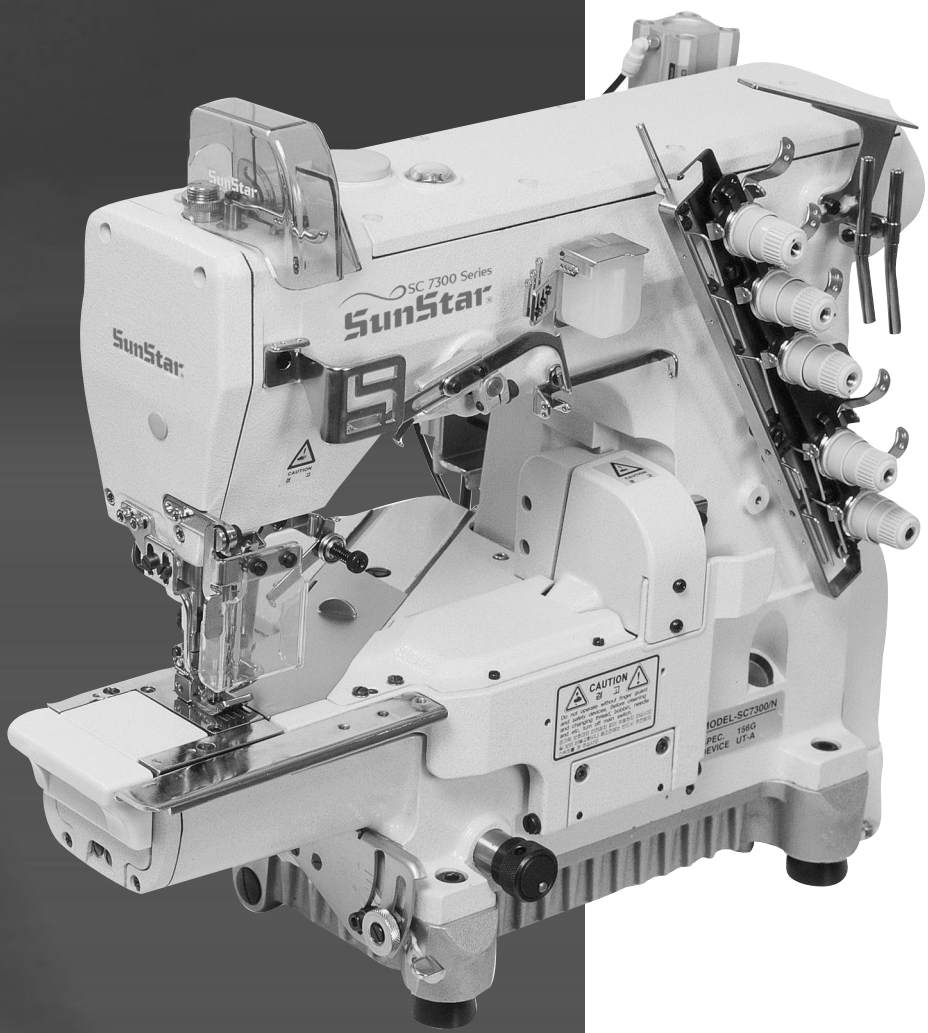
SunStar®

User's Manual

SC 7200 Series
SC 7300 Series
SC 7310 Series

Super High-Speed Cylinder Bed Interlock Machine



1) For proper use of the machine, thoroughly read this manual before use.
2) Keep this manual in a safe place for future reference in case the machine breaks down.

SUNSTAR MACHINERY CO., LTD.

MME-050822

1. Thank you for purchasing our product. Based on the rich expertise and experience accumulated in industrial sewing machine production, SUNSTAR will manufacture industrial sewing machines, which deliver more diverse functions, high performance, powerful operation, enhanced durability, and more sophisticated design to meet a number of user's needs.
2. Please read this user's manual thoroughly before using the machine. Make sure to properly use the machine to enjoy its full performance.
3. The specifications of the machine are subject to change, aimed to enhance product performance, without prior notice.
4. This product is designed, manufactured, and sold as an industrial sewing machine. It should not be used for other than industrial purpose.

SUNSTAR MACHINERY CO., LTD.

Classification of Pattern Types

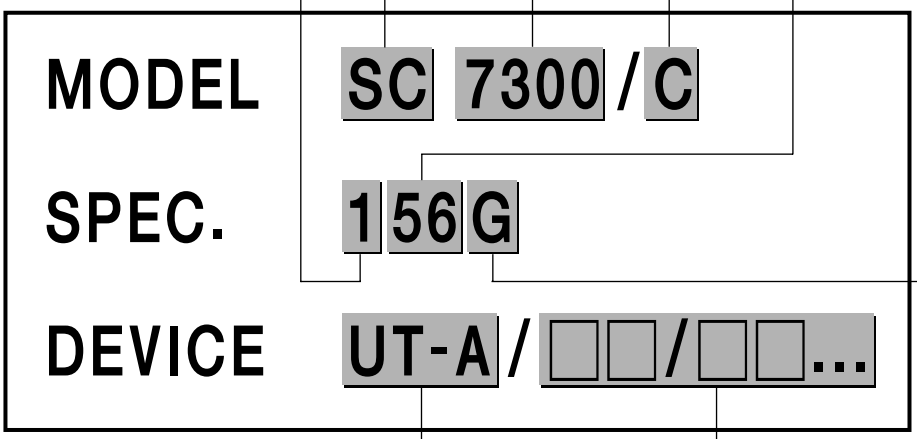
Symbol of Series
SUNSTAR
Chain Stitch M/C

Bed Type & No. of Needle	
73	Cylinder Bed-3Needle
72	Cylinder Bed-2Needle

Main Motor	
C	Fortuna Ⅳ
N	Fortuna Ⅲ
M	Clutch Motor

Top Cover Thread	
0	Without Top Cover Thread
1	With Top Cover Thread

Needle Distance	
32	3.2mm
40	4.0mm
48	4.8mm
56	5.6mm
64	6.4mm



Device	
UT-A	Under Thread Trimmer [2-Solenoid Valve Type]
UT-B	Under Thread Trimmer [3-Solenoid Valve Type]

Attachment (Option)	
ST-C	Top Cover Thread Trimmer(Cylinder Bed)
CO	Covering Guide
HE	Hemming Guide
WF	Walking Foot
ATF	Auto Tape Feeder
TL	See through light for Hemming
SL	Compact Spot light
TC	Needle thread Clamp

Shape of Stitch Plate	
G	Standard
L	For long stitch (longer than 2.5mm)
S	For short stitch (shorter than 1.8mm)

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Cylinder Bed Chain Stitch M/C

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MODEL SC 7310 / C

SPEC. 156G

DEVICE UT-B+S / □□/□□...

Thread Trimmer Device	
UT-A+S	2-Solenoid Valve Type
UT-B+S	3-Solenoid Valve Type
ST-C	Upper Thread Trimmer

Attachment	
WK1	Walking Presser foot (Hemming)
AL	Attaching guide for elastic lace
EL	See through light for hemming
TL	Compact spot light
PK	Needle thread clamp

Shape of Stitch Plate	
G	Standard
L	For long stitch (longer than 2.5mm)
S	For short stitch (shorter than 1.8mm)

CONTENTS

1

Machine Safety Regulations

Safety instructions on this manual are defined as Danger, Warning and Caution.
If you do not follow the instructoins, physical injuries and machine damages might be occurred.

Danger : This indication should be observed definitely. If not, there will be a danger during the installation, conveyance and maintenance of the machine.
Warning : When you follow this indication, injuries from the machine can be prevented.
Caution : When you follow this indication, error on the machine can be prevented.

1) Transporting machine  Danger	Those in charge of transporting the machine should have a full understanding of the machine. The following indications should be followed when the machine is being transported. ⓐ More than 2 people must transport the machine. ⓑ To prevent accidents from occurring during transportation, wipe off the oil on the machine compeletely.
2) Installing machine  Warning	The machine may not work properly or breakdown, if installed in certain places, Install the machine where the following qualifications agree. ⓐ Remove the package and wrappings from the top. Take special notice on the nails on the wooden boxes. ⓑ Dust and moisture stains and rusts the machine. Install an airconditioner and clean the machine regularly. ⓒ Keep the machine out of the sun. ⓓ Leave sufficient space of more than 50cm behind, and on the right and left side of the machine for repairing. ⓔ EXPLOSION HAZARDS Do not operate in explosive atmospheres. To avoid explosion, do not operate this machine in an explosive atomsphere including a place where large quantities of aerosol spray product are being used or where oxygen is being administered unless it has been specifically certified for such operation. ⓕ The machine is not provided with a local lighting due to the feature of machine. Therefore the illumination of the working area must be fulfilled by end user. [Refer] Details for machine installation are described in 4. Installation.
3) Repairing machine  Caution	When the machine needs to be repaired, only the assigned troubleshooting engineer educated at the company should take charge. ⓐ Before cleaning or repairing the machine, turn off the main power and wait 4 minutes till the machine is completely out of power. ⓑ Not any of the machine specifications or parts should be changed without consulting the company. Such changes may make the operation dangerous. ⓒ Spare parts produced by the company should only be used for replacements. ⓓ Put all the safety covers back on the machine after the machine has been repaired.

4) Operating machine

Warning

SC 7300 Series is made to sew patterns on fabrics and other similar materials for industrial use. Follow the following indications when operating the machine.

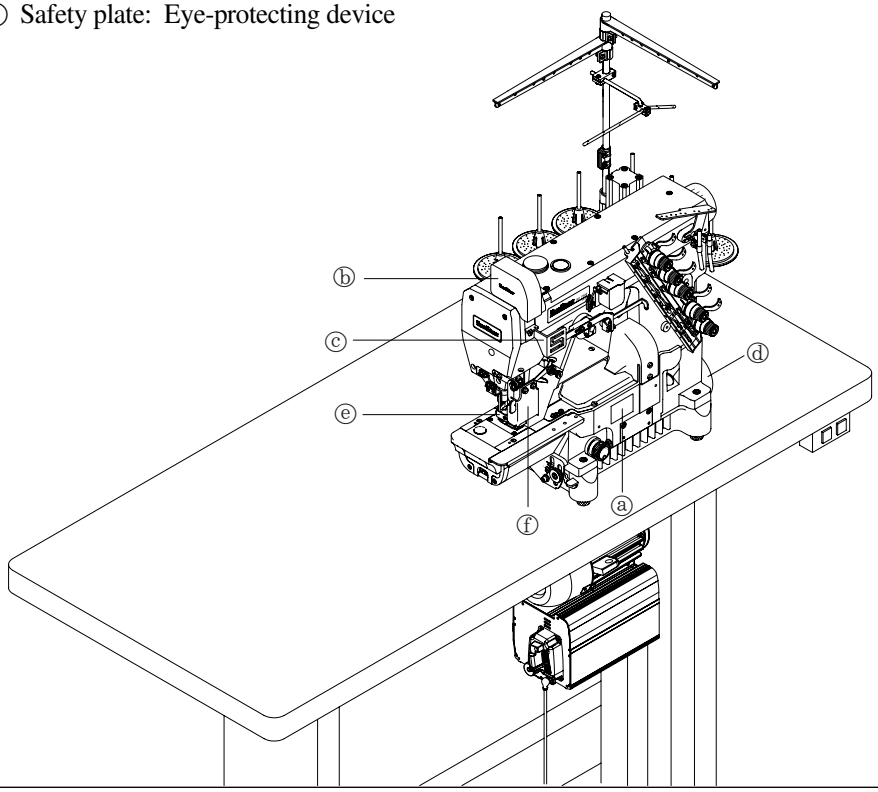
ⓐ Read through this manual carefully and completely before operating the machine.
ⓑ Wear proper clothes for work.
ⓒ When the machine is in operation, do not bring your hands or body near the moving parts of the machine, such as needle, looper, spreader, thread take-up lever and pulley, etc.
ⓓ Keep the covers and safety plates on the machine during operation.
ⓔ Be sure to connect the earthing conductor.
ⓕ Turn off the main power and check if the switch is turned "off" before opening electric boxes such as the control box.
ⓖ Stop the machine before threading the needle or checking after work.
ⓗ Do not step on the pedal when turning the power on.
ⓘ Do not operate the machine with any cooling fan blocked.
The air-filter on control box must be cleaned once a week.
ⓙ If possible, install the machine away from source of strong electrical noise such as high frequency welding machines

[Warning]
Keep cover in place before operating, turn off power before inspecting or adjusting in order to prevent physical injury from belt.

5) Safety devices

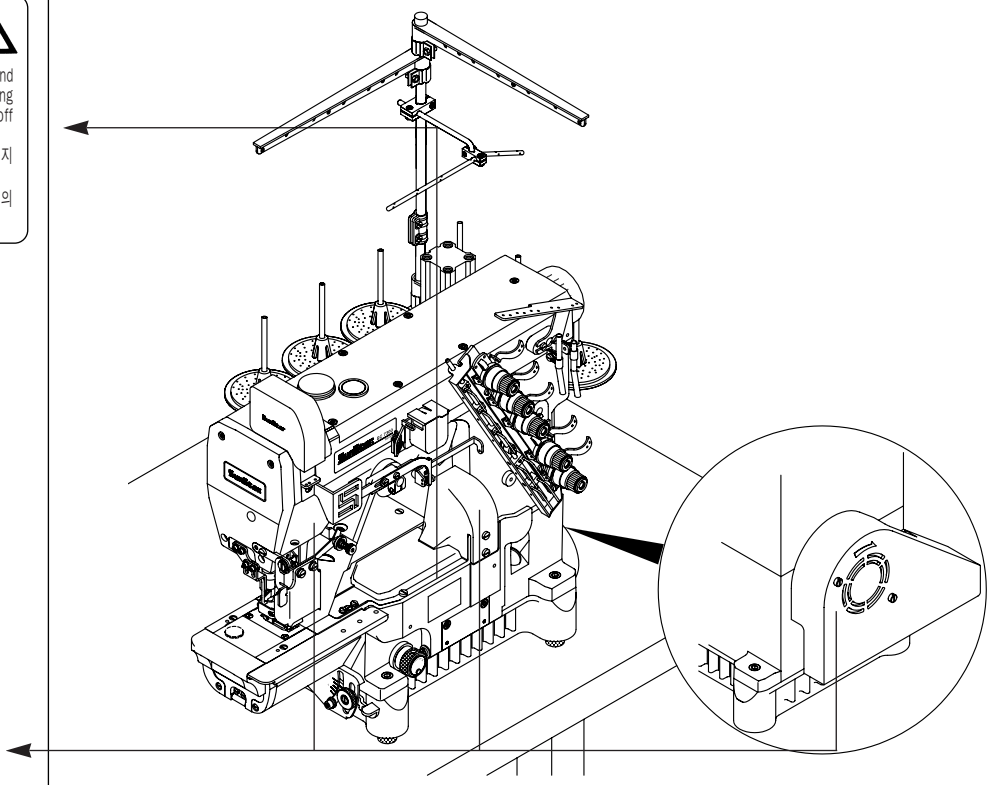
Caution

ⓐ Safety label : Cautions during machine operation
ⓑ, ⓒ Thread take-up lever cover : A device designed to prevent any physical contact with thread take-up lever
ⓓ Belt cover: A device designed to prevent the body and clothes from getting jammed by the moto
ⓔ Finger guard : A device to prevent contact between fingers and needles
ⓕ Safety plate: Eye-protecting device



6) Caution mark position

Caution mark is attached on the machine for safety.
When you operate the machine, follow the directions on the mark.



7) Contents of marks

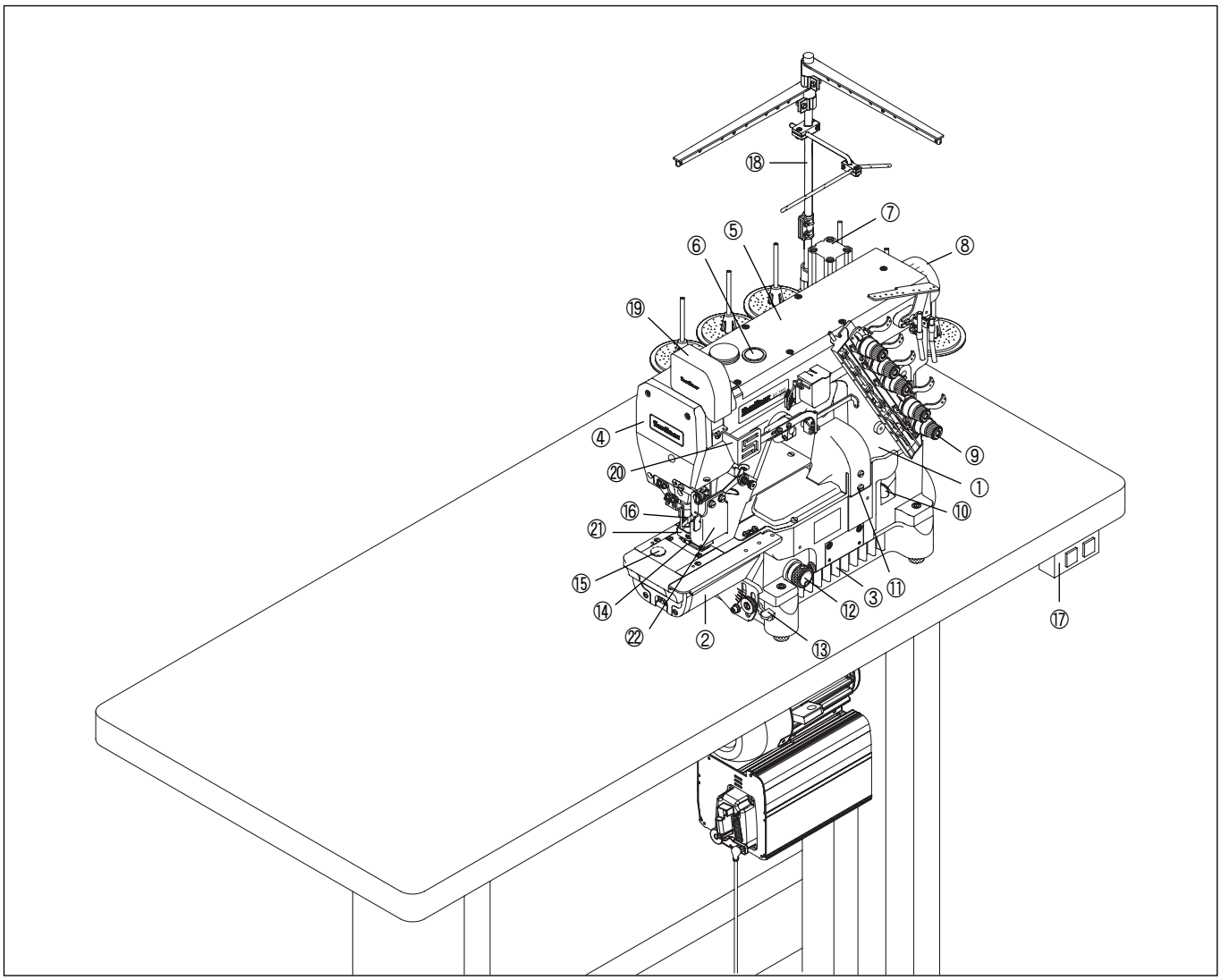
Caution

(1)

(2)

2

Names of machine parts



① Arm
② Bed
③ Oil pan
④ Face plate
⑤ Upper cap
⑥ Oil window
⑦ Knee-lifting cylinder
⑧ Upper shaft pulley
⑨ Thread-adjusting device
⑩ Oil gauge
⑪ Looper cam cover
⑫ Differential feed regulating screw
⑬ Differential feed regulating lever
⑭ Presser foot
⑮ Main feed regulating button
⑯ Air wiper
⑰ Power switch
⑱ Bobbin stand

Safety devices

⑲ Thread guide cover for needle thread
⑳ Thread take-up lever cover for needle thread
㉑ Finger guard
㉒ Safety plate

3

Specifications

Model	SC 7300 Series
Description	Super high-speed cylinder bed, 3-needle, interlock stitch machine
Stitch Type	ISO 406,407,602,605
For use	General seaming of knitted materials
Sewing speed	Max. 6000 s.p.m (In the case of on-and-off operation)
Stitch length	1.4~3.6mm
	Stitches per inch: 7-18; The number of stitches per 30mm: 8-21
Needle	UY×128GAS No. 65 - No. 90(Standard : No. 70)
Needle clearance	2-needle: 3.2, 4.0, 4.8, 5.6, 6.4 mm
	3-needle: 5.6, 6.4 mm
Needle bar stroke	31mm
Lifting of presser foot	Max. 7 mm (5 mm if equipped with a spreader)
Feed Regulation	Push-Button type
Differential ratio	Max. Normal Differential Ratio ⟶ 1 : 2.9
	Max. Reverse Differential Ratio ⟶ 1: 0.3
Differential Feed Regulation	Adjusting screw and adjusting lever
Lubrication	Automatic lubrication by oil pump
Oil used	All-purpose machine oil
Oil fan capacity	800CC

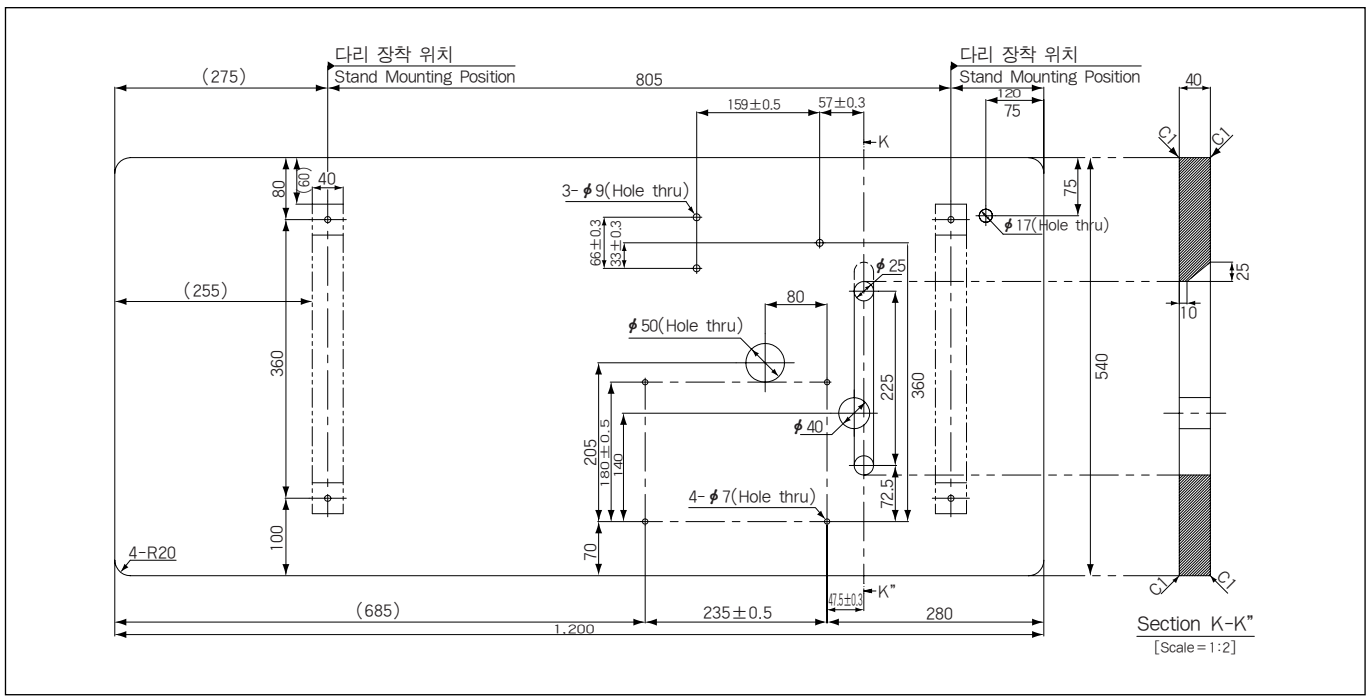
4

Installation

1) Installation of table

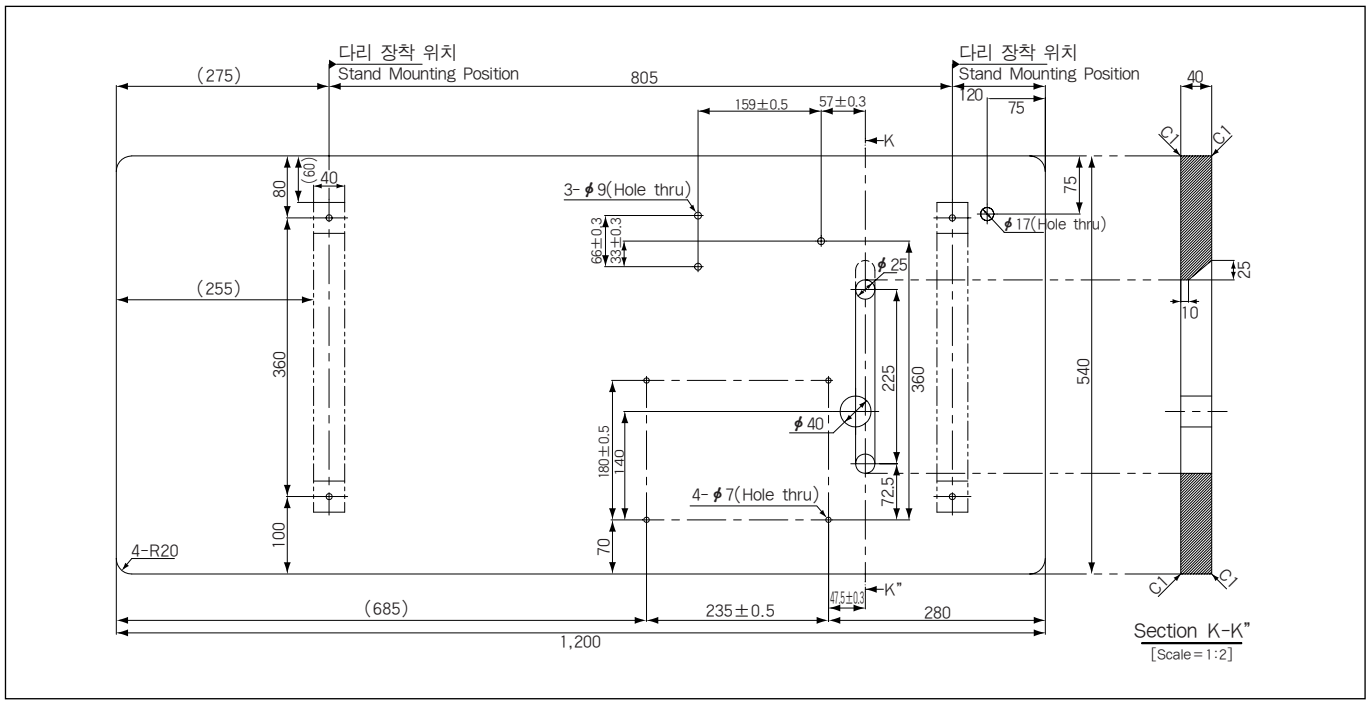
(1) Types of table

A. Table Top Type (trimming)



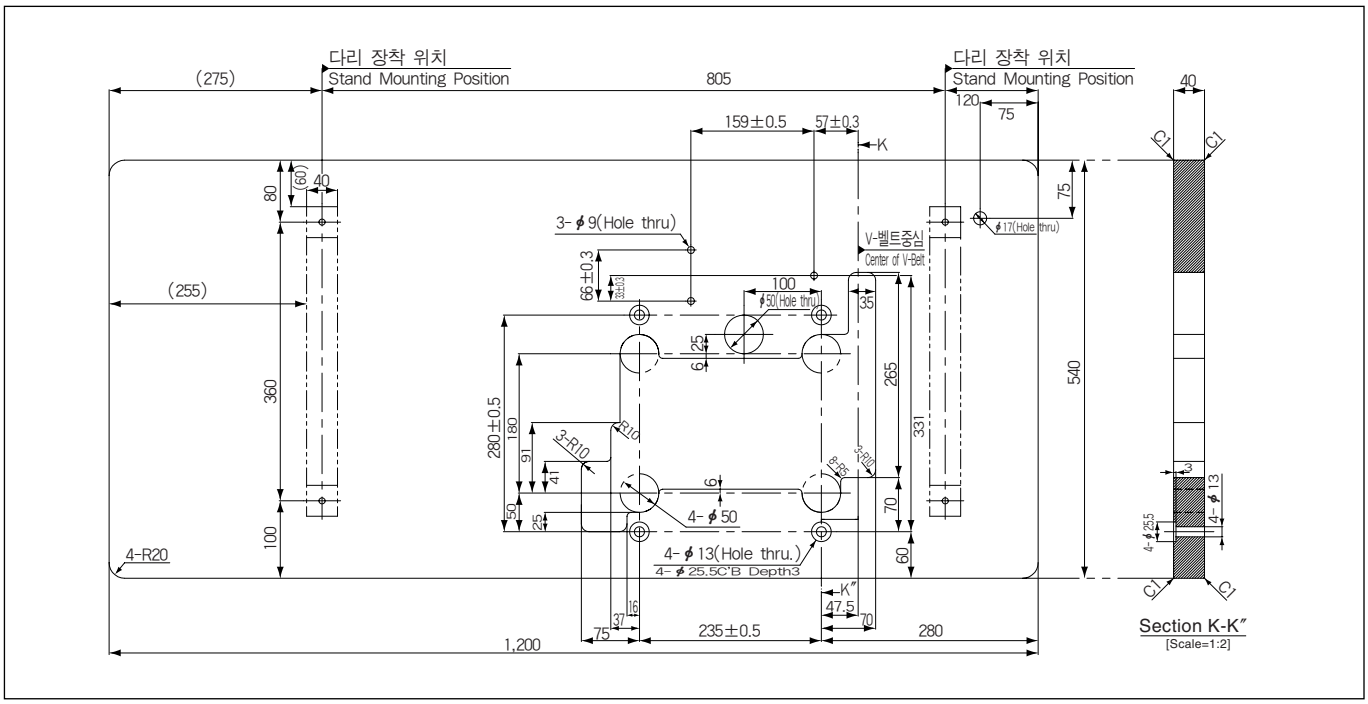
[Figure 1]

