



5400SO/5600SO

THREAD SERGER MACHINE

INSTRUCTION MANUAL

IMPORTANT SAFETY INSTRUCTIONS

Putting sewing systems into operation is prohibited until it has been ascertained that the sewing systems in which these sewing machines will be built into, have conformed with the safety regulations in your country. Technical service for those sewing systems is also prohibited.

1. Observe the basic safety measures, including, but not limited to the following ones, whenever you use the machine.

2. Read all the instructions, including, but not limited to this instruction Manual before you use the machine. In addition, keep this instruction Manual so that you may read it at anytime when necessary.

3. Use the machine after it has been ascertained that it conforms with safety rules/standards valid in your country.

4. All safety devices must be in position when the machine is ready for work or in operation. The operation without specified safety devices is not allowed.

5. This machine shall be operated by appropriately-trained operators.

6. For your personal protection, we recommend that you wear safety glasses.

7. For the following, turn off the power switch or disconnect the power plug of the machine from the receptacle.

1) Threading needle(s), looper, spreader etc. and replacing bobbin.

2) For replacing part(s) of needle, presser foot, throat plate, looper, spreader, feed dog, needle guard, folder, cloth guide etc.

3) For repair work.

4) When leaving the working place or when the working place is unattended.

5) When Using clutch motors without applying brake, it has to be waited until the motor stopped totally.

8. If you should allow oil, grease, etc. used with the machine and devices to come in contact with your eyes or skin or swallow any of such liquid by mistake, immediately wash the contacted areas and consult a medical doctor.

9. Tampering with the live parts and devices, regardless of whether the machine is powered, is prohibited.

10. Repair, remodeling and adjustment works must only be done by appropriately trained technicians or specially skilled personnel. Only spare parts designated by can be used for repairs.

11. General maintenance and inspection works have to be done by appropriately trained personnel.

12. Repair and maintenance works of electrical components shall be conducted by qualified electric technicians or under the audit and guidance of specially skilled personnel.

Whenever you find a failure of any of electrical components, immediately stop the machine.

13. Before making repair and maintenance works on the machine equipped with pneumatic parts such as an air cylinder, the air compressor has to be detached from the machine and the compressed air supply has to be cut off. Existing residual air pressure after disconnecting the air compressor from the machine has to be expelled. Exceptions to this are only adjustments and performance checks done by appropriately trained technicians or specially skilled personnel.

14. Periodically clean the machine throughout the period of use.

15. Grounding the machine is always necessary for the normal operation of the machine. The machine has to be operated in an environment that is free from strong noise sources such as high-frequency welder.

16. An appropriate power plug has to be attached to the machine by electric technicians. Power plug has to be connected to a grounded receptacle.

17. The machine is only allowed to be used for the purpose intended. Other used are not allowed.

18. Remodel or modify the machine in accordance with the safety rules/standards while taking all the effective safety measures. Assumes no responsibility for damage caused by remodeling or modification of the machine.

FOR SAFE OPERATION

1. So as to avoid electric shock hazards, do not open the cover of the electrical box of the motor or touch any part inside the electrical box with the power to the machine turned ON.

2. To prevent possible personal injury, never operate the machine with the belt cover and the eye guard removed.

3. To protect against possible personal injury resulting from being caught in the motor, use a motor that is provided with a motor pulley cover.

4. To avoid electric shock hazards, never operate the machine with the ground wire for the power supply removed.

5. During operation, be careful not to allow your or any other person's head, hands or fingers to come close to the hand wheel, V belt and motor so as to prevent possible personal injury that may occur when your hands/fingers are caught in the machine. Also, do not plaything close to them.

6. So as to avoid possible injury to your hands and fingers, do not put any of them near the cloth cutting knife and the needle when turning the power to machine or while the machine is in operation.

7. To prevent possible injury to your hands and fingers, do not put any of them inside the eye guard while the machine is in operation.

8. To avoid electric shock hazards and accidents arising from damaged electrical components, be sure to turn OFF the power switch before inserting/detaching the power plug.

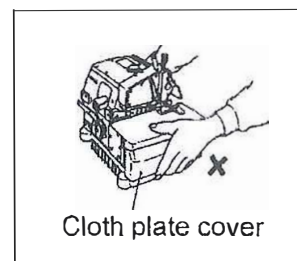
9. So as to protect against possible personal injury resulting from abrupt start of the machine, make sure to turn OFF the power to the machine when you leave your machine.

10. In the event of a power failure, be sure to turn OFF the power to the machine to protect against possible personal injury resulting from abrupt start of the machine.

11. So as to protect against possible personal injury resulting from abrupt start of the machine, remove the belt cover, motor pulley cover and the V belt after turning OFF the power to the machine and confirming that the sewing machine will not run even by depressing the start pedal.

12. Before inspecting, adjusting or cleaning the machine, threading the machine head or replacing the needle, so as to protect against possible personal injury resulting from abrupt start of the machine, be sure to turn OFF the power to the machine so as to prevent an accident and confirm that the sewing machine will not operate even when depressing the foot pedal of the sewing machine.

