. Then fix it by tightening thread pin clamp screw **f**.
- ⑤ Loosen the thread pin clamp screw **f**. Set the height of the thread pin **e** and the thread pin **b** 3.2mm above. Then fix it by tightening thread pin clamp screw **f**.



[ Figure 43 ]



The upper part of the pins should be assembled horizontally.



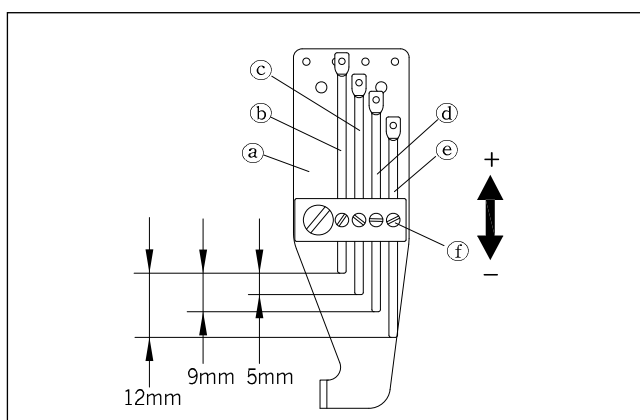
[ Figure 44 ]

TIP) Needle thread loop is increasing when moving the needle thread pin **f** upward and the loop is decreasing when moving the needle thread pin **f** downward. Therefore use it by adjusting properly according to the working conditions.

### (2) Thread guide adjustment

- ① Make the thread guide hole height of the needle thread guide **b** and the thread guide hole height of the fixation block holder **a** equally.
- ② Set the needle thread guide **c** 5mm below the needle thread guide **b**.
- ③ Set the needle thread guide **d** 9mm below the needle thread guide **b**.
- ④ Set the needle thread guide **e** 15mm below the needle thread guide **b**.

TIP) Needle thread tension is stronger when moving the needle thread guide **b**, **c**, **d**, **e** upward and the tension is weaker when moving the needle thread guides downward. Therefore use it by adjusting properly according to the working conditions.



[ Figure 45 ]

## 2) LOOPER THREAD TENSION ADJUSTMENT



Check the OFF-status condition of a power switch before adjusting the tension.

### (1) Looper threads take-up lever guide standard position

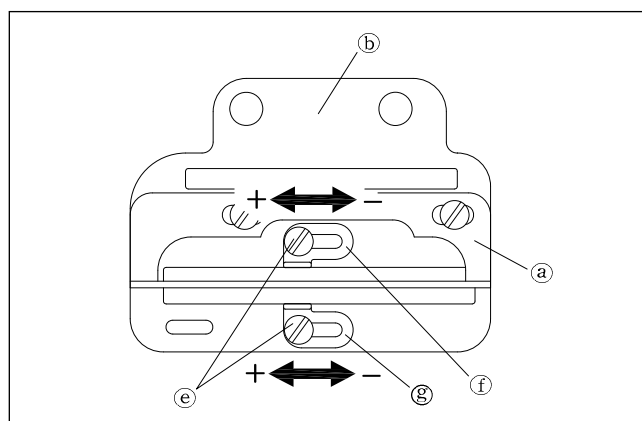
Align the right end of the looper thread take-up guide**⑥** with the right end of the guide support plate**①**. (Refer to the Figure 46)

### (2) Looper threads take-up lever timing adjustment

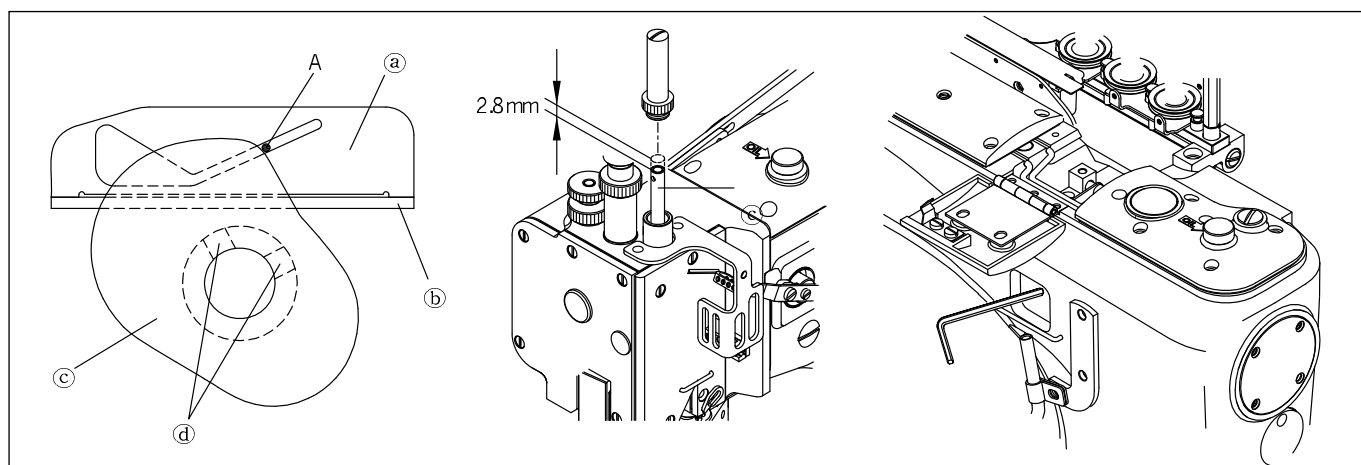
The timing setting standard of the looper thread take-up is to set the looper thread**③** through the point A when the needle bar goes down 2.8mm from the highest point.

Loosen the looper thread take-up clamp screw**④** and adjust like above then fix it by tightening the clamp screw.

(Refer to the Figure 47)



[ Figure 46 ]



[ Figure 47 ]

TIP) Make the timing of the looper thread take-up lever faster to increase the amount of the looper thread take-up lever, make the timing slower to decrease the amount of the looper thread take-up lever.



1. When setting the timing of the looper thread take-up lever over the adjustment range, it causes the skipped stitches.
2. Adjust the thread take-up lever back and forth not to approach to the guide support plate**①** when adjusting the timing of the looper thread take-up lever or the upper thread take-up lever.

### (3) Looper threads take-up lever eyelet standard position

Set the looper thread take-up lever eyelet**⑦**, **⑧** at the very right position. This is the standard.

TIP) Move the eyelet**⑦**, **⑧** toward the left if you want to increase the amount of the looper thread take-up lever and otherwise move them toward the right then fix the screw**②**.



### 3) UPPER THREAD TENSION ADJUSTMENT



Check the OFF-status condition of a power switch before adjusting the tension.

#### (1) Thread take-up lever thread guide hole standard position

Set the distance between the thread take-up holder base④ and the thread guide hole of the thread take-up lever to 4.4mm. (Refer to the Figure 48)

Loosen the thread take-up lever fixation screw⑤ and adjust the the thread take-up lever③.

The tighten the thread take-up lever fixation screw⑤ and set it in order.

TIP) Move the hole of the thread take-up lever③ downward to increase the amount of the thread take-up of the upper thread take-up lever and move the hole upward to decrease the amount of the thread take-up of the upper thread take-up lever.

