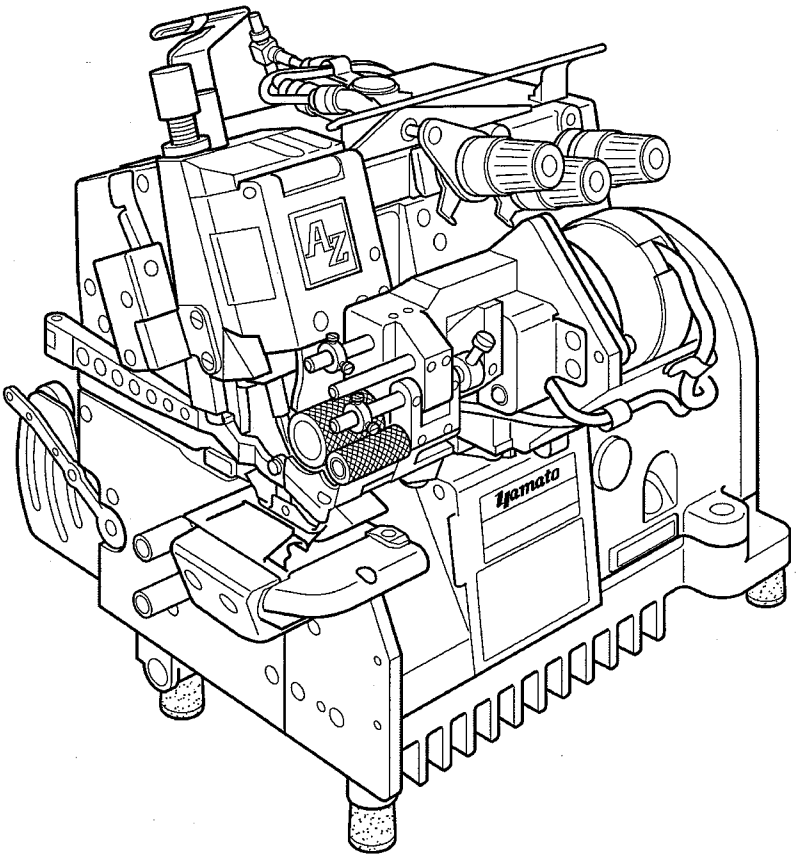
yamato®

INSTRUCTIONS

HIGH SPEED CYLINDER BED OVERLOCK MACHINE

AZ8451



Thank you for purchasing the AZ8451. This instruction manual provides you with information on handling the AZ8451 and precautions on use. Before use, please carefully read this document to understand the contents. The instruction manual should be placed wherever it is accessible easily.

YAMATO SEWING MACHINE MFG. CO.,LTD.

CONTENTS

◇This instruction manual has been prepared mainly for engineers' use. It is, however, recommended that the items marked with be read by operators as well for the proper use of the AZ8451.

◇Each illustration contained in this document is given a figure number in its lower left corner. In the text, such figure numbers are used, as necessary, for your reference to the corresponding illustrations.

⚠ 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 can not 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, 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 judgement.
(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 a 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.

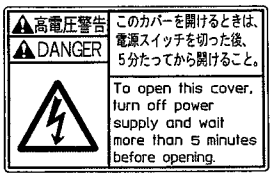
This mark indicates the caution which, if not heeded, may result in minor or moderate injury or machine damage and the note to emphasize essential information.

This mark indicates the warning of electric shock by high voltage.

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.)

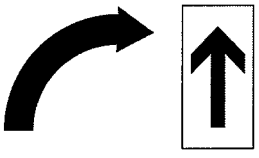


High-voltage applies in the control box. This label indicates that electric shock may be caused.

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.

