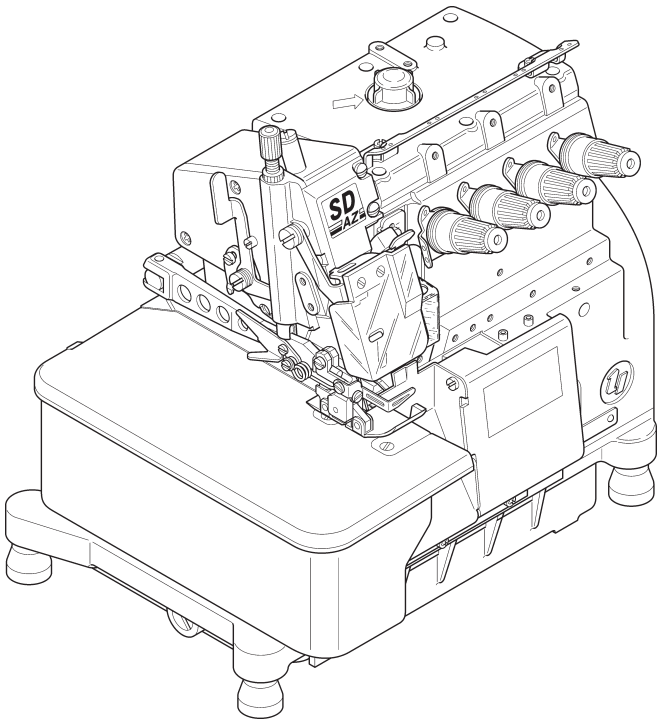
yamato®

Instruction Manual

HIGH SPEED SAFETY STITCH MACHINE
FOR MEDIUM WEIGHT MATERIALS

AZ8600SD class



Thank you for having purchased the Model AZ8600SD class.
Before using your AZ8600SD class, please read the instruction manual and understand the contents well.
After reading the instruction manual, please keep it in a location where it is easily accessible to the operator.

YAMATO SEWING MACHINE MFG. CO.,LTD.

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CONTENTS

Attention

◇This instruction manual is designed mainly for technicians, but it is advisable that also operators read the instructions with mark to use the machine properly.

◇The numbers in lower left corners of figures are figure numbers. We use them in texts as needed for your reference.

Attention

The parts used for this product are subject to change without notice. If such a change is made, any part of the contents and illustrations of this instruction manual may not conform to this product.
In preparing the instruction manual, we have made our best efforts for making it free of any error or omission. If any error or omission should yet be found, it might not be rectified immediately.

⚠SAFETY INSTRUCTIONS

1. Safety Instruction

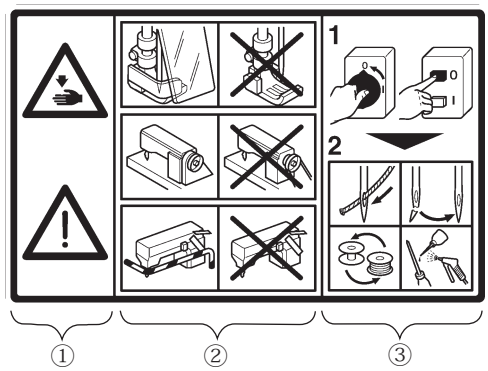
The sewing machine, automatic machine, and attachments (collectively called “the machine” below) involve sewing operations that require the operator to be near moving parts of the machine. Because of this, there is always a potential danger of unintentional contact with the moving parts. For this reason, the operators who actually use the machine and the maintenance staff who perform maintenance and repair must carefully read “2. Basic precautions” and “3. Precautions to be taken in various operating stage” below and fully understand this information before operating or maintaining the machine.
The information contained in the “Safety Instruction” of this manual also includes items not found in the product specifications.
To assist in better understanding this manual and the product warning labels, warning indicators are categorized as shown below. Be sure that you fully understand the contents and carefully follow the instructions.

1.1 Explanation of risk levels

⚠DANGER	This indication is given when there is a danger of death or serious injury if the person in charge or any third party mishandles the machine or does not avoid the dangerous situation when operating or maintaining the machine.
⚠WARNING	This indication is given when there is a potential for death or serious injury if the person in charge or any third party mishandles the machine or does not avoid the dangerous situation when operating or maintaining the machine.
⚠CAUTION	This indication is given when there is a potential danger of medium to minor injury or damage of the sewing machine if the person in charge or any third party mishandles the machine or does not avoid the dangerous situation when operating or maintaining the machine.

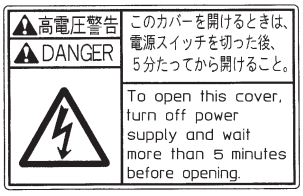
1.2 Explanation of pictorial warning indications and warning labels

	There is a risk of injury if contacting a moving section.
	There is a risk of a burn if contacting a high-temperature section.
	There is a risk of electrical shock if contacting a high-voltage section.
	Connection of an earth cable is indicated.
	The correct direction is indicated.



Explanation of safety label

①There is the possibility that slight to serious injury or death may be caused.
There is the possibility that injury may be caused by touching the moving part.
②Perform sewing work with safety cover.
Perform sewing work with safety protection device.
③Be sure to turn the power OFF before carrying out “threading,” “needle changing,” “bobbin changing” or “oiling and cleaning.”



Explanation of high-voltage warning label

High voltages are flowing inside the power supply of the control box. This indicates that there is a risk of electrical shock. When it is necessary to open the control box containing electrical parts, be sure to turn the power off, remove the power plug and wait for at least five minutes before opening the cover in order to prevent an accident resulting in electrical shock.

1.3 Explanation of symbols

Explains the symbols used in the instruction manual.

	Failure to follow the instructions can result in an injury or damage to the machine.
	Be sure to follow the instructions when you operate, check, adjust or repair the machine.
	Never do this.
	Be sure to remove the power plug from the source of the power supply, when checking, adjusting and/or repairing the machine or when there is the possibility that lightning may strike.
	Additional explanations and notes, etc., for operation or adjustment

2. Basic precautions

1. Be sure to read this instruction manual and all the other explanatory documents supplied with accessories of the machine before using the machine. Always keep the instruction manual where it is easily accessible for the operator and maintenance staff.
2. The content of this section includes items which are not contained in the specifications of your product.
3. Be sure to wear safety goggles to protect against accidents caused by needle breakage.

2.1 Applications, purpose

Our industrial sewing machines have been developed in order to increase quality and/or productivity in the sewing industry.
Accordingly, never use our products for other than the intended use as described above.

2.2 Working environment

The environment in which our industrial sewing machines are used may seriously affect their durability, functions, performance and/or safety. Do not use the machine in the circumstances below.

- Places of high ambient temperature and/or humidity that seriously affects sewing machines.
- Outdoors, places of high temperature or in direct sunlight.
- Environments containing dust, corrosive or flammable gases, or in contact with chemicals.
- Where the voltage fluctuation range is more than ± 10% of the rated voltage.
- Location where sufficient power is not available for the power supply capacity of the controllers and motors that is used.
- Near objects where strong electric or magnetic fields, such as high frequency welding machines which make noise, are generated.
- As dew condensation may occur when suddenly bringing the machine from a cold environment to a warm place, in order to prevent accidents caused by breakage or malfunction of the electrical components, be sure to turn the power on after waiting for a sufficient period of time until there is no sign of water droplets.
- When lightning occurs, be sure to stop operation and remove the power plug in order to prevent accidents caused by breakage or malfunction of the electrical components.

2.3 Safety devices and warning labels

- Be sure to operate the machine after verifying that safety device(s) are correctly installed in order to prevent accidents caused by lack of the device(s).
  With regard to safety device(s), please refer to page vi.
- If any of the safety devices is removed, be sure to replace it and verify that it works normally in order to prevent accidents.
- Be sure to keep the safety label and/or warning lables attached to the machine clearly visible in order to prevent accidents. If any of the labels has become stained or come unstuck, be sure to replace it with a new one.

2.4 Instruction and training

- ○ Operators and workers, who supervise, repair or maintain the machine head and/or machine unit, are required to have the adequate knowledge and operation skills to do the job safely.
- ○ The manager should plan and enforce the safety education and training of those operators and workers beforehand.

2.5 Modification

- Never modify and/or alter the machine in order to prevent accident that can result in personal injury or death. Yamato assumes no responsibility for damages or personal injury or death resulting from a machine which has been modified or altered.

⚠ WARNING

2.6 Items for which the power to the machine has to be turned off

Be sure to immediately turn the power off if any abnormality or failure is found or in the case of power failure in order to protect against accidents that can result in personal injury or death.

To protect against accidents resulting from abrupt starting of the machine, be sure to carry out the following operations after turning the power off.

- When threading to the parts such as the needle, looper, spreader, etc., or when changing the bobbin.
- When changing or adjusting all component parts of the machine.
- Adjusting the stitch length
- Adjusting the differential feed ratio
- When inspecting, repairing or cleaning the machine or leaving the machine.

○ Be sure to remove the power plug by holding the plug section instead of the cord section in order to prevent electrical shock, earth-leakage or fire accidents.

○ If the machine is using a clutch motor, to protect against accidents resulting from abrupt starting of the machine, be sure to carry out the above operations after verifying that the machine has stopped completely, since the motor continues turning for a while even after turning off the power supply switch.

3 PRECAUTIONS TO BE TAKEN IN VARIOUS OPERATING STAGES

3.1 Unpacking

⚠ Be sure to unpack the machine from the top. If the machine is packed in a wooden crate, be careful of the nails. Remove the nails from the board.

Never hold the parts near the needle or threading parts when removing the sewing machine head from the buffer of the box.

⚠ Removing and carrying the sewing machine head should always be carried out by two or more people.

⚠ Take out the machine very carefully while checking the position of the center of gravity.

Preserve the cardboard box and packing material carefully in case secondary transport is needed in the future.

Disposal of the packaging

The packaging material of the machine consists of wood, paper, cardboard and polystyrene foam. The proper disposal of the packaging is the responsibility of the customer, and must be properly disposed of in accordance with the locally valid environmental protection regulations.

Disposal of the machine waste

The proper disposal of the machine waste is the responsibility of the customer, and must be disposed of in accordance with the locally valid environmental protection regulations.
The materials used in the machines are steel, aluminum, brass and various plastics.
A specialist should be commissioned if necessary.

3.2 Transportation

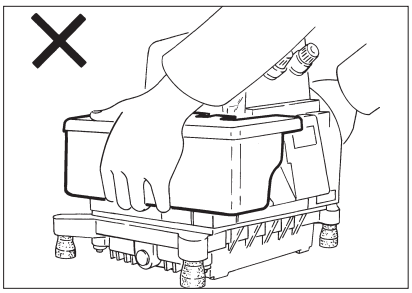
⚠ Be sure to take sufficient safety measures to prevent falling or dropping when lifting or moving the machine.

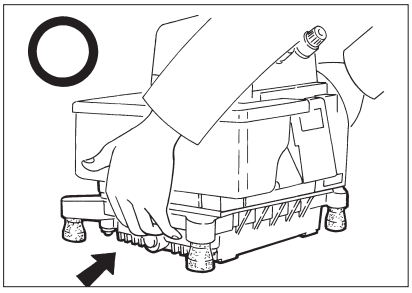
⚠ If the machine and/or your hands are stained with oil, the machine may easily fall to the floor. Therefore, wipe off the oil carefully.

⚠ To prevent accidents during transportation, repackage in the same state as the original delivery packaging.
Be particularly sure to fully wipe off any oil adhering to the machine before repackaging.

⚠ The machine head should be carried by two or more people.
The machine should be carried by people only when moving to the table or transfer hand truck, and all other transportation operations should use a hand truck. When moving to the table or hand truck, be careful that the machine is not subjected to excessive impact or vibrations. Otherwise the sewing head could fall over.

When handling the machine, do not carry the bottom part of the cloth plate cover.





3.3 Installation, preparation

3.3.1 Machine table

❗ Prepare a machine table (table board and legs) that has sufficient strength to withstand the weight of the sewing head and any reaction while operating.
Securely join the table and legs to ensure sufficient strength to withstand the weight of the sewing head and any reaction while operating.

○ Maintain a comfortable working environment with consideration of the lighting and the arrangement of sewing machine to enable the operators to work smoothly.

○ Adjust the height of the table according to the posture of the worker.
Also, when installing the control box and the related parts on the sewing machine, make sure not to affect the posture of the worker.
If casters are fitted to the table stand, be sure to use high-strength casters with a locking mechanism.

⚠ Lock the casters except when moving the machine.

3.3.2 Wiring and grounding

🚫 Never connect the plug for power supply until assembly is finished.
Also, be sure to avoid the usage of multiple-outlet extension cords in order to prevent electrical shock, earth-leakage or fire accident.

❗ Fix the connectors securely to the sewing machine head, motor, and electric apparatus.
Also, when unplugging the connectors, hold the connector part.

❗ When wiring the connection cords, please take care of the following.

○ Connect the cords away from the driving parts.

○ Do not apply excessive force to the connection cords.

○ Do not bend the cords excessively.

🚫 Never use staples to fasten the cables. Otherwise it may cause a short circuit and/or fire.

❗ Arrange the ground wire securely to the designated position on the machine head.
Also, wire separately from the grounding for other equipment.

3.3.3 Handling machine oil

⚠ Keep machine oil out of the reach of children.

❗ Be sure to fill or add lubrication oil to sewing machines before operating them.
Use “Yamato SF oil 28” as specified.

⚠ If machine oil gets in your eyes, it may cause eye inflammation. Always wear protective glasses to prevent the oil from getting in your eyes.
*Should machine oil get in your eyes, wash them with fresh water for 15 minutes and then consult a medical doctor.

⚠ If oil adheres to your eyes or body, be sure to immediately wash it off in order to prevent inflammation or irritation.

⚠ If oil is swallowed unintentionally, be sure to consult a medical doctor in order to prevent diarrhea or vomiting.

❗ Methods of disposing of waste oil and/or containers are specified by law. Dispose of it properly as required by law. If you have further questions on its disposal, consult the place of purchase.

❗ After opening the oil container, be sure to seal it to prevent dust and water from getting into the oil and keep it in the dark to avoid direct sunlight.

🚫 Do not store in high-temperature areas or areas exposed to an open flame.

⚠ WARNING

3.4 Before operation

○ Never put your hand under the needle or near the moving parts of the machine when turning on the power supply switch.

○ When operating a new sewing machine, make sure the rotating direction of the pulley agrees with the rotating-direction mark.

○ Before turning the power on, visually check the cables and connectors for conditions such as damage, disconnection and/or loosening.

○ If a table stand with casters is used, be sure to secure the table stand by locking the casters or securing the legs with adjusters, if provided, in order to prevent accidents caused by abrupt moving of the machine.

⚠ WARNING

3.5 During operation

○ Be sure to operate the sewing machine using the safeguards such as belt cover, finger guard, and eye guard.
○ Never place your finger, hair or objects under the needle or close to the moving parts while operating the sewing machine.
○ Be sure to turn off the power supply switch when threading or replacing the needles.
○ Never place your hands close to the knives (upper and lower knives) when operating the sewing machine with the trimming devices.
○ Be sure to turn off the power supply switch when terminating the sewing work or leaving the sewing machine.
○ In the event of the power failure, be sure to turn off the power.
Also, if the sewing machine malfunctions, makes abnormal sound or emits unusual odors while operating, be sure to turn off the power supply switch.
○ While operating the machine, wear clothing that cannot be caught in the machine.
○ Do not put any tools or other unnecessary objects on the machine table while running the machine.
○ If a clutch motor type is used, it will continue running for a while even after the power is turned off. Therefore, be careful because the machine could start running by pressing the machine pedal.
○ If a servomotor is used, the motor does not produce noise while the machine is at rest. Be sure not to forget to turn the power off in order to prevent accidents caused by abrupt starting of the machine or motor.
○ To prevent entanglement accidents in machines with a puller mechanism, keep your hands, hair, and clothing away from the machine.

⚠ WARNING

3.6 Maintenance, inspection and repair

○ Maintenance, inspection, and repair must be performed by staff that have received special training and fully understand and follow the information in the instruction manual.
○ Be sure to turn off the power supply switch and make sure the sewing machine and motor completely stop before the maintenance, inspection, and repair. (If the machine is using a clutch motor, take care that the motor keeps turning for a while even after turning off the power supply switch.)
○ Do not attempt to modify the machine at your own discretion. We are not responsible for accidents caused by such modification.
○ Use genuine Yamato parts when repairing the machine and/or replacing the parts. We are not responsible for accidents caused by any improper repair/adjustment and substituting other parts for those manufactured by Yamato.
○ Turn off the power supply switch if removing or replacing any parts or during adjustment of the sewing machine.
○ Be sure to also remove the gasket if the cover is removed for maintenance, inspection, and repair. If the gasket is not removed, the edge of gasket may cause injury.
○ Do not pull the cord when removing the plug. Be sure to hold the plug itself.
○ A high voltage is applied inside the control box. Turn off the power supply switch and wait for at least five minutes before opening the cover.
○ Be sure to replace the safety devices and/or safety covers if removed for maintenance, inspection and repair.
○ After performing maintenance, inspection and repair, make sure that turning on the power does not pose any danger to you.
When operating the machine for the first time after work is performed, run at low speed to check for abnormal sounds or other problems before performing high-speed operation.

4. Recommended check points for maintaining machine performance

(1) Perform regular cleaning of the machine parts by following the instruction manual.
(2) Perform regular inspection of the lubrication oil by following the instruction manual, and refill or replace the oil as required.
(3) Because the oil-proof parts use rubber, their oil-proof performance is reduced over time.
○ If the seals or other stationary parts fall off or begin to lose their sealing performance, replace them with new parts.
○ The replacement period for parts used in the movable sections varies depending on the machine operating conditions, environment, maintenance, and oil used, but replacement every several years is recommended.
(4) For details about the replacement procedure, please contact your local dealer or Yamato.

5. Safety devices and warning label affixing locations

Belt cover

⚠ The belt cover prevents entanglement with the belt.

⃠ Do not operate with the cover removed.

Front cover

⚠ The front cover prevents contact with the moving parts inside the cover.

⃠ Do not operate with the cover opened.