B. Table Top Type (Non-trimming)



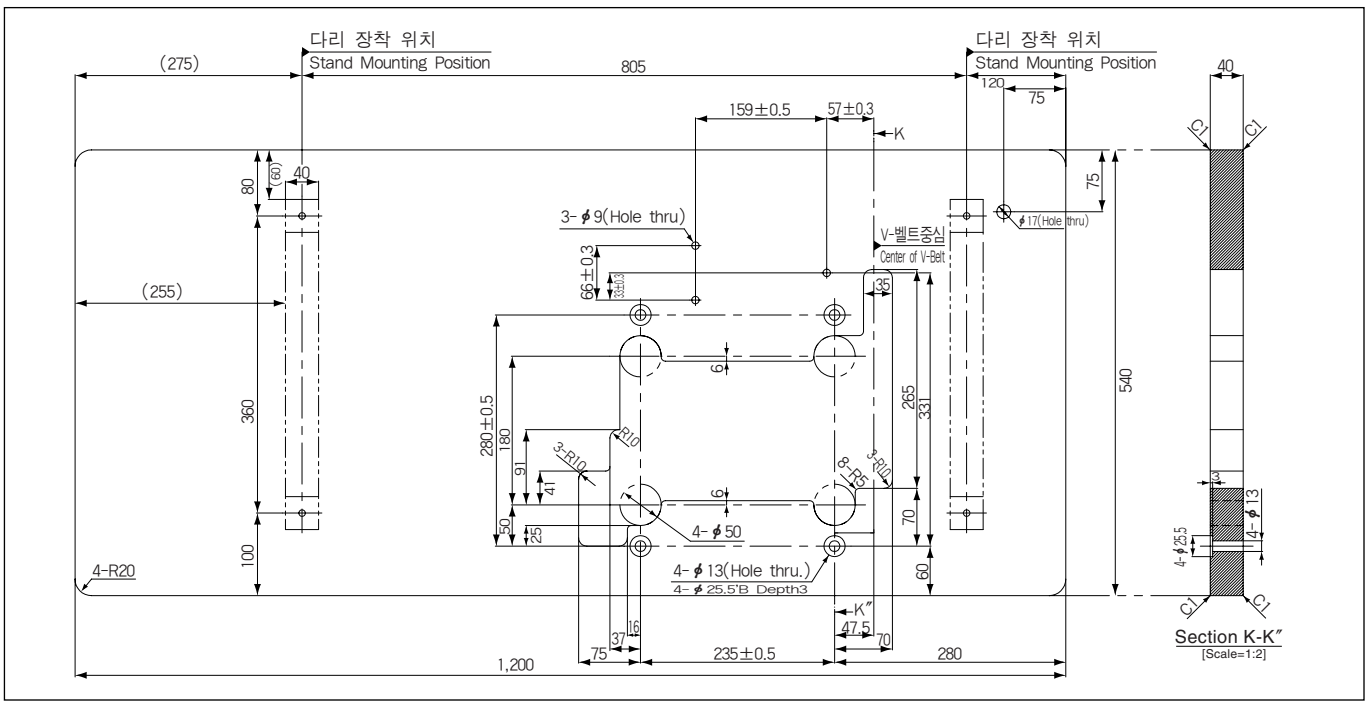
[Figure 2]

C. Semi-Submerged Type (Trimming type)



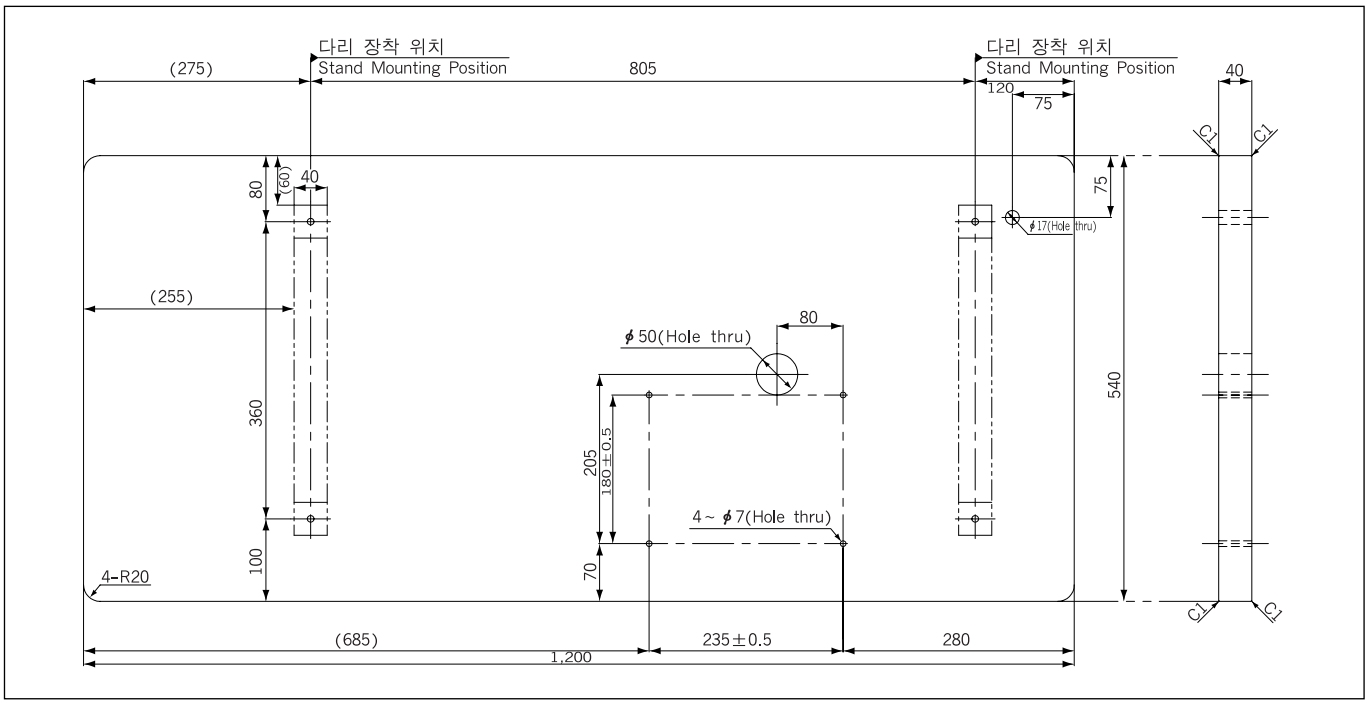
[Figure 3]

D. Semi-Submerged Type (Non-trimming type)



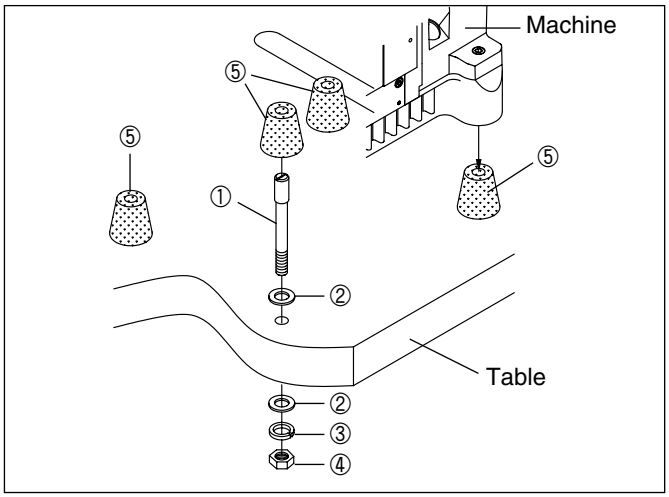
[Figure 4]

E. Options for small-sized motor type

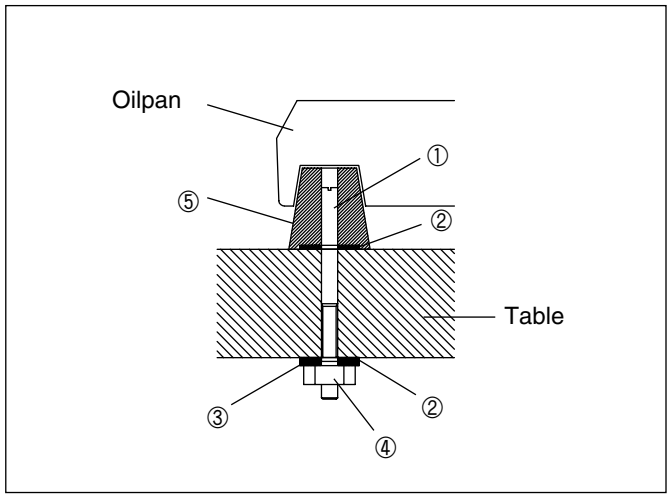


[Figure 5]

(2) Installation of table-top type table



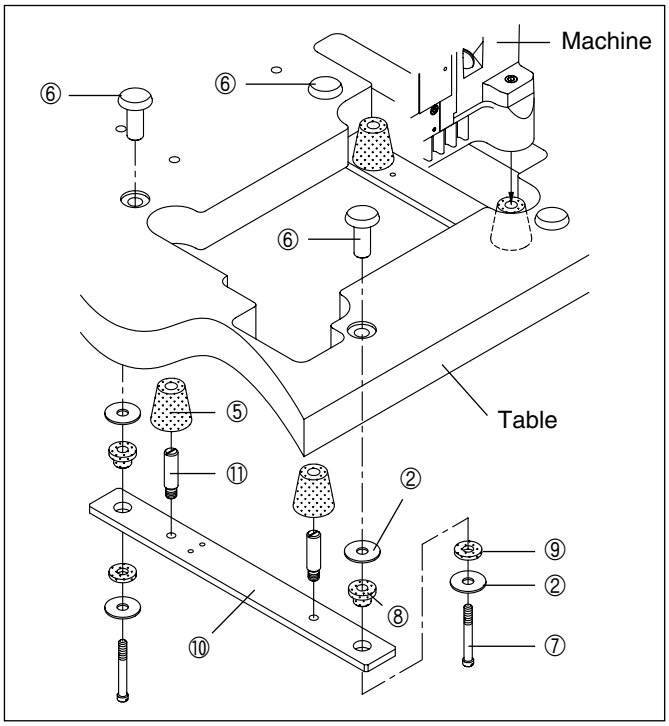
[Figure 6]



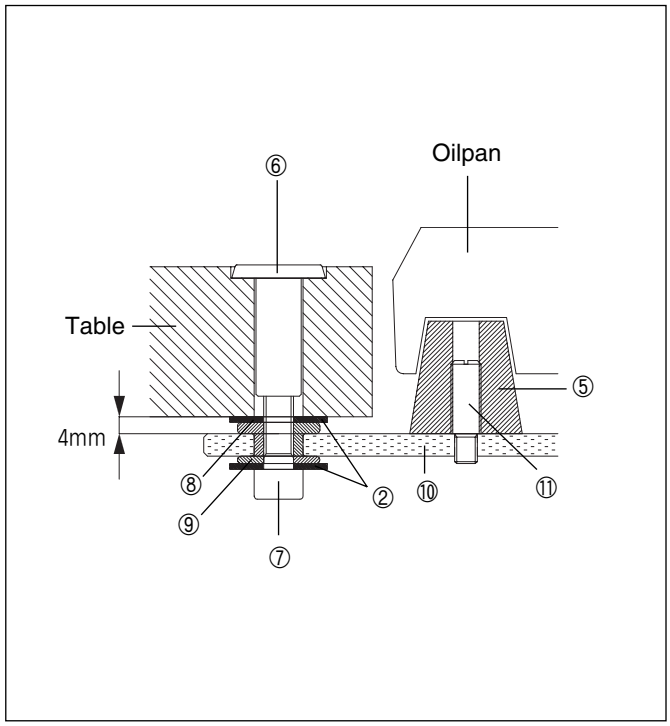
[Figure 7]

Mount the sewing machine as shown in Figure 6 and 7.
Fix the table with screws and nuts. Place the rubber cushion on the bolt and then fix the oilpan onto the cushion securely.

(3) Installation of semi-submerged type table



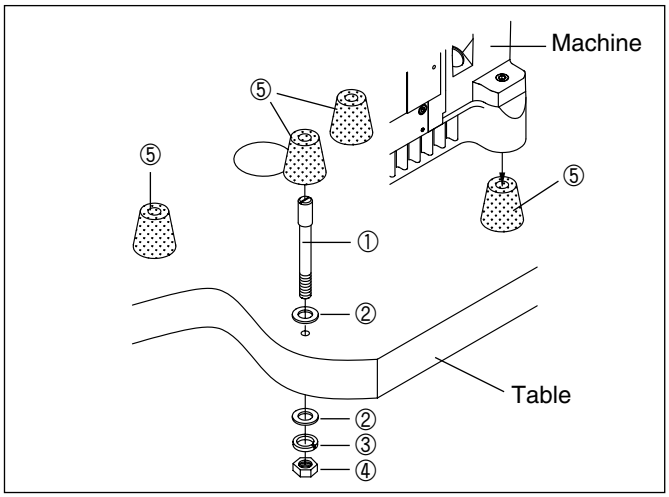
[Figure 8]



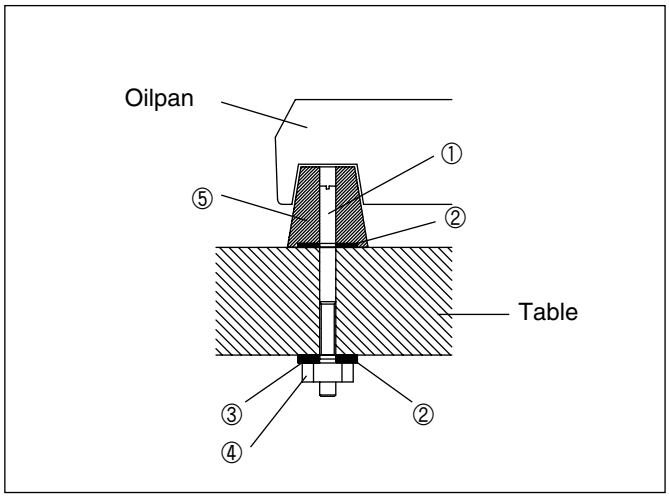
[Figure 9]

Mount the sewing machine as illustrated in Figure 8 and 9.
First, insert the screw into the bed support bar ⑩ and fix it onto the table. Then fit the rubber cushion onto the screw and place the oilpan securely.

⑷ Installation of small-sized motor type table (option)



[Figure 10]



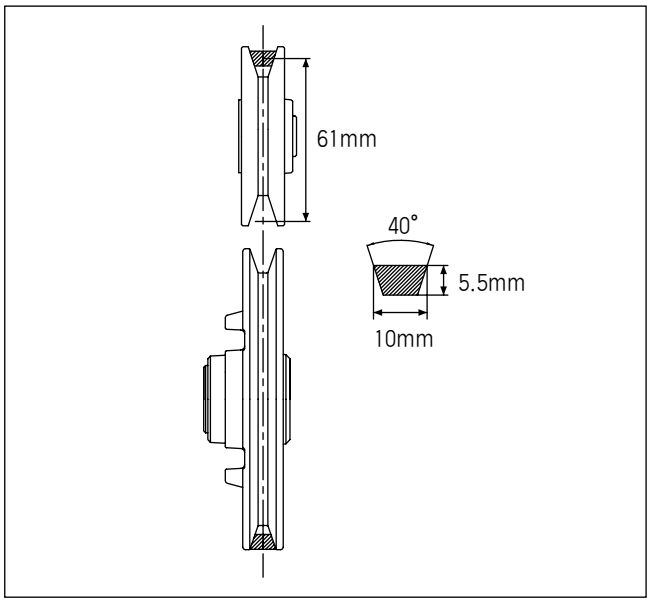
[Figure 11]

Mount the sewing machine as shown in Figure 10 and 11.
Insert the screw and nut into the table, and place the rubber cushion on the bolt. Securely place the oilpan on the cushion afterwards.

2) Installation of motor and belt

Use a 3-Phase, 2-Pole, 400W(1/2 HP) clutch motor and M-type V-belt for the machine.
Start the pedal. When the motor pulley begins to move to the left, adjust the position of the motor so that the centers of the motor pulley and the M/C pulley meet with each other.

Diameter. of Motor Pulley(mm)	s.p.m of machine	
	50Hz	60Hz
75	3,200	3,900
80	3,400	4,100
85	3,600	4,400
90	3,900	4,700
100	4,300	5,200
110	4,700	5,700
120	5,100	6,200
130	5,500	6,700



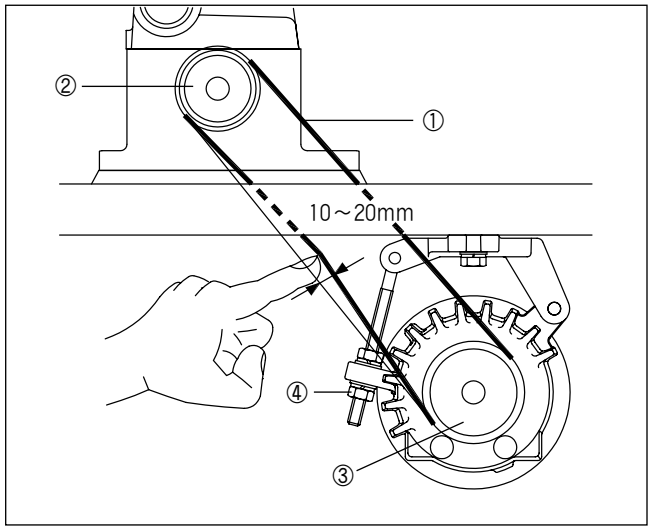
[Figure 12]

※ The diameter of pulleys in the market is generally set with a 5 mm clearance.

3) Adjustment of belt tension

[Warning]
Be sure to turn the power switch off before adjusting belt tension.

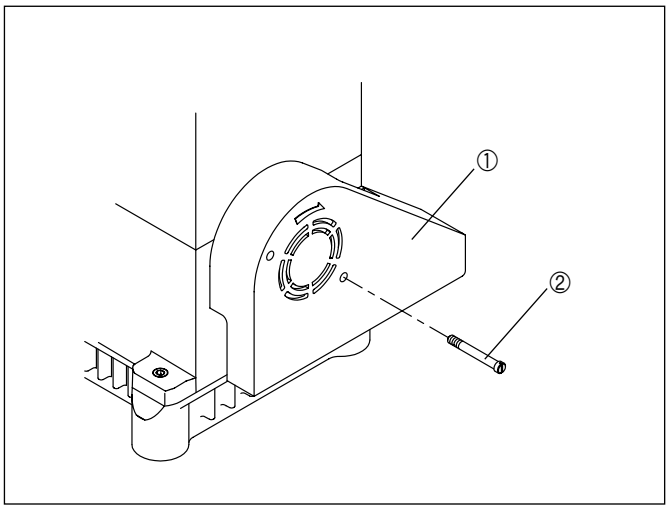
Turn the screw④ of the motor③ around. Adjust the belt ① to go in approximately 10~20mm when its center portion is pushed with a finger. (Refer to figure 13)



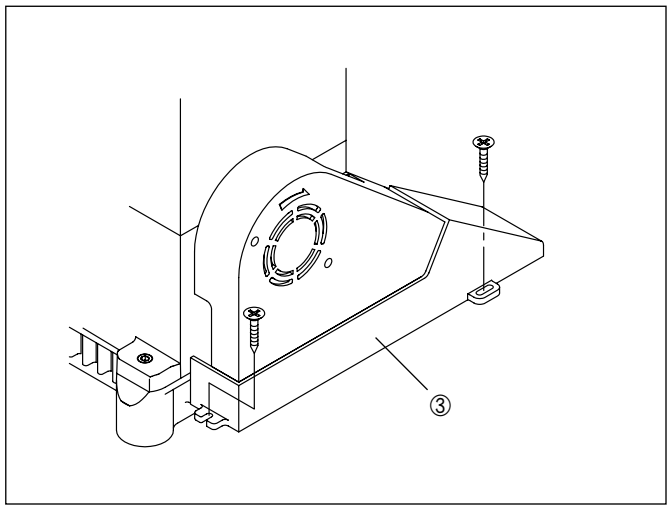
[Figure 13]

4) Installation of belt cover

[Warning]
Always install the belt cover for safety.



[Figure 14]

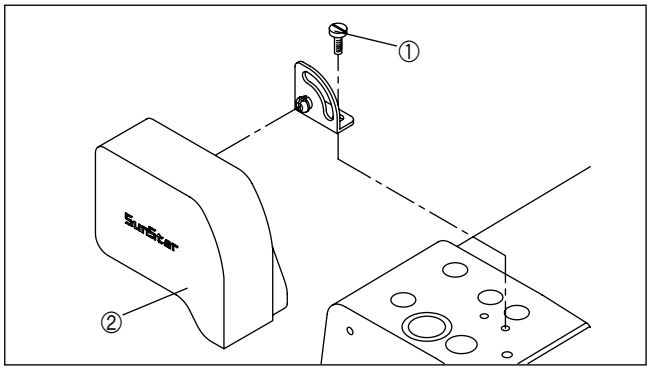


[Figure 15]

Fasten the belt cover (upper)① with a screw② as shown in figure 14. For A-Type table, mount the belt cover (lower)③ as shown in figure 15.

5) Installing cover for needle bar thread guide

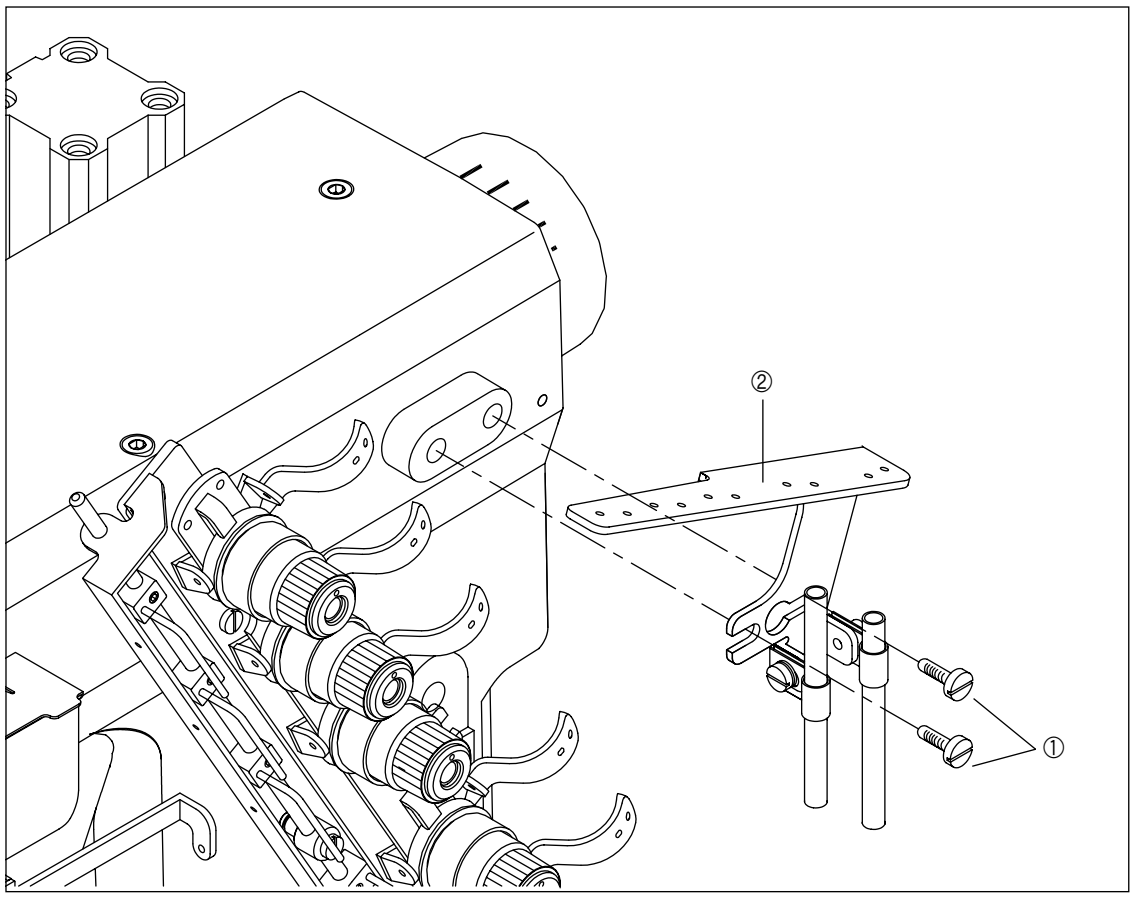
As illustrated in the figure, fix the cover② for needle bar thread guide onto the arm with two screws①.



[Figure 16]

6) Installation of thread guide plate

Use screws ① (2 each) to mount the thread guide plate ② onto the arm as described below in the figure.



[Figure 17]

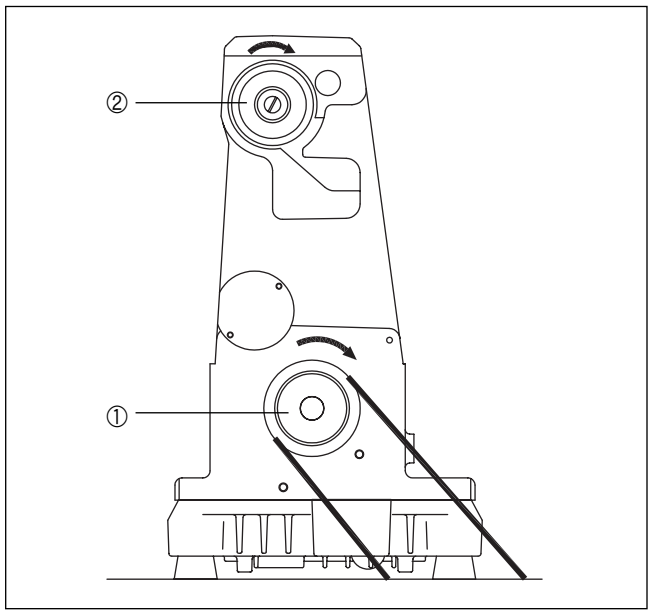
5

Sewing speed and rotating direction of pulley

The maximum speed of the sewing machine is 6,000 s.p.m, and 4,000 s.p.m for commercial use. (If a puller is installed, maximum sewing speed is 4,500 s.p.m, and 4,000 s.p.m for commercial use.)

To ensure durability, run the sewing machine at 5,000 s.p.m for 200 hours of operation (or 1 month) when using the machine for the first time.

As shown in figure 18, the rotating direction of the lower shaft pulley① and upper shaft pulley② is clockwise.



