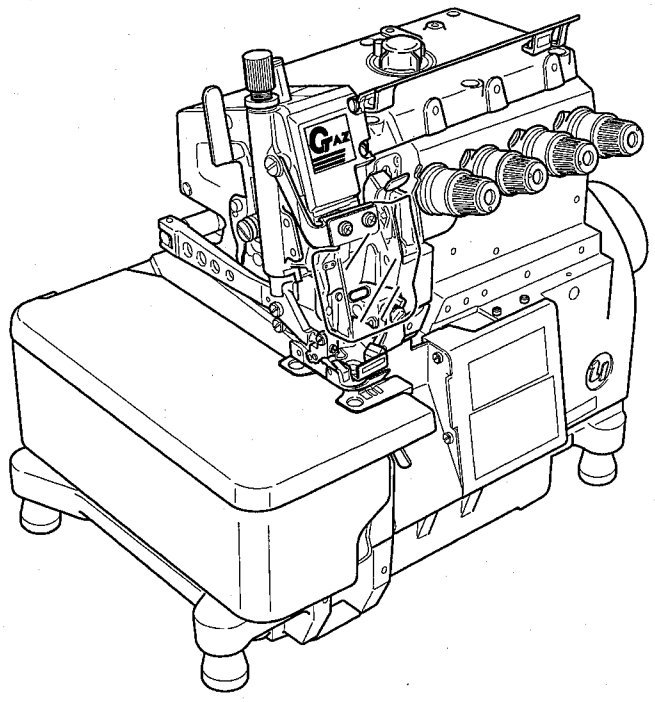
yamato®

Instruction Manual

HIGH SPEED SAFETY STITCH MACHINE
FOR HEAVY WEIGHT MATERIALS

AZ7600G-1



Thank you for having purchased the Model AZ7600G-1.
Before using your AZ7600G-1, 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 description in this instruction manual is subject to change for improvements of the commodity without notice.

Safety instructions

1. To ensure safe use

Always observe the following instructions to ensure the safe use of the industrial sewing machines and devices.

1-1 Application and purpose

The sewing machine is designed to improve productivity in the sewing industry and must not be used for other applications and purposes. Do not use this sewing machine until it can be confirmed that safety measures for the drive units have been taken.

1-2 Before use

Read all instruction manuals thoroughly before starting the use of this machine and follow them.

Also, read the instruction manual for the installed drive unit.

1-3 Working environment

DO NOT WORK IN THE FOLLOWING ENVIRONMENTS:

- Place where atmosphere temperature and humidity give a bad influence the performance of sewing machines.
- Outdoors and place where the sewing machines are exposed to sunlight directly.
- Atmosphere containing dust, corrosive gases or flammable gases.
- Place where voltage fluctuation exceeds ± 10 % of the rated voltage.
- Place where power capacity necessary for the used motor specifications cannot be secured.
- Place where strong electric or magnetic fields are generated such as near large-output high frequency transmitters or high frequency welding machines.

1-4 Unpacking and transportation

(1) Unpack from the top.

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

(3) When carrying the sewing machine head, have an assistant.

(4) Pay attention not to get excessive impact or shock when moving the sewing machine head with a pushcart.

2. Installation and preparation

2-1 Instruction and training

Operators and workers, who supervise, repair or maintain the machine head and machine unit, are required to have the adequate knowledge and operation skills to do the job safely. In order to establish such necessary conditions, it needs for the employer to plan and enforce the safety education and training to those workers.

2-2 Sewing table and motor

(1) Prepare a machine table that has enough strength to withstand the weight of the sewing head and any reaction while operating.

(2) Maintain a comfortable working environment with considering the lighting and the arrangement of sewing machine so that the operators can work smoothly.

(3) When installing the control box and the related parts on the sewing machine, take care about the posture of the worker.

(4) Install the drive unit correctly according to the instruction manual.

2-3 Wiring

(1) Never connect the plug for power supply until assembly is finished.

(2) Fix the connectors securely to the sewing machine head, motor, and electric apparatus.

(3) Do not apply excessive force to the connection cords.

(4) Connect the cords away from the driving parts.

(5) Place the ground wire securely to the designated position on the machine head.

2-4 Before operation

(1) Take care not to attach lubricant, silicone oil, and grease on the eyes or skin.

Keep them away from children.

(2) Be sure to fill or drop lubrication oil before operating the sewing machine. Use the Yamato SF oil as specified.

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

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

2-5 During operation

(1) Be sure to operate the sewing machine with the safeguards such as belt cover, finger guard, and eye guard.

(2) Never place the finger, hair or objects under the needle or close to the moving parts while operating the sewing machine.

(3) Be sure to turn off the power supply switch when threading or replacing the needles.

(4) Never place your hands close to the knives when operating the sewing machine with the trimming devices.

(5) Be sure to turn off the power supply switch when terminating the sewing work or leaving the sewing machine.

(6) If the sewing machine malfunctions, abnormal sound or smell something unusual while operating, be sure to turn off the power supply switch.

2-6 Removal

(1) Turn off the power supply switch if removed or replaced any parts or during adjustment of sewing machine.

(2) Do not pull the cord when removing the plug. Be sure to hold the plug itself.

(3) A high voltage is applied inside the control box. Turn off the power supply switch and wait more than 5 minutes before opening the cover.

3. Maintenance, inspection, and repair

(1) Follow the instruction manuals for maintenance, inspection, and repair.

(2) Entrust the maintenance, inspection, and repair to specially trained personnel.

(3) 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 using a clutch motor, take care that the motor keeps turning for a while even after turning off the power supply switch.)

(4) Do not modify the sewing machine by the customer's judgment.

(5) Be sure to use original replacement parts for repairs or maintenance.

4. Caution signs and alert pictorial markings

This instruction manual contains the following caution signs and alert pictorial markings to prevent you from injuring yourself or the sewing machine from being damaged.
Please follow the instructions.

4-1 Meanings of caution signs

WARNING indicates potentially hazardous situations which, if not heeded, could result in death or serious injury to you and others.

CAUTION indicates hazardous situations which, if not heeded, may result in minor or moderate injury to you and others, or may result in machine damage.

NOTE is used to emphasize essential information.

4-2 Alert pictorial markings

This mark indicates the warning which, if not heeded, could result in death or serious injury.

This mark indicates the caution for high temperature.

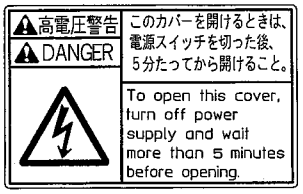
This mark indicates the warning which, if not heeded, could result in death or serious injury.

High-voltage applies in the control box. This label indicates that electric shock may be caused.

This mark indicates the caution which, if not grounded, the machine or device could malfunction and could result in personal injury.

5 . Warning labels on sewing machines

This label indicates that removal of the safeguards and works except for sewing performance while the power supply switch is on are prohibited. (For details, see the next page.)

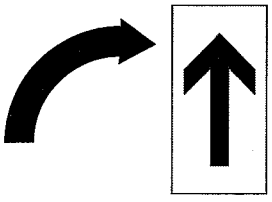


High-voltage applies in the control box. This label indicates that electric shock may be caused.

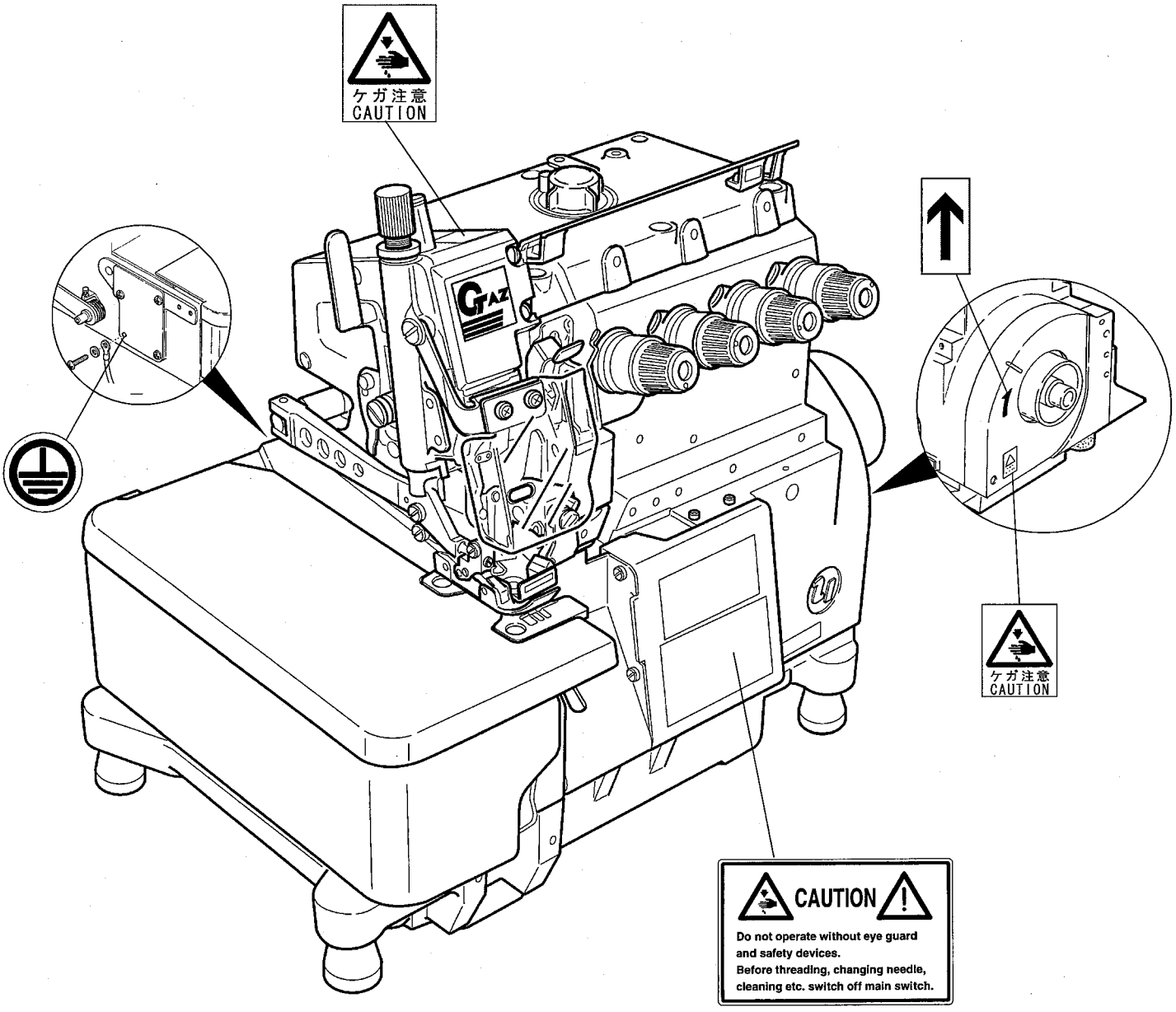
This label is affixed on the safeguards. Considering the operation, it is not affixed on the finger guard and eye guard. Be sure to operate with the finger guard and eye guard in position.

Stepping motor and solenoid may overheat if used continuously. To prevent a burn, take care not to touch.

If not connected earth line, static electricity may be generated and inflict injury on person. In addition, the malfunction of electric system may cause injury to person.

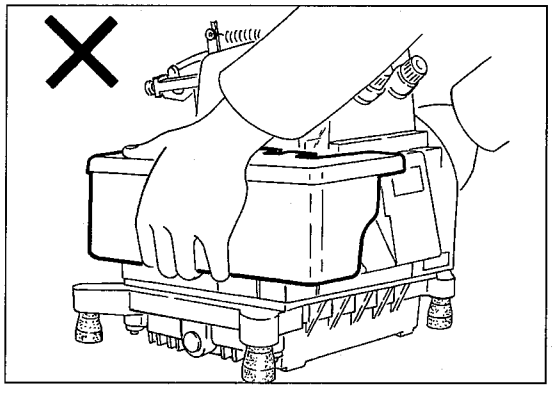


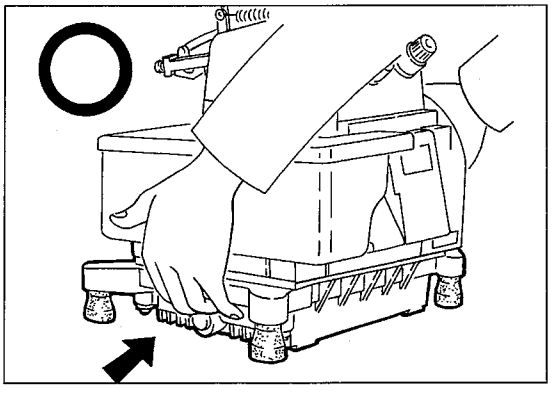
Check the rotating direction of machine pulley agrees with ' ROTATING-DIRECTION SYMBOL'.



6 . Handling the machine

When carry a sewing machine, do not hold the bottom of the cloth plate cover.