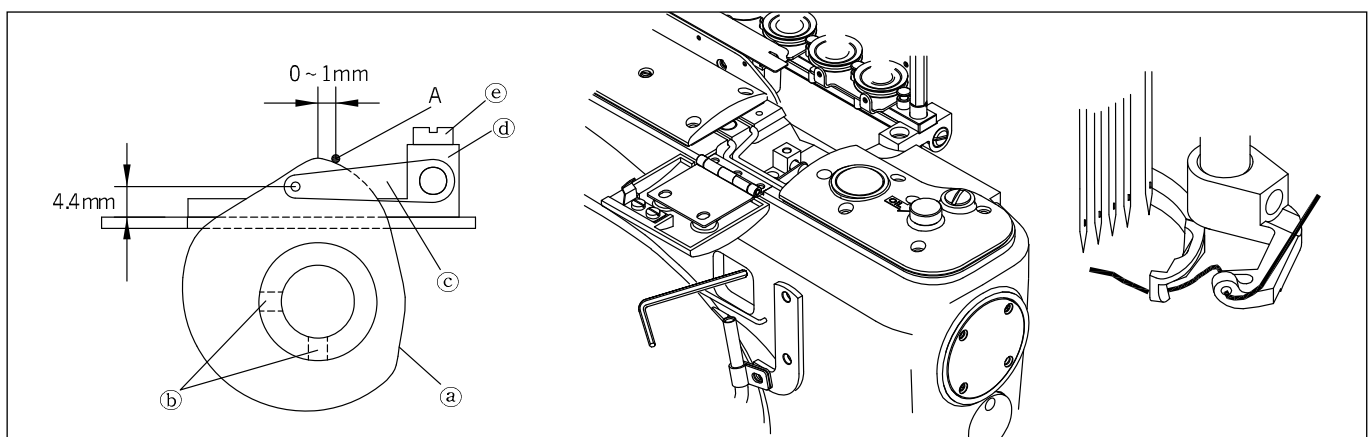
#### (2) Upper thread take-up lever timing adjustment

When the upper thread is seized by the upper thread holder, set the upper thread to 0~1mm position from the highest point of the thread take-up lever, which is point A in the Figure 46.

Loosen the upper thread take-up lever clamp screw⑥ and tighten the clamp screw.



Adjust the thread take-up lever plate back and forth not to approach to the guide support plate when adjusting the looper thread take-up lever or the timing of the upper thread take-up lever.



[ Figure 48 ]

### 4) NEEDLE HEIGHT SETTING



Check the OFF-status condition of a power switch before adjusting.

When the needle bar is at the highest point, the height of the 4th end of the needle on the left is set as followings like Figure 47.

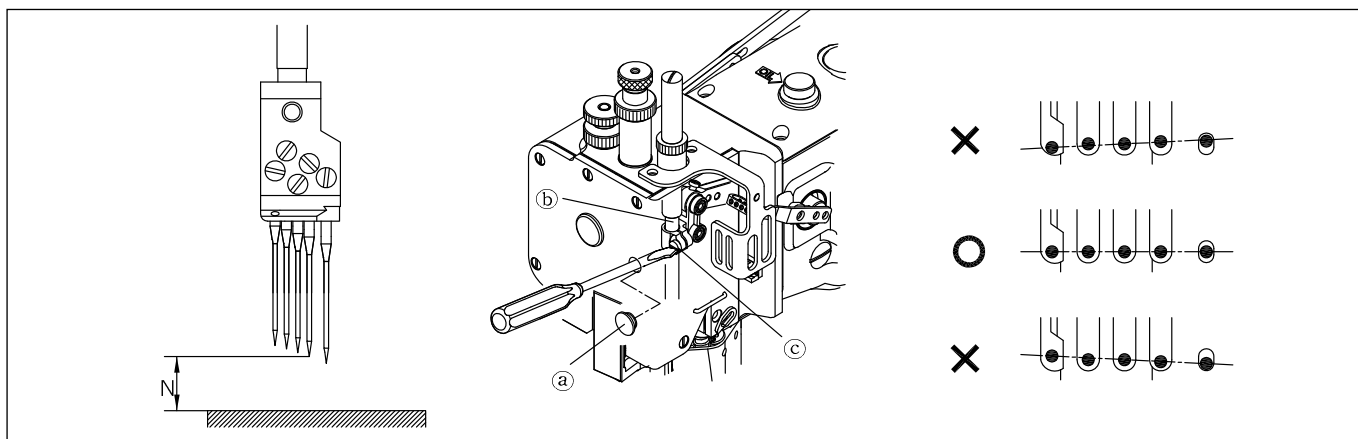
M5 (5.2mm type) = 13.49mm

M6 (6mm type) = 12.7mm

① Lift the needle bar⑥ to the highest point.

② Remove the rubber cap① and loosen the needle bar clamp screw③.

- ③ Adjust the needle bar ⑥ like the above.
- ④ Tighten the needle bar clamp screw ③ firmly and close the rubber cap ①.



[ Figure 49 ]

## 5) UPPER THREAD RETAINER



Check the OFF-status condition of a power switch before adjusting.

### (1) Upper thread retainer standard position

Set the upper thread retainer to the first and second needle behind on the left when the upper thread retainer ① is at the closest to the needle. (Refer to the Figure 50)

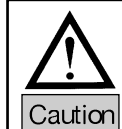
Set the upper thread retainer like above by loosening the upper thread retainer clamp screw ④. Then set according to the fixation by tightening the upper thread retainer clamp screw ④.

### (2) Upper thread holder standard position

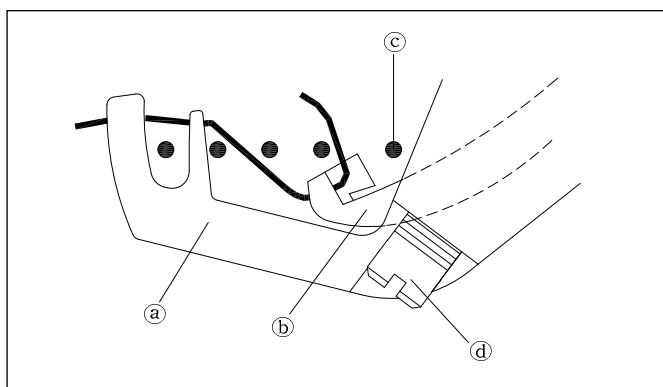
When the upper thread holder ② is at the closest to the upper thread retainer ①, set the distance between them to 0.4~0.7mm.

When the upper thread holder ② is at the end of the right direction, set the distance between the upper thread holder ② and the retainer needle ③ to 0.5mm.

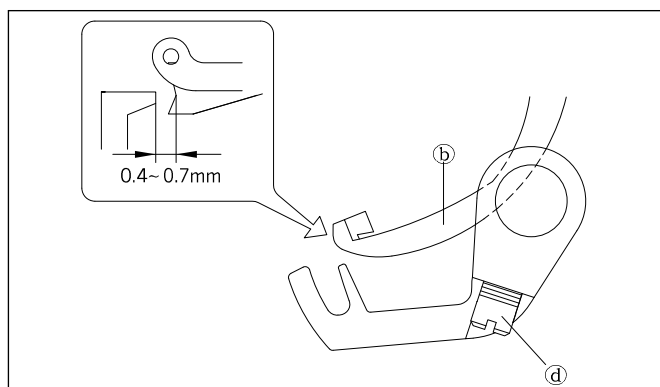
Set the upper thread retainer like above by loosening the upper thread retainer clamp screw ④. Then set according to the fixation by tightening the upper thread retainer clamp screw ④.