[Figure 18]

6

Lubrication

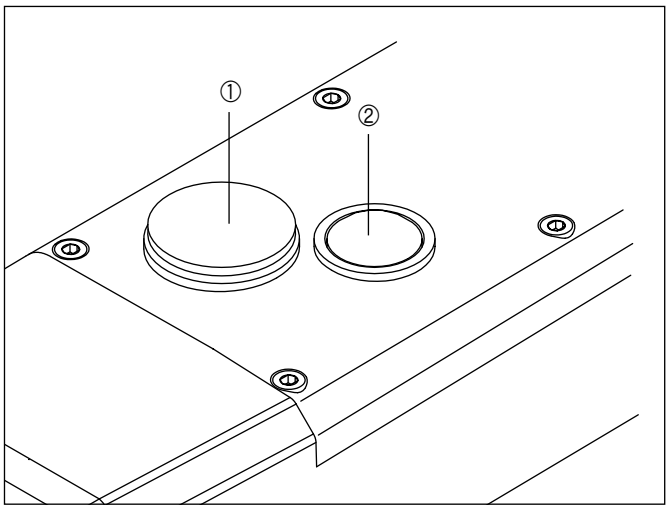
[Warning]
Be sure to turn the power switch off before oiling

1) Lubricating oil

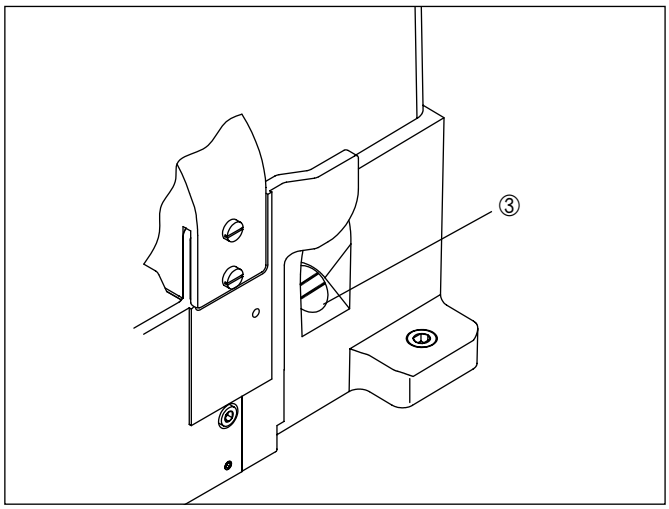
Use industrial-purpose lubricating oil supplied by SunStar or SF oil by YANASE for this particular type of sewing machine.

[Caution]
Do not put foreign materials into the lubricating oil. It will degrade the lubricating oil and cause mechanical breakdowns.

2) Supplying oil



[Figure 19]



[Figure 20]

The sewing machine is not oiled when shipped out from the factory. To ensure trouble-free use of the sewing machine, open the upper rubber lid ① and supply oil to the upper line of the oil gauge ③.

[Caution]
Too little oil may cause mechanical breakdowns and too much may degrade the quality of sewing materials. Be sure to adjust the amount of oil appropriately.

3) Oil Gauge and Oil Window

Always check the oil gauge ③ before starting the machine. Supply oil if the remaining oil comes short of the lower line of the gauge.

When operating the machine, check the flow of the oil through oil window ②.

4) Oil change

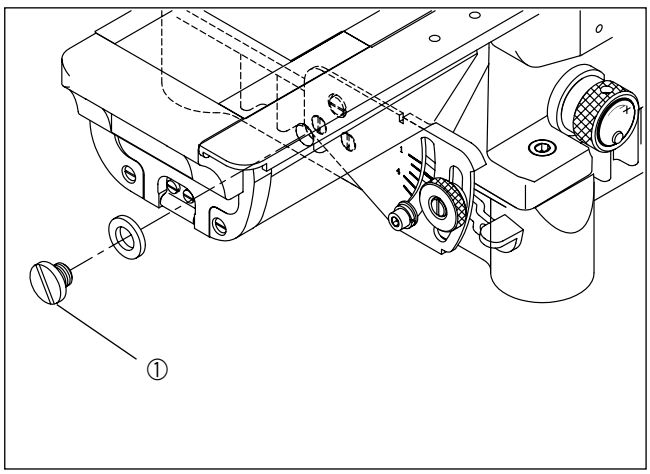
To ensure durability of the sewing machine, be sure to change oil after 250 hours of initial operation.

Change oil according to the following.

⑴ Unfasten oil discharge screw ① to let out the lubricating oil.

⑵ Fasten oil discharge screw① securely afterwards.

⑶ Refer to 2) Supplying oil for lubrication.



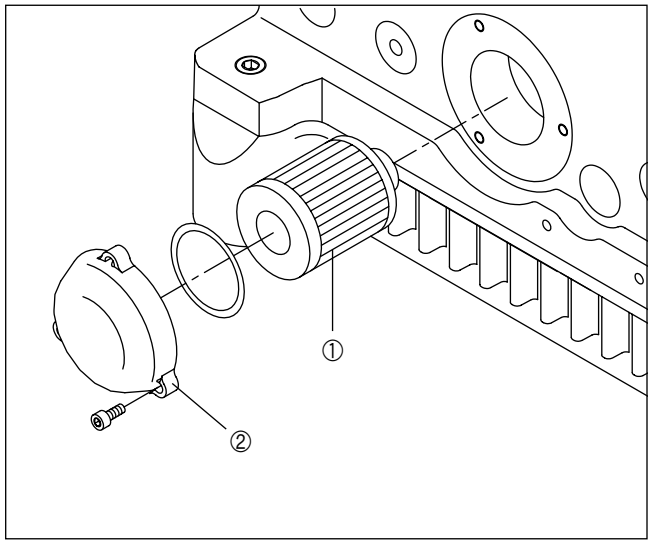
[Figure 21]

5) Cleaning the oil filter

Oil will not supply smoothly if dust gets built up in oil filter ①. Check the oil filter once every six months.

Check the oil filter through the oil window if there is no or only little amount of oil being supplied.

Before checking the oil filter, remove the oil filter cover ②. Clean dust build-ups inside the oil filter.



[Figure 22]

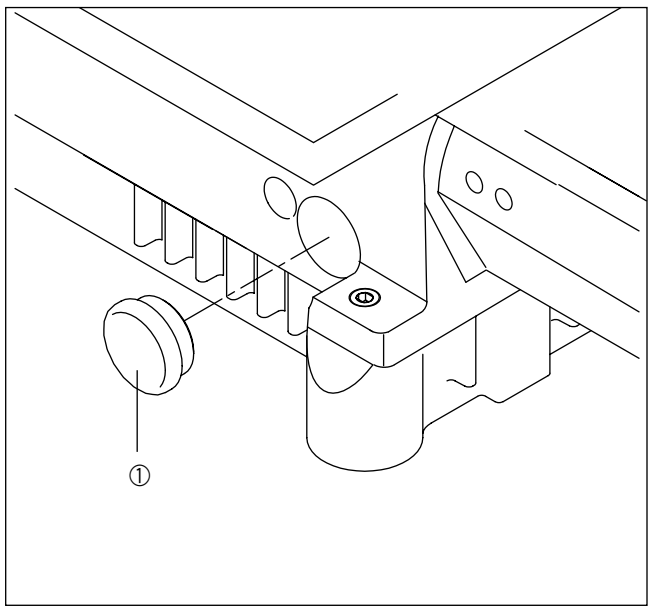
[Caution]
When removing the oil filter cover, be sure to prevent the remaining oil in the oil filter from leaking.

6) Cleaning the machine

After each daily operation, clean the sewing machine to remove any dust or thread pieces left.

Open bed cover (left), bed front cover or other covers for cleaning. You may also use air guns.

Take out the backside rubber cap of the bed ① at the back of the sewing machine. Clean out dust or any residues in the oil net with a tweezer or an air gun once a week.



[Figure 23]

7

Standard adjustments of the sewing machine

1) Needle used

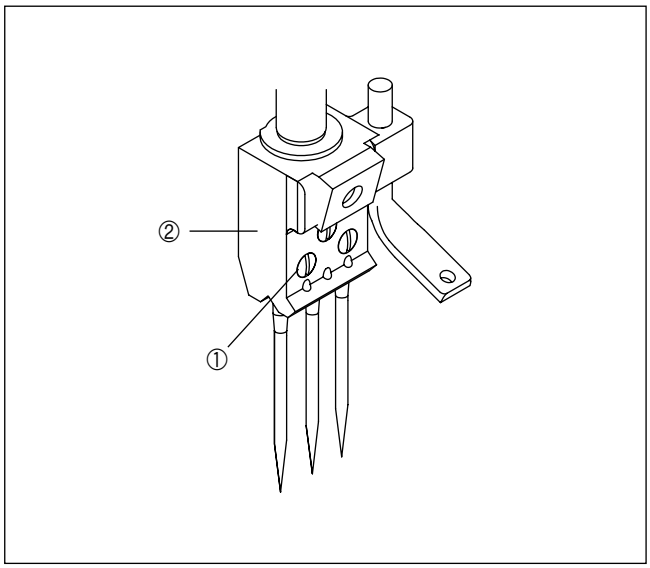
This sewing machine uses UY128GAS needles.
Needles come in various size. Select the most appropriate needle depending on the thickness or the type of sewing materials.

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

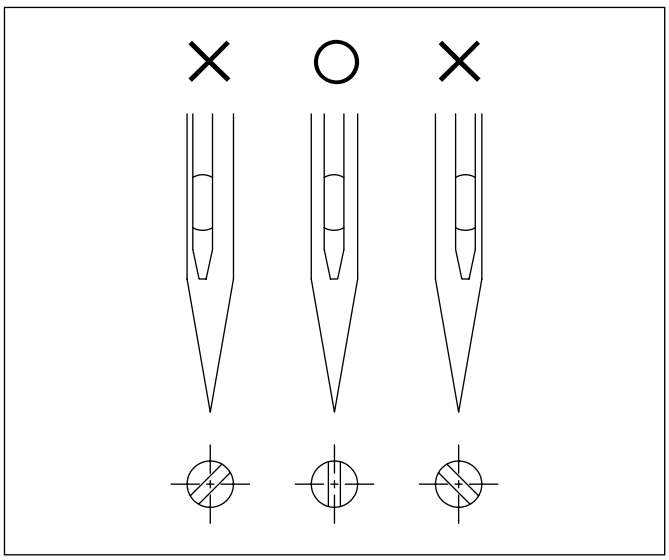
2) Installation of needle

[Warning]
Turn the power switch off before installing a needle.

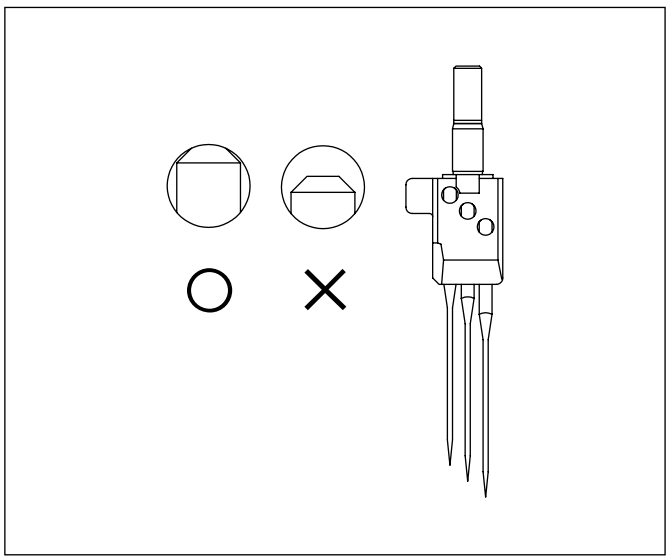
Use a needle driver to loosen the screw ①, and remove the old needle with tweezers. (Figure 24)
Set the needle groove to completely face back, and raise the needle to the groove tip of the needle holder ②. Then fasten the screw ① firmly. (Figure 25, 26)



[Figure 24]



[Figure 25]



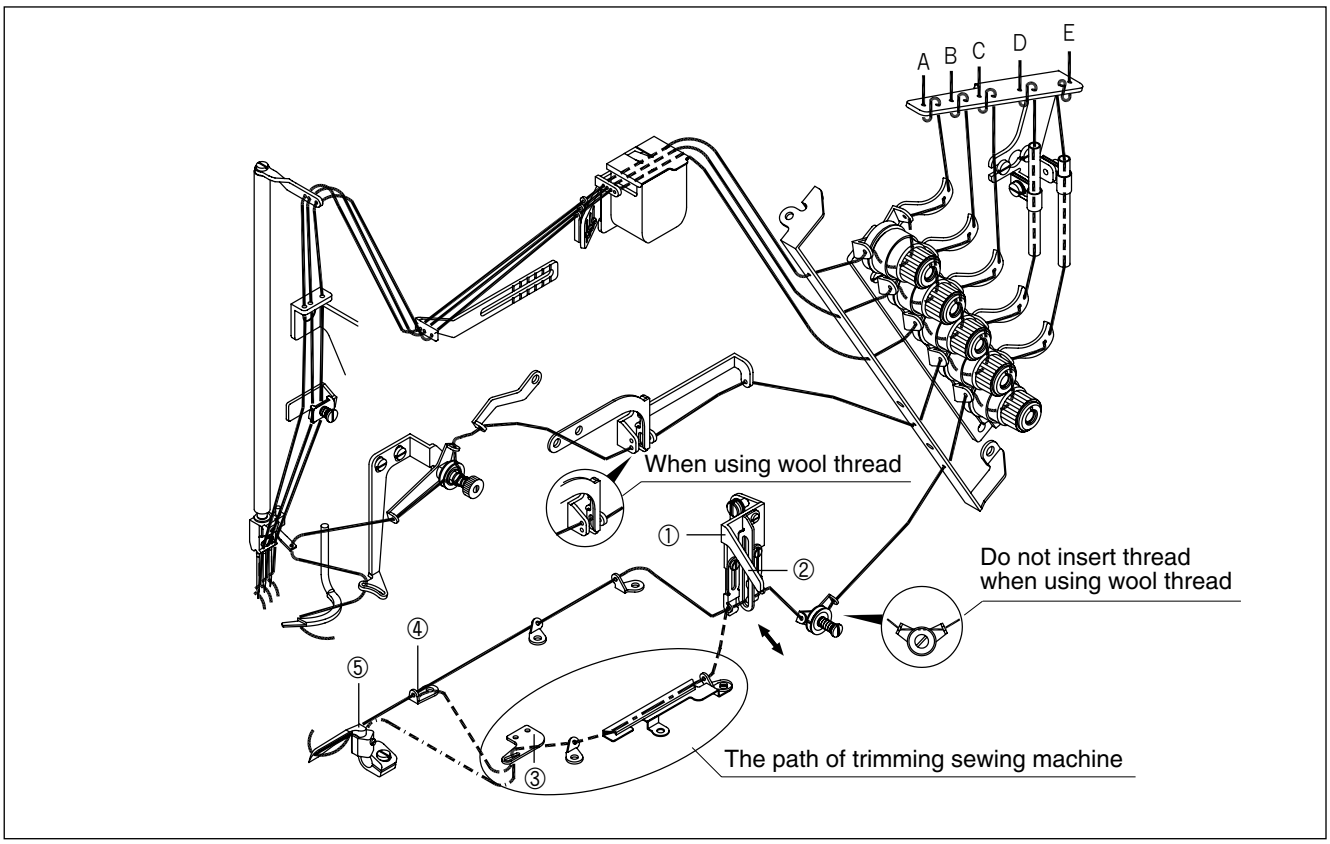
[Figure 26]

3) Threading

Insert the thread as shown in figure 27 for 3-needle sewing machine.

If treading is not done correctly, stitches may skip, threads may break or tension may be uneven. A, B and C stand for each needle thread, D for top cover thread and E for looper thread.

Except for the second needle thread in the case of 2-needle sewing machine, refer to the above instructions for threading.



[Figure 27]

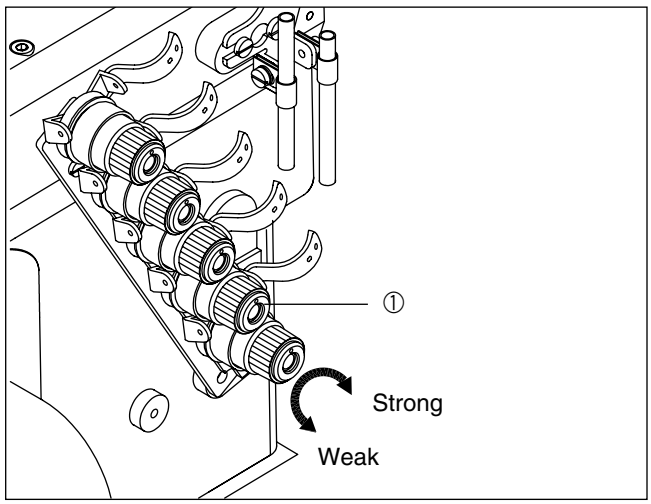
You can thread easily by lifting the lever② of the looper thread guiding bracket①.

For general types of threads, pull the thread into the looper⑤ through looper shaft bushing eyelet④, but for threads made of cotton or polyester, remember not to insert the thread into looper shaft bushing eyelet④.

4) Adjustment of thread tension

Thread tension must be adjusted according to the type of threads and fabrics, stitch length and other sewing conditions.

Thread tension can be adjusted by rotating the thread adjusting device cap①. Turn clockwise to strengthen and counterclockwise to weaken the tension.



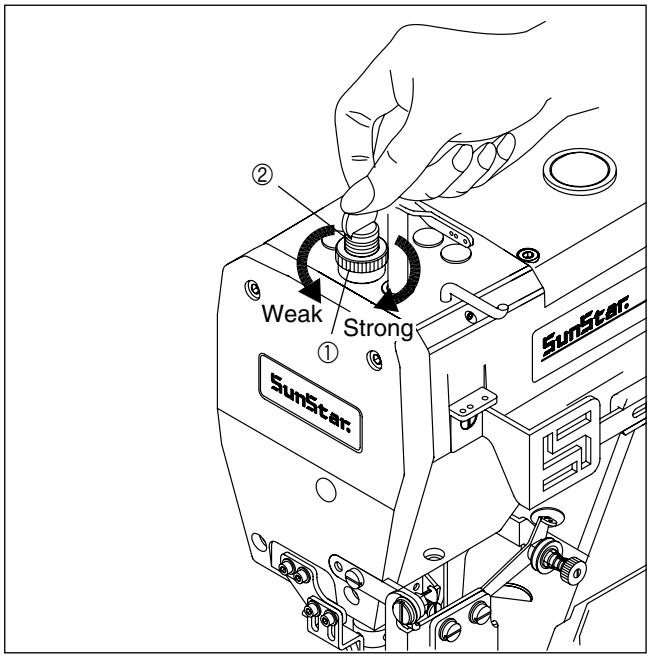
[Figure 28]

5) Adjustment of presser foot tension

If the sewing material is in good condition, it is better to have as little tension as possible on the presser foot.

Loosen the presser bar nut① and turn the presser bar screw ② with a coin to adjust the tension of the presser bar. Re-tighten it afterwards.

Tension will become stronger if the screw② is turned clockwise, and weaker if turned counterclockwise.

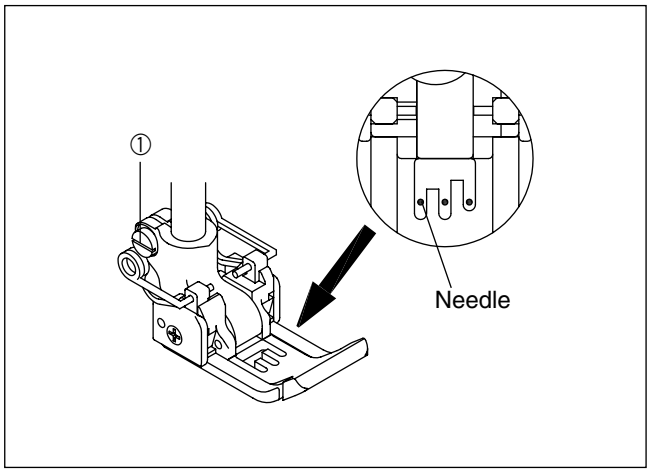


[Figure 29]

6) Adjustment of presser foot position

[Warning]
Be sure to turn the power switch off before adjusting the position of the presser foot.

After unfastening the screw ①, move the front part of the presser foot left and right to bring the needle to pass the center of the needle passage of the presser foot.



[Figure 30]

7) Adjustment of stitch length

[Warning]
Be sure to turn the power switch off before adjusting stitch length.

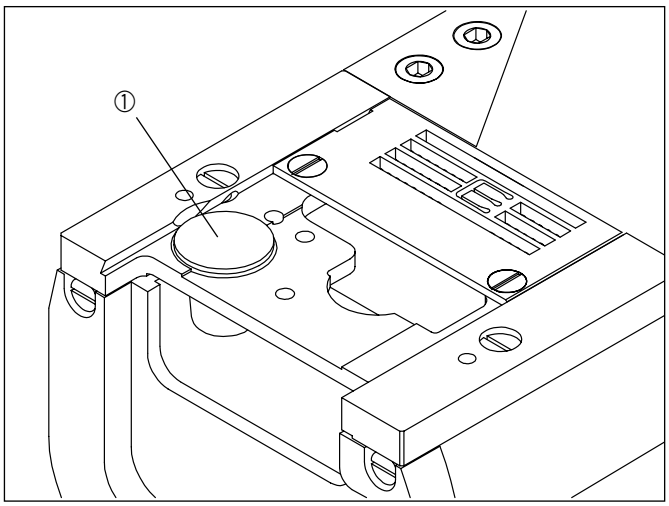
⑴ Stitch length

Stitch length can be adjusted straight from 1.4mm to 3.6 mm

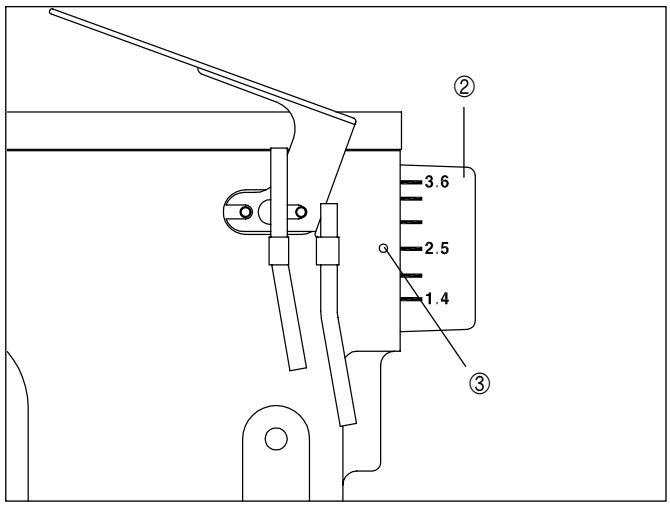
The table below shows stitch length, number of stitches per inch(25.4mm) and per 30 mm.

Stitch length (mm)	No. of stitches (per inch)	No. of stitches (per 30mm)
3.6	7	8
2.4	10.5	12.5
1.4	18	21

(2) Change of stitch length



[Figure 31]



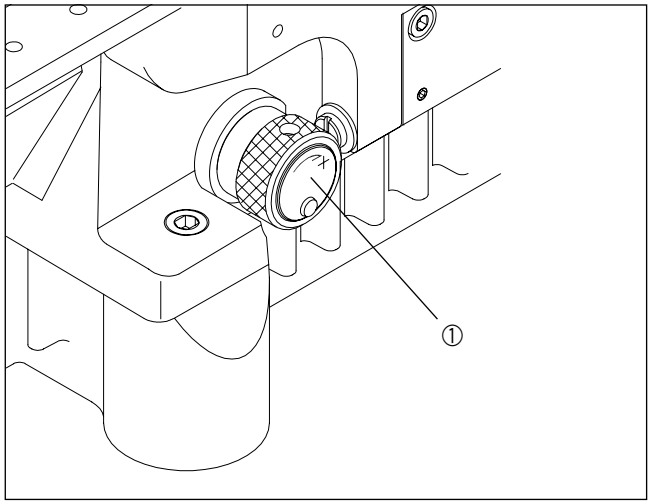
[Figure 32]

Press lightly stitch length-adjusting button① with your left hand so that the end comes in contact with inner parts.
With the button① pushed in, turn the upper shaft pulley② with your right hand so that the button① goes in deeper.
At this point, rotate the upper shaft pulley with the button① strongly pushed in.
Stitch length is a value you get when the mark around the upper pulley meets the mark ③.

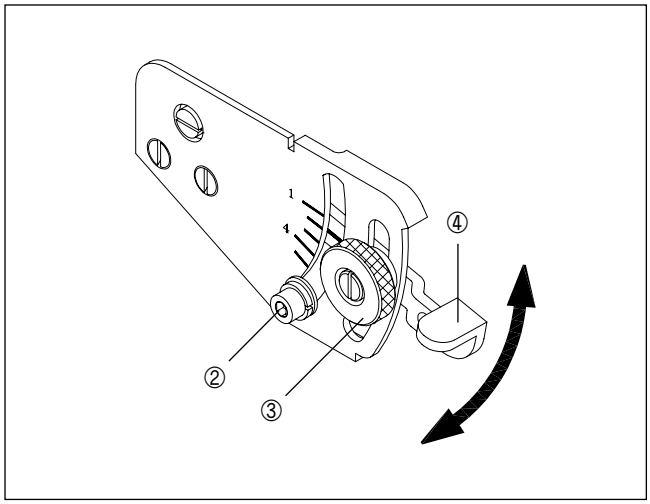
Caution	**When the stitch width adjustment is completed, make sure that the adjusting button① returns to the original position before operating the machine. Otherwise, damage to the machine might occur.**

8) Adjustment of differential feed

[Caution]
Be sure to turn the power switch off before adjusting differential feed.



[Figure 33]



[Figure 34]

⑴ Differential feed

Set normal differential feed or reverse differential feed by rotating differential feed regulating handle①. As differential feed is driven independently from main feed, changes in main feed (stitch length) will result in differential ratio. Be sure to re-adjust main feed to maintain a consistent level of differential ratio.

Scales in figure 34 show the level of differential feed. For example, if the desired feed or stitch length is 2, turn the differential feed regulating handle ① to bring the scale at 2 to obtain the differential ratio of 1:1.

Normal differential is when the scale is set larger than 2, and reverse differential is when set less than 2.

⑵ Change of differential feed

Select the lever position from the scale pointed by the differential feed regulating lever④ when (differential feed) regulating handle① is turned, to regulating lever stopper ②. Then tighten with the regulating lever nut ③ afterwards.

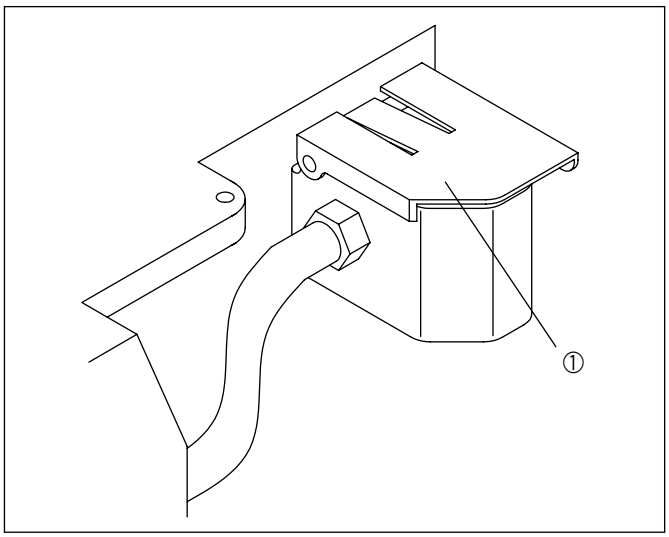
For maximum differential feed, turn the handle ① to set the lever at the scale '1'.

※ The range of differential feed changes in accordance with stitch length. Refer to the table below.