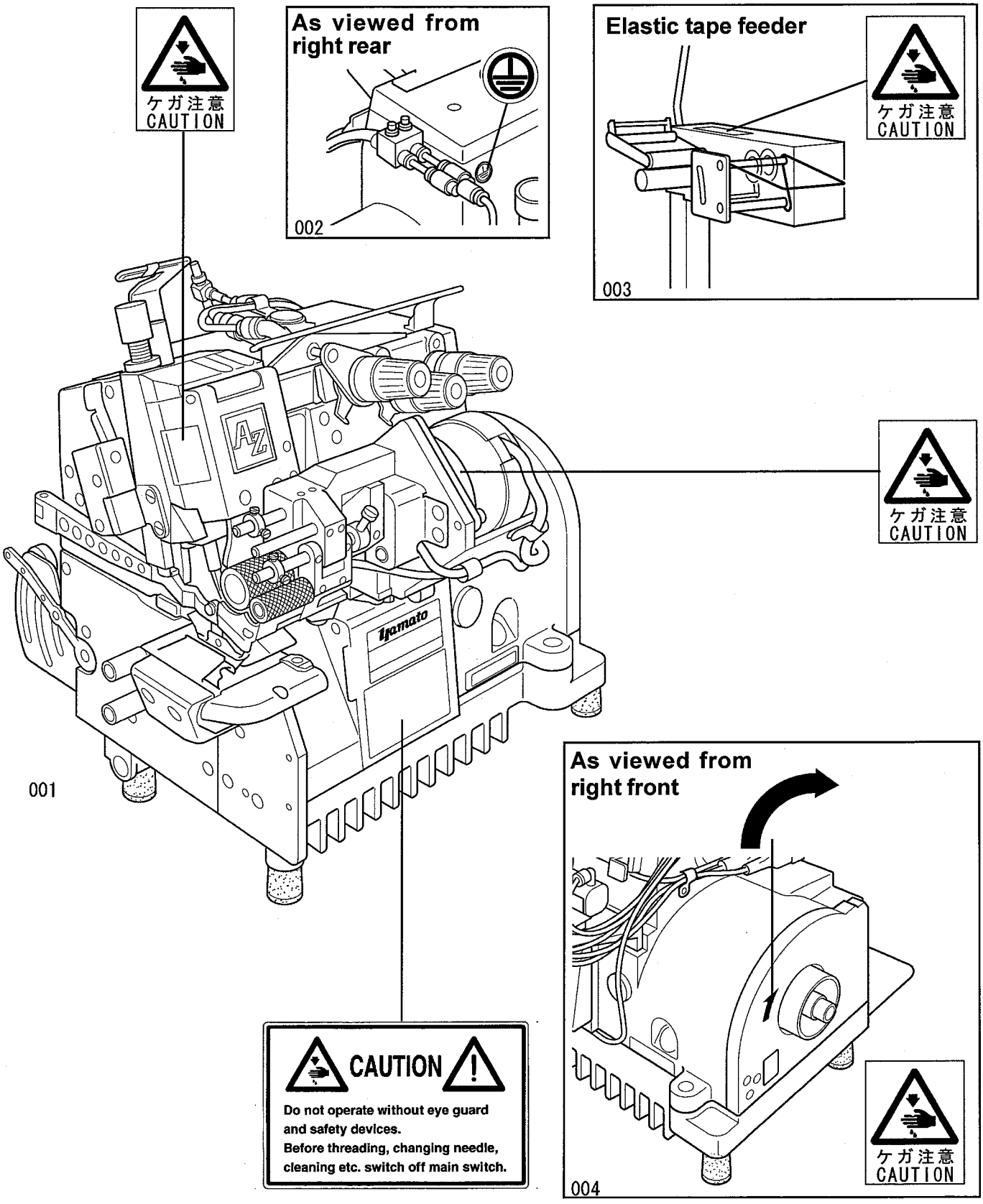
In addition, the malfunction of electric system may cause injury to person.



