SunStar®

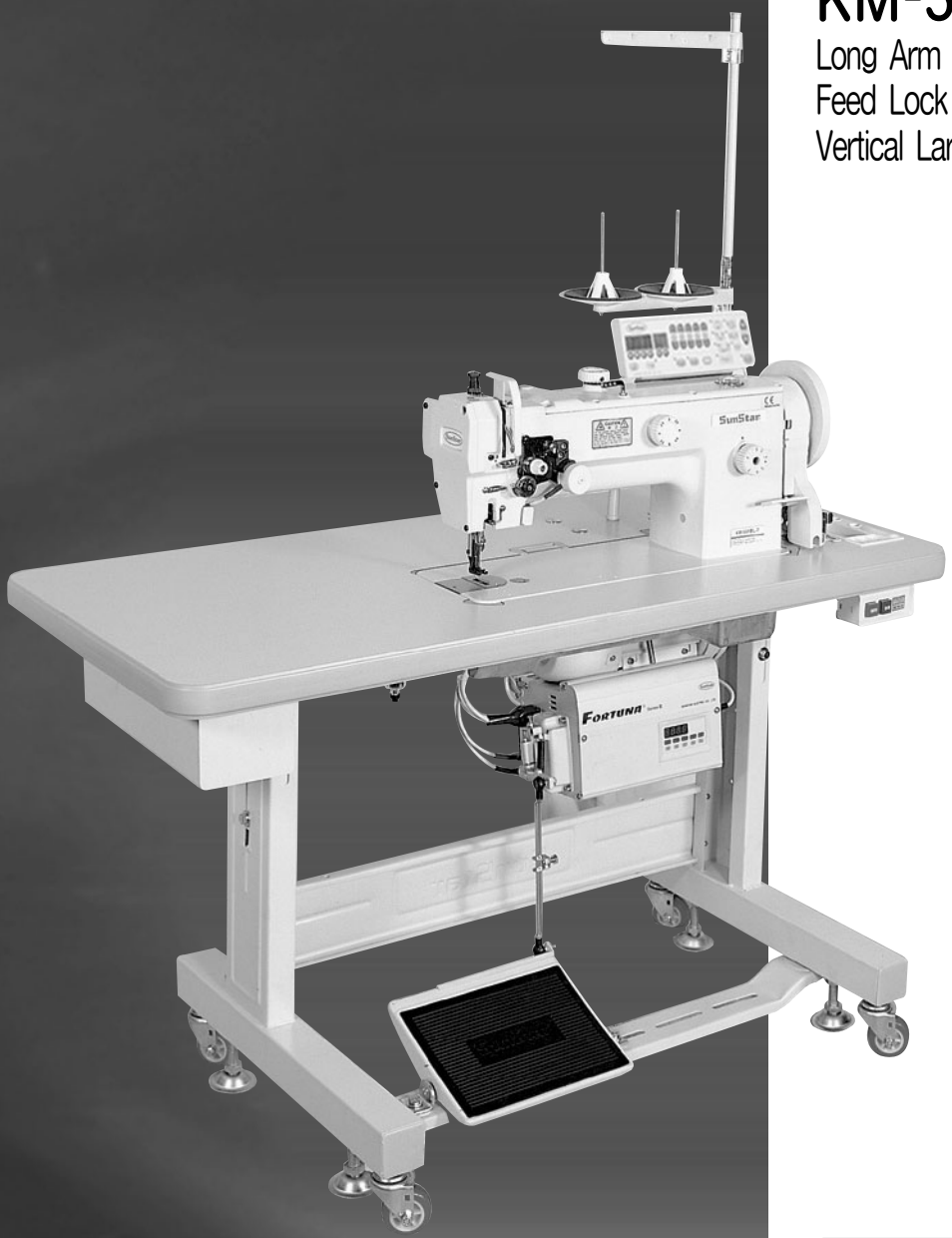
USER'S MANUAL

KM-591BL-7

Long Arm Type, 1 Needle, Unison-Feed Lock Stitch Machine With Vertical Large Hook and an Automatic Thread Trimmer

KM-591BL

Long Arm Type, 1 Needle, Unison-Feed Lock Stitch Machine with Vertical Large Hook



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 MACHINERY CO., LTD.

MME-050509

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.

Contents

Safety Regulations for Machines

Safety Regulations for Machines The safety marks are defined as danger, warning and caution.
In case the regulations are not followed, it will bring about physical injuries or mechanical damage.
The safety marks and symbols are as follows.

[Meaning of Safety Sign]

⚠ Danger
The contents of this mark should be observed clearly. **Or users are apt to be killed or suffer severe physical injuries.**

⚠ Warning
The content of this mark should also be observed, otherwise users are likely to die or suffer severe physical injuries.

⚠ Caution
The content of this mark should also be observed, otherwise it will bring about the physical injuries or the mechanical damage.

[Meaning of Marks]

	This mark means a 'must-not.'
	This mark means a 'must' for safety.
	This mark should be observed, or users are likely to be struck by electricity.

1-1) Machine Transportation  Danger	**The person who knows the safety regulations well should transport machines. In case the machines are transported, the following directions should be observed.** ⓐ At least 2 persons should work together. ⓑ In case the machine should be transported, please wipe the oil covered on the machine to prevent the accident.
1-2) Machine Installation  Caution	**Because the physical damage such as the functional obstacles and breakdowns are likely to occur in compliance with the condition of installing the machine, the following preconditions should be fulfilled.** ⓐ Please keep the order from top to bottom when unpacking the package. Especially, mind that the nail on the boxes. ⓑ Because machines are apt to be contaminated and corroded by dust and moisture, you should install the climate controller and should clean the machines regularly. ⓒ Keep the machines out of the direct rays of the sun. ⓓ Keep both sides and the backside of the machines off at least 50cm from the wall to secure enough space to repair. ⓔ Don't run the machine near the places with the dangers of explosion. Don't run the machine near the places with the dangers of explosion, including the places where the spraying product like aerosol are used in large quantities or oxygen are dealt with, unless the exact actions concerning the operation are guaranteed to avoid the explosion. ⓕ Because of the peculiarity of the machine, any illuminators are not equipped. So, users should install the lighting apparatus around the working area. [Note] The details about the installment of the machine are described in No. 2 Installment of Machine.
1-3) Troubleshooting  Danger	**In need of troubleshooting, it should be done by the trained A/S engineer of our company.** ⓐ Ahead of cleaning and repair, be sure to shut off the power supply. And wait for about 4 minutes till the machine discharges completely. ⓑ Even a part or all of the machine should not be modified without any consultation with our company. ⓒ In case of repair, you should change the damaged part into the standard article of our company. ⓓ After repair, please put again the safety cover disjointed while repairing.

1-4) Machine Operation

Warning

KM-591BL series are manufactured for industry use to sew textiles and other similar material. In case of running the machine, users should observe the following things.

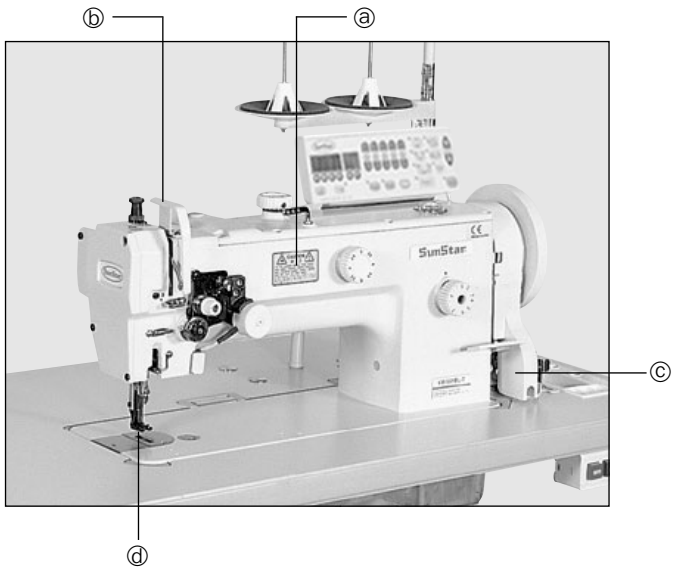
ⓐ Ahead of operating the machine, please read the manual and understand fully the details on its operation.
ⓑ Don't forget to put on the garment suited for the safe work.
ⓒ Keep your hands or a part of the body away from the running part of the machine like a needle, hook, thread take-up spring and pulley etc.
ⓓ Don't remove any kind of cover for safety while running the machine.
ⓔ Be sure to connect the earthed line.
ⓕ Before opening the electric box such as a control box, be sure to shut off the power supply and make sure that the power switch should be put on "off."
ⓖ When threading the needle or before checking after sewing, be sure to stop the machine.
ⓗ Don't switch on the power supply with the foot on the pedal.
ⓘ Don't run the machine when the cooling fan are not running. Be sure to clean the air filter in the control box once a week.
ⓙ If possible, keep off from the strong electronic wave like a high frequency welding machine.

Warning	Fingers or hands can be cut off because of the belt. So be sure to run the machine after covering the safety cover, and in case of checking or regulating, be sure to switch off the power supply.

1-5) Safety Device

Warning

ⓐ Safety Label : Suggestions while running the machine are stated
ⓑ Thread take-up lever cover : The device to prevent the human body from touching the thread take-up lever
ⓒ Belt cover : The device to prevent hands, feet and clothing from getting jammed by the belt
ⓓ Finger guard : The device to prevent fingers from contacting the needle



1-6) Precaution Mark Position

"Precautions" is adhered to the machine for safety.
In case of starting to run the machine, read the directions of "Precautions" carefully.