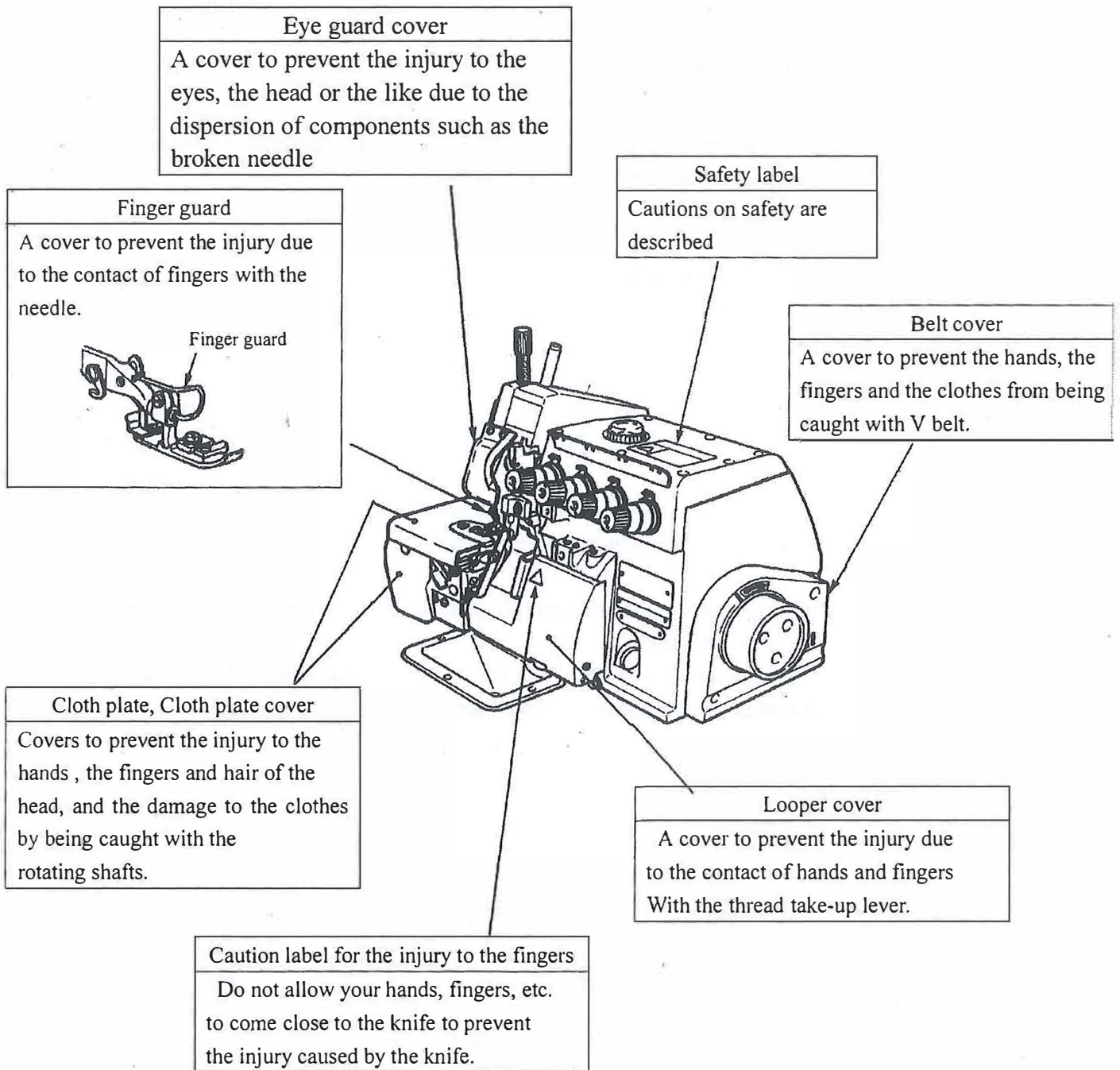
13. To protect against personal injury resulting from possible drop of the machine, do not carry your machine by holding the cloth plate cover by hand. Doing so may cause the cover to open or break resulting in drop hazards.



SAFETY DEVICE

NOTE:

Safety devices herein described may differ in accordance with the destination and specifications.



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I . SPECIFICATIONS

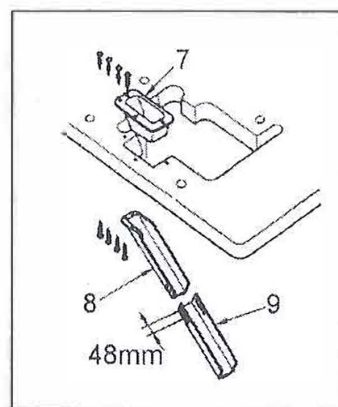
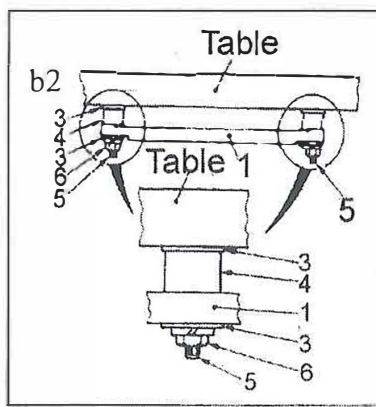
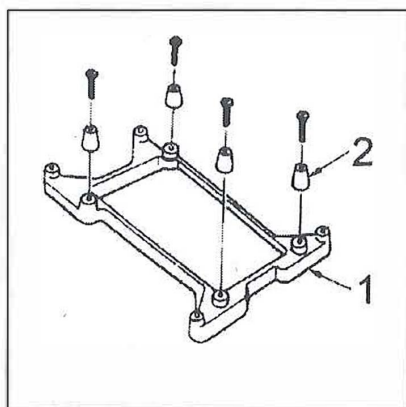
	5400SO	5600SO
Sewing speed	Max. 6,500 rpm	
	(Excluding some subclass models)	
Stitch length	1.0~3.6 mm	1.5~3.6 mm
Needle gauge	2.0 mm	3.2, 4.8 mm
Overedge width	4.0 mm	4.0, 4.8, 6.4 mm
Differential feed ratio	Gathering stitch 1:1.9 (Max. 1:2.9)	Stretching stitch 1:0.8 (Max. 1:0.6)
Needle	DC×27 (Standard) DC×1 may be used .	
Presser foot lift	6.5 mm	
	Excluding some subclass models	
Lubricating oil	No.32 For special purposes Oil	
Noise	Workplace-related noise at sewing speed n=5,000 min-1 :LPA ≤83 dB(A) Noise measurement according to DIN 45635-48-A-1.	