1.Name of each part

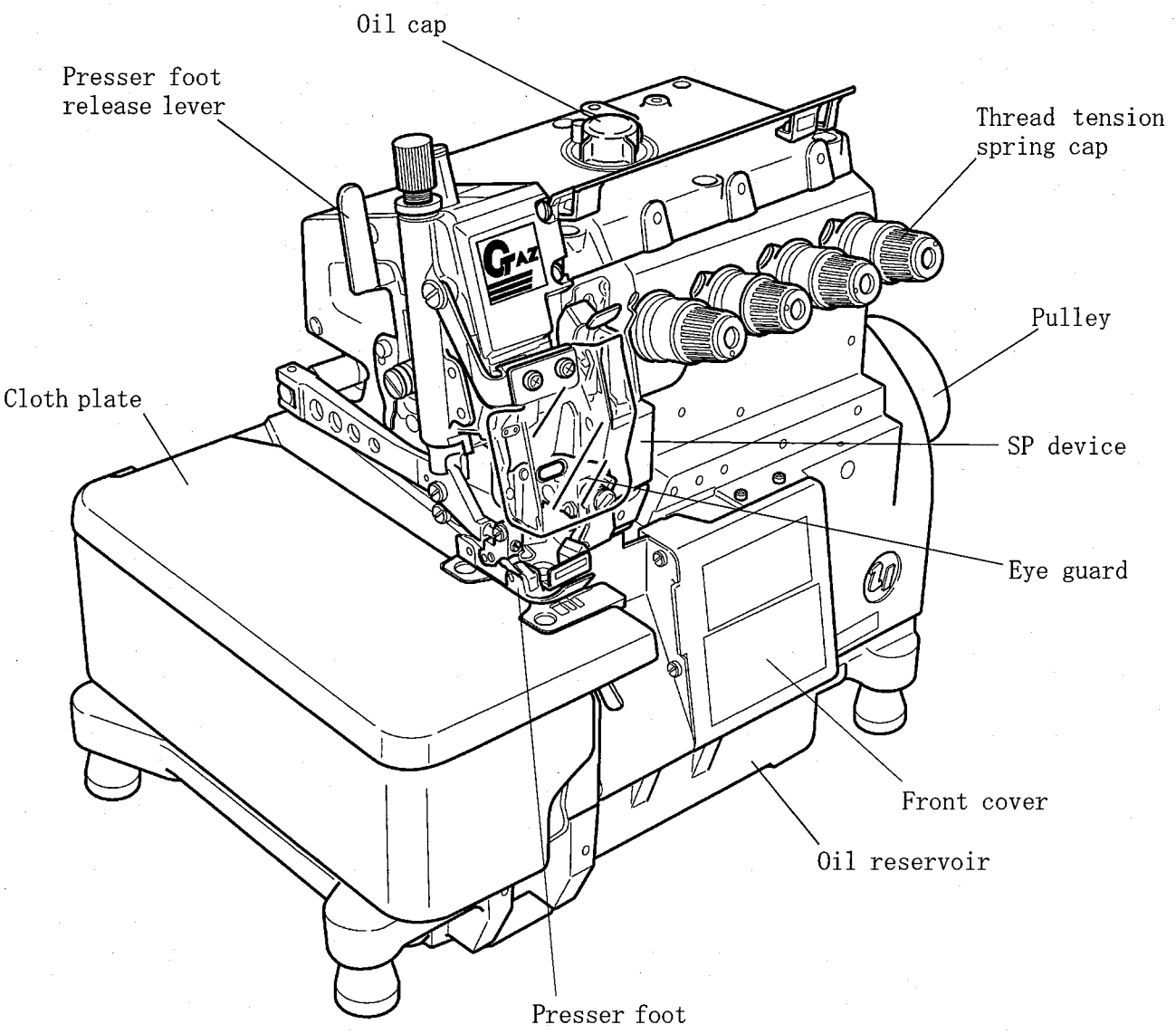


Fig. 1

2.Installation

2.1 Installation for semi-submerged type

2.1.1Table cutting diagram

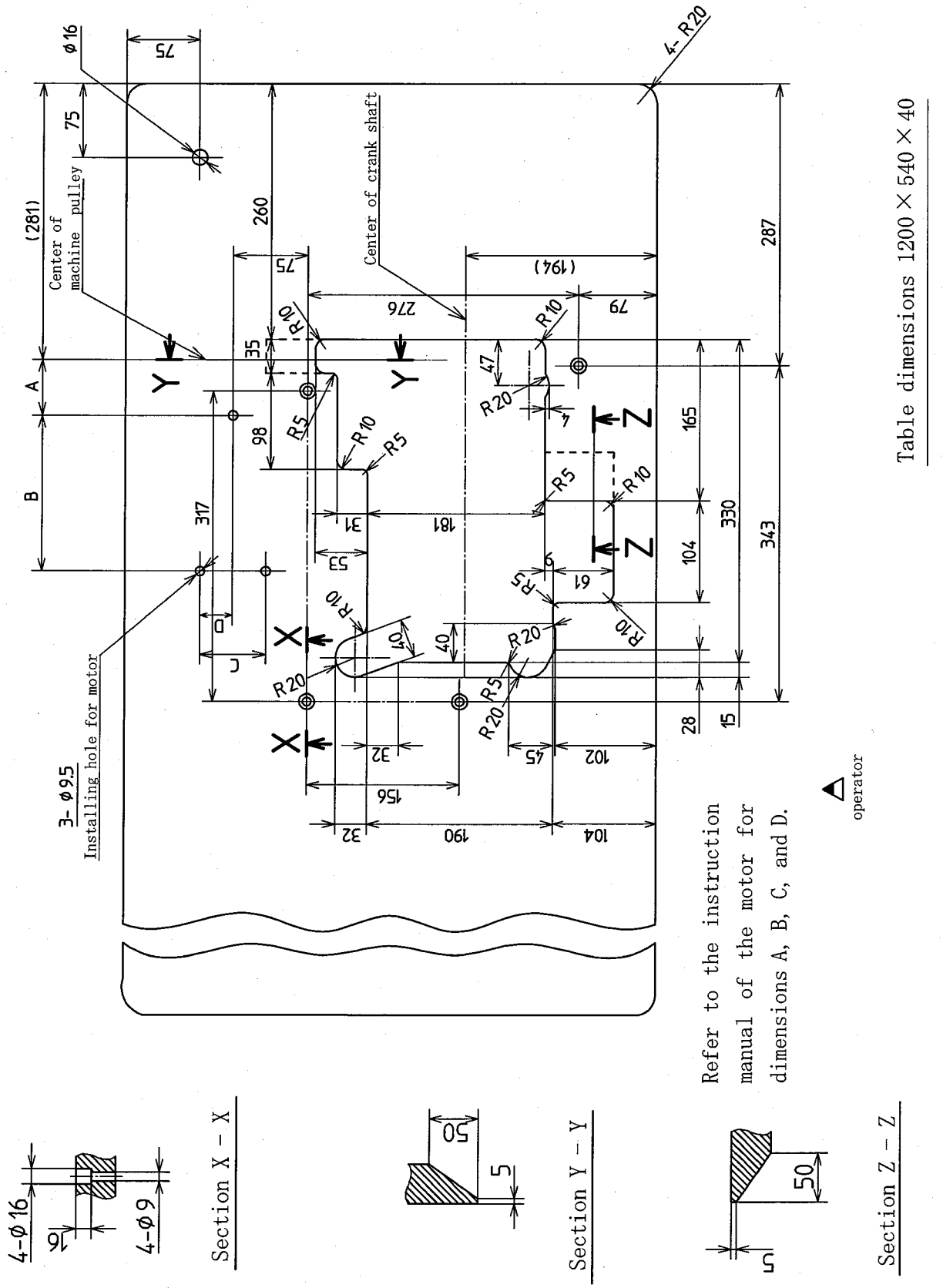


Fig. 2

2.1.2 Installation

Install the machine correctly referring to Fig. 3 and 4.

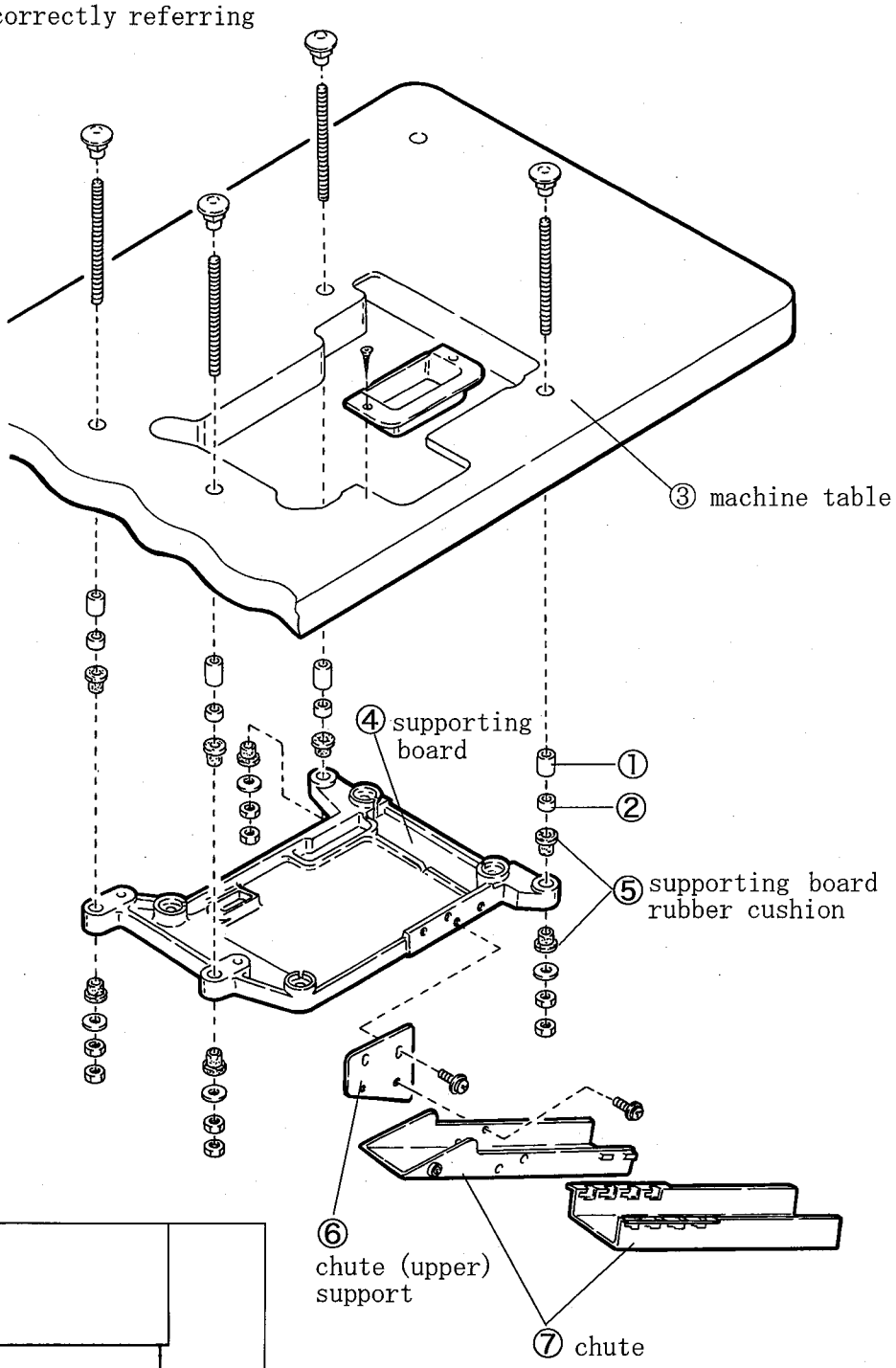


Fig. 3

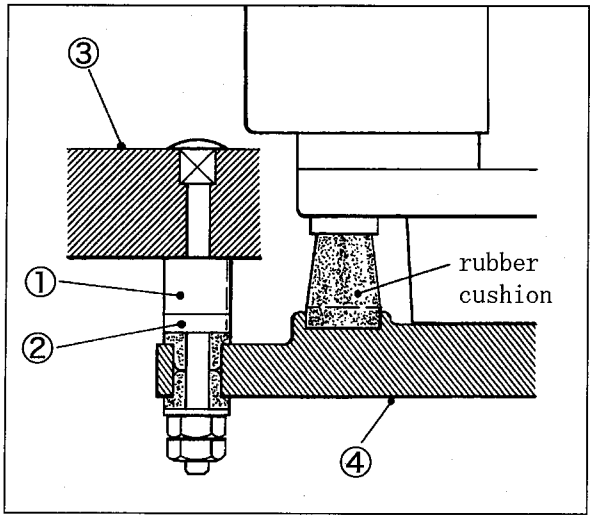


Fig. 4

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

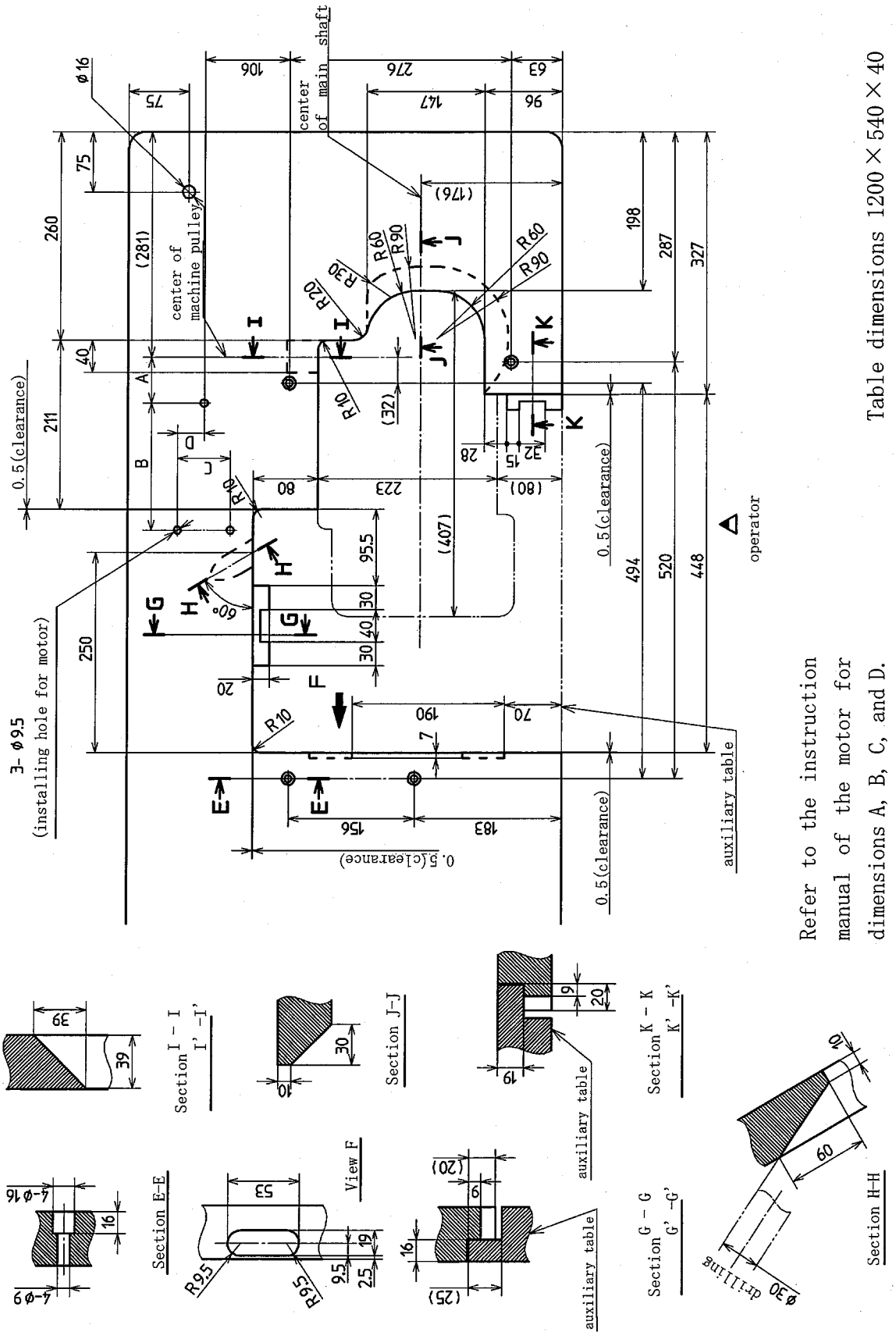
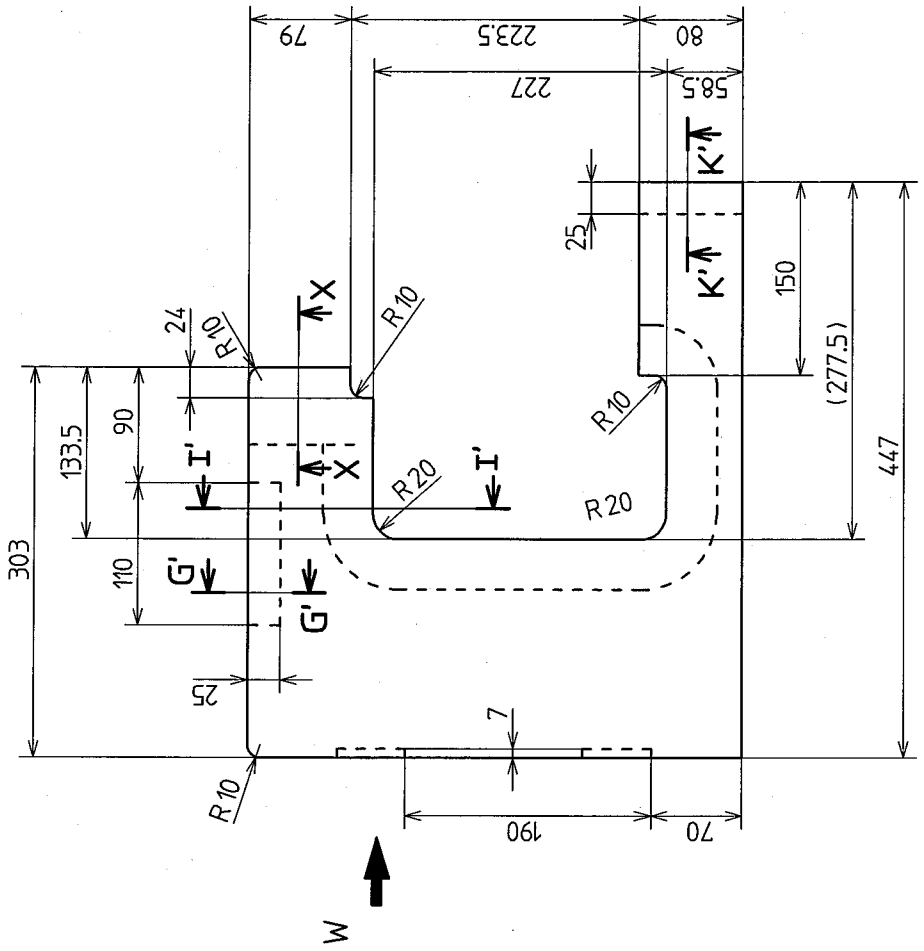
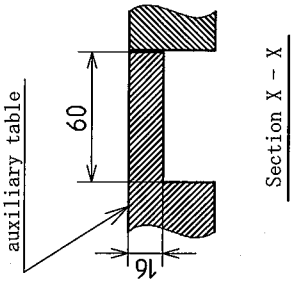