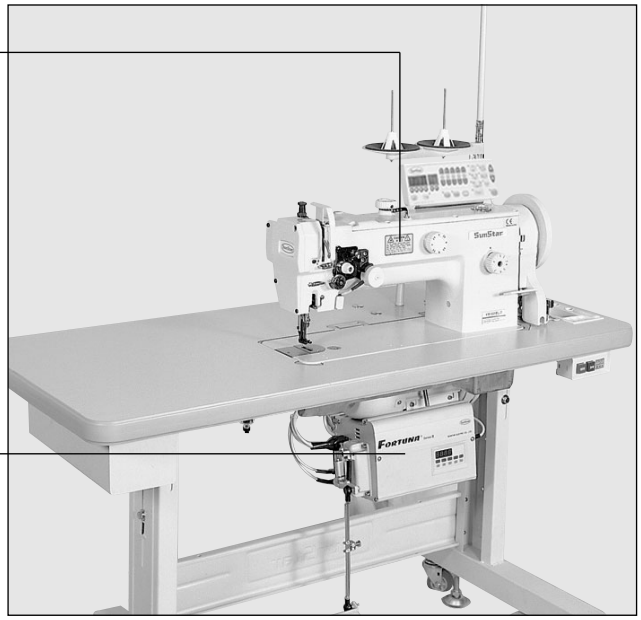
[Position of Precaution Mark]

CAUTION
경 고

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

CAUTION
경 고

Hazardous voltage will cause injury.
Be sure to wait at least 360 seconds before opening this cover after turn off main switch and unplug a power cord.
고압 전류에 의해 감전될 수 있으므로 커버를 열 때는 전원을 내리고 전원 플러그를 뽑고 나서 360초간 기다린 후 여십시오.



1-7) Content of Precaution

Notice

CAUTION
경 고

Do not operate without finger guard and safety devices. Before threading, changing bobbin and needle, cleaning etc. switch off main switch.
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1 Specifications

1) Sewing machine specification

KM-591BL-7 : Long arm type, 1-needle unison feed lock stitch machine with vertical large hook and an automatic thread trimmer
KM-591BL : Long arm type, 1-needle unison feed lock stitch machine with vertical large hook.

Item \ Model name	KM-591BL-7	KM-591BL
Trimming device	★	•
Climb device	★	
Use	Medium to heavy weight material	
Sewing speed	Max. 2,400 spm	
Maximum stitch length	9 mm	
Needle bar stroke	35 mm	
Thread take-up lever stroke	71.5 mm	
Hook	Vertical large hook	
Needle	DPX17 #16~23 (Standard #23)	
Lift of the presser foot	(by hand) 9mm, / (by knee) 16mm	
Alternating vertical movement	2~5.5 mm	
Compressed air	0.5 MPa	
Lubrication	Automatic oil supply	
Working space	322 mm	

2) Motor specifications

(1) Servo motor specifications

MODEL	VOLT	WATT	HERTZ
S3M55-1B	Single Phase 110V	550W	50/60 Hz
S3M55-2B	Single Phase 220V	550W	50/60 Hz
S3M55-3B	Three Phase 110V	550W	50/60 Hz

(2) Clutch motor specifications

MODEL	VOLT	WATT	HERTZ
HEC-1705 (Single Phase)	110V/220V	400W	50/60 Hz
HEC-1706 (Triple Phase)	110V/220V	400W	50/60 Hz

(3) Peripheral automatic device (optional) specifications

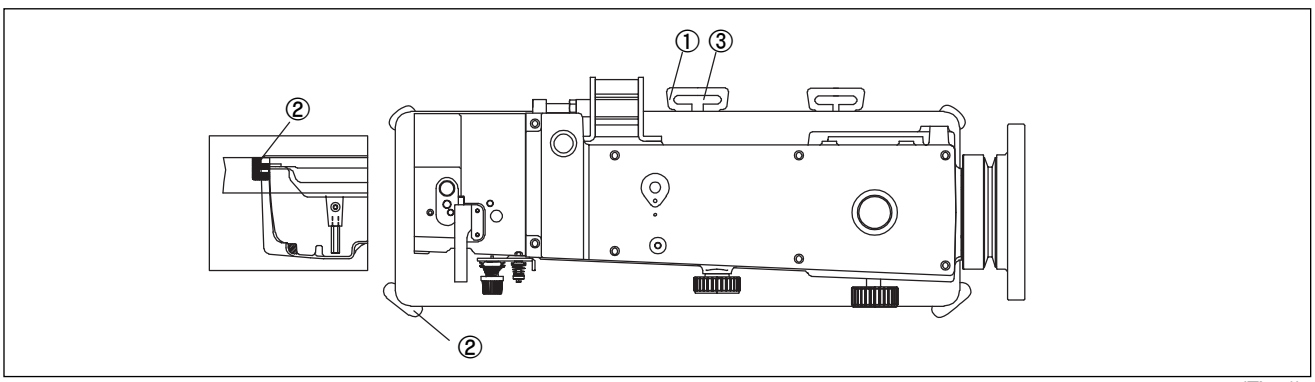
Name of optional devices	Model	Usage
Auto Knee Lifting System		Air pressure cylinder working structure where the presser foot is automatically lifted by one backward pedal.
Production Counter	SCOUN-1	A production counting system where the completed amount is displayed in the program unit panel. Addition, subtraction and amended inventory are also displayed in addition to implementation ratio.
Material Edge Sensor	SEDG-1 SEDG-2	By detecting the fabric's edge or thickness, the machine automatically stops without halting the pedal. The two types of sensors are edge sensor type SEDG-1 and the thickness sensor type SEDG-2.
Standing Pedal	SPDL-1 SPDL-2	This is an indispensable device when one man operates a number of machines. Separate pedals for acceleration, thread trimming, and presser foot lifting are set up. There are the fixed speed SPDL-1, EDPL-1 and the variable speed SPDL-2, EDPL-2.

2 Installation

Warning	
	▶ In case of installing the machine, it should be performed by the trained engineer.
	▶ In case of wiring work, be sure to leave the work to an expert or an agent.
	▶ The machine weight over 43kg. At least 2 persons should carry out the installing work.
	▶ Plug in after finishing the installing work. In case the user press on the step by mistake, the machine runs automatically. By doing so, it can cause the physical injuries.
	▶ Connect the earthed lines. Imperfection of the connection of the earthed lines gives rise to an electric shock or malfunction.
	▶ Set the belt cover on top of the machine.
	▶ In case of bending the machine backward or returning to the original condition, be sure to use both hands. If you use only one hand, it causes physical injuries by slipping.

1) Installation of the machine head

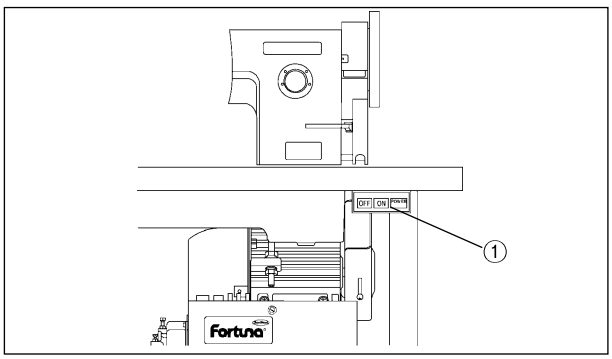
Insert hinge rubber① into the table. As described in "Figure 1", put the oil pan corner in the middle of the head supporting rubber② and attach the table. After putting the hinge ③ in the bed hole, insert the hinge rubber① and install the sewing machine in the table corner rubber cushion.



(Fig. 1)

2) Installation of power switch box

When attaching the power switch box①, as shown in "Figure 2", attach it to lower right corner of the table.



(Fig. 2)

⚠ Caution

▶ Be sure to plug in after finishing oil supply.
If the user press on the step by mistake, the machine runs automatically. By doing so, it can cause the physical injuries.

▶ In case of treating the lubricant, don't bring the lubricant into contact with eyes or the skin. Its contact can cause an inflammation. And don't drink the lubricant. It can cause vomiting or diarrhea. And Keep it out of the reach of the children.

▶ Be sure to run the machine after supplying oil in case you should start to run it for the first time, or in case it has not been used for a long time.

3) Oil supply

(1) Fitting the magnet to remove chips (iron powder).

Find the magnet to remove chips in the accessory box and it to the oil pump located at the lower part of the bed as shown in "Figure 3".

※ Do not use the magnet for other purposes. Operating the sewing machine without the magnets may cause malfunction and adverse effects to its durability.

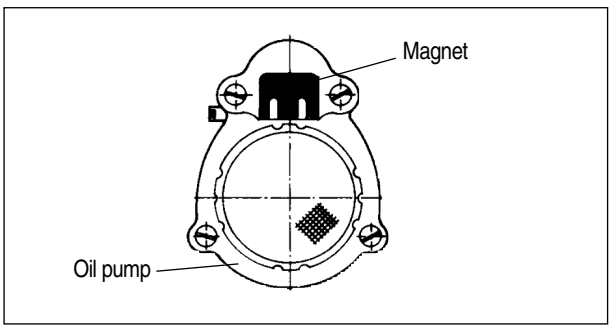
(2) Filling the oil pan with lubricants

A. Fill the lubricant up to the "H" point ①.

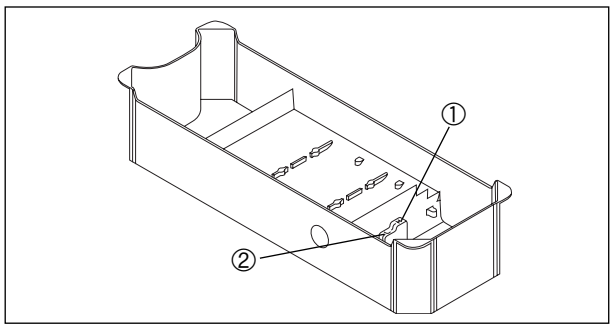
B. You should use the exclusive oil provided by "SUNSTAR" for industrial sewing machines or TELLUS C10" of the Shell company.