Eye guard

⚠ The eye guard prevents injury to the operator's eyes due to breaking of needles during the sewing operation. This section also houses the needle thread take-up, upper knife, and other moving parts.

⃠ Do not operate with the eye guard opened.

Finger guard

⚠ The finger guard prevents the operator's fingers from going under the needle. However, there is some space at the top of the finger guard and other sections, and so there is a risk of finger insertion.

⃠ Do not operate when the finger guard is removed.

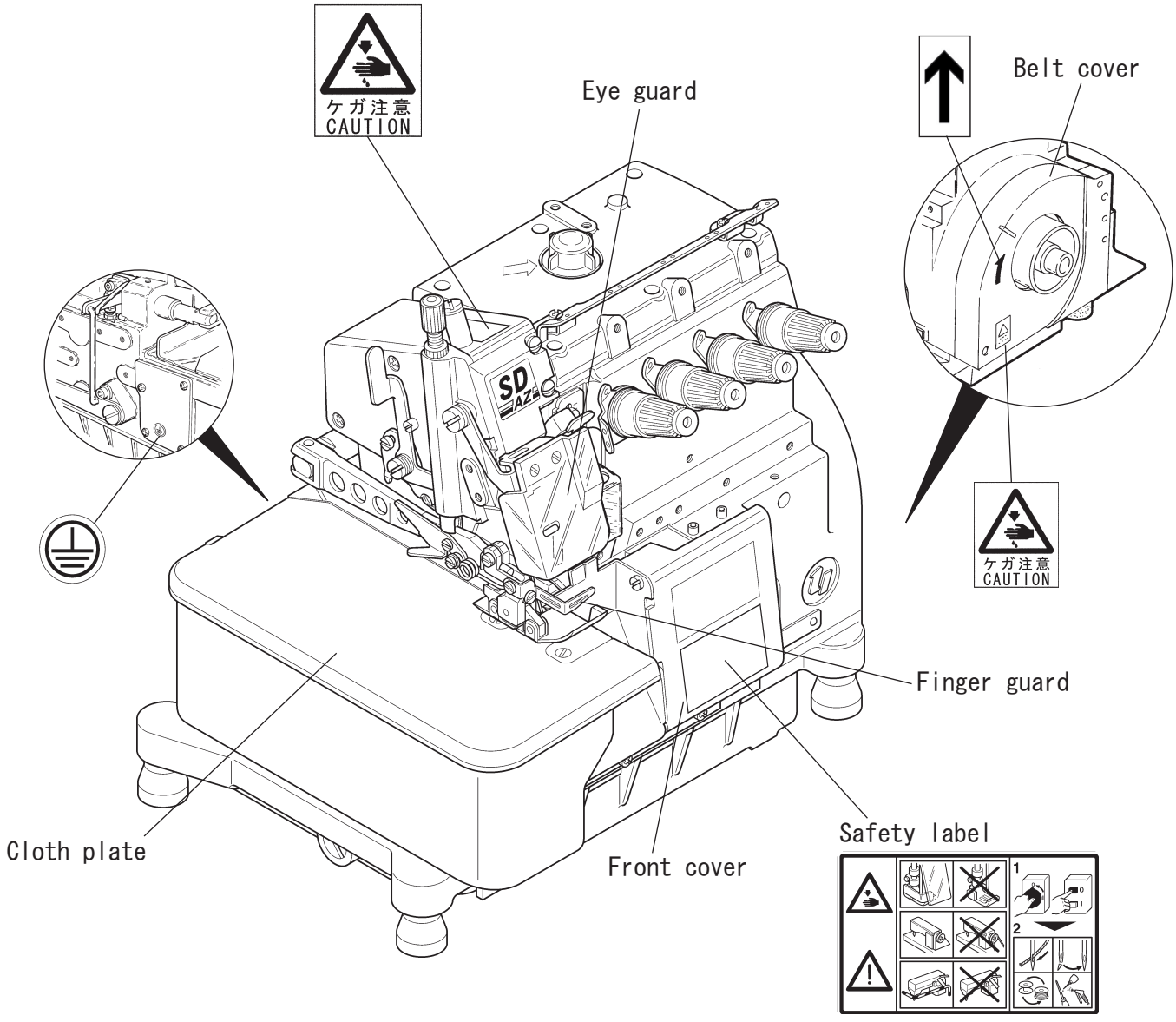
Cloth plate

⚠ The cloth plate prevents contact with the moving parts inside the cloth plate.

⃠ Do not operate when the cloth plate is opened.

Safety label, warning label

❗ Reaffix the labels if they start peeling off or become dirty and illegible.



1. Name of each part

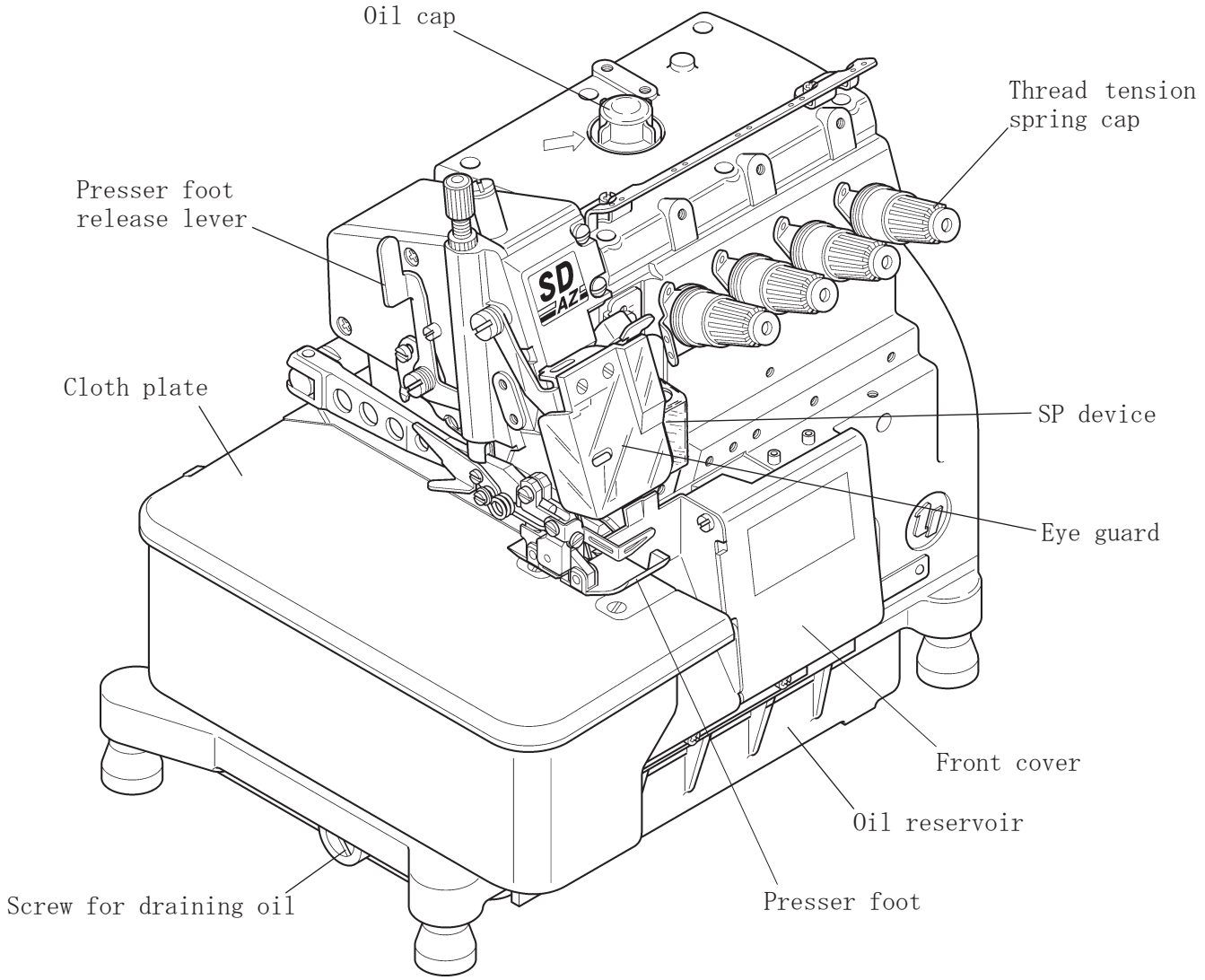


Fig. 1-1

2. Installation

2.1 Installation for semi-submerged type

2.1.1Table cutting diagram

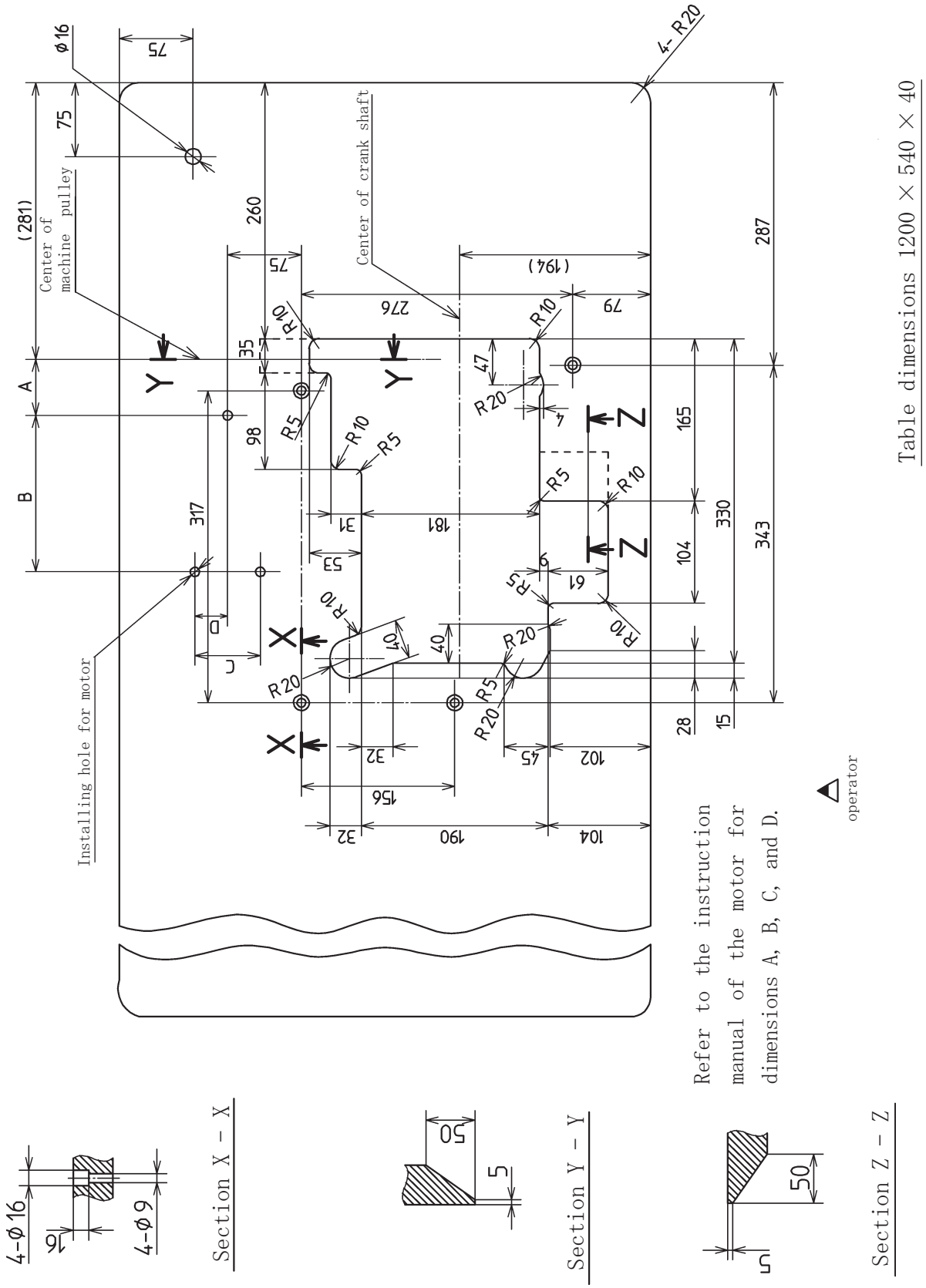


Fig. 2-1

2.1.2 Installation

Install the machine correctly referring to Figs. 2-2 and 2-3.