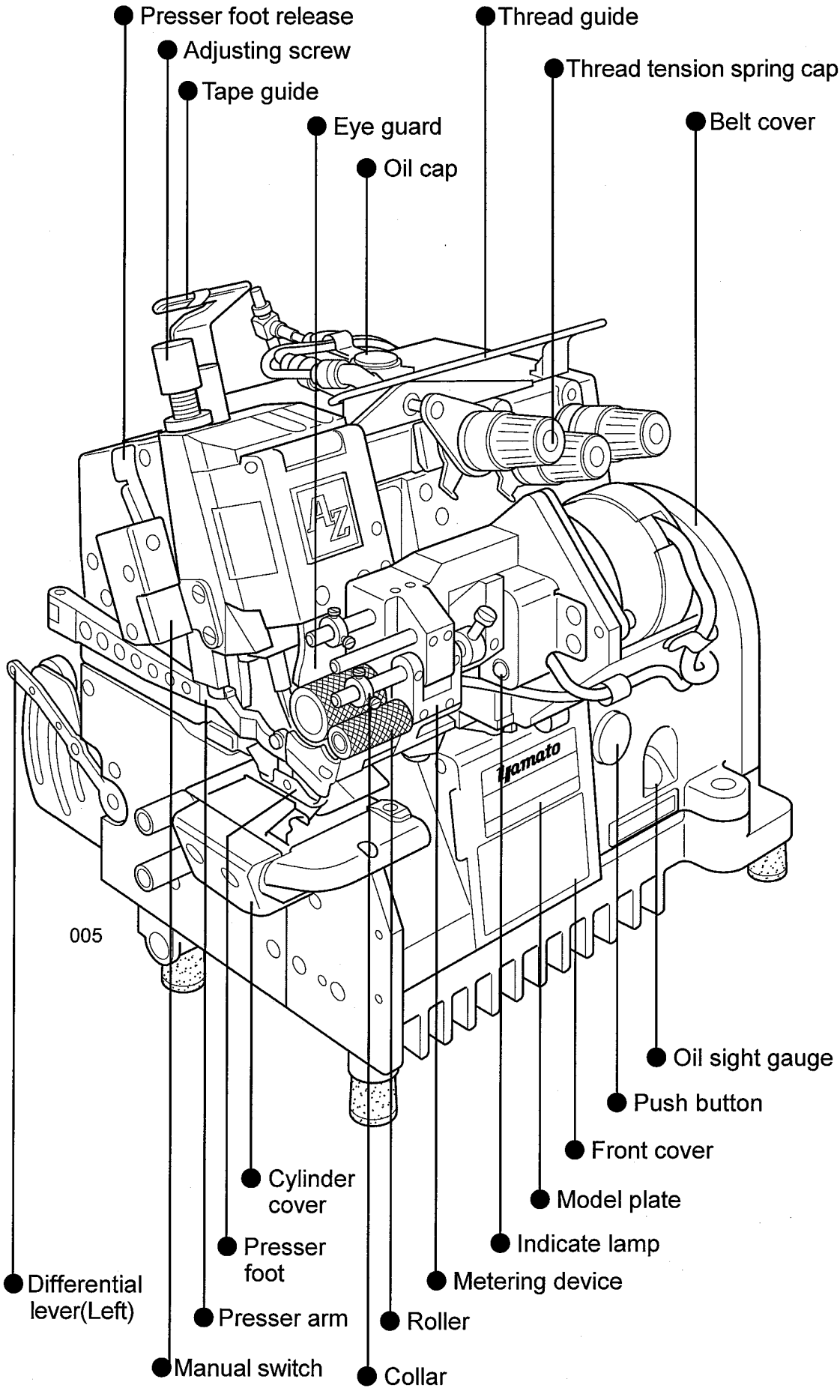
Check the rotating direction of machine pulley agrees with 'ROTATING-DIRECTION SYMBOL'.