C. If the oil lever drops to the "L" level②, replenish it to the "H" point①.

D. Change the lubricant once every two weeks.



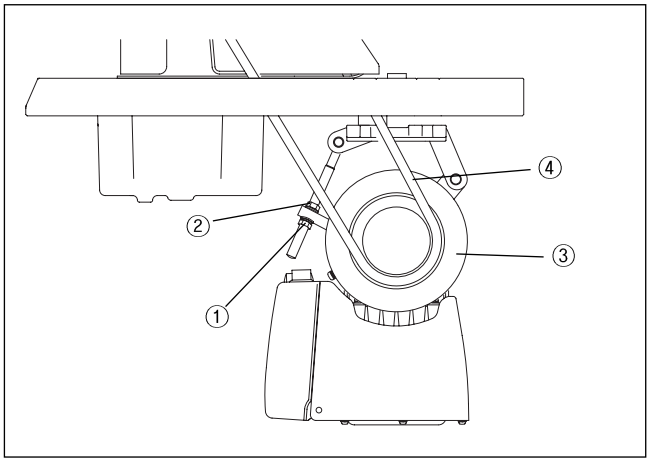
(Fig. 3)



(Fig. 4)

4) Belt tension adjustment

After installing the motor, if you sufficiently loosen the fixed nuts ① and ②, tension in the belt④ will occur naturally because of the weight of the motor③. At this moment, tighten the fixed nut① and use fixed nut ② to fix it firmly. (See figure 5)

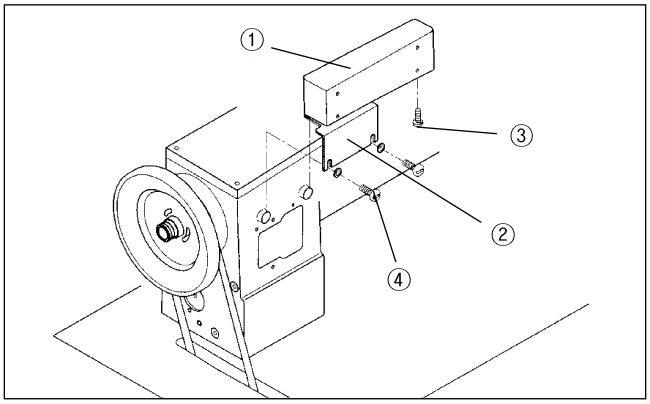


(Fig. 5)

5) Installation of program unit(Sever Motor)

A. Use 4 fixed screws③to fix the bracket ②on the program unit①

B. In the program unit①, use two fixed bolts ④ to tightly fix the assembled brackets.



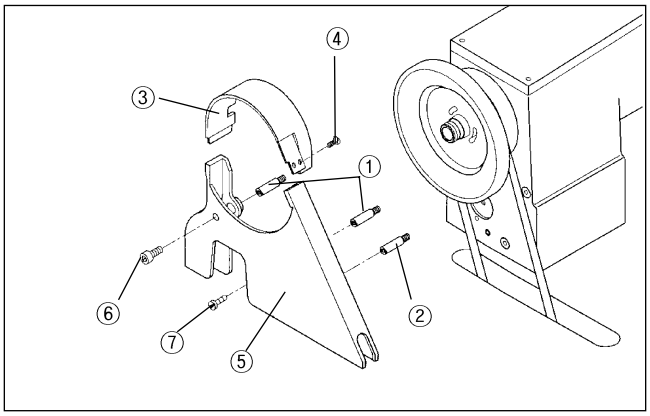
(Fig. 6)

6) Installation of belt cover

A. 3 screws that support the belt cover can be found in the accessory box. Assemble the two short screws① into the upper part of the sewing machine, and assemble the remaining and longest screw② into the lower part of the sewing machine.

B. Fix the Belt cover "A" ⑤ into the belt cover supporting screw and assemble it using the belt cover fixed screw ⑥⑦(See figure 7).

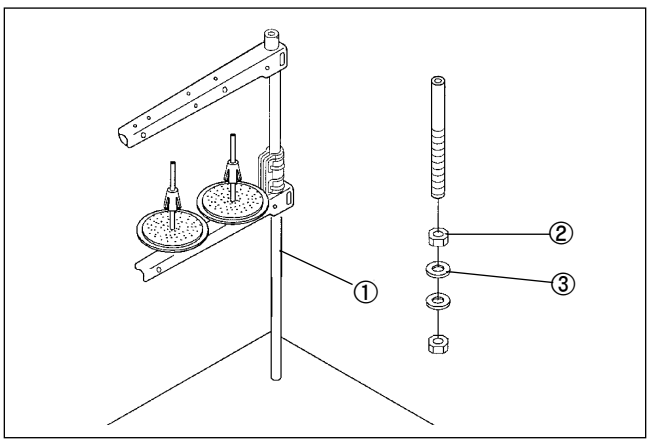
C. Insert the front part of "belt cover B" ③into the groove of the front part of Belt cover A" ⑤, and use the fixed screw ④to fix the back part. (See figure 7)



(Fig. 7)

7) Installation of thread stand

As shown in "Figure 8", assemble the thread stand①, insert it in the table hole, and use the fixed nut②and washer③ to fix it.



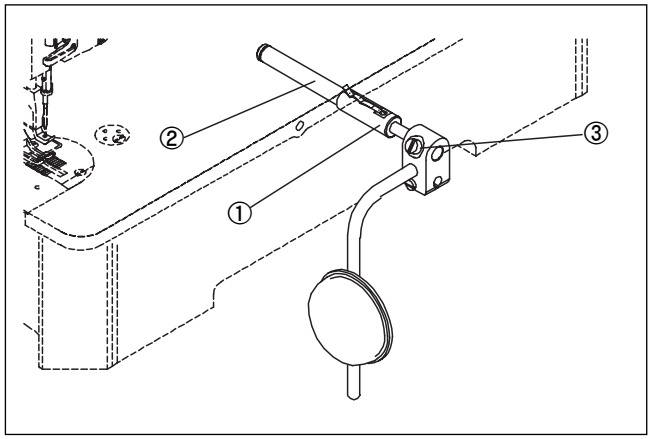
(Fig. 8)

8) Installation of knee lifting pad

A. The knee lifting pad(ass'y) socket① wrapped in the accessory box must be placed in the knee lifting axis②.

B. Loosen bolt ③ and maintain knee-lifting pad in vertical position to tighten it.

[Caution]
When reclining the machine, recline after removing the knee-lifting pad(ass'y).



(Fig. 9)

9) Installation of air pressure related parts and checking their functions (optional)

⚠ Caution

▶In need of regulating the machine with the switch on or with the air injected, please pay special attention to your safety.

▶Please adjust air pressure to 0.5Mpa.

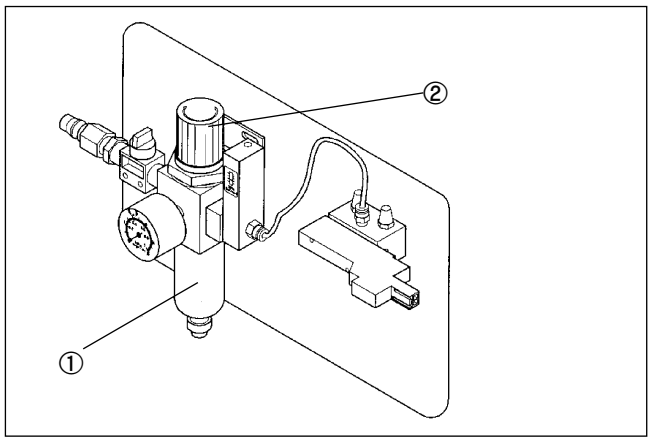
(1) Installation

As shown in the figure, after fixing the air pressure filter on the bracket, use the neck screw to fix the bracket on the lower side of the table.

(2) Air pressure adjustment

a) Adjust the pressure by taking out and lifting the air pressure filter① knob ②.

b) After adjusting the air pressure to. 0.49㎫(5㎏f/㎠) turn the knob ② to its original position and the adjustment is over.



(Fig. 10)

3 Adjustment of sewing machine

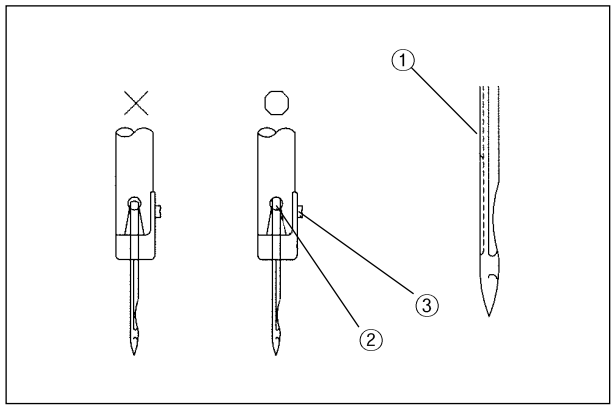
⚠ Caution

▶In case of setting the needle, be sure to switch off the power supply. In case the user press on the step by mistake, the machine runs automatically. By doing so, it can cause the physical injuries.

▶In case of using the clutch motor, the motor revolves because of inertia for a while even after switching off the power supply. Be sure to start to work only after the motor comes to a complete stop.