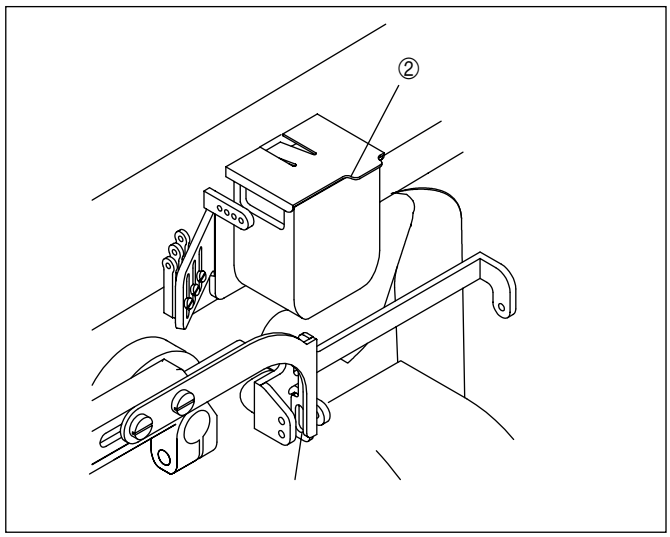
Stitch length (mm)	Maximum normal differential feed	Maximum reverse differential feed
3.6	1 : 1.1	1 : 0.3
2.5	1 : 1.6	1 : 0.4
2.0	1 : 2	1 : 0.5
1.4	1 : 2.9	1 : 0.7

9) Lubricating device of needle thread and needle cooling device

[Warning]
Be sure to turn the power switch off before work.



[Figure 35]



[Figure 36]

High-speed sewing generates heat as a result of frictions between the needle and sewing materials. Heat may result in thread breaks, skipped stitches, or enlarged stitch holes when used with polyester threads or fabrics.
To prevent such troubles, this sewing machine comes attached with the needle cooling device and needle thread lubricating device as a standard option.

※ Open cover ① of the silicon oiling tank and cover ② of the needle thread oiling tank to check the level of silicon oil. Oil if necessary.

※ If there is no need for silicon due to specific sewing conditions, remove the felt to prevent the needle and the thread from passing the dry felt.

8

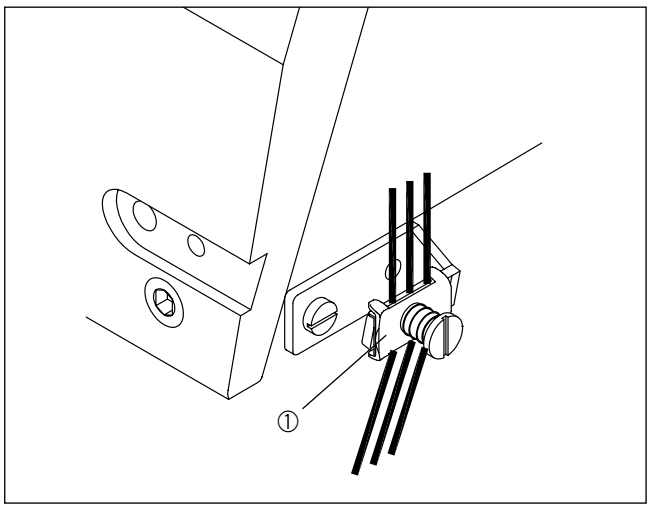
Fine-tuning of the sewing machine

1) Adjustment of needle thread tension

[Warning]
Turn the power switch off before adjusting tension.

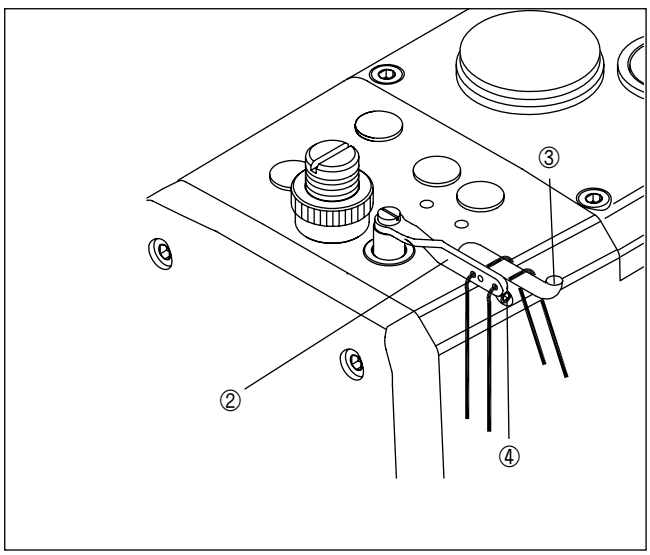
For some types of threads, looping is not an easy thing to do. Wrong loops may make it difficult for the looper to pass needle thread loop and cause skipped stitches.

In such case, pull the needle thread through the auxiliary tension-adjusting device of the needle thread ① as shown in figure 37.



[Figure 37]

Use the needle thread guide ③ when using stretchable threads such as synthetic thread and the loop of needle thread is unstable.
It is a standard setting to bring the center of the needle hole of the needle bar take up ② against the upper side of the needle thread guide when the needle bar is at its lowest position.
The height of the needle bar guide can be adjusted by loosening the screw ④.



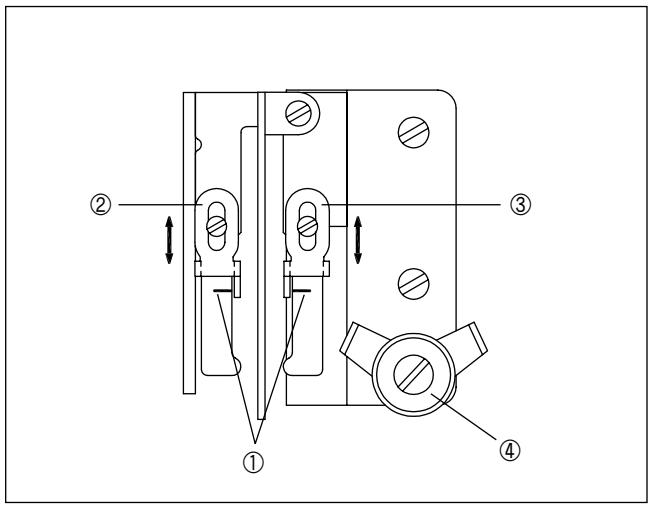
[Figure 38]

2) Adjustment of looper thread tension

[Warning]
Be sure to turn the power switch off before adjusting tension.

As a standard, the center of the thread hole of the looper thread guide ② and ③ is generally positioned along the line of the looper thread guide bracket①.
Loosen the screw to lower the looper thread guide down to decrease the looper thread tension, and raise it up to increase the tension.

※ When using the woolly thread, bring the looper thread guide(②, ③) down as much as possible, and do not insert thread into disc ④.

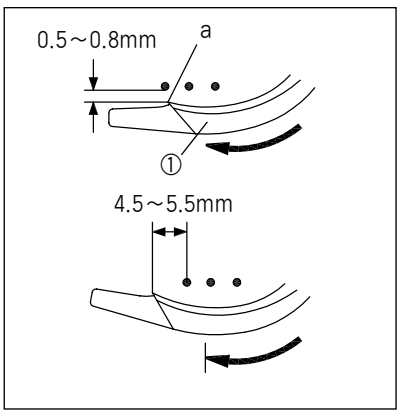


[Figure 39]

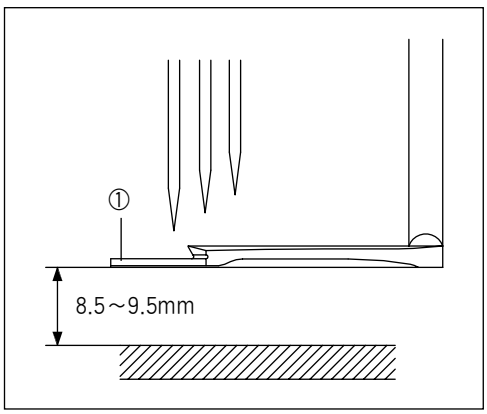
3) Adjustment of needle and spreader

[Warning]
Turn the power switch off before adjustments

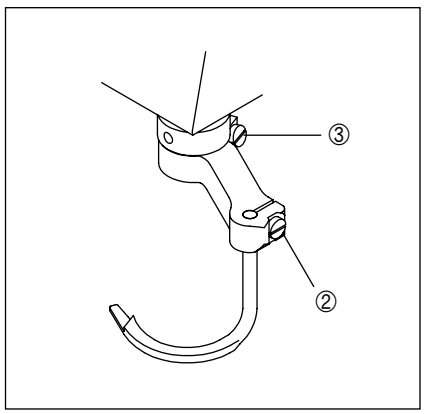
(1) Installation of spreader



[Figure 40]



[Figure 41]



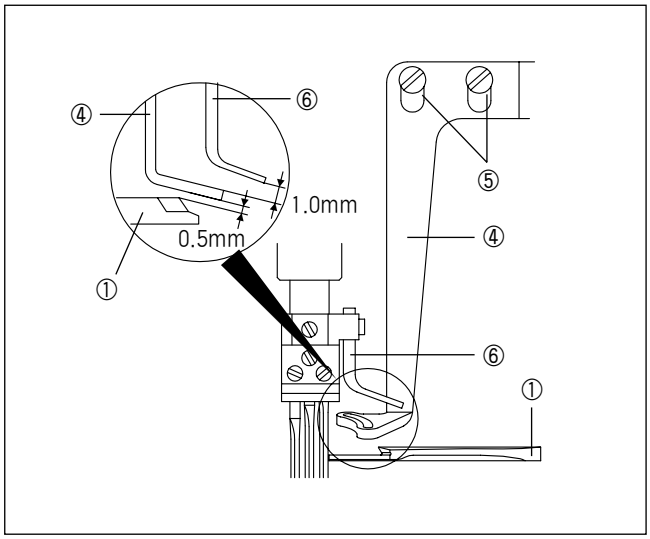
[Figure 42]

When the spreader① moves to the left, the clearance between the left needle and the hook tip of the spreader (a) is 0.5mm ~ 0.8mm. (Figure 40)
When the spreader sits at the far left, the distance from the left needle center to the hook tip of the spreader (a) is 4.5mm ~ 5.5mm.
The height between the stitch plate and the lower side of the spreader① is 8.5mm ~ 9.5mm. (Figure 41)
The spreader can be adjusted by untightening the spreader fixing screw② and the spreader handle fixing screw③. (Figure 42)

⑵ Installation of top cover thread guide

The clearance between the lower side of the top cover thread guide④ to the upper side of the spreader① is 0.5mm.

Fix the screw⑤ when the spreader is at its far right, in order to hook the thread well onto the thread hooking part.

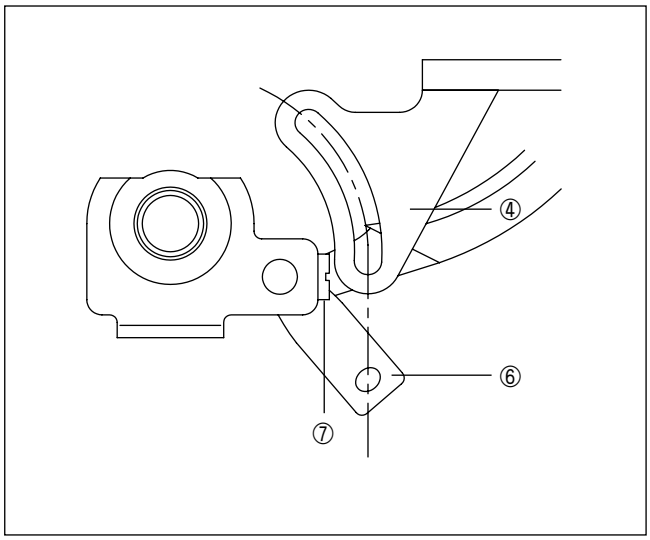


[Figure 43]

⑶ Installing the top cover thread eyelet

When the needle bar is at its lowest, the clearance between the upper side of the top cover thread guide ④ and the lower side of the top cover thread eyelet ⑥ is 1.0mm. Bring the needle groove of top cover thread eyelet ⑥ to the centerline of the slots of the top cover thread guide ④. Tighten the screw ⑦ afterwards.

※ Adjust (1), (2) and (3), depending on the type of thread used.



[Figure 44]

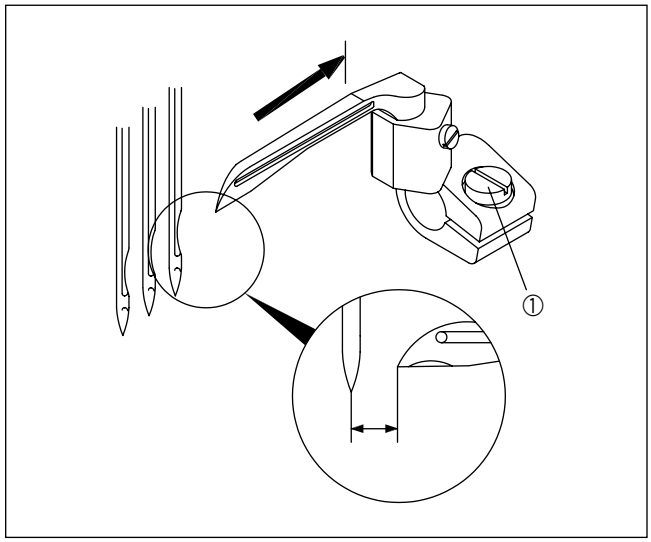
4) Adjustment of needle and looper timing

(1) Left/right position of looper

The clearance between the end tip of the looper and the center of the right needle changes in accordance with needle distance, when the needle is at its lowest, and the looper is at its far right. Be sure to adjust the distance as shown in the table below.

Adjustment can be done by loosening the screw① of the looper holder.

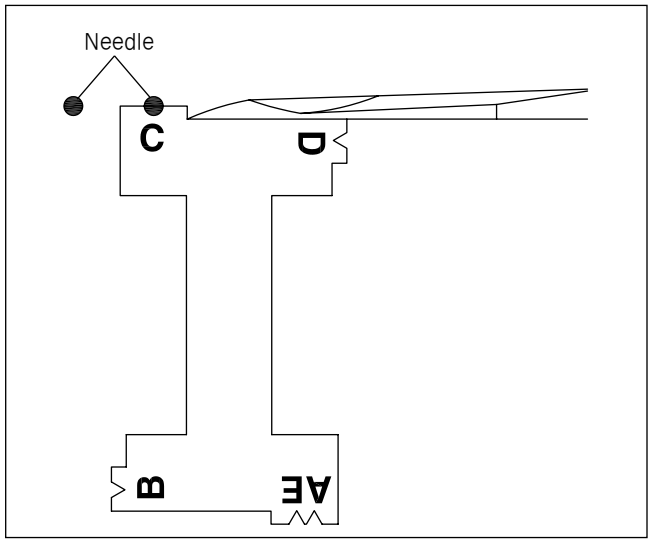
※ In all cases, the distance from the center of the needle bar to the end tip of the looper is 6.0 mm.



[Figure 45]

Distance between needles	Gauge scales	Distance from the left of the needle bar to the end tip of the looper
3.2mm (32)	A	4.4 mm
4.0mm (40)	B	4.0 mm
4.8mm (48)	C	3.6 mm
5.6mm (56)	D	3.2 mm
6.4mm (64)	E	2.8 mm

Using the Looper Timing Gauge makes it easy to adjust the left and right position of the loopers. Timing Gauge is an optional part. If needed, you may ask for the purchase to where the product was bought or SunStar directly.

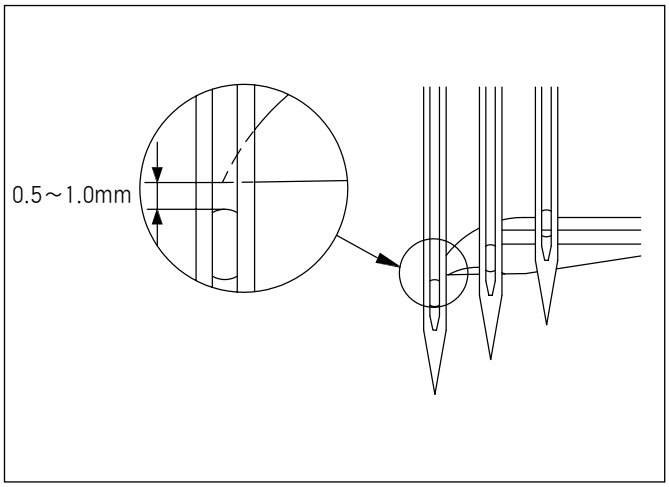


[Figure 46]

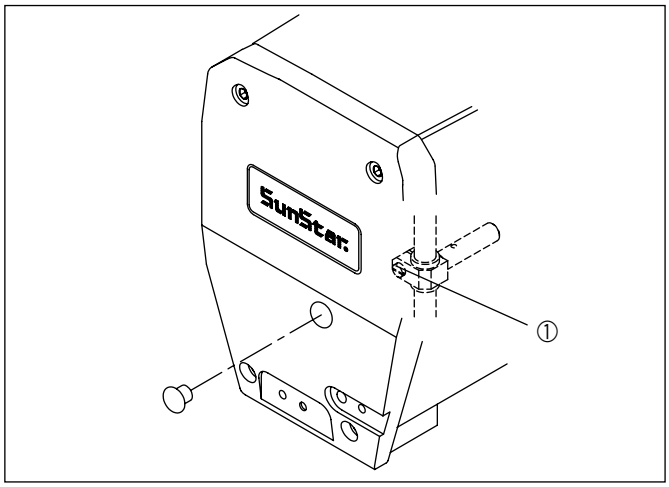
※ Use Timing Gauge

Timing Gauge is marked with such scales as A, B, C, D and E depending on needle distance. When the looper is in the most right-end position and the right needle settles on the "V groove" according to needle distance, keep the Timing Gauge and the loopers in sync, and fasten the "looper holding nut."

⑵ Needle height



[Figure 47]

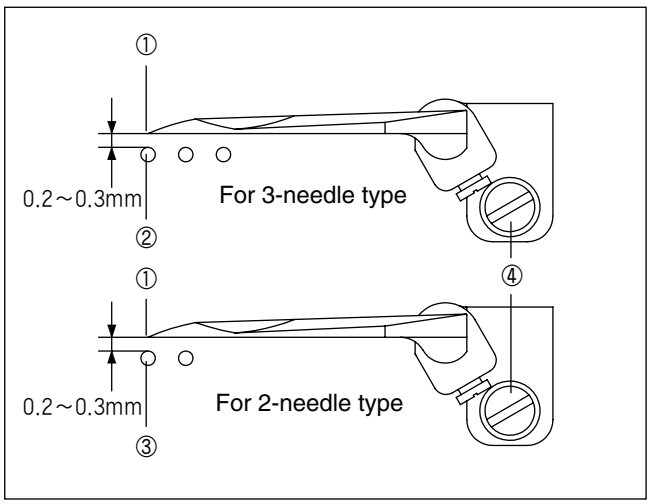


[Figure 48]

When the end tip of the looper passes the left needle center, it must pass the needle groove at 0.5~1.0 mm off from the upper part. In other words, the height of the needle is set by the looper.
Using a driver, unfasten the screw① of the needle bar holder through a hole in the face plate and adjust the needle bar up and down to get the right needle height.

⑶ Front/rear position of needle and looper

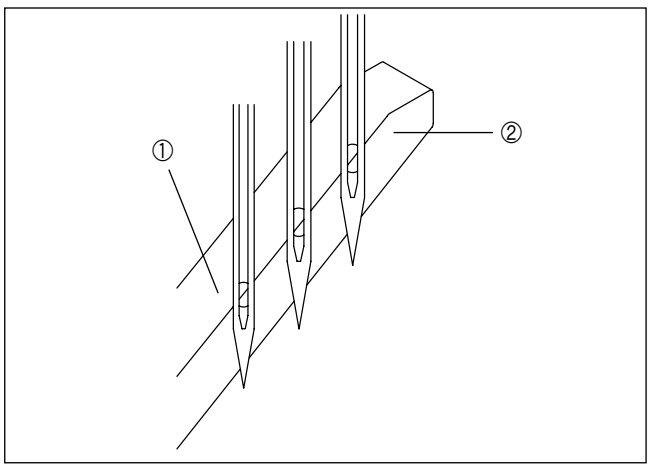
The recommended clearance when the end tip of the looper① meets the left needle is 0.2 ~0.3 mm. For adjustments, unfasten the screw④ of the looper holder.



[Figure 49]

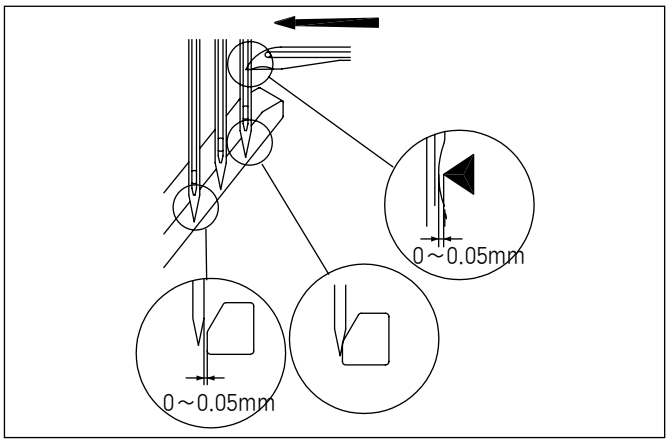
⑷ Needle and needle guard(rear)

※ When needle guard (R) is at the lowest point of the needle bar, align the center of the needles along the line② of the needle guard (R) ①.

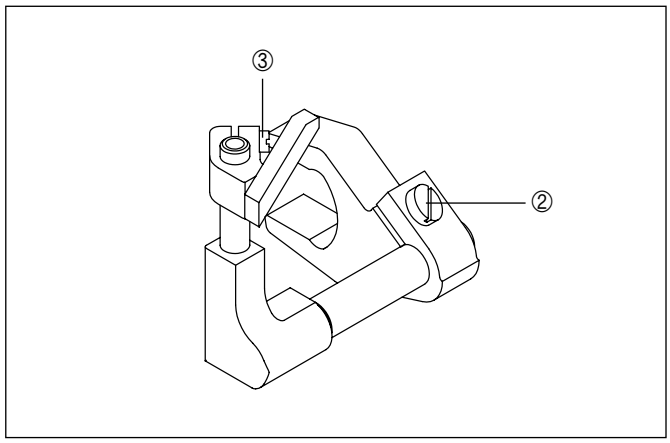


[Figure 50]

※ Front/rear position of needle guard(R)



[Figure 51]

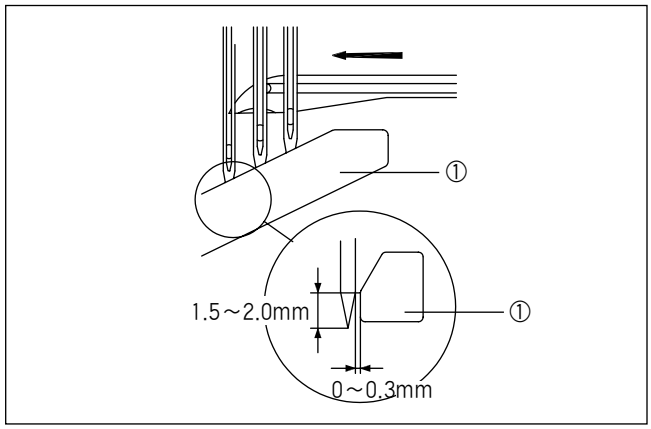


[Figure 52]

When the end tip of the looper comes to the center of the right needle, press the needle guard (R) to adjust the clearance between the needle and the looper at 0~0.05 mm. At this point, be sure to set the distance between the left needle and the needle guard (R) at 0~0.05 mm. Adjustments can be done by loosening the screws (②, ③).

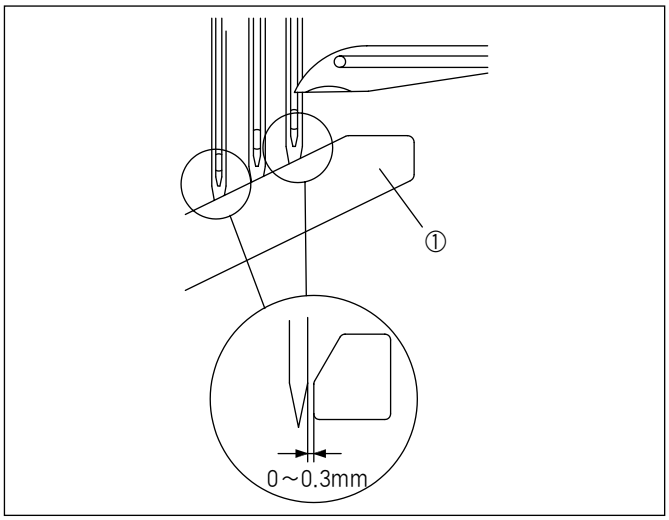
⑸ Needle and needle guard(front)

When the end point of the looper comes to the center of the left needle, adjust the end point of the looper to rise 1.5~2 mm higher than the needle. At this point, set the clearance between the needle and the needle guard (F) at 0~0.3 mm.

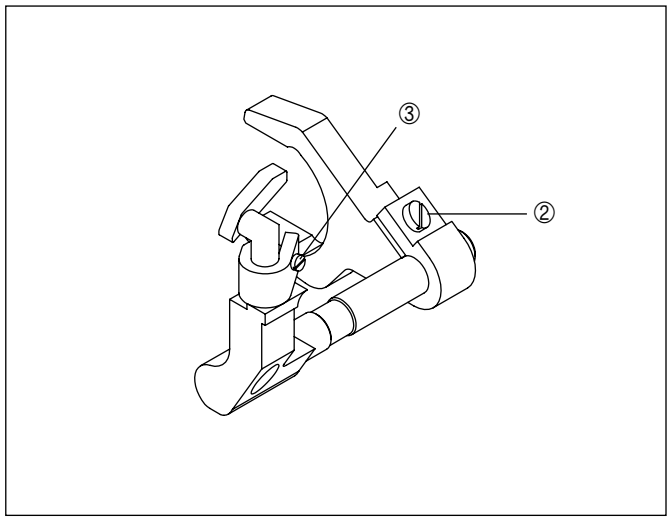


[Figure 53]

And, when the end point of the looper returns to the right needle, set the clearance with the needle guard (F) at 0~0.3 mm. Adjustments can be done by untightening th screws (②, ③).



[Figure 54]



[Figure 55]

9

Automatic Thread Trimmer

1) Operation

[Note]
Be sure to lay sewing materials under the presser foot before operation.

(1) Operation procedures for UT-B and UT-A device.

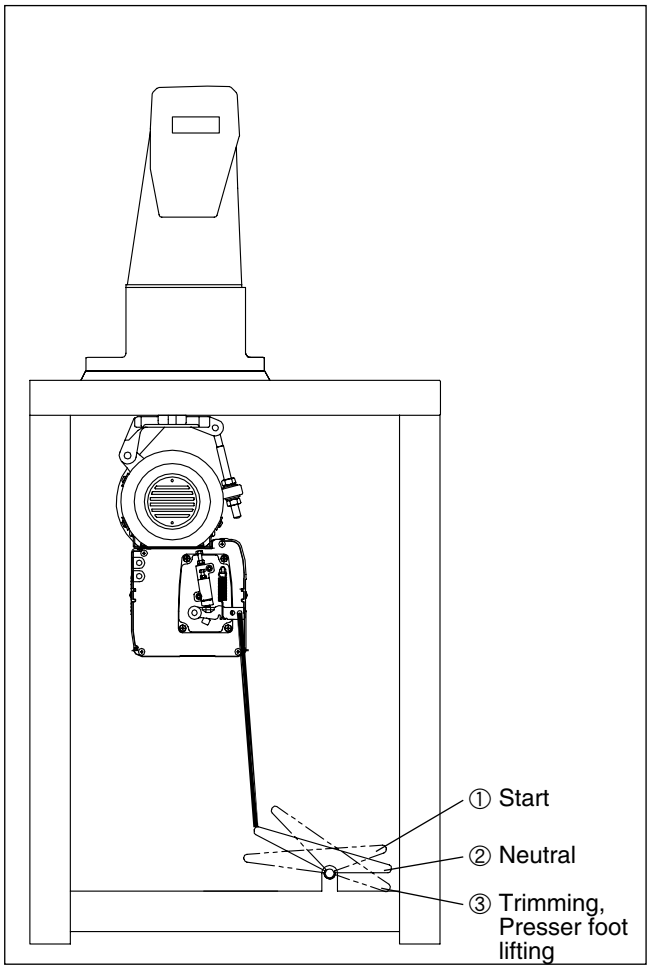
Motor is selected either from ① or ②. Operation procedures for ① or ② are as follows.