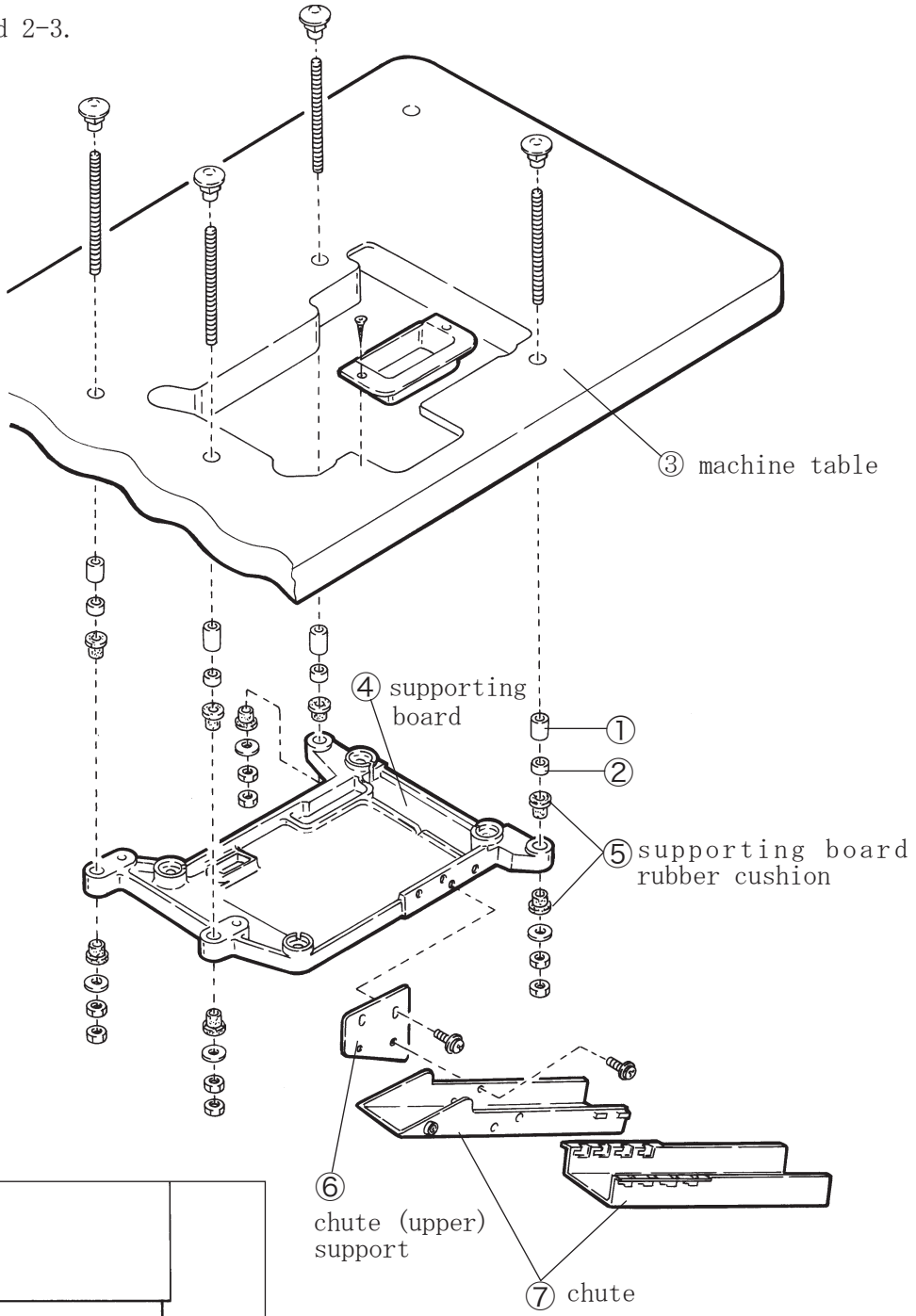


Fig. 2-2

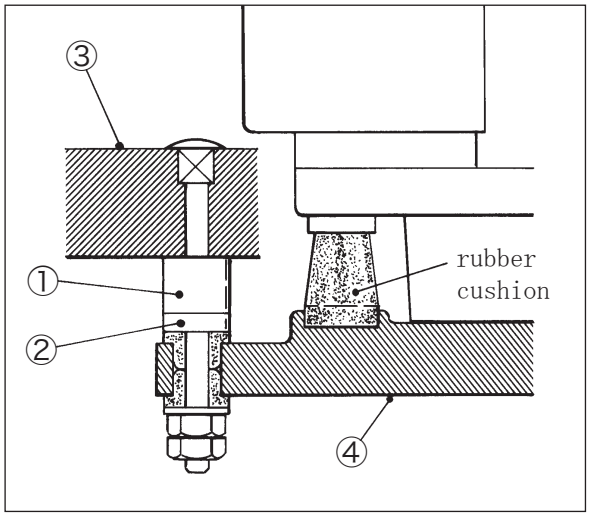


Fig. 2-3

Table 1 The number of spacers ① and ②

Thickness of table	pcs. of ①	pcs. of ②
40 ㎜	4	4
45 ㎜	4	not necessary

Size of spacers : ① =15 ㎜ ② =5 ㎜

2.2 Installation for fully-submerged type

2.2.1 Table cutting diagram

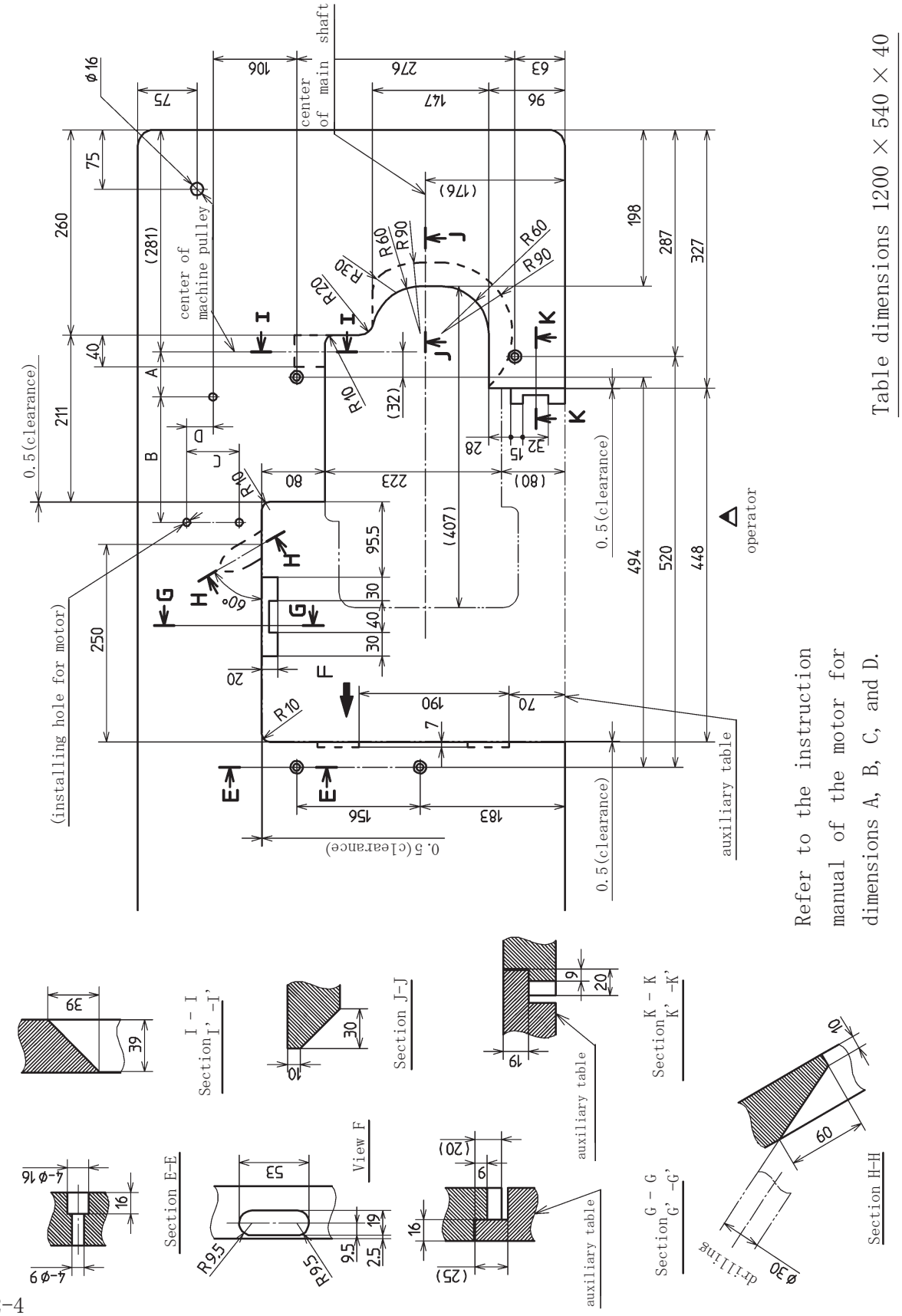


Fig. 2-4

Cutting diagram of auxiliary table

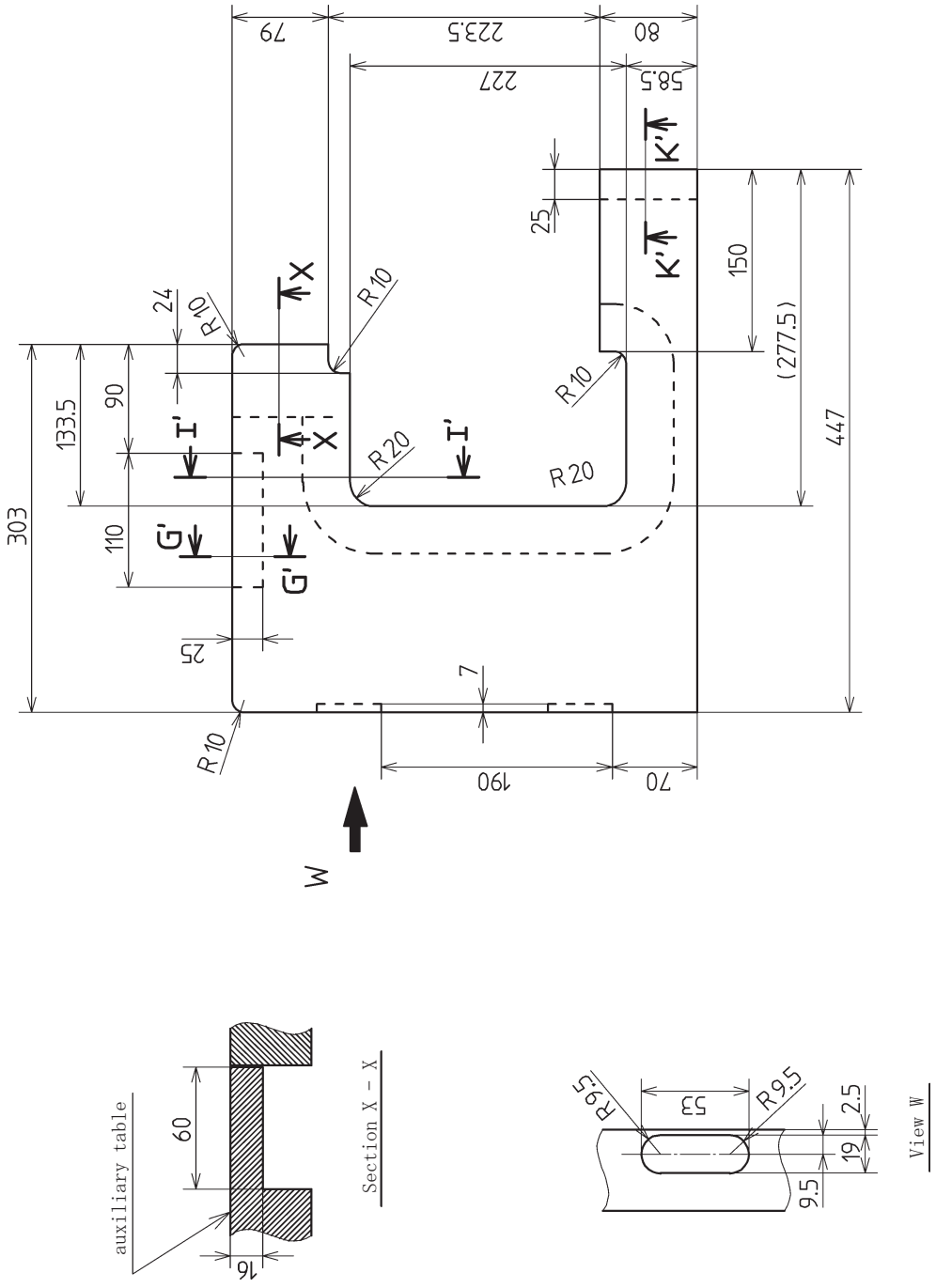
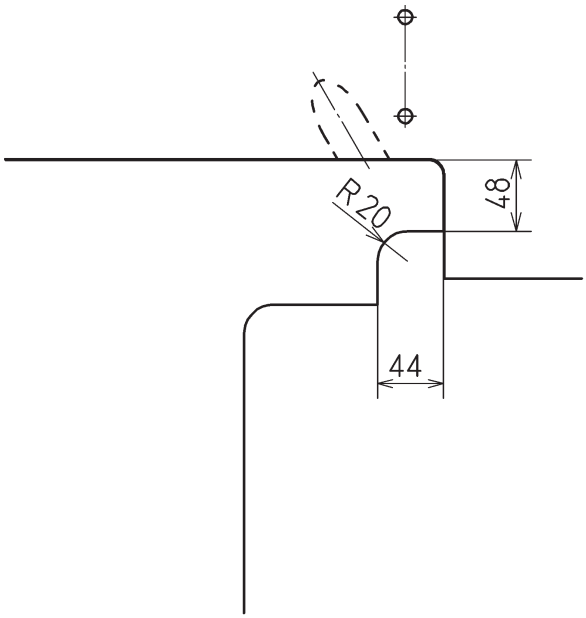


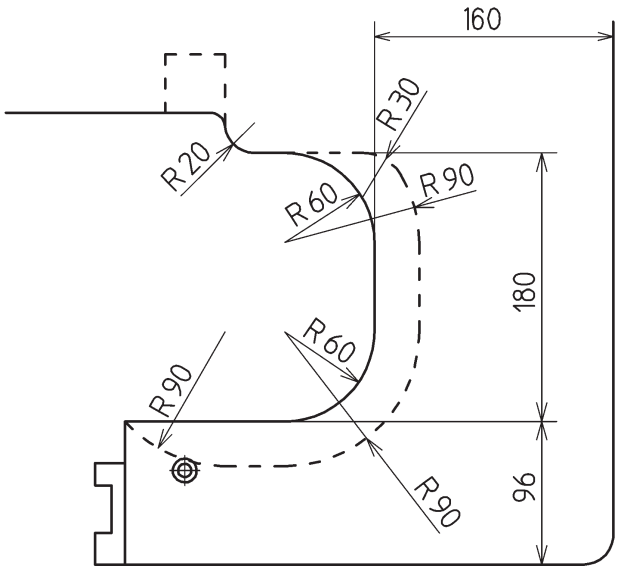
Fig. 2-5

2.2.2 Table cutting diagram for fully-submerged type with a device

To set up the machine with a device, install the device with below dimensions referring to "2.2.1 Table cutting diagram" (Figs. 2-4 and 2-5).



AZ8600SD with K1 device



Using a servo motor

Fig. 2-6

2.2.3 Installatioin

Install the machine correctly referring to Figs. 2-7 and 2-8.

Adjust the position of supporting board so that the machine is set horizontally and the cloth plate is set on the same height with the machine table or higher slightly than it.

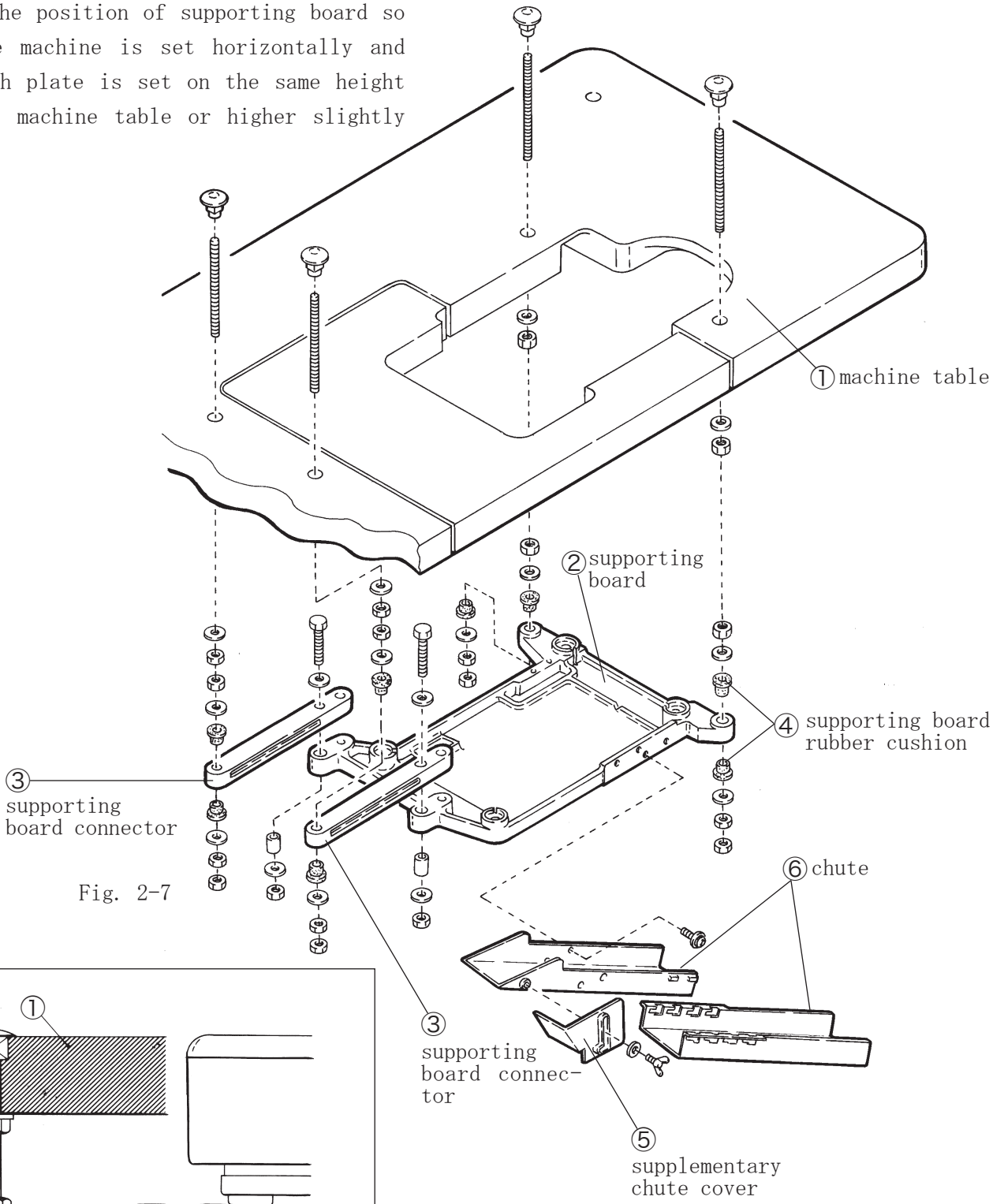


Fig. 2-7

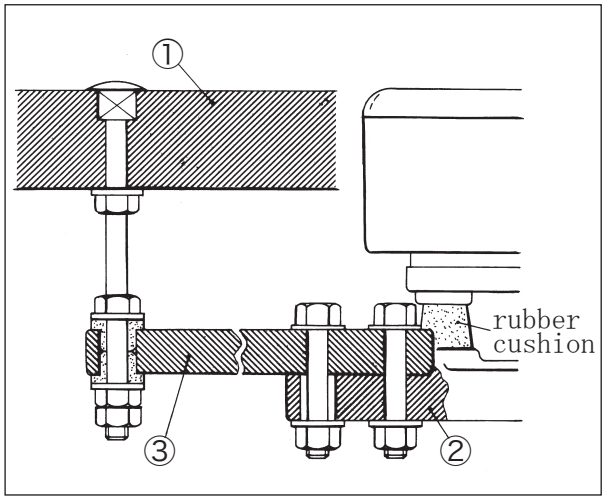


Fig. 2-8

2.3 Motor and belt

See the instruction manual for the motor to be used and install the motor properly.

To install the clutch motor, align the center of the machine pulley with that of the motor pulley when the motor pulley shifts to the left with toeing down the pedal.

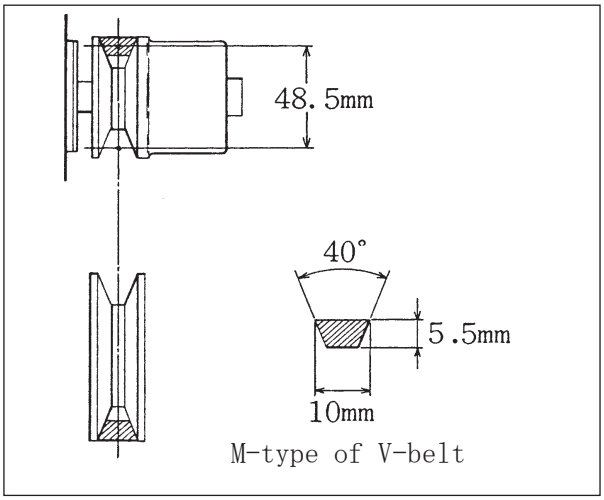


Fig. 2-9

NOTE: Table 2 shows the outside diameter of the motor pulley, sewing speed of the machine, and size of the belt when using the clutch motor of 3-phase, 2-pole, 400W(1/2HP).

The outside diameter on the table shows the nearest size to the calculated values based on the commercial pulleys at intervals of 5 mm.

⚠CAUTION

Use only those motor pulleys applicable to the machine. If not, the sewing speed will be over maximum and it can cause the machine to damage.

Outside diameter of pulley (mm)	Sewing speed of machine		Size of belt	
	50 Hz	60 Hz	Semi-submerged	Fully-submerged
75		5000	M33	M28
80		5300	M33	M29
85	4700	5700	M34	M29
90	5000	6000	M34	M29
95	5300	6400	M34	M30
100	5600		M35	M30
105	5900		M35	M30
110	6200		M35	M31
115	6500		M36	M31

Table 2

Servomotor:

Calculate the outside diameter of a motor pulley from the formula as below.
Or see Table 3 to select a proper motor pulley diameter.

$$\text{Outside diameter of motor pulley} = \frac{\text{Usual sewing speed}}{\text{Servomotor speed}} \times 48.5 + 5 \text{ mm}$$

Sewing speed of machine (sti/min)	Outside diameter of motor pulley (mm)	
	rpm of servomotor	
	3000rpm	3600rpm
5000	86	72
5300	90	76
5700	97	82
6000	102	86
6200	105	89
6500	110	93

Table 3

Belt

Use a V-belt of M type.
For belt size, refer to Table 2.

2.4 Hanging belt

⚠CAUTION

Before hanging belt, ALWAYS turn the motor switch OFF and check that the motor has already stopped.

Use the M-type of V-belt.

(1) Hang the belt ① on the machine pulley ②, and then on the motor pulley ③ while rotating the machine pulley.

(2) Adjust the belt tension so that the belt has 10 — 20 ㎜ slack when its center is pushed with 10N.

(3) Lock the motor with the adjusting bar ④.