1) Needle insertion

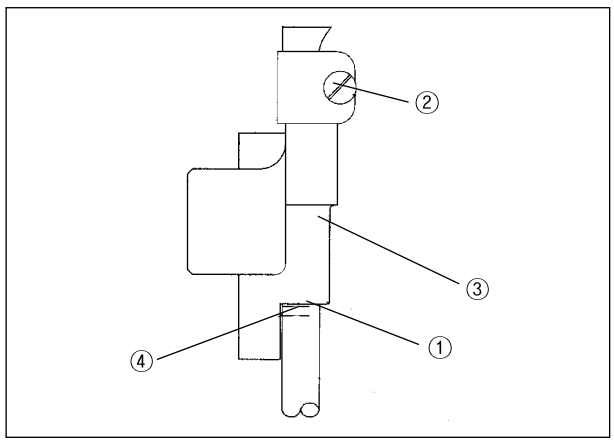
While the needle groove① is on the left, adhere the needle tip on the upper side of the stopper hole② and fix the needle with the fixing screw③ (See figure 11) .



(Fig. 11)

2) Needle bar adjustments

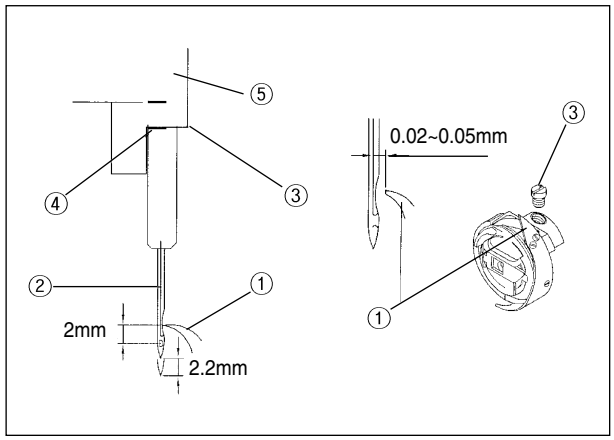
After opening the side plate, turn the pulley and place the needle bar① at the lowest point, loosen the needle plate tightening screw② and move the needle plate frame③ at the bottom, after aligning the needle plate's lowest point marked seal④, firmly tighten the needle bar tightening screw②. (See figure 12)



(Fig. 12)

3) Regulating timing of needle and hook

After adjusting the needle bar and elevating the needle bar lowest point by 2.2mm, place the hook point① at the center of the needle② and fix and tighten the setting screw③. At this moment, the distance between the needle and hook point should be 0.02mm~0.05mm and the needle plate seal point④ and needle bar frame⑤ should align with the lower side.
(See figure 13)



(Fig. 13)

4) Regulating oil supply to hooks

Caution

▶ In case of checking the amount of oil to hooks, please take care lest the hands or the checking slip of the amount of oil should come into contact with the movable parts such as the surrounding tools for transfer. Its contact can cause injuries.

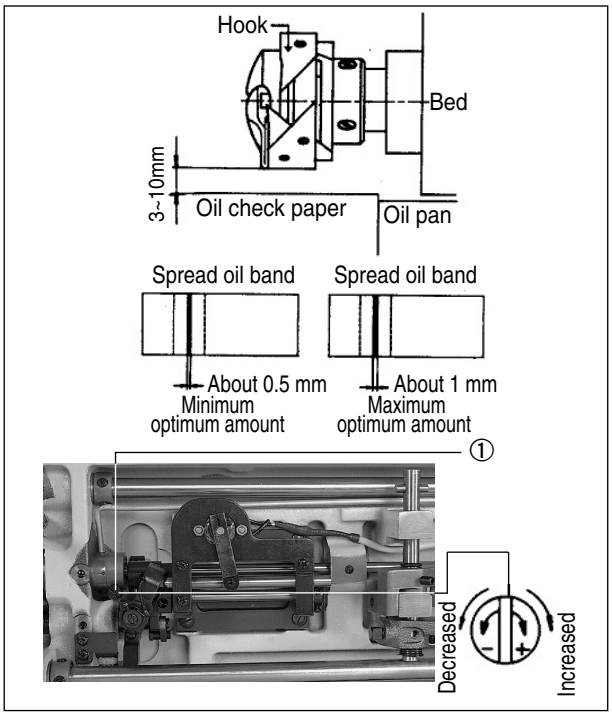
(1) Checking oil supply amount

A. After the sewing machine runs 3 minutes of empty rotations(at a proper speed) if you put the oil supply check paper as shown in "Figure 14" and run the machine for 5 seconds, you can check the quantity of oil by the amount of oil that appears on the oil supply checking paper.

B. The oil checking should be done three times and the appropriate maximum and minimum quantity are shown in "Figure 14". (If the oil supply is too small, the hook can have motor problems, and if the oil supply is too big, the fabric can be contaminated by the oil.)

(2) Oil supply adjustment

If you turn the oil supply adjustment screw ① assembled at the lower axis front bushing clockwise (+) the supply of oil will increase, and if it is turned counterclockwise(-), it will decrease.



(Fig. 14)

5) Lower thread winding and adjustment

(1) Winding the lower thread

A. The thread should come out through hole ① from the back of the tension regulating dish ② towards the front.

B. The thread should be taken to the bobbin ③ and wound clockwise 5 or 6times from the bottom.

C. After pushing lever ④ and letting pulley ⑤ touch the V-belt, run the machine.

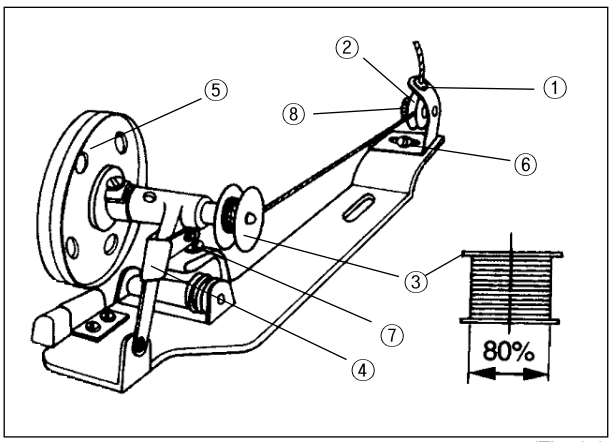
D. If the bobbin winds all the lower thread, pulley ⑤ is automatically separated from the V-belt. (See figure 15)

(2) Lower thread adjustment

A. When the lower thread is wound irregularly unscrew ⑥, move it left to right, and tightly screw ⑥ again.

B. The lower thread's winding amount can be adjusted. if you turn the regulating screw ⑦ clockwise it increases and if you turn it counterclockwise it decreases.

C. For the lower thread's tension adjustment that winds the bobbin, if you turn screw ⑧ clockwise it becomes stronger and if you turn it counterclockwise it becomes weaker.



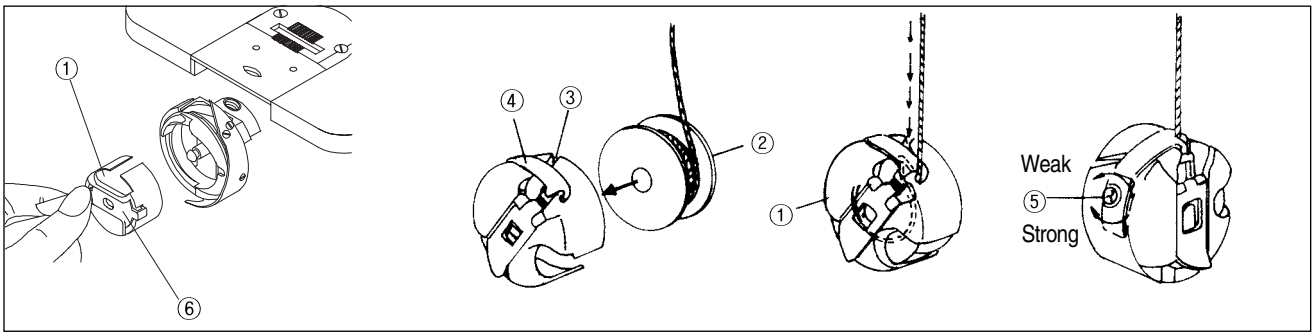
(Fig. 15)

Caution

▶In case of adjusting the tension of the lower thread, be sure to switch off the power supply.
If the users press on the step by mistake, the machine runs automatically. By doing so, it can cause the physical injuries.

▶In case of using the clutch motor, the motor revolves because of inertia for a while even after switching off the power supply.

6) Lower thread hanging and tension adjustment



(Fig. 16)

A. After putting the bobbin case① into bobbin②, hang the thread between the thread groove③ and under the tension adjustment pan spring④. For the lower thread tension adjustment, turn the tension adjustment screw⑤ clockwise to make it stronger and turn it counterclockwise to make it weaker. For the lower thread output tension, hold the thread end so that when the bobbin case① is dropped it can drop gradually by its own weight.(See figure 16)

B. Removing bobbin case

Hold the bobbin case handle⑥ and insert it in the hook. When taking out the bobbin, hold the handle⑥ and pull it. (If you let go of the bobbin② handle, it will fall out) (See figure 16)

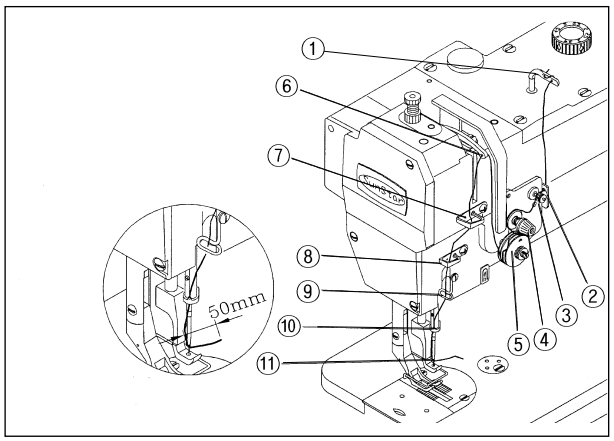
Caution

▶In case of taking up the upper thread, be sure to switch off the power supply.
If the users press on the step by mistake, the machine runs automatically. By doing so, it can cause the physical injuries.

