SunStar

USER'S MANUAL

SS-7350 Series

Small cylinder bed interlock sewing machine

1) FOR AT MOST USE WITH EASINESS, PLEASE CERTAINLY READ THIS MANUAL BEFORE STARTING USE.
2) KEEP THIS MANUAL IN SAFE PLACE FOR REFERENCE WHEN THE MACHINE BREAKS DOWN.

SunStar CO., LTD.

MME-090929

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 CO., LTD.

Classification of Pattern Types

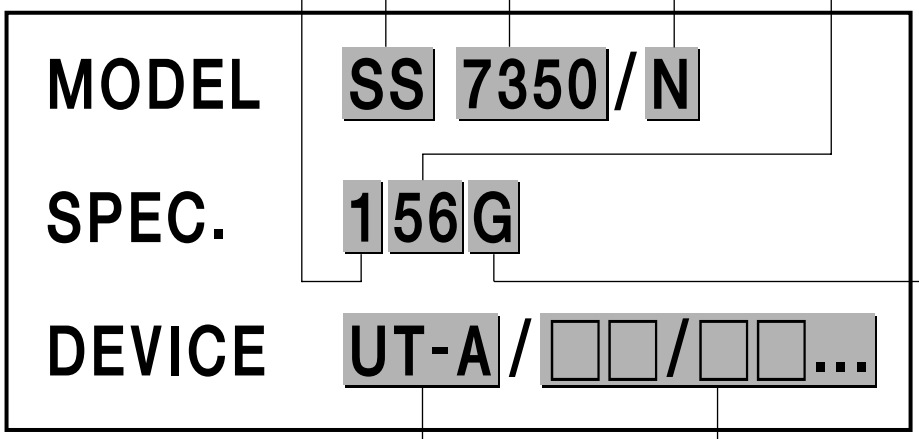
Bed Type & No. of Needle	
7350	Small Cylinder Bed-3Needle

Symbol of Series
SUNSTAR
Small Cylinder Bed Chain Stitch M/C

Main Motor	
N	Fortuna V Motor
M	Clutch Motor

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

Needle Space	
48	3.2mm
56	4.0mm
64	4.8mm



Attachment (Option)	
HE	Hemming Guide
WK1	Walking Presser Foot
ATF	Tape Feeder(Side meter type)
TL	Compact Spot Light
PK	Needle thread Clamp

Device	
UT-A	Lower Thread Trimming(Air Pressure 2)
UT-B	Lower Thread Trimming(Air Pressure 3)
ST-C	Upper Thread Trimming(Cylinder Bed)(Option)

Shape of Stitch Plate	
G	For Medium Weight Fabrics
L	For Light Weight Fabrics
S	For Special Specifications

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

SS 7350 Series is made to sew patterns on fabrics and other similar materials for industrial use. Follow the following indications when operating the machine.

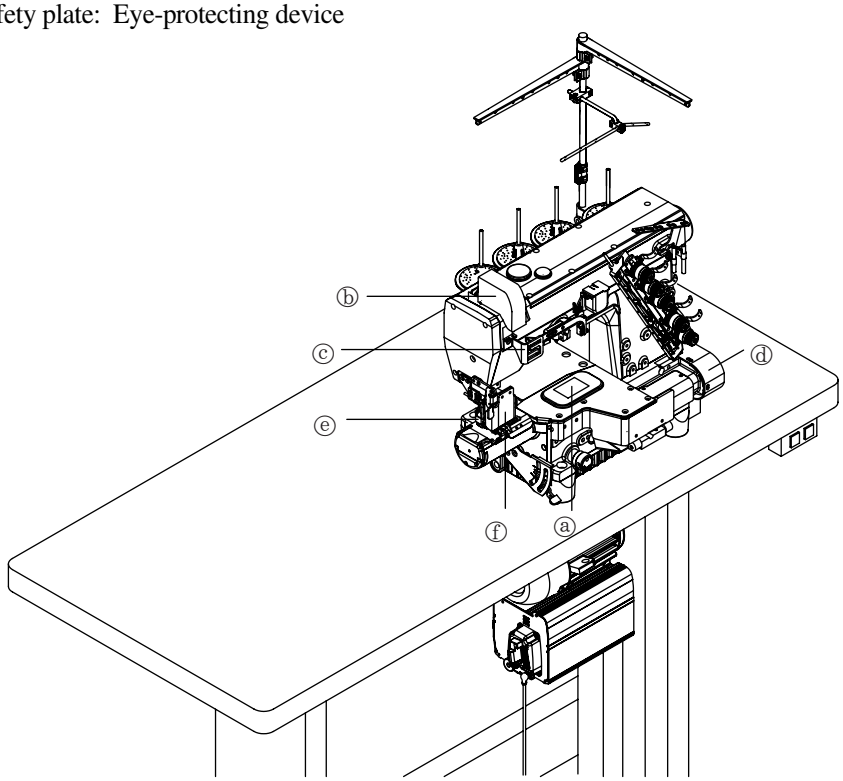
ⓐ Read through this manual carefully and completely before operating the machine.
ⓑ Wear proper clothes for work.
ⓒ When the machine is in operation, do not bring your hands or body near the moving parts of the machine, such as needle, looper, spreader, thread take-up lever and pulley, etc.
ⓓ Keep the 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

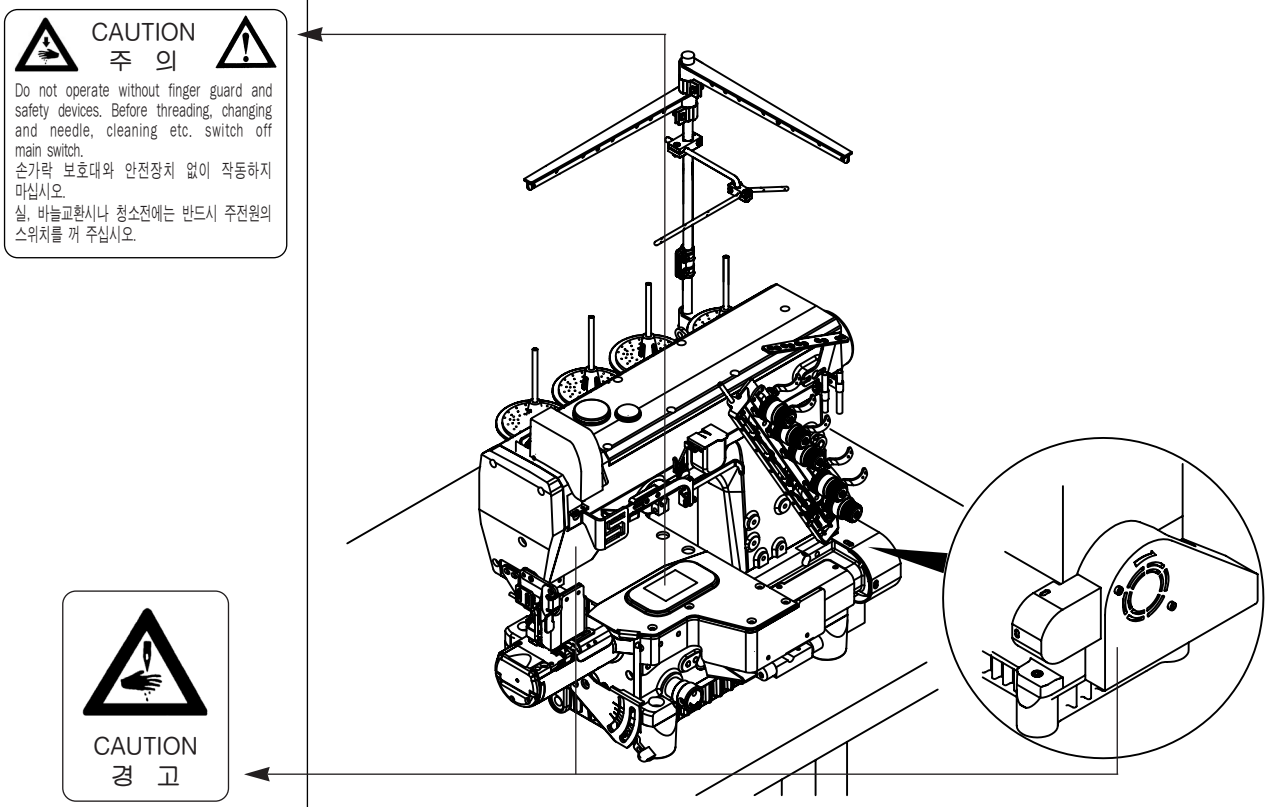
Caution

ⓐ 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



1-6) Caution mark position

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



1-7) Contents of marks

Caution

(1)

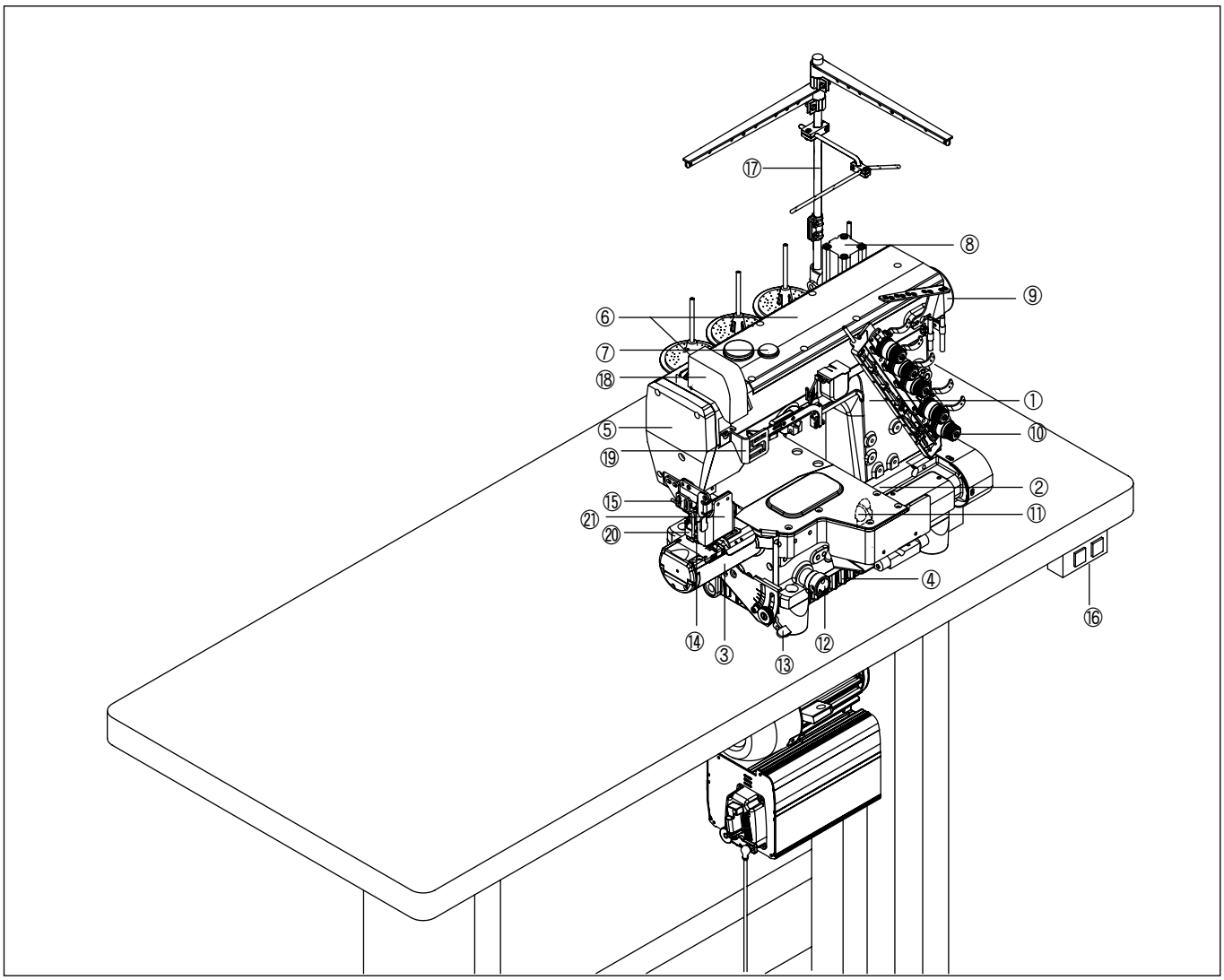
CAUTION
주 의

Do not operate without finger guard and safety devices. Before threading, changing and needle, cleaning etc. switch off main switch.
손가락 보호대와 안전장치 없이 작동하지 마십시오.
실, 바늘교환시나 청소전에는 반드시 주전원의 스위치를 꺼 주십시오.

(2)

2

Names of machine parts



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

Safety devices

⑱ Thread guide cover for needle thread
⑲ Thread take-up lever cover for needle thread
⑳ Finger guard
㉑ Safety plate

3

Specifications

Model	SS 7350 Series
Description	Small cylinder bed-3Needle interlock sewing machine
Stitch Type	ISO 406,407,602,605
For use	General seaming of knitted materials, T-shirt collar, children clothes sleeves
Sewing speed	Max. 4,500 s.p.m
Stitch length	1.4~4.2mm
	Stitches per inch: 6-18; The number of stitches per 30mm: 7-21
Needle	UY×128GAS No. 65 - No. 90(Standard : No. 70)
Needle clearance	3-needle: 4.8, 5.6, 6.4 mm
Needle bar stroke	33mm
Lifting of presser foot	Max. 7 mm (5 mm if equipped with a spreader)
Feed Regulation	Adjusting lever method
Differential ratio	Max. Normal Differential Ratio ⟶ 1 : 1.4
	Max. Reverse Differential Ratio ⟶ 1: 0.8
Differential Feed Regulation	adjusting screw method
Lubrication	Automatic lubrication by oil pump
Oil used	All-purpose machine oil
Oil fan capacity	800CC

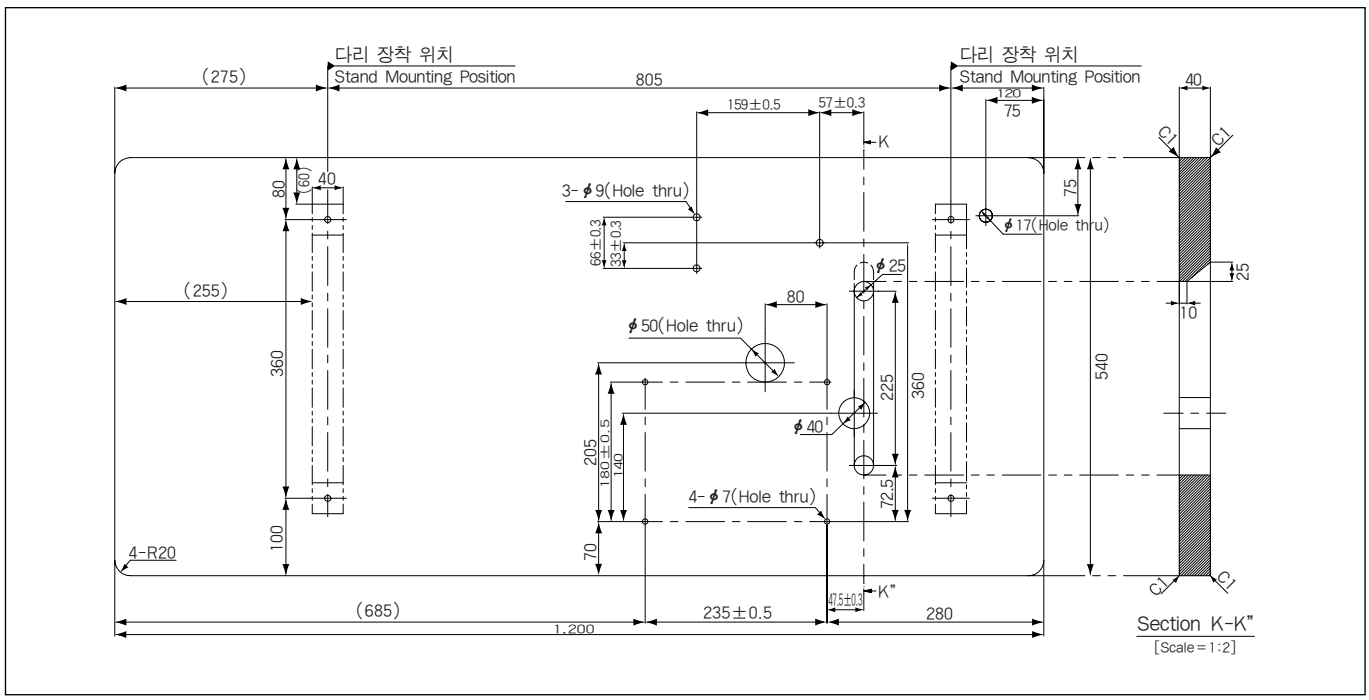
4

Installation

1) Installation of table

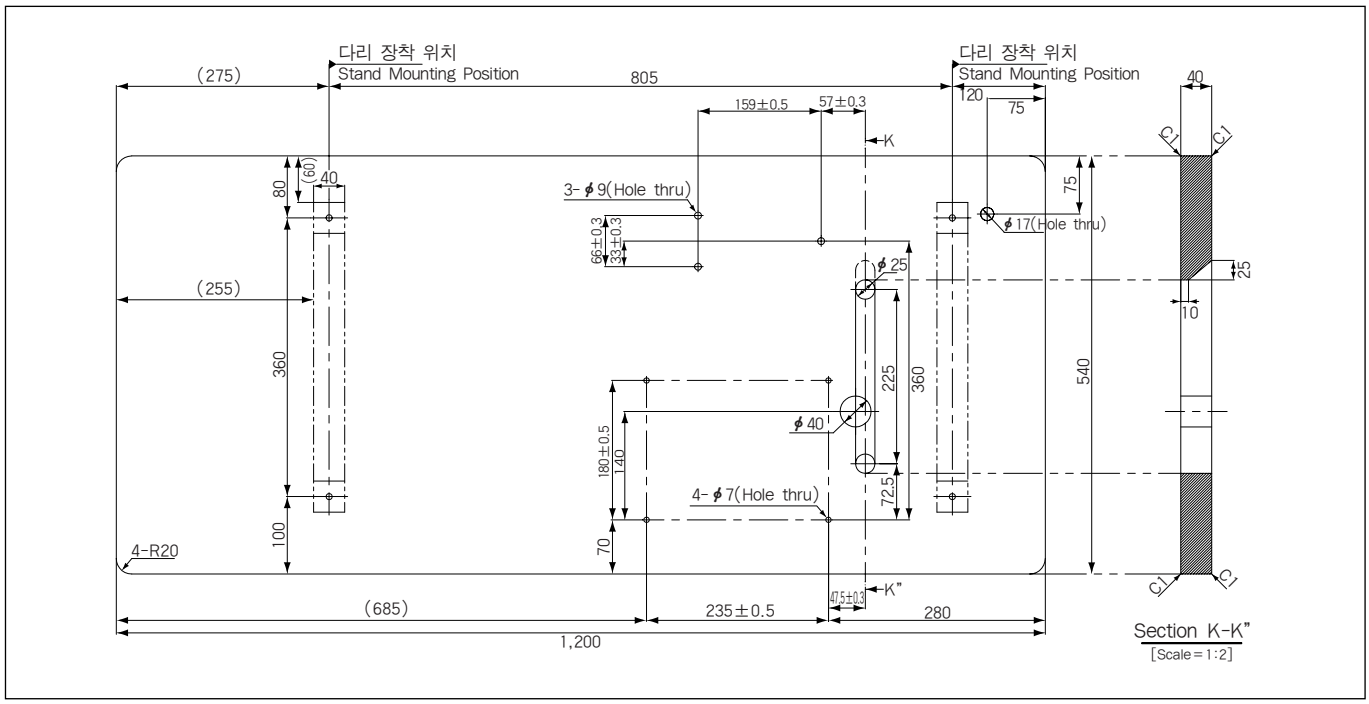
(1) Types of table

A. Table Top Type (trimming)



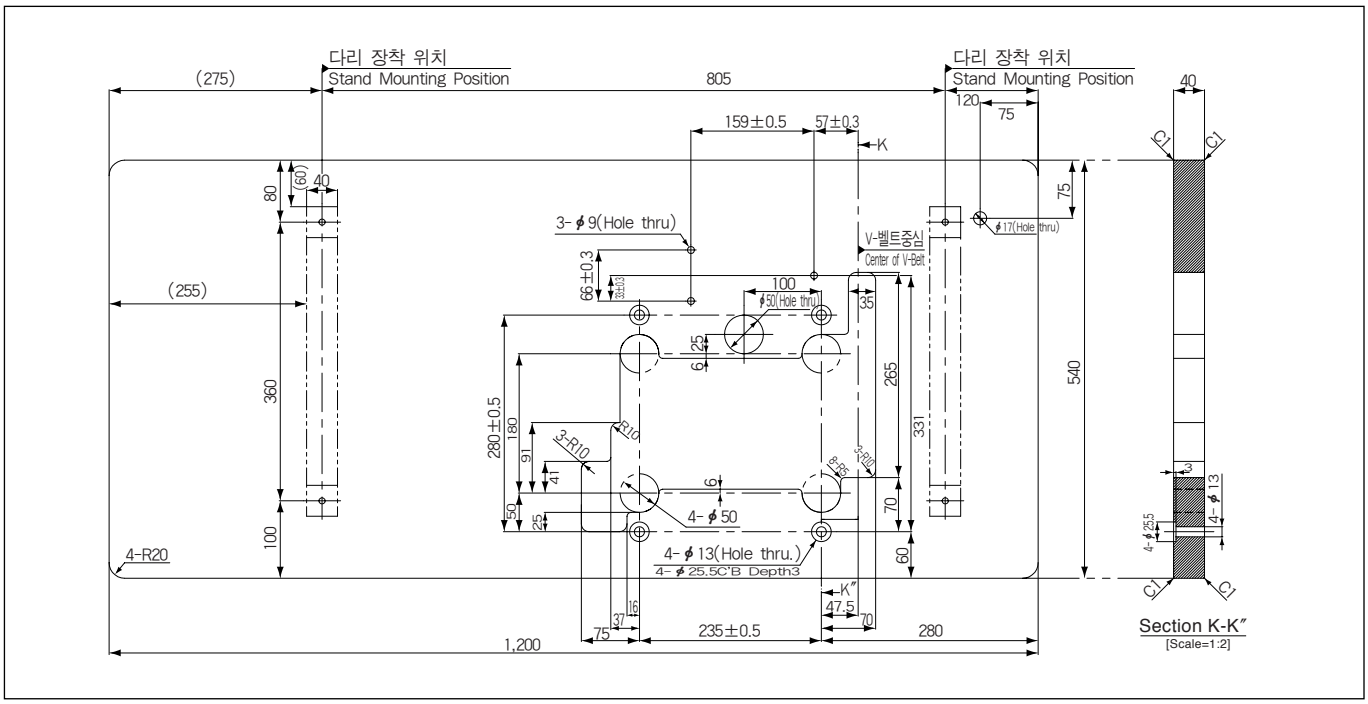
[Figure 1]