Fig. 5

Cutting diagram of auxiliary table





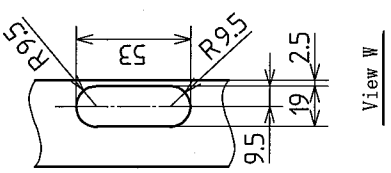
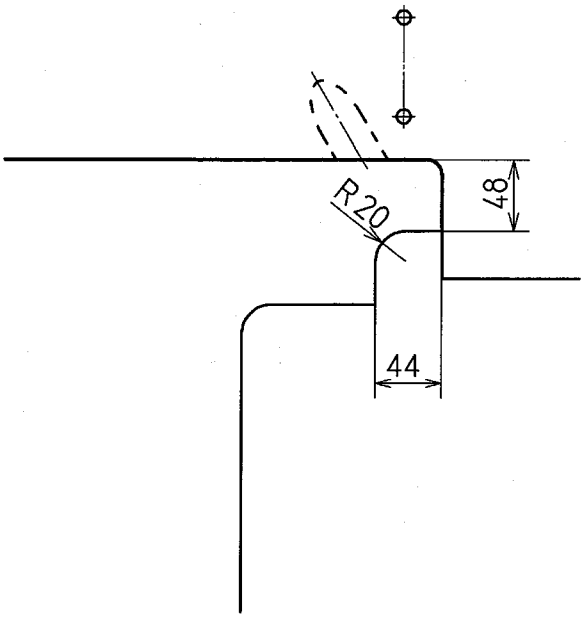


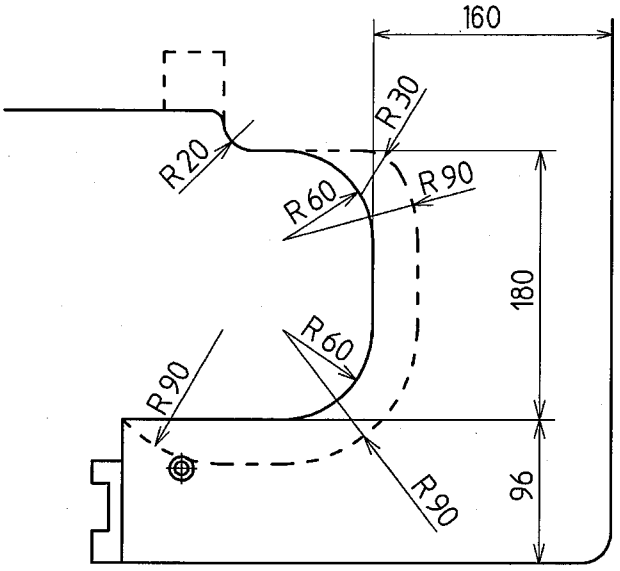
Fig. 6

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 the following dimensions and refer to "2.2.1 Table cutting diagram" (Figs. 5 and 6).



AZ7600G-1 with K1 device



Using a servo motor

Fig. 7

2.2.3 Installatioin

Install the machine correctly referring to Fig. 8 and 9.

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

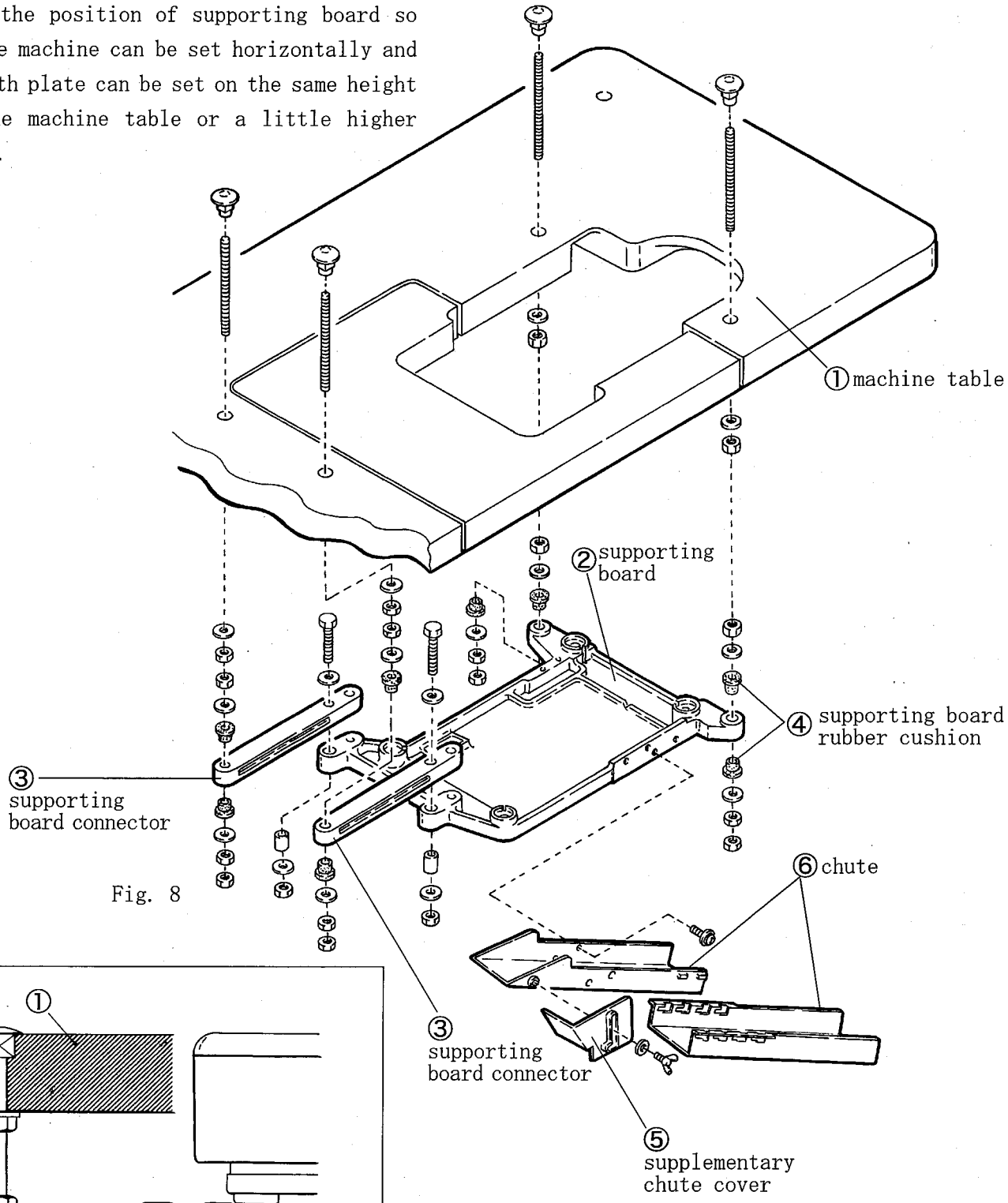


Fig. 8

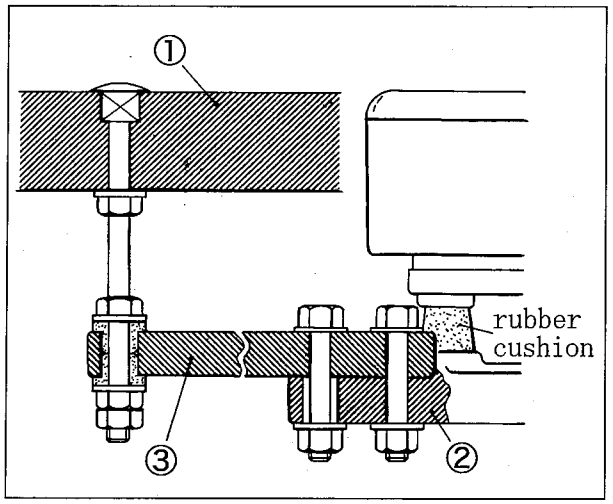


Fig. 9

2.3 Motor and belt

See the instruction manual for the motor to use 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.

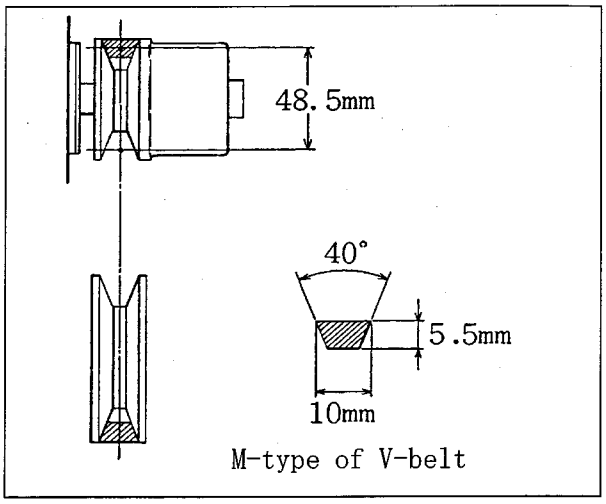


Fig. 10

NOTE: Table 2 shows the outside diameter of the motor pulley, rpm 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.

Outside diameter of pulley (mm)	rpm of machine		Size of belt	
	50Hz	60Hz	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

⚠ CAUTION

Use only those motor pulleys apply to the machine. If not, the machine will over the speed limit and be damaged.

2.4 Hanging belt

⚠ WARNING

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

Use a V-belt of the M-type.

(1) Hang the belt① on the machine pulley②, and the other end on the motor pulley③ while rotating the machine pulley.

(2) Adjust the belt tension so that the belt has 10 — 20 mm slack when its center is pushed with 10N(1.02kgf).

(3) Lock the belt with the nut④.

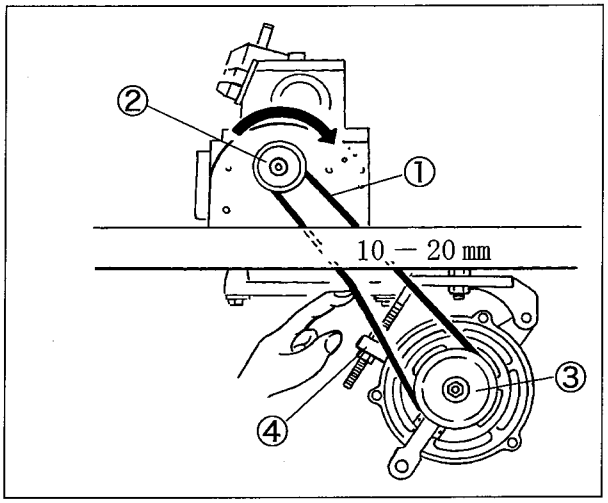


Fig. 11

2.5 Installing belt cover

⚠WARNING

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

(1) Install the auxiliary belt cover① as shown in the figure.
(2) Install the belt cover② as shown in the figure.

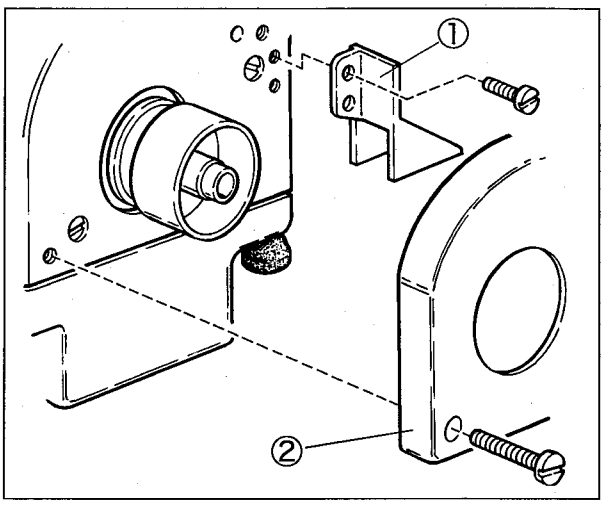


Fig. 12

2.6 Installing eye guard and finger guard

To ensure safety, ALWAYS install the eye guard③ and finger guard④ to prescribed position during operation.

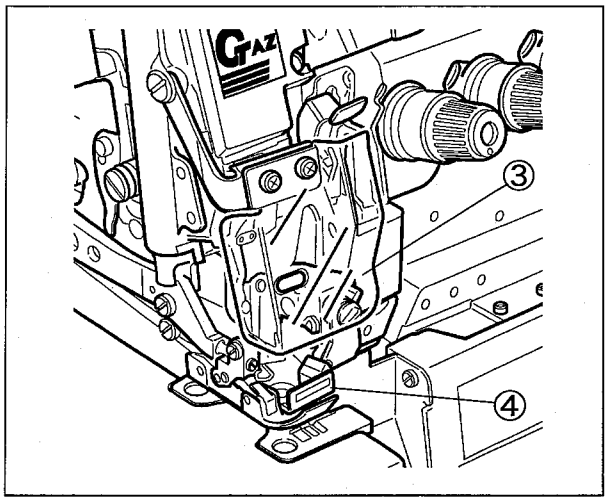


Fig. 13

3.Sewing speed and rotating direction of pulley

The maximum sewing speed has been shown in Table 3. Run a new machine at 15 - 20% lower rotating speed of the 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 pulley① and the machine pulley② is clockwise as shown in the figure.

⚠ CAUTION

If the machine pulley rotates in reverse direction, oil can not be supplied properly and the machine can be damaged.

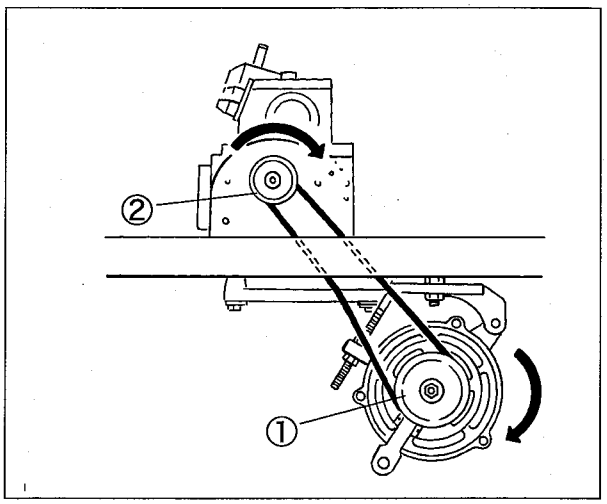


Fig. 14

Model	Max. sewing speed (rpm)
AZ7600G-1	6,500

Table 3

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 damages 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 bar① and the looper bar② with two or three drops.