A. Put sewing materials under the presser foot and step on the pedal towards ① position.

B. Leave pedal at ② neutral
→ The needle will stop at the highest point.

C. Step the pedal backward towards ③ position.
→ The trimming device will begin to move under the needle plate to cut the needle thread and looper thread. The looper thread will be caught by clamp spring, and air wiper will run for two seconds, and then presser foot will go up.
→ (For UT-A device, lifting of the presser foot and wiper operation will begin at the same time.)

D. Leave the pedal at ② neutral
→ The presser foot will go down.



[Figure 56]

[Caution]
If the pedal is not in ① position, move the pedal towards ② or ③ to bring the presser foot up/down.

[Note]
Be sure to place sewing materials under the presser foot before operation.

(2) Operation procedures for ST-C device.

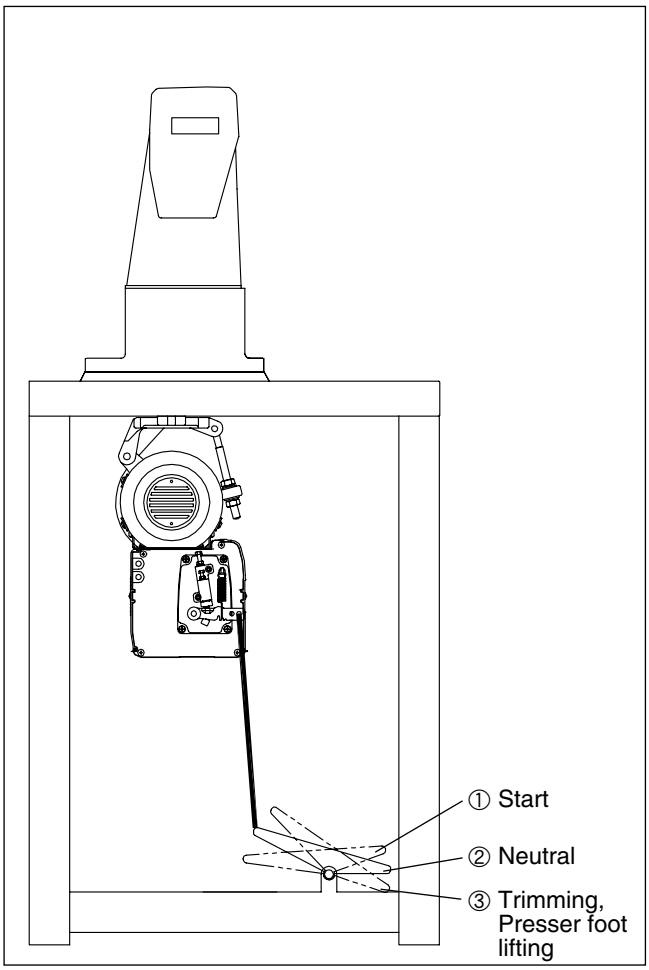
Motor is selected either from ① or ②. Operation procedures for ① or ② are as follows.

A. Put sewing materials under the presser foot and step on the pedal towards ① position
→ Sewing will begin.

B. Leave pedal at ② neutral
→ The needle will stop at the highest point.

C. Step the pedal backward towards ③ position.
→ The trimming device will begin to move under the needle plate to cut the needle thread and looper thread. The clamp spring will catch the looper thread, after trimming top cover thread, and the presser foot will go up.

D. Leave the pedal at ② neutral.
→ The presser foot will go down.



[Figure 57]

[Caution]
If the pedal is not in ① position, move the pedal towards ② or ③ to bring the presser foot up/down.

2) Wiring

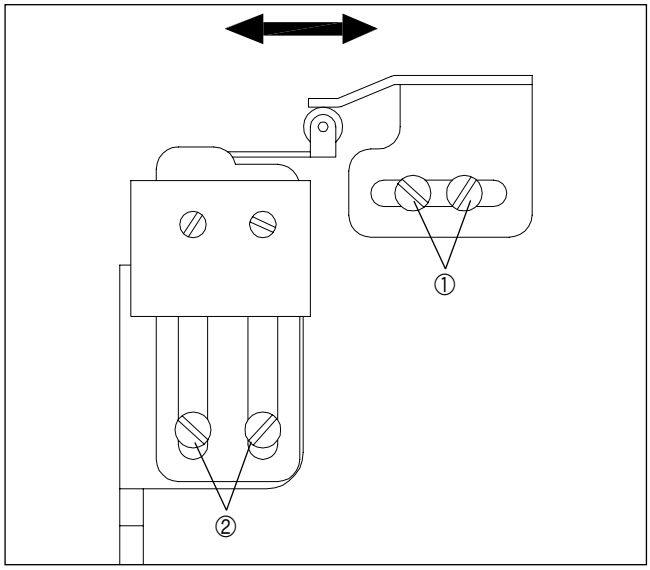
(1) Limit switch

A. Adjusting limit switch

a. Loosen screws ① and ②.

b. When trimming blade returns to its original position, adjust so that the switch is turned on.

c. Fix screws ① and ②.

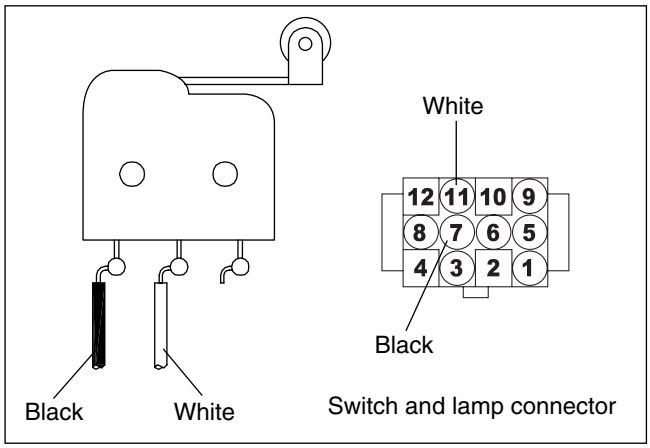


[Figure 58]

B. Connecting limit switch

a. General Servo motor A (Fortuna Ⅲ)

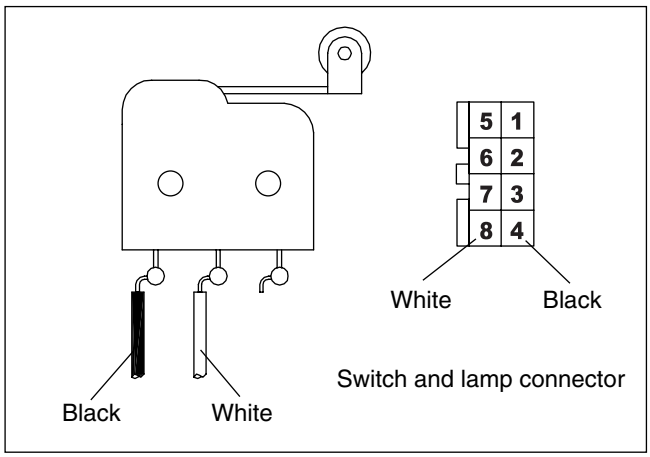
Link the limit switch cord to the 12P-connector as follows.



[Figure 59]

b. Small motor A (Fortuna Ⅳ)

Link the limit switch cord to 8P-connector as follows.



[Figure 60]

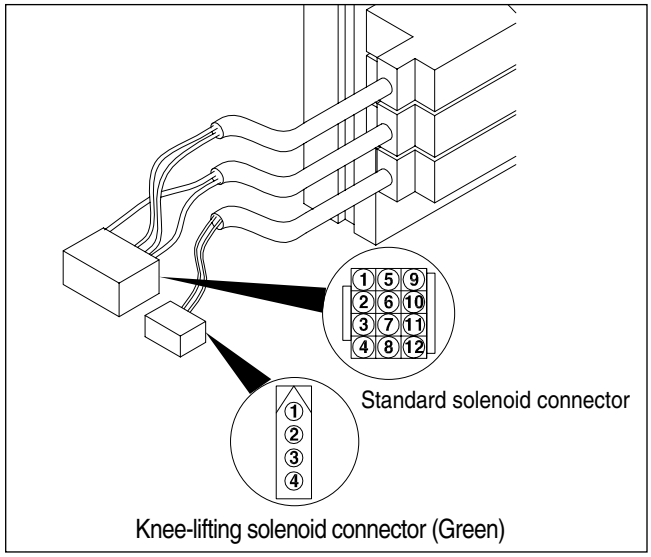
(2) Connecting solenoid valve

A. Fortuna Ⅲ servo motor

a. For UT-B device

- Press solenoid valve buttons to check how each device moves.
- If the device does not work, check the cords.
- For the pneumatic solenoid valve carries polarity, check the connection between the cable and the connector.

  The device will not work if the cords are plugged in incorrectly to opposite power.



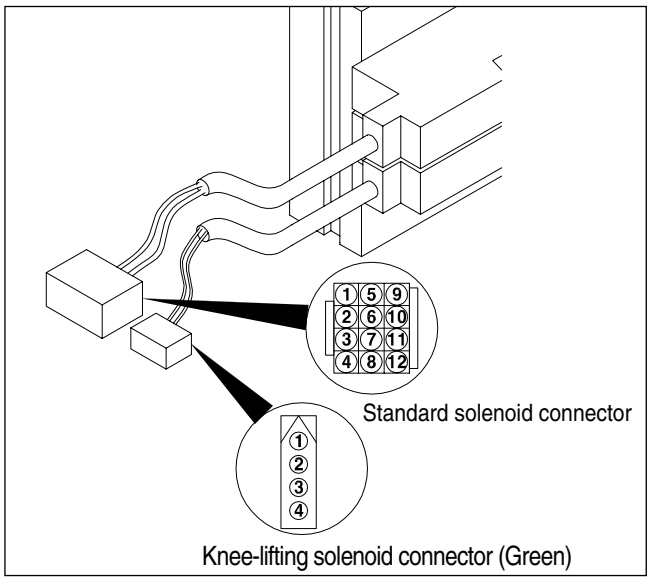
[Figure 61]

Solenoid valve number	Solenoid valve application	Connector type	Pin number
1	Presser foot lifting	Knee-lifting solenoid connector	3 [+], 4 [signal]
2	Lower trimming	Standard solenoid connector	2 [signal], 6 [+]
3	Air wiper operation	Standard solenoid connector	3 [signal], 7 [+]

b. For UT-A device.

- Press solenoid valve buttons to check how each device moves.
- If the device does not work, check the cords.
- For the pneumatic solenoid valve carries polarity, check the connection between the cable and the connector.

  The device will not work if the cords are plugged in incorrectly to opposite power.



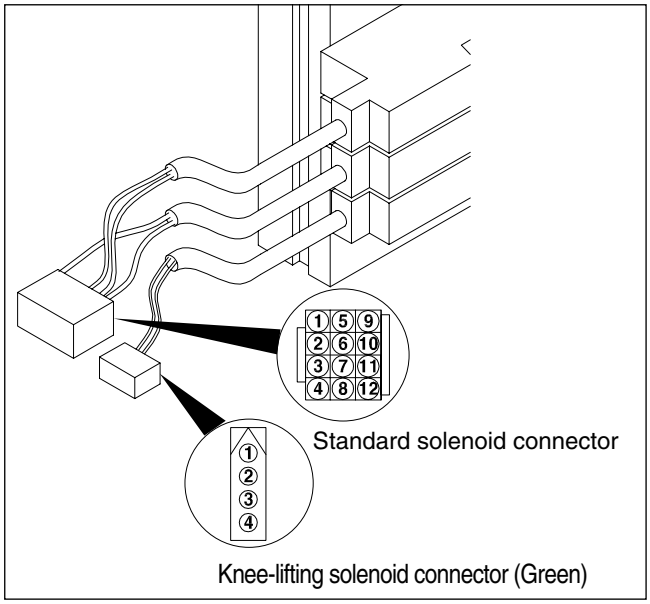
[Figure 62]

Solenoid valve number	Solenoid valve application	Connector type	Pin number
1	Presser foot lifting and air wiper operation	Knee-lifting solenoid connector	3 [+], 4 [signal]
2	Lower trimming	Standard solenoid connector	2 [signal], 6 [+]

c. For ST-C device.

- Press solenoid valve buttons to check how each device moves.
- If the device does not work, check the cords.
- For the pneumatic solenoid valve carries polarity, check the connection between the cable and the connector.

  The device will not work if the cords are plugged in incorrectly to opposite power.



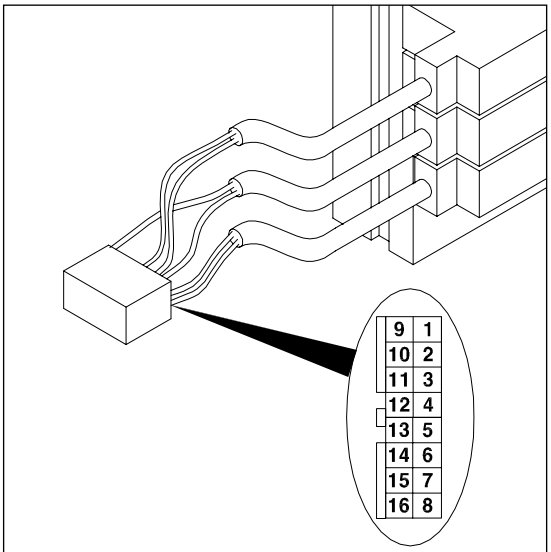
[Figure 63]

Solenoid valve number	Solenoid valve application	Connector type	Pin number
1	Presser foot lifting	Knee-lifting solenoid connector	3 [+], 4 [signal]
2	Lower trimming	Standard solenoid connector	2 [signal], 6 [+]
3	Top cover thread trimming	Standard solenoid connector	3 [signal], 7 [+]

B. Fortuna Ⅳ Compact Servo Motor

a. For UT-B device.

- Press solenoid valve buttons to check how each device moves.
- If the device does not work, check the cords.
- For the pneumatic solenoid valve carries polarity, check the connection between the cable and the connector.
  The device will not work if the cords are plugged in incorrectly to opposite power.

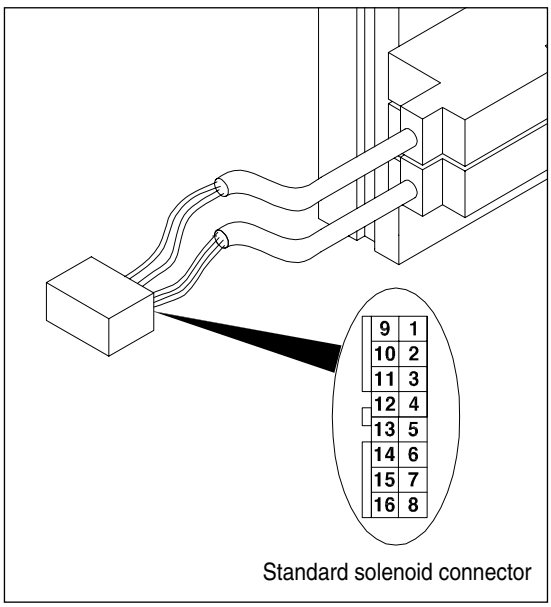


[Figure 64]

Solenoid valve number	Solenoid valve application	Connector type	Pin number
1	Presser foot lifting	Standard solenoid connector	2 [+], 10 [signal]
2	Lower trimming	Standard solenoid connector	11 [signal], 3 [+]
3	Air wiper operation	Standard solenoid connector	12 [signal], 4 [+]

b. For UT-A device.

- Press solenoid valve buttons to check how each device moves.
- If the device does not work, check the cords.
- For the pneumatic solenoid valve carries polarity, check the connection between the cable and the connector.
  The device will not work if the cords are plugged in incorrectly to opposite power.



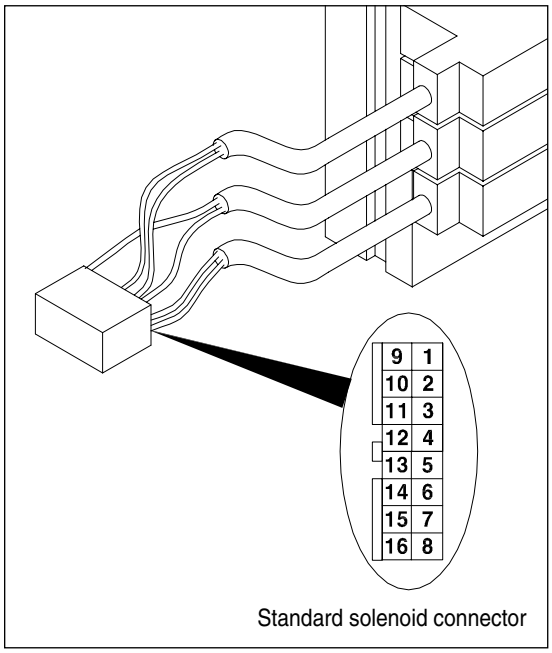
[Figure 65]

Solenoid valve number	Solenoid valve application	Connector type	Pin number
1	Presser foot lifting and air wiper operation	Standard solenoid connector	2 [+], 10 [signal]
2	Lower trimming	Standard solenoid connector	11 [signal], 3 [+]

c. For ST-C device.

- Press solenoid valve buttons to check how each device moves.
- If the device does not work, check the cords.
- For the pneumatic solenoid valve carries polarity, check the connection between the cable and the connector.

  The device will not work if the cords are plugged in incorrectly to opposite power.

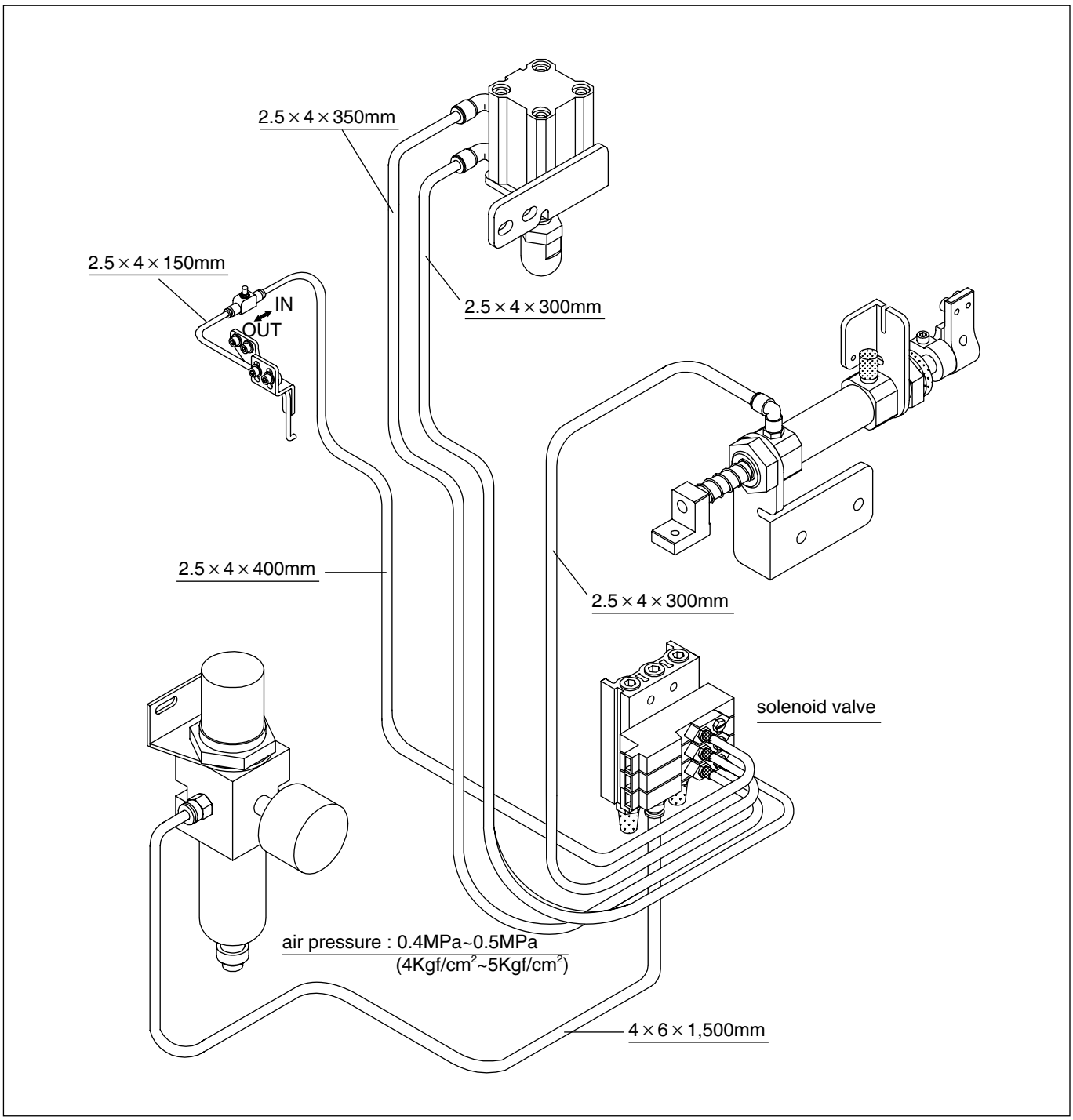


[Figure 66]

Solenoid valve number	Solenoid valve application	Connector type	Pin number
1	Presser foot lifting	Standard solenoid connector	2 [+], 10 [signal]
2	Lower trimming	Standard solenoid connector	11 [signal], 3 [+]
3	Top cover thread trimming	Standard solenoid connector	12 [signal], 4 [+]

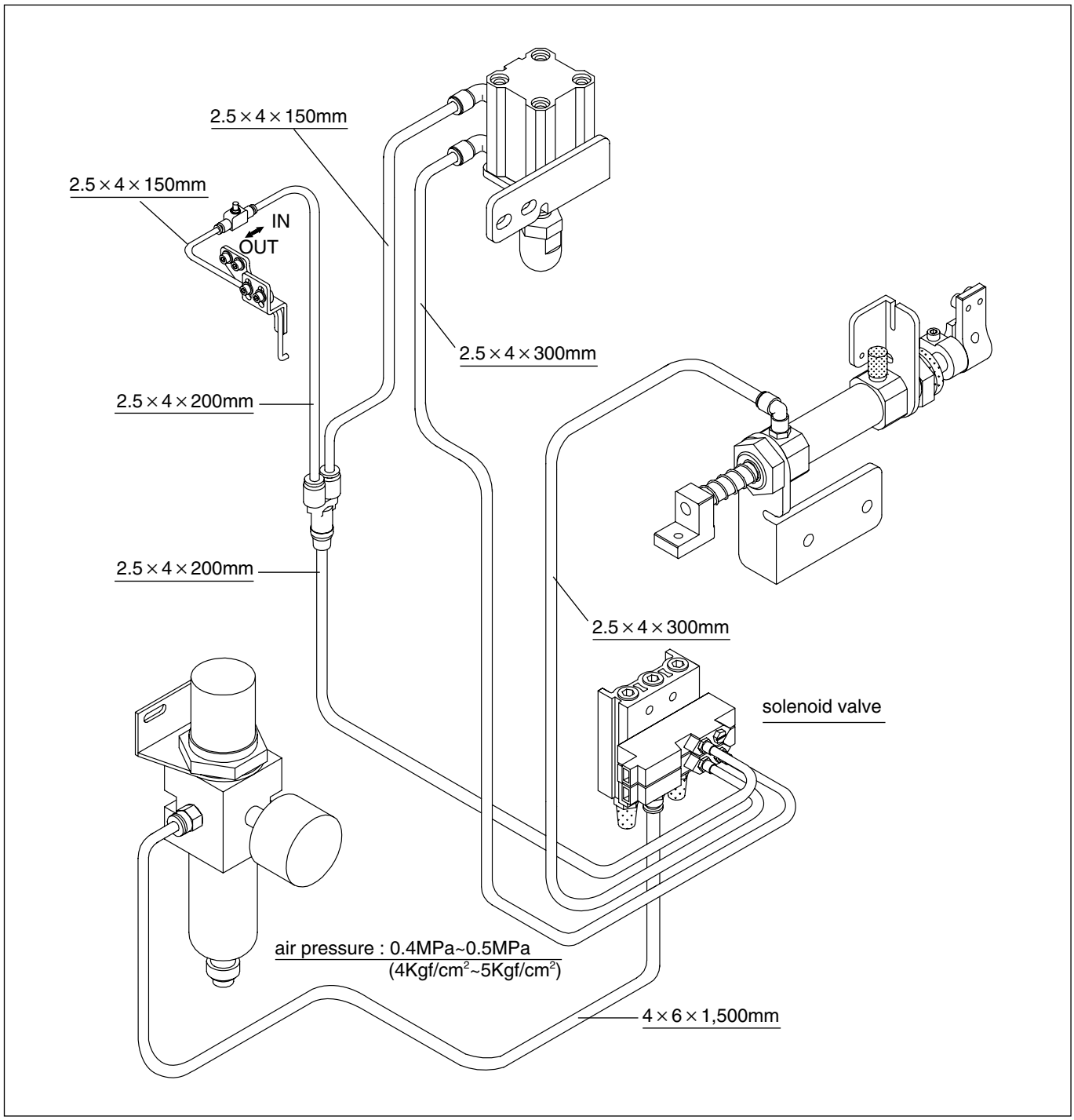
3) Air pressure wiring map

(1) UT-B device



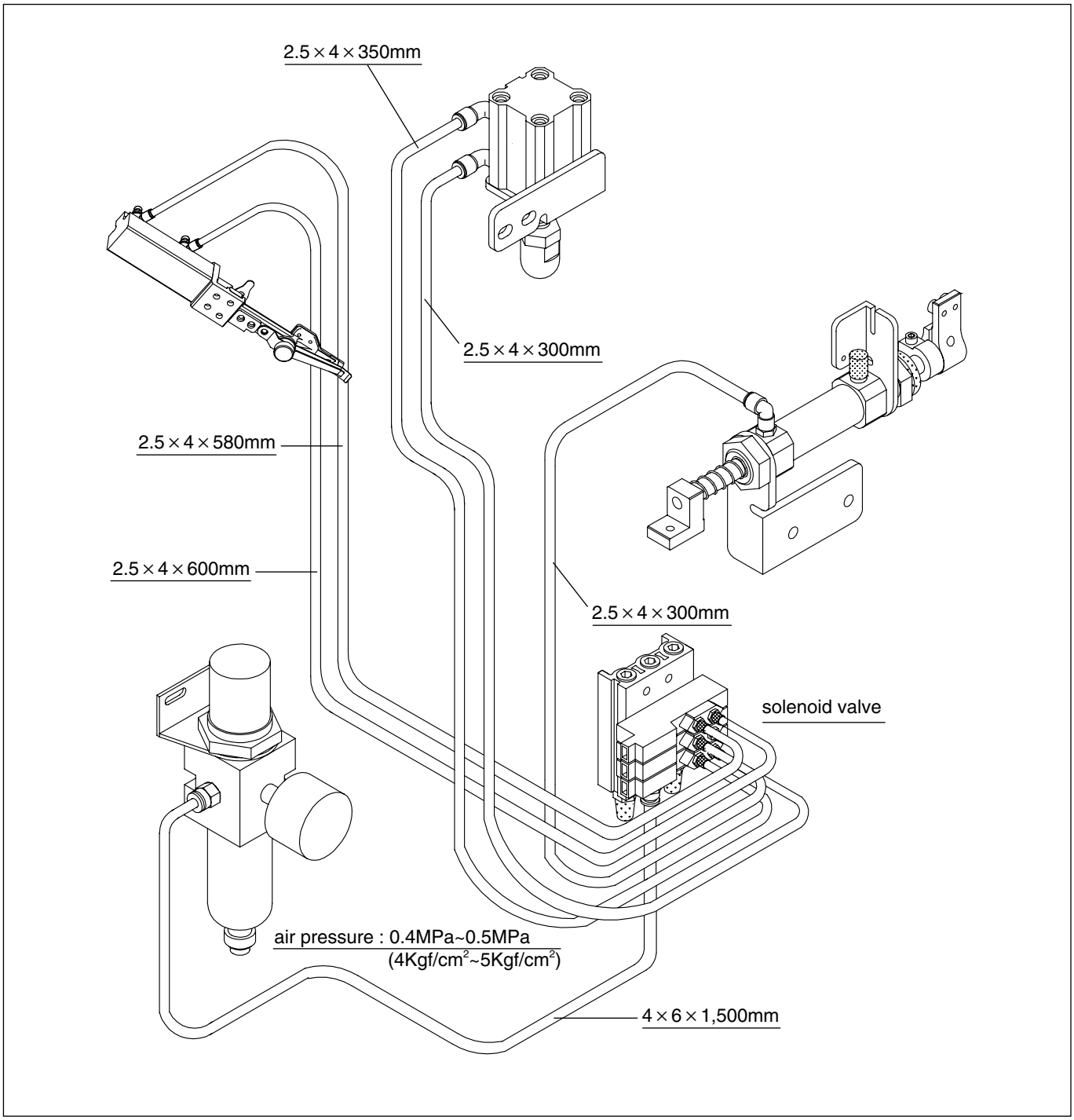
[Figure 67]

(2) UT-A device



[Figure 68]

(3) ST-C device

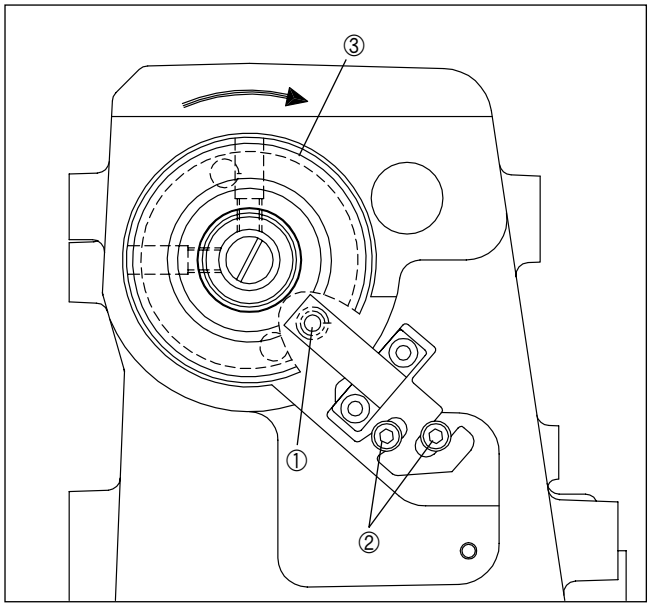


[Figure 69]

4) Installation of synchronizer sensor

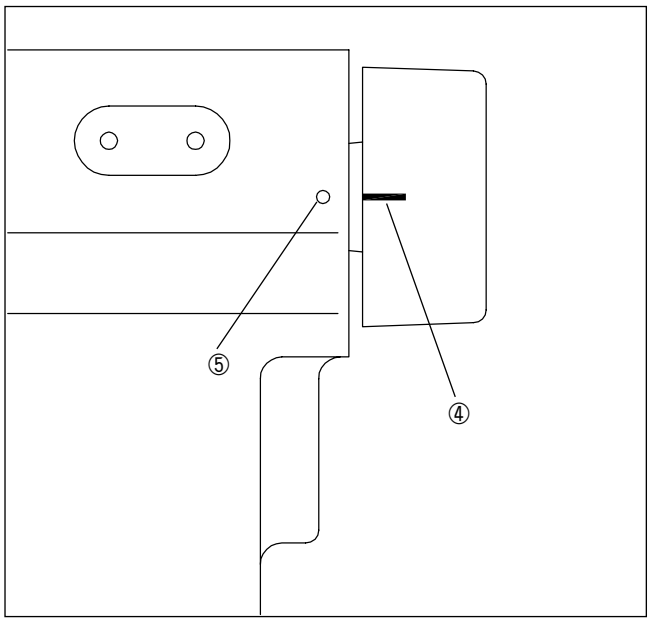
[Warning]
Leave the trimming cylinder plug pulled off from the control box in the motor. Otherwise, parts can be damaged.