B. Table Top Type (Non-trimming)



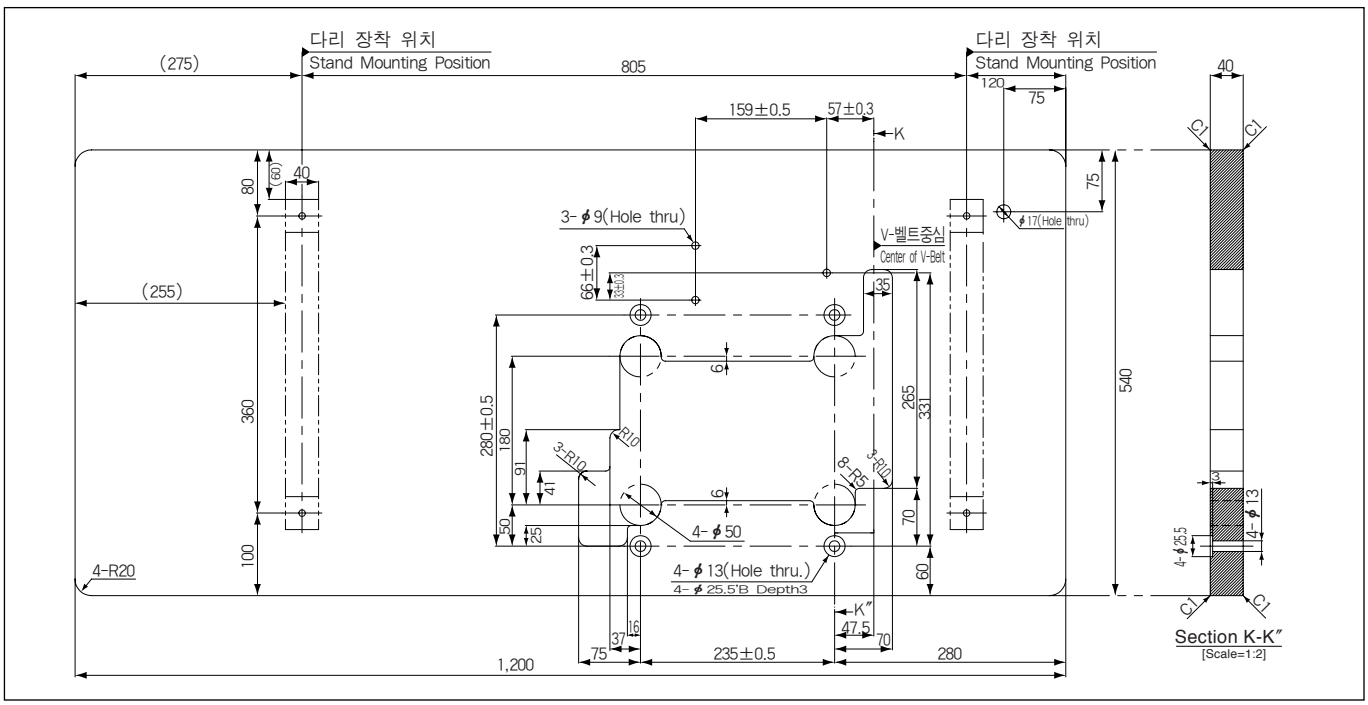
[Figure 2]

C. Semi-Submerged Type (Trimming type)



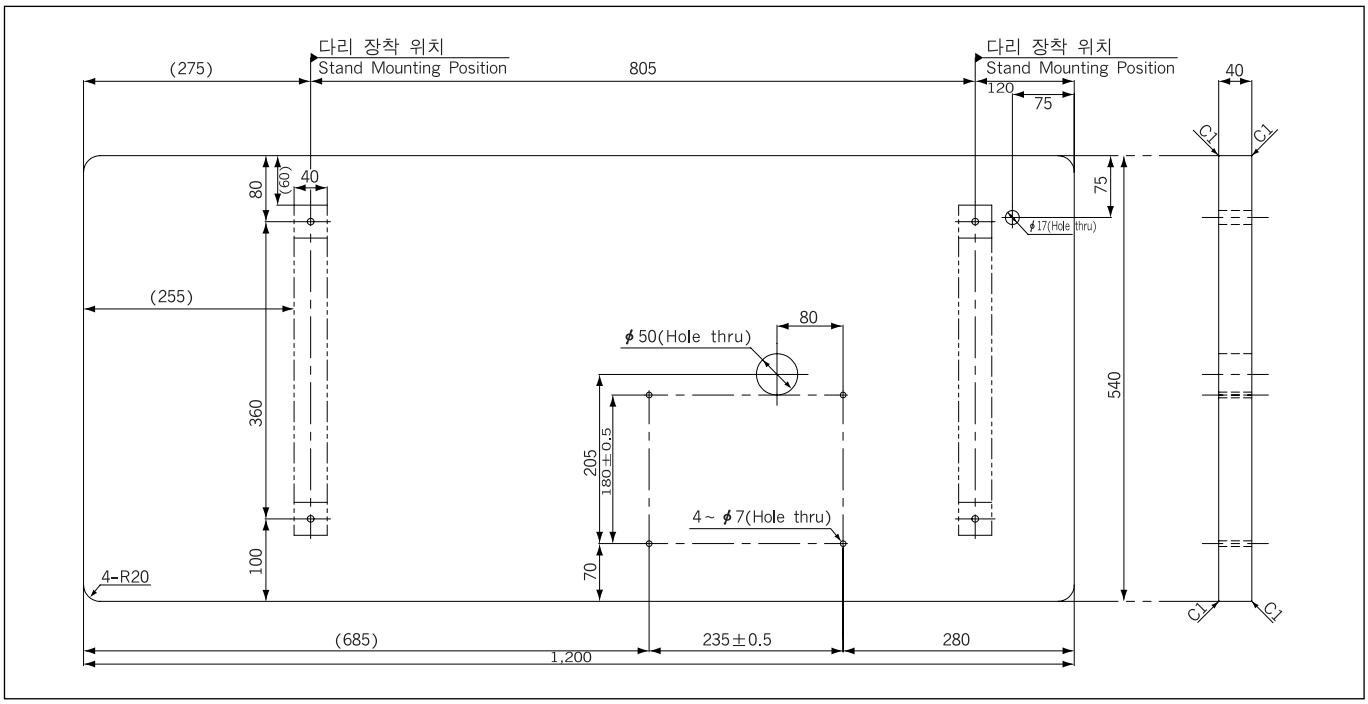
[Figure 3]

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



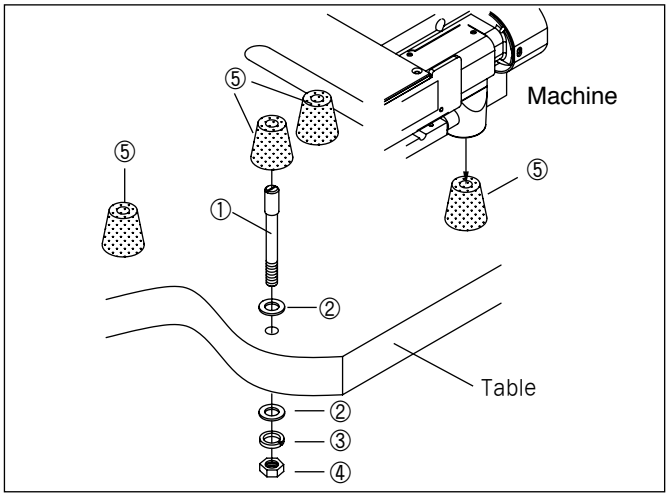
[Figure 4]

E. Options for small-sized motor type

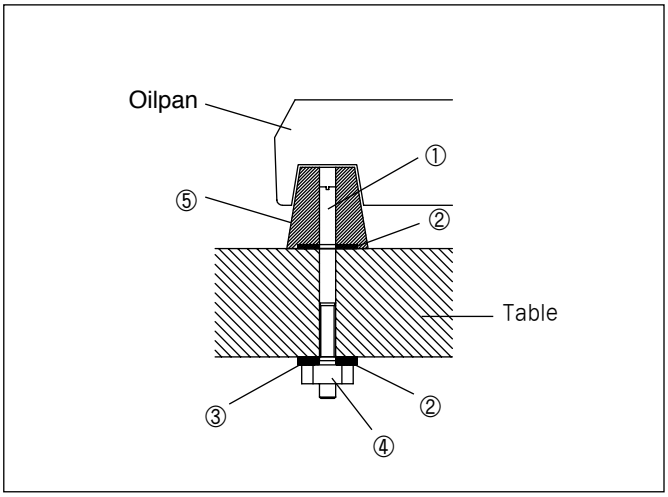


[Figure 5]

(2) Installation of table-top type table



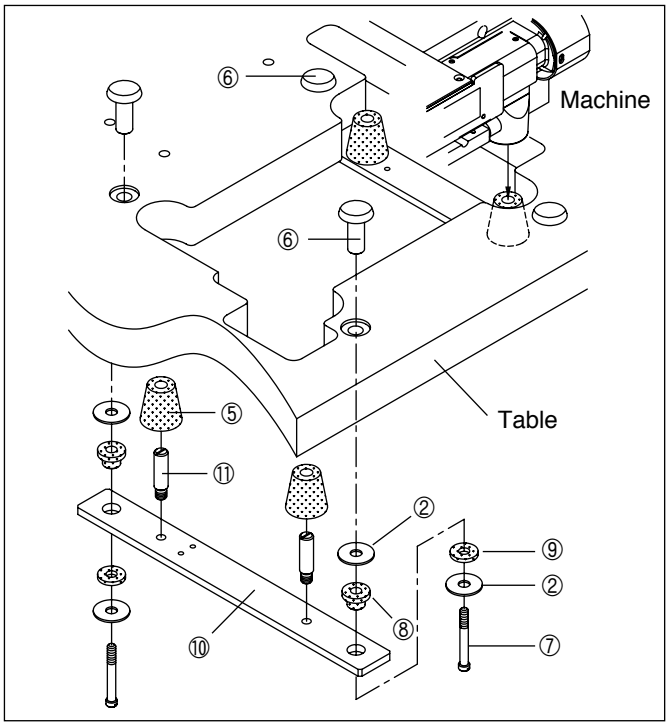
[Figure 6]



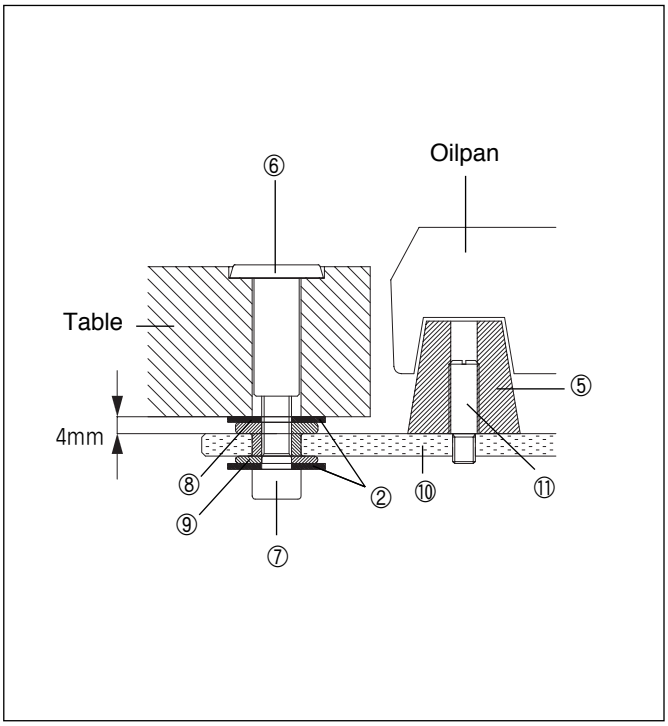
[Figure 7]

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



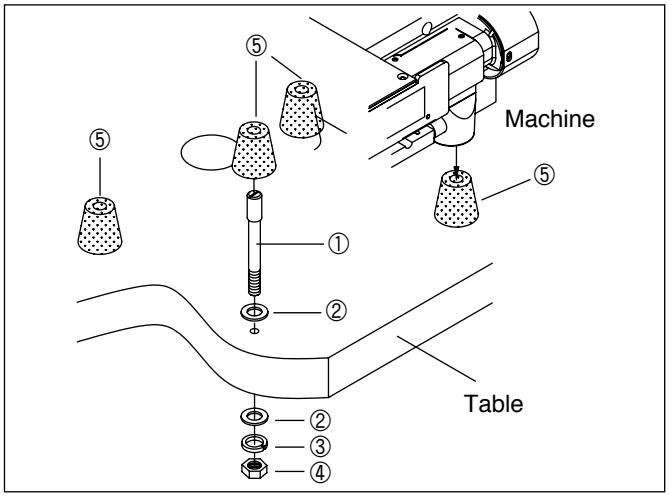
[Figure 8]



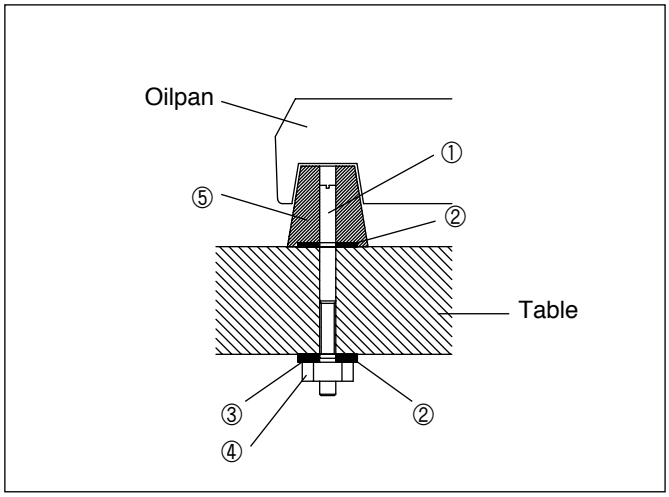
[Figure 9]

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.

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



[Figure 10]



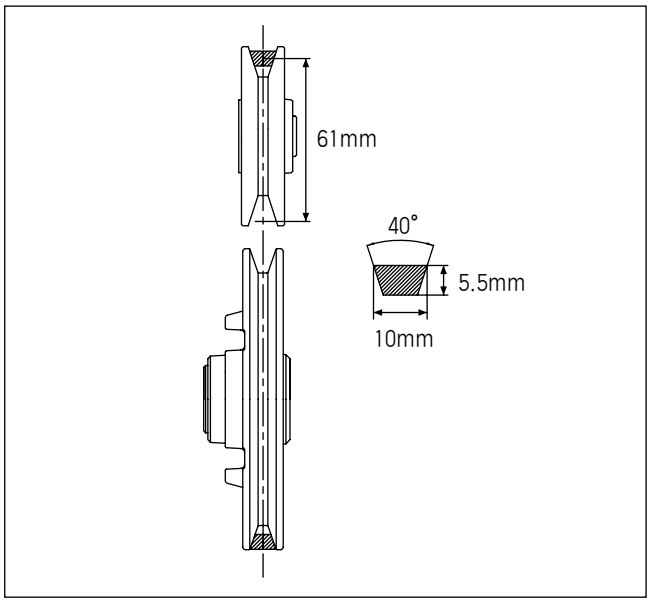
[Figure 11]

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



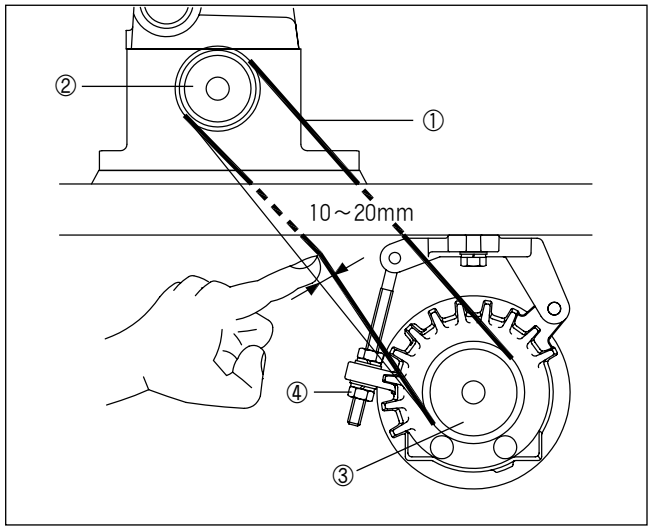
[Figure 12]

※ 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.

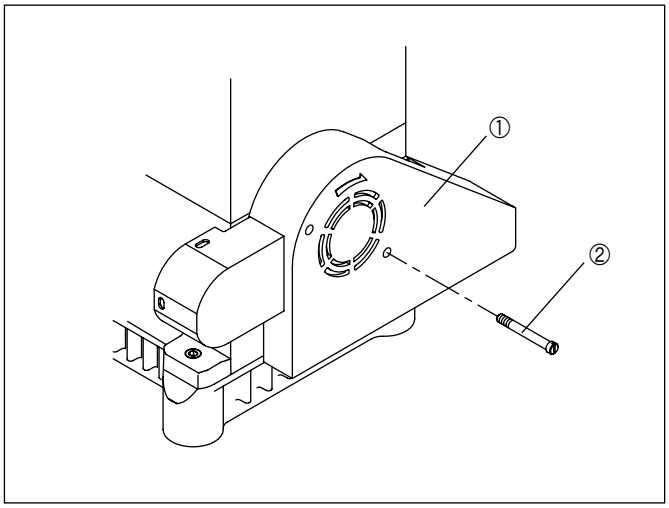
Turn the screw④ of the motor③ around. Adjust the belt ① to go in approximately 10~20mm when its center portion is pushed with a finger. (Refer to figure 13)



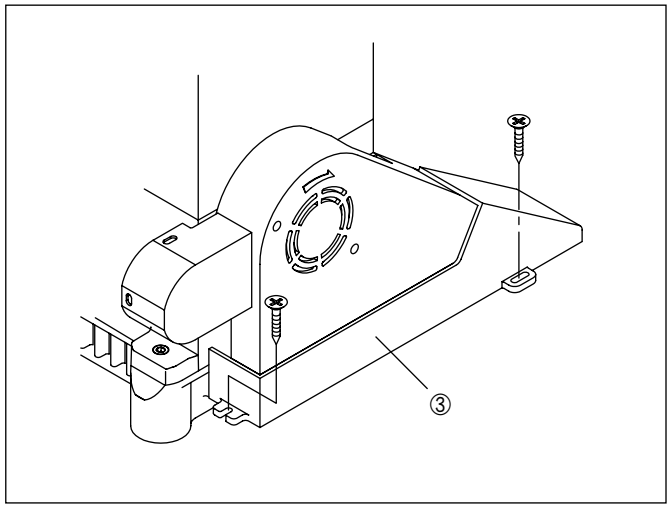
[Figure 13]

4) Installation of belt cover

Warning	Always install the belt cover for safety.



[Figure 14]

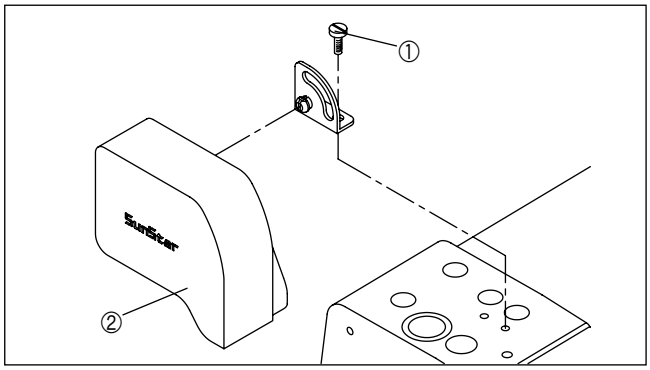


[Figure 15]

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

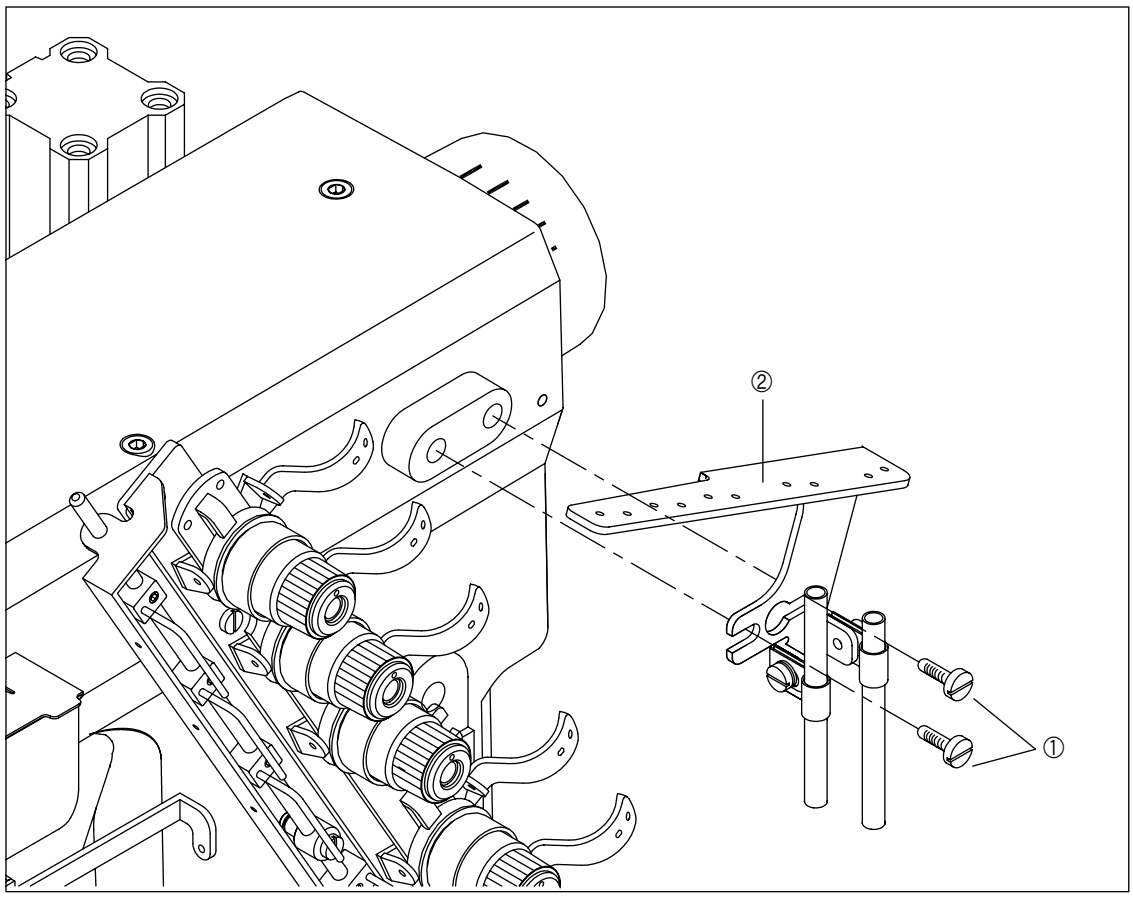
As illustrated in the figure, fix the cover② for needle bar thread guide onto the arm with two screws①.