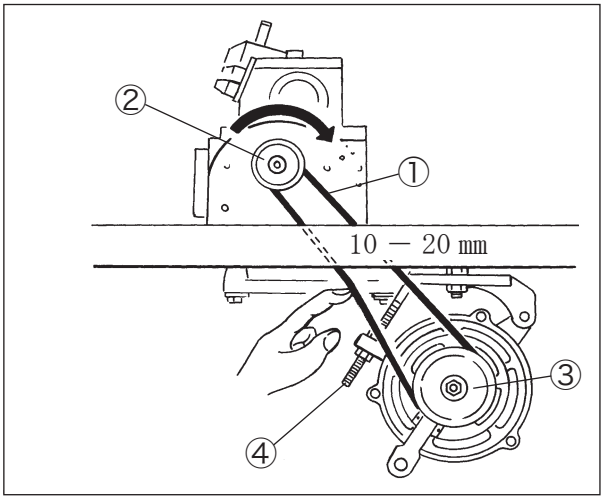


Fig. 2-10

2.5 Installing belt cover

⚠CAUTION

Be sure to install belt cover to prevent you from injuring and a material from being caught by the belt.

(1) Install the auxiliary belt cover ① as shown in the figure.

(2) Install the belt cover ② as shown in the figure.

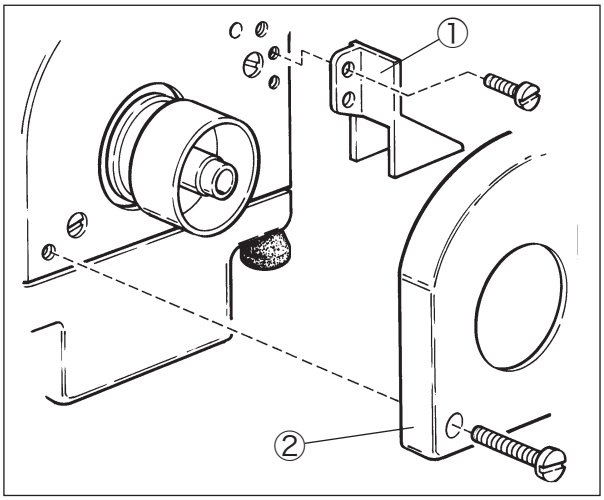


Fig. 2-11

2.6 Installing eye guard

To ensure safe use, ALWAYS install the eye guard ③ on the prescribed position when operating.

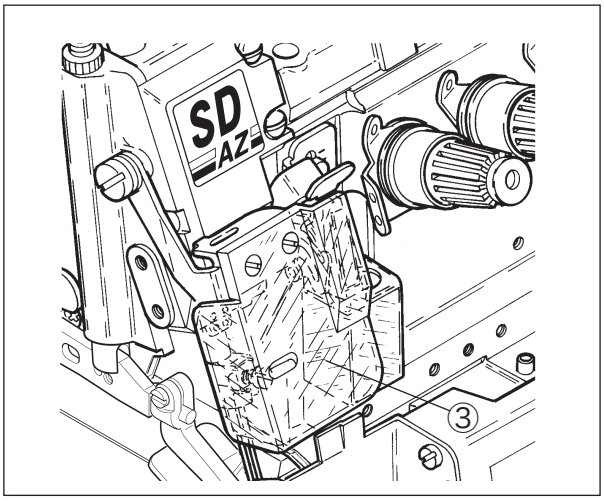


Fig. 2-12

3. Sewing speed and rotating direction of pulley

The maximum sewing speed is 6500 sti/min.
Run a new machine at speed lowered 15 - 20% of maximum sewing speed during the first 200 hours (for about one month) so that the machine can offer a long service life in good condition.

The rotating direction of the motor pulley ① and the machine pulley ② is clockwise as shown in the figure.

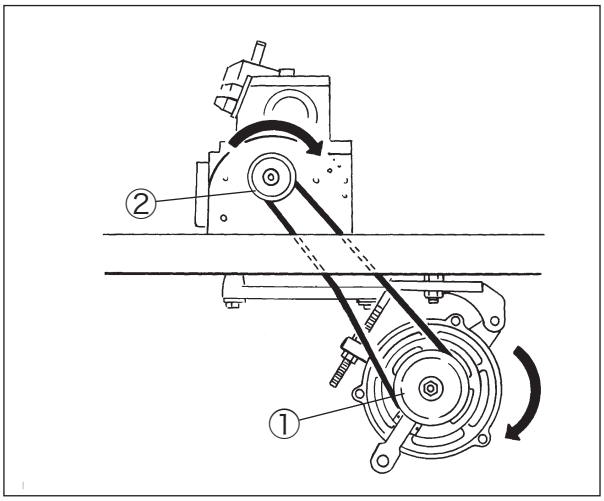


Fig. 3-1

⚠CAUTION

If rotating in reverse direction, oil can not be supplied properly. It can cause the machine to damage.

4. Lubrication

4.1 Lubricating oil

Use YAMATO SF OIL No. 28.

⚠CAUTION

NEVER add additives to the oil.
If added, it can cause the deterioration of the oil and the damage to the machine.

4.2 Lubricating

When using a new machine or a machine which has not been run for a while, supply the oil to the needle bar ① and the looper bar ② with two or three drops.

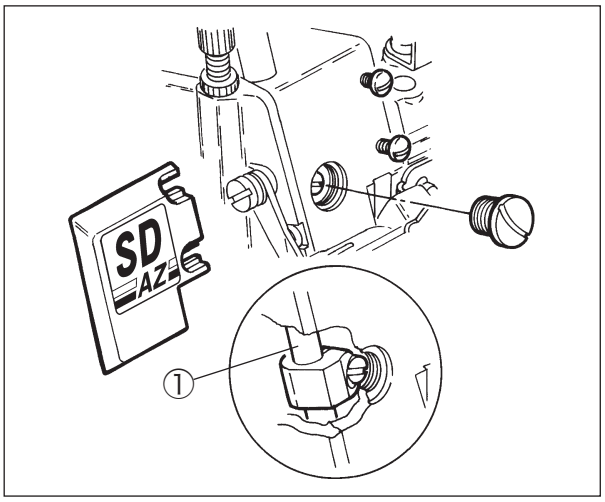


Fig. 4-1

Remove the oil cap ③ indicated "OIL-IN" and supply the oil to the upper line of the oil sight gauge ④.

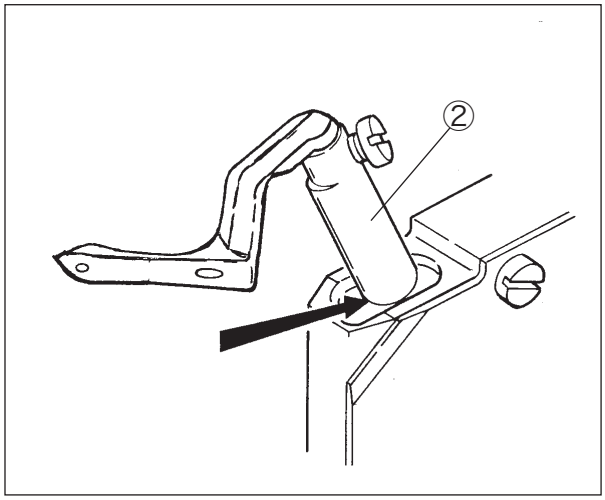


Fig. 4-2

Check that the oil splashes from the nozzle inside the oil cap ③ with running the machine.
If the oil does not splash from the nozzle, see **"4.4 Checking and replacing oil filter"** on page 12.

⚠CAUTION

Too much oil or insufficient oil can cause oil leakage and machine trouble. Be sure to keep the oil level between the lines. Also too much lubrication can cause the oil to scatter and material to be stained.

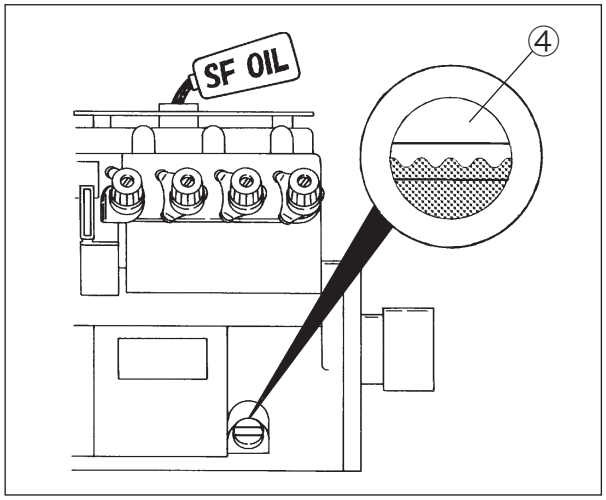


Fig. 4-3

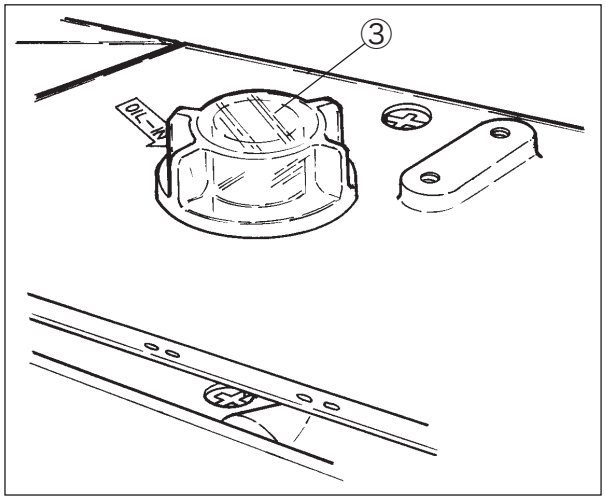


Fig. 4-4

4.3 Changing oil

Period

When using a new machine, change the lubricating oil after running the machine for 200 hours (for about one month). After that, change the oil once or twice a year.

Procedure

(1) Remove the belt cover. (See page 9)
(2) Remove V-belt from the motor pulley. (See page 8)
(3) Remove the machine from the machine table.
(4) Set a container received the oil under the screw ①.
(5) After removing screw ①, the oil is drained.

ATTENTION

Be careful not to soil the V-belt and the machine pulley with the oil.

(6) Reset the screw ①.
(7) Change the oil. (See "4.2 Lubricating" on page 11)
(8) Reset the machine on the machine table.
(9) Hang V-belt on the motor pulley and reset the belt cover. (See pages 8 and 9)

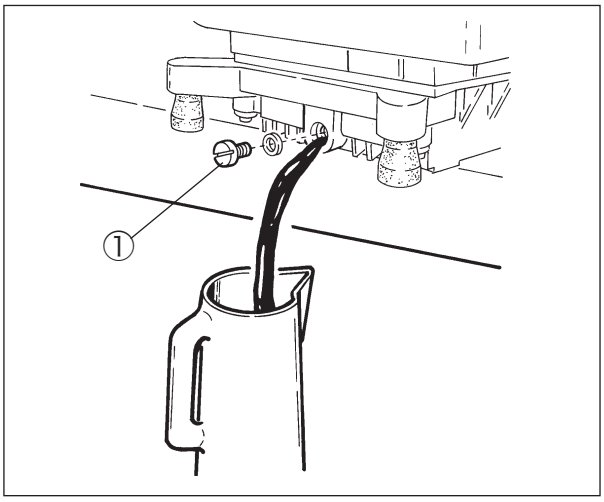


Fig. 4-5

4.4 Checking and replacing oil filter

◆ If the oil filter ② is clogged with dust, lubrication cannot be done properly.
◆ Remove the oil filter cap ③ and the oil filter ② to check them every six months. If clogged or cracked, clean or replace the oil filter.
◆ If the oil splashes from the nozzle insufficiently or includes many bubbles even though oil is sufficiently kept, check or replace the oil filter.

NOTICE

Be careful the oil may spill out from the oil filter ②, when loosening the screw ④.

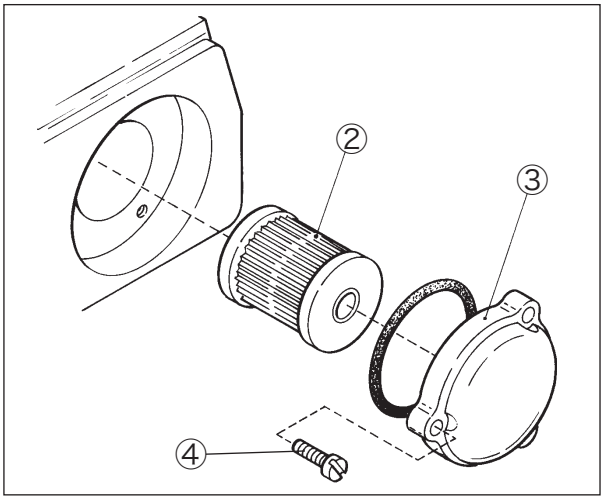


Fig. 4-6

5. Proper operation

5.1 Needle system

AZ8600SD : DC × 27 (or B27, 1886)

Select the proper needle in size depending on the thickness and the type of the material.

Japanese standard	18	19	20	21
Metric standard	110	120	125	130

Table 4

5.2 Installing needles

⚠CAUTION

Before installing the needles, ALWAYS turn the motor switch OFF and check that the motor has already stopped.

(1) Loosen the screw ①.
(2) Remove the old needle with a pair of tweezers.
(3) Insert a new needle into the needle clamp ② as far as it will go with facing its scarf to the right back. (Figs. 5-2 and 5-3)
(4) Tighten the screw ①

❗ATTENTION

The tightening torque of the screw ① is 0.6N･m.

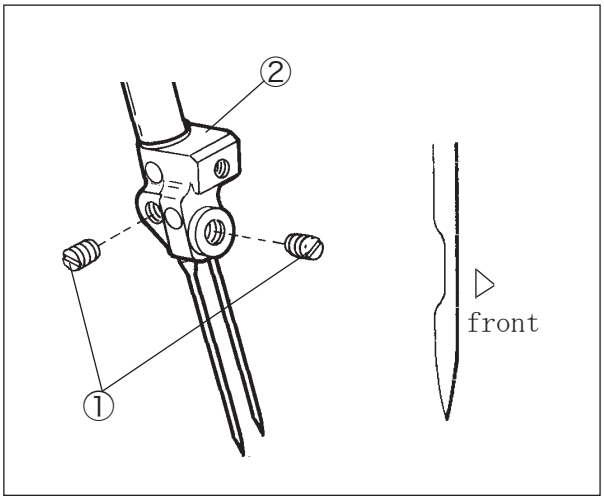


Fig. 5-1

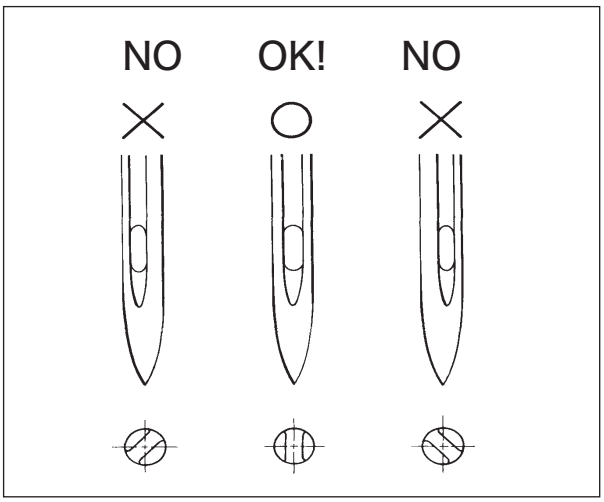


Fig. 5-2

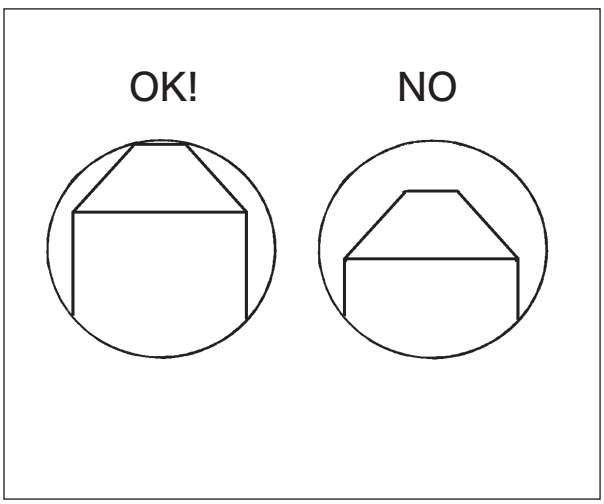


Fig. 5-3

5.3 Adjusting thread tension

Adjust the thread tension with the thread tension spring caps ① - ⑥ depending on the type of material, the type of thread, seam width, stitch length, and other sewing conditions.

- To tighten the thread tension, turn caps clockwise.
- To loosen the thread tension, turn caps counterclockwise.

Thread \ Model	AZ8600SD 2-needle safety stitch	AZ8620SD 3-needle safety stitch
Left needle thread	①	①
Right needle thread		②
Double chain needle thread	②	③
Upper looper thread	③	④
Lower looper thread	④	⑤
Double chain looper thread	⑥	⑥

Table 5

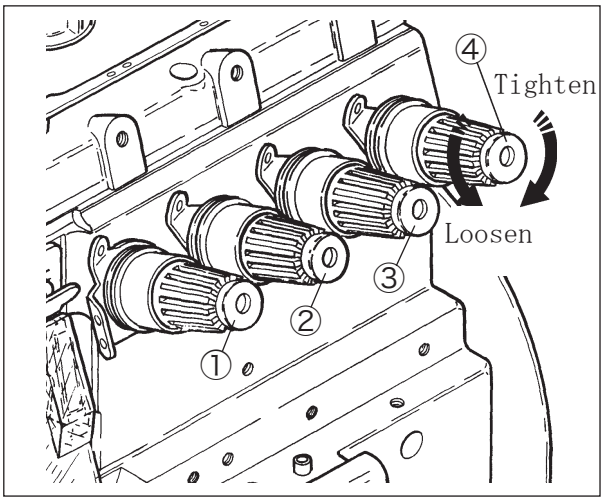


Fig. 5-4 AZ8600SD

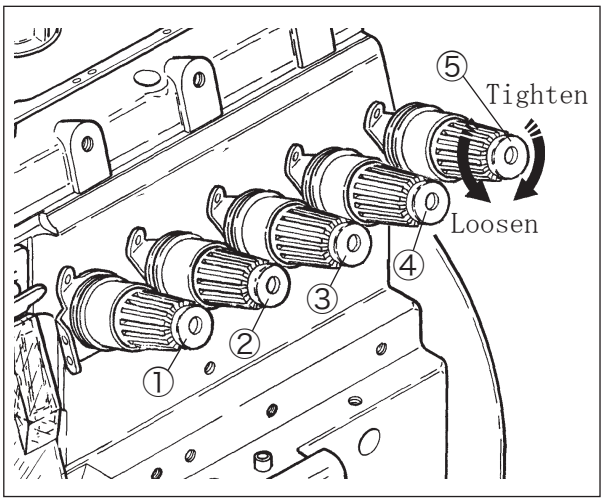


Fig. 5-5 AZ8620SD

Threading

⚠CAUTION

Before threading, ALWAYS turn the motor switch OFF and check that the motor has already stopped.