II . INSTALLATION

1. INSTALLING THE FRAME SUPPORT PLATE

(1) Semi-sunken type

- 1) Attach rubber cushion②to frame support plate①.
 - 2) Attach support plate washer③, support plate bolt spacer④, frame support plate①and support plate washer③in the written order to the machine table . Then fix the frame support plate to the machine table with support plate bolt A⑤and nut⑥.
 - 3) Install waste chute opening⑦on the front side of the upper surface of the table , and install waste chute(upper)⑧on the bottom face of the table .
 - 4) Install waste chute (lower)⑨on waste chute(upper)⑧.
- The installation of the chutes can be adjusted within a length of 48 mm.



(2) Fully-sunken type

- 1) Attach frame support plate joint A④, frame support plate joint③and rubber cushion②to frame support plate①.
- 2) Fix support plate bolt B⑥to the machine table .
- 3) Put frame support plate joint A④and frame support plate joint B③between support plate washers⑤respectively .

Install frame support plate ① so that the cloth plate is 5 mm higher than the upper surface

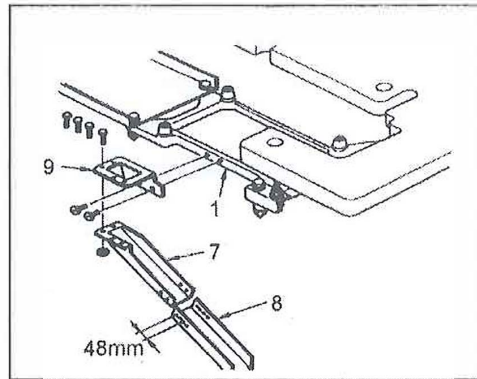
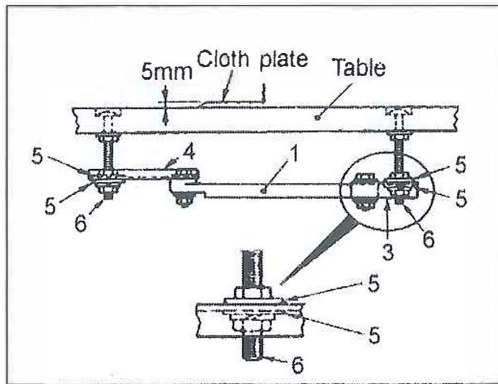
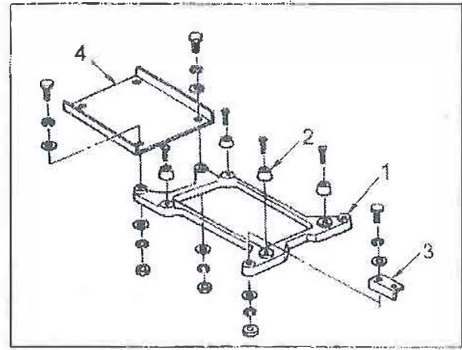
of the machine table .

4) Install waste chute stopper plate⑨on frame support plate.

5) Install waste chute(upper)⑦on waste chute stopper plate ⑨.

6) Install waste chute(lower)⑧on waste chute (upper) ⑦.

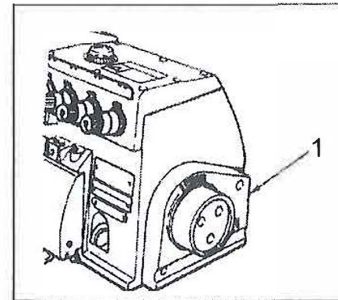
The installation of the chutes can be adjusted within a length of 48 mm.



2. ATTACHING THE BELT COVER

To protect against possible personal injury due to abrupt start of the Machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.

Attach belt cover①to the machine head .

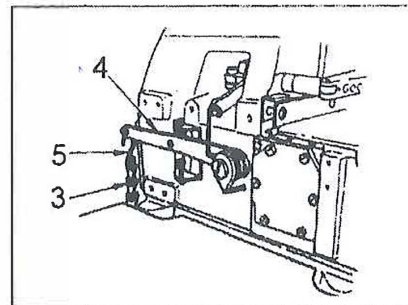
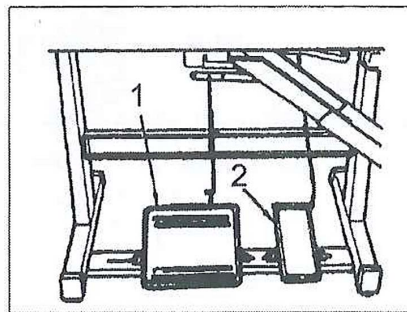


3. INSTALLING THE PEDALS

To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.