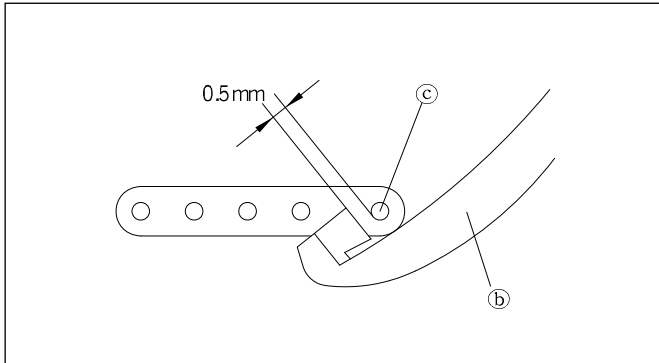
Set the upper thread retainer ① and the upper thread holder ② not to move up and down then tighten the clamp screw firmly.



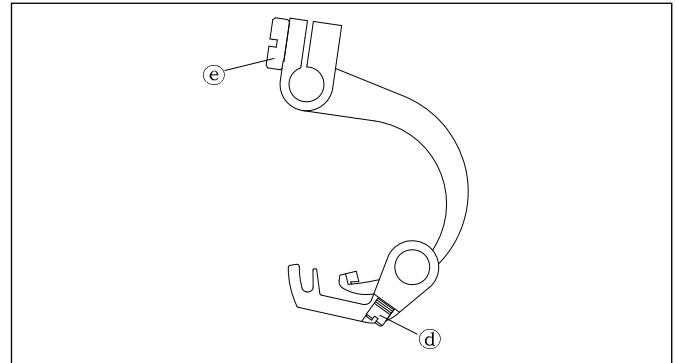
[ Figure 50 ]



[ Figure 51 ]



[ Figure 52 ]



[ Figure 53 ]

## 6) ADJUSTMENT OF NEEDLE AND LOOPER TIMING



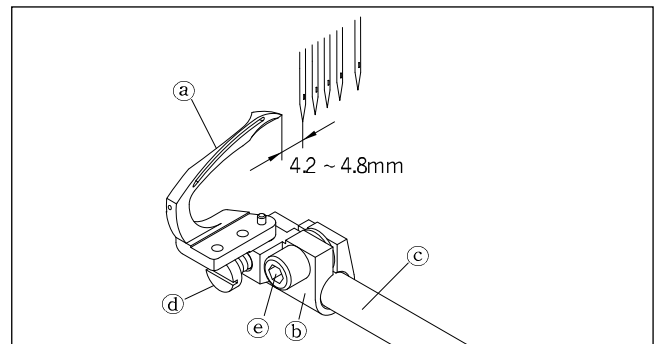
Check the OFF-status condition of a power switch before adjusting.

### (1) Standard height of the looper

Insert the looper ① into the end of the looper holder ②.  
Loosen the looper clamp screw ④ and fix it by tightening the clamp screw firmly. (Refer to the Figure 54)

### (2) Distance between the looper and the needle

When the looper ① goes to the farthest part from the needle, make the distance between the looper ① and the very left center of the needle to 4.2~4.8mm. Loosen the looper holder clamp screw ⑤ and fix it by tightening the clamp screw firmly. (Refer to the Figure 54)



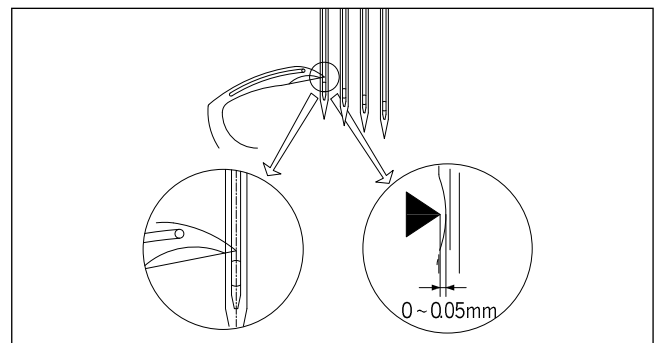
[ Figure 54 ]

### (3) Front / back position of the looper and the needle

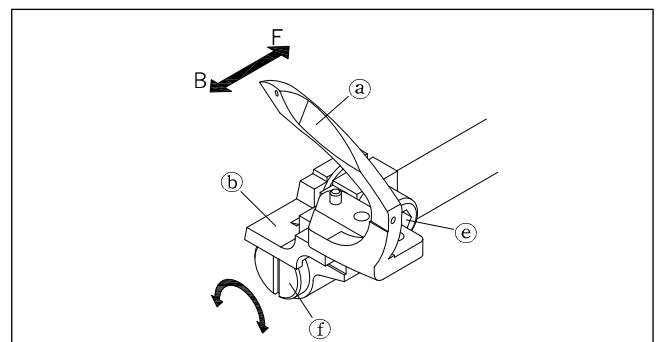
When the looper ① moves from the left to the right, the looper ① should pass through behind the needle. (Refer to the Figure 55)

Set the distance the looper ① and the needle to 0~0.05mm to make the looper ① is at the closest to the needle. Set the looper not to attach to the needle. (Refer to the Figure 55)

When rotating the looper adjusting screw ⑥ clockwise by loosening the looper holder clamp screw ⑤, it moves to the F direction. When rotating the looper adjusting screw counterclockwise, it moves to the B direction. Therefore fix by tightening the clamp screw after setting it. (Refer to the Figure 56)



[ Figure 55 ]



[ Figure 56 ]

## 7) STANDARD POSITION OF NEEDLE GUARD



Warning

Check the OFF-status condition of a power switch before adjusting.

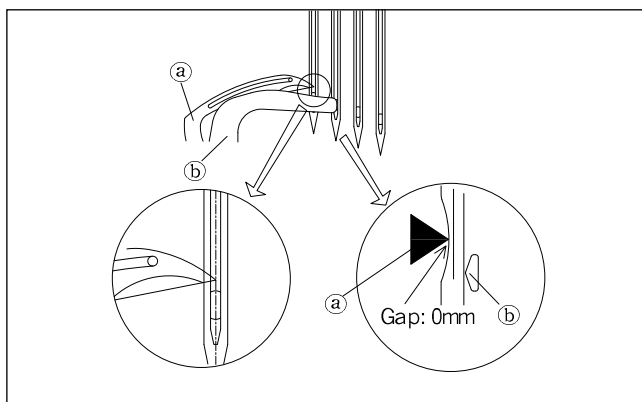
### (1) Standard position of the needle guard (front)

Loosen the needle guard (front) fixation screw (c). Adjust the needle guard (front) (b) for the distance between the looper (a) and the needle to 0mm when the end of the looper (a) meets the center of the first needle on the left. Then fix it by tightening the needle guard (front) fixation screw (c).