▶In case of using the clutch motor, the motor revolves because of inertia for a while.
Be sure to start to work only after the motor comes to a complete stop.

7) Upper thread hanging

Place the take-up thread at the highest point and insert the upper thread in the order shown in "Figure 17". The amount of the upper thread coming out of the needle hole should be around 50mm for the first sewing session. (See figure 16)

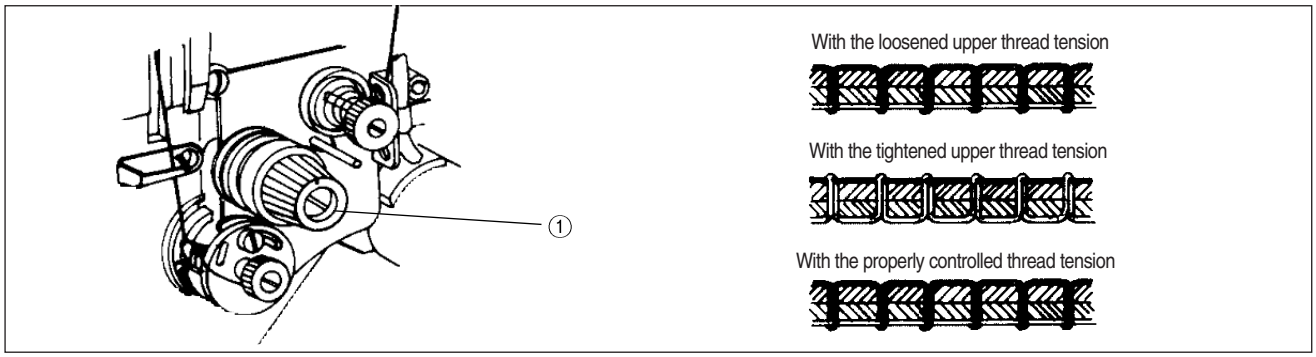


(Fig. 17)

8) Thread tension adjustment

(1) Thread adjustment device

As shown in "Figure 18", if you turn the thread adjustment device's tension regulating nut ① clockwise the upper thread tension will increase and if turned counterclockwise it will decrease.

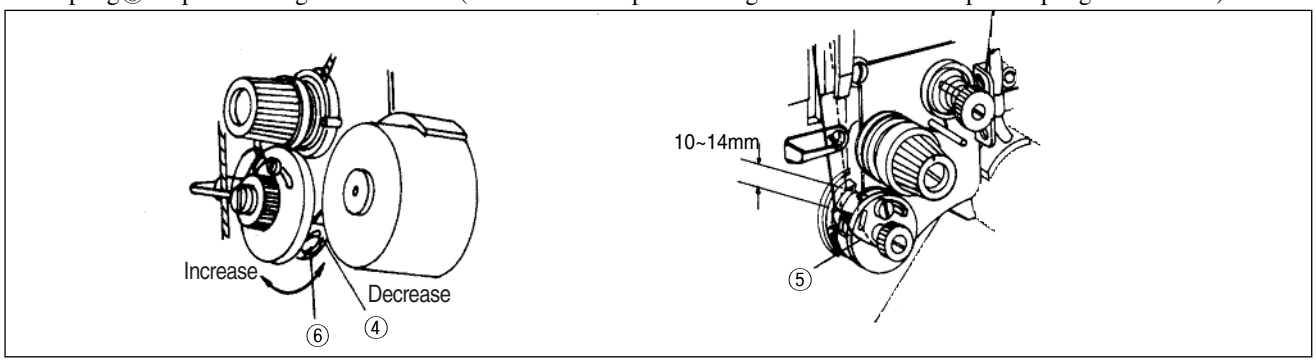


(Fig. 18)

(2) Thread take-up spring's tension adjustment

A. Thread take-up lever spring's running amount adjustment

As shown in "Figure 19", after loosening the stopper tightening screw ⑥ and turning counterclockwise the Take up lever spring stopper④, the Thread take-up lever spring⑤'s operation range will increase and if it is turned clockwise, the Thread take-up lever spring⑤'s operation range will decrease. (※The standard operation range of the Thread take-up lever spring is 10~14mm)



(Fig. 19)

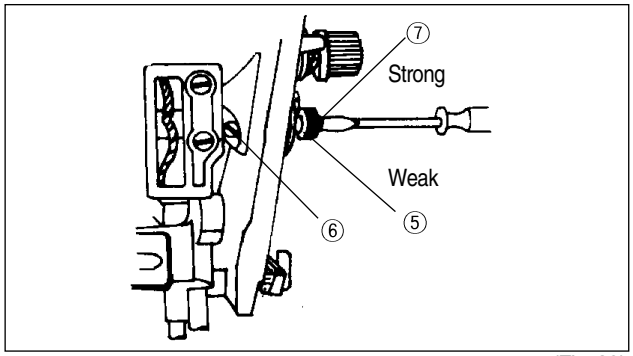
B. Thread take-up spring tension adjustment

As shown in "Figure 20", after loosening the thread adjustment device axis screw ⑥, using a driver, if the upper end groove of the thread adjustment device axis⑦ is turned clockwise, the tension of the thread take-up lever spring⑤ becomes stronger and if it is turned counterclockwise it becomes weaker.

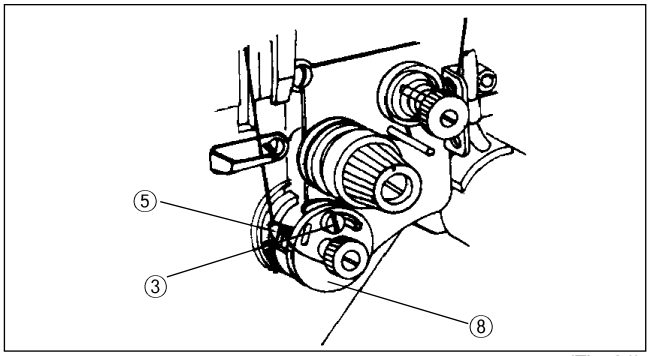
C. Thread take-up lever spring's operation timing adjustment

As shown in "Figure 21" after loosening the stopper screw③ if you turn the thread take-up lever spring guide plate ⑧ clockwise, the thread take-up lever spring⑤'s operation timing becomes faster and if it is turned counterclockwise it becomes slower.

※The thread take-up lever spring's operation timing is the standard when the thread take-up lever spring guide plate is located in the middle as the figure shows.



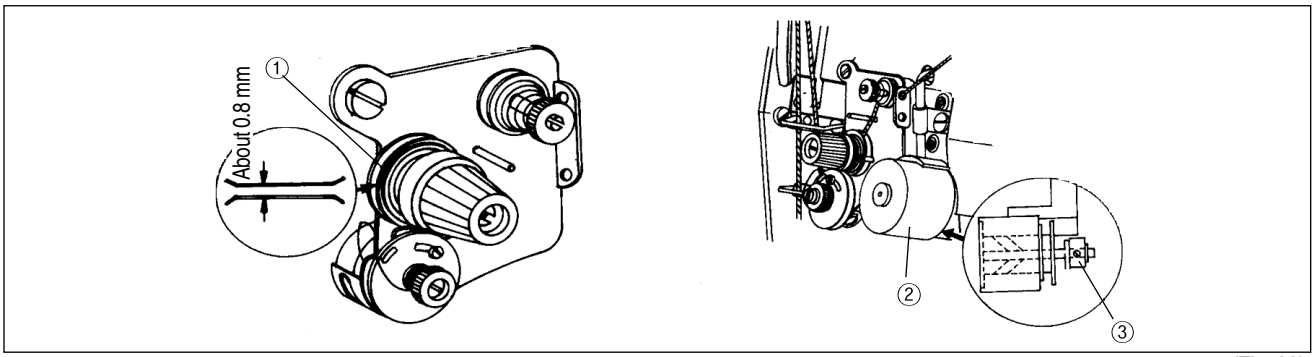
(Fig. 20)



(Fig. 21)

(3) Adjustment of thread release operation amount (Automatic trimming type)

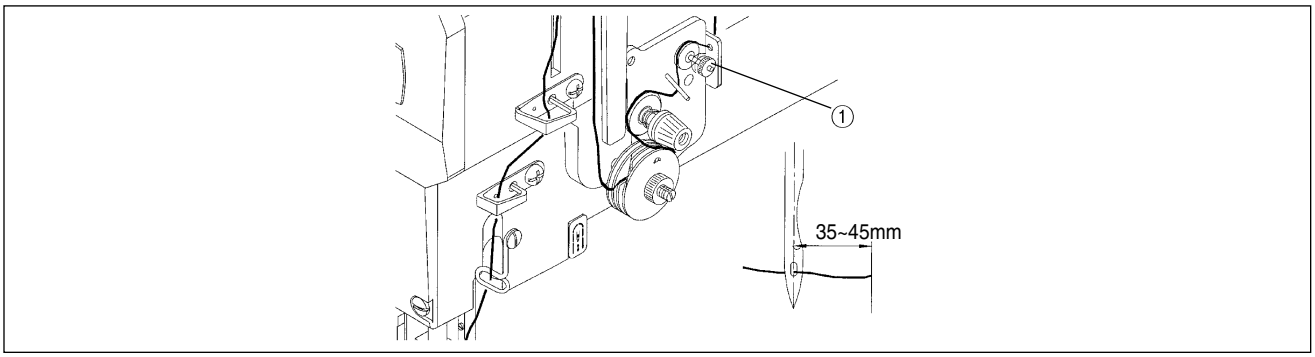
After thread trimming, when the upper thread falls out of the needle hole, check if plate ① opened during the trimming movement. In order to adjust the mount of the plates opening , turn on the thread release solenoid ②and make sure that the opening amount of the thread tension adjustment plate① is 0.8mm by adjusting the solenoid axis collar ③back and forth. Also, when the thread release solenoid is turned off, check if the plates are completely adhered to each other.(See figure 22)



(Fig. 22)

(4) Adjustment of thread amount subsidiary device (Automatic trimming type)

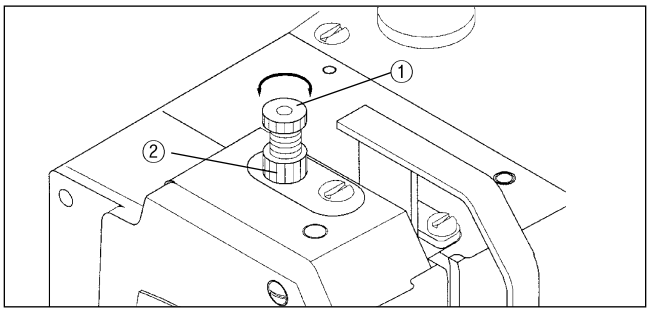
As shown in "Figure 23", if you turn the adjusting nut① clockwise, the length of the thread becomes shorter. And if it is turned counterclockwise, it becomes longer. After trimming the thread, the appropriate length of thread is 35~45mm.