(1) Install the synchronizer ① on the machine and fasten screw ② lightly.
(2) Turn on the motor switch
(3) Press the pedal and form a few stitches
(4) Press the pedal backward to stop the needle
(5) Loosen the screw ② and turn the line ⑤ on the upper shaft pulley to align with the hole ④ in the arm. Be sure to keep the position of the screw ② unchanged.



[Figure 70]

(6) To see whether the needle bar is located at 0.5mm below the highest point, press the pedal and run the machine.



[Figure 71]

[Caution]
(1) At this point, the needle bar should be positioned at the highest point.
(2) The optimal condition for the synchronizer sensor is when the needle bar is 0.5mm below the highest point by turning the upper shaft pulley a bit more.

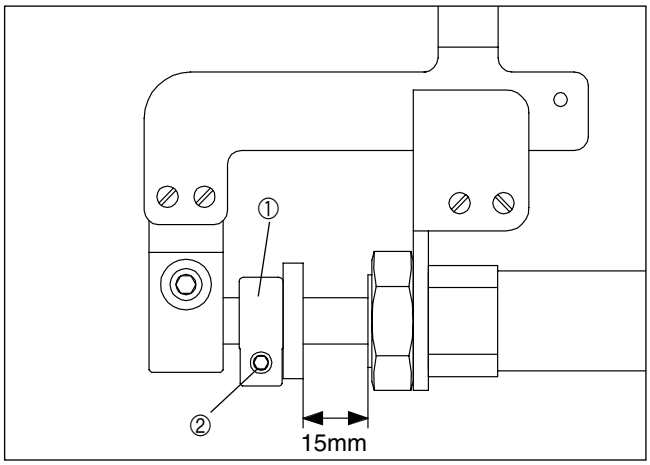
5) Adjustment of automatic thread trimmer

[Warning]
Before adjustments, always turn off the motor switch and check to make sure that the motor is in stop mode.

(1) Adjusting thread trimming air cylinder

A. The desirable stroke is 15mm.
B. Loosen the screw ② of the collar ① to adjust the stroke.

[Caution]
The operation status of the automatic thread trimmer should be re-adjusted when air cylinder stroke changes. Check the status of the limit switch.
(Refer to 9-2 Wiring)

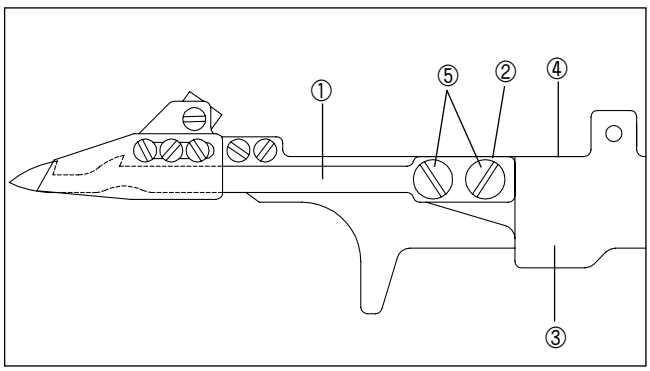


[Figure 72]

(2) Position of moving blade

[Warning]
The trimming device can be moved manually only when the needle is at the highest point. Otherwise, parts can be damaged.

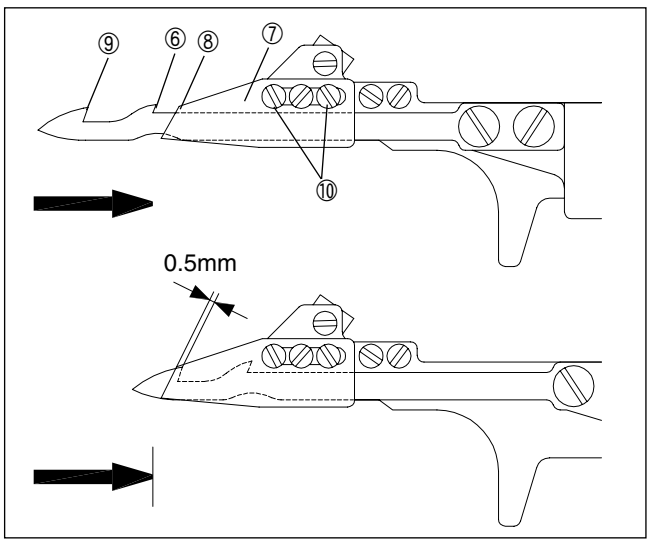
A. Bring in parallel side ② of the moving blade ① and side ④ of the moving blade body ③.
B. Adjust the screw ⑤.



[Figure 73]

(3) Adjustment between moving blade and fixed blade

A. Unfasten the screw ⑩.
B. Bring in parallel the needle thread hook ⑥ of the moving blade and the corner ⑧ of the fixed blade ⑦.
C. When the moving blade is at the far right, move the fixed blade ⑦ left and right to set the clearance between the fixed blade ⑦ and the looper thread hook at 0.5mm.
D. Tighten the screw ⑩.

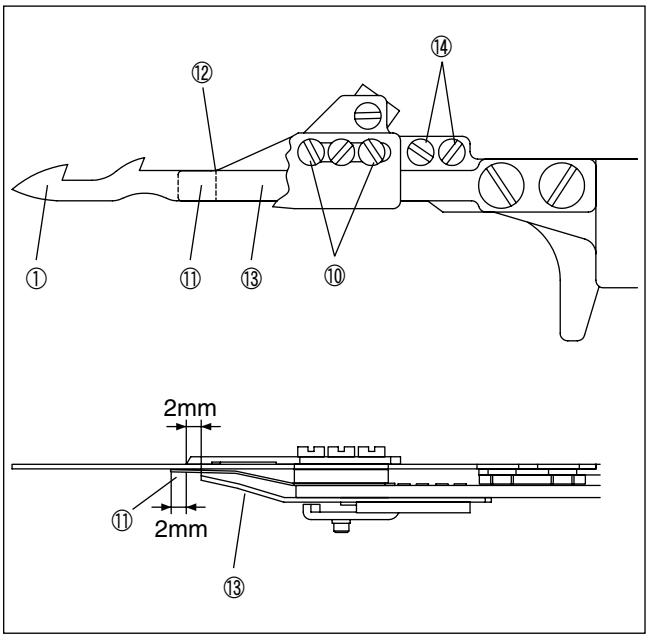


[Figure 74]

[Warning]
Before adjustments, always turn off the motor switch and check to make sure that the motor is in stop mode.

(4) Position of clamp spring and clamp spring pressure

A. Loosen the screw ⑩.
B. Adjust so that the side of the clamp spring ⑪ and the side ⑫ of the moving blade ① are aligned with each other.
C. Tighten the screw ⑩.
D. Loosen the screw ⑭.
E. Adjust so that the side of the clamp spring pressure ⑬ is parallel to the side of the clamp spring ⑪ and the moving blade①.
F. Set a clearance of 2.0mm between the end tip of the clamp spring pressure ⑬ and the end tip of the fixed blade.
G. Fix the screw ⑭ tightly.

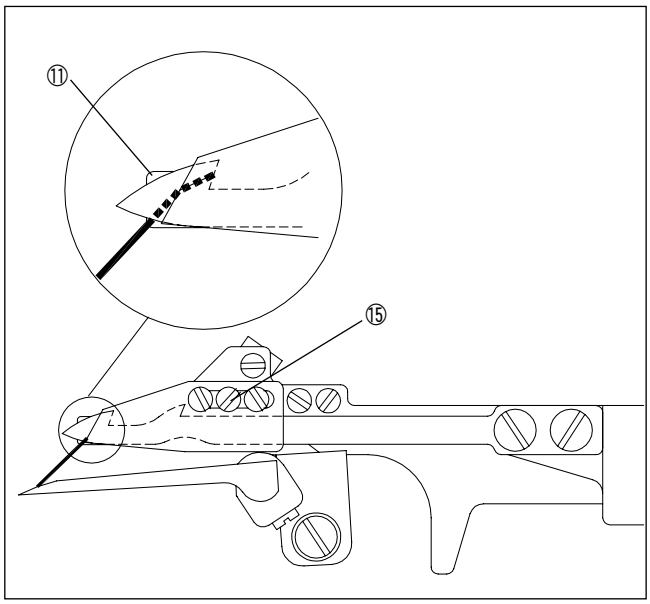


[Figure 75]

(5) Pressure adjustment of clamp spring

A. The looper thread is caught by the clamp spring after trimming
B. To increase pressure, turn the screw ⑮ clockwise and to decrease pressure, turn it counter-clockwise.

[Caution]
If the looper thread is caught securely after trimming, keep the pressure to the minimum.



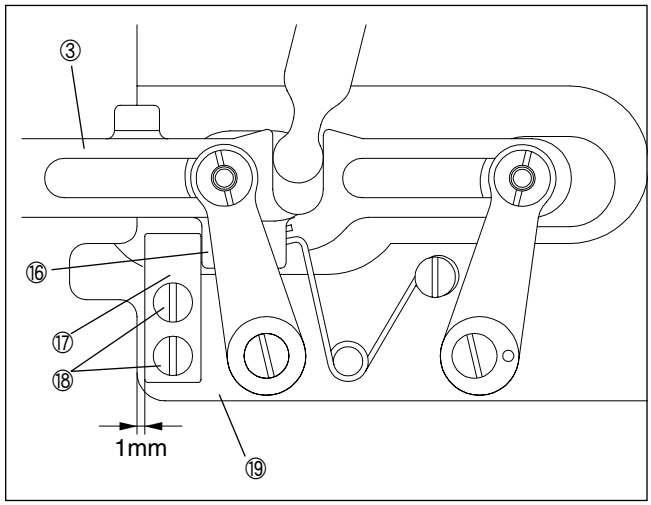
[Figure 76]

[Warning]
Before adjustments, always turn off the motor switch and check to make sure that the motor is in stop mode.

(6) Position of fixed blade body

The fixed blade body ⑯ simultaneously moves to the left with the moving fixed body ③ and stops after contacting the stopper for fixed blade body ⑰. At this point, the fixed blade will slide under the needle plate and begin to move.

[Warning]
Do not force the fixed blade body ⑯ to the left for the clamp spring pressure can touch the looper.



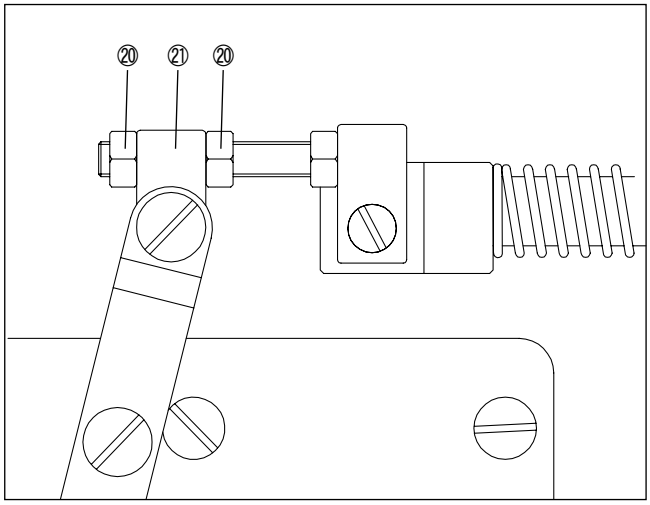
[Figure 77]

A. Unfasten the screw ⑱.
B. Set a clearance of 1mm between the left end tip of the thread trimming base ⑲ and the left end tip of the stopper for fixed blade body ⑰.
C. Adjust the screw ⑱ afterwards.

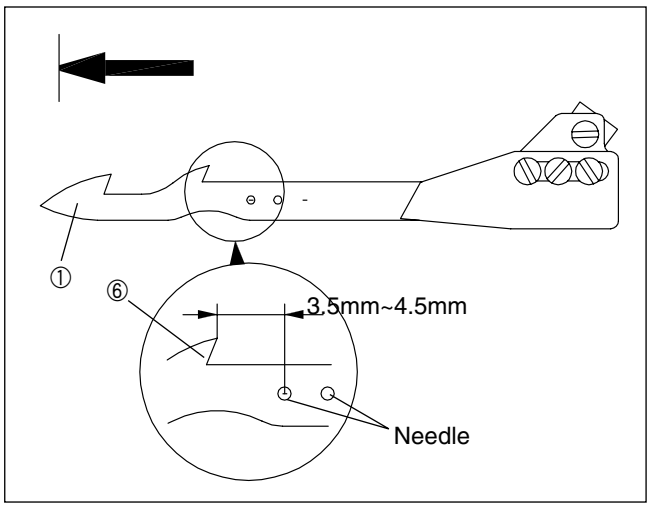
[Warning]
Before adjustments, always turn off the motor switch and check to make sure that the motor is in stop mode.

(7) Relation between moving blade and needle

A. Unfasten the nut ⑳.
B. Bring the moveable blade ① to the far left.
C. Move the bracket (L) for moving knife driving lever ㉑ left and right to set a clearance of 3.5mm~4.5mm between the needle thread hook ⑥ and the left needle.
D. Fasten the nut ⑳ afterwards.



[Figure 78]

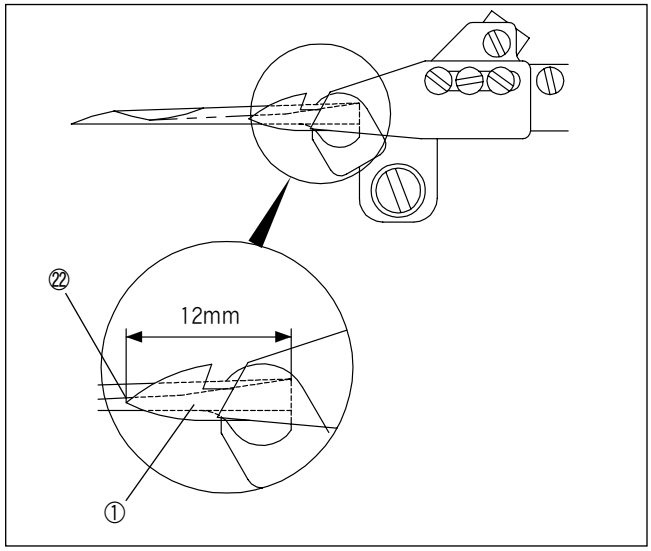


[Figure 79]

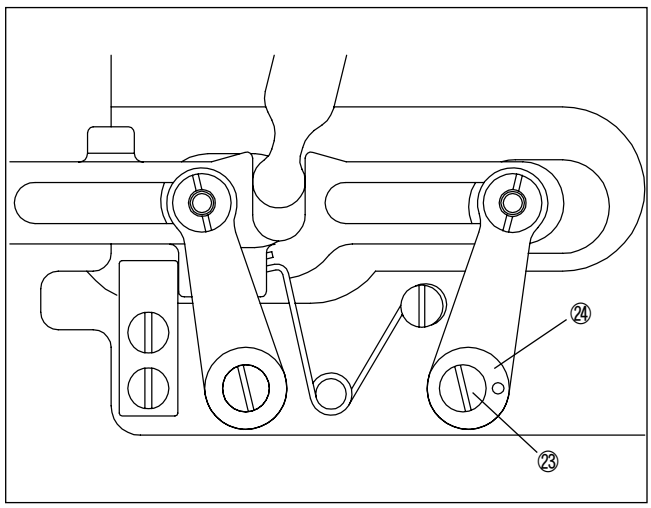
[Warning]
Before adjustments, always turn off the motor switch and check to make sure that the motor is in stop mode.

(8) Position of moving blade point

A. Position the moving blade ① to the left.
B. When the distance between the endpoint ㉒ of the moving blade ① and the right endpoint of the looper is 12mm, adjust to bring the endpoint ㉒ towards the center of the looper.
C. To move the endpoint ㉒ back, loosen the screw ㉓ to turn the hinge (R) for blade guide lever ㉔ clockwise. To move the endpoint ㉒ front, turn the hinge counter-clockwise.
D. Fasten the screw ㉓ afterwards.



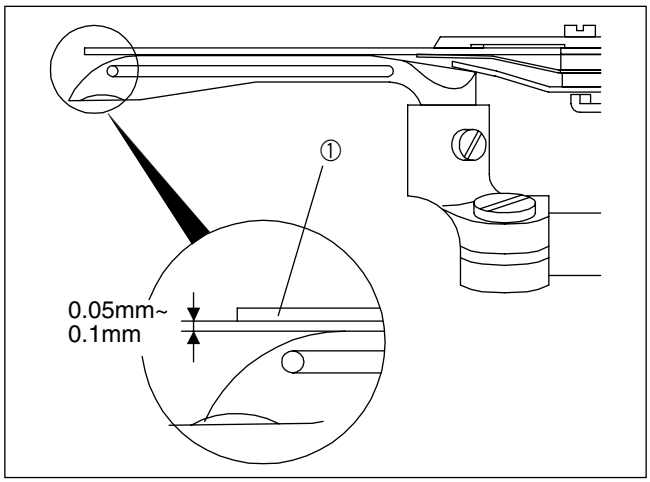
[Figure 80]



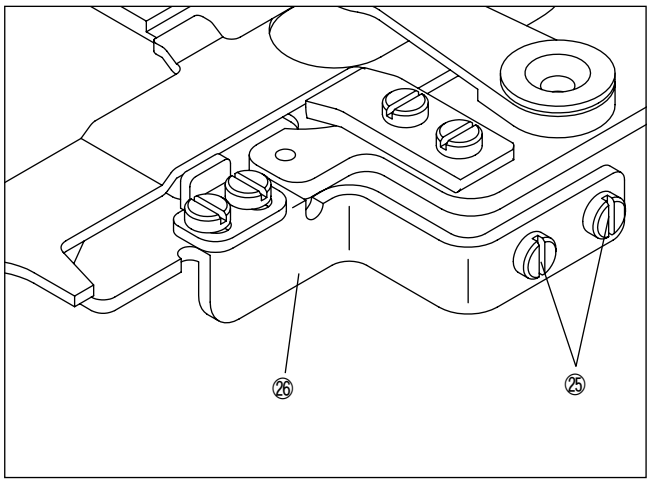
[Figure 81]

[Warning]
Before adjustments, always turn off the motor switch and check to make sure that the motor is in stop mode.

(9) Adjusting moving blade carrier guide (lower)



[Figure 82]



[Figure 83]

The optimal clearance between the moving blade ① and the upper portion of the looper is 0.05~0.1mm.

A. Loosen the screw ㉕ and move the moving blade carrier guide (lower) ㉖ up and down for adjustments.

B. Fix the screw ㉕ tightly.

C. Check if the fixed blade body and the moving blade body move smoothly.

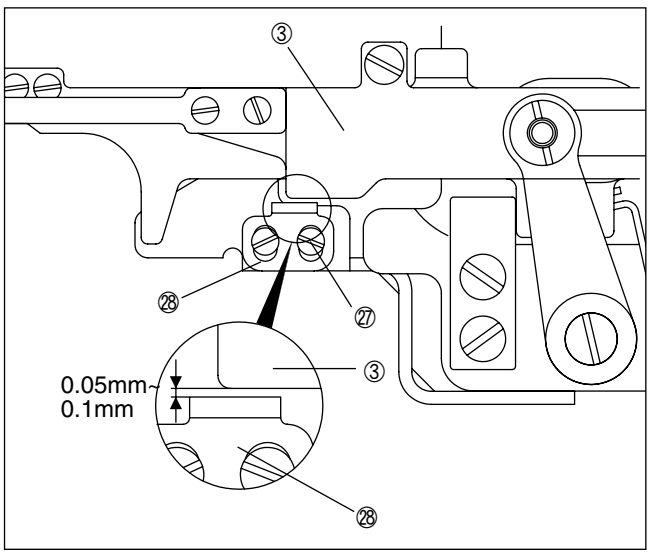
(10) Adjusting moving blade carrier guide (upper)

The fixed blade body simultaneously moves to the left with the moving blade body and stops as it touches the stopper for the fixed blade carrier.

A. Loosen the screws ㉗ (2 each).

B. When the moving blade body stops as described above, adjust the clearance between the moving blade body ③ and the moving blade carrier guide (upper) ㉘ between 0.05 and 0.1mm.

C. Tighten the screws ㉗.



[Figure 84]

[Warning]
Before adjustments, always turn off the motor switch and check to make sure that the motor is in stop mode.

(11) Relation between needle thread, looper thread and moving blade

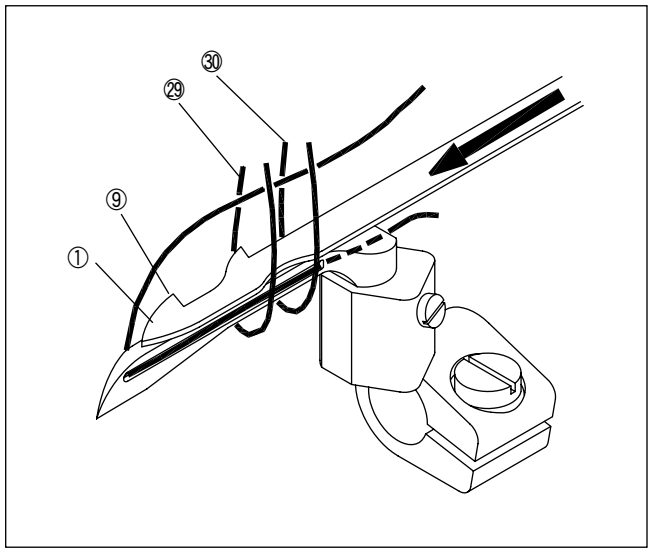
Check the following.

A. Does the moving blade ① pass through the loops of needle threads ㉙ and ㉚?

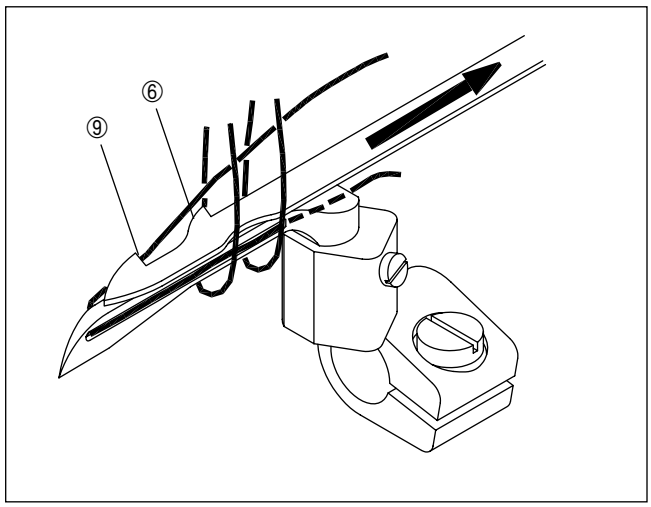
B. Does the hook of the looper thread ⑨ move in front of the looper thread?

C. Does the needle thread get pulled by the hook ⑥ to ensure trimming by the fixed blade?

D. Does the looper thread get pulled by the hook ⑨ to ensure trimming by the fixed blade?



[Figure 85]



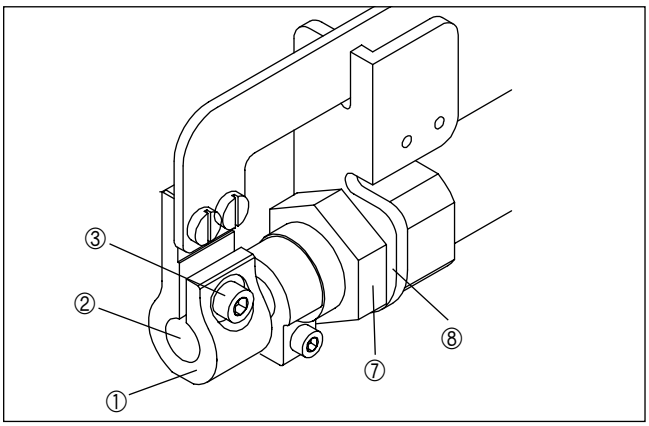
[Figure 86]

6) Adjustment of thread tension release mechanism

[Warning]
Before adjustments, always turn off the motor switch and check to make sure that the motor is in stop mode.

(1) Block for trimming switch guide.

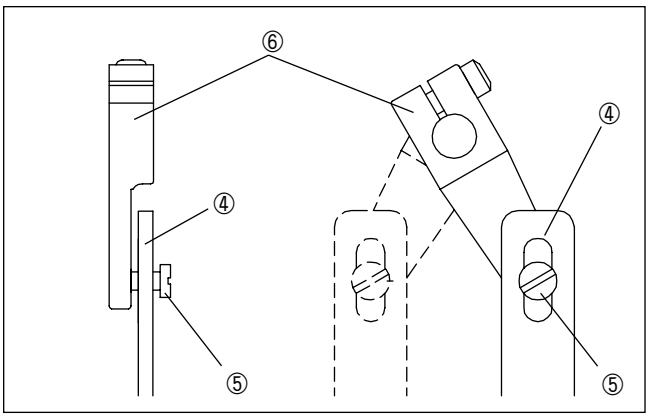
A. Loosen the screw ③.
B. When the rod of the trimming cylinder is at the far left (when the trimming device is not working), adjust the block for trimming switch guide ① to parallel with the rod end ② of the trimming cylinder.
C. Tighten the screw ③.