1) Install starting pedal①on the left and presser lifter pedal②on the right as seen from the operator .

2) Use an S-shaped hook⑤to connect chain③of the presser lifter pedal to the hole located in the top end of presser lifting lever④.



III. PREPARATION AND OPERATION

To avoid malfunction and damage of the machine, confirm the following:

1) Before you put the machine into operation for the first time after set-up, clean it

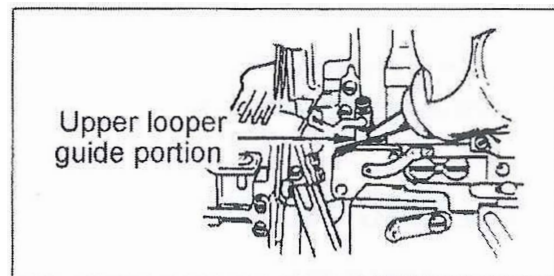
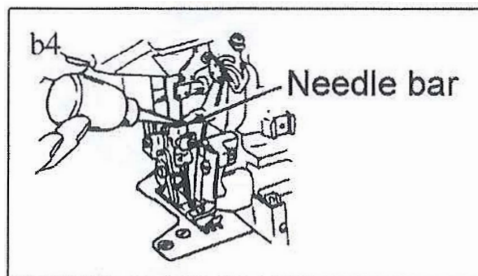
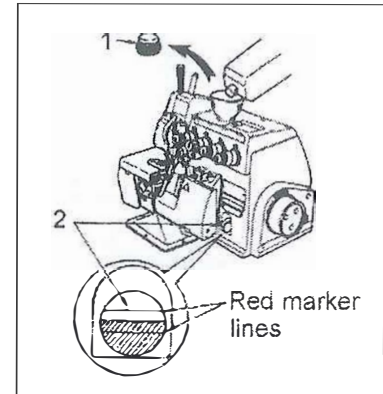
1. LUBRICATION

To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.

- 1) Remove oil cap①.
- 2) Pour NO.32 for special purposes oil reservoir.
- 3) Supply oil until the oil surface reaches between the two red marker lines when oil gauge②is observed from the side .

Note:

- 1) Be careful not to supply oil above the upper red marker line, or else troubles due to excessive lubrication may result.
- 2) Change oil when one month has passed after the setup of the sewing machine. Then, change oil every six months.
- 3) Supply oil if the oil surface comes down under the lower marker line when observing the oil gauge from the side.



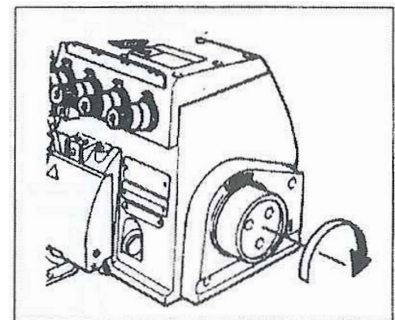
Note:

Apply two or three drops of oil to the needle bar and upper looper guide portion when operating the machine for the first time after set-up or after a long period of disuse.

2. CHECKING THE DIRECTION OF ROTATION

1) The correct direction of rotation of the sewing machine is clockwise when observing the machine from the handwheel side.

Never allow the machine to rotate in the reverse direction. If the machine rotates counterclockwise, the oil pump will fail to function resulting in seizure.

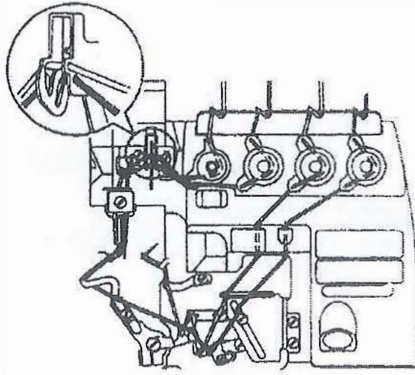


3. THREADING THE MACHINE

To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.

Thread the machine as shown in the figure. (Threading diagram is pasted inside the looper

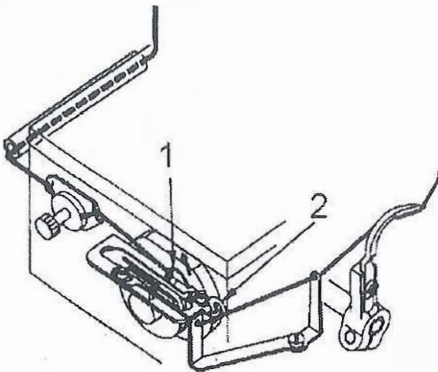
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Note:

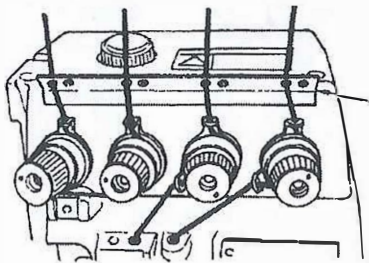
Raise looper thread cam thread guide① and perform threading . Return looper thread cam thread guide① to its home position and securely fix it to thread guide spring②.

5600SO



Note:

Be sure to pass the needle thread for double chainstitch through the needle thread take-up lever.
(Pass the needle thread for overlocking through the thread take-up lever located outside.)