6. Location of safety label marking

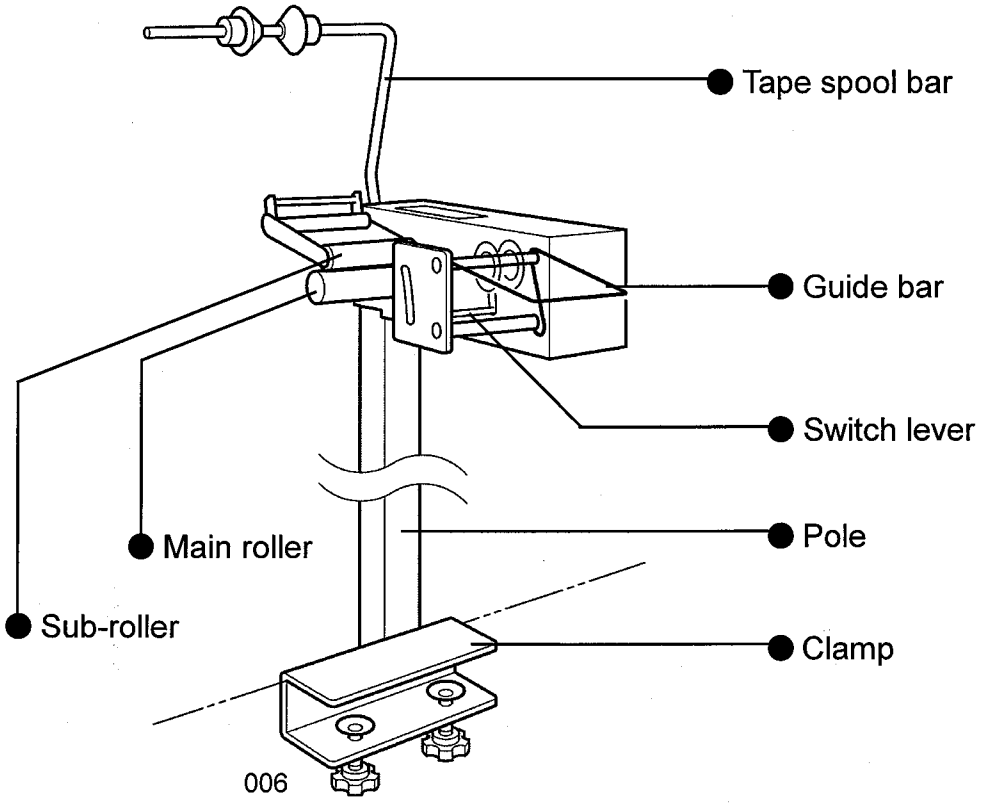
To ensure safety operation, these illustration show the location where the safety label should be marked.
The safety label should be maintained to be free from any contamination or damage. In the event it is damaged or lost, be sure to provide a new one.