Run the thread correctly as shown in the threading figure attached inside the front cover.

❗ATTENTION

Improper threading can cause thread breakage, skip stitch, and uneven stitch.

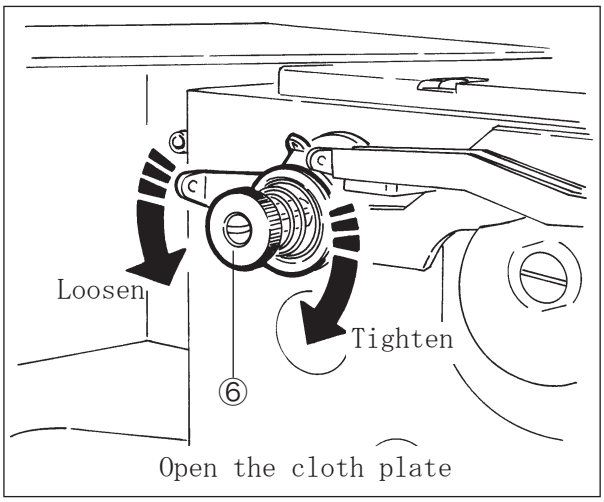


Fig. 5-6

5.4 Pressure of presser foot

Loosen the lock nut ① and adjust the pressure of the presser foot with turning the adjusting screw ②.

- To increase the pressure, turn the adjusting screw clockwise.
- To decrease the pressure, turn the adjusting screw counterclockwise.

Keep the pressure as low as possible for stable stitches.

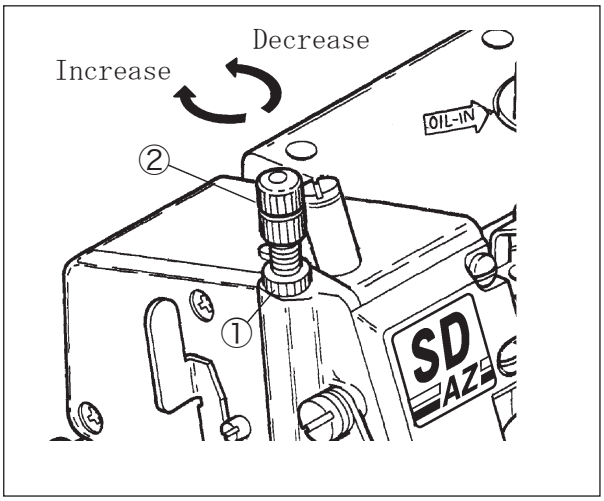


Fig. 5-7

5.5 Releasing presser foot

⚠CAUTION

Before adjusting, ALWAYS turn the motor switch OFF and check that the motor has already stopped.

Rotate the machine pulley and position the needle at the highest point. Release the presser foot to the left while pressing the presser foot release lever ③.
To set the presser foot, slide and push the presser foot against to the right side while pressing the presser foot release lever ③. Then release the lever.

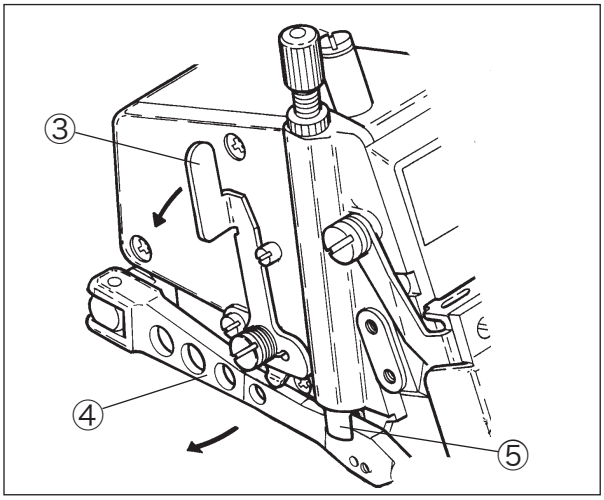


Fig. 5-8

⚠CAUTION

Make sure that the presser arm ④ gets into the groove of the presser bar ⑤.
If not, it can cause breakage to parts and injuries.

5.6 Opening cover

Front cover ①

To open the front cover①, slide it to the right and tilt toward you.
To close it, raise it. Its spring makes it slide to the left.

Cloth plate ②

To open the cloth plate②, shift it to the left while the pushing lever③.
To close it, shift it to the right. Check that it is locked securely.

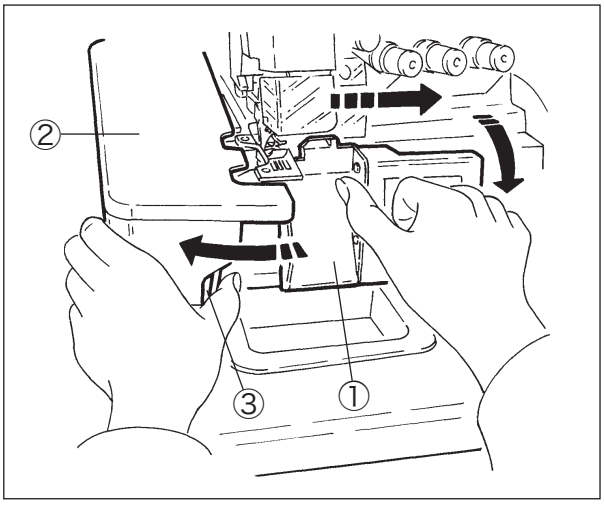


Fig. 5-9

5.7 Adjusting differential feed dog

Loosen the lock nut④ and adjust the differential feed lever⑤.
Moving up will make stretching and moving down will make gathering.
Adjusting the screw⑥ enables the differential feed lever⑤ to be fine-adjusted.

- To lower lever, turn the screw clockwise.
- To raise lever, turn the screw counterclockwise.

Differential ratio up to 1:0.6 - 1:2 is available by internal adjusting mechanism respectively.
Table 6 shows the graduation, differential ratio, and max. stitch length.

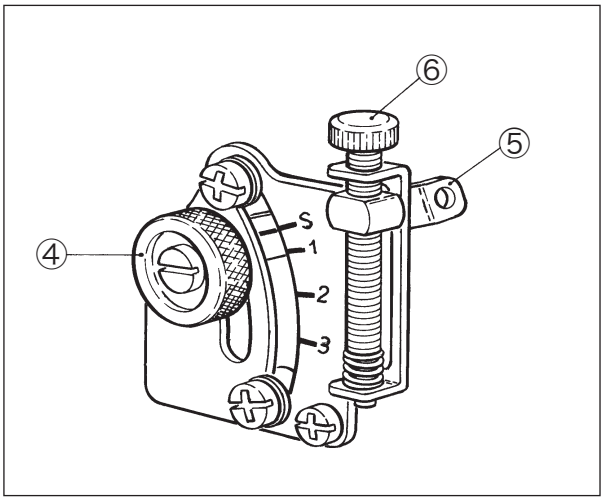


Fig. 5-10

Graduation	Differential ratio	Max. stitch length (mm)
S	1:0.7	5
1	1:1	5
2	1:1.6	4
3	1:2.3	3

Table 6

5.8 Adjusting stitch length

⚠CAUTION

Before adjusting, ALWAYS turn the motor switch OFF and check that the motor has already stopped.

Each graduation on the machine pulley indicates the length(㎜) for one stitch.
After sewing, the actual stitch length has difference with the length on graduation. It depends on the application, the type and weight of material to be sewn or the differential ratio.

(1) Rotate the pulley while the pushing push button①. At the point as far as it will go, again push it securely.
(2) With keeping that, align desired graduation of the pulley with the mark② on the belt cover.
(3) Release the push button①.

● To shorten stitch length, turn the pulley in the direction "S".
● To lengthen it, turn it in the direction "L".

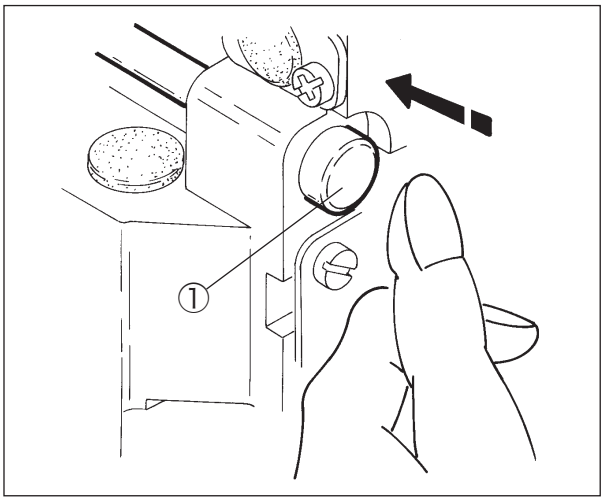


Fig. 5-11

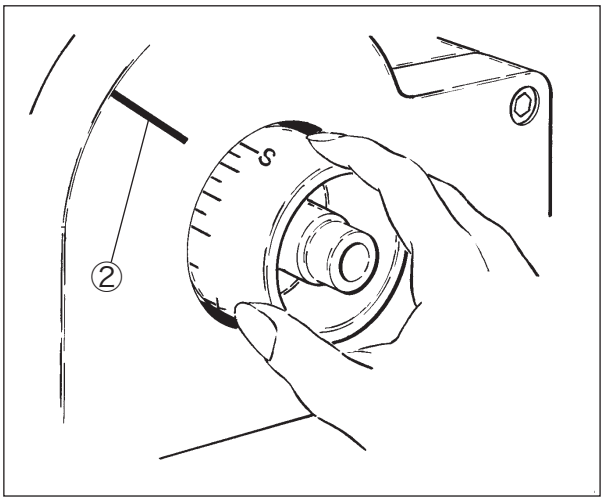


Fig. 5-12

⚠CAUTION

Check that push button is released completely and the pulley rotates smoothly.

Stitch length is adjustable in range of 2.0－5.0 ㎜.

Table 7 shows the number of stitches per inch (25.4 ㎜) and 30 ㎜ converted stitch length.

Stitch length (㎜)	Number of stitch (per 1 inch) (25.4 ㎜)	Number of stitch (per 30 ㎜)
2	12	15
3	8	10
4	6	7.5
5	5	6

Table 7

5.9 SP device and HR device

SP device(needle thread oiling) and HR device(needle point cooling) are equipped as standard to prevent thread breakage and skip stitch when running the machine at high speed or using synthetic thread and/or synthetic material.

⚠CAUTION

(1) When not using SP device and HR device, remove felts ③ and ⑤. It may occur irregular condition during sewing.

(2) If the silicone oil is stuck to the parts other than SP and HR devices, it can cause the machine trouble. Be sure to wipe it away.

Use dimethyl silicone oil.

Check the oil amount in SP tank①. If not enough, supply the oil through the hole②.

Check the oil amount after opening the oil container plug④ of HR device. If not enough, supply the oil.

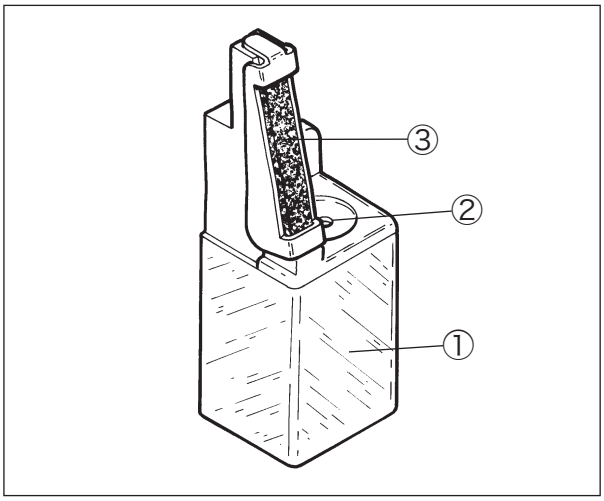


Fig. 5-13 SP device

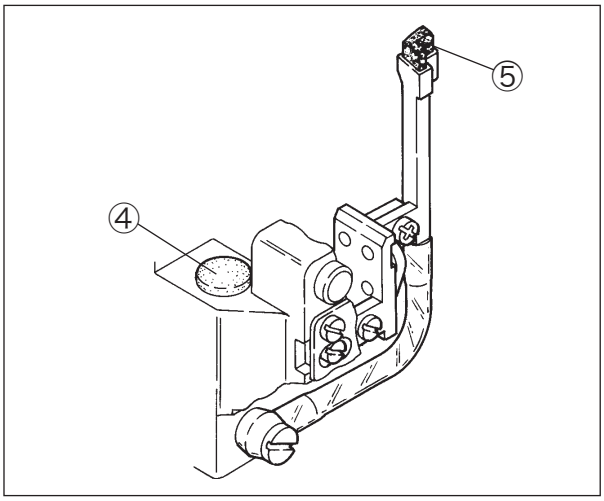


Fig. 5-14 HR device

5.10 Cleaning the machine

⚠CAUTION

Before cleaning, ALWAYS turn the motor switch OFF and check that the motor has already stopped.

Clean waste thread and dust inside the machine at the end of work everyday.
Clean the slots in the stitch plate and the feed dog area once a week.

⚠CAUTION

Clogged dust can cause breakage to parts and oil leakage.

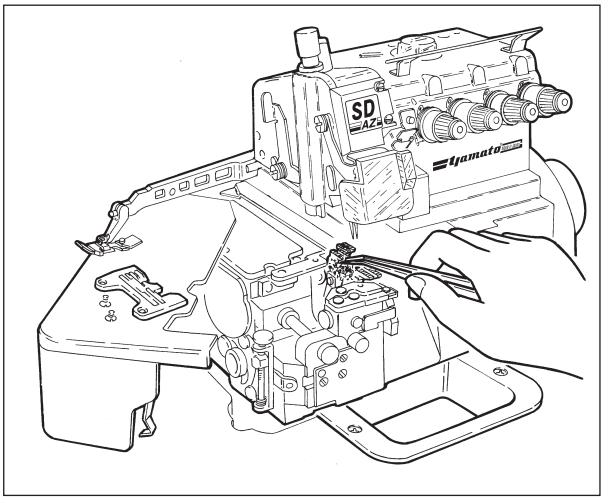


Fig. 5-15

Cheking of the machine at the sewing factory (by maintenance of technician)

Daily maintenance:

(1) Before operating, remove the machine cover and re-thread correctly without slacking. Check that the thread hanger is right above the soopl seat discs of the thread stands (the thread stands should be fixed securely).
(2) Check the lubricating and silicone oil amount. Supply them if necessary.
(3) Check the order of threading.
(4) Check the bend of needles, damage to tips, and the setting positions respectively.
(5) Check the sharpness of knives.
(6) Check the seam by testing sewing of material.
- ◆ stitch length, differential feeding
- ◆ adjusting knives and thread tension

Weekly maintenance:

(1) On weekends, clean the machine carefully by removing the presser foot and the stitch plate.
(2) Check the tension of V-belt.
(3) Check and supply the lubricating oil.

6. Adjustment of sewing machine

⚠CAUTION

Before adjusting, ALWAYS turn the motor switch OFF and check that the motor has stopped.

6.1 Needle thread tension for overlock stitch

To set the standard position of needle thread eyelet①, position the center of the screw② with the marks③.

To set the standard position of the needle thread pull-off ④, align the portion⑤ with the eye ⑥ of the needle thread eyelet(right) when the needle thread pull-off ④ comes to the extreme front.
Loosen the screw⑦ to adjust it.

- To loosen the needle thread tension, move the needle thread eyelet and the needle thread pull-off in the direction "L".
- To tighten the needle thread tension, move them in the direction "T".

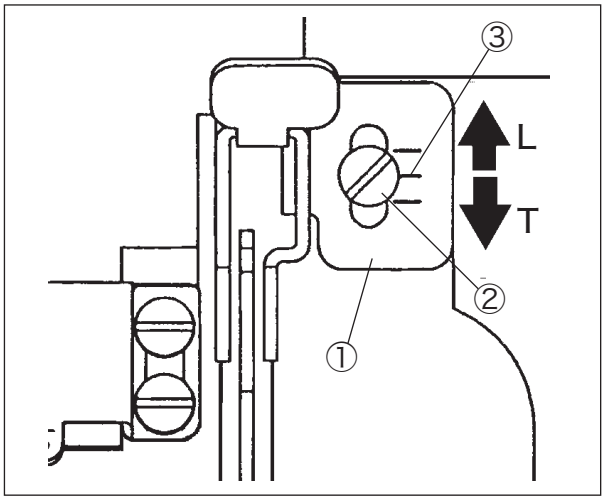


Fig. 6-1

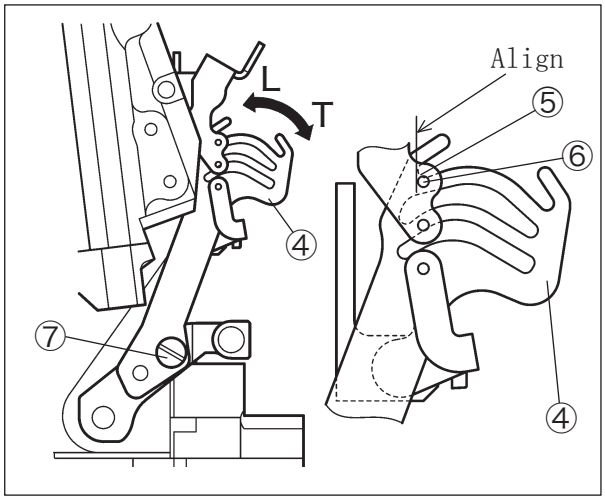


Fig. 6-2

6.2 Looper thread tension for overlock stitch

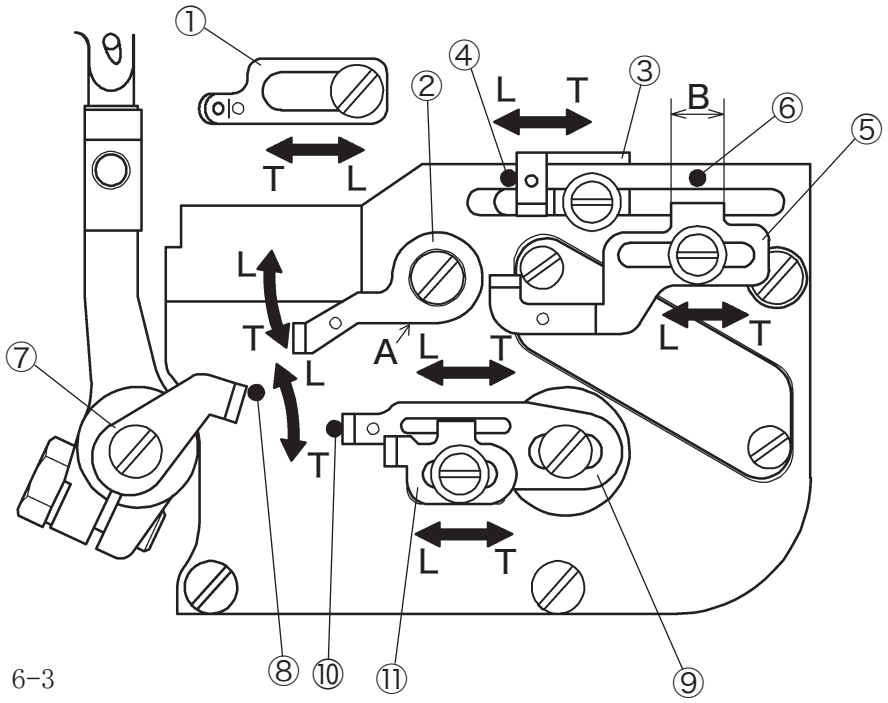


Fig. 6-3

The standard position of each looper thread eyelet:

Upper looper supplementary thread eyelet ①

Move it to the extreme left.