Intermediate
Thread guide

Note:

When using an untwisted thread such as wooly nylon thread or weak thread, do not wind it round the intermediate thread guide.

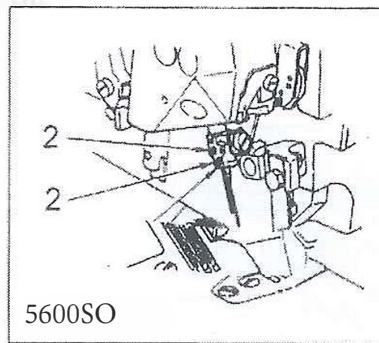
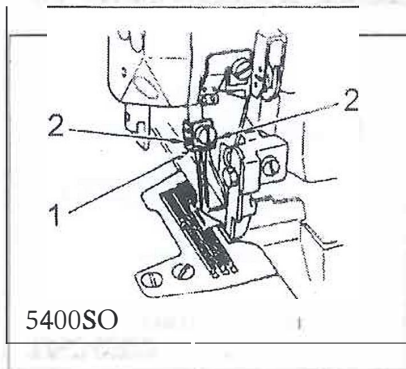
4. ATTACHING NEEDLES

To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.

The standard needle is DC×27#11 . You can also use the DC×1 needle . In this case, however, the clearance provided between the needle and the looper may be required to be adjusted. If sewing needs to be carried out with a finely adjusted thread tension , use the DC×27 needle .

- 1) Bring needle clamp① up to the highest position .
- 2) Loosen needle clamp screw②, and fully insert the needle into the needle clamp hole with the needle recess facing backward as viewed from the operator's side .

- 3) Tighten needle clamp screw②.

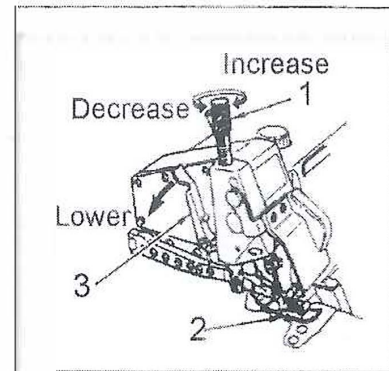


5. ADJUSTING THE PRESSURE OF THE PRESSER FOOT AND REMOVING THE PRESSER FOOT

To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.

- 1) Adjust the pressure of the presser foot by turning presser foot adjust screw①.

When the adjust screw is turned clockwise, the pressure will increase. When it is turned counterclockwise, the pressure will decrease.

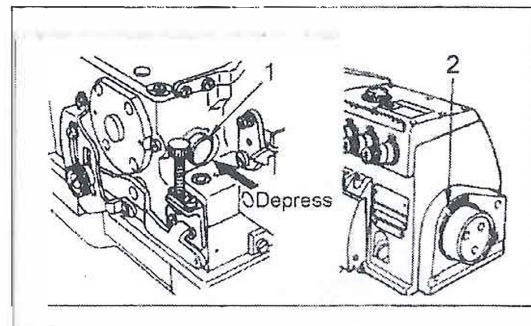


- 2) To open presser foot②sideward , raise the needle to the highest position of its stroke and lower presser bar lifting lever③.

6. ADJUSTING THE STITCH LENGTH

To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.

- 1) Slowly turn the handwheel as you keep depressing pushbutton①, and you will find a point at which the pushbutton goes in farther



- 2) With the above condition maintained , align the desired scale mark on the handwheel with mark②on the belt cover . Use the scale mark as reference.

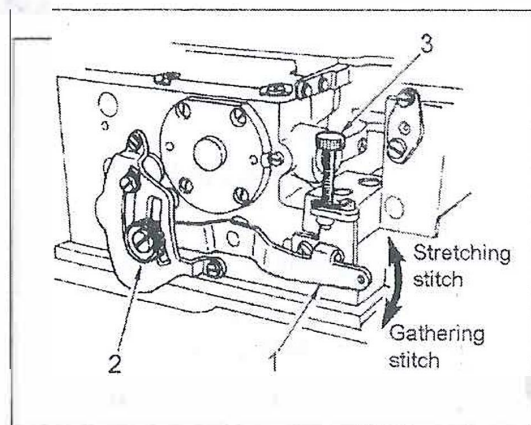
- 3) Reset pushbutton①after setting the scale mark .

7. ADJUSTING THE DIFFERENTIAL FEED

To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.

- 1) Loosen differential feed lock nut②. Move differential feed adjusting lever ① up for stretching stitch or down for gathering stitch

- 2) When you want to move differential feed adjusting lever①only slightly , use differential



feed fine adjustment screw③.

3) When the scale mark is set to “-1”, the machine will perform stretching stitch with a differential feed ratio of 1:0.8, and when it is set to “0”, the differential feed ratio between the main feed dog and the differential feed dog will be 1:1.

4) The maximum differential feed ratio for gathering is 1:1.9 (it can be set to 1:2.9 depending on the adjustment of the internal mechanism of the sewing machine). The scale marks beyond “0” are used as reference.

IV. MAINTENANCE

1. ADJUSTING THE KNIVES AND OVEREDGE WIDTH

To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.

1) Height of the lower knife

Loosen setscrew② and adjust the height of lower knife① so that its edge is flush with the throat plate surface.