Remove the oil cap③ indicated "OIL-IN" and supply the oil to the upper line of the oil sight gauge④.

Make sure that the oil splashes from the nozzle inside the oil cap③ 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 oil scatter and material stain.

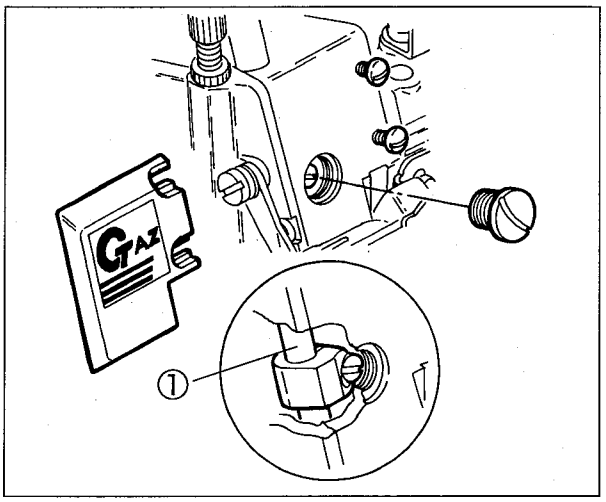


Fig. 15

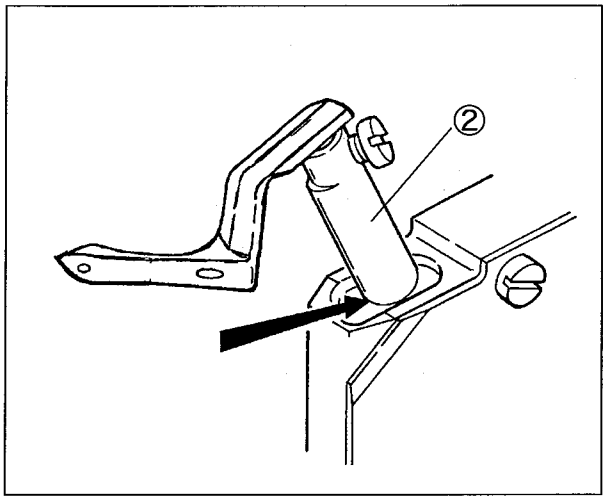


Fig. 16

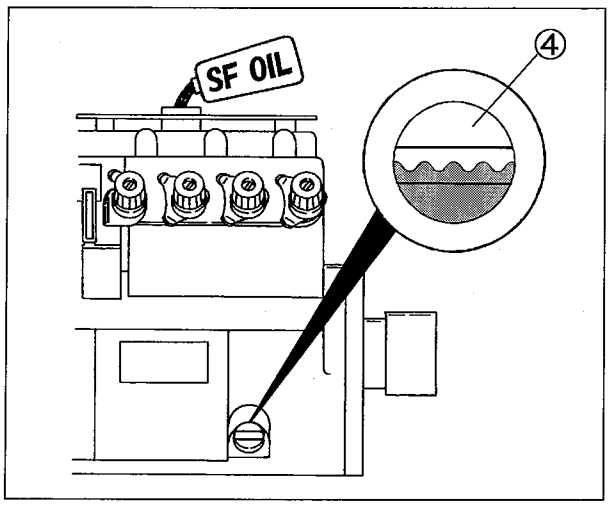


Fig. 17

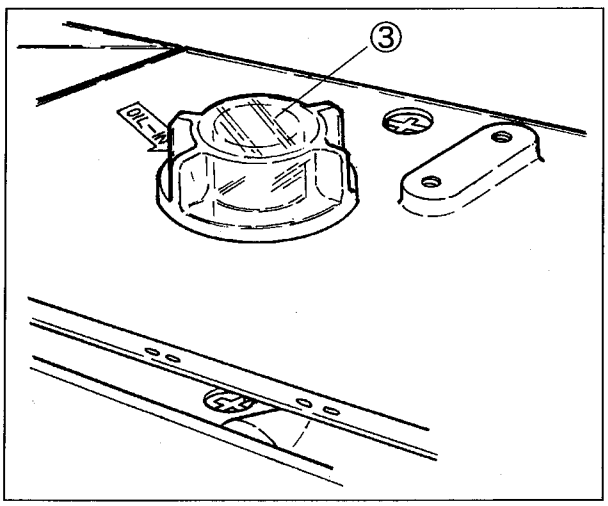


Fig. 18

4.3 Changing oil

Timing of changing:

When using a new machine, change the lubricating oil after running the machine for 250 hours (for about one month). After that, change the oil once or twice a year.

Procedure for changing:

(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 vessel to receive the oil under the screw ①.
(5) After removing screw①, the oil drains out.

NOTE

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

(6) Reset the screw①.
(7) Change the oil. (See "4.2 Lubrication" 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 page 8 and 9)

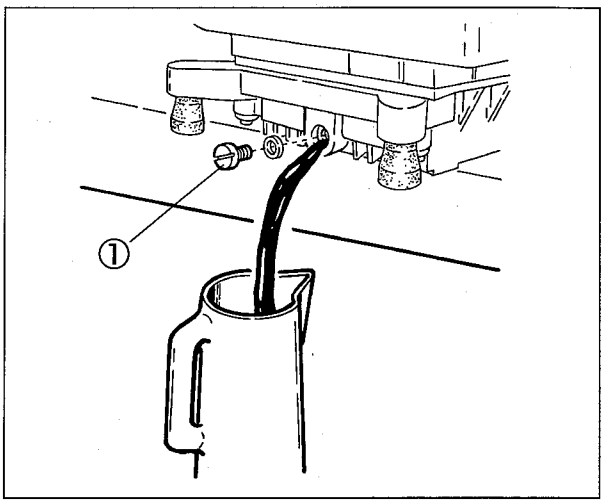


Fig. 19

4.4 Checking and replacing oil filter

◆ If the oil filter② is clogged with dust, lubrication can not be performed properly.
◆ Remove the oil filter cap③ and the oil filter ② to check them every six months. If clogged or cracked, clean or replace the oil filter.
◆ If the oil is splashed from the nozzle insufficiently or includes many bubbles even though the oil has been sufficiently kept, check or replace the oil filter.

NOTE

Be careful that the oil may spill out from the oil filter②, when loosening the screw④.

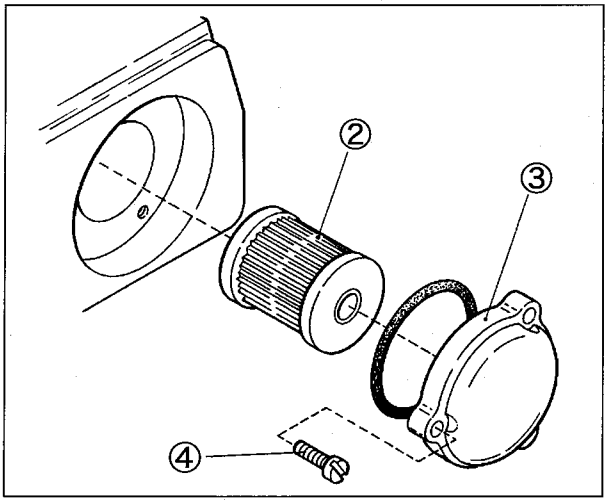


Fig. 20

5.Proper operation

5.1 Needle system

AZ7600G-1 : DC × 27

Select proper needles in size according to the thickness and the type of the material.

Japanese Standard	16	18	19
Metric Standard	100	110	120

Table 4

5.2 Installing needles

⚠WARNING

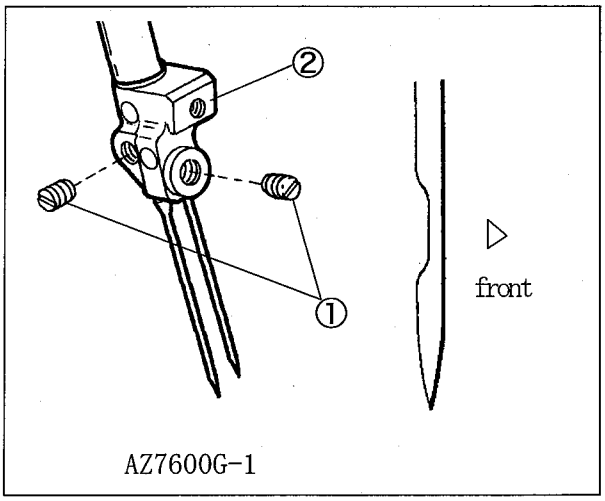
Before installing the needles, ALWAYS turn the motor switch OFF and check if the motor has already stopped.

(1) Loosen the screw① with an allen wrench. (Fig. 21)
(2) Remove the old needle with a pair of tweezers.
(3) Insert a new needle into the needle clamp② as far as it goes with facing its scarf to the right back. (Figs. 22 and 23)
(4) Tighten the screw① with the allen wrench.

● Accessories include an allen wrench.

NOTE

The tightening torque of the screw ① is 0.6N·m(6kgf·cm).



AZ7600G-1

Fig. 21

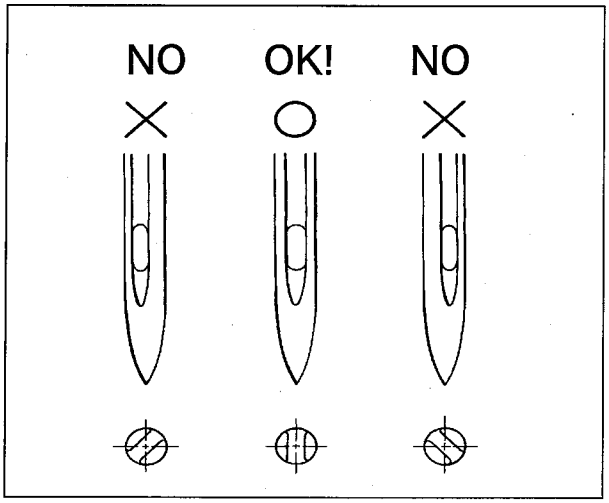


Fig. 22

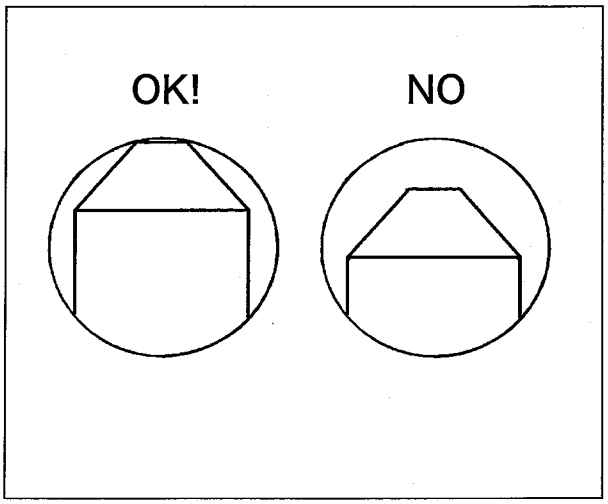


Fig. 23

5.3 Adjusting thread tension

Adjust the thread tension with the thread tension spring caps ① - ⑥ according to the type of fabric, 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	AZ7600G-1 2-needle safety stitch	AZ7600G-1 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

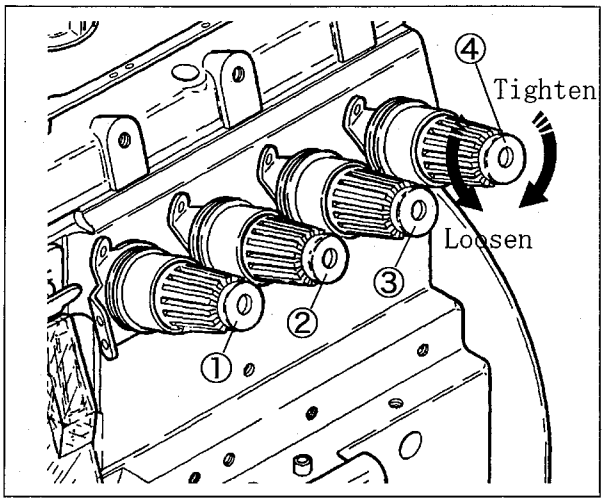


Fig. 24 AZ7600G-1

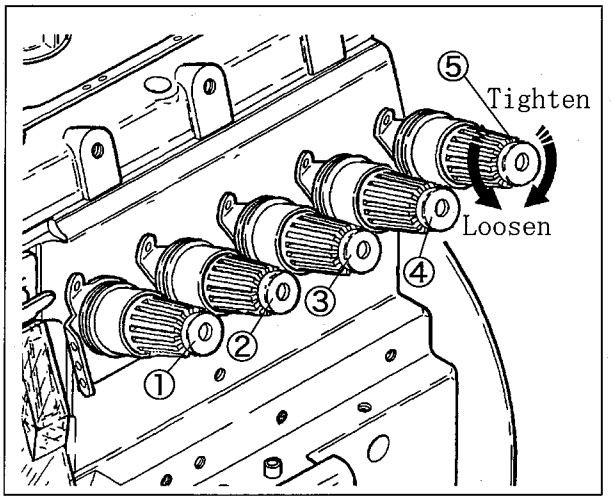


Fig. 25 AZ7620G-1

Threading

⚠WARNING

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

Threading correctly referring to the threading figure which has been attached to the back of the front cover.

⚠CAUTION

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

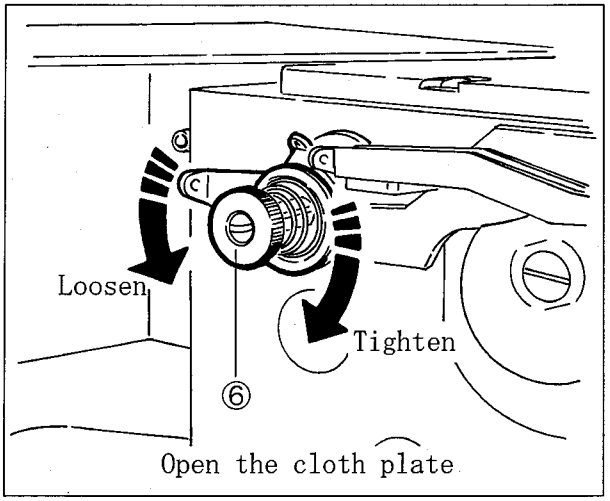


Fig. 26

5.4 Pressure of presser foot

Loosen the lock nut① and adjust the pressure of the presser foot by turning the adjusting screw②.

- 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 stitch.

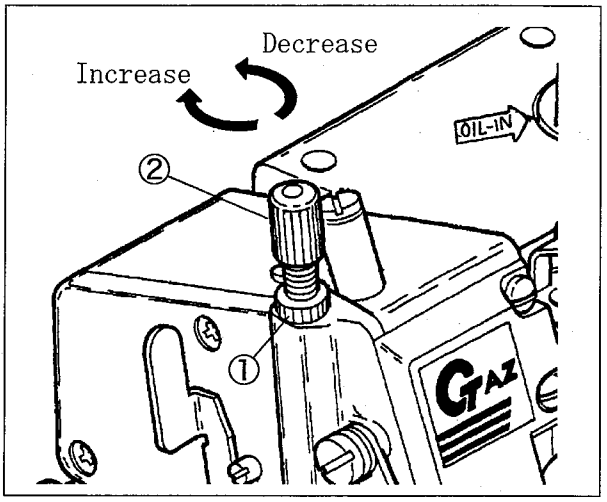


Fig. 27

5.5 Releasing presser foot

⚠WARNING

Before adjusting, ALWAYS turn the motor switch OFF and check if 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 lever③.
To set the presser foot, slide and push the presser foot against to the right side while pressing the presser foot release lever③. Then release the lever.