[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.

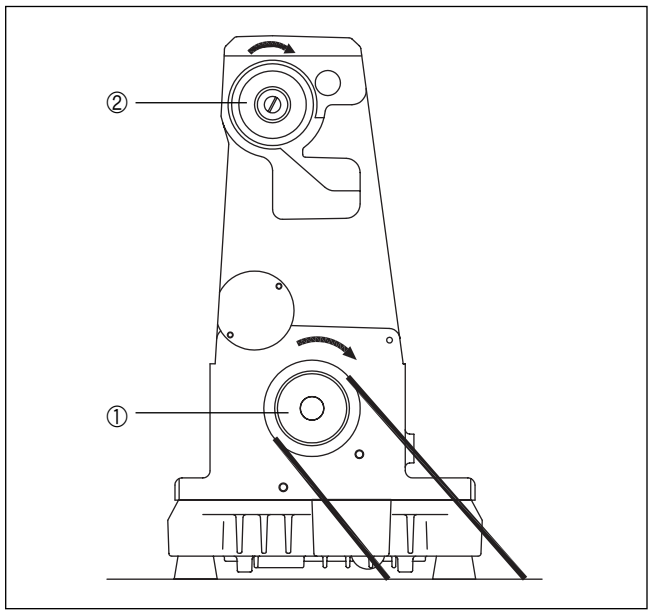


[Figure 17]

5

Sewing speed and rotating direction of pulley

The maximum speed of the sewing machine is 4,500 s.p.m, and 4,000 s.p.m for commercial use.
To ensure durability, run the sewing machine at 3,500 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

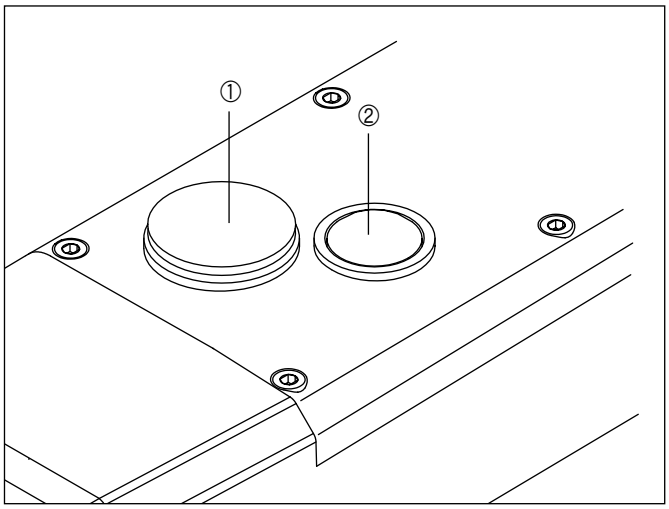
Warning	Be sure to turn the power switch off before oiling

1) Lubricating oil

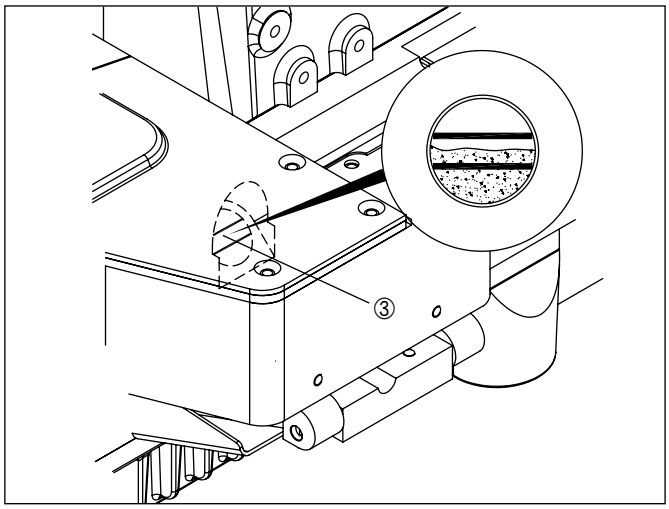
Use industrial-purpose lubricating oil supplied by SunStar or SF oil by YANASE for this particular type of sewing machine.

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

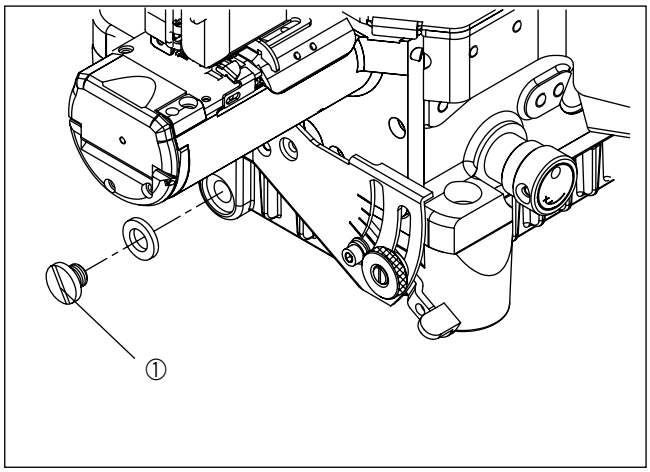
To ensure durability of the sewing machine, be sure to change oil after 250 hours of initial operation.

Change oil according to the following.

⑴ Separate the V-belt from the motor pulley and move the sewing machine to the table front.

⑵ Unfasten oil discharge screw ① to let out the lubricating oil.

Caution	Be cautious not to drop the sewing machine and prevent the V-belt from being smeared with oil.



[Figure 21]

⑶ Fasten oil discharge screw① securely afterwards.

⑷ Return the sewing machine back to the original location.

⑸ Place the V-belt on the motor pulley.

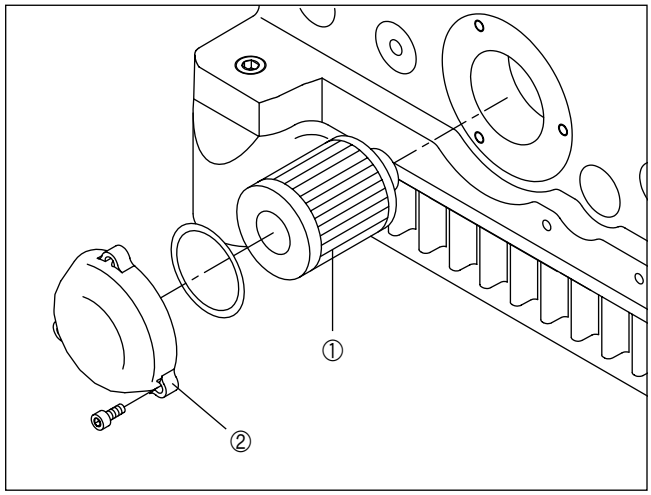
⑹ Refer to 2) Supplying oil for lubrication.

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]

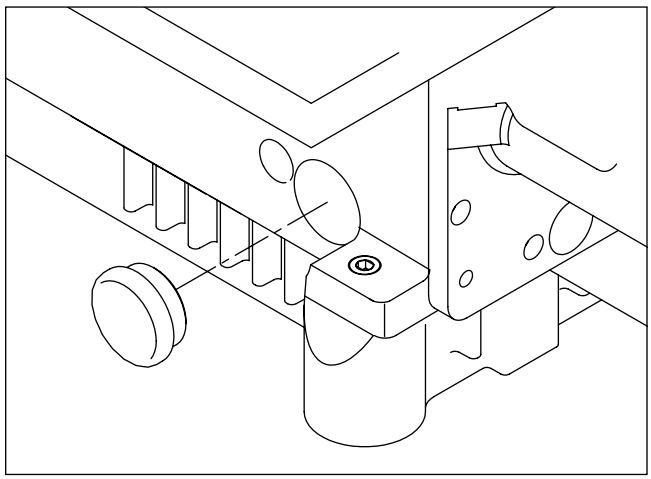
Caution	When removing the oil filter cover, be sure to prevent the remaining oil in the oil filter from leaking.

6) Cleaning the machine

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

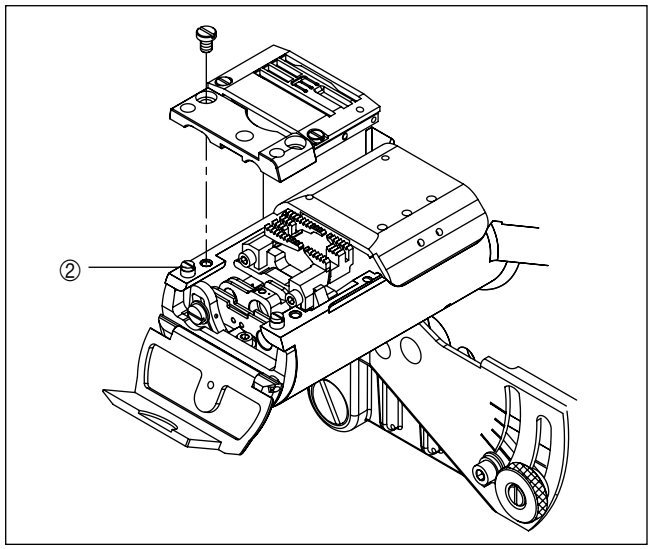
Open bed cover (left), bed front cover or other covers for cleaning. You may also use air guns.

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]

Caution	When using an air gun, be cautious to prevent the gathering of dust and thread cuts around parts.



[Figure 24]

Caution	Do not loosen the fixing screw ② for the location bushing on the needle plate attachment base.

7

Standard adjustments of the sewing machine

1) Needle used

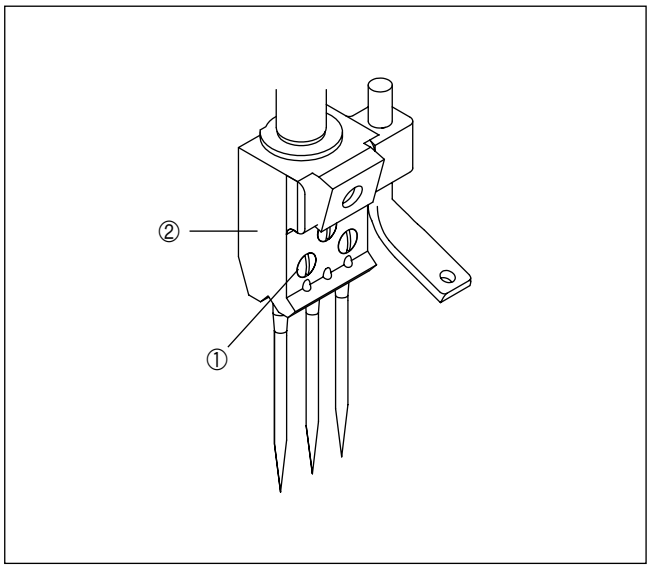
This sewing machine uses UY128GAS needles.
Needles come in various size. Select the most appropriate needle depending on the thickness or the type of sewing materials.

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

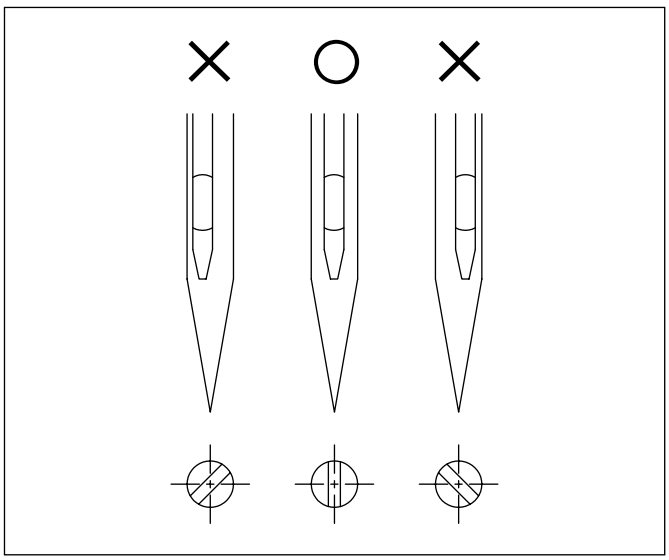
2) Installation of needle

Warning	Turn the power switch off before installing a needle.

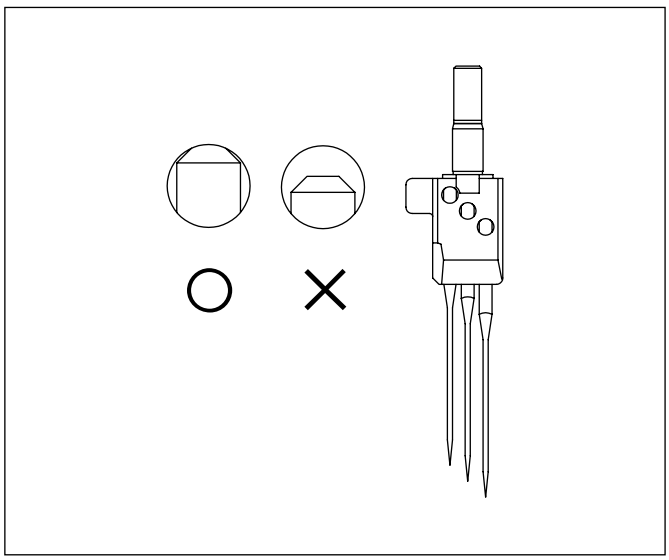
Use a needle driver to loosen the screw ①, and remove the old needle with tweezers. (Figure 25)
Set the needle groove to completely face back, and raise the needle to the groove tip of the needle holder ②. Then fasten the screw ① firmly. (Figure 26, 27)



[Figure 25]



[Figure 26]



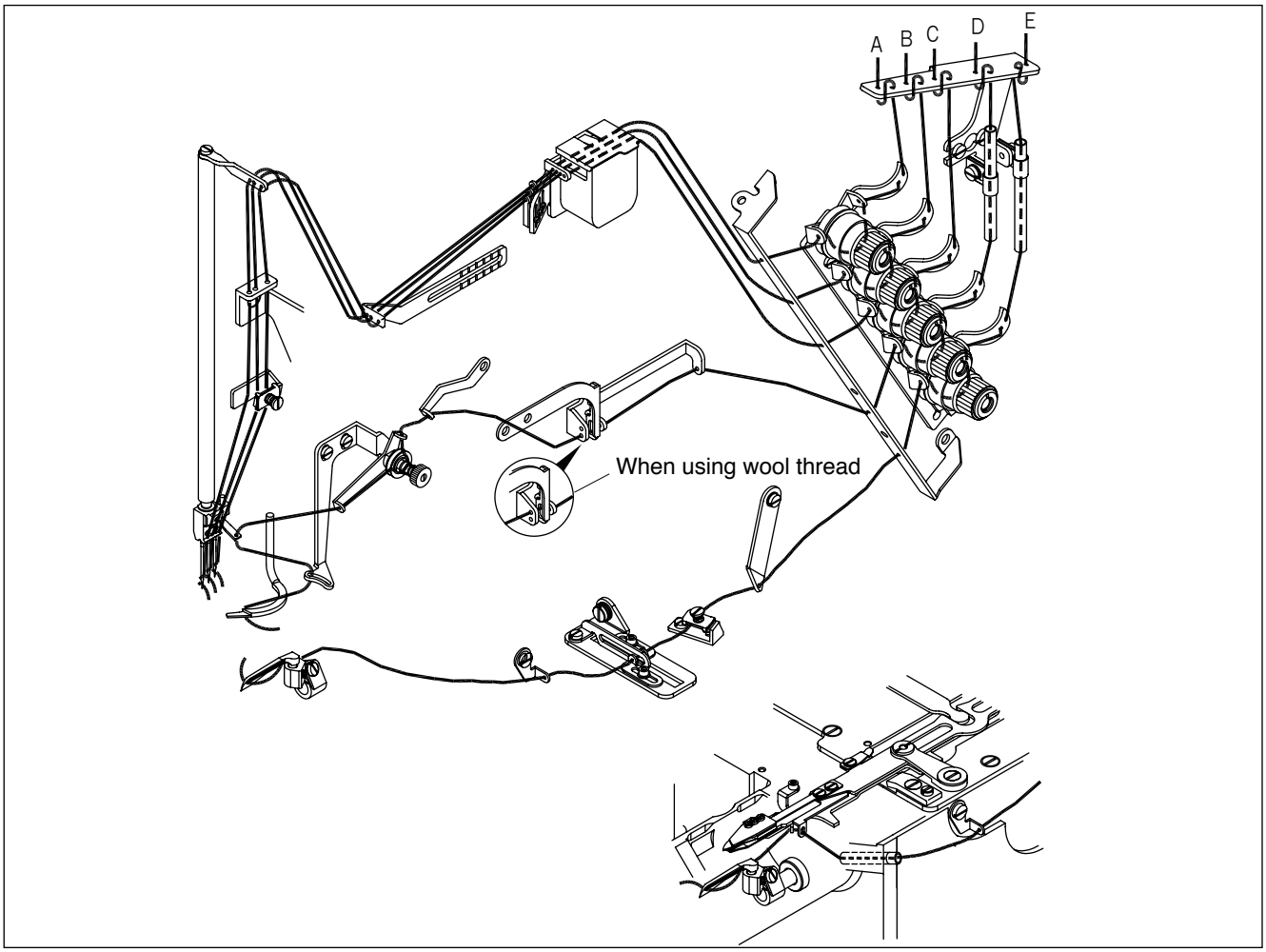
[Figure 27]

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.

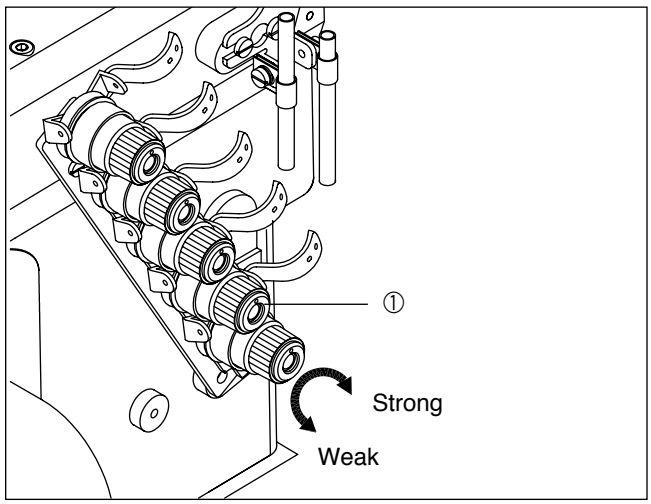


[Figure 28]

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.



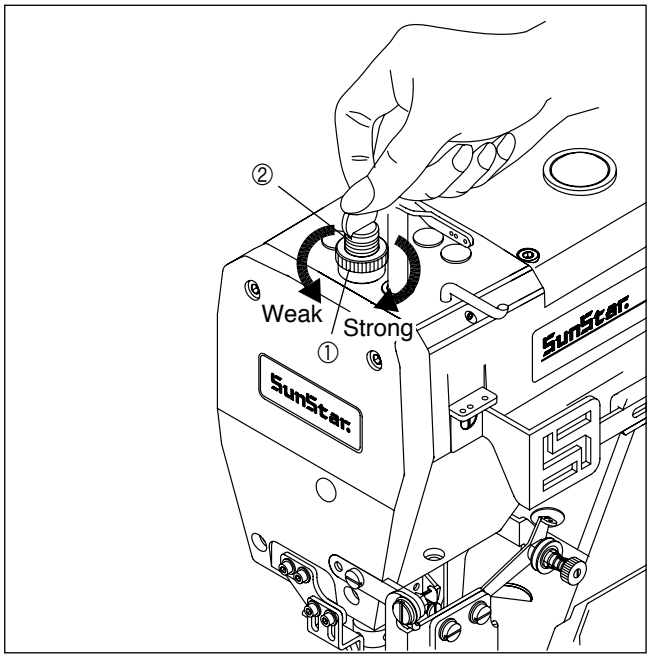
[Figure 29]

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.

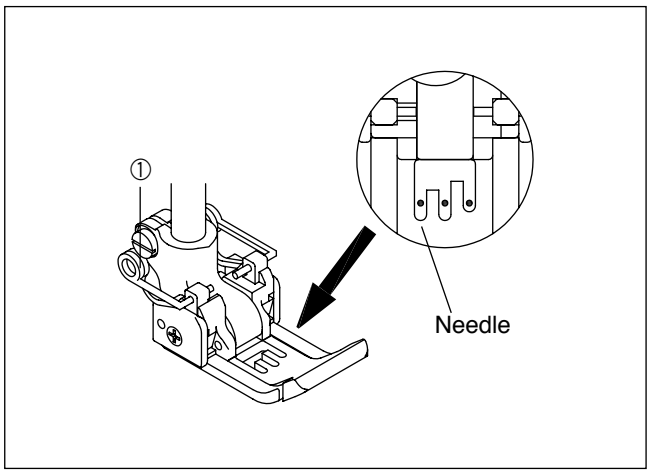


[Figure 30]

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 31]

7) Adjustment of stitch length

경 고	Be sure to turn the power switch off before adjusting stitch length.

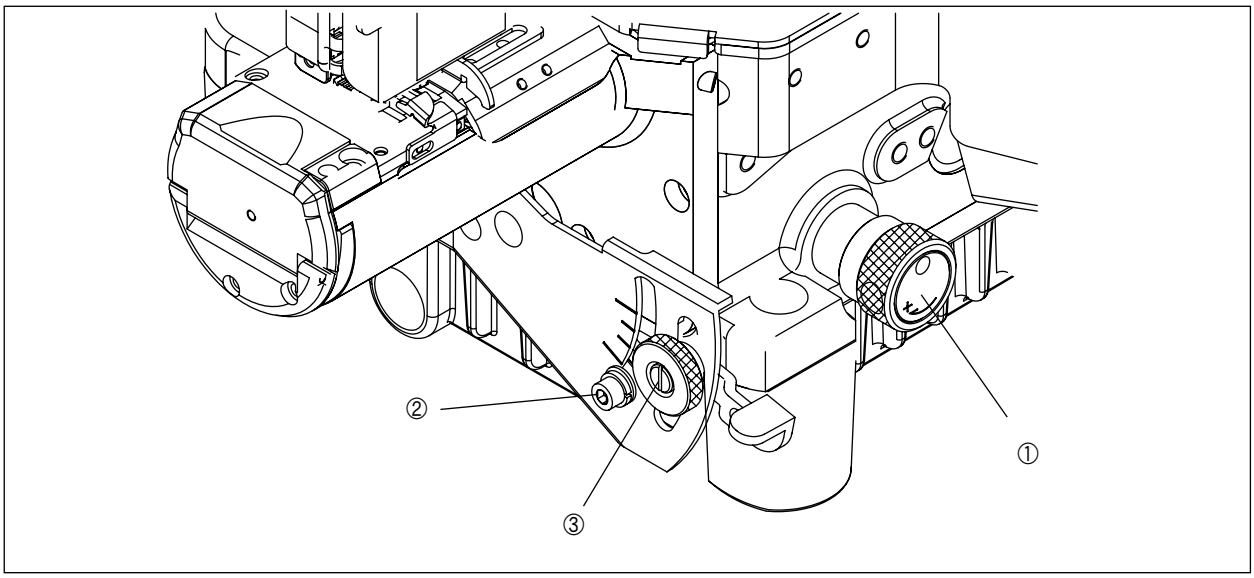
⑴ Stitch length

Stitch length can be adjusted straight from 1.4mm to 4.2 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)
4.2	6	7.5
3.6	7	8
2.4	10.5	12.5
1.4	18	21

(2) Change of stitch length



[Figure 32]

When the adjusting handle① is turned clockwise, the stitch length widens. When it is turned counter-clockwise, the stitch length is reduced.