2) Height of the upper knife

Loosen setscrew④ and perform adjustment so that upper knife ③ overlaps lower knife① by 0.5 to 1 mm when upper knife③ is at its lowest position.

3) Overedge width

Overedge widths of 1.6 through 6.4 mm are provided by changing the parts or by using subclass models.

(The overedge width will be slightly larger than the knife cut width.)

To change the overedge width:

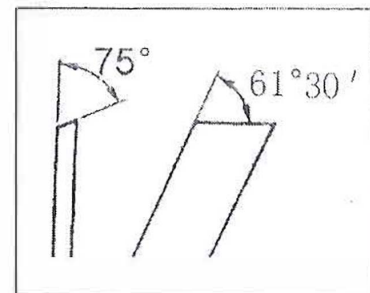
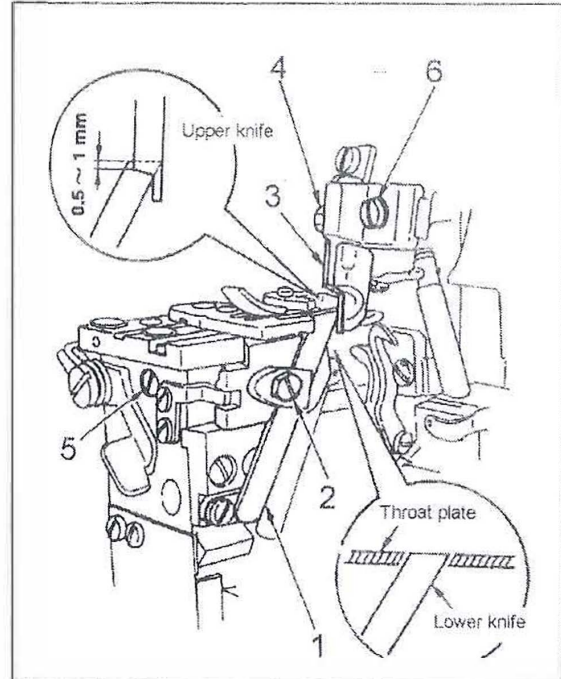
- 1) Loosening setscrew⑤, push lower knife① to the left and fix it.
- 2) Loosen setscrew⑥ and move upper knife③ as required, then fix it.
- 3) Lower the upper knife to its lowest point and loosen setscrew⑤. Tighten setscrew⑤ when the lower knife comes in contact with the upper knife.

Note:

- 1) Be sure to tighten setscrew⑤ before operating machine.
- 2) After the completion of adjustment, make the knives cut a thread to make sure of sharpness of the knives.

4) Resharpener the lower knife

When the lower knife has become dull, resharpen it as shown in the figure right.



2. CLEANING THE MACHINE HEAD

To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.

Clear lint from inside the looper cover and the needle bar and components about one or twice a day. If not, oil may leak or the sewing material will be soiled.

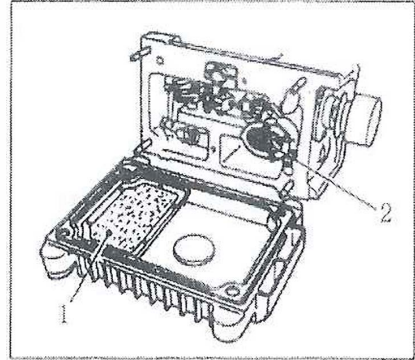
Note:

Do not wipe the coated surface of the machine head with lacquer thinner. Doing so will damage the coated surface.

3. CLEANING THE FILTER AND PUMP NET

1) To use the sewing machine for an extended period of time, clean filter ① and pump net ② periodically twice or three times a year. If the filter and pump net are clogged with dusts, the machine components may be seized or worn out extraordinarily. So, carefully check the filter and pump net.

2) If the lubricating oil in the machine is stained, change the oil also at the time of cleaning.



4. MOTOR PULLEY AND V BELT

Number of Revolutions of Sewing machine (rpm)	50 Hz			60 Hz		
	Outer diameter of motor pulley (mm)	V belt (inch)		Outer diameter of motor pulley (mm)	V belt (inch)	
		Semi-sunken type	Fully-sunken type		Semi-sunken type	Fully-sunken type
6,500	120	38	32	100	36	32
6,000	110	36	32	95	35	30
5,500	100	36	32	85	35	30
5,000	90	35	30	80	34	30
4,500	80	35	30	70	34	30

1) Use a clutch motor of 1/2 HP (400W).

2) Use an M type V belt.

3) Relations among number of revolutions of sewing machine, motor pulley, and length of V belt are as shown in the aforementioned table.

4) Effective diameter of the handwheel of sewing machine head is 50.6 mm.

5. DIMENSIONS USED TO ADJUST THE LOOPER AND THE NEEDLE

GUARD

1) To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.

2) To avoid possible accidents due to unfamiliarity with the machine, get a maintenance man who has a good knowledge of the machine or serviceman of our distributor to adjust the machine

or replace any of its parts.