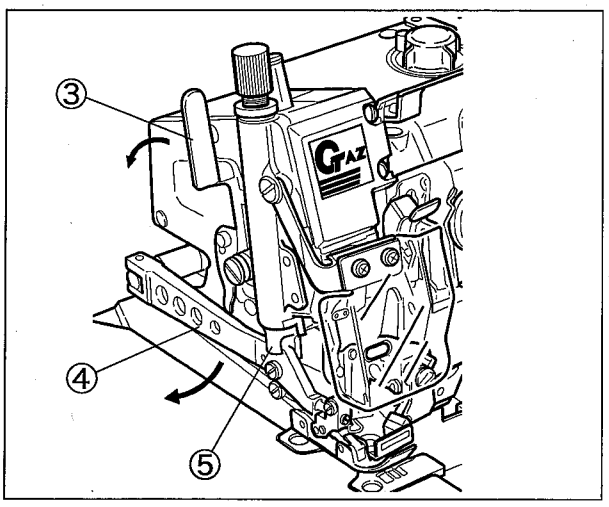


Fig. 28

⚠WARNING

Make sure that the presser arm④ has been fitted into the groove of the presser bar⑤.
If not, it can cause damage to the parts and injury.

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 pushing the lever③.
To close it, shift it to the right. Check if it has been locked securely.

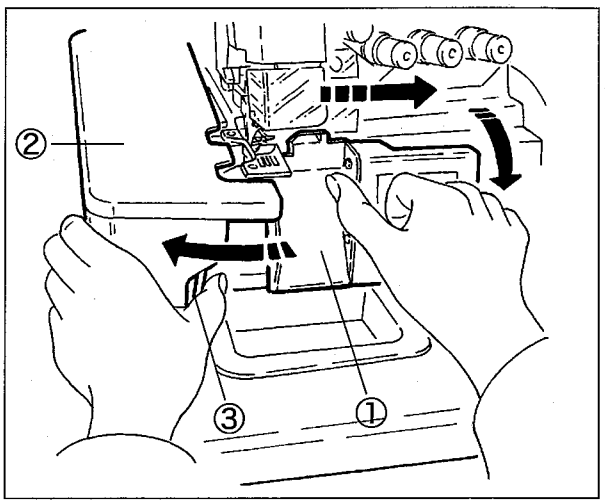


Fig. 29

5.7 Adjusting differential feed dog

Loosen the lock nut④ and adjust the differential feed lever⑤.
For stretch sewing, move the lever up; for gather sewing, move the lever down.
Adjust differential feed lever⑤ securely with turning the screw⑥.

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

Differential ratio up to 1:0.6 - 1:2 or 1:1 - 1:3 is available by adjusting internal mechanism.
Table 7 shows the differential ratio and maximum stitch length of each model.

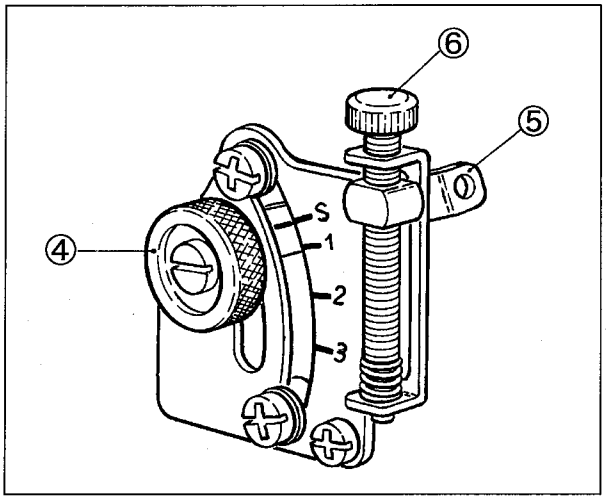


Fig. 30

Model / Graduation	AZ7600G-1Class	
	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

⚠WARNING

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 may different from the length on graduation. It changes because of application, type and weight of material or differential ratio.

(1) Press the pushing button① while rotating the pulley. At the point that the button goes far, press it again strongly.
(2) Align desired graduation of the pulley with the mark② on the belt cover, while keep pressing the button.
(3) Release the push button①.

- To make stitch length shorter, turn the pulley in the direction "S".
- To make stitch length longer, turn it in the direction "L".

⚠CAUTION

Check if the push button has been released completely and the pulley rotates smoothly.

The stitch length is adjustable between 2 to 5 ㎜.

Table 8 shows the number of stitches per inch (25.4 ㎜) and 30 ㎜ converted stitch length.

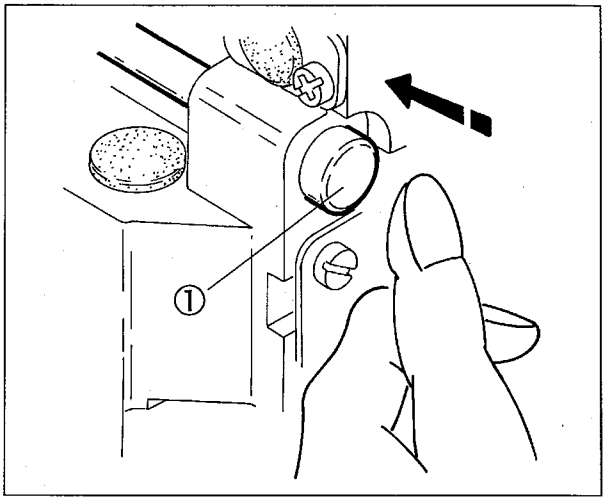


Fig. 31

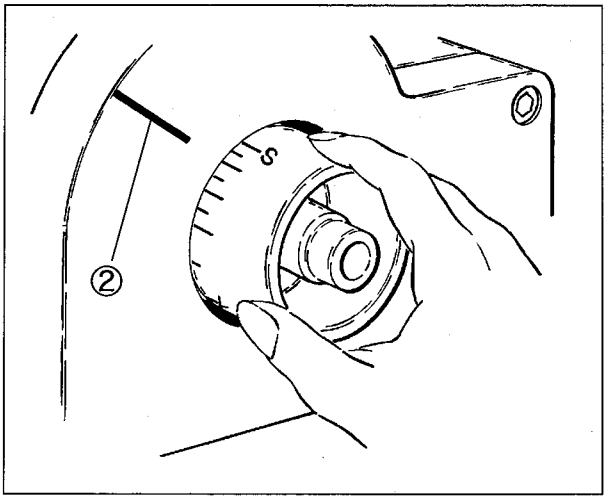


Fig. 32

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 tip 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 fabric.

⚠ CAUTION

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

(2) If the silicone oil is sticked 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.

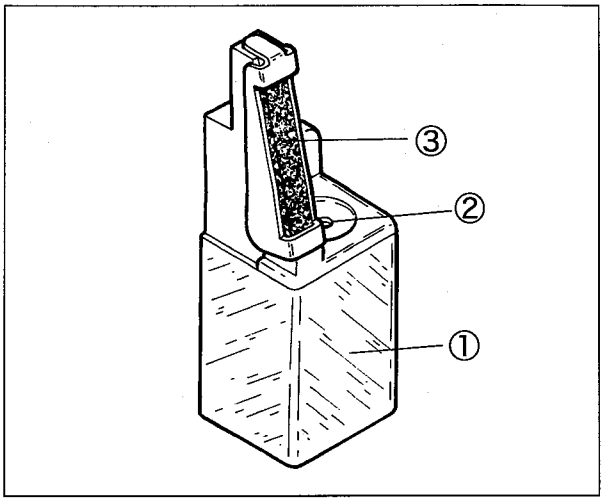


Fig. 33 SP device

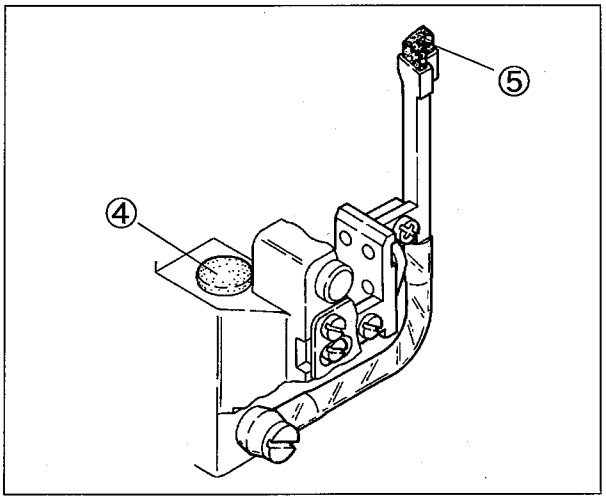


Fig. 34 HR device

5.10 Cleaning the machine

⚠WARNING

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

Waste thread and dust inside of sewing machine may cause troubles. Sewing machine should be cleaned at the end of every working day.
Grooves of stitch plate and the area around feed dogs should be cleaned once a week.

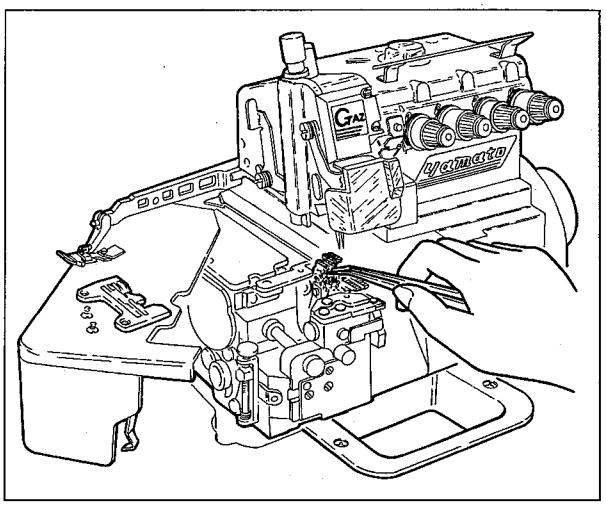


Fig. 35

⚠CAUTION

Clogged dust can cause damages to parts and oil leakage.

Cheking at the sewing factory (maintenance by 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 spool 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 on tips, and the setting positions respectively.
(5) Check the sharpness of knives.
(6) Check the seam by testing sewing fabric.
- ◆stitch length, differential feeding
- ◆adjusting knives and thread tension

Weekly maintenance:

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

6.Adjustment of sewing machine

⚠WARNING

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 mark③.

To set the standard position of the needle thread pull-off⑤, align the portion⑥ with the eye⑦ of the needle thread eyelet(right) when the needle thread pull-off⑤ comes at the extreme front.
Loosen the screw⑧ 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".

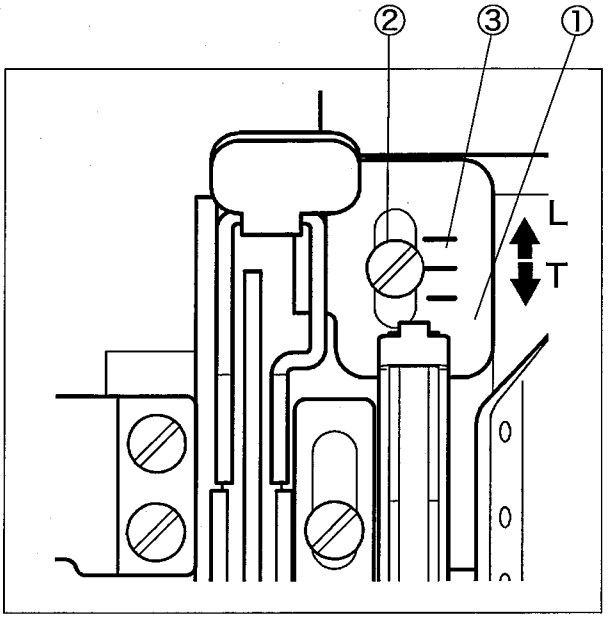


Fig. 36

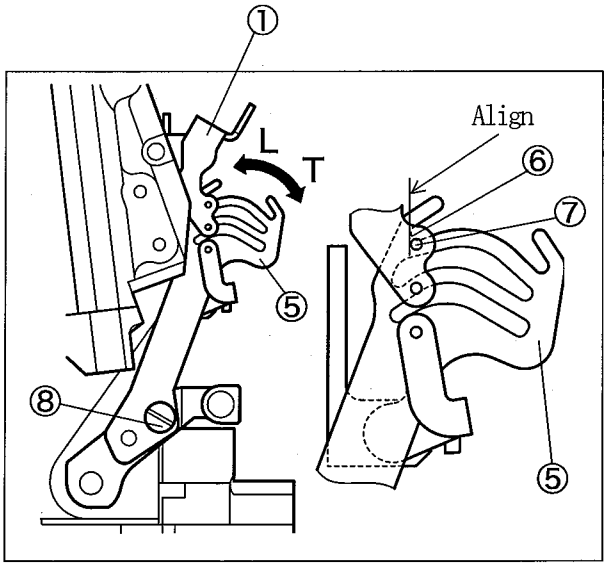


Fig. 37

6.2 Looper thread tension for overlock stitch

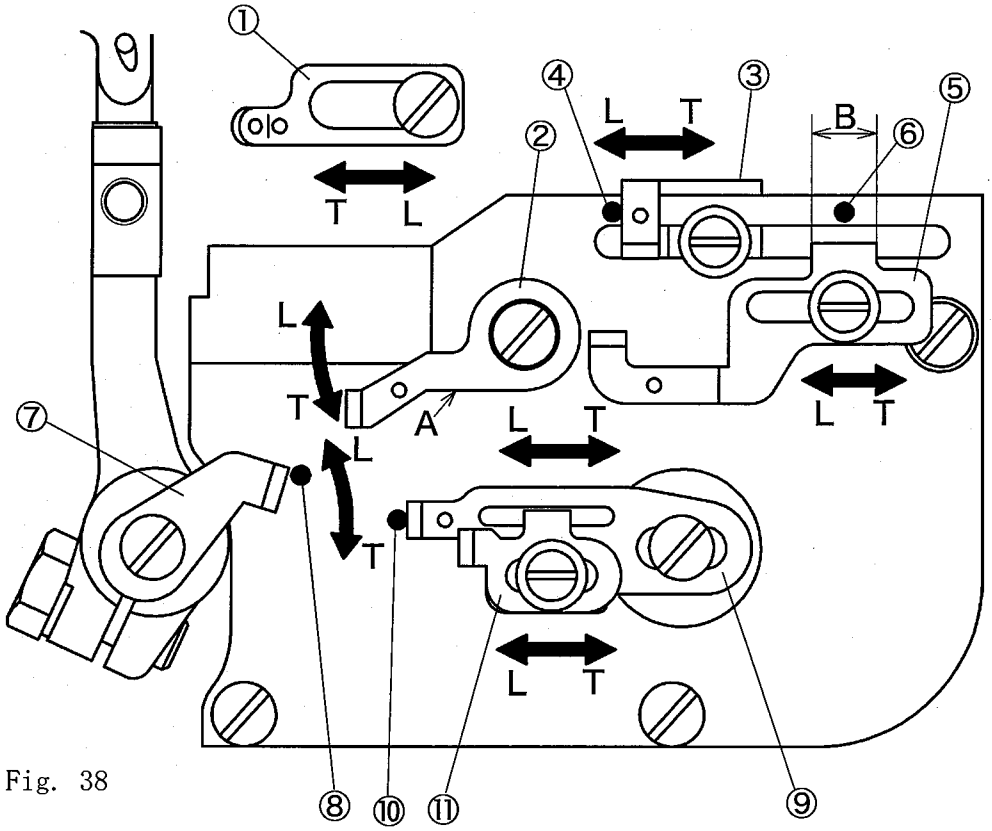


Fig. 38

The standard setting 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 the mark④.