[Figure 87]

(2) Thread tension release connecting plate.

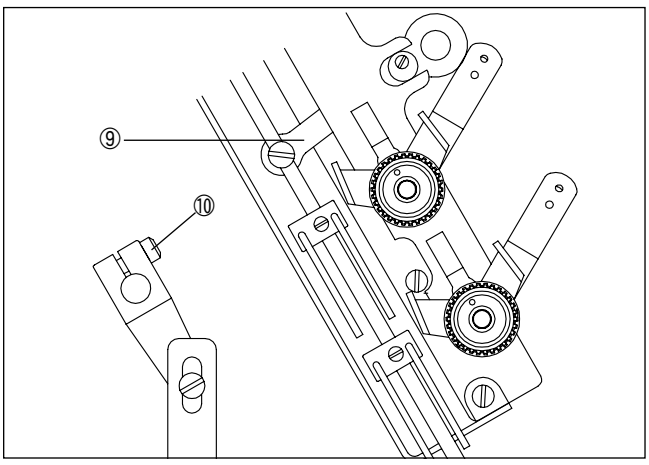
A. Loosen the nut ⑦ of the thread trimming air cylinder.
B. Adjust the holder for limit switch bracket ⑧ to bring the thread tension release connecting plate ④ to come between the screw head ⑤ and the tension release lever ⑥.
C. Tighten the nut ⑦.



[Figure 88]

(3) Thread pull-off lever

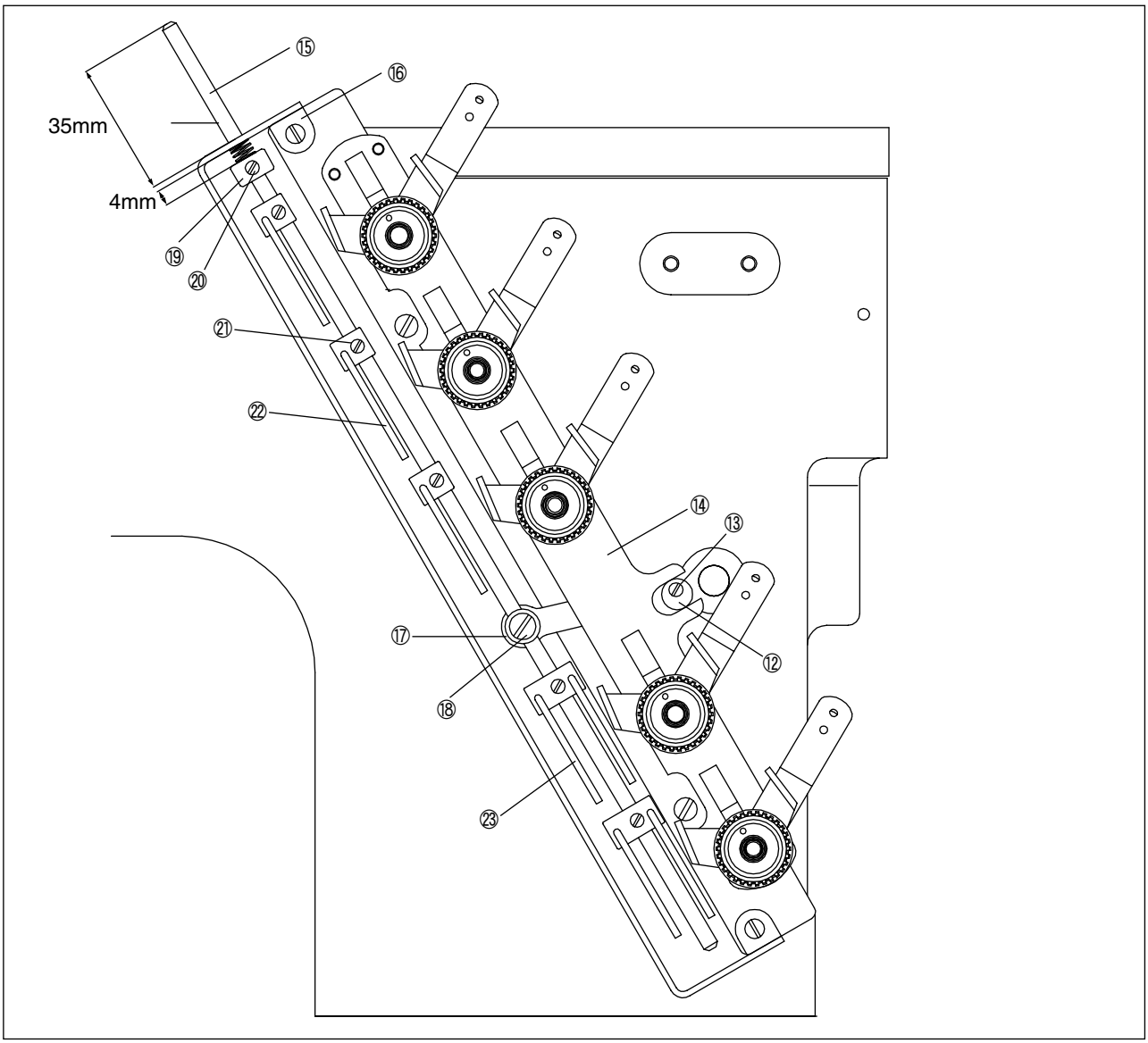
A. Loosen the screw ⑩ of the tension release lever located on the backside of the machine.
B. Lift the thread pull-off lever ⑨ to the top.
C. Tighten the screw ⑩ afterwards.



[Figure 89]

[Warning]
Before adjustments, always turn off the motor switch and check to make sure that the motor is in stop mode.

(4) Tension disc separator

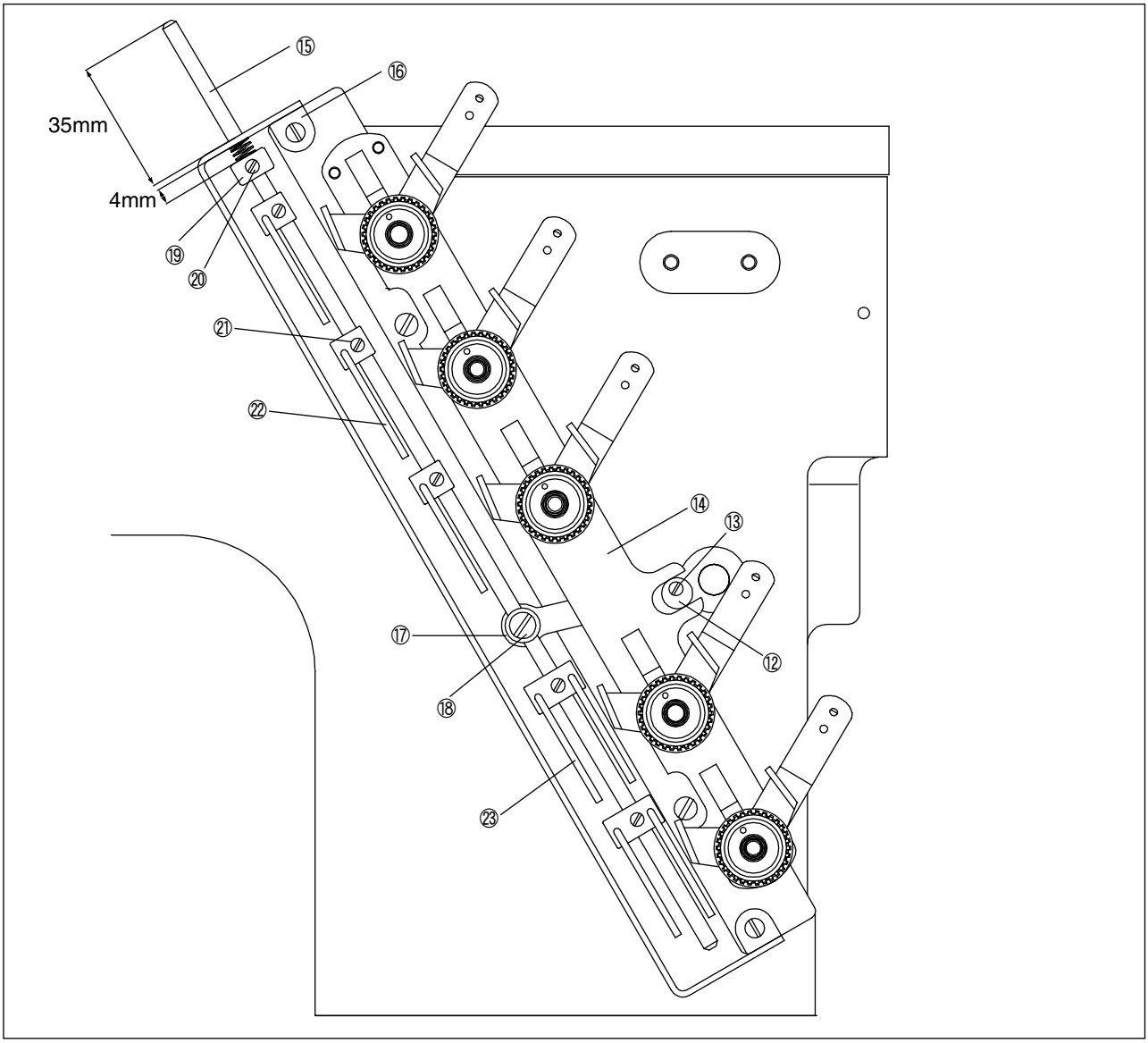


[Figure 90]

A. Loosen the screw ⑬ of the thread pull-off eccentric cam ⑫.
B. Turn ⑫ to position the tension disc separator ⑭ so that the tension disc separator opens as fast as possible.
C. Loosen the screw ⑱ to set a clearance of 35mm between the top of the thread pull-off bar ⑮ and the top of the guide for thread pull-off bar ⑯.
D. With the screw ⑱, fix the thread pull-off bar ⑮ onto the thread pull-off bar holder ⑰.
E. Loosen the screw ⑳.
F. Set a clearance of 4.0mm between the collar for thread pull-off bar ⑲ and the guide for thread pull-off bar ⑯.
G. Fasten the screw ⑳.

[Warning]
Before adjustments, always turn off the motor switch and check to make sure that the motor is in stop mode.

(5) Thread pull-off hook unit



[Figure 91]

The thread pull-off hook unit "A" ㉒ is designed to control the needle thread in the sewing material to the minimum when sewing starts.

A. Loosen the screw ㉑.

B. To reduce the amount of remaining thread, lift the thread pull-off hook unit "A" ㉒. To increase, bring the unit down.

[Caution]

A. Use the thread pull-off hook "B" unit ㉓ only when you are using wool thread for the looper thread. When the thread pull-off hook "B" unit ㉓ is not in use, bring it up so that thread does not get caught.

B. Do not force the thread pull-off hook "A" unit ㉒ up. Stitches may not be formed when the sewing starts.

7) Adjustment of air wiper

[Warning]
Before adjustments, always turn off the motor switch and check to make sure that the motor is in stop mode.

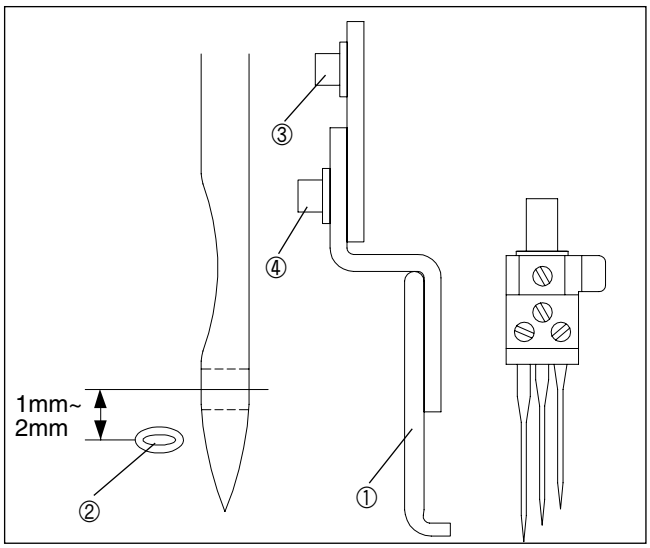
(1) Loosen the screw ③.

(2) Move the air wiper ① front and back so that the air wiper ① operates behind the needle.

(3) Fasten the screw ③.

(4) Loosen the screw ④.

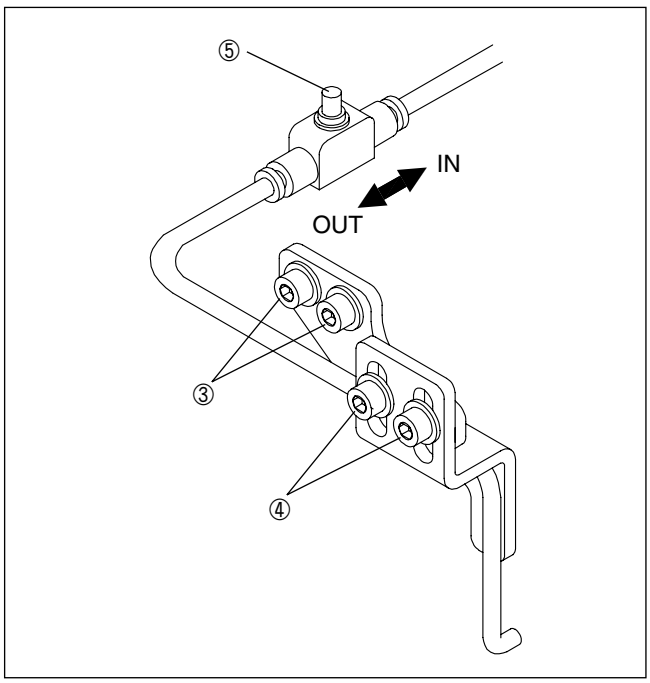
(5) When the needle is at the highest point, adjust the air wiper ① so that the center of the air blowing hole ② is 1.0~2.0 mm lower than the needle groove of the left needle.



[Figure 92]

(6) Fasten the screw ④.

(7) Control the amount of air with the speed controller ⑤. To reduce the air, turn the screw clockwise and to increase, turn it counter-clockwise.



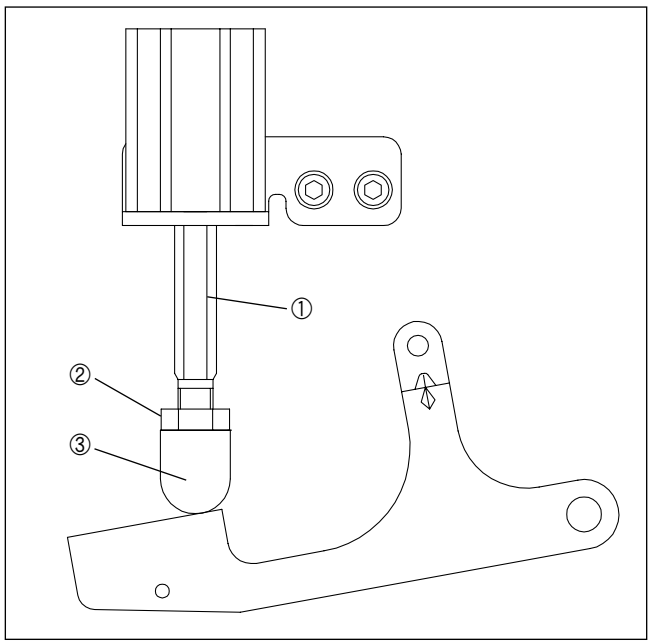
[Figure 93]

[Caution]
A. Keep the air level to the minimum as long as the machine functions well.
B. If air gets out from the needle front, the needle thread may slip off of the needle hole. Make sure that the wiper operates to the backside of the needle.

8) Presser foot lifter mechanism

[Warning]
Before adjustments, always turn off the motor switch and check to make sure that the motor is in stop mode.

(1) Unfasten the nut ②.
(2) When the knee-lifting air cylinder rod ① is at the lowest point, turn the knuckle for knee-lifting air cylinder ③ to bring up the presser foot by 5mm (7mm).
(3) Fasten the nut ② afterwards.



[Figure 94]

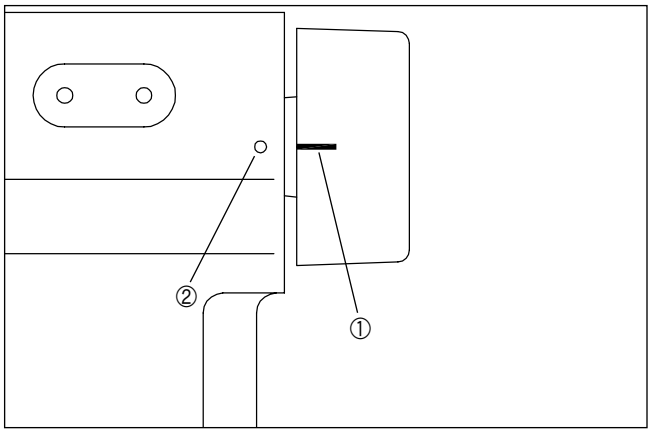
9) ST-C device

(1) Position of movable trimming blade

[Warning]
Before adjustments, always turn off the motor switch and check to make sure that the motor is in stop mode.

A. Align the line ① of the upper shaft pulley with the carving ② of the sewing machine body (The needle bar will go up to the highest point).

[Caution]
Loosen the screws ⑦ and ⑧ to prevent the movable trimming knife ③ from touching the presser foot, the left needle and the spreader.



[Figure 95]

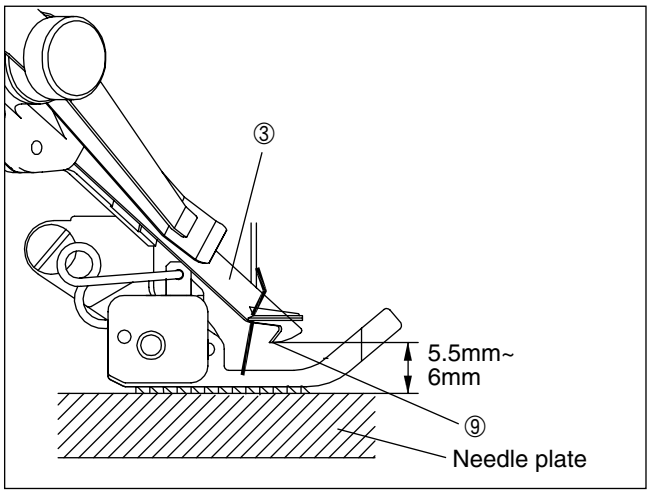
B. Insert into the hole ④ of the movable trimming knife ③ with tweezers to bring down the knife ③ to the lowest point.

C. When the movable trimming knife ③ is at the lowest point, unfasten the screw ⑩ to set a clearance of 5.5~6.0mm between the needle plate (stitch plate) and the blade tip ⑨ of the movable trimming knife ③.

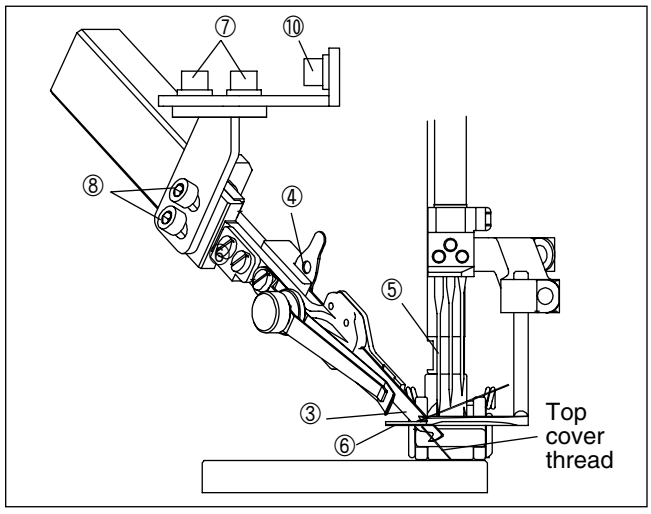
[Caution]
After adjustments, the movable trimming knife ③ should cross the top cover thread.

D. After adjustments, fix the screws ⑦, ⑧ and ⑩.

E. Move the movable trimming knife ③ up and down to see whether it crosses top cover thread.



[Figure 96]

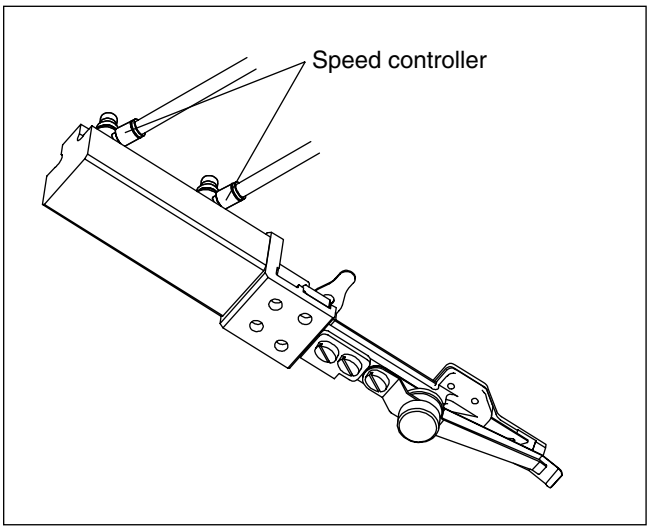


[Figure 97]

(2) Speed adjustment of trimming thread-moving blade

A. The speed of the trimming thread-moving blade can be adjusted with a speed controller of the cylinder.

B. To reduce speed, loosen the nut of the speed controller and turn the screw clockwise and vice versa.



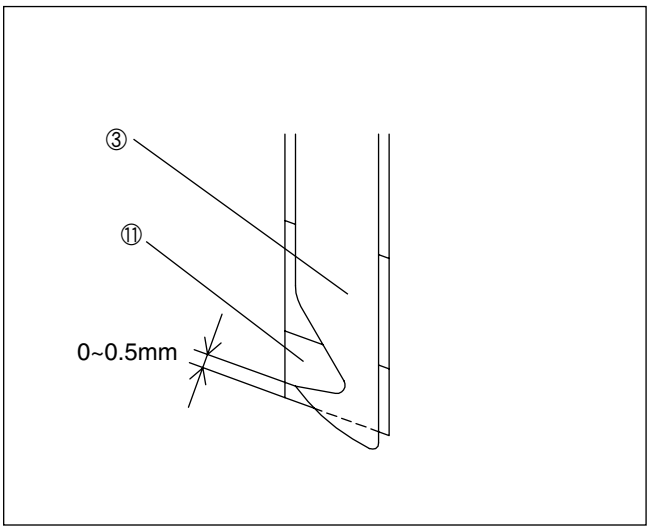
[Figure 98]

(3) Clearance between movable trimming knife and fixed trimming knife

[Warning]
Before adjustments, always turn off the motor switch and check to make sure that the motor is in stop mode.

The clearance between the movable trimming knife ③ and the fixed trimming knife ⑪ before the blades move is 0~0.5mm.

[Caution]
The stroke of the movable trimming knife is equivalent to the cylinder stroke.



[Figure 99]

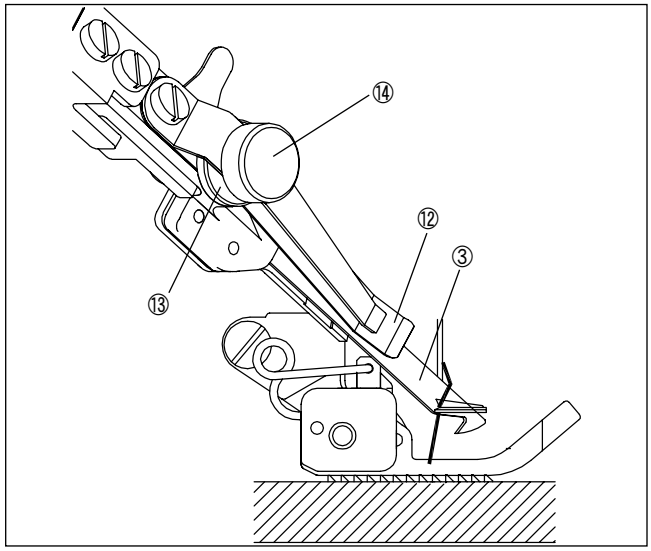
[Warning]
Before adjustments, always turn off the motor switch and check to make sure that the motor is in stop mode.

(4) Pressure of thread clamp spring

The pressure of the thread clamp spring should be kept to a minimum as long as the thread can be caught comfortably after trimming.

A. Loosen the nut ⑬.

B. After trimming, use the screw ⑭ to adjust the pressure so that the thread clamp spring ⑫ and the movable trimming knife ③ can catch the thread.



[Figure 100]

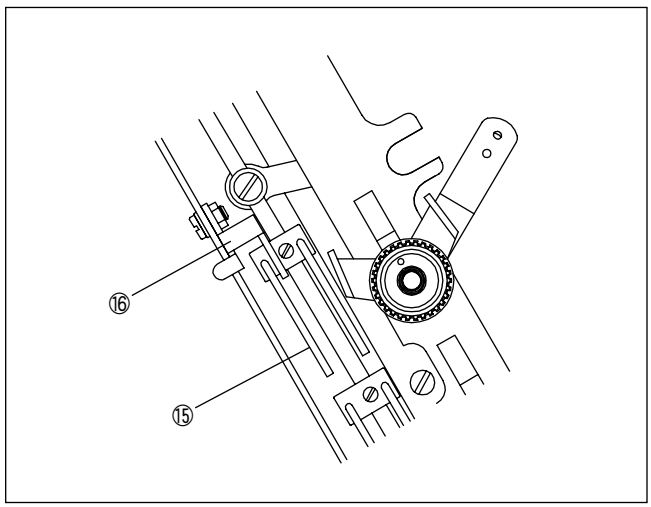
(5) Adjusting thread pull-off hook unit

To shorten the thread after trimming, lift the thread pull-off hook ⑮ up and vice versa.

[Caution]

A. Use as much thread stroke as possible. If there is not enough stroke, trimming thread may not be caught after trimming.

B. When using flexible thread such as wool thread, insert it into the eyelet ⑯.



[Figure 101]

10

SC 7310 (Left Fabric Trimmer)

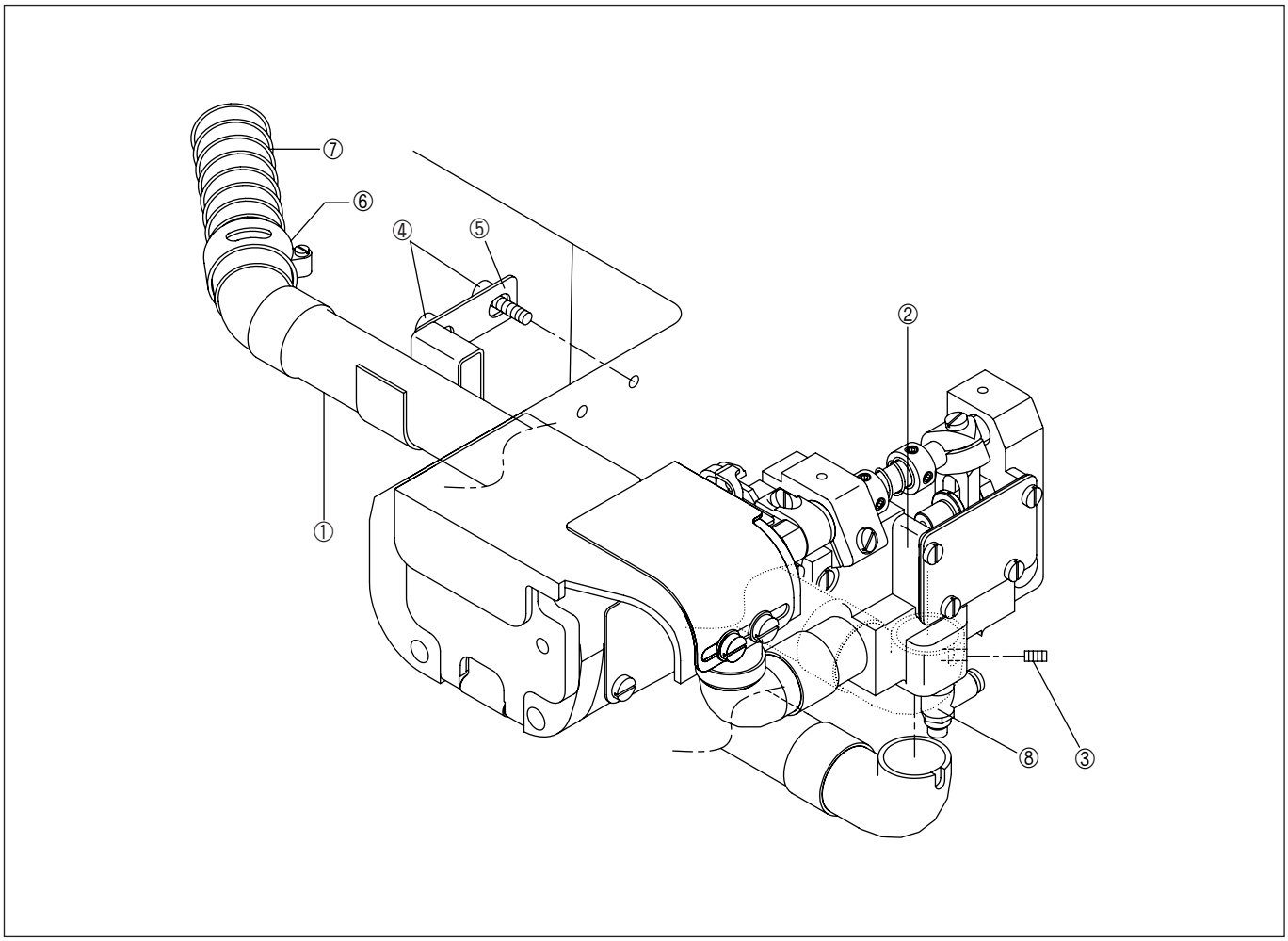
Warning	Turn off the motor switch before making any adjustments. Make sure that the motor is completely turned off.