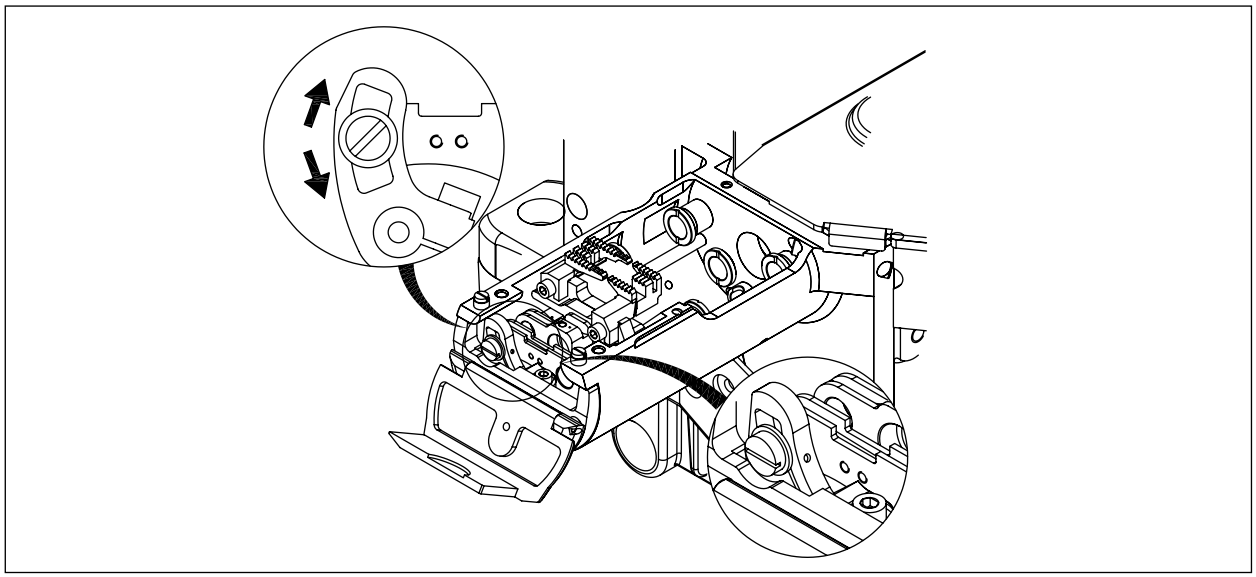
When the stitch length is adjusted with the lever and the adjusting handle① is turned, within the scope from the lever scale to the stopper②, fix the lever at a certain location with a nut③.

In the case of adjusting the stitch length in the middle of machine operation, connect the
hook, etc. to the lever.

Caution	When using sewing machines mounted with pneumatic trimming devices designed to automatically find the needle location, e.g., UT-A, UT-B or ST-C, be sure to turn off the power before stitch width conversion.

8) Adjustment of differential feed

Warning	Be sure to turn the power switch off before adjusting differential feed.



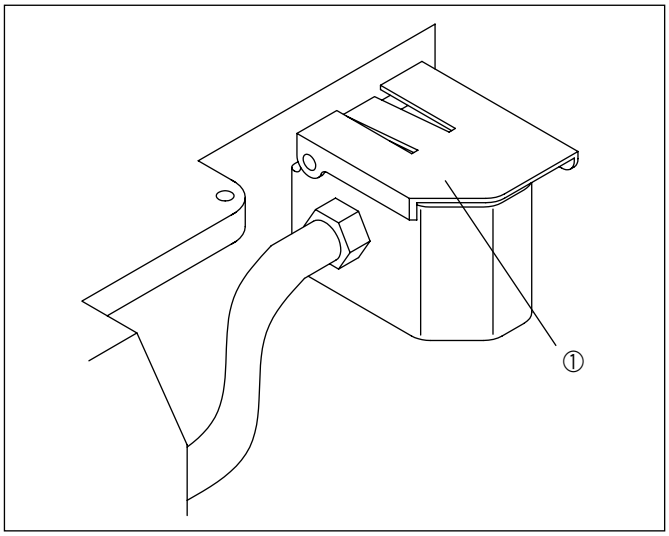
[Figure 33]

Loosen and move upward the fixing screw① and then it becomes differential feed (1:1.4). When the fixing screw is moved downward, the reverse differential feed is possible.
When the punched mark of the differential feed lever② is matched with the center of the fixing screw①, the differential ratio becomes 1:1.

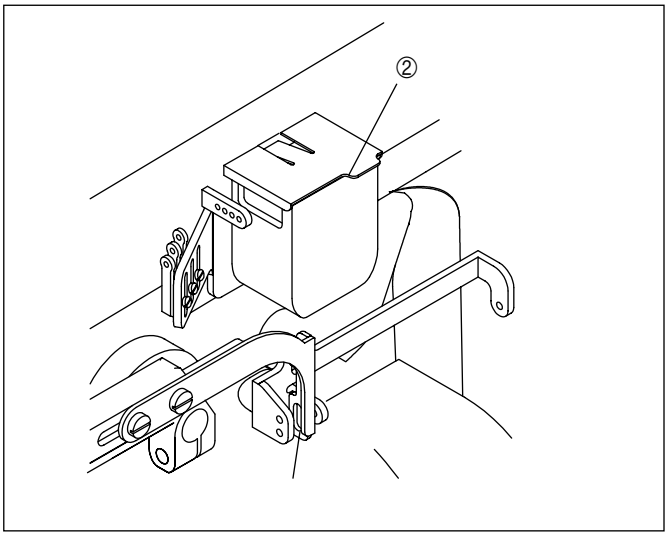
Caution	When the stitch length is 4.2mm, the maximum differential ratio is 1:1.2.

9) Lubricating device of needle thread and needle cooling device

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



[Figure 34]



[Figure 35]

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.

Caution	· 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. · Do not supply silicon oil to the sewing machine. Or take caution to prevent oil leakage into the machine parts.

8

Fine-tuning of the sewing machine

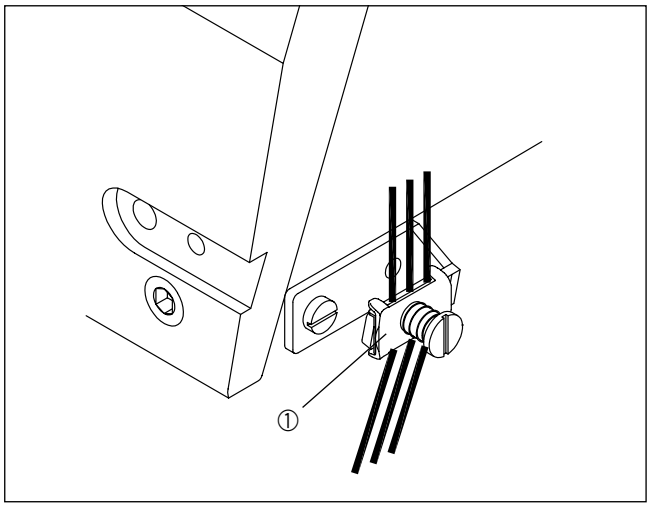
1) Adjustment of needle thread tension

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.

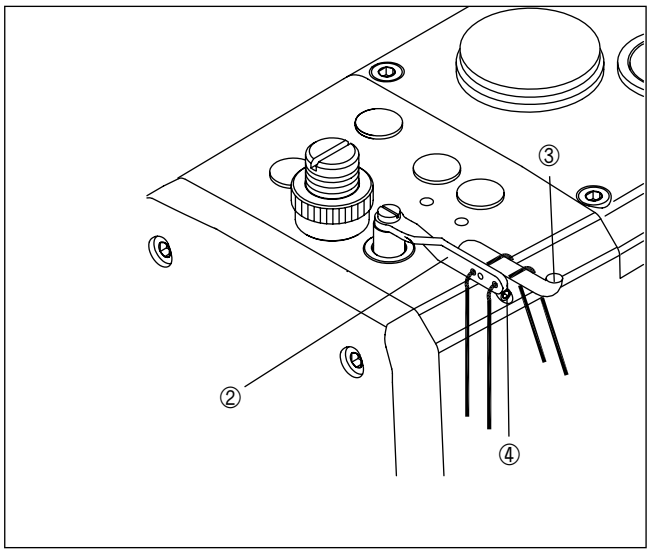
In such case, pull the needle thread through the auxiliary tension-adjusting device of the needle thread ① as shown in figure36.

Caution	When "UT" device is installed, it is better not to use it.



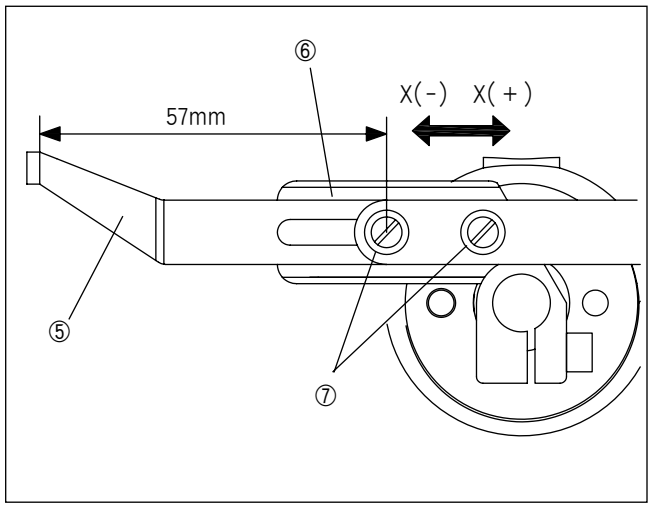
[Figure 36]

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.



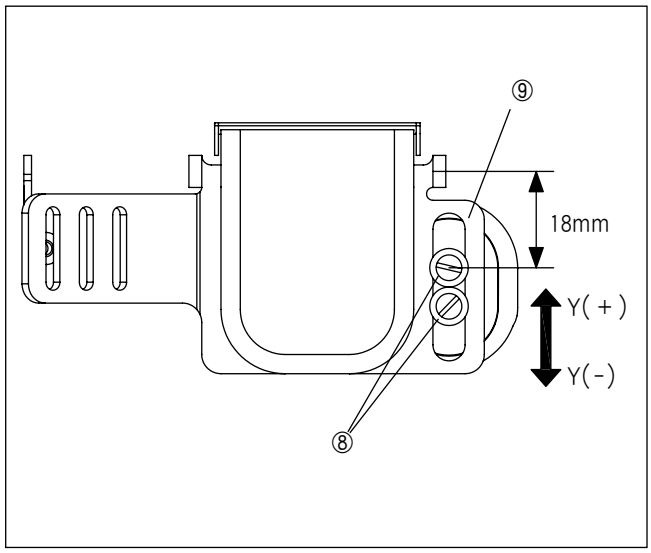
[Figure 37]

Fix the thread take-up lever⑤ at 57mm away from the center of the fixing screw⑦
when the thread take-up lever⑥ is horizontal at the highest position of the needle bar.
To tighten thread, move the thread take-up lever⑤ in the (-)X direction and to loosen
thread, move it in the (+)X direction.
The thread take-up lever can be adjusted after loosening⑦.



[Figure 38]

If the adjustment is not enough, loosen the fixing screw⑧ and move thread path ⑨, adjusting
the thread tension.
Thread is tightened when it is moved in the (+)Y direction, and it is loosened when it is
moved in the (-)Y direction.
Fix the top of thread path at 18mm away from the center of the fixing screw⑧.



[Figure 39]

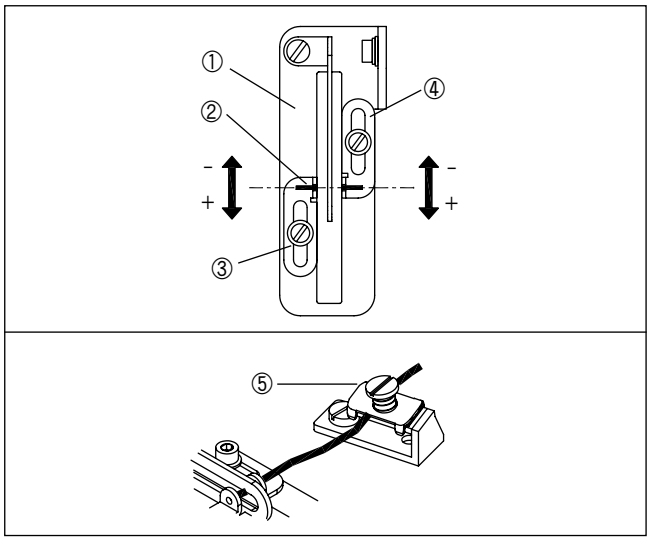
2) Adjustment of looper thread tension

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

The standard setting is to match the punched mark② on the looper thread take-up lever guide support① with the thread holes of the thread guides③,④.
To increase thread supply, loosen the thread guide fixing screws③,④ and advance the thread guide forward. To reduce thread supply, move the thread guide backward.

※ When using the wool thread, move the looper thread guides③, ④ forward as much as possible, and do not insert thread into disc⑤.

Caution	Please note that excessive supply of looper thread may cause stitch skip.

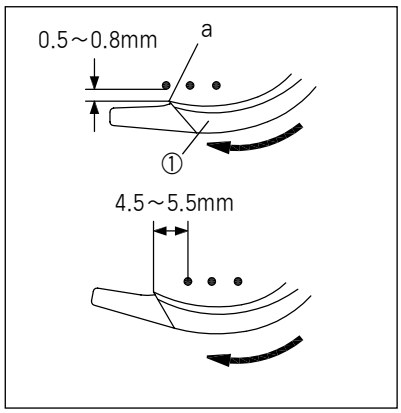


[Figure 40]

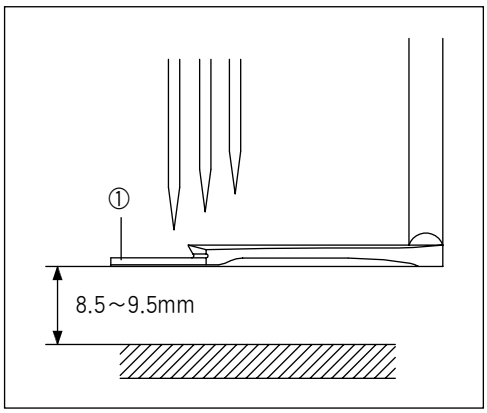
3) Adjustment of needle and spreader

Warning	Turn the power switch off before adjustments

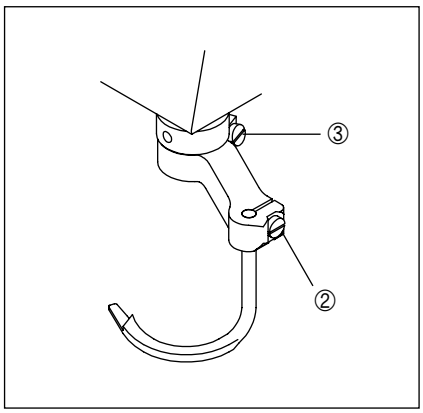
(1) Installation of spreader



[Figure 41]



[Figure 42]



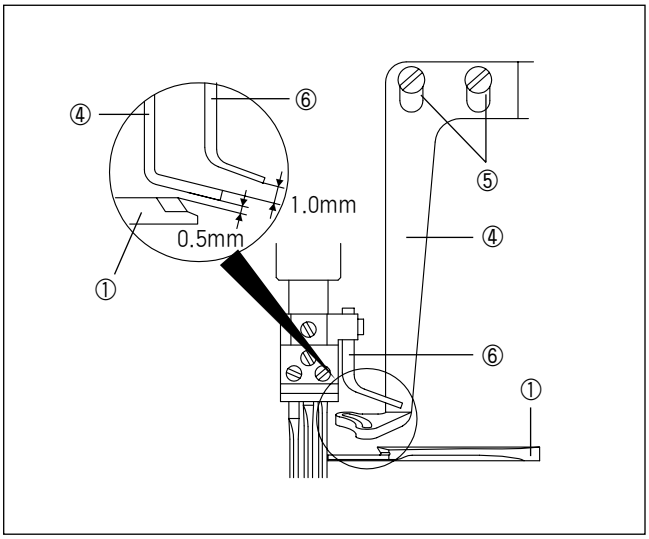
[Figure 43]

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 41)
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 42)
The spreader can be adjusted by untightening the spreader fixing screw② and the spreader handle fixing screw③. (Figure 43)

(2) 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.

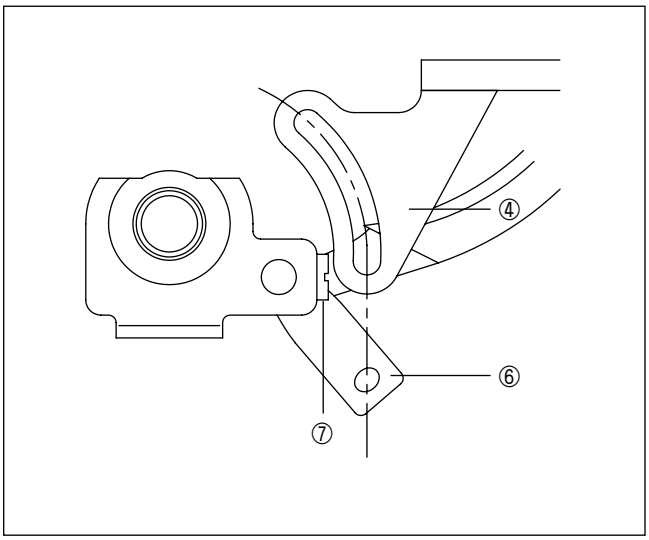


[Figure 44]

(3) 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.



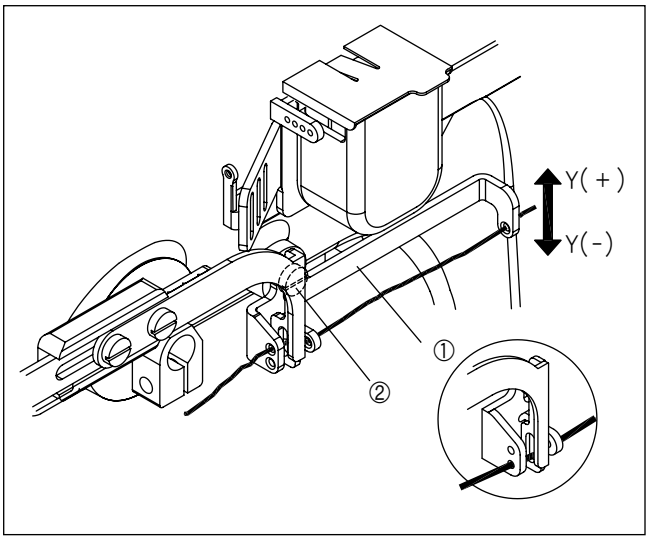
[Figure 45]

(4) Adjusting decorative thread

The lifting of decorative thread eyelet(right) ① in the (+)Y direction reduces thread supply, and the lowering of the eyelet in the (-)Y direction increases thread supply.

When using the elastic decorative thread like wooly thread, loosen the fixing screw② and lower the decorative thread eyelet(right) ① in the (-)Y direction.

In the case of wooly thread, pass it through the lower thread hole.



[Figure 46]

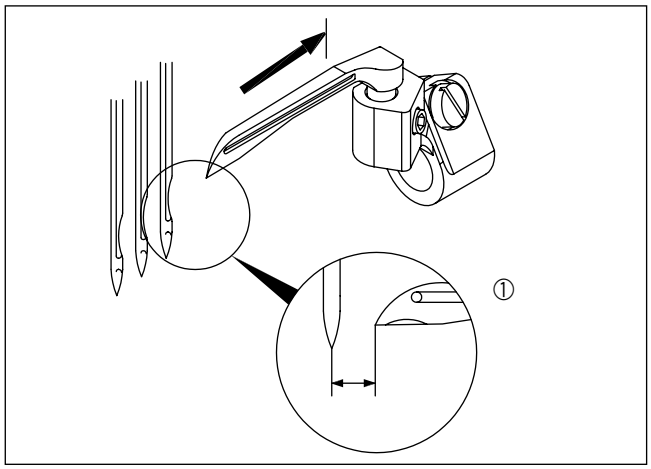
4) Adjustment of needle and looper timing

(1) Left/right position of looper

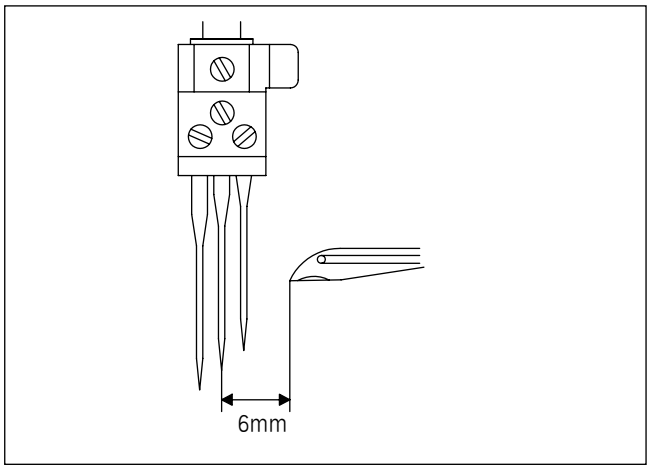
The clearance between the end tip of the looper and the center of the right needle changes in accordance with needle distance, when the needle is at its lowest, and the looper is at its far right. Be sure to adjust the distance as shown in the table below.

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.



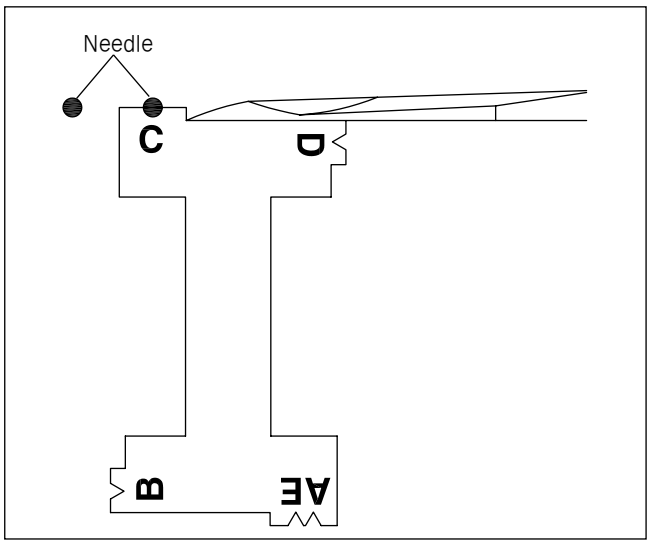
[Figure 47]



[Figure 48]

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.