Lower looper thread eyelet ⑤

Position the center of the width B with the mark⑥.

Looper thread pull-off ⑦

Move its right end to the mark⑧.

Upper looper thread pull-off ⑨

Align the eye of the thread pull-off with the mark⑩ when the lower looper moves to the extreme right.

Lower looper thread pull-off ⑪

Thighten 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 front-and-rear position of the double chainstitch thread eyelet①, align the eyes③④ of the needle thread eyelet② with the eye⑤ of the double chainstitch thread eyelet. For adjusting, loosen the screw⑥ and move the double chainstitch thread eyelet① in the front-and-rear direction.

◆ To set the standard up-and-down position, make the distance between the eye④ which under the needle thread eyelet②and the eye⑤ of double chainstitch thread eyelet to 6mm. For adjusting, loosen the screw⑦ and move the holder⑧ for double chainstitch needle thread eyelet 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".

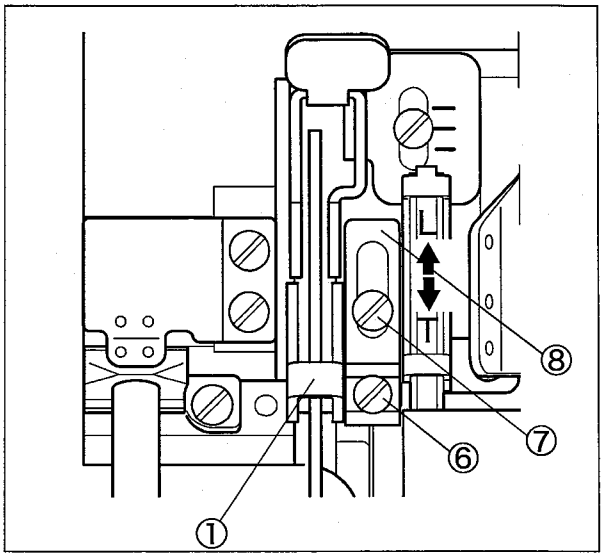


Fig. 39

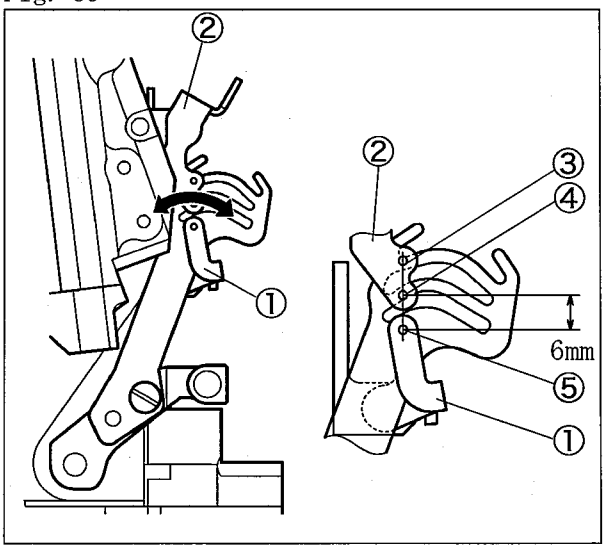


Fig. 40

6.4 Looper thread tension for double chainstitch

◆ Align the eye of the double chaining looper thread eyelet⑨ with the surface⑩ of the double chaining looper thread take-up⑨ when the straight line A is level. Position the thread retaining finger⑫ 1 mm above the eye of the looper thread eyelet⑪.

◆ To set the standard position of the double chaining looper thread eyelet⑩, position the center of the slot in that of the screw⑬.

● To loosen looper the 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, it starts taking up the looper thread when the needle starts lowering from the highest point.

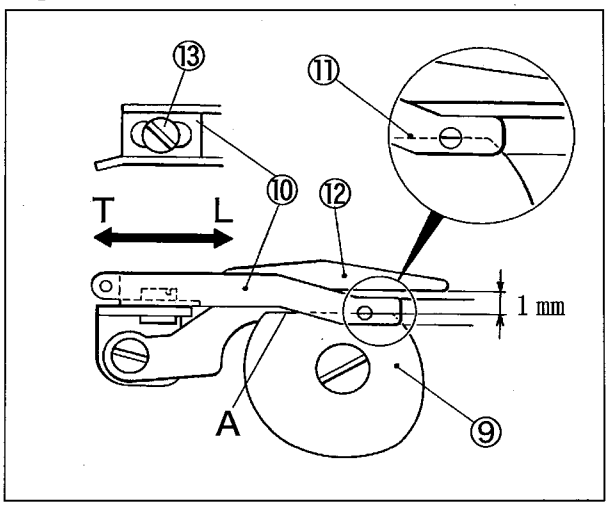


Fig. 41

NOTE

Set the thread retaining finger in the center of double looper thread take-ups when tightening the screw of it.

6.5 Adjusting the width of overedge seam

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

To make wide overedge seam:

(1) Loosen the screw③ on the upper knife holder.
(2) Tighten the screw③ securely after moving the holder as desired in the direction "W".
(3) Loosen the screw④ on the lower knife holder.
(4) The lower knife ② touches the upper knife ① closely because of the pressure of its spring.
(5) Tighten the screw④ securely.

To make narrow overedge seam:

(1) Loosen the screw ④ on the lower knife holder.
(2) Tighten the screw④ slightly after moving the holder as desired in the direction "N".
(3) Loosen the screw③ on the upper knife holder.
(4) Tighten the screw③ with applying the upper knife ① to the lower knife ②.
(5) Loosen the screw④.
(6) The lower knife ② touches the upper knife ① closely because of the pressure of its spring.
(7) Tighten the screw④ securely.

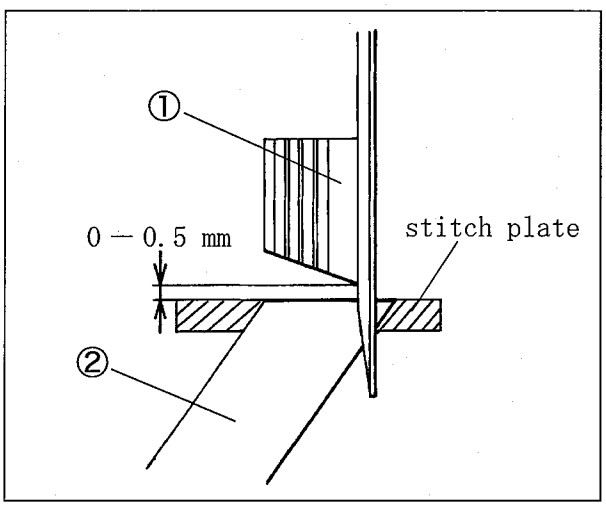


Fig. 42

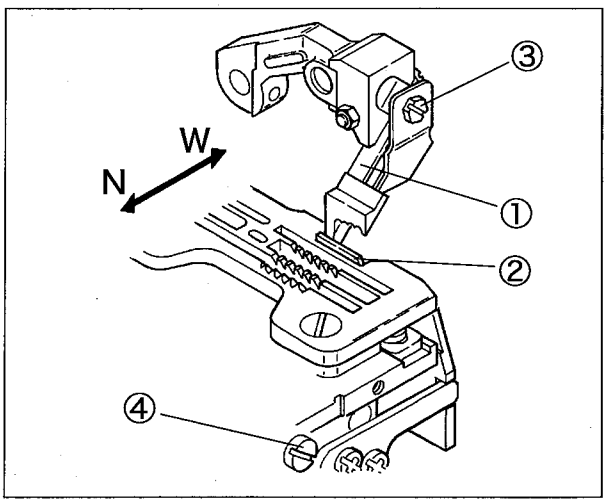


Fig. 43

NOTE

1. After changing the width of overedge seam, check the sharpness of the edges by setting the thread between the upper and the lower knives with rotating the machine pulley by hand. (See "6.5.4 Sharpness of knives")
2. Use a stitch plate apply to the width of overedge seam.
   Adjustable range of overedge seam is within ± 0.5 mm based on the value indicated the gauge respectively.
3. Dust clogged at the connecting part of the upper knife holder changes the installing angle of the knives. It will make them cut badly. Be sure to clean the parts by loosening the screw③.

6.6 Adjusting upper and lower knives

6.6.1 Height of lower knife

Install the edge of the lower knife① on the same level with the top surface of the stitch plate or 0 — 0.3 mm lower than it.
Loosen the screw② to adjust it.

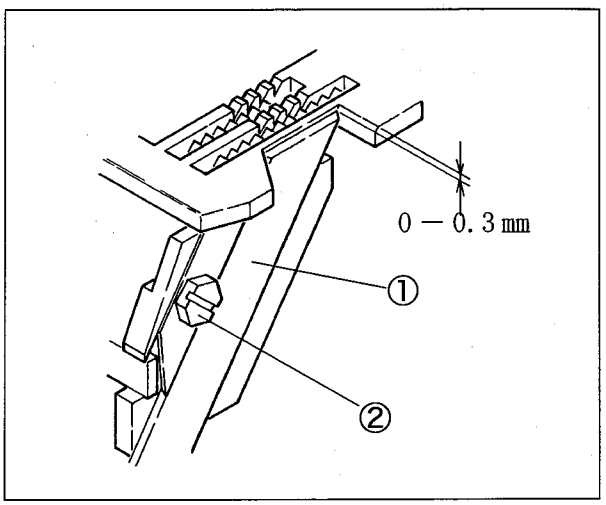


Fig. 44

6.6.2 Height of upper knife (angled type)

Loosen the screw⑤ and apply the upper knife③ to the screw④ fully. The height will be decided automatically.
Then tighten the screw⑤ securely.
The engagement of the upper knife③ and the lower knife① is 0.5—1.0 mm at the lowest point of the upper knife③.
Loosen the screw⑥ and turn the screw④ to adjust it.

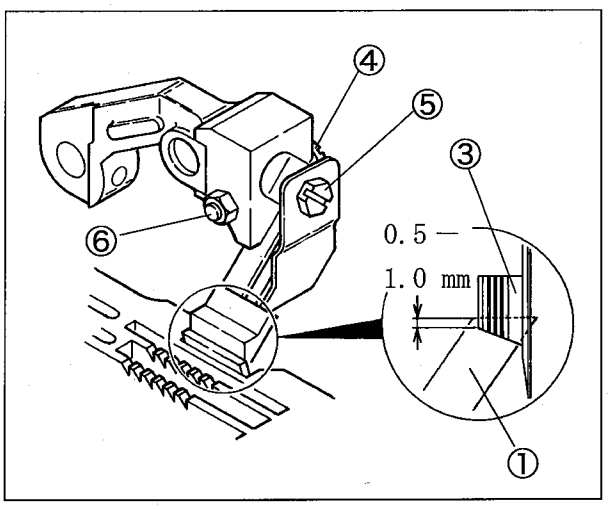


Fig. 45

6.6.3 Sharpness of knives

After adjusting the knives and the width of overedge 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.

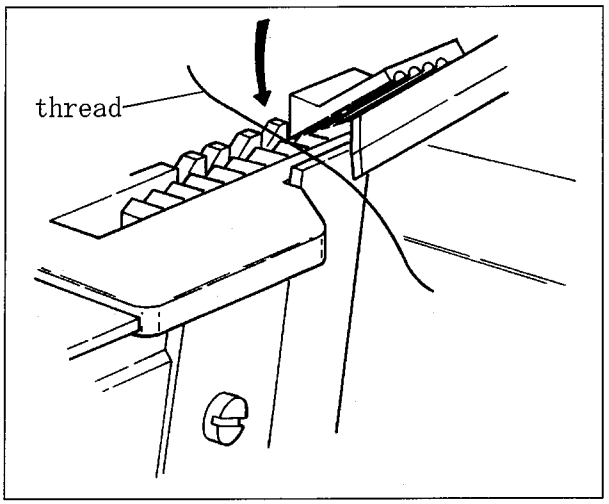


Fig. 46

6.6.4 Sharpening knives

If the lower knife cuts badly, re-sharpen it. (See Fig. 47)

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 necessary, contact us directly or the dealer for re-sharpening.

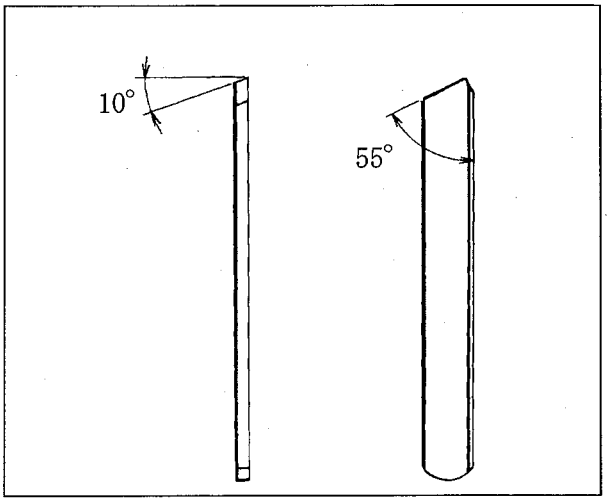


Fig. 47

6.7 Height of feed dogs

To set the standard position, set the top surfaces of the main and the differential feed dogs parallel to that of the stitch plate when the top surfaces of the feed dogs are raised and on the same level with that of the stitch plate.

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

Install the auxiliary feed dog ⑤ on a level with the main feed dog ③.

Adjust the differential feed dog ①, the main feed dog ③, and the auxiliary feed dog ⑤ with loosening the screws ②, ④, and ⑥ respectively.

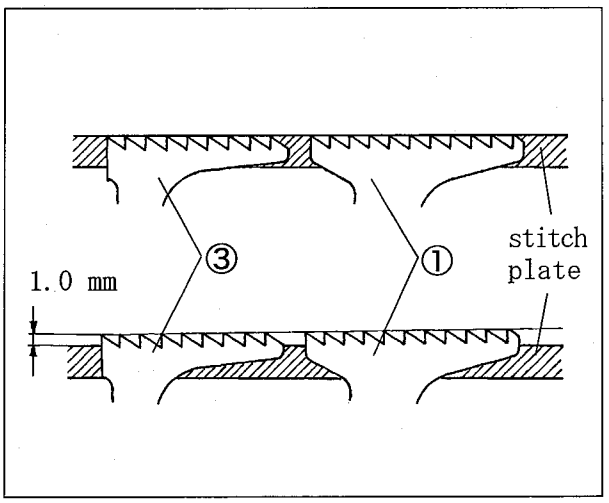


Fig. 48

NOTE

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

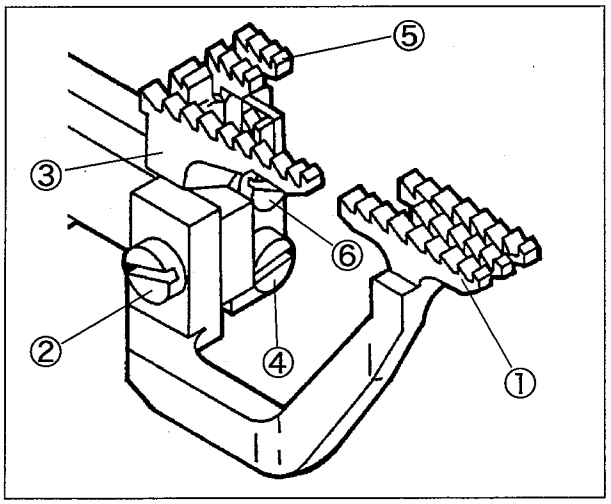


Fig. 49

6.8 Tilting of feed dog

Remove the tail cover① and loosen the screw②.
Move the feed bar block(rear) lid③ to adjust it.