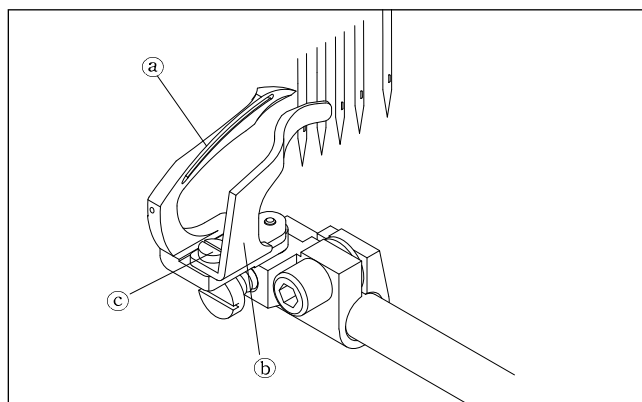


Caution

Check that the end of the looper (a) is grazed the back part of the needle when the looper (a) moves from the left to the right by rotating the hand pulley and also check the looper (a) moves from the left to the right of the needle.



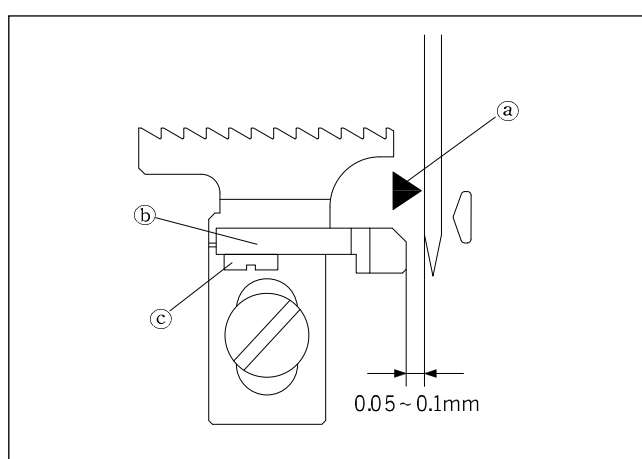
[ Figure 57 ]



[ Figure 58 ]

### (2) Standard position of the needle guard (rear)

Open the looper cover and loosen the needle guard (rear) fixation screw (c). When the needle guard (rear) (b) is at the closest to the needle, adjust the distance to 0.05~0.1mm and then fix it by tightening the needle guard (rear) fixation screw (c). (Refer to the Figure 59)



[ Figure 59 ]



Caution

1. Check that the end of the looper (a) is grazed the back part of the needle when the looper (a) moves from the left to the right by rotating the hand pulley and also check the looper (a) moves from the left to the right of the needle.
2. Reset the needle guard (rear) (b) because the distance between the needle guard (rear) and the needle is changed after adjusting the stitch length.

## 8) FEED DOG HEIGHT SETTING



Check the OFF-status condition of a power switch before adjusting.

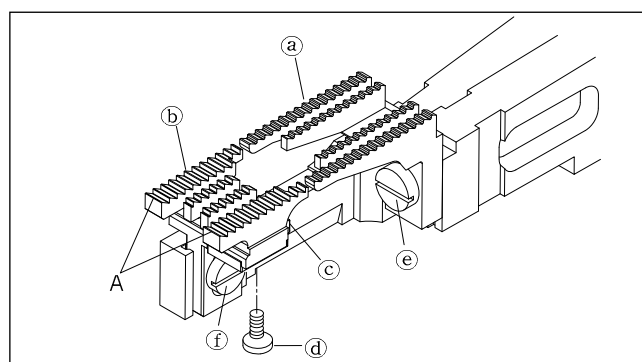
Differential feed dog ① and the main feed dog ② is set to be adjusted independently.



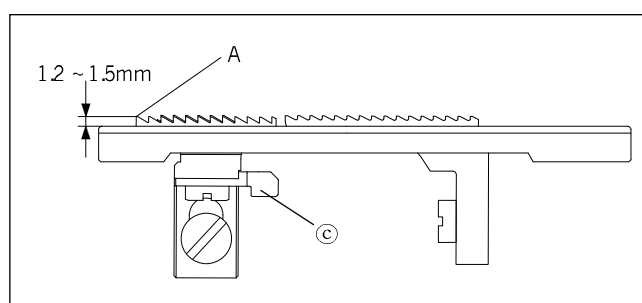
Move the needle guard (rear) farthest from the differential feed dog ① before adjusting the feed dog height. Tighten the needle guard (rear) clamp screw ④ a little to set the feed dog height and then reset the needle guard (rear) ③ and fix it by tightening the clamp screw. [Refer to the 7) STANDARD POSITION OF NEEDLE GUARD]

### (1) Standard height of the feed dog

Loosen the main feed dog clamp screw ⑥. When the feed dog height is on the top, adjust the part A of the main feed dog ② at the needle plate to the 1.2~1.5mm. Then fix it by tightening the main feed dog clamp screw ⑥. Fix the differential feed dog ① by tightening the differential feed dog clamp screw ⑤ after loosening the differential feed dog clamp screw ⑤ and adjusting the height of the main feed dog ② and feed dog horizontally. (Refer to the Figure 60, 61)



[ Figure 60 ]



[ Figure 61 ]

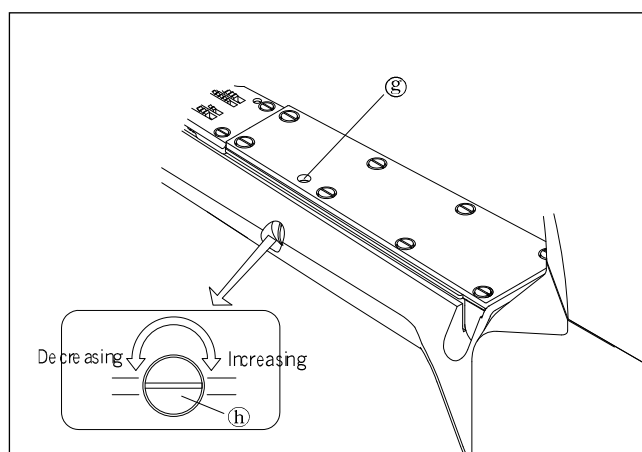
### (2) Fine tuning of the feed dog

After fine tuning the feed dog height with the feed bar eccentric pin ⑧ by loosening the feed bar eccentric pin clamp screw ⑨ which is at the center of the bed, fix it by tightening the feed bar eccentric pin clamp screw ⑨. (Refer to the Figure 62)

Tip) Rotate the feed bar eccentric pin ⑧ clockwise to lift the feed dog height up, rotate the pin counterclockwise to descend the height down.

Tip) Set the groove of the feed bar eccentric pin ⑧ horizontally before adjusting the feed dog height. By doing this, you can adjust the movement of the differential feed dog ① and the main feed dog ② equally.

Tip) When removing the needle plate, rotate the feed bar eccentric pin ⑧ counterclockwise and lower the feed dog.