Looper thread eyelet(left) ②

Position the part A horizontally.

Upper looper thread eyelet ③

Move its left end to mark ④.

Lower looper thread eyelet ⑤

Position the center of the width B with mark ⑥.

Looper thread pull-off ⑦

Move its right end to mark ⑧.

Upper looper thread pull-off ⑨

Align the eye of the thread pull-off with the mark ⑩ when the lower looper moves to the extreme right.

Lower looper thread pull-off ⑪

Tighten it with the screw at the center of the slot.

- To tighten the thread tension, move each thread eyelet or thread pull-off in the direction "T".
- To loosen the thread tension, move them in the direction "L".

6.3 Needle thread tension for double chainstitch

◆ To set standard back-and-forth position of the double chainstitch thread eyelet(right) ①, align the eyes ③④ of the needle thread eyelet ② with the eye ⑤ of the double chainstitch thread eyelet.
For adjusting, loosen the screw ⑥ and move the double chainstitch thread eyelet(right) ① in the front-and-rear direction.

◆ To set the standard up-and-down position, make the distance between the eye ④ which under the needle thread eyelet ② and the eye ⑤ of double chainstitch thread eyelet to 6mm.
For adjusting, loosen the screw ⑦ and move the holder ⑧ for double chainstitch needle thread eyelet(right) ① up and down.

● To loosen the needle thread tension, move the holder in the direction “L”.

● To tighten the needle thread tension, move the holder in the direction “T”.

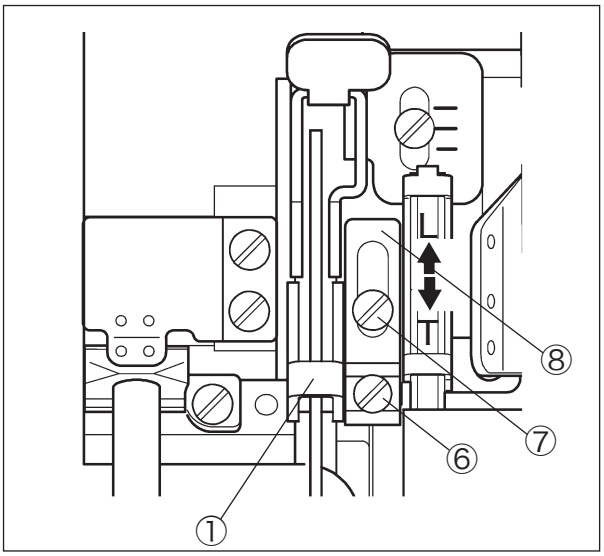


Fig. 6-4

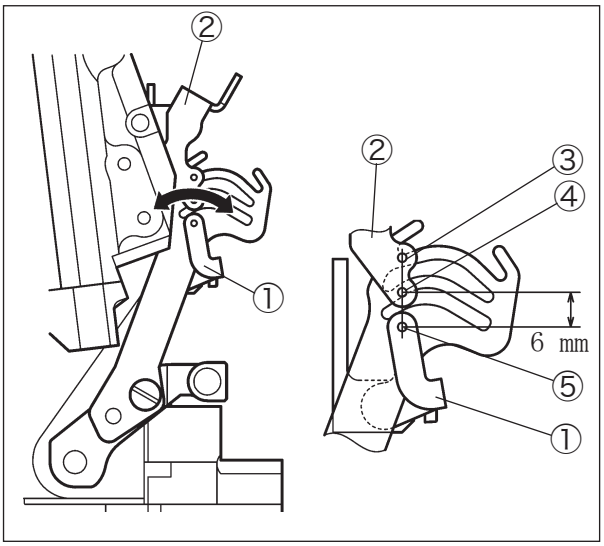


Fig. 6-5

6.4 Looper thread tension for double chainstitch

◆ Align the eye of the double chaining looper thread eyelet ③ with the surface ② of the double chaining looper thread take-up ① when being a level with the straight line A.
Position the thread retaining finger ④ 1 mm above the eye of the looper thread eyelet ③.

◆ To set the standard position of the double chaining looper thread eyelet ③, position the center of the slot in the center of the screw ⑤.

● To loosen the looper thread tension, move the looper thread eyelet in the direction "L".
● To tighten the looper thread tension, move it in the direction "T".

◆ At the standard timing of the looper thread take-up, the looper thread take-up starts taking up the looper thread when the needle starts lowering from the highest point.
Loosen the screw of the cam to this adjustment.
Set the thread retaining finger in the center of double looper thread take-ups when tightening the screw of it.

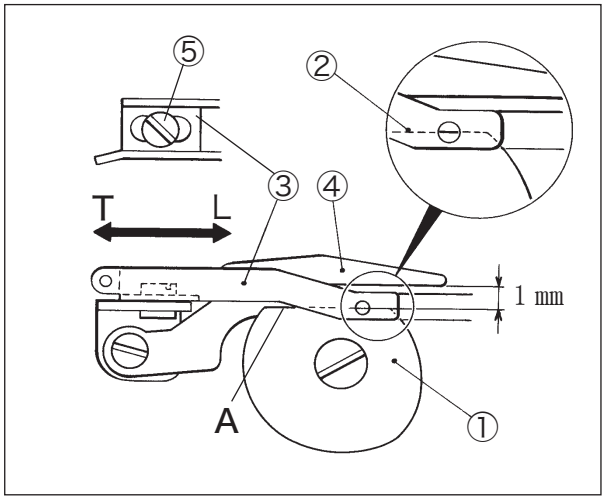


Fig. 6-6

6.5 Adjusting the width of overedge seam

Before adjusting, set the edge of the upper knife ① 0 — 0.5 ㎜ above the lower knife ②.

To make wide overedge seam:

(1) Loosen the screw ③ on the upper knife holder.
(2) Tighten the screw ③ securely after moving the holder as desired in the direction "W".
(3) Loosen the screw ④ on the lower knife holder.
(4) The lower knife ② touches the upper knife ① closely with its spring.
(5) Tighten the screw ④ securely.

To make narrow overedge seam smaller:

(1) Loosen the screw ④.
(2) Tighten the screw ④ slightly after moving the holder as desired in the direction "N".
(3) Loosen the screw ③.
(4) Tighten the screw ③ while applying the upper knife ① to the lower knife ②.
(5) Loosen the screw ④.
(6) The lower knife ② touches the upper knife ① closely with its spring.
(7) Tighten the screw ④ securely.

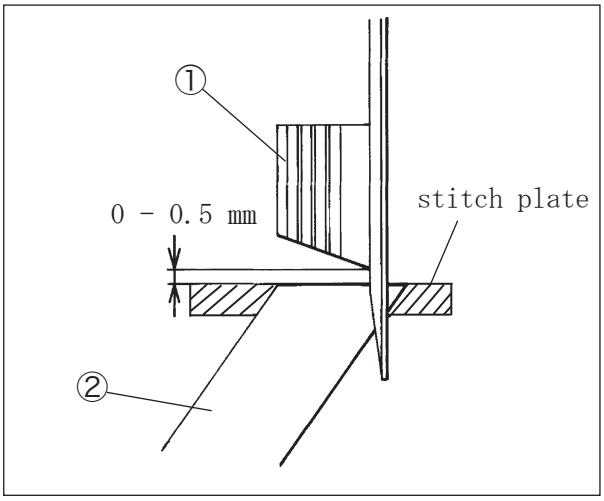


Fig. 6-7

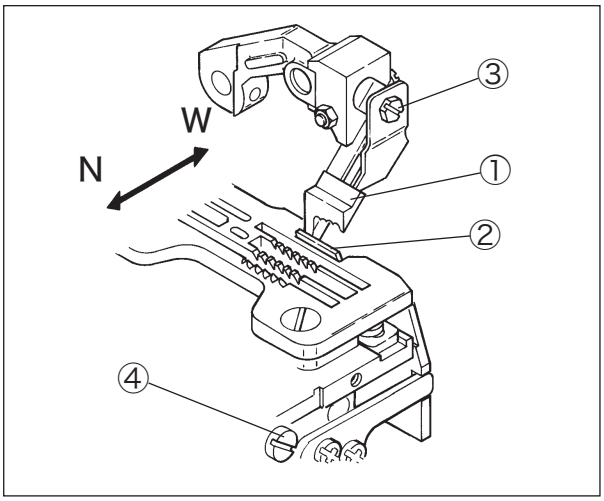


Fig. 6-8

ATTENTION

1. After changing the overedge seam width, check the sharpness of the blades (See "6.6.3 Sharpness of knives").
2. Use a stitch plate applicable to the overedge seam width.
   Adjustable range of overedge seam is within ±0.5 ㎜ based on the value indicated the gauge respectively.
3. Dust clogged at the connecting part of the upper knife holder may change the installing angle of the knives. It will make them cut badly. Loosen the screw ③ and clean the parts completely.

6.6 Adjusting upper and lower knives

6.6.1 Height of lower knife

Install the edge of the lower knife ① on a level with the top surface of the stitch plate or 0 — 0.3 mm lower than it.
Loosen the screw ② to adjust it.

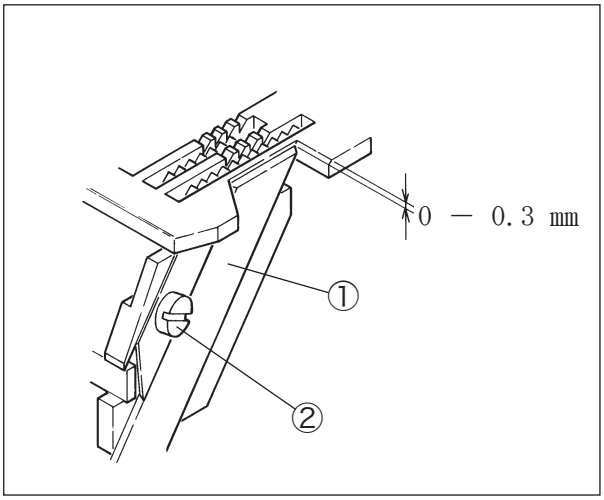


Fig. 6-9

6.6.2 Height of upper knife (angled type)

Loosen the screw ⑤ and apply the upper knife ③ to the screw ④ fully. It makes the height automatically.
Then tighten the screw ⑤ securely.
The engagement of the upper knife ③ and the lower knife ① is 0.5 — 1.0 mm at the lowest point of the upper knife ③.
Loosen the nut ⑥ and turn the screw ④ to adjust it.

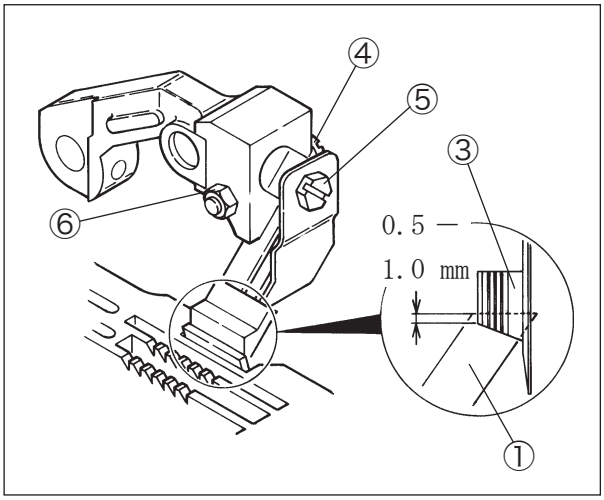


Fig. 6-10

6.6.3 Sharpness of knives

After adjusting the knives and the width of over-edge seam, check the sharpness of the edges by setting the thread between the upper and the lower knives while rotating the machine pulley by hand.

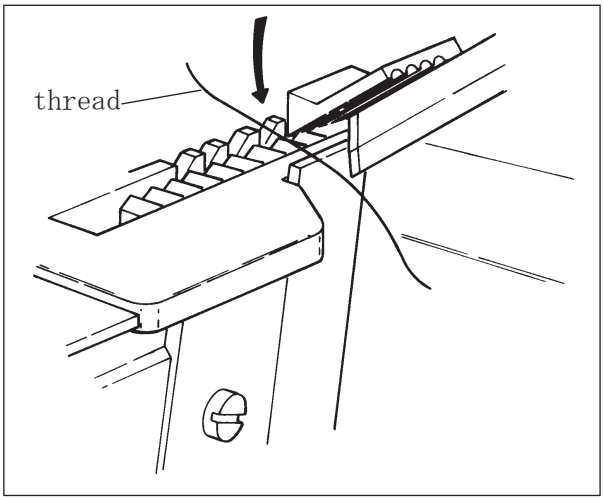


Fig. 6-11

6.6.4 Sharpening knives

If the lower knife cuts badly, re-sharpen it. (See Fig. 6-12)

The upper knife made of super hard alloy is unnecessary to re-sharpen for about one year and normal grinder is not useful for re-sharpening it.
Keep another upper knife for spare.
If needed, contact us directly or the dealer for re-sharpening it.

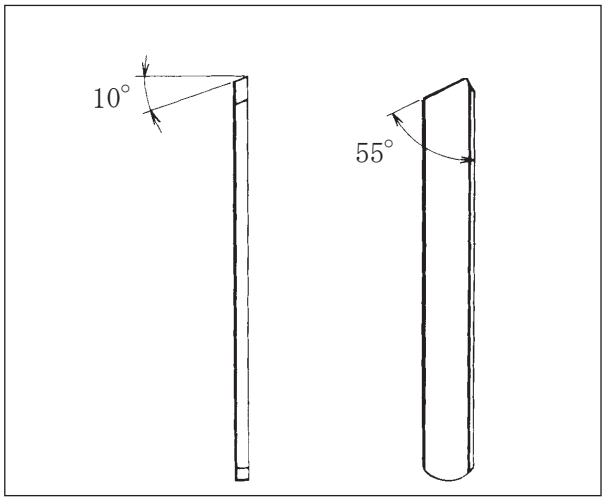


Fig. 6-12

6.7 Height of feed dogs

To set the standard position, set the tops of the main and differential feed dogs parallel to that of the stitch plate when the tops of the feed dogs are raised and even with that of the stitch plate.

Adjust the height between the top of the stitch plate and the rear side of the main feed dog ③ to 1.0 ㎜ when the feed dog is at the highest point.

Install the auxiliary feed dog ⑤ 0.3 ㎜ lower than the main feed dog ③.

Loosen the screws ②④⑥ to adjust the differential feed dog ①, the main feed dog ③, and the auxiliary feed dog ⑤ respectively.

ADVICE

Make sure there is no step between the main feed dog ③ and the differential feed dog ①. If different height between them, it can cause the unstable feeding and feed scratch mark.

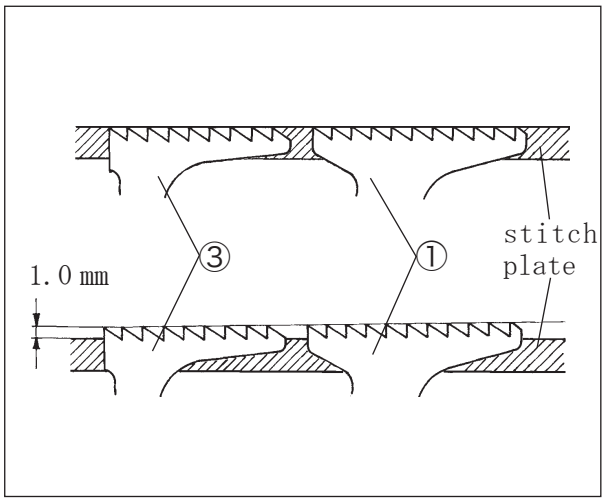


Fig. 6-13

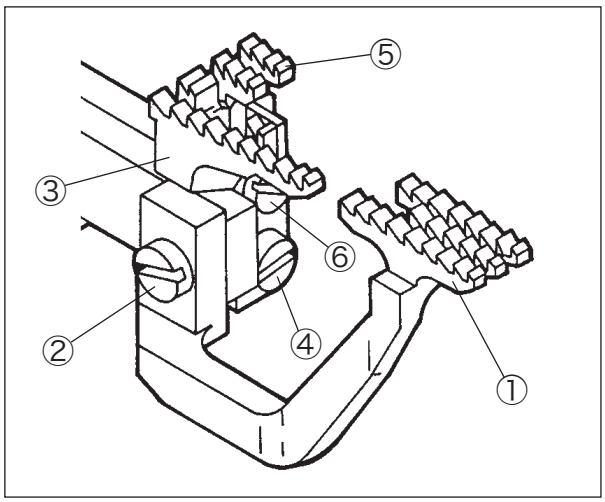


Fig. 6-14

6.8 Tilt of feed dog

Remove the tail cover ① to loosen the screw ②. Move the feed bar block(rear) lid ③ to make adjustment.