(Fig. 23)

9) Presser foot pressure adjustment

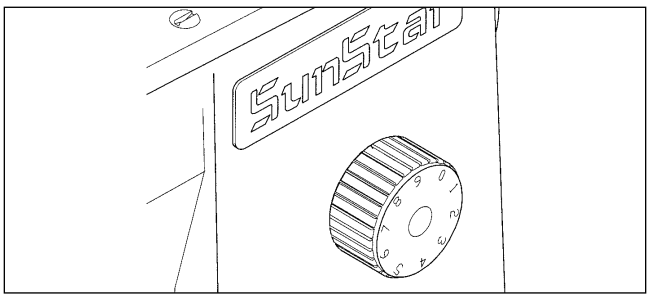
As shown in "Figure 24", if you turn the pressure adjustment screw ① clockwise the pressure of the presser foot becomes stronger, and if it is turned counterclockwise it becomes weaker. After adjusting it, always fix it with the fixing nut②.



(Fig. 24)

10) Stitch length adjustment

As shown in "Figure 25", the numbers that are shown in the stitch length adjusting dial① are the stitch length represented in "mm". Find the stitch length you want by adjusting it from left to right.



(Fig. 25)

⚠ Caution

▶After finishing dismantling or adjusting the safety devices, be sure to install it in the original position properly and check whether it functions as desired or not.

▶In case of bending the machine backward or returning to the original condition, be sure to use both hands. If you use only one hand, it can cause the physical injuries by slipping.

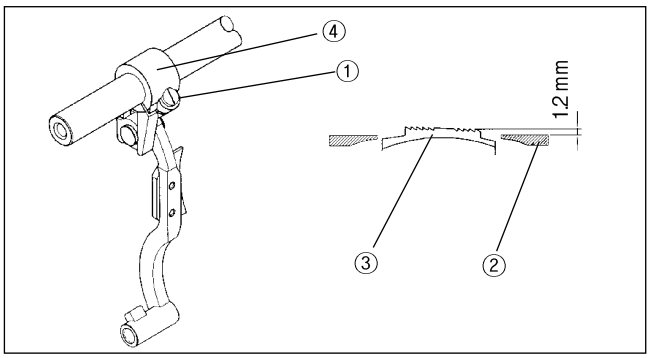
▶In case of adjusting the machine with the switch on, be sure to see that all is right.

▶In case of troubleshooting or checking the machine, it should be performed by the trained engineer.

▶In case of repair and checking related to electricity, be sure to leave the work to an expert or an agent.

11) Adjustment of feed dog height and inclination

The adjustment of the feed dog height is done by turning the pulley and putting the feed dog③ at the highest point and as shown in "Figure 26". After loosening the lifting bar crank(front) tightening screw①, move the lifting bar crank(front)④. It is standard to leave around 1.2mm distance from the needle plate's② upper side. After adjustment, firmly fix the lifting bar crank(front) tightening screw①.

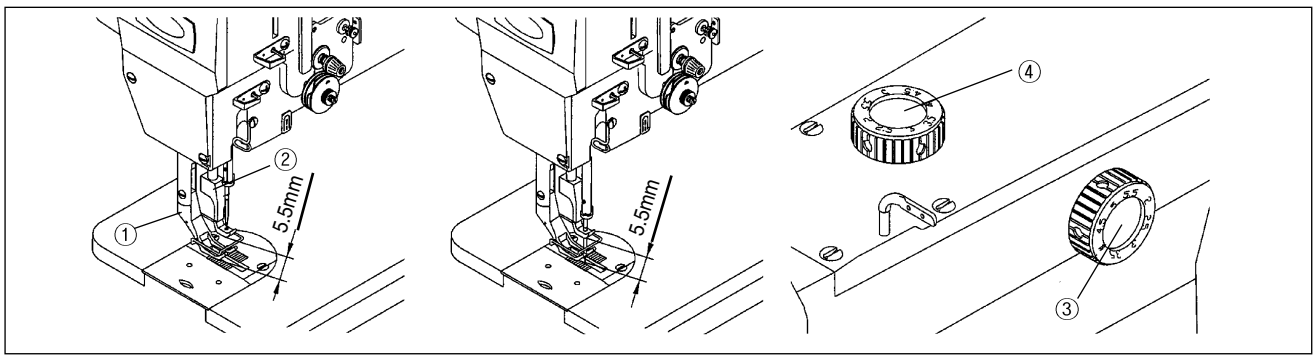


(Fig. 26)

12) Adjustment of main and auxiliary presser foot

It is standard that the auxiliary and main pressers foot move up and down at the same height. According to the conditions of the sewing product the auxiliary presser foot① and the main presser foot② can be adjusted to have the same amount of movement and either one of the auxiliary presser foot① and the main presser foot②can be lowered or elevated. Use the following information to adjust it.

(1) Adjusting auxiliary presser foot and main presser foot to make up and down motions at the same height.



(Fig. 27)

A. The standard range of adjustment for up and down motion of the auxiliary presser foot ① and main presser foot② is up to 2~5.5mm.

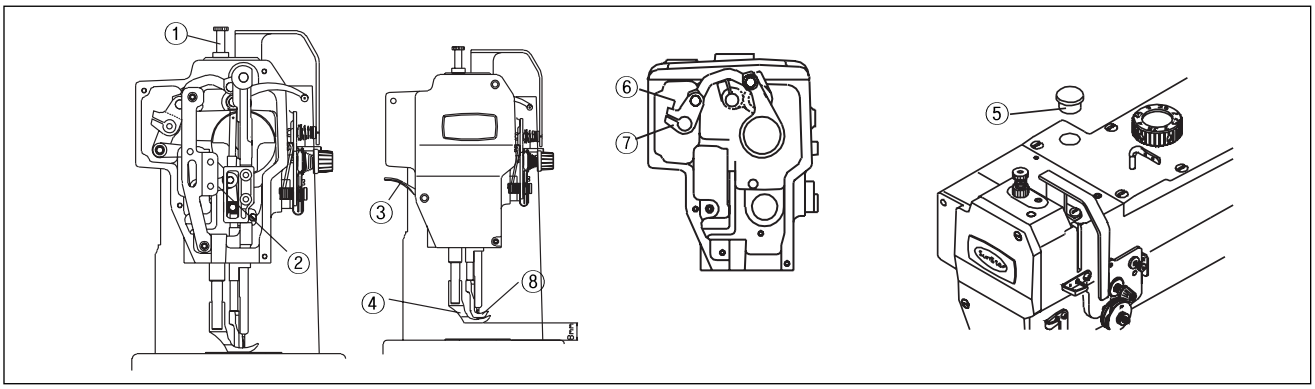
B. The up and down motion of the auxiliary presser foot ① and main presser foot② can be simply adjusted by the climb device dial located in the front part of the sewing machine.

C. The dial④ located on the upper cover limits the motion of the climb device dial③ and the numbers of both dials③ and ④ must be identical for the auxiliary presser foot and the main presser foot to move at the same height.

Ex) If the auxiliary presser foot and the main presser foot's quantity of motion is set to 4mm, adjust the dial number of the upper cover to 4 and adjust the dial at the front part of the sewing machine to 4.

However, if you want to adjust from a low number to a higher number, adjust dial ④ and then dial ③. And if you want to adjust from a high number to a lower number, adjust dial③ and then dial ④

(2) Adjusting auxiliary presser foot and main presser foot to make up and down motions at a different height.



(Fig. 28)

A. Adjustment of auxiliary presser foot

a) Loosen pressure adjusting screw ① in the pressure bar and the bracket fixing screw ②.

b) Adjust the bracket fixing screw to be placed 9mm above the needle plate ④ when lifting pressure bar ③.

c) After adjustment is over, fix bracket fixing screw ② correctly and properly adjust the pressure adjusting screw ①.

d) After adjusting the height of the auxiliary presser foot ④ adjust the main presser foot.

B. Adjustment of main presser foot.

a) After placing the thread take-up lever at the lowest point, lower the presser bar lifter ③.

b) After opening the upper cover of the rubber stopper ⑤ loosen the screw ⑥.