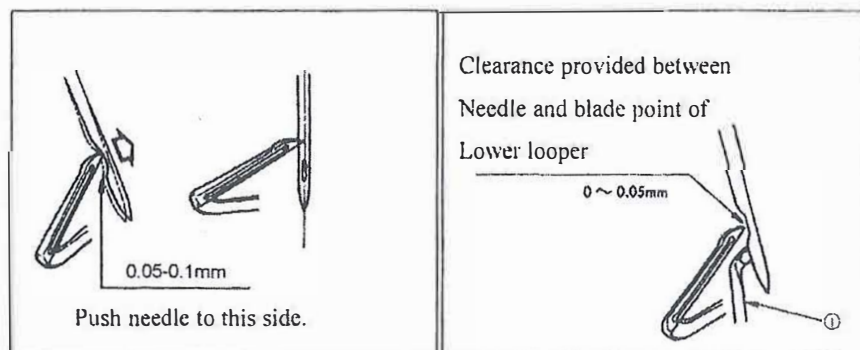
3) To avoid possible personal injury when the machine starts, it has to be ascertained in prior to the actuation of the machine that no screw are loosened and no components come in contact one another.

Note:

The dimensions given in the table are standard ones to be used to adjust the looper. They are intended to be used for reference and should be changed more or less in Accordance with the sewing products and thread to be used.

	<p>5400SO</p>					<p>Blade point of chain looper</p> <p>0.05-0.1mm</p>	
	<p>5600SO</p>			<p>0.05-0.2mm</p>			
	A	B	C	D	E	F	G
	11	-	-	11.8	4.8	4	-
	11	-	-	11.8	4.8	4	-
5400SO	11	10.1	-	11.8	4.8	4	-
5600SO	11	-	9.5	11.8	4.8	4	1.8
	11	-	-	10.5	4.9	4	-
	12.6	-	11.1	12.8	4.9	3	1.8
	11	10.1	9.5	11.8	4.9	4	1.8

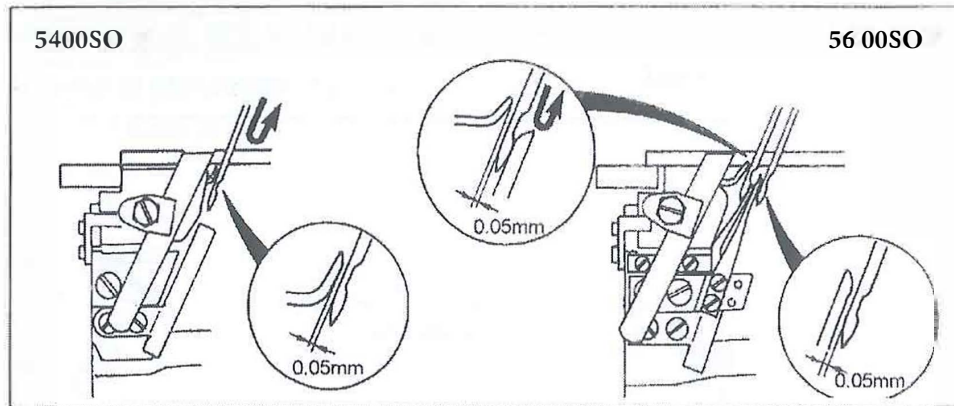
1) Adjust the lower looper so that the needle is pushed by 0.05 to 0.1mm to this side by the blade point of lower looper in the state where the blade point of lower looper is aligned with the center of needle.



2) Then, adjust traveling needle guard⁽¹⁾ so that the clearance provided between the needle and the blade point of lower looper should be 0 to 0.05mm in the state where the needle is pushed to this side by traveling needle guard⁽¹⁾.

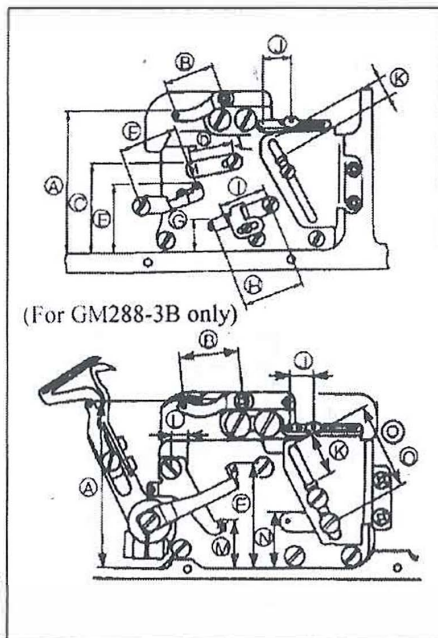
For the 2-needle overlock machine, adjust both the left and right needles in the same manner.