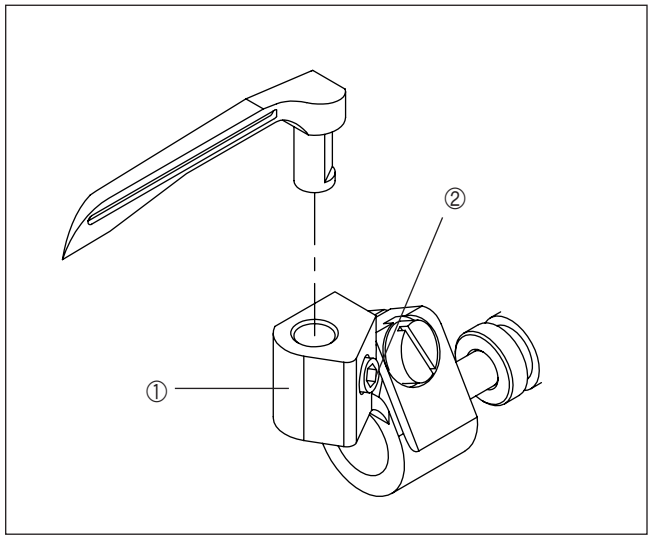
[Figure 49]

※ 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 Angle and height for looper attachment

Insert the looper deep inside the looper holder① and fasten the fixing screw②. Then the attachment angle of 2° and the height are determined.

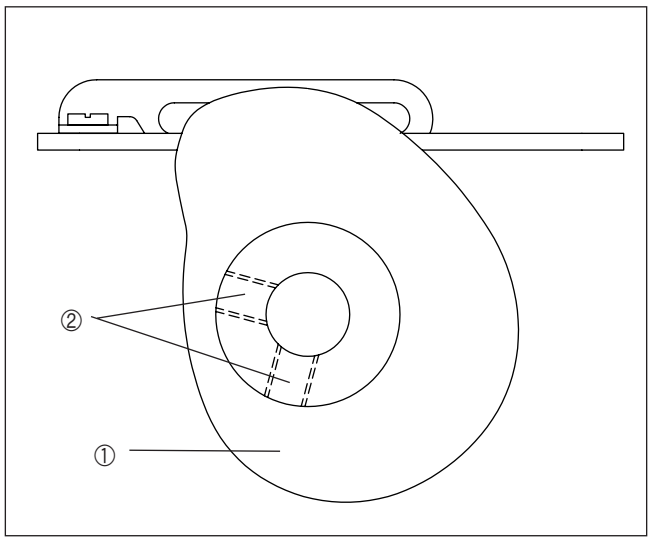


[Figure 50]

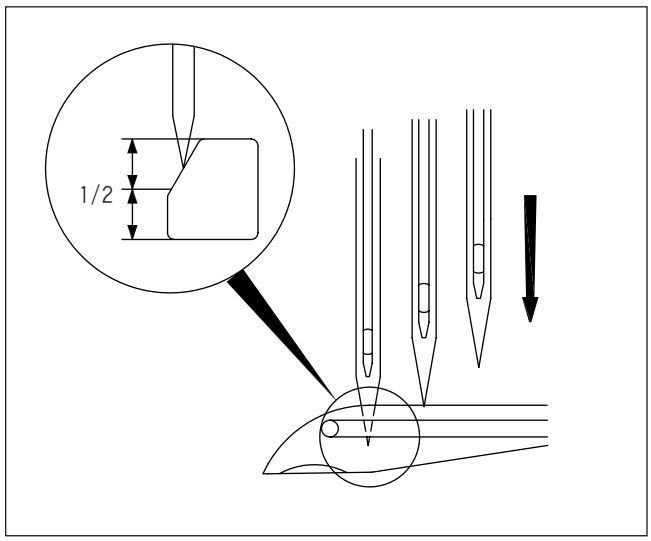
③ Location of looper cam

The figure shows the looper cam view from the needle bar direction.

Lower the needle from the highest point. When the needle reaches the half point of the looper, loosen the fixing screw② to escape the thread from the highest position of the looper cam①.

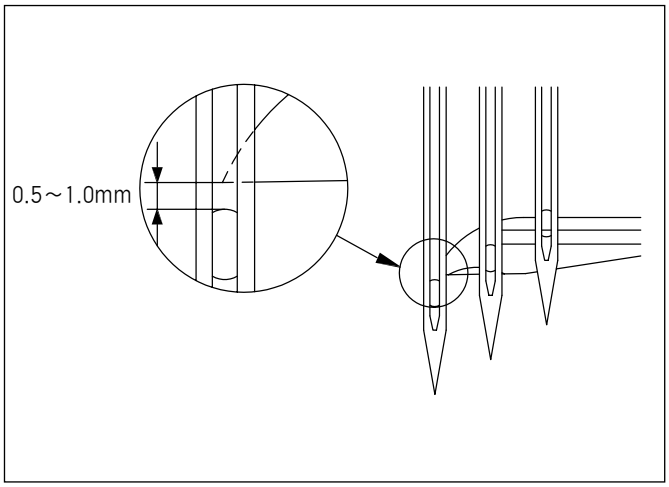


[Figure 51]

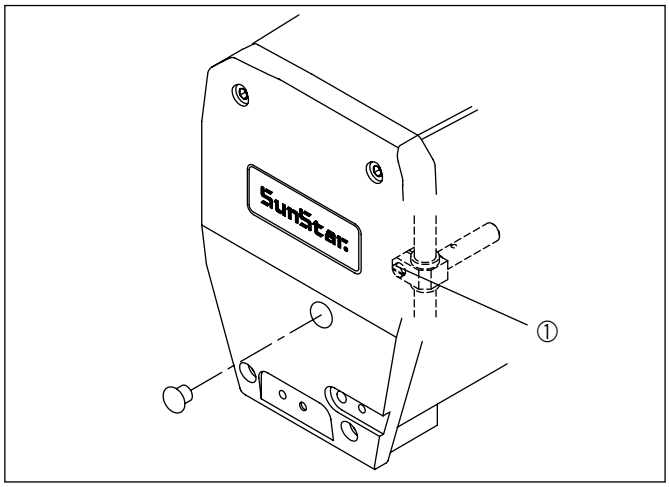


[Figure 52]

⑷ Needle height



[Figure 53]

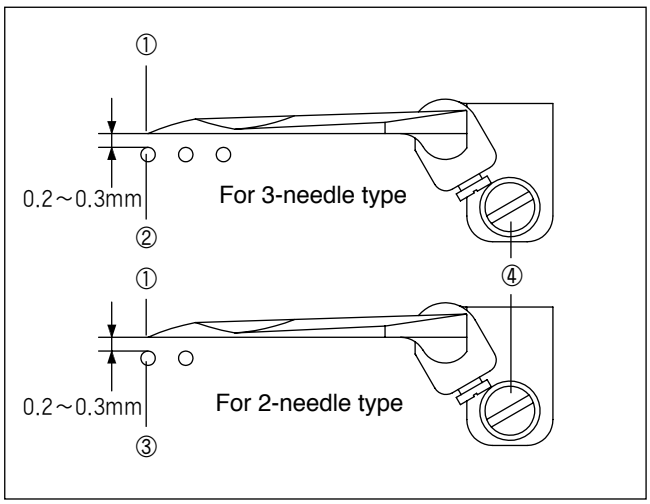


[Figure 54]

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.

⑸ Front/rear position of needle and looper

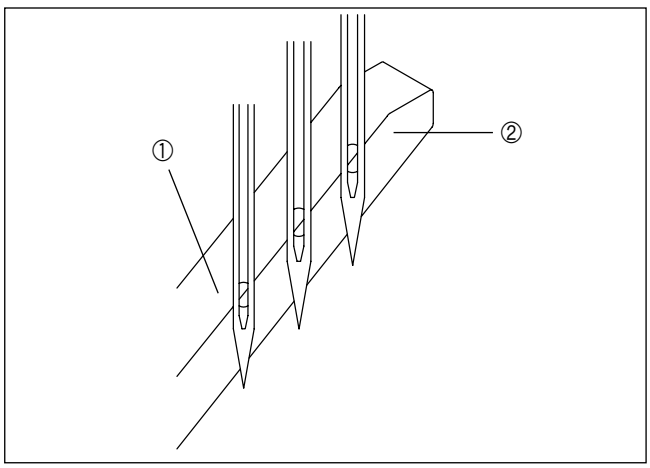
The recommended clearance when the end tip of the looper① meets the left needle is 0.2 ~0.3 mm. For adjustments, unfasten the screw④ of the looper holder.



[Figure 55]

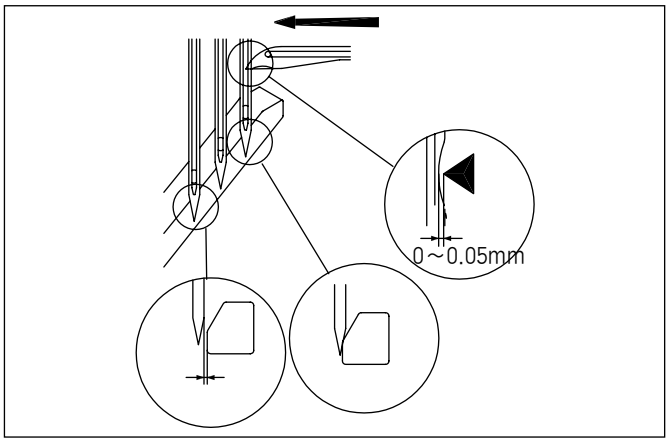
⑹ Needle and needle guard(rear)

※ 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.

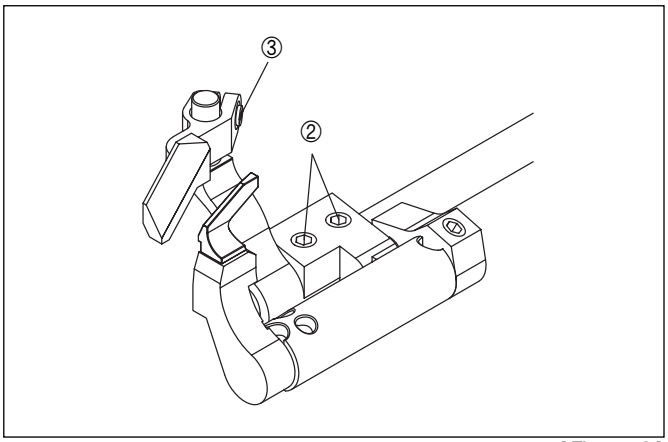


[Figure 56]

※ Front/rear position of needle guard(R)



[Figure 57]

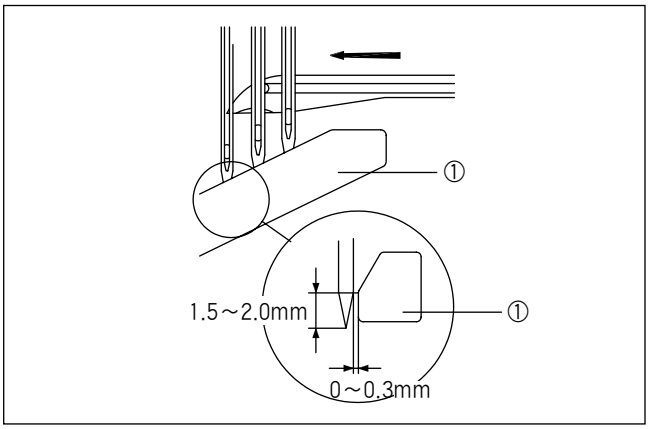


[Figure 58]

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).

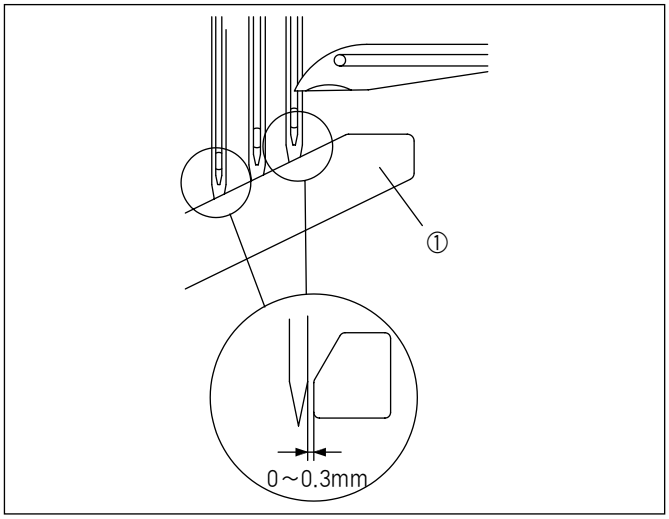
(7) Needle and needle guard(front)

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.

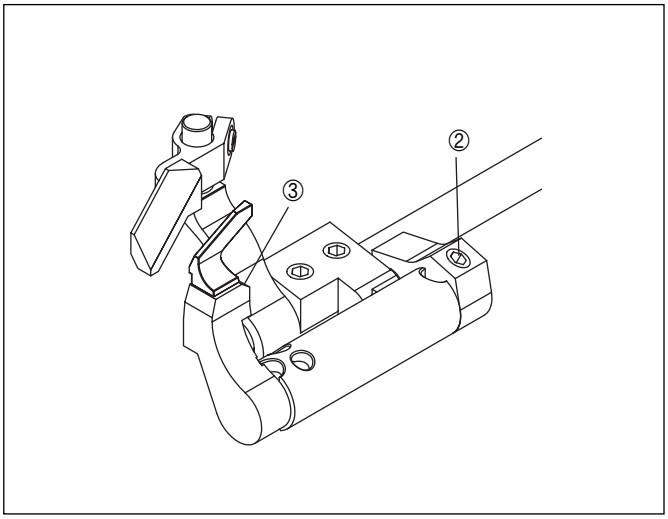


[Figure 59]

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).



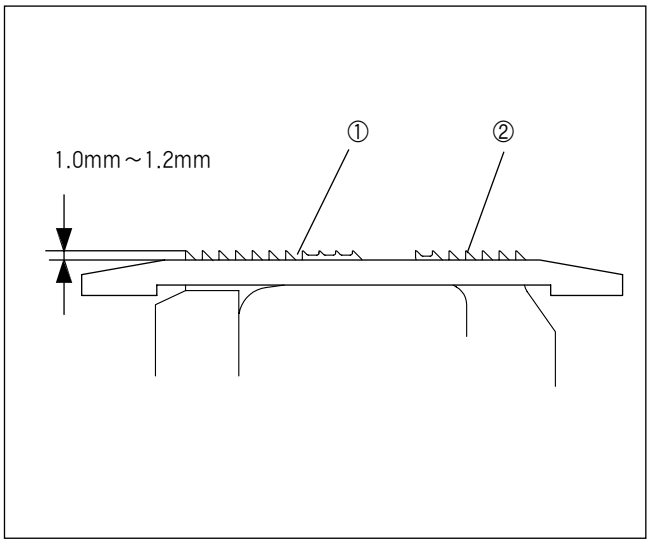
[Figure 60]



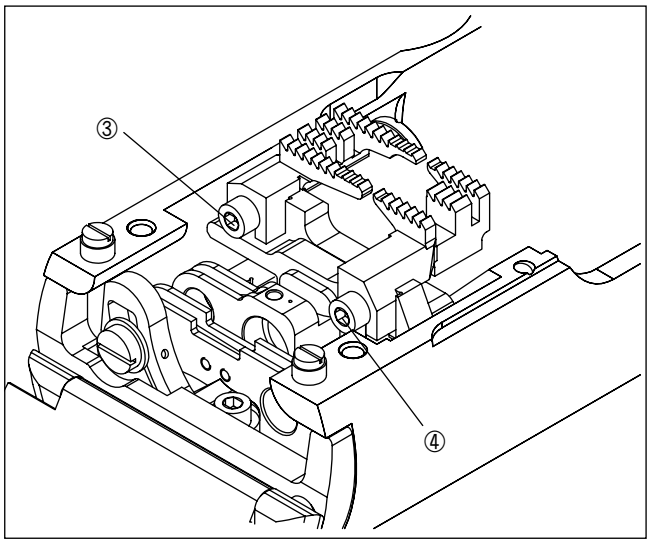
[Figure 61]

5) Adjusting the feed dog height

When the feed dog is at the highest position, the feed dog face and the needle plate face are in parallel.
Set the main feed dog① and the differential feed dog② at the same height, and adjust the distance from the needle plate face to the feed dog face at 1~1.2mm.
Adjustment can be conducted after loosening the fixing screws③,④.



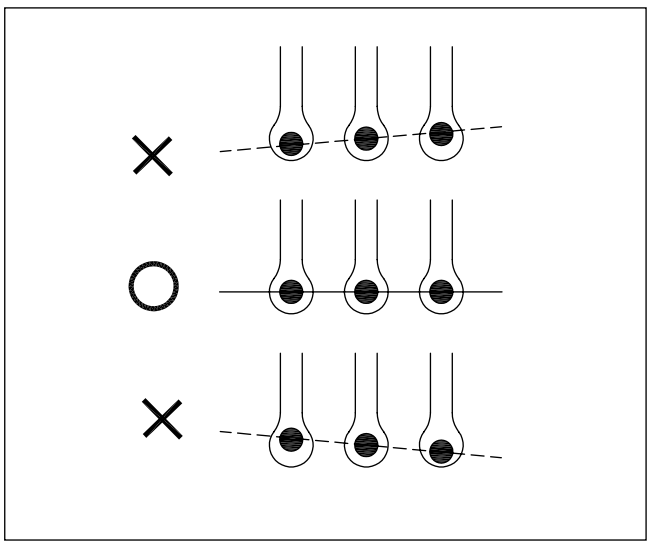
[Figure 62]



[Figure 63]

6) Adjusting needle and needle plate

When adjusting the needle bar height, the needle should be aligned horizontally with high accuracy like the solid line in the figure. It should not be aligned as the dotted line in the figure.



[Figure 64]

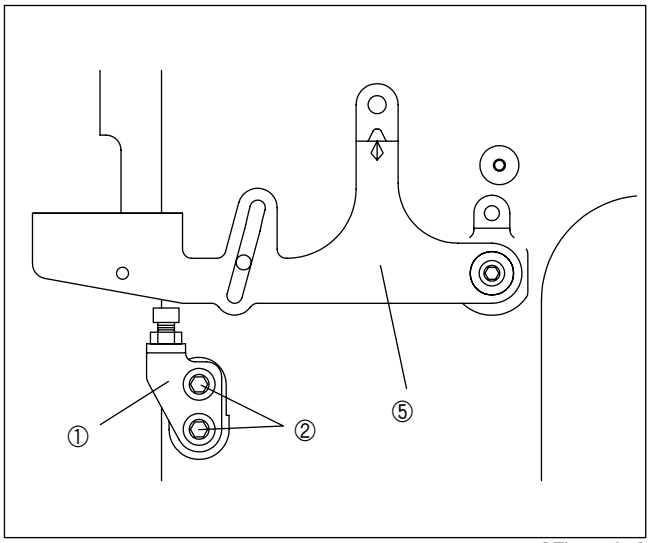
7) Presser foot separation and lift volume

Loosen the fixing screw② for the knee lift lever stopper① and the fixing screw④ for the presser bar collar③ and push the knee lift lever⑤ downward. Then the presser bar can be separated.

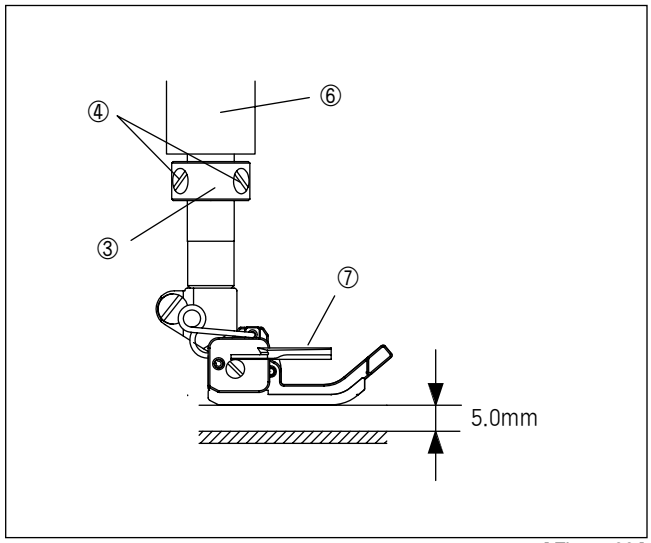
To set the presser foot height, push down the knee lift lever⑤ and set the distance between the needle plate face and the presser foot bottom at 5.0mm(in the case of using decorative thread looper), and then fasten the fixing screw② for the knee lift lever stopper①.

Then set the distance between the presser bar bushing bottom⑥and the presser bar collar face③ at 0.2mm and fasten the fixing screw④.

The distance will be 7mm when there is no spreader⑦. However, without the use of the spreader, the presser bar collar is not used.



[Figure 65]



[Figure 66]

9

Automatic Thread Trimmer

1) Operation

Caution	Turn the power switch off before adjusting tension.

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

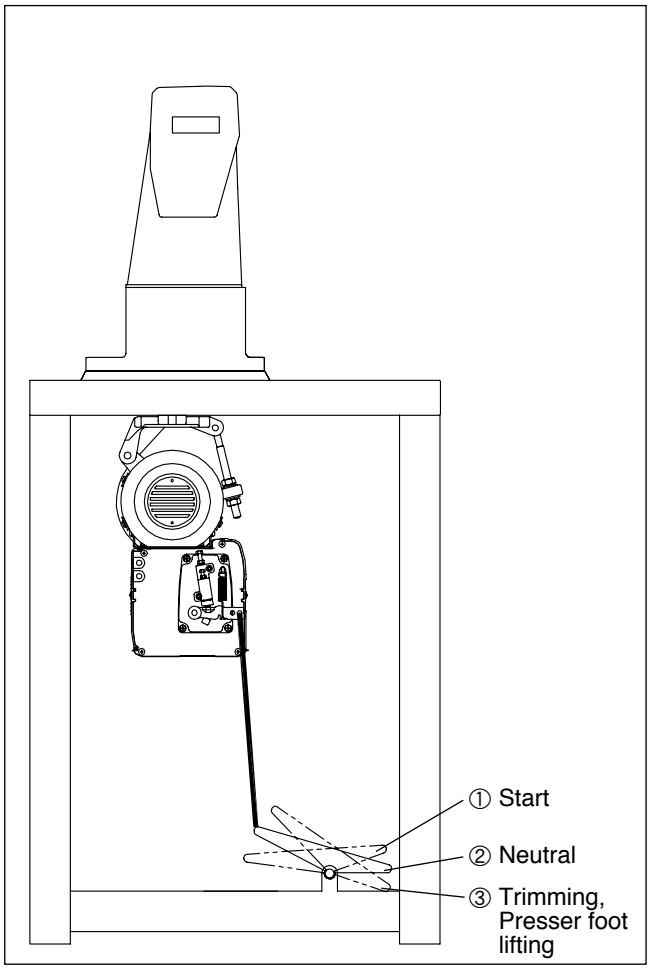
Motor is selected either from ① or ②. Operation procedures for ① or ② are as follows.