● To tilt the feed dog forward down, move it up.
● To tilt the feed dog forward up, move it down.

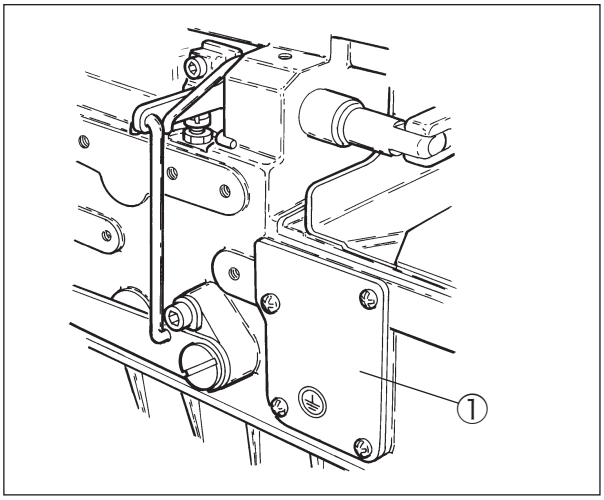


Fig. 6-15

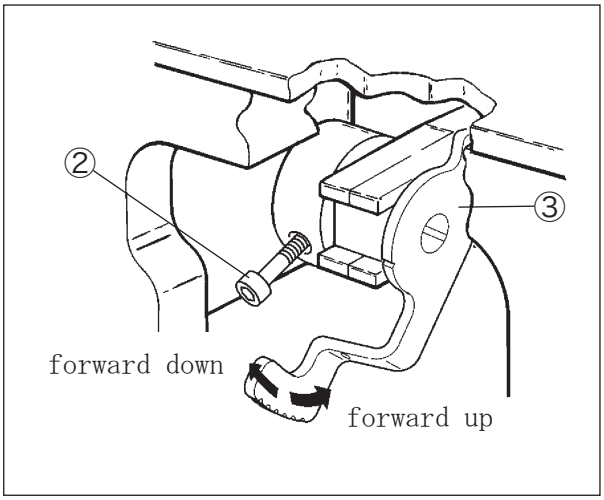


Fig. 6-16

6.9 Needles and loopers

Make adjustment by following the steps below:

In case of 2-needle safety stitch machines

(1)Height of needle
(2)Front-and-rear position of upper looper
(3)Distance between needle and upper looper
(4)Installation angle of lower looper
(5)Front-and-rear position of lower looper
(6)Distance between needle and lower looper
(7) Timing relation between upper looper and lower looper

In case of 3-needle safety stitch machines

(1)Height of needle
(2)Installation angle of lower looper
(3)Fix the distance between needle and lower looper, the front-and-rear positionof lower looper temporarily
(4)Parallel of needles
(5)Front-and-rear position of upper looper
(6)Distance between needle and upper looper
(7)Front-and-rear position of lower looper
(8)Distance between needle and lower looper
(9)Timing relation between lower looper and upper looper

6.9.1 Height of needle

When the needle bar is at the highest point, adjust the height "N" from the top of the stitch plate to the needle tip to 12.0 - 12.3 mm.

(1) Loosen the screws ① and remove the logo plate ②. (Fig. 6-17)
(2) Remove the screw ③.
(3) Rotate the machine pulley to raise the needle bar at the highest point.
(4) Loosen the screw ④ and move the needle bar up or down to adjust the height.

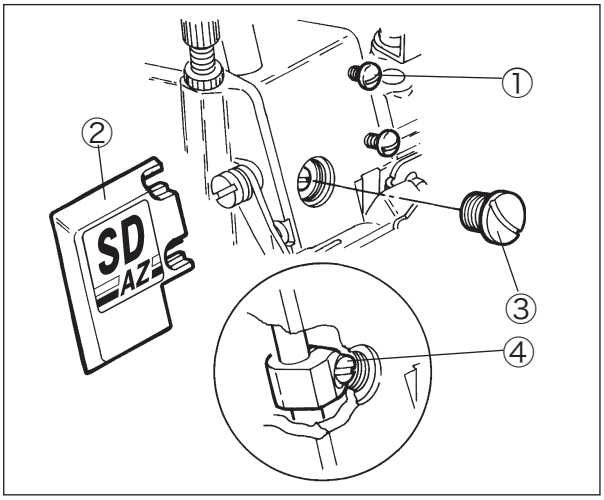


Fig. 6-17

ATTENTION

1. **Tighten the screw ④ with a tightening torque of 1.5 N·m.**
2. **Check the parallel setting of the needles for 2-needle machine and 3-needle machine (See "6.9.6 Back-and-forth position of lower looper").**
3. **Apply the liquid packing to the thread of the screw when tightening it.**

AZ8600SD

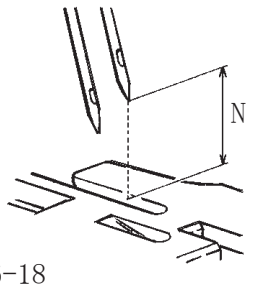


Fig. 6-18

AZ8620SD

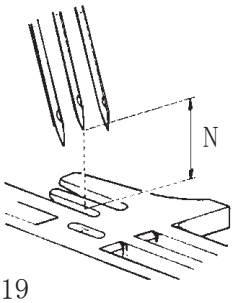


Fig. 6-19

6.9.2 Distance between needle and upper looper

Rotate the machine pulley clockwise and move the upper looper ① to the extreme left. Make the distance between the upper looper ① tip and the center of the needle to 5.0 — 5.5 mm.

(1) Loosen the screw ② .
(2) Make the looper thread eyelet ③ away from auxiliary looper holder cover ④.
(3) Remove the screw ⑤.
(4) Remove the cover ④.
(5) Loosen the screw ⑥ to make adjustment.

ATTENTION

Tighten the screw ⑥ while pressing it against to the machine, after adjustment.

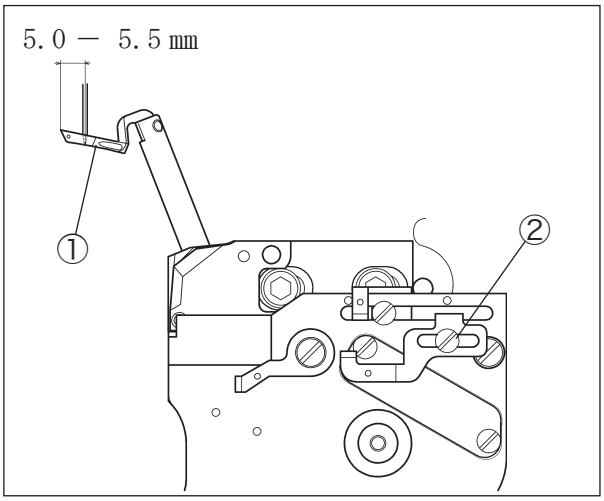


Fig. 6-20

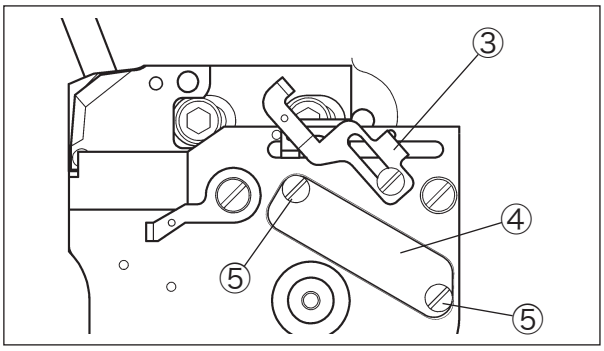


Fig. 6-21

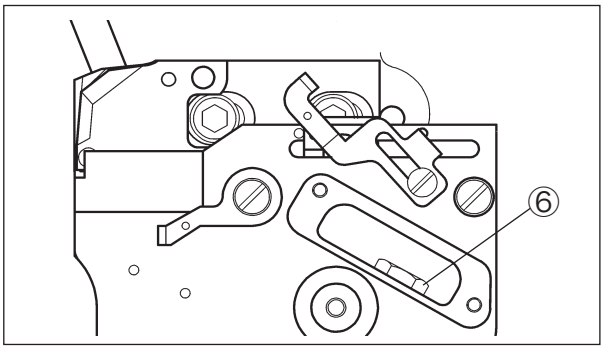


Fig. 6-22

6.9.3 Back-and-forth position of upper looper

The thick portion (around the needle eye) of the upper looper will be very close to the right needle when the upper looper moves from the extreme left to the right while rotating the machine pulley clockwise.
Loosen the screw ⑦ to make the clearance between the back side of the upper looper ① and the needle to 0.05 — 0.1 mm.

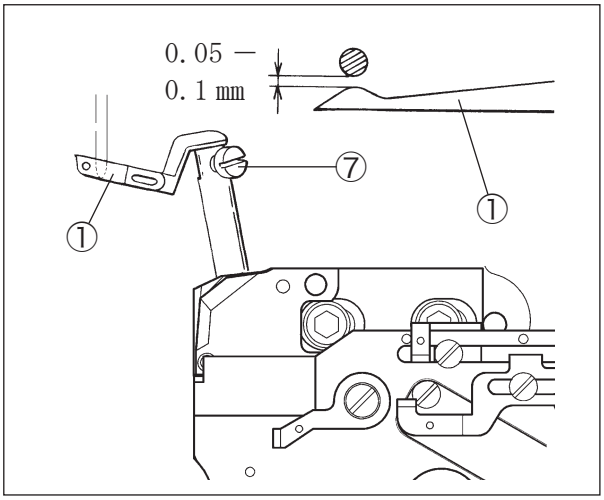


Fig. 6-23

6.9.4 Installing angle of lower looper

The standard installation angle of lower looper ① is value A in Table 8 .
Make adjustment by loosening the screw ② to make the height difference between the rear and the tip of the lower looper to value B in Table 8. (Fig. 6-24)

Model	A	B
2-needle safety stitch machines (AZ8600SD)	2 — 3°	0.5 — 1.0 mm
3-needle safety stitch machines (AZ8620SD)	2 — 4°	0.5 — 1.5 mm

Table 8

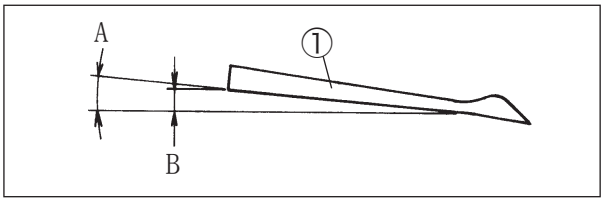


Fig. 6-24

6.9.5 Distance between needle and lower looper

Rotate the machine pulley clockwise and move the lower looper ① to the extreme left. Loosen the screw ③ of the lower looper holder to make the distance between the lower lopper tip and the center of the needle to 4.0 - 4.5 mm.

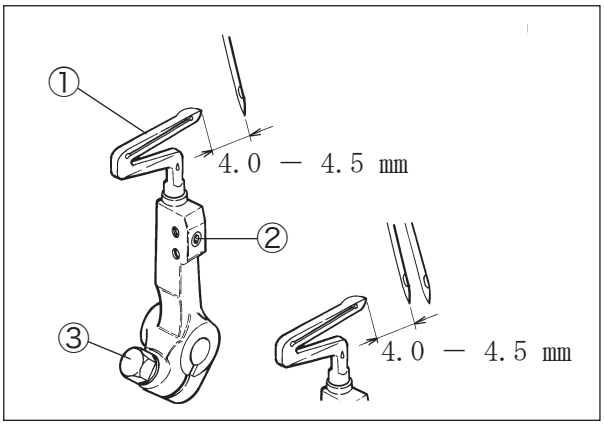


Fig. 6-25

6.9.6 Back-and-forth position of lower looper

2-needle safety stitch on AZ8600SD:

Make the clearance between the lower looper ① tip and the needle to 0 — 0.05 mm when the lower looper ① meet the center of the needle.

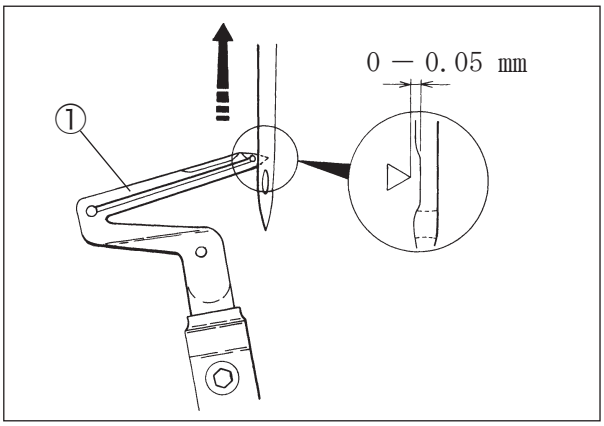


Fig. 6-26

3-needle safety stitch on AZ8620SD:

(1) Make the clearance between the lower looper tip and the left needle to 0 — 0.05 mm when the lower looper ① meet the center of the needle.
(2) Make sure that the clearance between the right needle and the lower looper ① tip to 0 — 0.05 mm (the same as the left needle) when they meet each other.

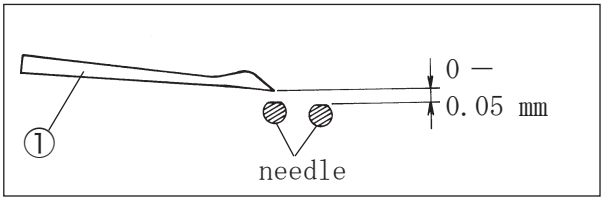


Fig. 6-27

Procedure

Loosen the screw ③ of lower looper holder arm to adjust the position of the lower looper.
Be sure to tighten the screw ③ after adjustment.

6.9.7 Parallel of needles

In case of 3-needle safety stitch machines, loosen the screw ① and make adjustment by turning the needle clamp slightly. Make the clearance the same as the left needle to 0 — 0.05 mm when the right needle meets the lower looper ②.
Also, refer to "6.9.1 Height of needle" on page 28.

ATTENTION

Tighten the screw ① after checking the height of needle. (See "6.9.1 Height of needle")
After adjusting the front-and-rear position of the lower looper, be sure to check the distance between the needle and the lower looper and tighten the screw ③.

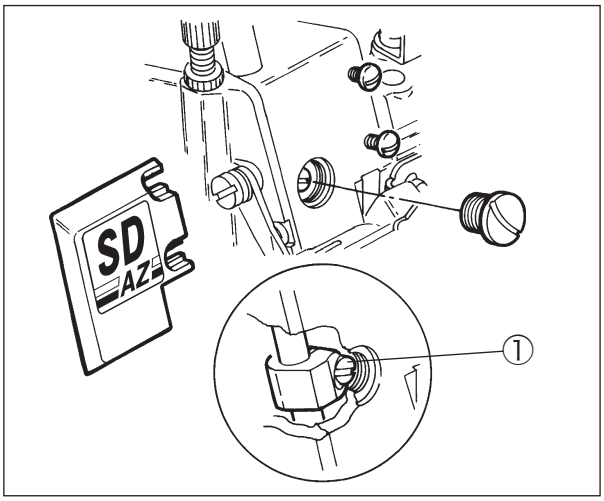


Fig. 6-28

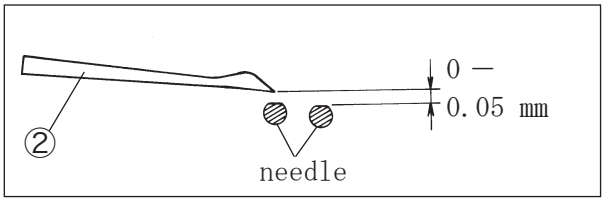


Fig. 6-29

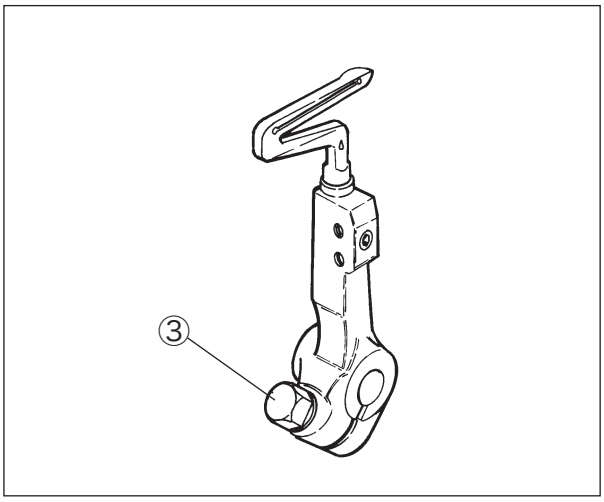


Fig. 6-30

6.9.8 Timing between lower looper and upper looper

Check that the clearance is 0.05 — 0.1 mm back-and-forth and 0.05 — 0.3 mm right and left when the lower looper ④ meets with the upper looper ⑤ while rotating the machine pulley clockwise.

It is correct timing within those clearances.

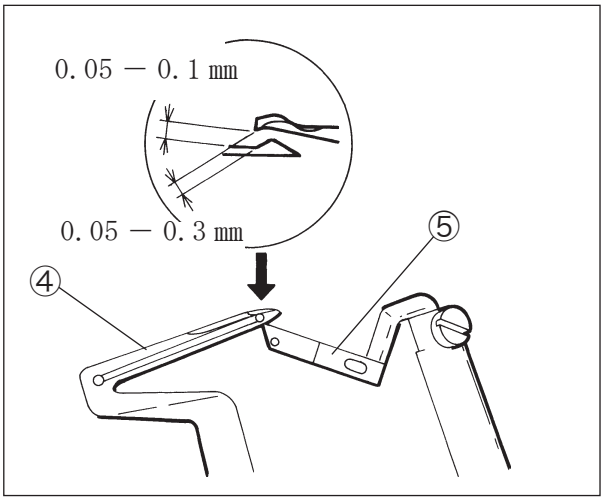


Fig. 6-31

6.10 Needle and double chaining looper

Timing:

To set the height, insert the double chaining looper① into the looper holder until it touches the holder pin.