Needle guard components



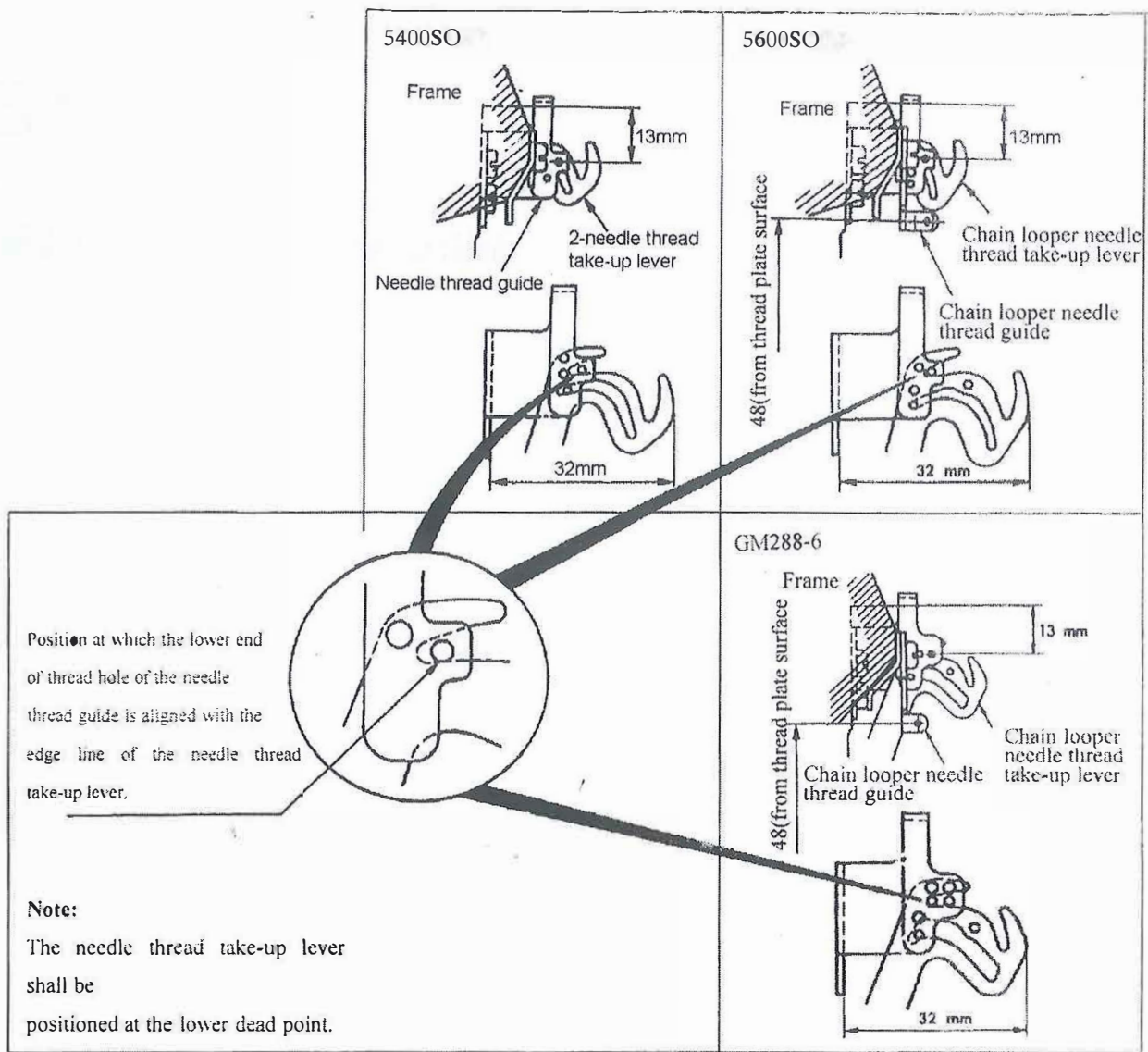
6. DIMENSIONS RELATED TO THE POSITION OF THE THREAD TAKE-UP AND THE LOOPER THREAD CAM (STANDARD ADJUSTMENT)

(1) Position of the looper thread take-up lever and the looper thread guide

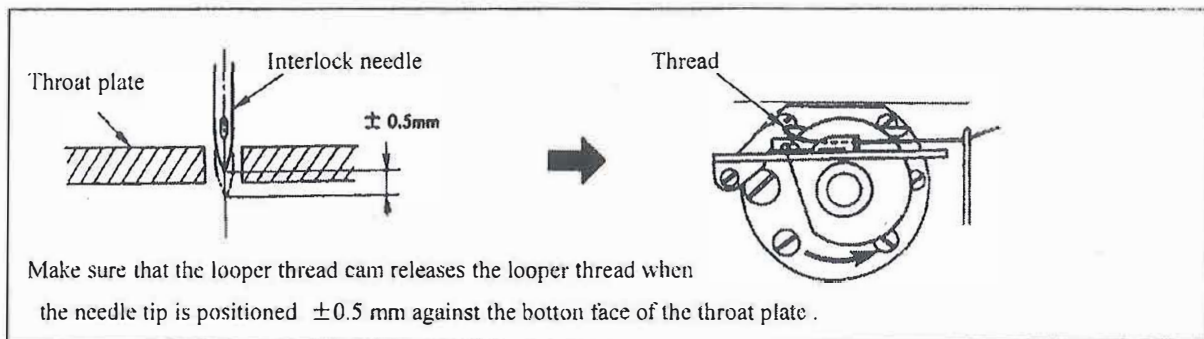


	A	B	C	D	E	F	G	H	I	J	K
5400SO	↑	↑	↑	↑	↑	↑	8	27	23.5	↑	↑
5600SO	↑	↑	↑	↑	↑	↑	9	26	22	↑	↑
	↑	↑	↑	↑	↑	↑	10	↑	↑	↑	↑

Dimensions of E and G are adjustment values when the upper looper is at its rightmost point.



(2) Adjustment value for the looper thread cam (GM288-5)



7. CONVERSION TABLE OF THE NEEDLE NUMBER

JAPAN (ORGAN)	GERMAN (SCHMETZ)
DC × 27 #9	B-27 Nm65
DC × 27 #11	B-27 Nm75
DC × 27 #14	B-27 Nm90
DC × 27 #16	B-27 Nm100
DC × 27 #18	B-27 Nm110
DC × 27 #19	B-27 Nm120
DC × 27 #21	B-27 Nm130



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