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 67]

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

Caution	Be sure to place sewing materials under the presser foot before operation.

(2) Operation procedures for ST-C device.

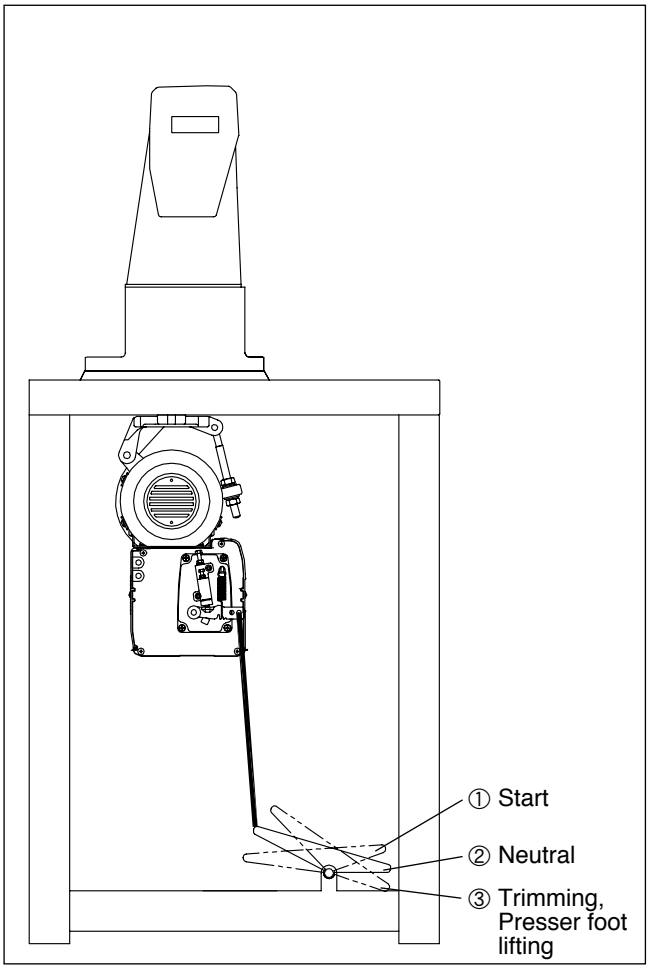
Motor is selected either from ① or ②. Operation procedures for ① or ② are as follows.

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 68]

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

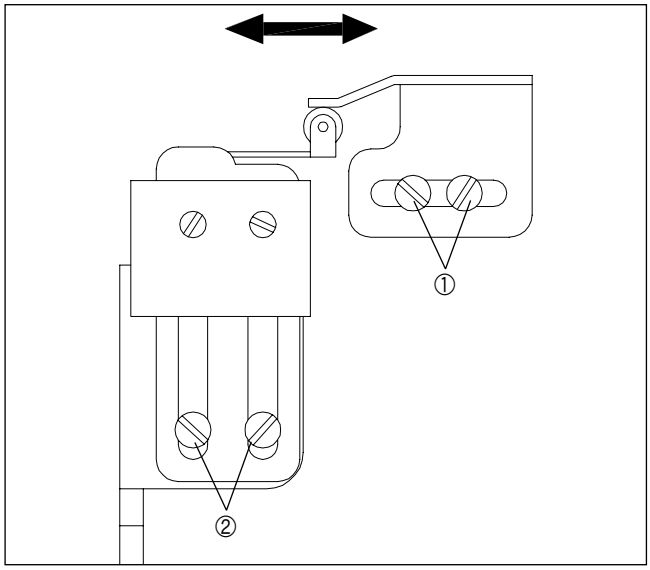
A. Adjusting limit switch

There is a detection switch which prevents the sewing machine from operating unless the trimmer is completely returned to the original position.

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.

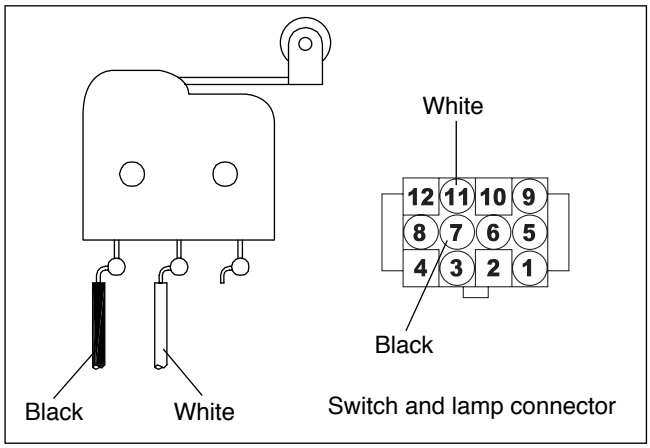


[Figure 69]

B. Connecting limit switch

a. General Servo motor A (Fortuna Ⅲ)

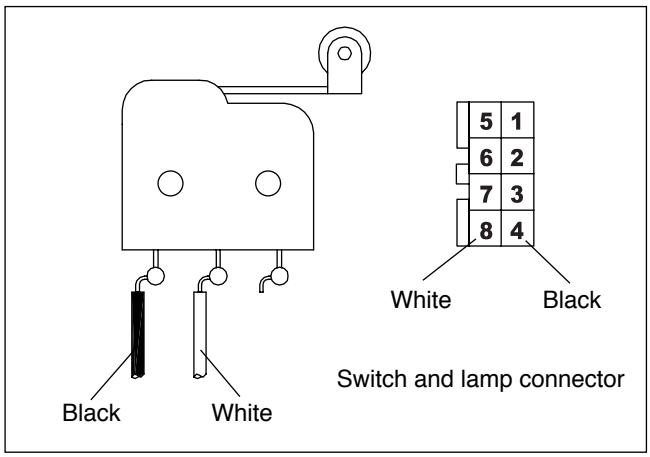
Link the limit switch cord to the 12P-connector as follows.



[Figure 70]

b. Small motor A (Fortuna Ⅳ)

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



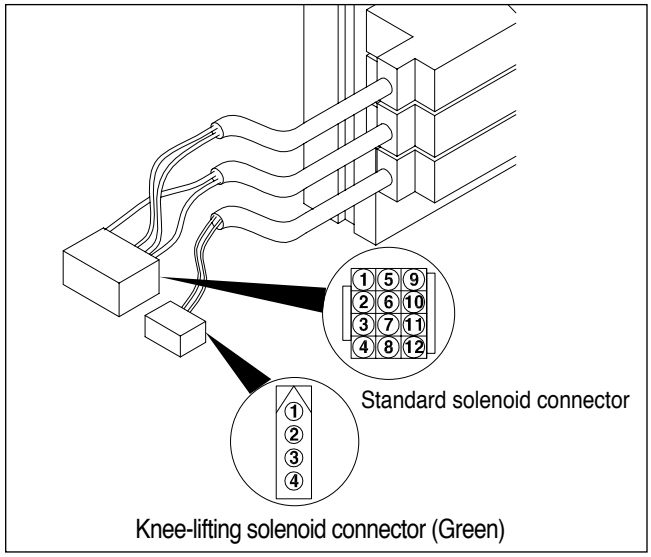
[Figure 71]

(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.

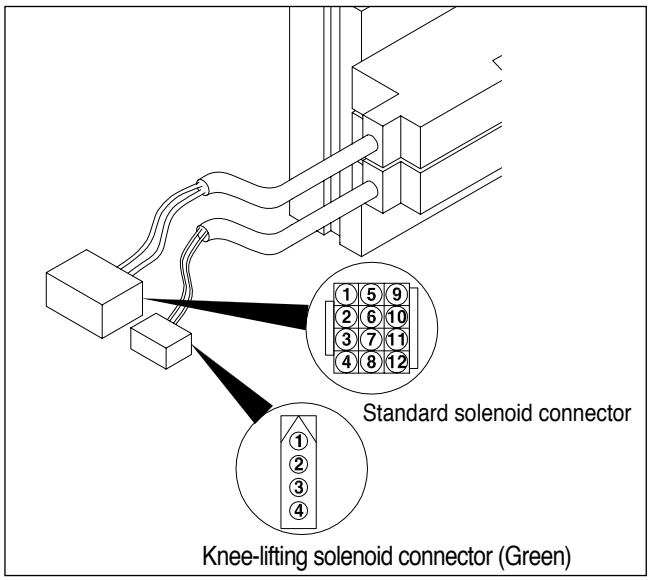


[Figure 72]

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.



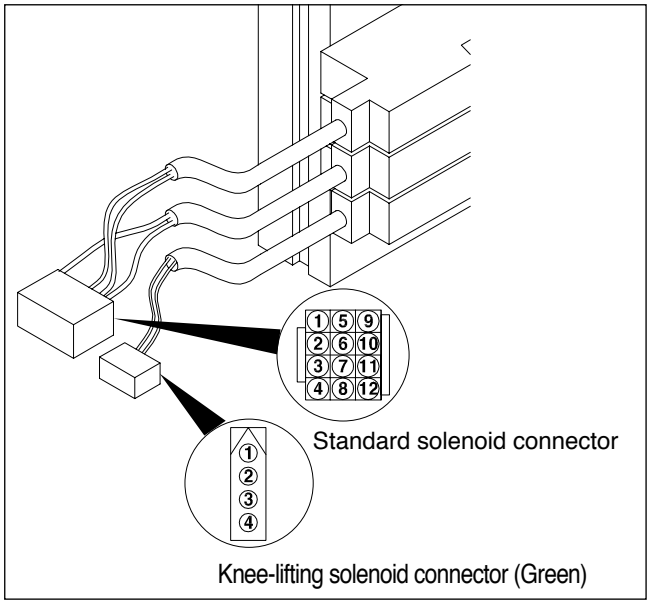
[Figure 73]

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.



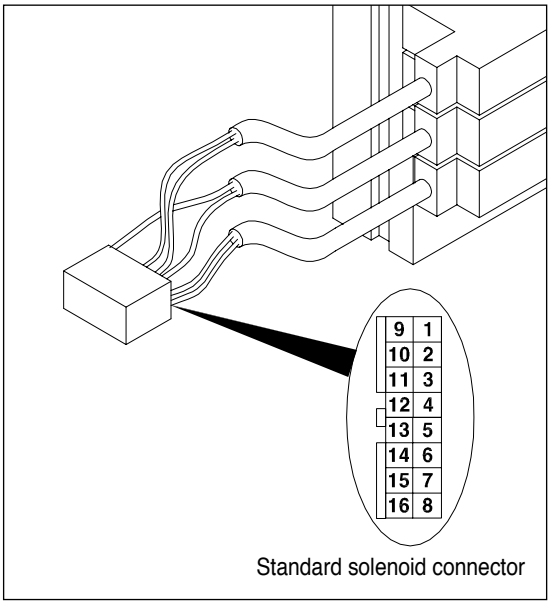
[Figure 74]

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.

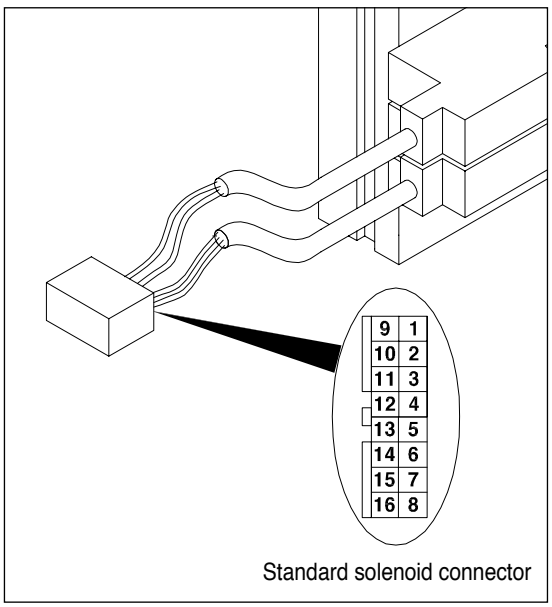


[Figure 75]

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.



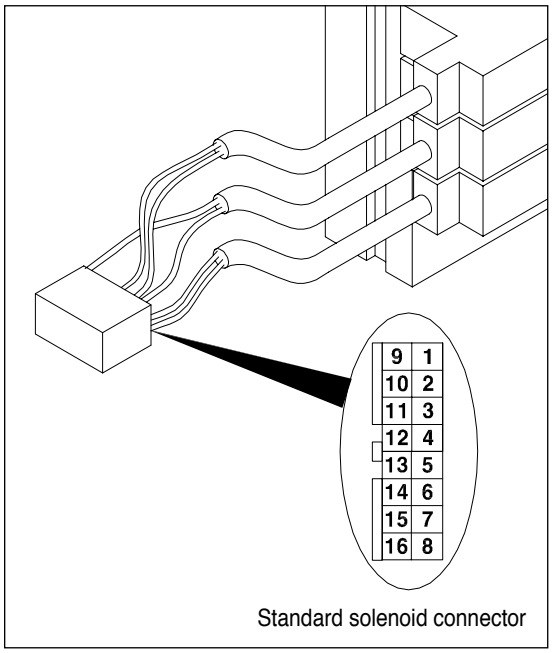
[Figure 76]

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.

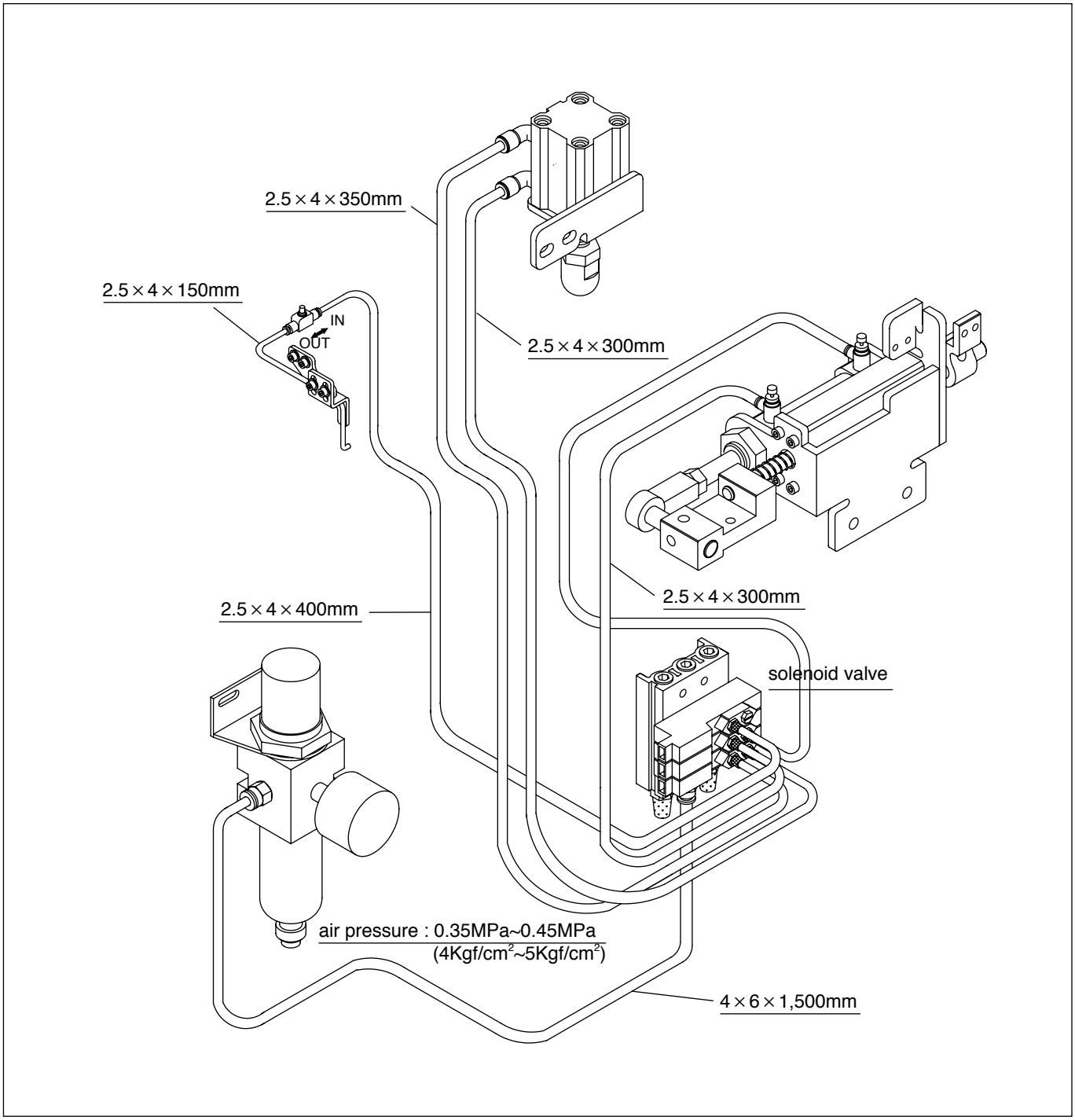


[Figure 77]

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 [+]

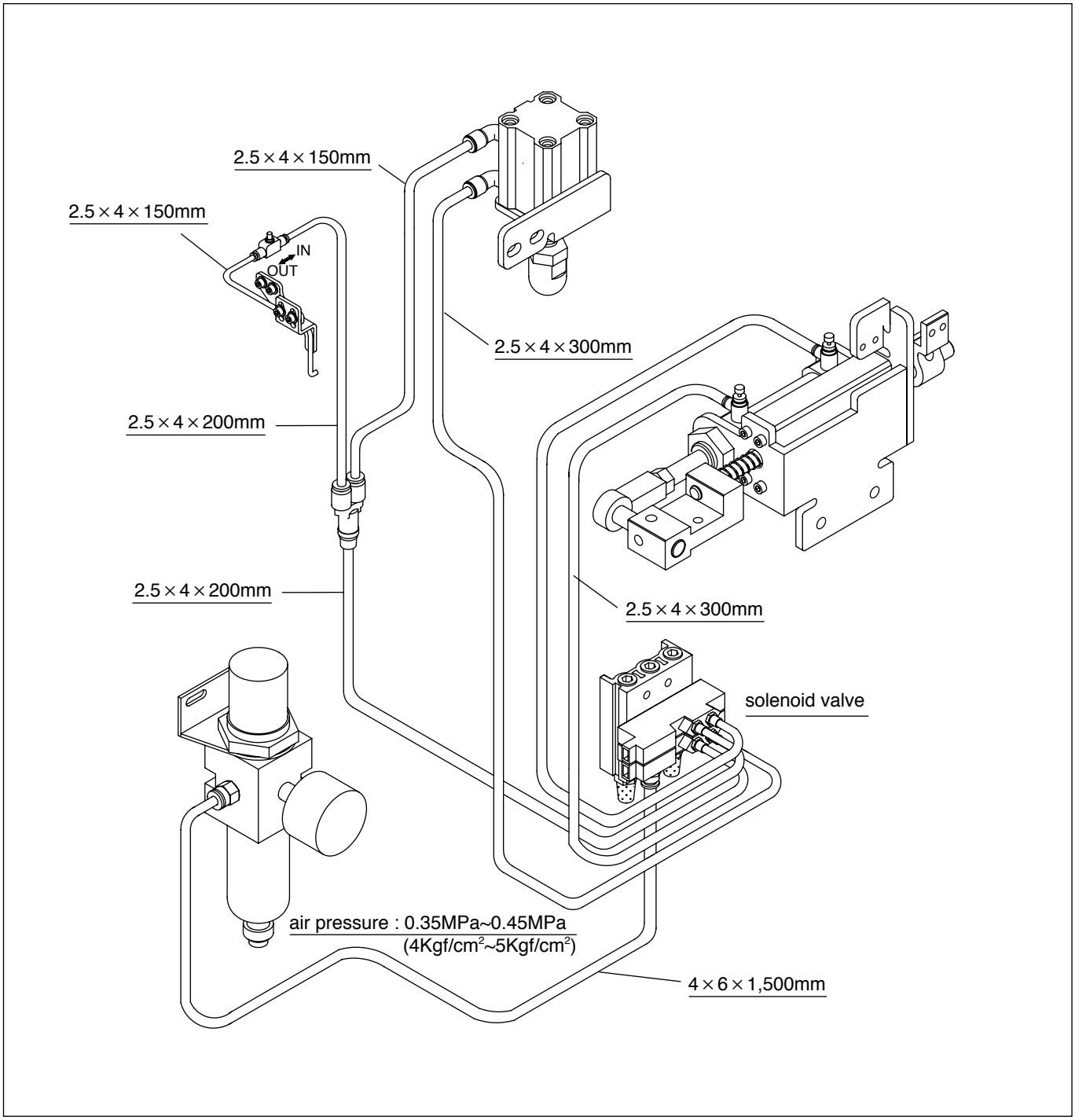
3) Air pressure wiring map

(1) UT-B device



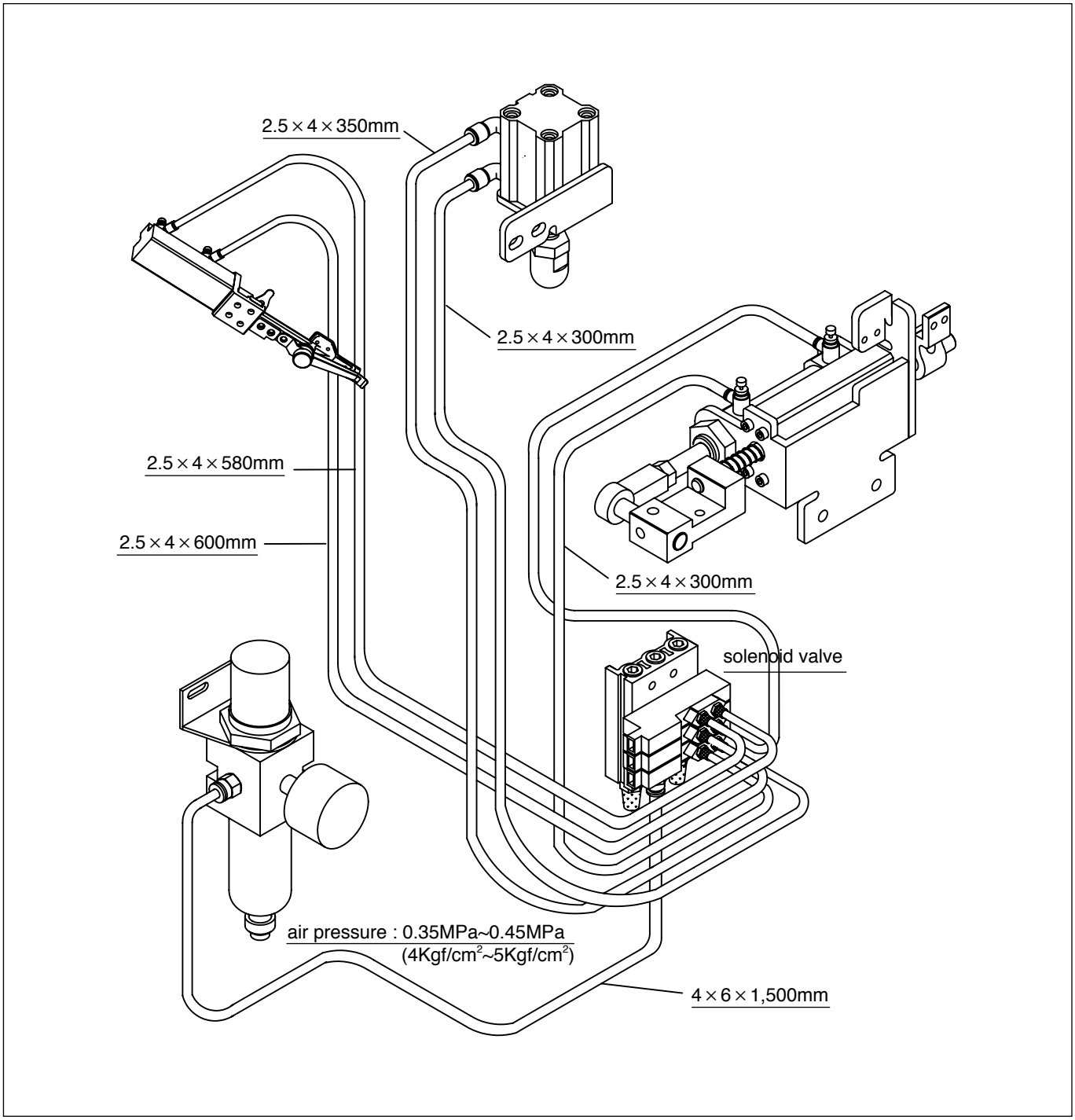
[Figure 78]