Loosen the screw③ to make the distance between the center of the double chaining needle② and the double chaining looper tip to 2.3 — 2.5 ㎜ when the double chaining looper① is at the extreme left.

Adjust the distance so that the looper tip touches the double chaining needle② slightly.

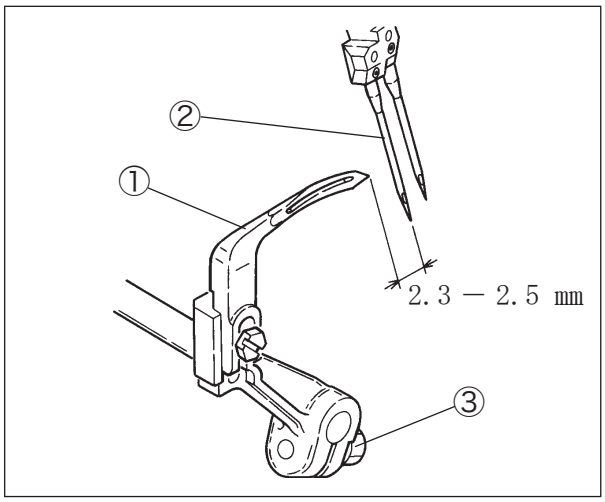


Fig. 6-32

Back-and-forth position:

Adjust the double chaining looper① tip to pass the behind the needle as closely as possible without touching.

Adjust the needle to pass the behind curved portion of the looper touching slightly when the looper moves from the right to the left.

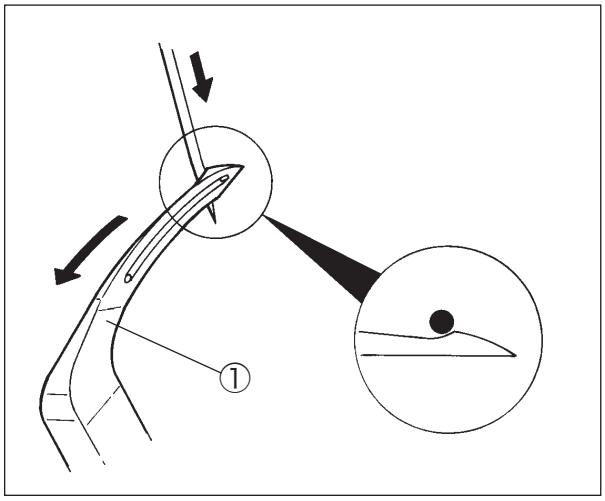


Fig. 6-33

6.11 Needle and needle guards

6.11.1 Needle and needle guard(rear)

The needle guard(rear) ① moving with the lower looper is equipped with this machine.
The needle guard(rear) ① holds the needle at behind it and guard the tip of the lower looper When the needle meets with the tip of the lower looper on elevation from the lowest point.

Adjust the clearance between the tip of the lower looper and the needle to 0 — 0.05 ㎜ with loosening the screws ②.

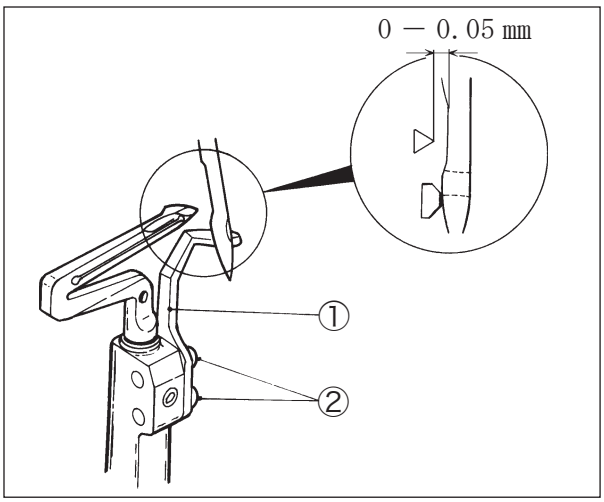


Fig. 6-34

6.11.2 Needle and needle guard(front)

Adjust the clearance between the needle and the needle guard(front) ③ to 0.02 — 0.05 ㎜ with loosening the screws ④.

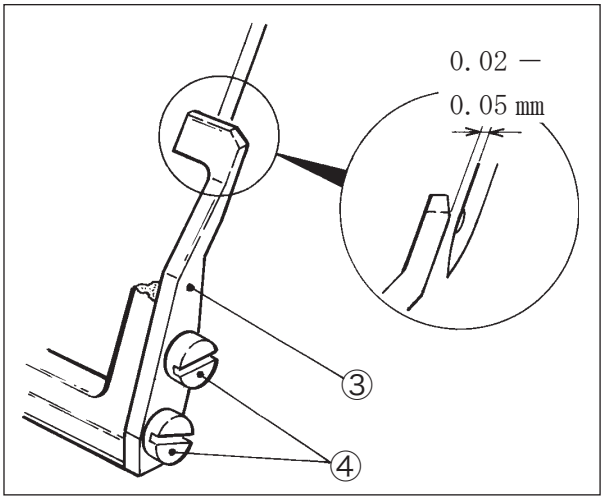


Fig. 6-35

6.11.3 Needle and needle guards for double chainstitch

Needle guard(rear) (double chain stitch):

Adjust the clearance between the needle and the needle guard(rear) ⑤ to 0 — 0.05 ㎜ at the lowest point of the needle with loosening the screws ⑥.

Needle guard(front) (double chain stitch):

Adjust the clearance between the needle and the needle guard(front) ⑦ to 0.1 — 0.2 ㎜ with loosening the screw ⑧.

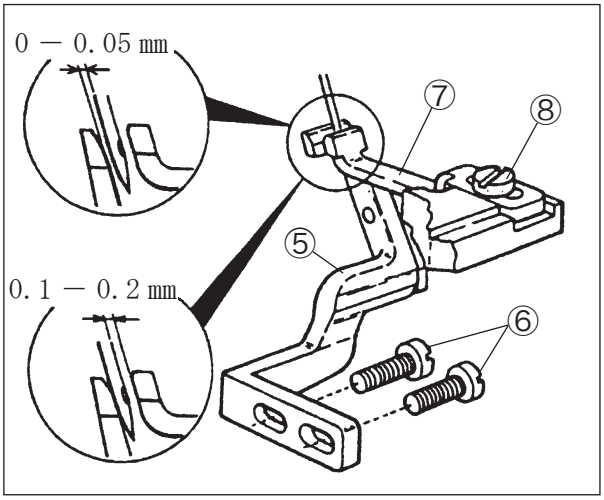


Fig. 6-36

6.12 Position of presser foot

Install the bottom surface of the presser foot parallel to the stitch plate from the front.
Slanted presser foot can cause feed scratch mark.

To set back-and-forth position, adjust the clearance between the needle drop of the presser foot and that of the stitch plate to 0.2 — 0.3 mm as shown in Fig. 6-37.
Loosen the screw ① to adjust it.

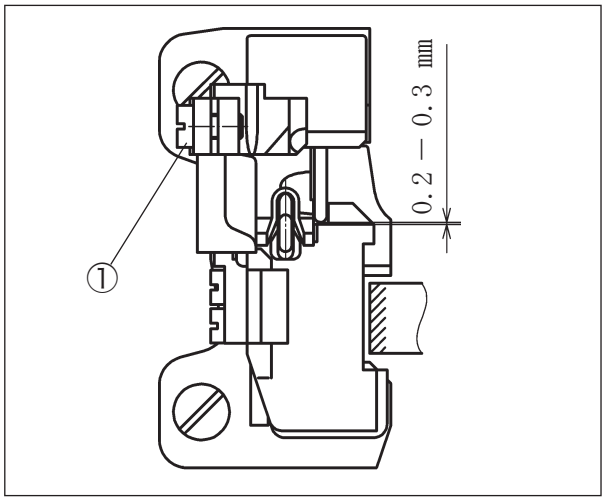


Fig. 6-37

7. SC10 device

7.1 Outline

SC10 is a self-cleaning system that can keep a clean and comfortable environment for operators. It eliminates clogged dust around the lower knife holder and under the stitch plate by cutting material during the sewing. And also makes maintenance easily and prevents troubles caused by the lint.

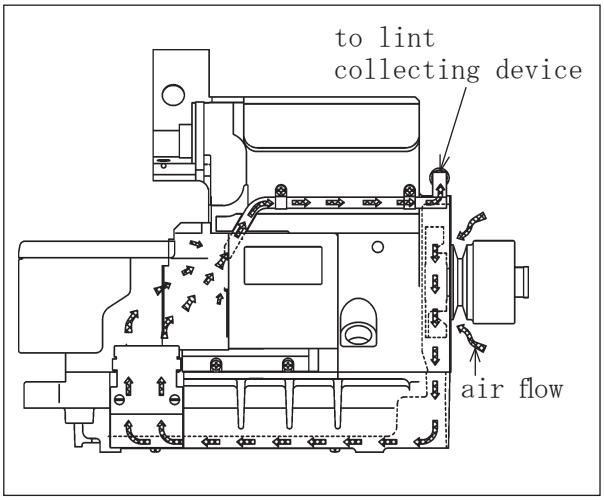


Fig. 7-1

7.2 Adjusting ventilating amount

Select the type of setting by changing the position of the air deflector ① depending on the sewing speed and sewing condition.

To set the standard position, insert the air deflector ① into the guides ② and ③. (See Fig. 7-2)
For high speed and less dust during sewing, insert the air deflector ① into the guides ② and ④. (See Fig. 7-3)

When not using SC10 device, remove the air deflector ①.

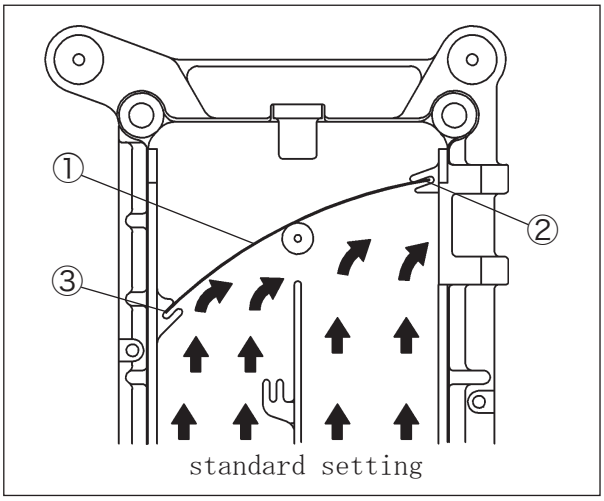


Fig. 7-2

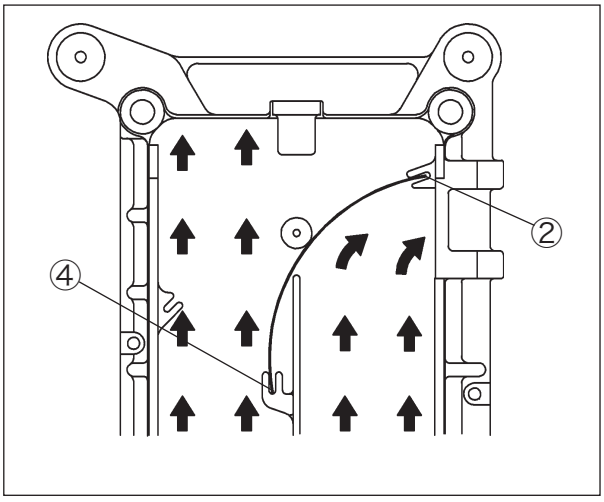


Fig. 7-3

7.3 Installation

7.3.1 Installing air deflector

(1) Drain the oil from the machine.
(2) Tilt the machine backward.
(3) Loosen two screws ④ and remove the wind guide plate ②.
(4) Install the air deflector ③ into the guides ⑤ of the oil reservoir ① securely.
(5) Reset the wind guide plate ②.
(6) Raise the machine upright and supply the oil.

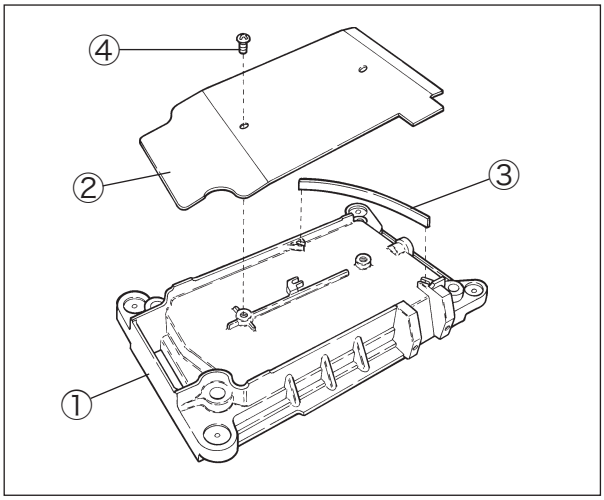


Fig. 7-4

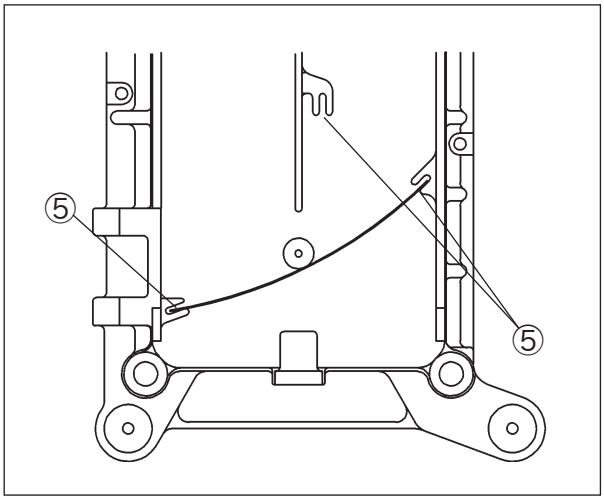


Fig. 7-5

7.3.2 Installing blowing hole

(1) Install the blowing hole screen ⑥ on the oil reservoir ①.
(2) Install the wind guide plate(front) ⑦ on the oil reservoir ① with two screws ⑧ while pressing the blowing hole screen ⑥.

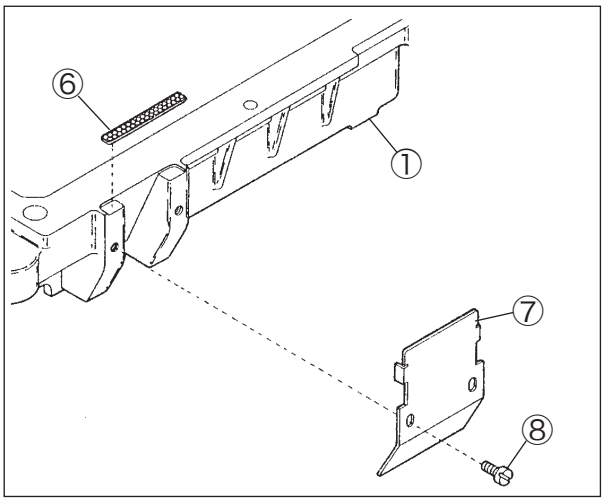


Fig. 7-6

7.3.3 Installing lint removal pipe

(1) Put two pipe clamps ② to the lint removal pipe ①.

(2) Install the lint removal pipe ① and the pipe clamps ② on the machine frame with two screws ③.

(3) Connect the lint removal pipe ① to the pipe from the lint collecting device.

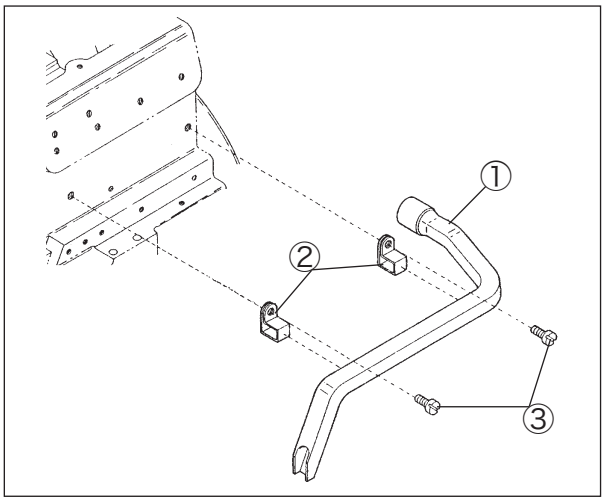


Fig. 7-7

ADVICE

Suction is not enough when connecting another device to one lint collecting device for SC10.
When using ventilation, air pressure should be 0.2 Mpa or more.

8. Specifications

Model	AZ8600SD, AZ8620SD
Dimensions	380 (L) × 245 (W) × 310 (H) mm
Weight	27.5 kg
Construction	Dust-proof, Oil-tight and completely sealed
Stitch Type	ISO (504, 401), (514, 401)
Application	Safety stitch of denim for medium weight materials
Sewing Speed	up to 6500 sti/min
Stitch Length	2.0 — 5.0 mm Number of stitches per inch(25.4 mm) 5 — 13 stitches per 30 mm 6 — 15 stitches
Needle System	DC × 27 (for both sides of overlock stitch and double chainstitch) Size #18 ～ #21 (110 ～ 130)
Needle Stroke	27.1 mm
Presser Foot Lift	up to 5 mm (Applicable up to 7 mm by changing needles to DO×5) (Note)
Feed Regulation	Push button System
Differential Ratio	Max. normal differential (Gathering) 1 : 2.3 Max. reverse differential (Stretching) 1 : 0.7 (Max. reverse differential ratio is available up to 1 : 0.6 by adjusting the position of the lever pin.)
Differential Feed Regulation	Adjustable by moving external lever even during operation Adjustable by Micro adjuster
Knives for Fabric Cutting	Lower Knife : Flat type, made of special steel Upper Knife : Angled type, made of super hard alloy
Lubrication Oil	YAMATO SF OIL No.28
Capacity or Oil Reservoir	900 ml
Lubrication	Forcedly lubrication by trochoid pump
Compliance With Regulation	CE Marking, RoHS directive
Installation	Fully-submerged type and Semi-submerged type
Noise Declaration	Lp_A = 85 dB (A) (6500 sti/min) : Standard complied with: ISO 10821-C6.2, ISO 11204 GR2

Note: When needles DO × 5 are used, readjusting the height of the needles should be required.

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