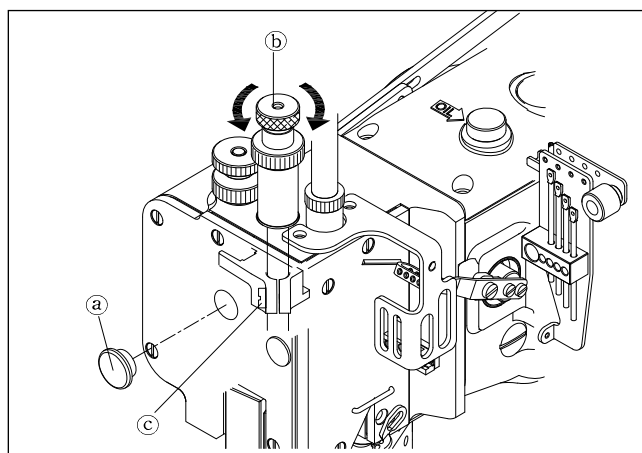
[ Figure 62 ]

## 9) EXCHANGE OF PRESSER FOOT



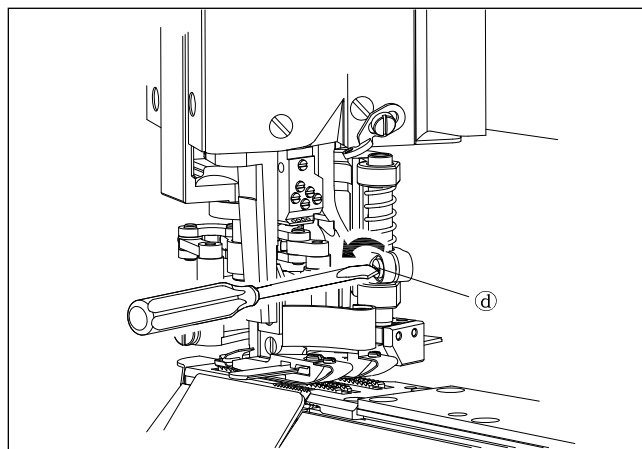
Check the OFF-status condition of a power switch before exchanging the presser foot.

- ① Remove the needle in the needle holder.
- ② Remove the rubber cap<sup>Ⓐ</sup>. (Refer to the Figure 63)
- ③ Loosen the presser bar adjusting screw<sup>Ⓑ</sup> and the presser bar connection bracket clamp screw<sup>Ⓒ</sup> (Refer to the Figure 63)



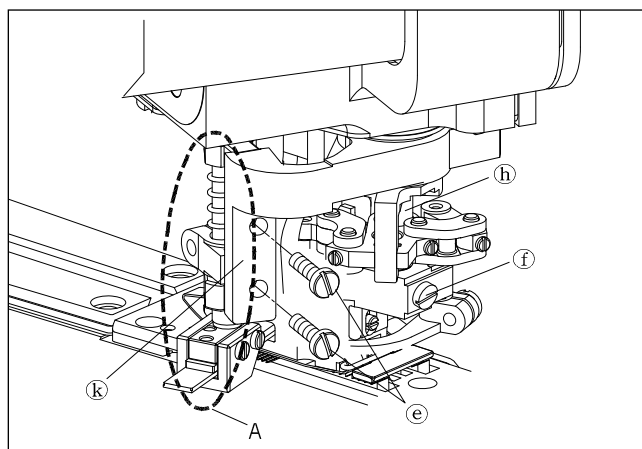
[ Figure 63 ]

- ④ Loosen the knife holder guide clamp screw<sup>Ⓓ</sup>. (Refer to the Figure 64)



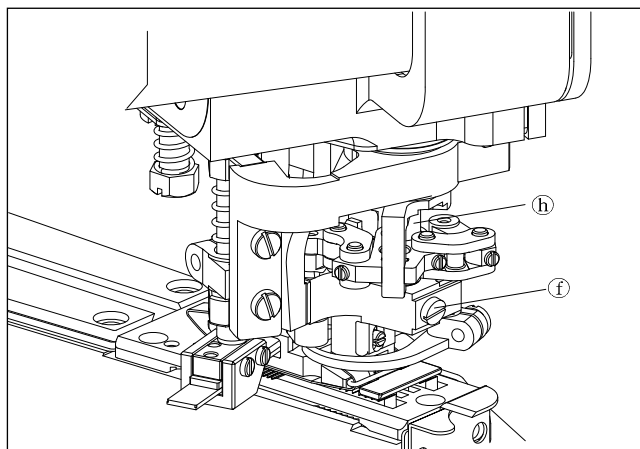
[ Figure 64 ]

- ⑤ Loosen the knife holder shaft support bar clamp screw<sup>Ⓔ</sup> and remove the knife holder shaft support bar A. (Refer to the Figure 65)



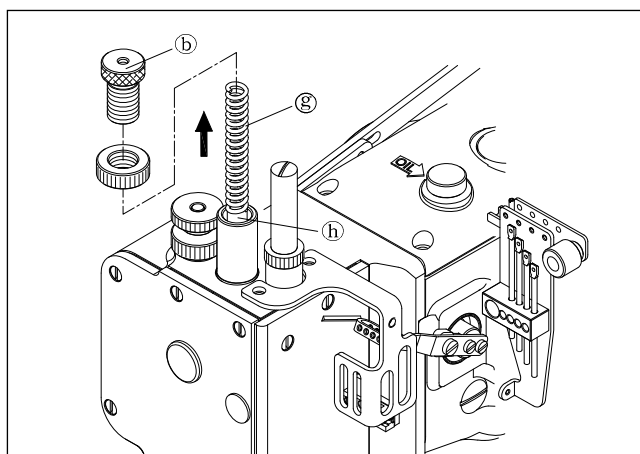
[ Figure 65 ]

- ⑥ Loosen the presser foot clamp screw ⑥.  
(Refer to the Figure 66)



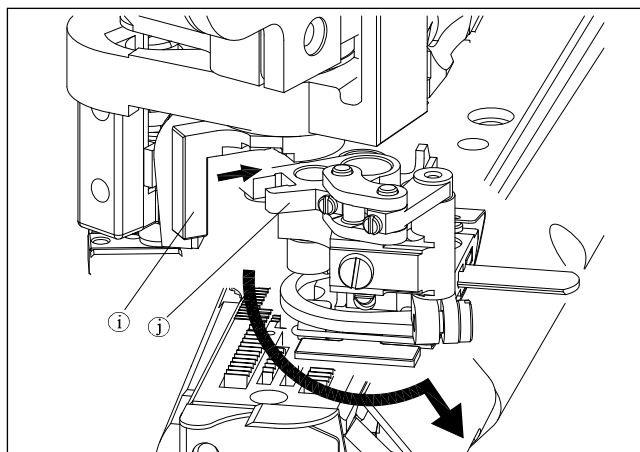
[ Figure 66 ]

- ⑦ Put to the highest point of the needle bar by rotating the hand pulley.  
⑧ Remove the presser adjusting screw ⑧ and lift the presser bar by using the presser bar pressure adjusting spring ⑧. (Refer to the Figure 67)



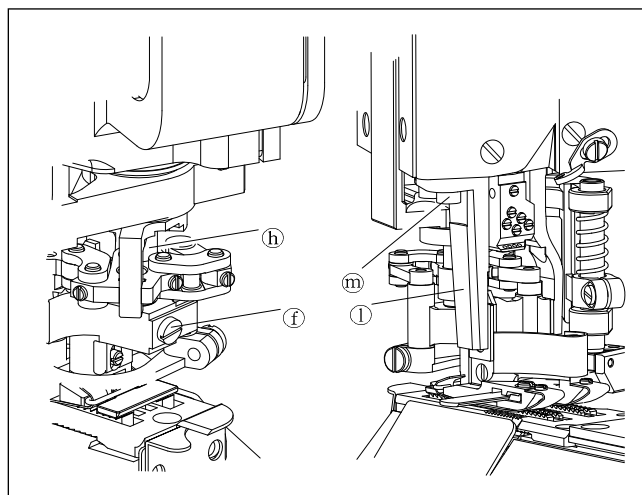
[ Figure 67 ]