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

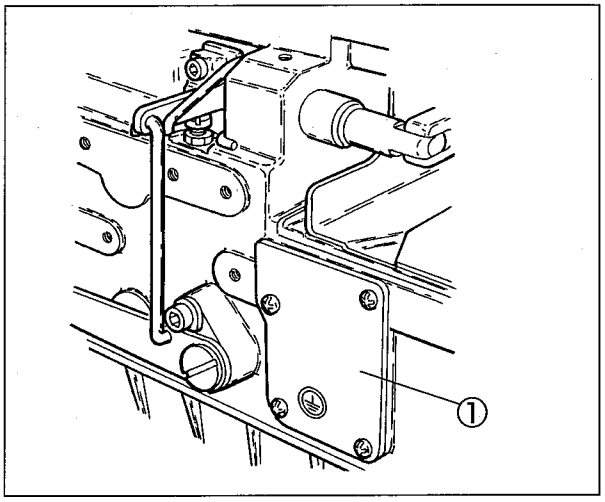


Fig. 50

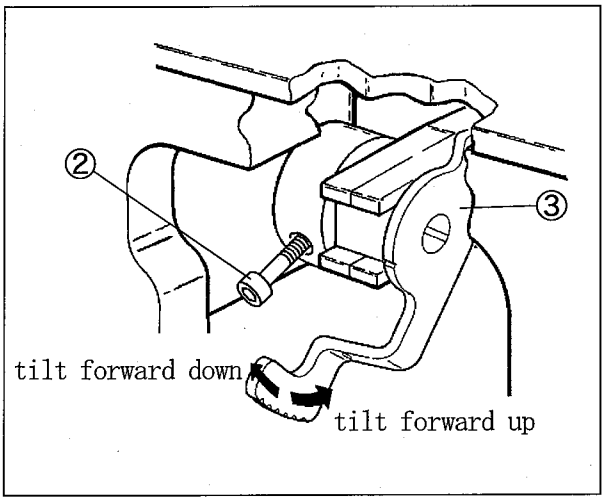


Fig. 51

6.9 Adjusting needles and loopers

Adjust the following procedure:

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

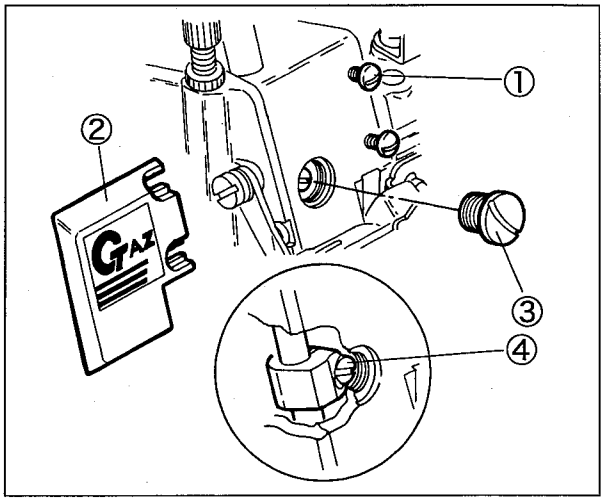


Fig. 52

6.9.1 Height of needle

(1) Loosen the screws① and remove the logo plate ②. (Fig. 52)
(2) Remove the screw③.
(3) Raise the needle bar at the highest point while rotating the machine pulley.
(4) Loosen the screw④ and adjust the needle bar while moving it up and down.

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

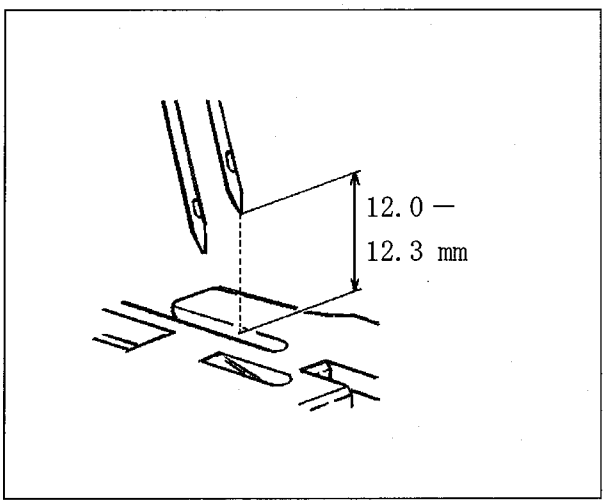


Fig. 53 AZ7600G-1

NOTE

1. **The tightening torque of the screw④ on the needle bar connecting bracket is 1.5N·m(15kgf·cm).**
2. **Apply the liquid gasket to the screw when tightening it.**

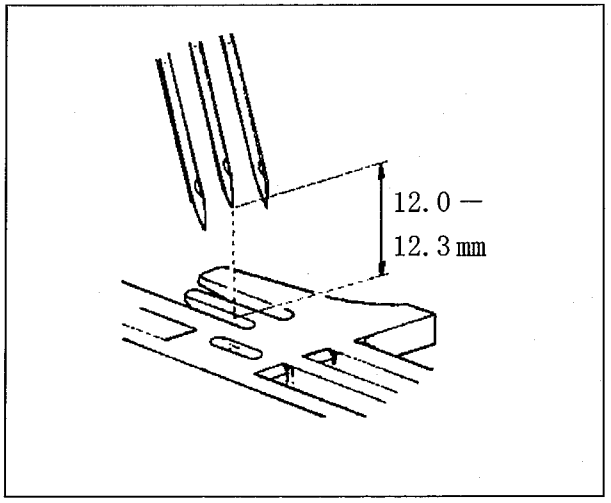


Fig. 54 AZ7620G-1

6.9.2 Installing angle of lower looper

To set the standard position, install the angle of 2 — 3° to the lower looper ①.
Loosen the screw ② to adjust rear of the lower looper 0.5 — 1.0 mm above the lower looper tip. (Fig. 55)

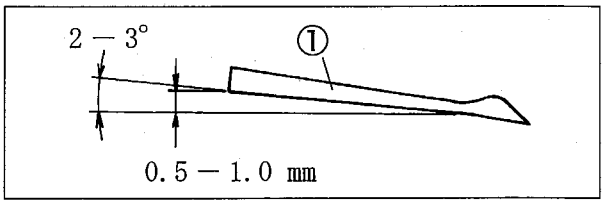


Fig. 55

6.9.3 Distance between needle and lower looper

Rotate the machine pulley clockwise and move the lower looper ① to the extreme left. Make the distance between the lower looper tip and the center of the needle to 4.0 — 4.5 mm.
Loosen the screw ③ on the lower looper holder to adjust it.

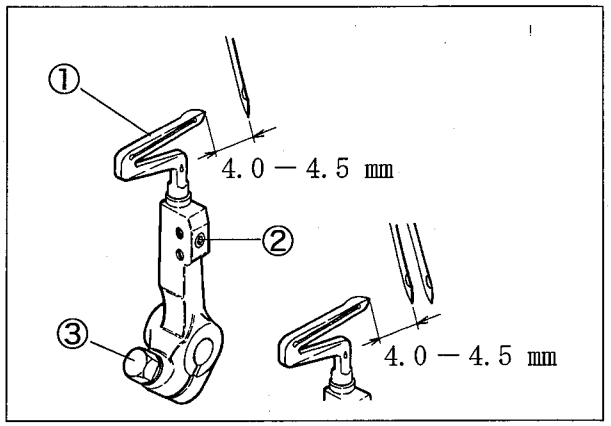


Fig. 56

6.9.4 Front-and-rear position of lower looper

Single needle overlock stitch on AZ7600G-1:

Loosen the screw ③ to make the clearance between the lower looper tip and the needle to 0—0.05 mm.

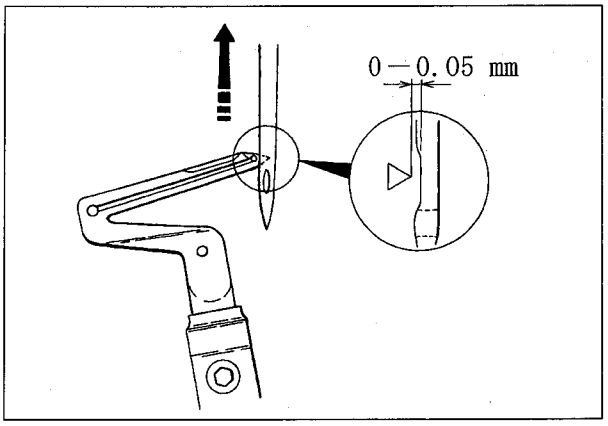


Fig. 57

2-needle overlock stitch on AZ7620G-1:

(1) Loosen the screw ③ to make the clearance between the lower looper tip and the left needle to 0 — 0.05 mm while loosening the screw ③.
(2) Make the clearance between the right needle and the lower looper to 0—0.05 mm when they meet with. Loosen the screw ④ and adjust it while turning the needle clamp slightly.
See "6.8.2 Height of needle" on page 28.

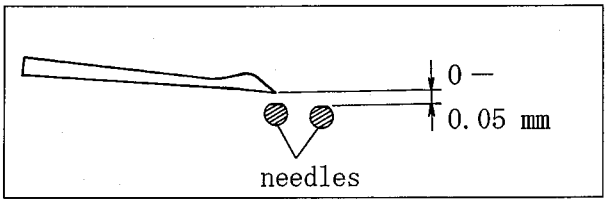


Fig. 58

NOTE

Tighten the screw ④ after checking the height of needle. When adjusting front-and-rear position of the lower looper, tighten the screw ③ after checking the distance of the lower looper.

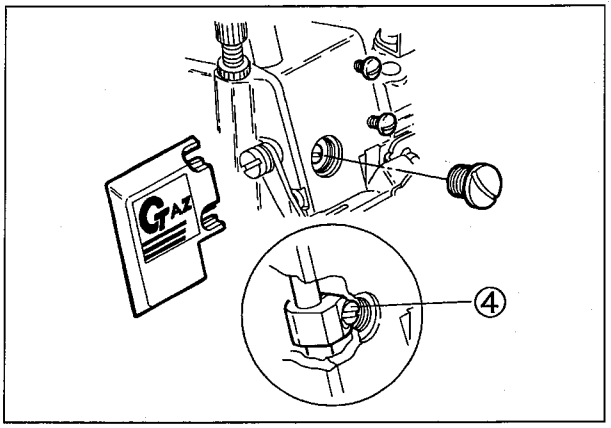


Fig. 59

6.9.5 Distance between needle and upper looper

Rotate the machine pulley clockwise and move the upper looper① to the extreme left. Adjust the distance between the tip of the upper looper and the center of the needle to 5.0 — 5.5 mm.

(1) Remove the thread eyelet support, the looper thread eyelet, and the looper holder cover.
(2) Loosen the screw② of the upper looper bar crank arm to adjust it.

⚠ CAUTION

Apply the liquid packing to the mounting part of the frame when installing the looper holder cover.
If not, it can cause oil leakage.

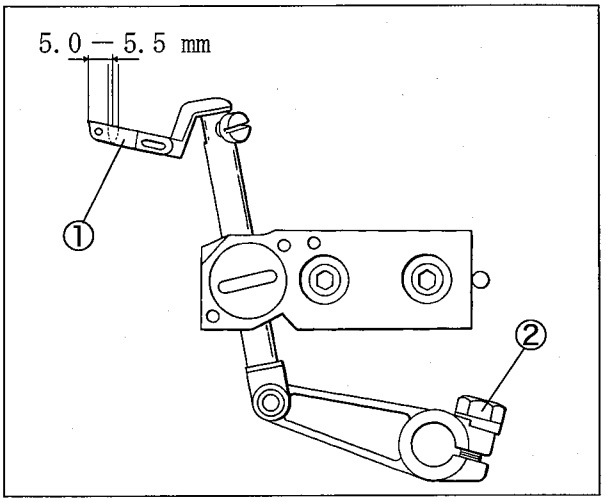


Fig. 60

6.9.6 Front-and-rear position of upper looper

The thick portion (around eye) of the upper looper is close to the needle when the upper looper① moves from the extreme left to the right while rotating the machine pulley clockwise.

Adjust the clearance between the back side of the upper looper① and the needle to 0.05 — 0.1 mm by loosening the screw③.

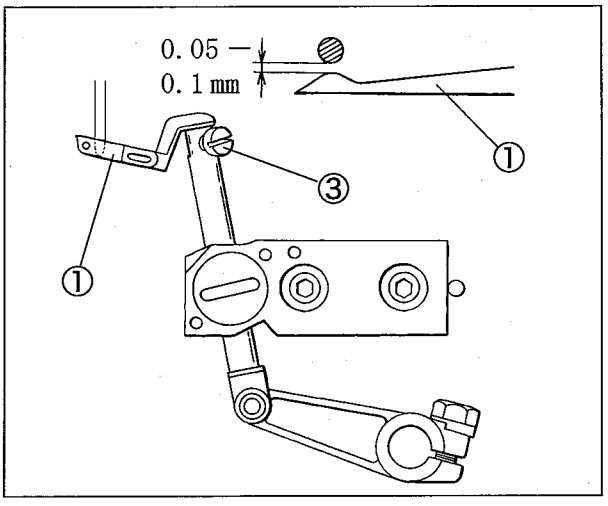


Fig. 61

6.9.7 Timing between lower looper and upper looper

Check that the clearance is 0.05 — 0.1 mm between back and forth and 0.05 — 0.3 mm between right and left when the lower looper① meets with the upper looper② while rotating the machine pulley clockwise.

It is correct if the timing is in those range of clearances.

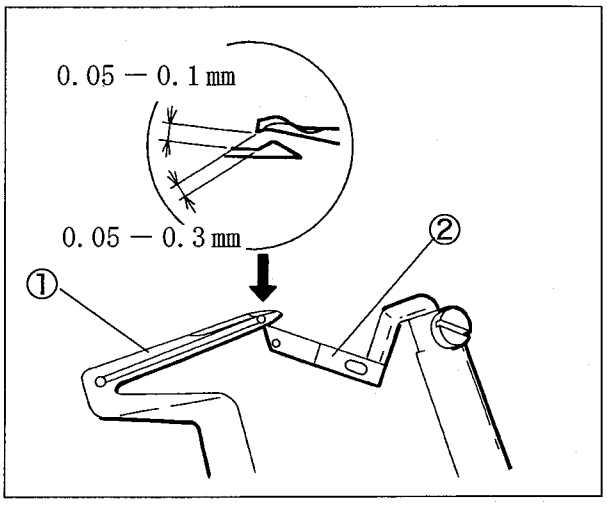


Fig. 62

6.10 Needle and double chaining looper

Timing

To set the height, insert the double chaining looper③ into the looper holder until it touches the holder pin.

Adjust the distance between the center of the double chaining needle④ and the tip of the double chaining looper to 2.3 — 2.5 mm when the double chaining looper③ is at the extreme left with loosening the screw⑤.

Adjust the distance so that the tip of the looper touches the double chaining needle④ slightly.