(2) UT-A device



[Figure 79]

(3) ST-C device

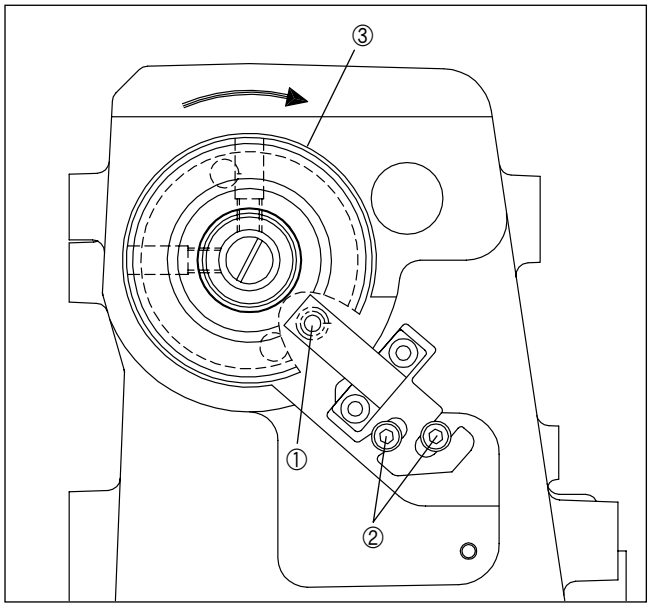


[Figure 80]

4) Installation of synchronizer sensor

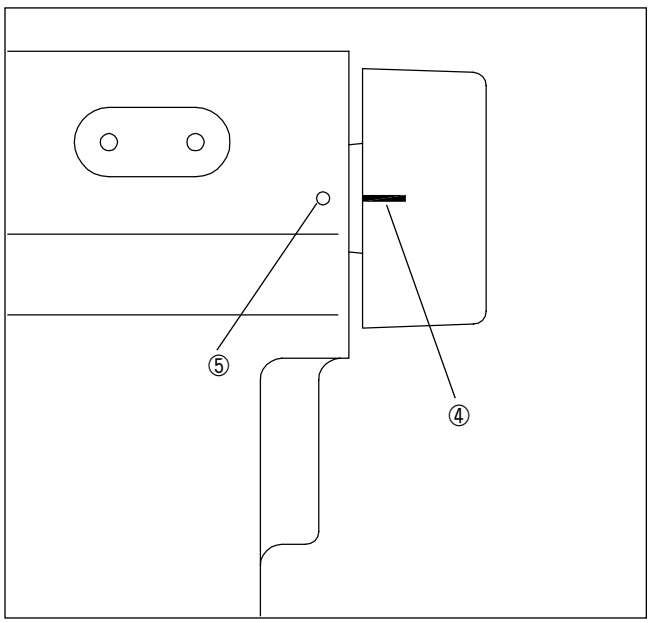
Warning	Leave the trimming cylinder plug pulled off from the control box in the motor. Otherwise, parts can be damaged.

(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 81]

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



[Figure 82]

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

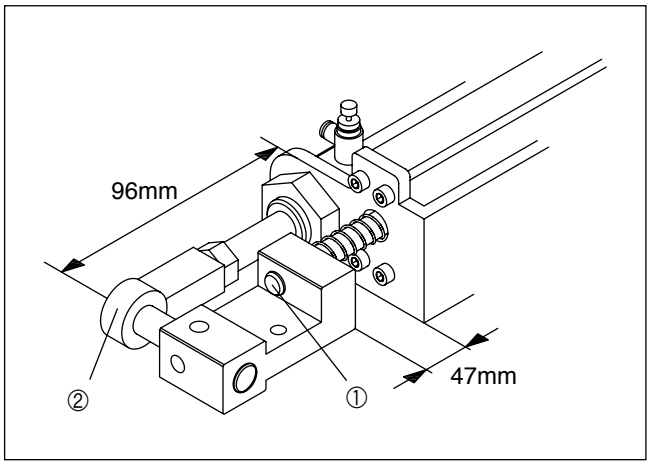
Warning	Before adjustments, always turn off the motor switch and check to make sure that the motor is in stop mode.

(1) Adjusting thread trimming air cylinder

A. The desirable stroke is 25mm.

B. Adjust the sub guide shaft ① and the rod end bearing ②, and conduck setting as in the figure.

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)**



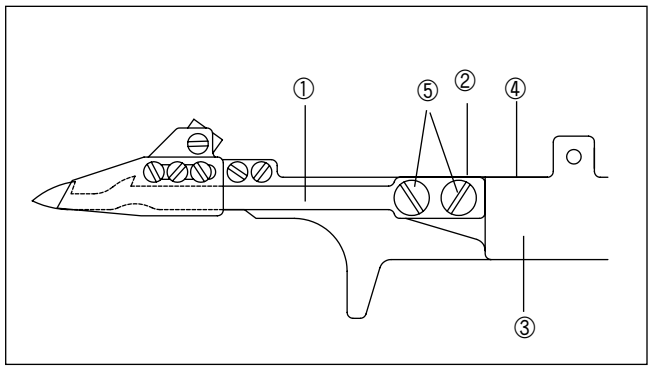
[Figure 83]

(2) Position of moving blade

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.

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



[Figure 84]

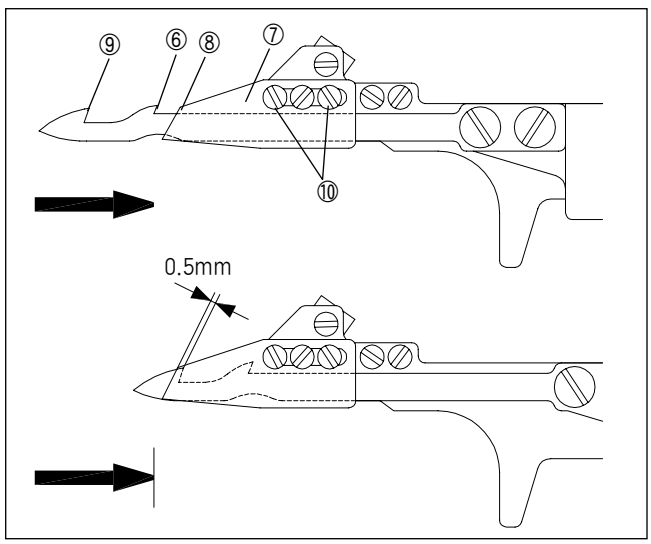
(3) Adjustment between moving blade and fixed blade

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.

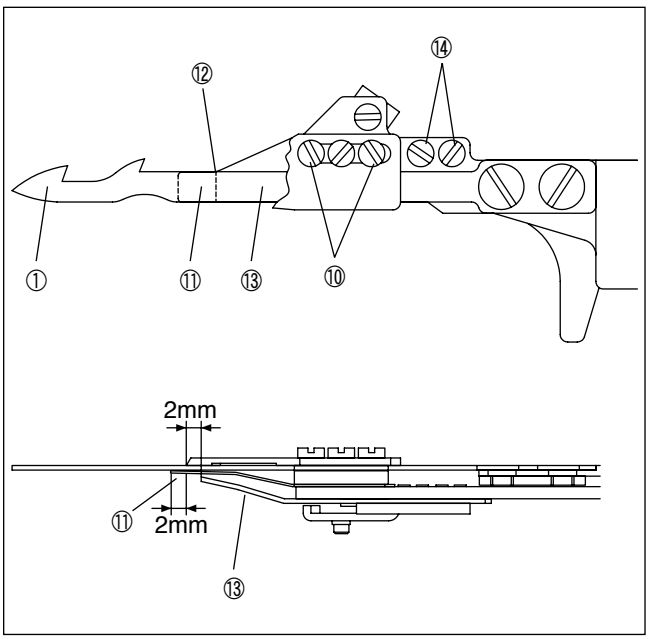


[Figure 85]

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.

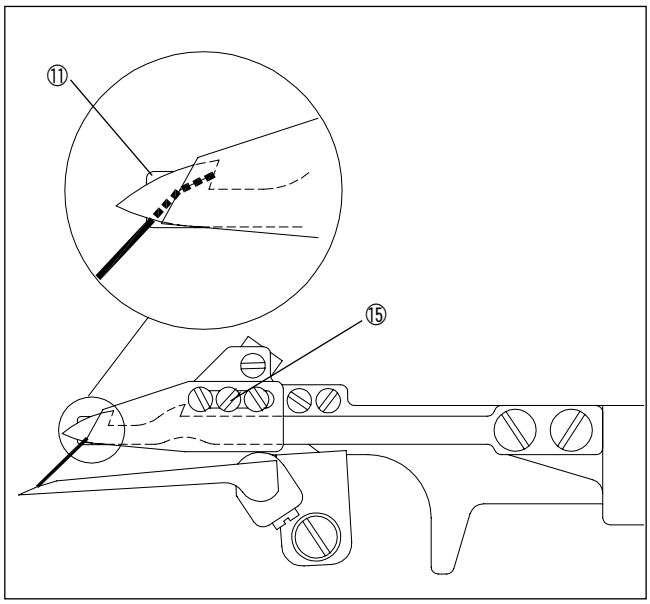


[Figure 86]

(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.

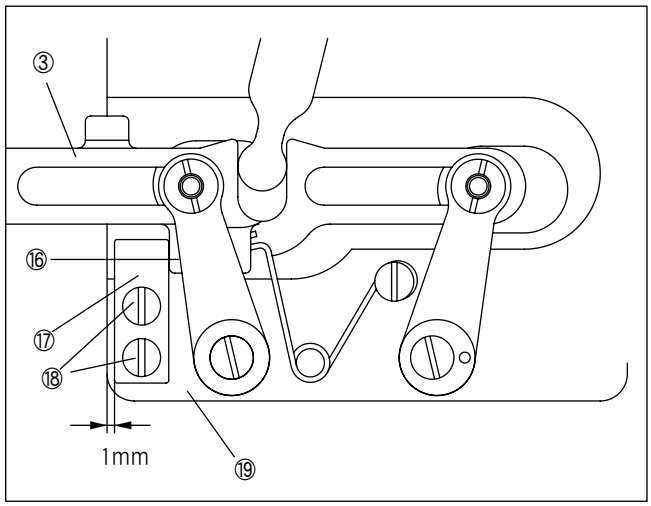


[Figure 87]

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.



[Figure 88]

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

A. Unfasten the screw ⑱.

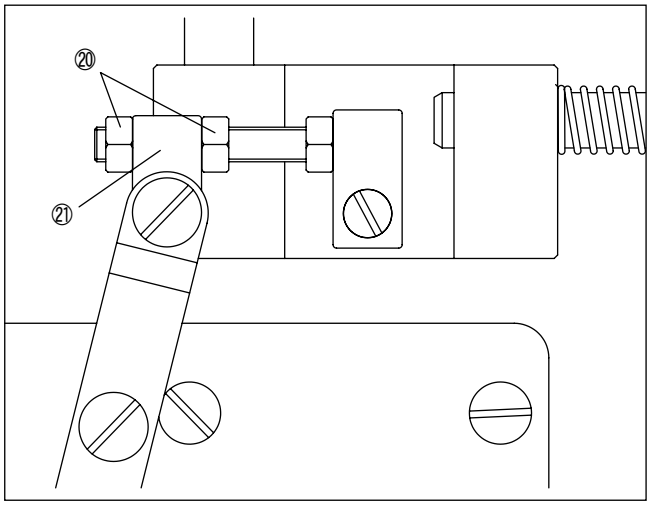
B. Set a clearance of 1mm between the left end tip of the thread trimming base ⑲ and the left end tip of the stopper for fixed blade body ⑰.

C. Adjust the screw ⑱ afterwards.

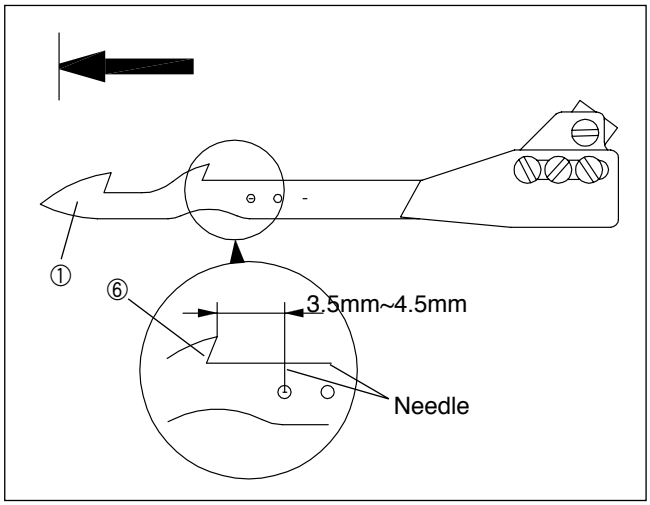
Warning	Before adjustments, always turn off the motor switch and check to make sure that the motor is in stop mode.

(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 89]



[Figure 90]

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

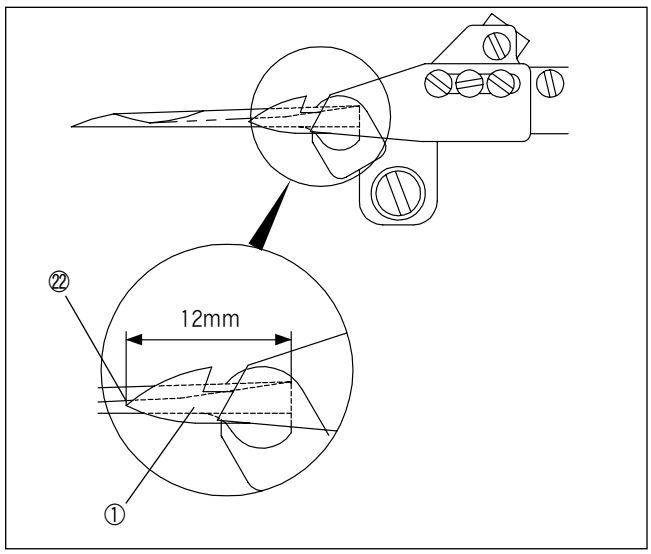
(8) Position of moving blade point

A. Position the moving blade ① to the left.

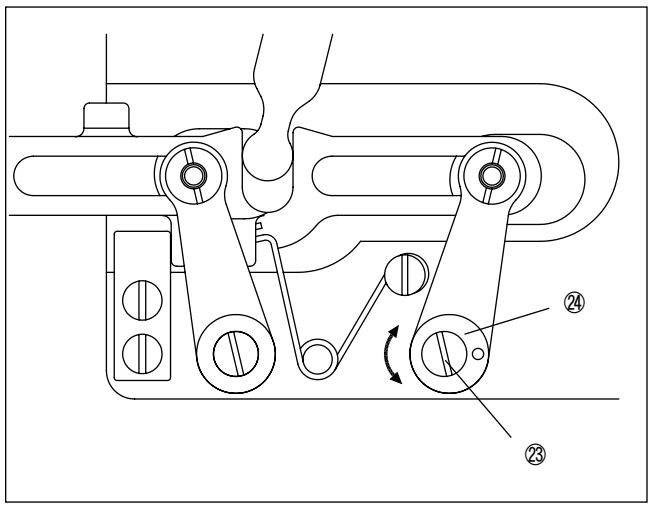
B. When the distance between the endpoint ㉒ of the moving blade ① and the right endpoint of the looper is 12mm, adjust to bring the endpoint ㉒ towards the center of the looper.

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 91]



[Figure 92]

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

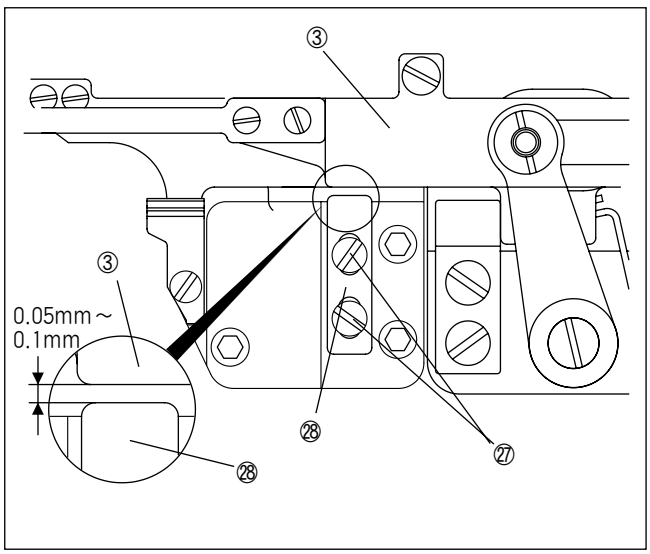
(9) Adjusting moving blade carrier guide (upper)

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 93]

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

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

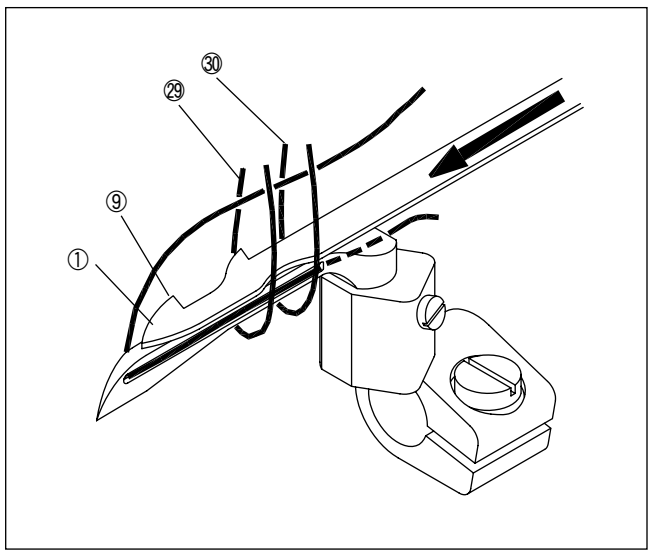
Check the following.

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

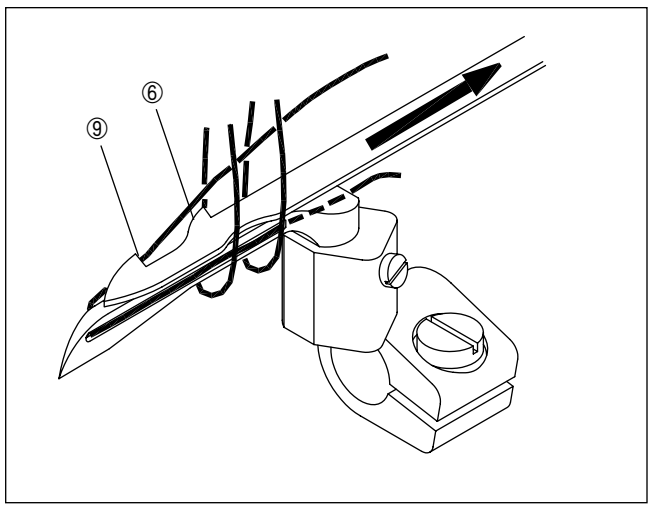
B. Does the hook of the looper thread ⑨ move in front of the looper thread?

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 94]



[Figure 95]

6) Adjustment of thread tension release mechanism

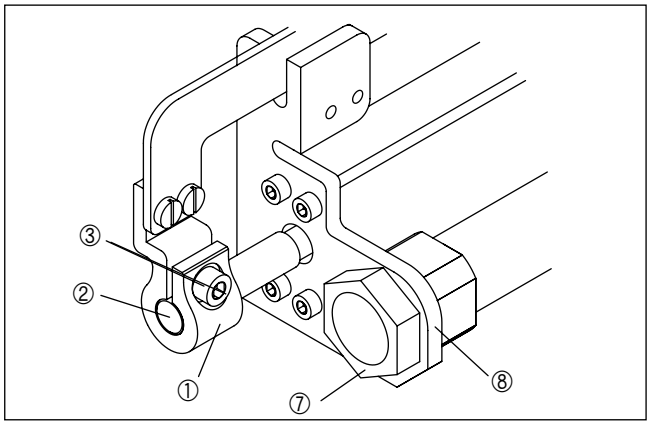
Warning	Before adjustments, always turn off the motor switch and check to make sure that the motor is in stop mode.

(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.



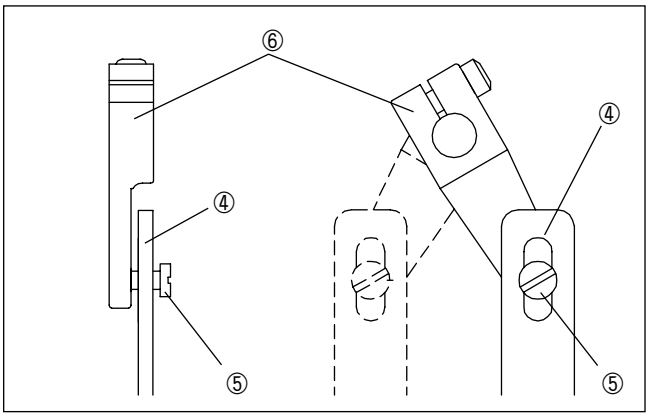
[Figure 96]

(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.