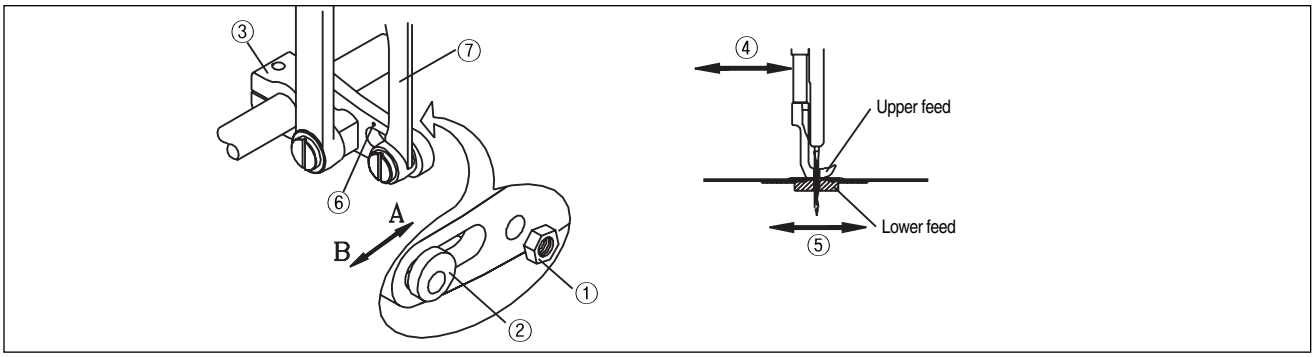
c) By adjusting the presser foot crank for up and down motions ⑦ you can adjust the auxiliary presser foot ④ and the quantity of the up and down motion of the main presser foot ⑧ to different levels.

d) After adjustment is over, tightly screw the crank fixing screw ⑥ and close it with the rubber stopper ⑤.

13) Adjustment of main presser foot movement

A. As shown in "Figure 29", the feeding quantity of the feed dog ⑤ is adjusted to be the same as the motion quantity of that of the main presser foot ④.(This is the point where the center of connecting single screw aligns the crank of feed rock shafe carved dot ⑥ and connecting rod of needle bar frame driving shaft. ⑦)

B. If the above-mentioned situation is not properly done you can adjust the motion quantity of the main presser foot according to the sewing conditions ④ by increasing or decreasing the motion amount done as follows.



(Fig. 29)

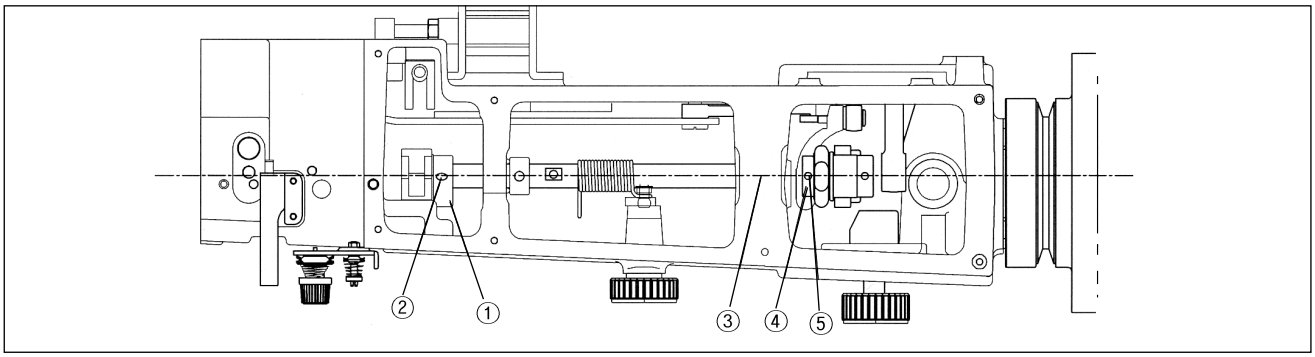
a) Loosen nut ① .

b) You can adjust it by moving the eccentric nut ② connected to the the crank of feed rock shaft ③.

c) When main presser foot ④ movement is small turn the eccentric nut ② to the A direction, and when turning it backwards, turn the eccentric nut ② towards the B direction.

14) Feed cam adjustment

The timing of the feed dog and needle can be adjusted by moving the feed cam④ up and down. After turning the pulley manually so that the needle plate is fixed at the highest point as shown in "Figure 30", it is standard that when the center of the first fixed screw ②of the presser foot's driving cam ①comes to the upper shaft center the tip of the first fixing screw ⑤of the feed cam④ should align with the upper shaft center③.



(Fig. 30)

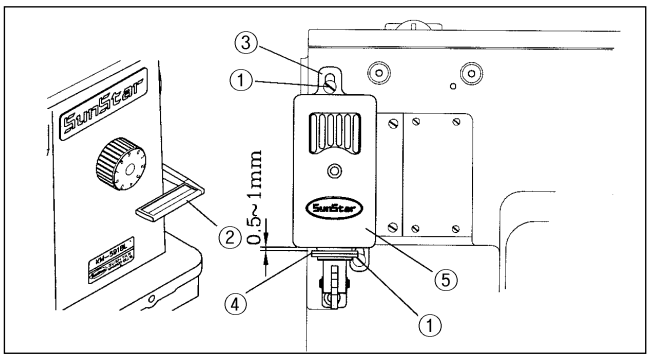
15) Adjustment of reverse solenoid location

(1) Reverse solenoid location

A. Put the stitch length dial at maximum.

B. Loosen two reverse solenoid bracket tightening screws ①

C. Lower the reverse lever② to the floor. Move the reverse solenoid bracket③ up and down. Then adjust the distance between the reverse solenoid movement rubber packing④ and the reverse solenoid⑤ to be 0.5~1mm and tighten the tightening screw ①. (See figure 31)

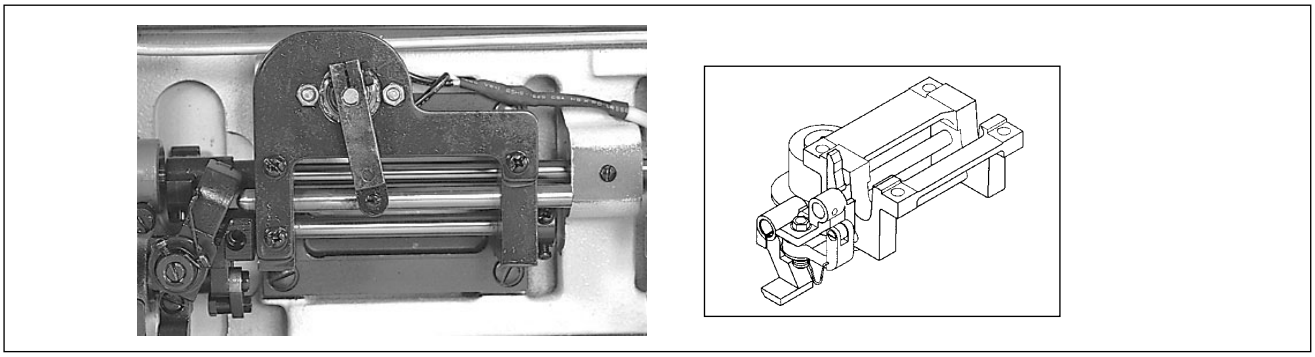


(Fig. 31)

16) Adjustment of trimming device

(1) Trimming device structure

The trimming device of this sewing machine is as the "Figure 32" shown below.



(Fig. 32)

[Caution]

This sewing machine adopts a trimming drive system where the cam on the lower shaft is the main source of power. So, when adjusting the sewing machine, if you turn the machine in the state that the trimming solenoid is operating, a needle and movable mes can be damaged by collision.

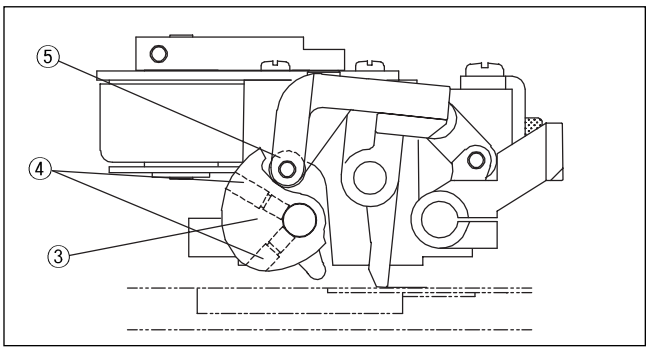
When the solenoid is operating, if you want to use the machine, make sure that you run the machine between the regular trimming distances (from low position of needle bar to upper position).

(2) Adjustment of the trimming cam

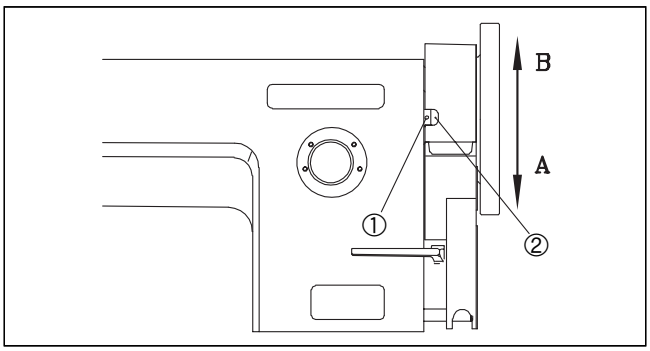
A. The standard location of the trimming cam③ is when the trimming cam③ becomes in contact with the trimming cam roller⑤ and the sewing machine's carved dot① and the pulley's yellow carved dot② meet.