- ⑨ Remove the thread holder crank ⑨ from the hook drive sleeve ⑨. (Refer to the Figure 68)  
⑩ Remove the presser foot among the presser foot guide (left), (right) by turning the presser foot to the left. (Refer to the Figure 68)  
⑪ Insert the replacement presser foot in the presser foot guide (left), (right) by turning to the right. (Refer to the Figure 68)  
⑫ Insert the thread holder crank ⑨ into the hook drive sleeve ⑨. (Refer to the Figure 68)



[ Figure 68 ]

- ⑬ Insert the presser bar **h** into the presser foot by pushing to the end and fix it by tightening the presser foot clamp screw **f**. (Refer to the Figure 69)
- ⑭ Check that the presser foot does move smoothly up and down not to move left and right. If not, loosen the presser foot guide clamp screw **m** and fix it after resetting the presser foot guide **l**.
- ⑮ Attach the knife holder shaft support bar to the knife holder bracket **k** with attention to the direction. Fix it by tightening the knife holder shaft support bar clamp screw **e**. (Refer to the Figure 65)
- ⑯ Adjust the knife holder guide and the knife (upper) position when the needle bar is at the lowest point. (Refer to the “7-11) BLADE EXCHANGE AND ADJUSTMENT”)
- ⑰ When the needle bar is at the lowest point and the presser foot is closest to the needle plate, insert the presser bar pressure adjusting spring **g** and adjust the presser bar pressure with the presser bar adjusting screw **b** by referring to the “6-6) PRESSER FOOT PRESSURE ADJUSTMENT”. Then tighten the presser bar connection bracket clamp screw **c** by pressing the presser bar connection bracket slightly and fix it.
- ⑱ Close the rubber cap **a**.
- ⑲ Insert the needle into the needle holder.



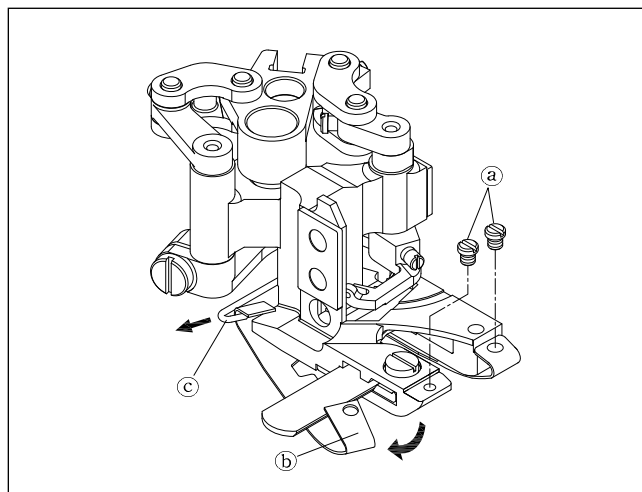
[ Figure 69 ]

## 10) EXCHANGE OF PRESSER FOOT SPRING PLATE A



Check the OFF-status condition of a power switch before exchanging the presser foot spring plate A.

- ① Loosen the presser foot spring plate A clamp screw **a**.
- ② Remove the presser foot spring plate A **b** from the presser foot.
- ③ Remove the presser foot spring plate A **b** from the spring plate holder **c**.
- ④ Insert the each replacement presser foot spring plate A **b** into the spring plate holder **c**.
- ⑤ Insert the presser foot spring plate A **b** into the presser foot in parallel.
- ⑥ Fix by tightening the presser foot spring plate A clamp screw **a**.



[ Figure 70 ]



## 11) BLADE EXCHANGE AND ADJUSTMENT



Warning

Check the OFF-status condition of a power switch before adjusting.

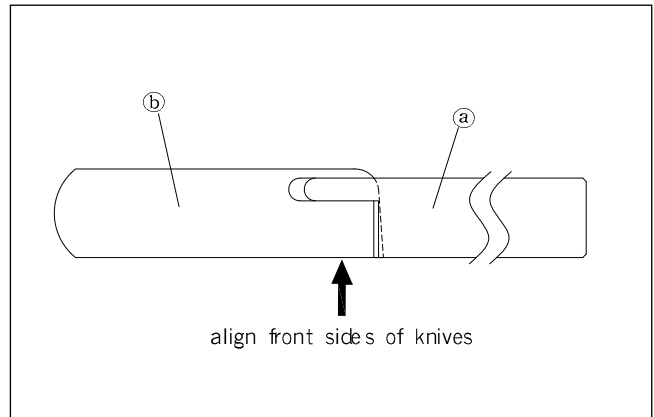
### (1) Knife (upper) pressure

When the needle bar is at the lowest point and the knife(upper)Ⓐ is the very left, the presser foot is attached to the needle plate and the knife(upper)Ⓐ is near the lower bladeⒷ.

The standard clearance between the knife holder guideⒹ and the knife holder shaft support barⒸ is 1mm.

Tighten the knife holder guide clamp screwⒺ after adjusting the knife holder guideⒹ by loosening the knife holder guide clamp screwⒺ.

Tip) The spring pressure is increasing when lifting the knife holder guide Ⓓ. The spring pressure is decreasing when descending the knife holder guide.



[ Figure 71 ]



Caution

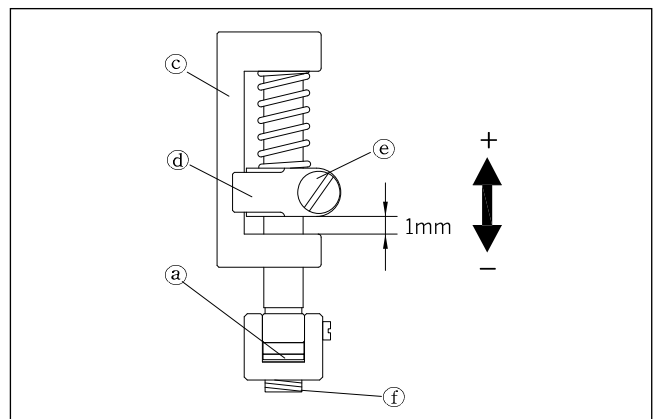
Align the knife(upper)Ⓐ and the front face of the lower bladeⒷ in a straight line without attaching the knife(upper)Ⓐ to the presser foot. Then tighten the knife holder guideⒹ with the screw.

### (2) Knife removal

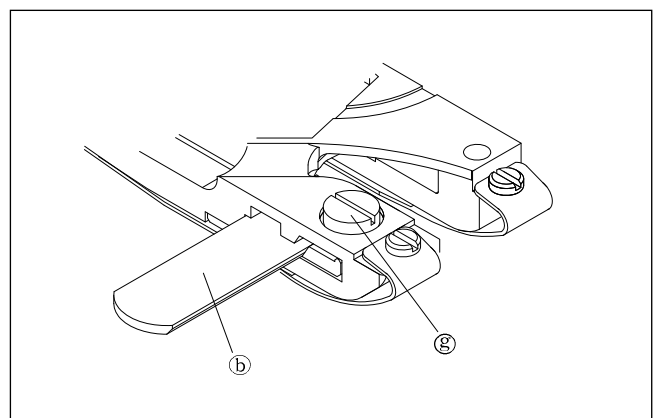
- ① Remove the knife(upper)Ⓐ by loosening the knife holder guide clamp screwⒺ and the knife clamp screwⒻ.
- ② Remove the lower bladeⒷ by loosening the lower blade holder clamp screwⒼ.