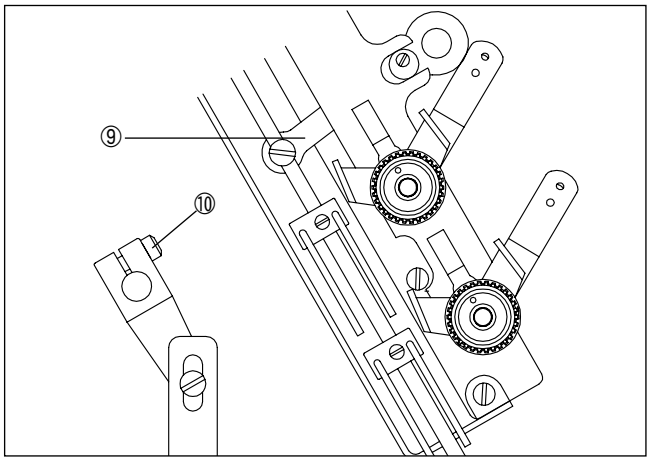
C. Tighten the nut ⑦.



[Figure 97]

(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.

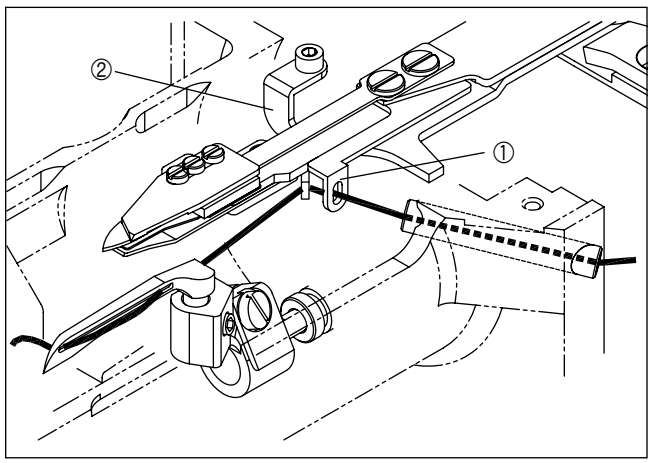


[Figure 98]

(4) Releasing looper thread

When using an elastic thread like wooly as looper thread, the looper thread guides ①,②must be used.

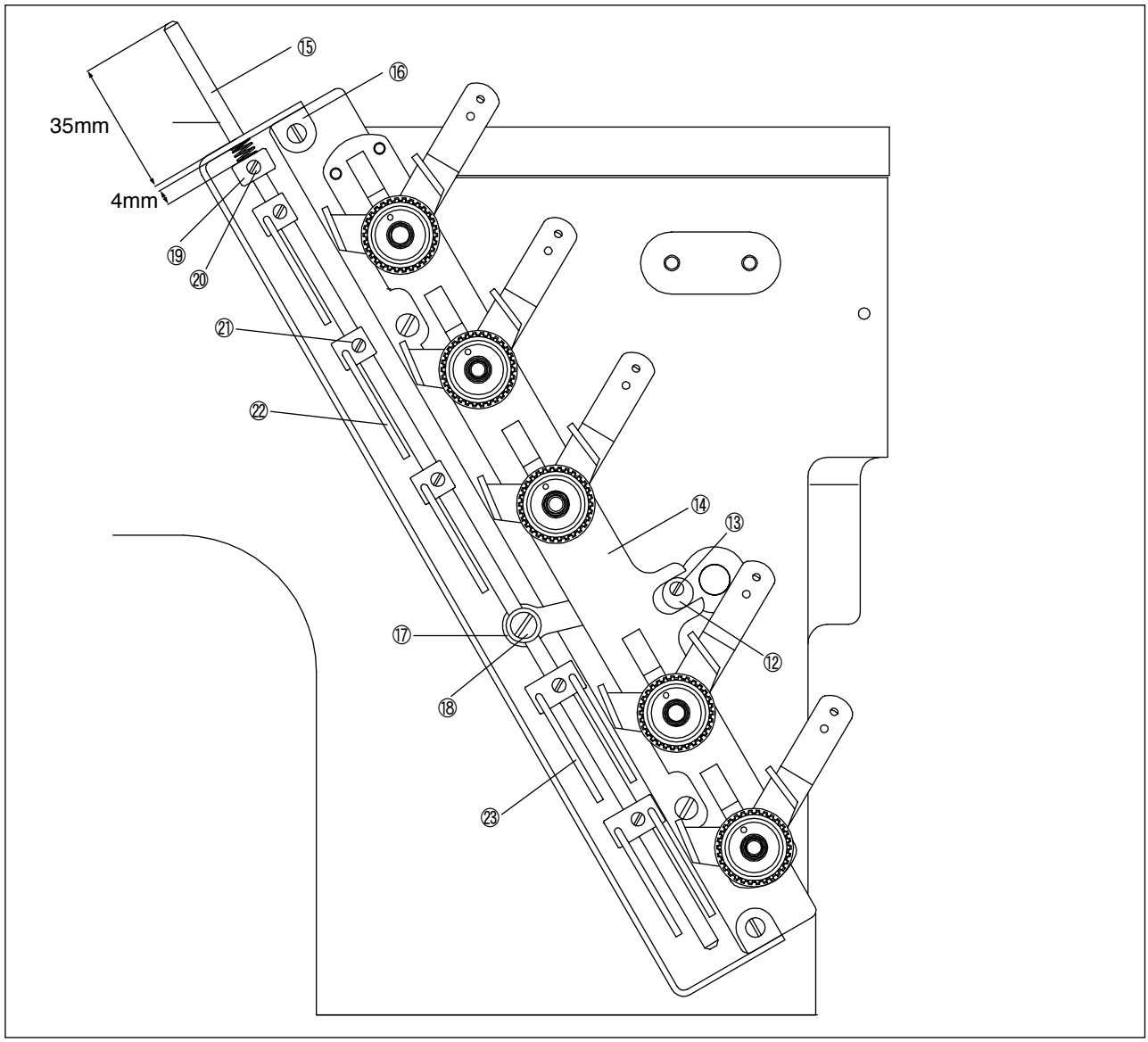
① Main feed adjusting screw ②Main feed adjusting lever ③ Cylinder
④ T-shirt collar, children clothes sleeves ⑤ Adjusting lever method, adjusting screw method



[Figure 99]

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

(5) Tension disc separator

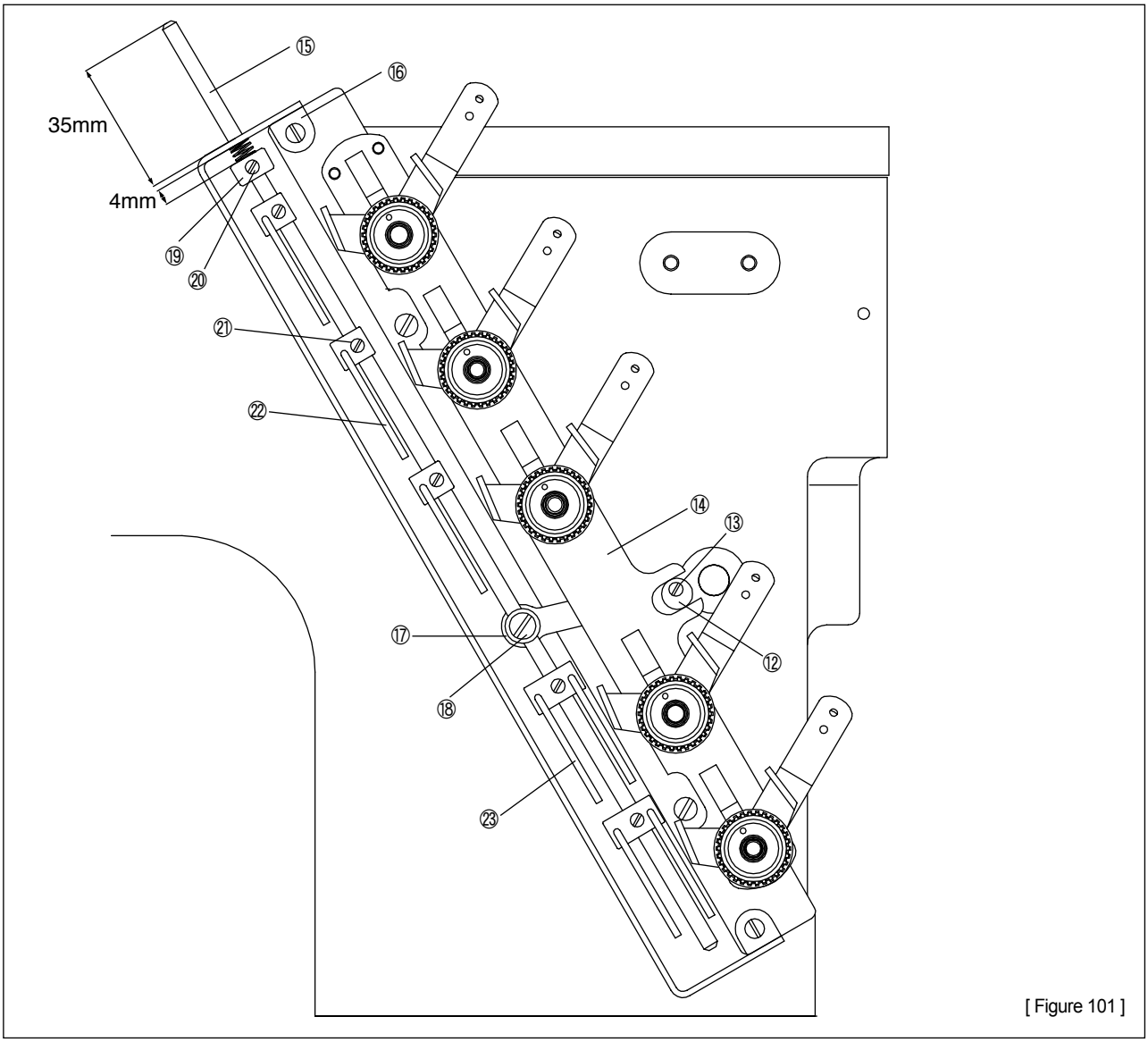


[Figure 100]

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.

(6) Thread pull-off hook unit



[Figure 101]

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.

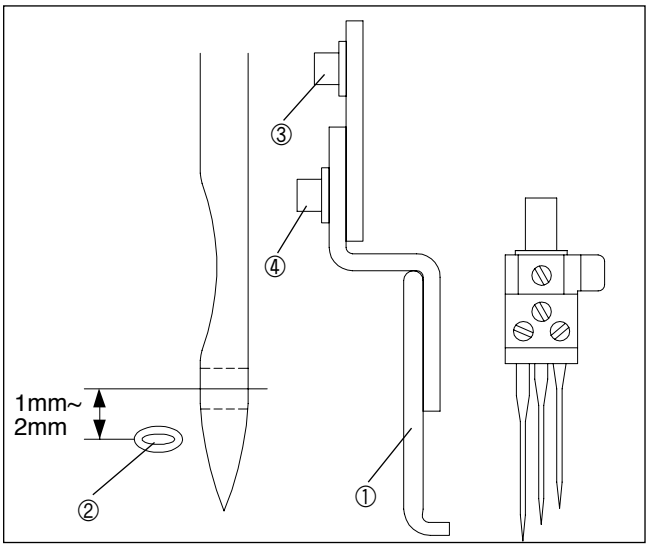
(1) Loosen the screw ③.

(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.

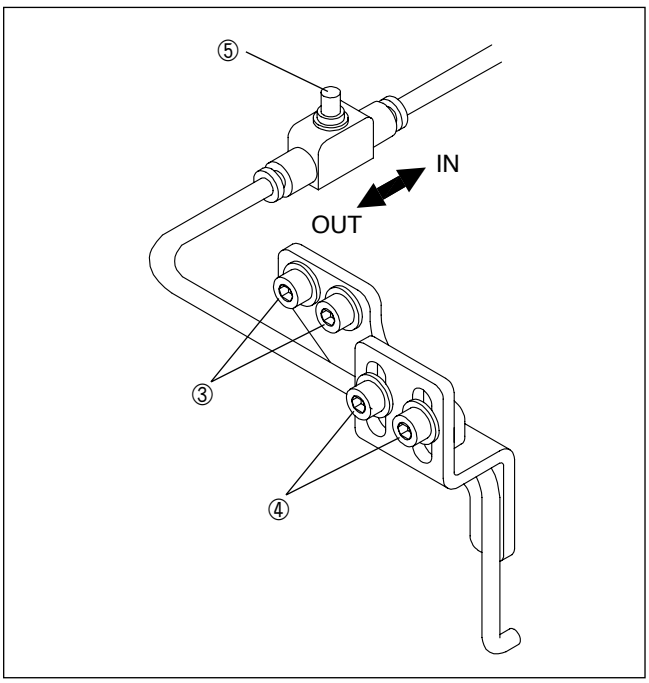
(5) When the needle is at the highest point, adjust the air wiper ① so that the center of the air blowing hole ② is 1.0~2.0 mm lower than the needle groove of the left needle.



[Figure 102]

(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.



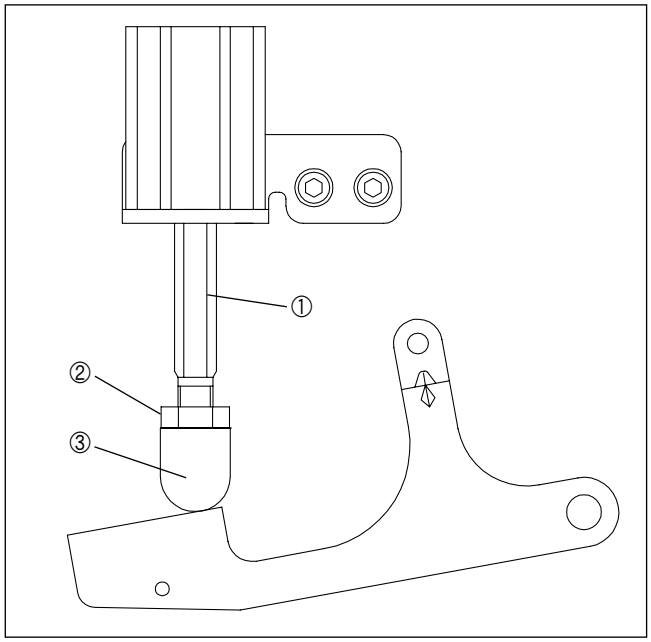
[Figure 103]

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.



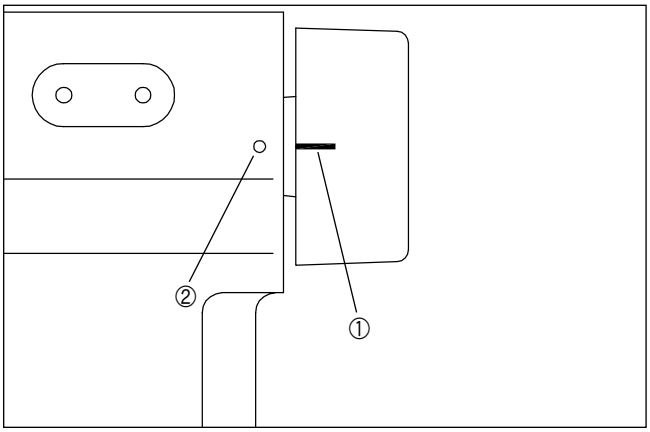
[Figure 104]

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).



[Figure 105]

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.

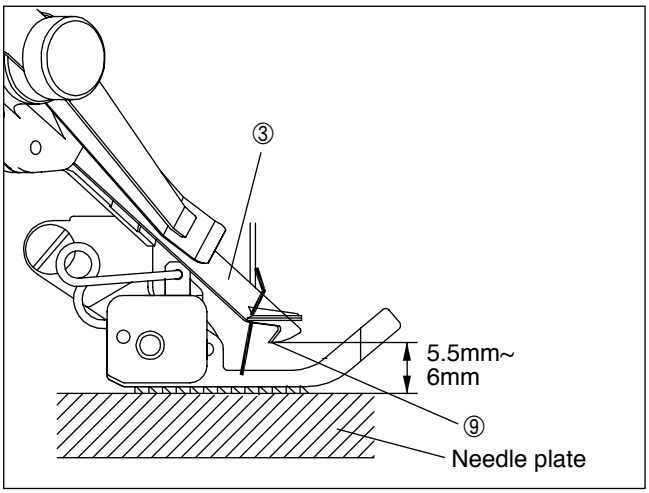
B. Insert into the hole ④ of the movable trimming knife ③ with tweezers to bring down the knife ③ to the lowest point.

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.

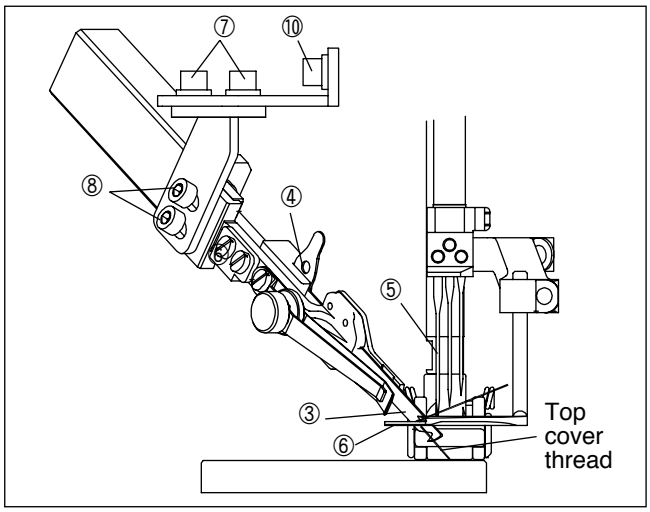
Caution	After adjustments, the movable trimming knife ③ should cross the top cover thread.

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 106]

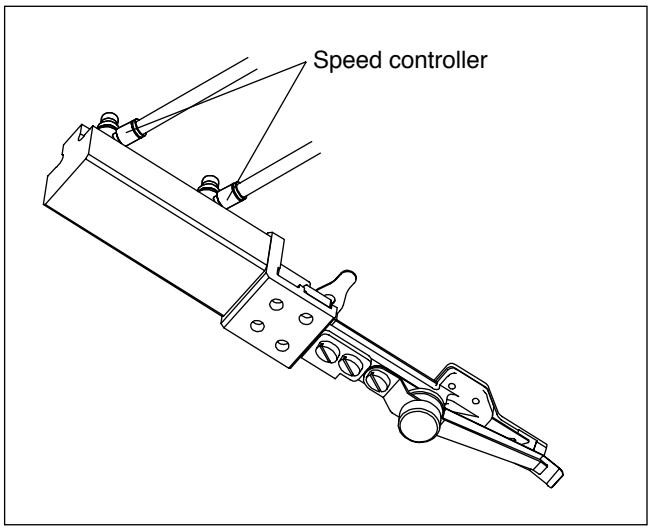


[Figure 107]

(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.



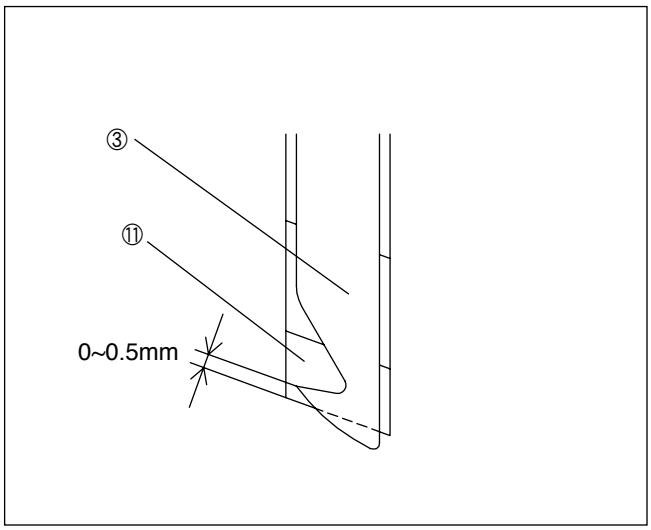
[Figure 108]

(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 109]

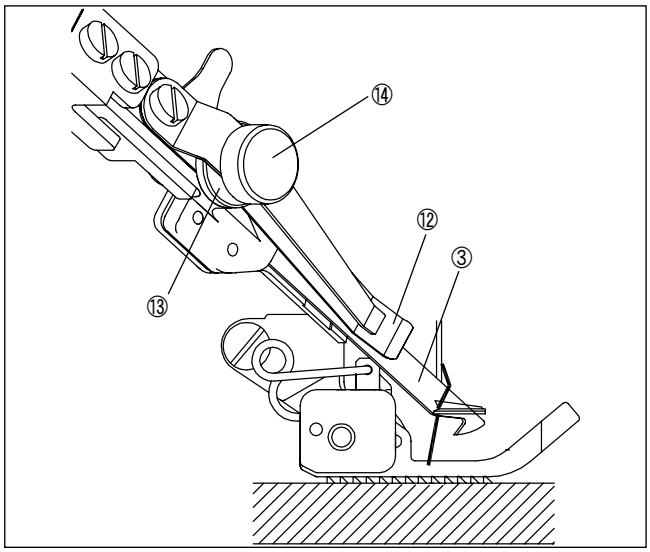
Warning	Before adjustments, always turn off the motor switch and check to make sure that the motor is in stop mode.

(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.

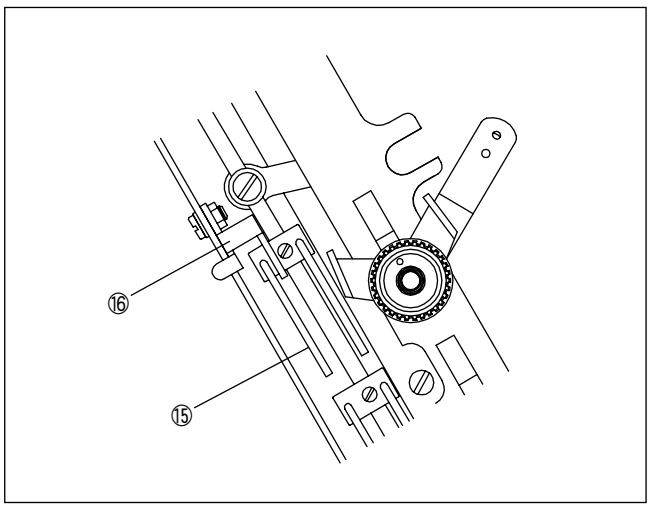


[Figure 110]

(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 111]