B. In order to adjust it as mentioned above, loosen the trimming cam tightened screw④.

C. After adjustment is over, tighten the trimming cam tightening screw④.



(Fig. 33)



(Fig. 34)

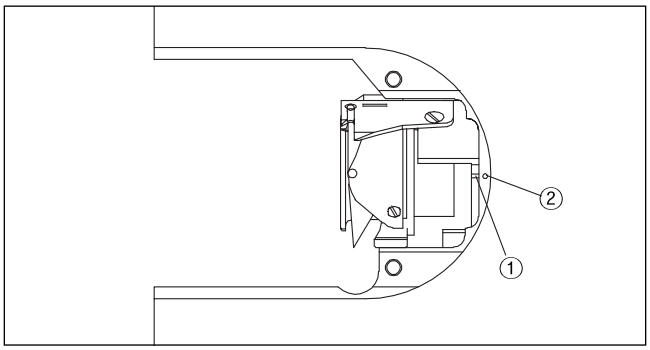
[Caution]

When using a synthetic thread that does not get tangled, adjust the cam by turning the pulley to direction A and moving it 5mm from the standard position. When using a thin synthetic thread, adjust the cam by turning the pulley towards direction B and moving it 5mm from the standard position.

(3) Adjustment of movable mes

A. Adjustment of movable mes location

As shown in "Figure 35", the movable mes original position is where the thread trimming holder slot① and the bed'supper side's carved dot or marker dot ② align.

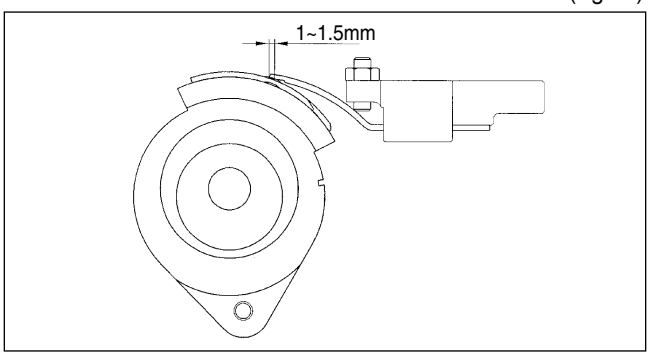


(Fig. 35)

B. Adjustment of the proceeding quantity of moving mes

a) After leaving the solenoid operating and turning the sewing machine, the moving mes rotates by the thread trimming cam. When the moving mes proceeding quantity reaches its maximum level, it is standard to let the cutting part of the moving mes proceed 1~1.5mm from the tip of the fixed mes.

b) Move the thread trimming lever for adjustment. (See figure 36).



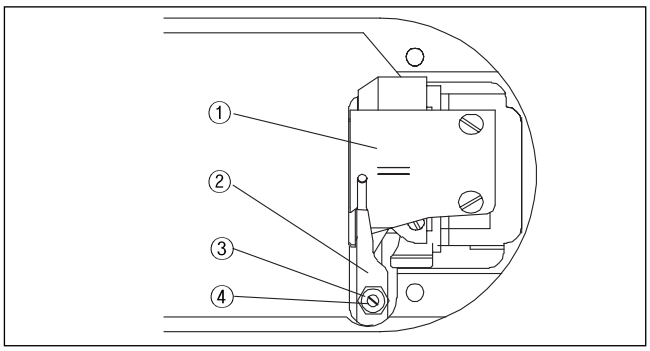
(Fig. 36)

17) Adjustment of mes pressure

A. As shown in "Figure 37", it is standard to let the moving mes① contact the fixed mes②.

B. In case where cutting is difficult due to the use of thick thread, if you strengthen the tension of the fixed mes it will be effective.

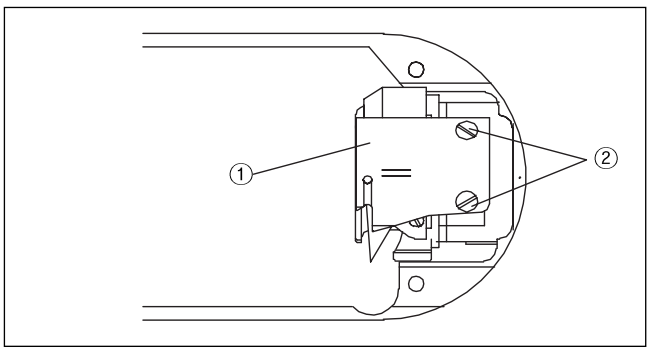
C. To adjust the tension of fixed mes, as shown in "Figure 37", after loosening the fixed me tension adjustment nut③, you use the adjustment screw④ to adjust it. After adjustment is finished always tighten the tension adjustment nut.



(Fig. 37)

18) Changing moving mes

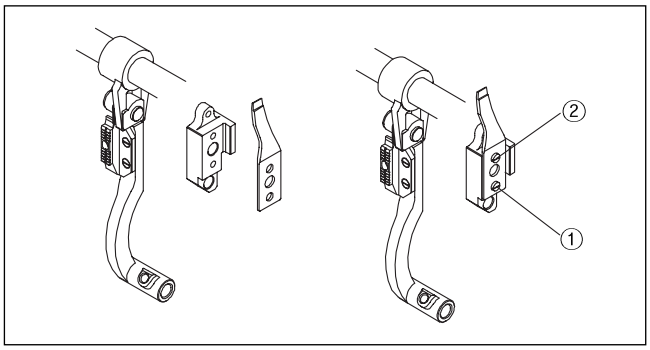
To change the moving mes, turn the pulley manually to let the needle place itself on the highest point and take off the needle plate by using the two fixing screws marked on "Figure 38". When assembling small parts, do the disassembling process backwards.



(Fig. 38)

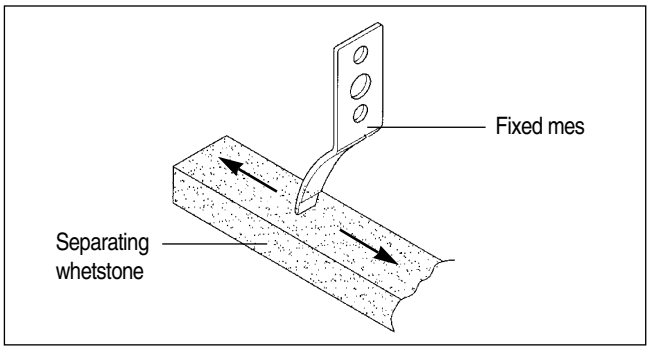
19) Changing fixed mes

A. To change fixed mes disassemble the fixed mes①, ② fixing screw on the base as shown in "Figure 39". When assembling small parts, do the disassembling process backwards.
(See figure 39)



(Fig. 39)

B. When the thread breaks during use or the thread is not clean, check the cutting part of the fixed mes. If the fixed mes tip is abrased then use the oil grinder to sharpen it as shown in "Figure 40".



(Fig. 40)

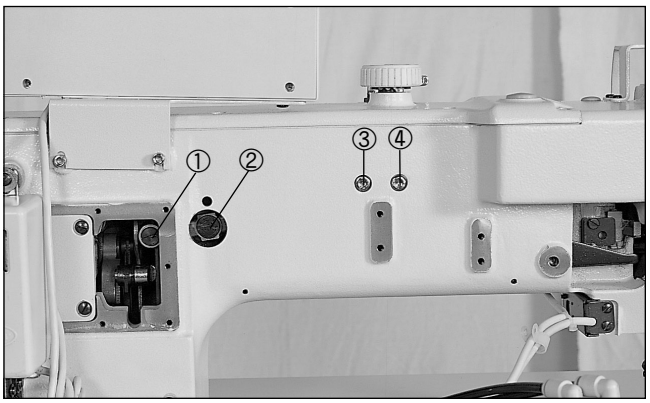
20) Appropriate speed for stitch lengths

As the sewing speed is increased, the length of the stitches can also increase, so follow the following speeds.

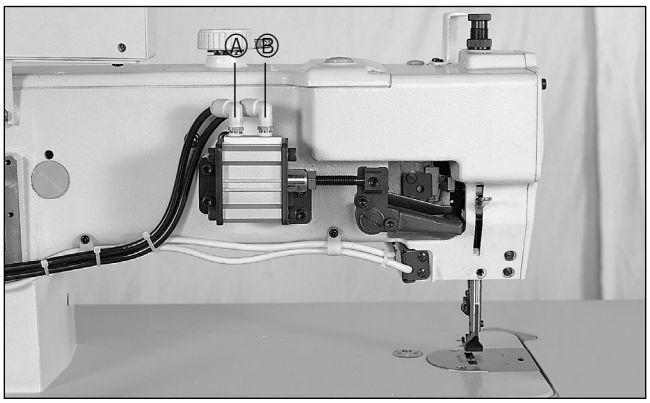
Stitch length	Maximum sewing speed
4mm	2400spm
4~6mm	2400~1600spm
6~9mm	1600spm~1200spm

21) Automatic presser foot lifting device (optional)

A. Before placing an automatic presser foot ligting device you must remove the manual presser foot lifting device (See figure 41). After loosening screws ①, ②, ③ and ④, remove the parts and place the automatic presser foot lifting as shown in "Figure 42".

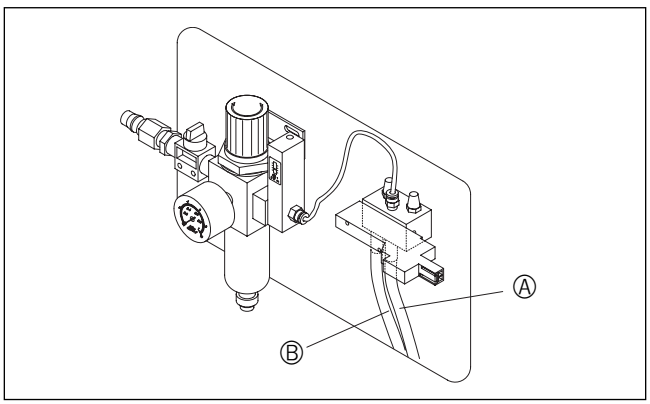


(Fig. 41)



(Fig. 42)

B. As seen in the "Figure 42 and 43", connect the air pressure unit and the cylinder using the air pressure hose Ⓐ and Ⓑ.



(Fig. 43)