※ Adjusting the mes system

1) Installation of accessories

The suction pipe(B)①, the suction pipe(B) holder⑤, the curved hose⑦, and the speed controller should be installed in the following order:

(1) Install the speed controller⑧ on the floor of the left mes driving base② as shown in the figure.
(2) Insert the suction pipe(B) ① into the hole on the surface of the left mes driving base② and fix it with the screw③.
(3) Use the screw④ fixed on the rear side of the sewing machine and install the suction pipe(B) holder⑤.
(4) Install the suction pipe(B) ① at the holder⑤.
(5) Use the hose band⑥ and fix the curved hose⑦ to the suction pipe.



[Figure 102]

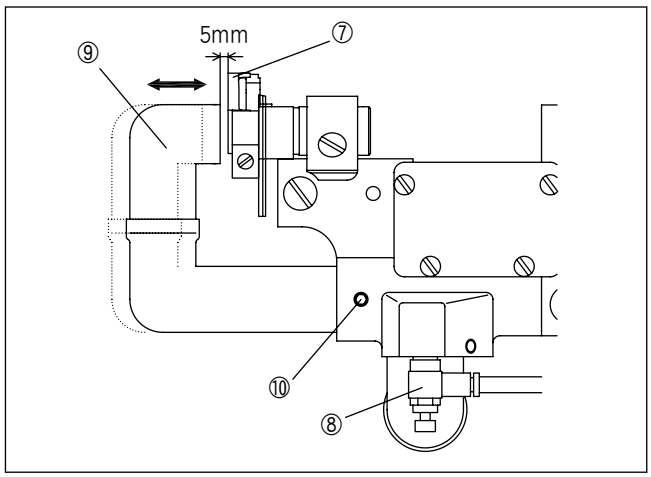
Warning **Turn off the motor switch before making any adjustments. Make sure that the motor is completely turned off.**

2) Adjustment of suction pipe(A)

Loosen the screw⑩ to adjust the location of or remove the suction pipe(A) ⑨.
Install the suction pipe(A) ⑨ 5mm away on the left side of the moving mes(left) holder cover plate⑦.

※ Compressed air-based extraction
Set the extraction power at the lowest possible pressure for chip extraction. Adjust the chip extraction power, using the speed controller⑧.

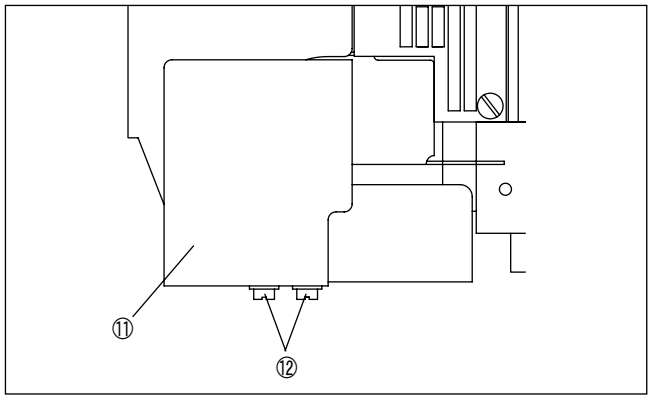
※ Vacuum system-based extraction
Connect the curved hose to the vacuum dust collector.
Set the extraction power at the lowest possible pressure for chip extraction. Adjust the vacuum system to change the extraction power.



[Figure 103]

3) Adjustment of the suction pipe cover plate

When adjustment is completed, loosen the screw⑫ on the suction pipe cover plate⑪, and align the right side of the cover plate with the pipe entrance.

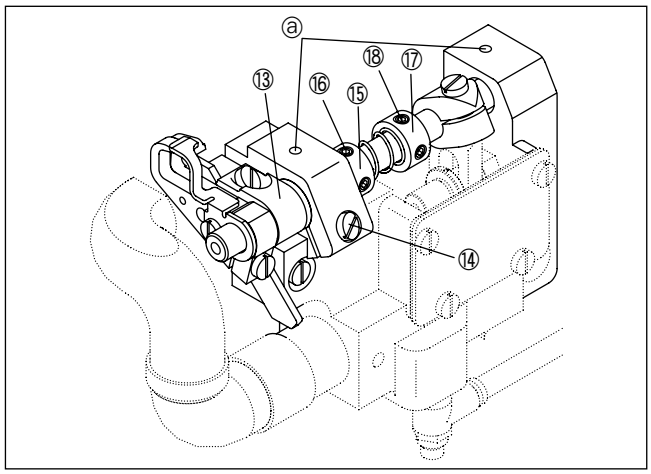


[Figure 104]

4) Cutting length (Location of fabric cutting)

The length of fabric to be cut should be adjusted in the following order:

(1) Loosen the screws for the fixed mes (left mes) holder and the collar.
(2) Move the fixed mes(left) holder⑬ to the desired position.
(3) Tighten the screws⑭ of the fixed mes(left) holder⑬. The tightening torque is 1.5~2N•m (15~20kgf•cm). (When shipped out from the factory, the distance between the left collar⑮ and the right collar⑰ is set at 9mm.)
(4) Loosen the screw⑱ of the collar(right)⑰.
(5) Place a strand of thread between the fixed mes(left)② and the moving mes(left)①, and check whether the pressure applied to the moving mes(left) is proper. Turn the pulley manually [Fig. 106].

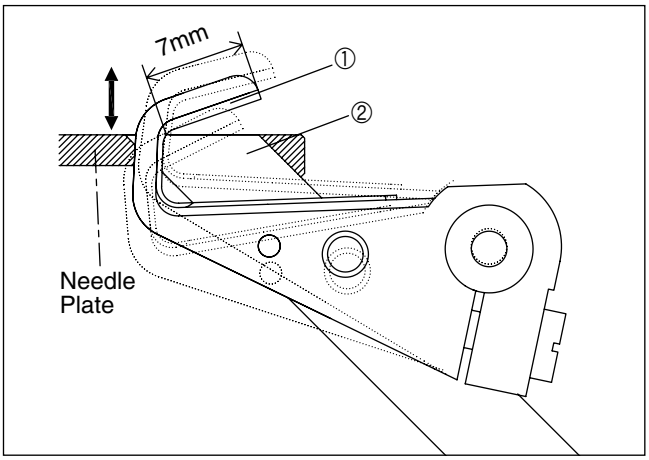


[Figure 105]

Note **Regularly supply oil through the oil hole ⓐ.**

Warning **Turn off the motor switch before making any adjustments. Make sure that the motor is completely turned off.**

(6) Adjust the moving mes(left)① and the fixed mes(left) ② to set the position of 7mm away from the end of the moving mes (around the root area of the moving mes(left)) to be at the same height of the front face of the fixed mes(left).
Afterwards, tighten the screw⑯ of the collar(left)⑮.
(7) Check whether the meses (knives) are operating properly.

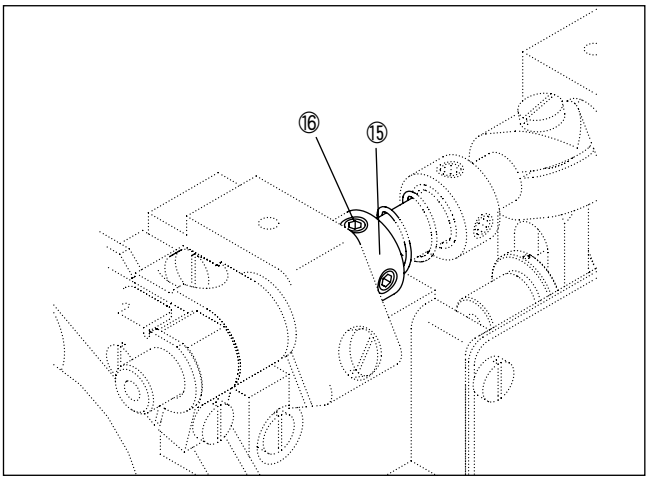


[Figure 106]

5) Removal and installation of the fixed mes (left)

※ How to remove the fixed mes(left)

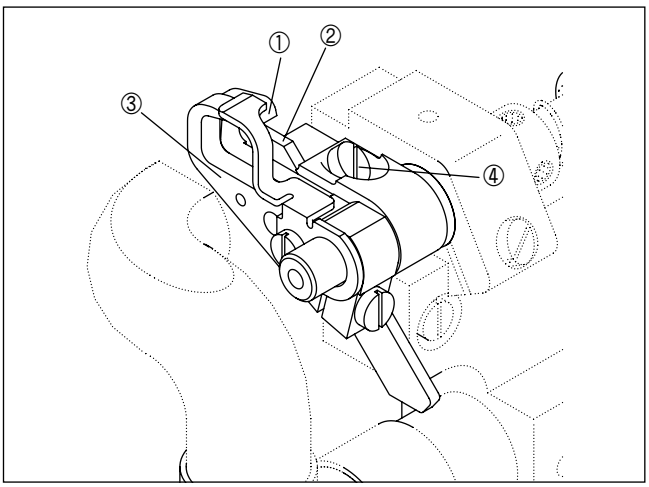
(1) Loosen the screw⑯ of the collar(left)⑮.
(2) Move the moving mes(left) holder③ to the left side and make space between the moving mes(left)① and the fixed mes(left)②.
(3) Tighten the screw⑯ of the collar(left)⑮.
(4) Loosen the screw④, which fixes the moving mes(left) ②, and lower the fixed mes(left)②.



[Figure 107]

※ How to install the fixed mes (left)

(1) Set the height of the fixed mes(left)② and the height of the needle plate front face to be same and tighten the screw④.
(2) Loosen the screw⑯ of the collar(left)⑮, and use the spring pressure to make the moving mes(left)① and the fixed mes(left)② contact each other.
(3) Place a strand of thread between the moving mes(left)① and the fixed mes(left)② to check whether the pressure applied to the moving mes(left) is appropriate. Turn the pulley manually.
(4) Adjust the moving mes(left)① and the fixed mes(left) ② to set the position of 7mm away from the end of the moving mes (around the root area of the moving mes(left)) to be at the same height of the front face of the fixed mes(left). Tighten the screw⑯ of the collar(left)⑮.
(5) Check whether the meses (knives) are properly operating once again.



[Figure 108]

Warning **Turn off the motor switch before making any adjustments. Make sure that the motor is completely turned off.**

6) Installation of the moving mes(left)

▶ How to install the moving mes(left)

(1) Assemble the moving mes and the moving mes holder using the moving mes holder pin.

(2) Loosely assemble the moving mes shaft⑤ and the moving mes holder using the screw③.
Make sure that the distance between the moving mes holder cover plate and the end of the shaft is 6.5mm.

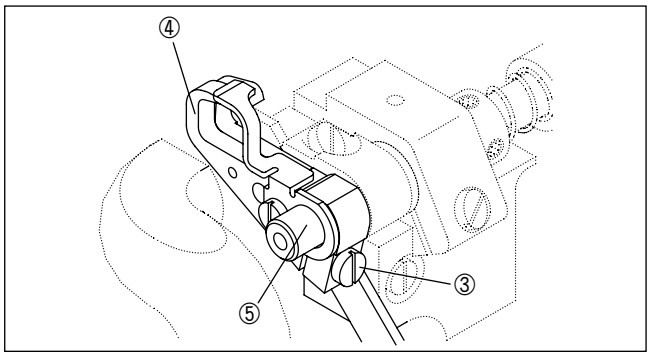
(3) Manually turn the pulley to lower the moving mes(left)①.
When the mes (knife)① is located at the dead point, move the moving mes(left) holder④ to place the end of the moving mes(left) blade 0.5mm above the front face of the fixed mes(left).
Then tighten the screw③ of the moving mes(left) holder ④.

(4) Loosen the screw⑯ of the collar(left)⑮, and use the spring pressure to make the moving mes(left) and the fixed mes(left) contact. [Fig. 107]

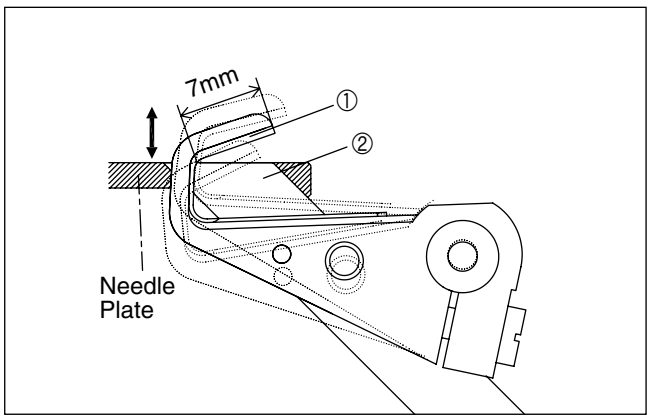
(5) Place a strand of thread between the moving mes(left)① and the fixed mes(left)② to check whether the pressure applied to the moving mes(left) is appropriate. And turn the pulley manually.

(6) Adjust the moving mes(left) and the fixed mes(left) to set the position of 7mm away from the end of the moving mes(left)① (around the root area of the moving mes(left)) and the front face of the fixed mes(left)② to be at the same height. Then tighten the screw⑯ of the collar(left)⑮. [Fig. 107]

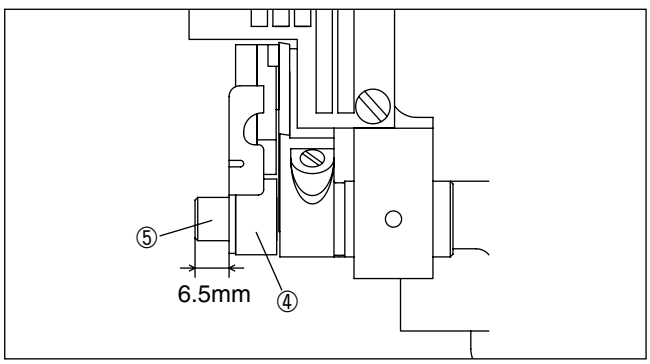
(7) Check whether the mes(knife) is properly operating once again.



[Figure 109]



[Figure 110]



[Figure 111]

Warning	**Turn off the motor switch before making any adjustments. Make sure that the motor is completely turned off.**

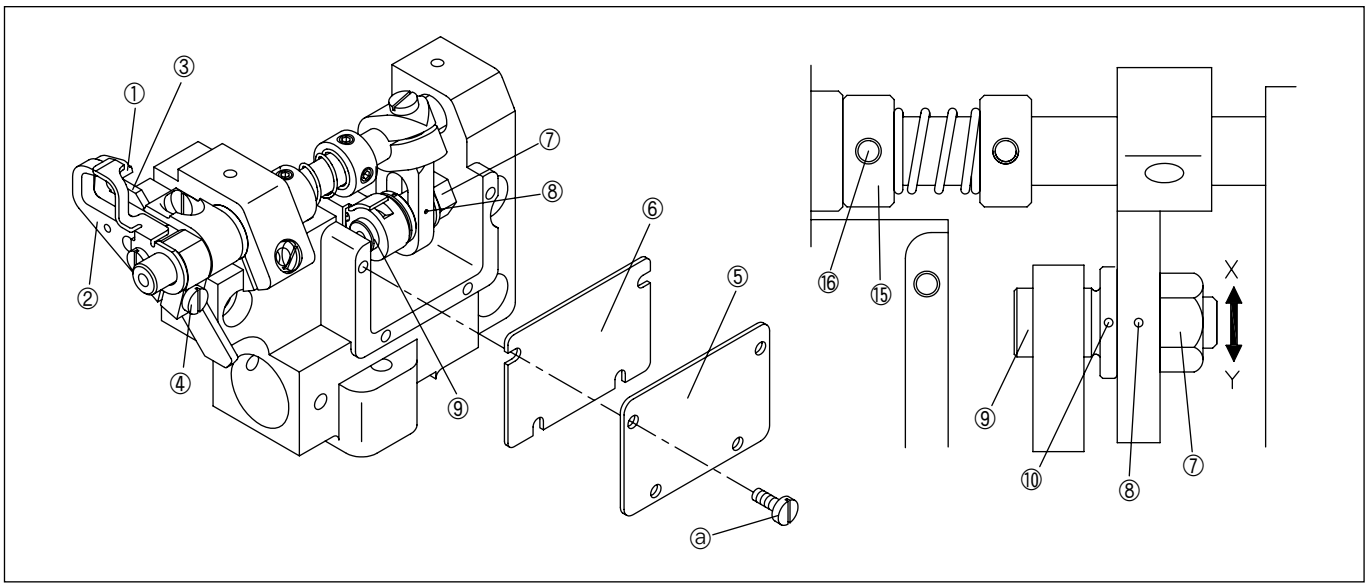
7) Adjustment of the moving mes(left) stroke

The stroke of the moving mes(left) can be adjusted at the range of 3.0mm to 4.0mm. When shipped out from the factory, the stroke default value is set at 4.0mm. In order to change the stroke of the moving mes(left), follow the instructions below in order.

(1) Loosen the screwⓐ and remove the bracket cover⑤ and the gasket⑥.
(2) Loosen the nut⑦ of the moving mes(left) adjusting lever pin⑨.
(3) Move the lever pin⑨ in the Y direction to reduce the stroke. Move the lever pin in the X direction to increase the stroke.

Note	**The stroke of the moving mes(left) becomes maximal, when the punched mark⑧ and the punched mark⑩ are aligned. Do not place the moving mes(left) adjusting lever pin⑨ above the maximal position by moving it to the X direction.**

(4) Adjust the nut⑦ of the moving mes(left) adjusting lever pin⑨.
(5) Slightly loosen the screw④ of the moving mes(left) holder②.
(6) Turn the pulley manually to lower the moving mes(left)①.
When the moving mes(left)① is located at the dead point, move the moving mes(left) holder② to place the end of the moving mes(left) blade 0.5mm above the front face of the fixed mes(left).
Then tighten the screw④ of the moving mes(left) holder②.
(7) Loosen the screw⑯ of the collar(left)⑮. Use the spring pressure to make the moving mes(left) and the fixed mes(left) contact each other.
(8) Place a strand of thread between the moving mes(left)① and the fixed mes(left)③, and check whether the pressure applied to the moving mes(left) is appropriate. Then turn the pulley manually.
(9) Adjust the moving mes(left)① and the fixed mes, and set the position of 7mm away from the end of the moving mes (around the root area of the moving mes(left)) and the front face of the fixed mes(left)③ to be at the same position. Then loosen the screw⑯ of the collar(left)⑮.
(10) Check whether the mes(knife) is operating properly.
(11) Use the screwⓐ to install the bracket cover⑤ and the bracket cover gasket⑥.



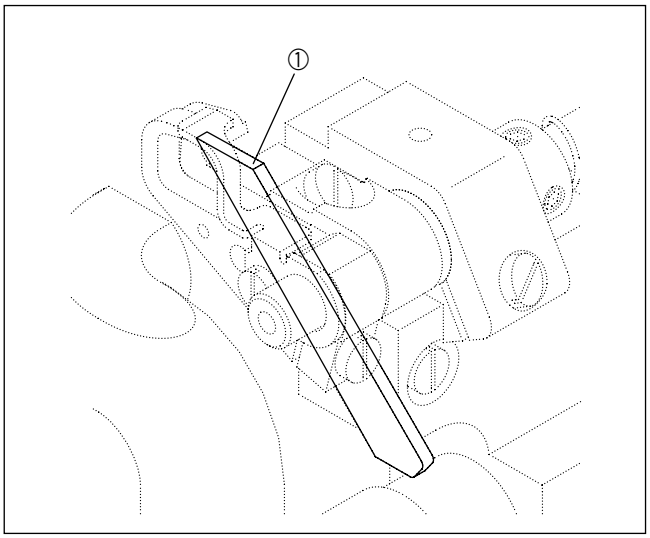
[Figure 112]

Warning	**Turn off the motor switch before making any adjustments. Make sure that the motor is completely turned off.**

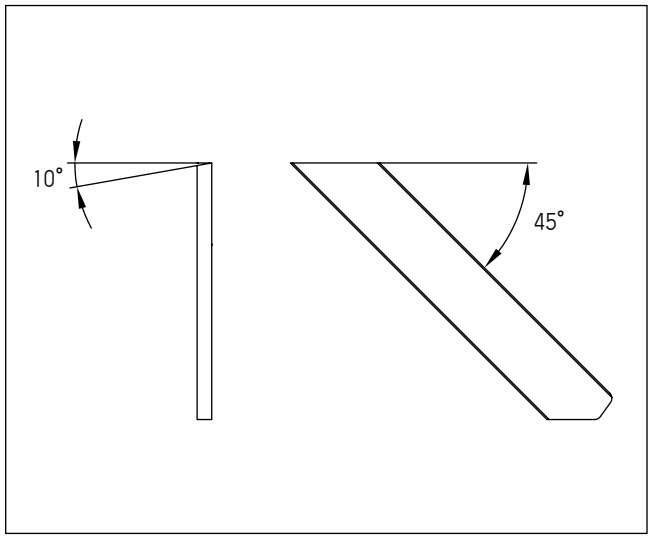
8) Mes (knife) adjustment

When the meses (knives) become dull, prepare cold water to sharpen the fixed mes (left mes)①. Keep the fixed mes (left mes) cold, while it is being sharpened as in the figure below.

Note	**The moving mes is made of cemented carbide, so that a regular grinder cannot be used to sharpen it. Therefore, it is recommended to keep a spare moving mes all the time. To purchase a moving mes, contact a distributor or SunStar Head Office.**



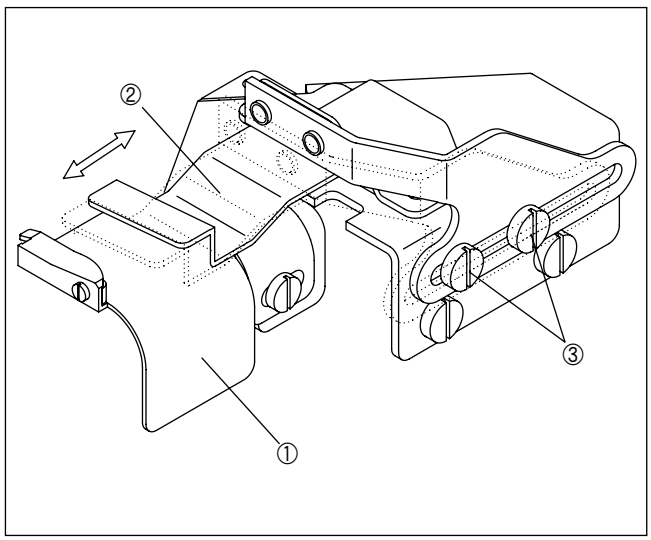
[Figure 113]



[Figure 114]

9) Adjustment of fabric guide

Use the fabric guide (left)① to make adjustments on the edges of fabric.
Use the fabric guide② to adjust the width of folded part.
Loosen the screw③ to make adjustments.



[Figure 115]

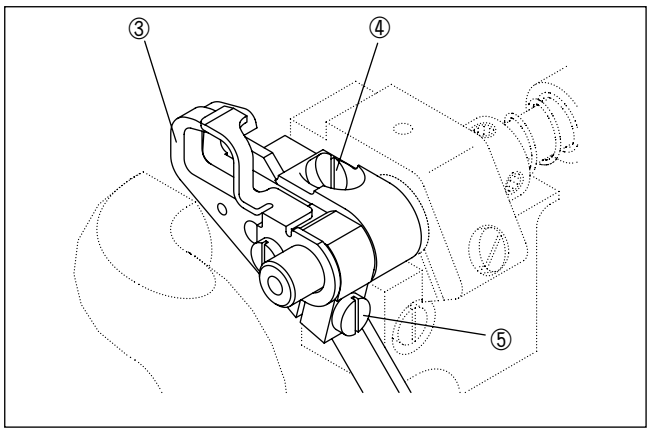
Warning **Turn off the motor switch before making any adjustments. Make sure that the motor is completely turned off.**

10) Separation of the left mes driving

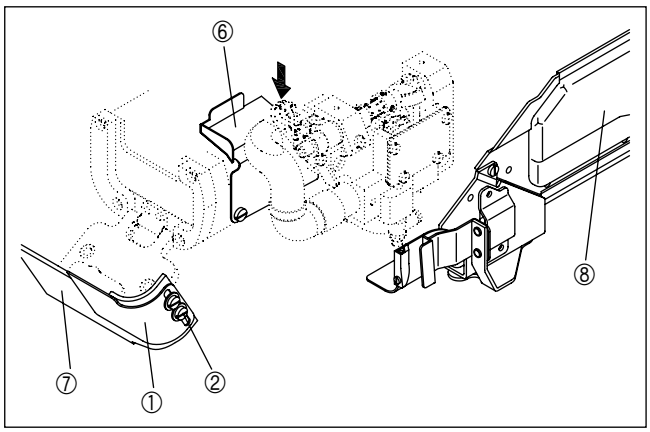
The left mes driving should be divided in the following order :

(1) Loosen the screws④ for the fixed mes (left mes).
(2) Move the fixed mes (left mes) 5mm downward from the upper side of the needle plate.
(3) Tighten the screws④ again.
(4) Loosen the screws⑤ for the fixed mes (left mes) holder and smoothly push the end of the moving mes (left mes) holder③.
(Push until contact with the fabric guide⑥.)
(5) Close the cover⑦.
(6) Close the upper cover⑧.
(7) Loosen the screws for the suction pipe cover①.
(8) Move the suction pipe cover① to the right and fill the space.
(9) Loosen the screws② for the suction pipe cover①.

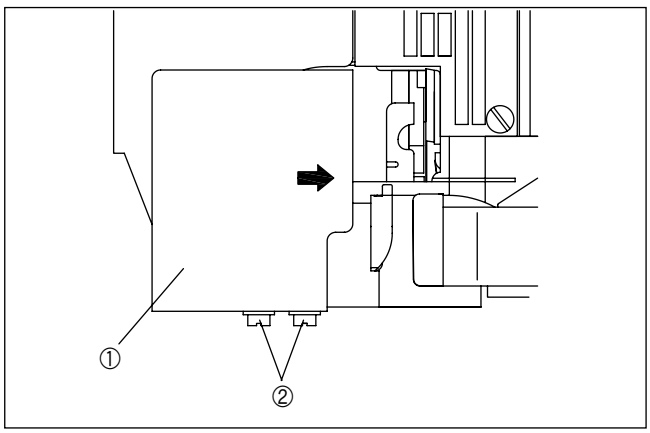
※ Reassemble the meses following the above procedures in the reverse order.



[Figure 116]



[Figure 117]



[Figure 118]