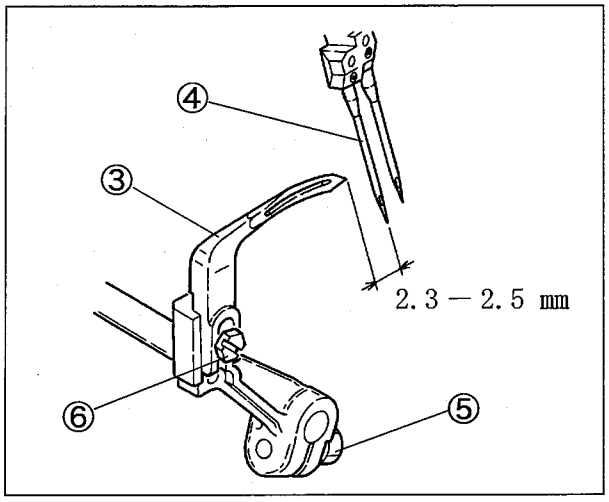


Fig. 63

Front-and-rear position:

Adjust the tip of the looper③ to where is as close as possible to the needle(but does not touch the needle), when it pass behind the needle.

Adjust the needle to where touches the back of curved portion of the looper slightly when the looper moves from the right to the left(the needle falls down behind the looper).

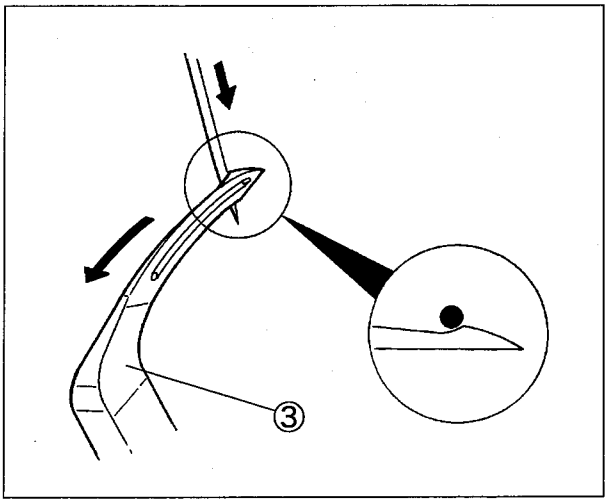


Fig. 64

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 in this machine.
The needle guard(rear) ① holds the needle in the back and guard the tip of the lower looper when the needle meets the tip of the lower looper on the way rising from the lowest point.

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

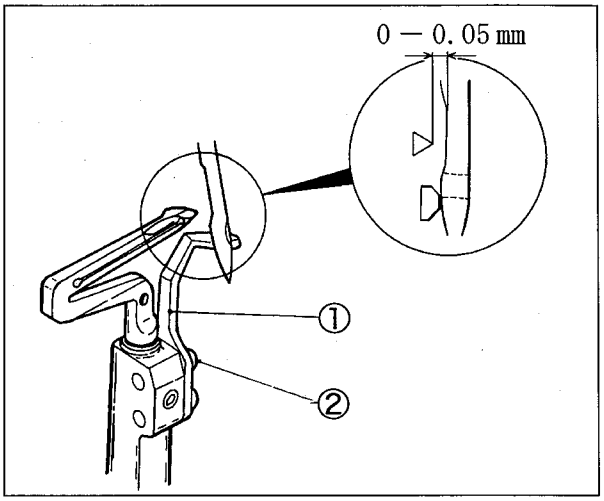


Fig. 65

6.11.2 Needle and needle guard(front)

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

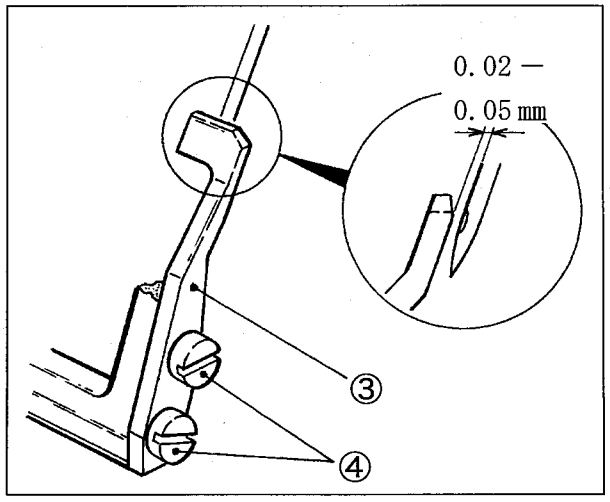


Fig. 66

6.11.3 Needle and needle guard for double chainstitch

Needle guard(rear) (double chainstitch):

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

Needle guard(front) (double chainstitch):

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

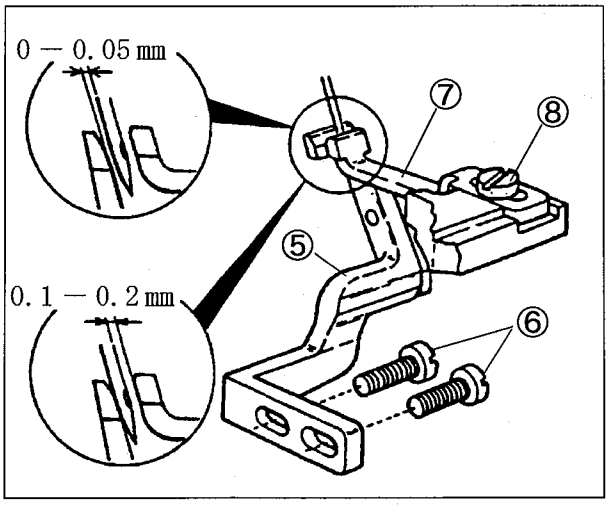


Fig. 67

6.12 Adjusting the position of presser foot

Install the bottom surface of the presser foot parallel to the stitch plate when see them from the front.
Slanted presser foot can cause feeding scratch mark.

For front-and-rear position, adjust the clearance between the needle drop of the presser foot and that of the stitch plate to 0－0.2㎜ as shown in Fig. 68.
Loosen the screw① to adjust it.

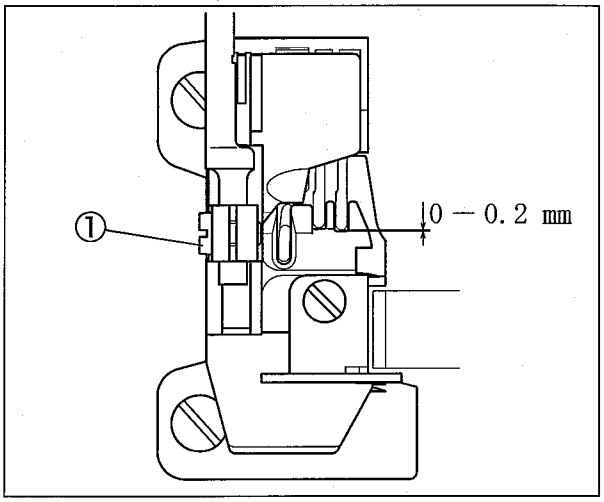


Fig. 68

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.

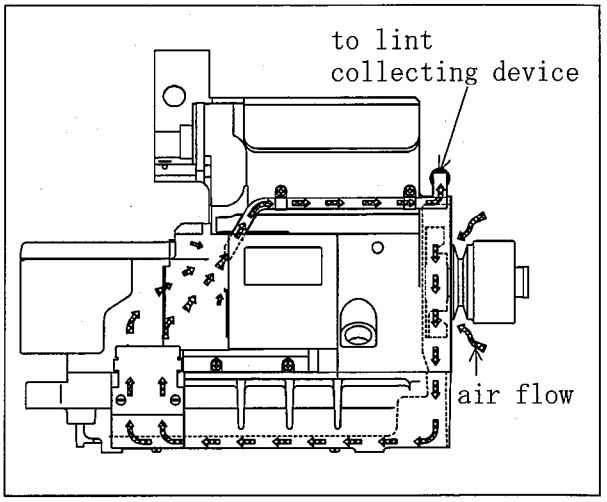


Fig. 69

7.2 Adjusting ventilating amount

Select the type of setting by changing the position of the air deflector① depending on the sewing speed and sewing condition.

To set the standard position, insert the air deflector① into the guides② and ③. (See Fig. 70) For high speed and less dust sewing, insert the air deflector① into the guides② and ④. (See Fig. 71)

When not using SC10 device, remove the air deflector①.

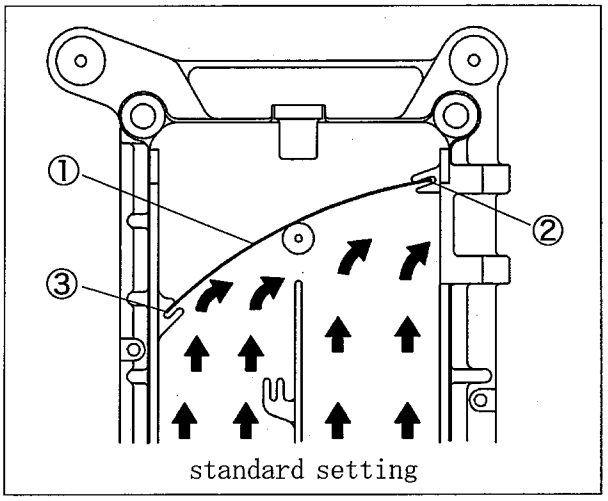


Fig. 70

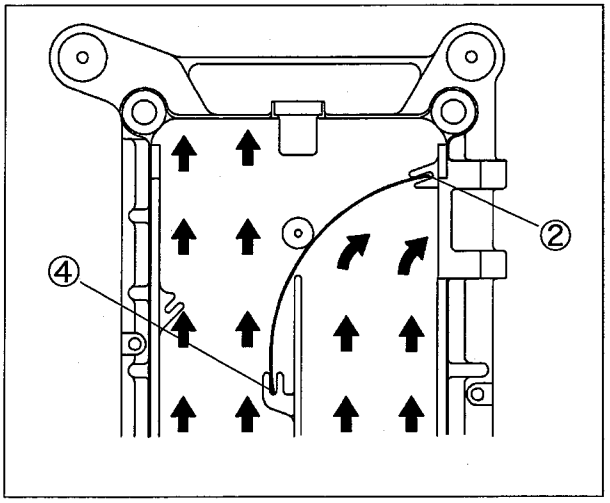


Fig. 71

7.3 Installation

7.3.1 Installing air deflector

(1) Drain the oil from the machine.
(2) Tilt the machine backward.
(3) Loosen two screws④ and remove the wind guide plate②.
(4) Install the air deflector③ into the guides⑤ of the oil reservoir① securely.
(5) Reset the wind guide plate②.
(6) Raise the machine upright and supply the oil.

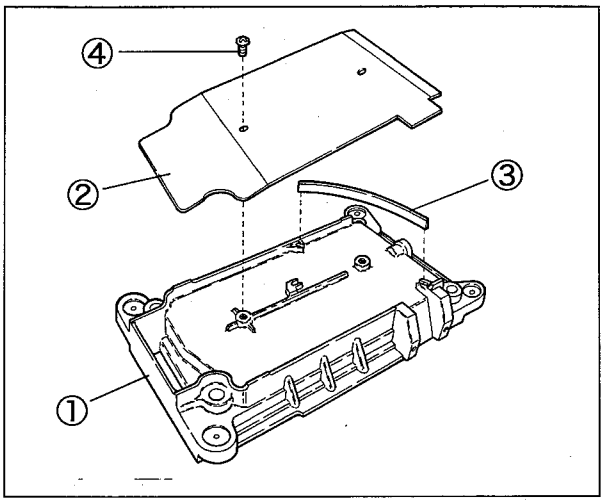


Fig. 72

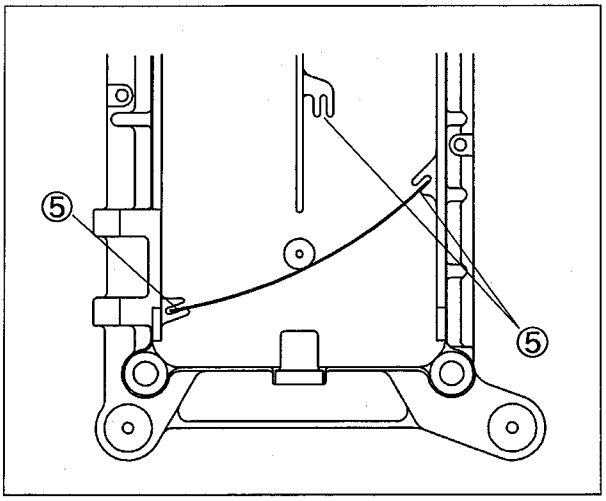


Fig. 73

7.3.2 Installing blowing hole screen

(1) Install the blowing hole screen⑥ on the oil reservoir①.
(2) Install the wind guide plate(front) ⑦ on the oil reservoir① with two screws⑧ while pressing the blowing hole screen⑥ .

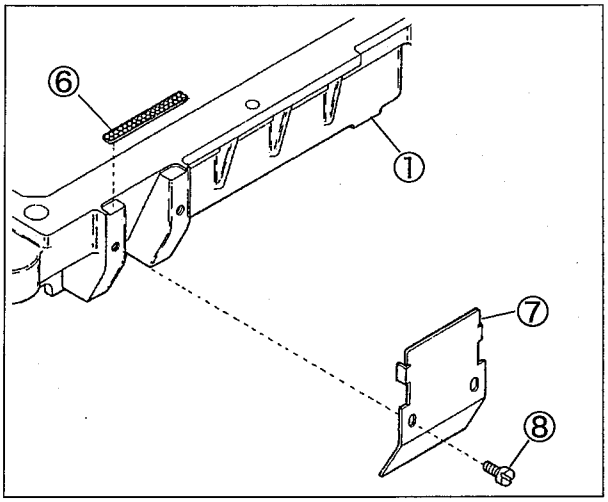


Fig. 74

7.3.3 Installing lint removal pipe

(1) Put two pipe clamps② to the lint removal pipe ①.

(2) Install the lint removal pipe① and the pipe clamps② on the machine frame with two screws ③.

(3) Connect the lint removal pipe① to the pipe from the lint collecting device.

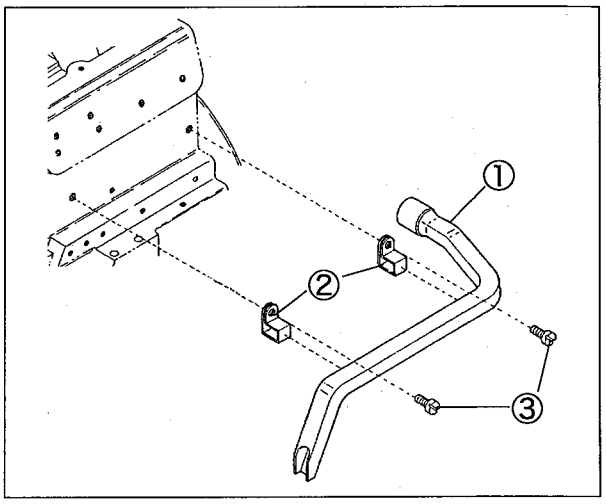


Fig. 75

⚠ CAUTION

Suction will be insufficient if connecting other devices to the lint collecting device except for SC10.
When using ventilation, air pressure should be more than 0.2Mpa(2kgf/cm).

8.Specifications

Model	AZ7600G-1	AZ7620G-1
Dimensions	380 (L) ×245 (W) ×310 (H) mm	
Weight	27 kg	
Construction	Dust-proof, Oil-tight and completely sealed	
Stitch Type	ISO (504, 401)	ISO (514, 401)
Application	Safety stitch of knitted or woven fabrics for heavy weight materials	
Sewing Speed	up to 6,500 rpm	
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 #16～#19 (100～120)	
Needle Stroke	27.1 mm	
Presser Foot Lift	up to 6 mm	
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 cc	
Lubrication	Oil is fed forcedly by gear pump	
Installation	Fully-submerged type and Semi-submerged type	

yamato
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