### (3) Knife reinstallation

- ① Fix the replacement lower bladeⒷ with the lower blade holder clamp screwⒼ and fix the knife(upper)Ⓐ with the knife holder screwⒻ. (Refer to the “6-11) OVERLAP WIDTH ADJUSTMENT OF UPPER SEWING MACHINE”)
- ② Adjust the knife holder guideⒹ referring to the above knife(upper) pressure.



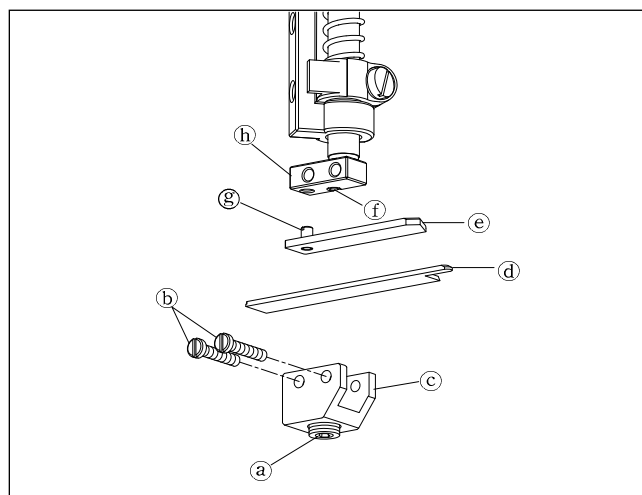
[ Figure 72 ]



[ Figure 73 ]

#### (4) Adjustment of the knife (upper) and lower blade meshing angle

Disassemble ㉑~㉕ parts in order then adjust them by turning the setting screw B ㉖ (Refer to the Figure 74)



[ Figure 74 ]



Check that the setting screw A ㉕ is sticking out of the knife support bar base when reassembling and insert into the hole of the knife holder shaft ㉖.

AIR-COMPRESSED THREAD TRIMMER (OPTIONAL) MANUAL



You must be well acquainted with the main consideration not to be injured by the machine.

1) CONSIDERTIONS BEFORE USING

- ① Check the OFF-status condition of a power switch before adjusting the machine.
- ② When setting the related sensor detection, refer to the following “8-3) SENSOR SETTING METHOD”.
- ③ Put the end part of the sewing material at the front before sewing.

Tip) If the sensor does not detect the sewing material before sewing, the initial thread trimming operation will not happen.

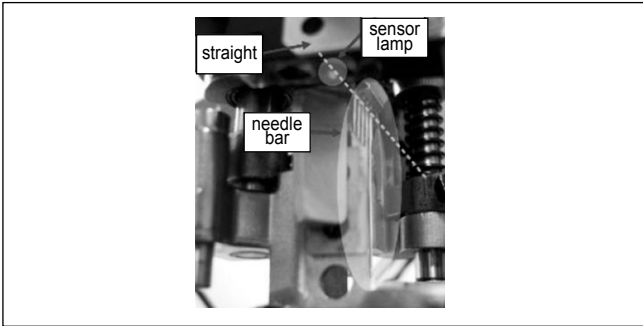
2) MODEL NUMBER SETTING

Parameter	No	Value	Remark
B-Group	56	102	

3) SENSOR SETTING METHOD

(1) Sensor setting

- ① Sensor position: Make a sensor lamp and a needle bar in a straight line.



[ Figure 75 ]

- ② Check the normal operation of a sensor: Turn the power on without sewing materials. When the sensor lamp comes on, it means that the sensor operates normally.



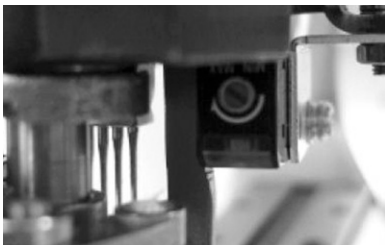
Use the exclusive needle plate to use the air-compressed thread trimming device.

While normal operating a sensor  
(or when there are no sewing materials)



[ Figure 76 ]

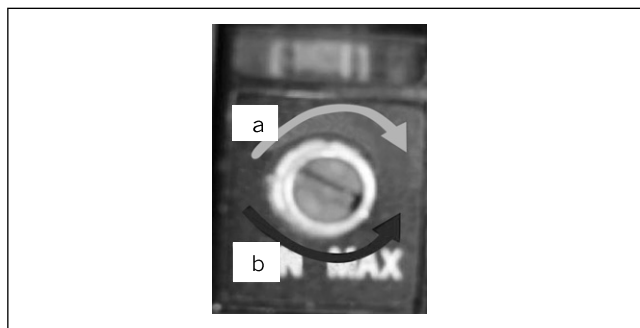
While abnormal operating a sensor, Power OFF  
(or when sewing materials are detected)



[ Figure 77 ]

### ③ Sensor detection adjustment

- a. Turn the detection switch to the MAX.
- b. Turn the detection switch 180 degree to the MIN in reverse like the Figure 76.
- c. Adjust the sensor detection to make sensor lamp comes on when there is not sewing material and goes out when there is sewing material like “② Check the normal operation of a sensor”.



[ Figure 78 ]

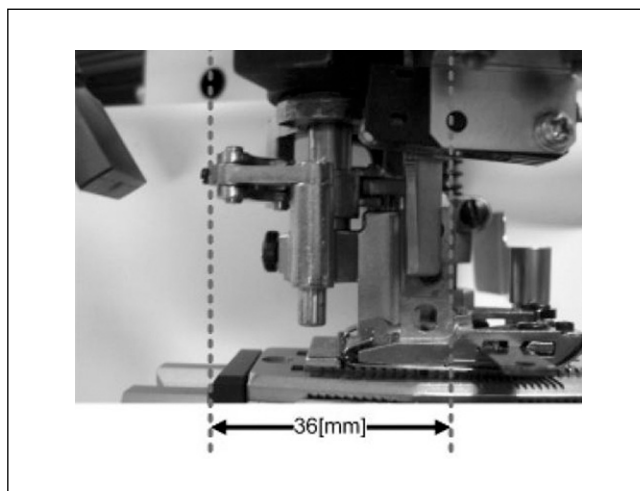
Tip) When the sensor lamp does not show ON/OFF properly, adjust the detection switch by turning left or right (counterclockwise or clockwise).



You must be well acquainted with the sensor detection adjustment method when adjusting the sensor detection.

### (2) Clearance between the sensor and the thread trimming device

The clearance between the sensor and the thread trimming device is about 36mm and the cutting stitch number should be decided by considering this clearance and the stitch length. The basic setting value is the 2mm pitch.  
(Related parameter: Group A No.41, No.48)



[ Figure 79 ]




Check the OFF-status condition of a power switch before adjusting.

#### 4) RELATED PARAMETER

Parameter	No.	Function	Default value	Extent	Unit
Group A	13	Cutting Device Motion Time	48[ms]	4~1020	48[ms]
	37	Setting Cutting Mode	3	0~3	Refer to "5) Thread trimming mode setting"
	38	Setting Cutting Range	0	0~2	Refer to "6) Thread trimming range setting"
	41	Initial Cutting Stitch No	10[stitch]	0~255	1[stitch]
	42	Initial Cutting Speed	1000[spm]	20~3800	20[stitch]
	48	Final Cutting Stitch No	20[stitch]	0~255	1[stitch]
	49	Initial Cutting Speed	1000[spm]	20~3800	20[stitch]

#### 5) THREAD TRIMMING MODE SETTING




**Caution**

Make a sensor to detect by putting the initial end part of the sewing material to the front of the sensor lamp before sewing. If the sensor does not detect the sewing material before operating, the initial thread trimming will not operate.

Parameter	Value	Function	Remark
Group A No.37	0	Manual Cutting Mode by knee switch	Auto mode impossible
	1	Auto Cutting Mode 1	
	2	Auto Cutting Mode 2	
	3	Auto Cutting Mode 3	

##### (1) Manual thread trimming mode by the knee switch

- ① Pedals in the neutral position before sewing
- ② Pedals in the neutral position during sewing
- ③ Pedals in the neutral position after sewing



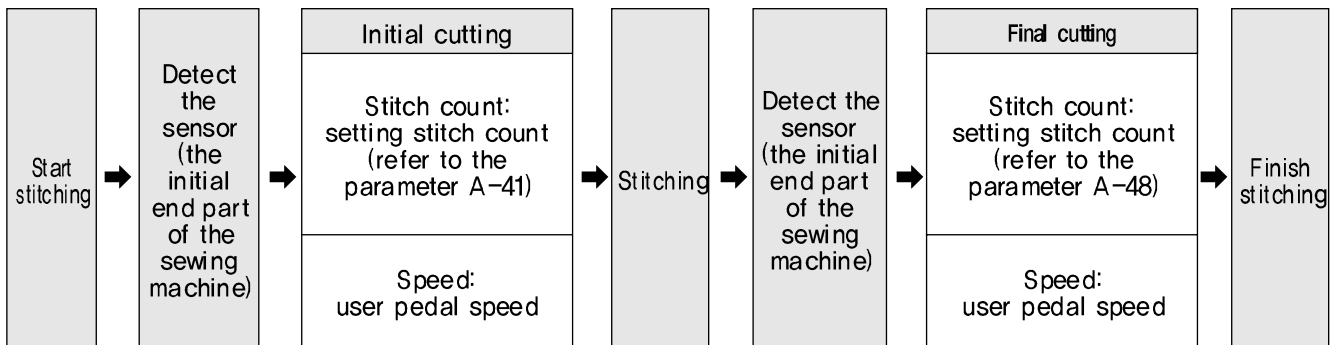
**Warning**

- Manual thread trimming mode is very dangerous. Operate the machine after mastering the thread trimming operation timing.
- Check the OFF-status condition of a power switch before adjusting the thread trimming device.

## (2) Operation process of “Auto thread trimming mode 1”

① feature: During pressing the pedals, the initial cutting and the final cutting is performed counting as much as the setting values after sensor detecting.

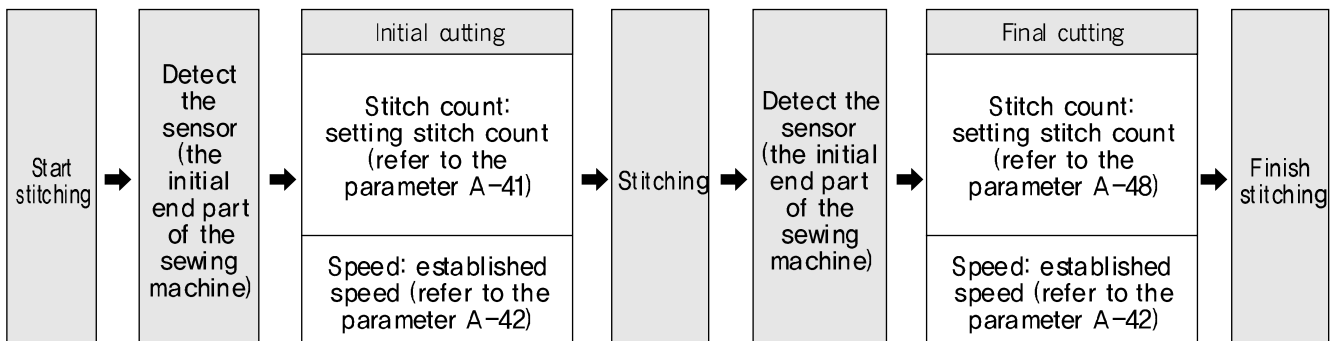
② thread trimming process



## (3) Operation process of “Auto thread trimming mode 2”

① feature: The sewing material is feeding as much as the stitches after detecting the sensor. When the movement stops, the initial cutting and the final cutting start operating.

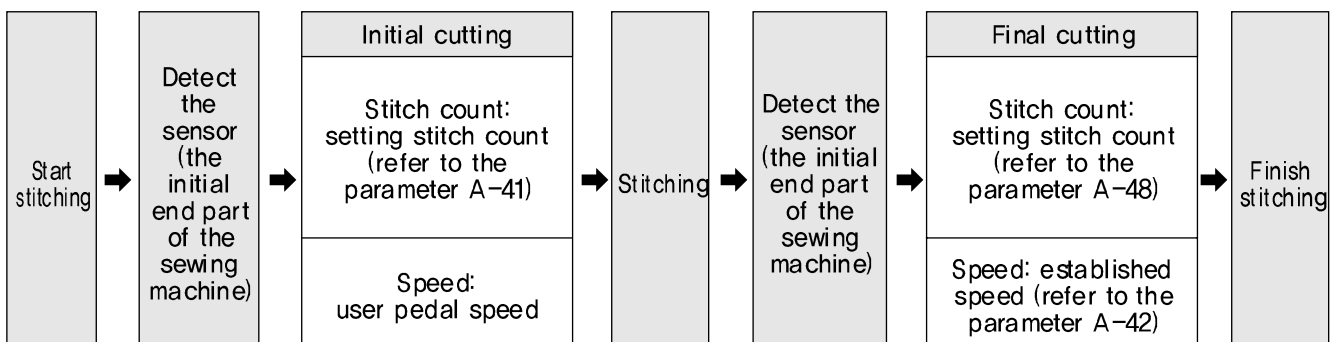
② thread trimming process



## (4) Operation process of “Auto thread trimming mode 3”

① feature: During pressing the pedals, the value is sent to the setting value by counting the stitches after detecting the sensor. Then the initial cutting starts working when taking your foot off the pedal. After that, the sewing material is automatically feeding as fast as the counted values. When the feed is over, the final cutting starts operating.

② thread trimming process



## 6) THREAD TRIMMING RANGE SETTING

Parameter	value	function	remark
Group A No.38	0	Initial/final cutting possible	
	1	Initial cutting impossible/ final cutting possible	
	2	Initial cutting possible/ final cutting impossible	



Warning

You must be well acquainted with the main consideration not to be injured by the machine.