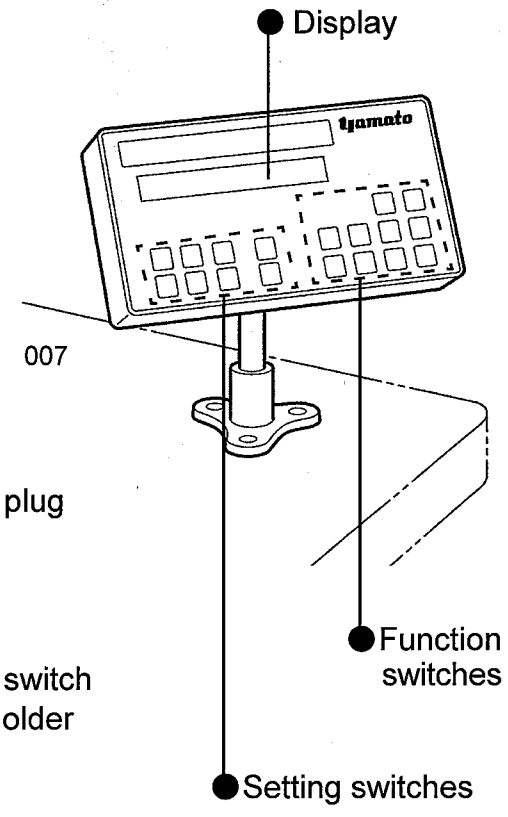
1. Names of the parts



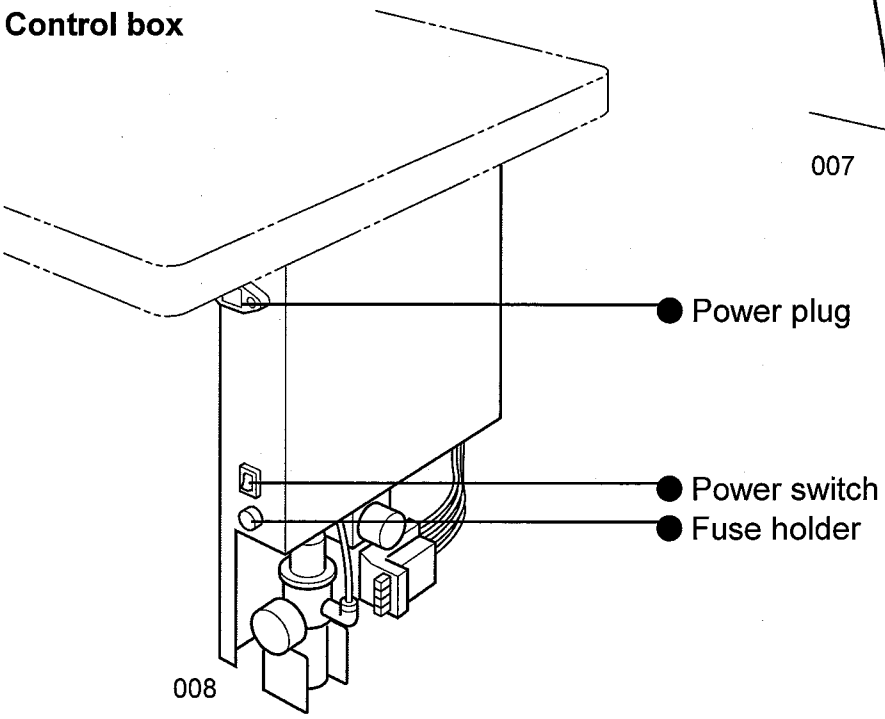
Elastic tape feeder



Operating control panel



Control box



2. Installation

⚠ WARNING

Do not connect the motor power plug into the electric outlet until all installation works are completed. Otherwise, you might get caught by the machine resulting in an injury.

2-1 Installation onto table

Install the machine correctly referring to Figure 009, 011 and 012 for the semi-submerged type A or Figure 010, 011 and 013 for the semi-submerged type B.

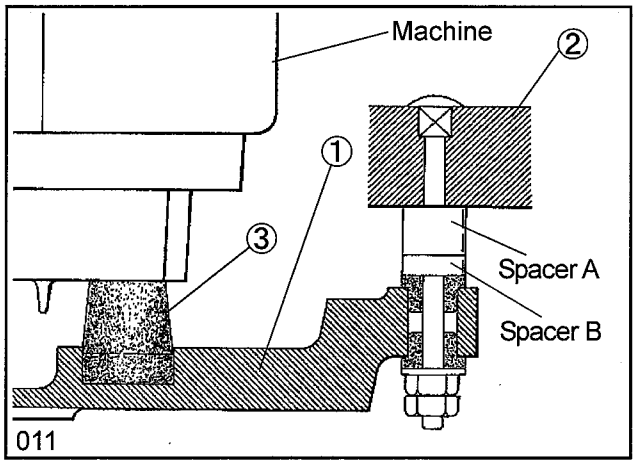
(1) Install the supporting board ① to the table ② with bolts and nuts.

(2) Insert the rubber cushion ③ into the supporting board ① and place the machine securely.
< Positions of rubber cushions >
•Rubber cushion with a shaft (Green)
..... Right rear
•Rubber cushion with a shaft (Black)
..... Right front, left rear
•Rubber cushion without a shaft (Green)
..... Left front

(3) Install the chute ④ to the supporting board ①.

<Only for the semi-submerged type B>

(4) Install the chip receiver ⑤ to the table ②.

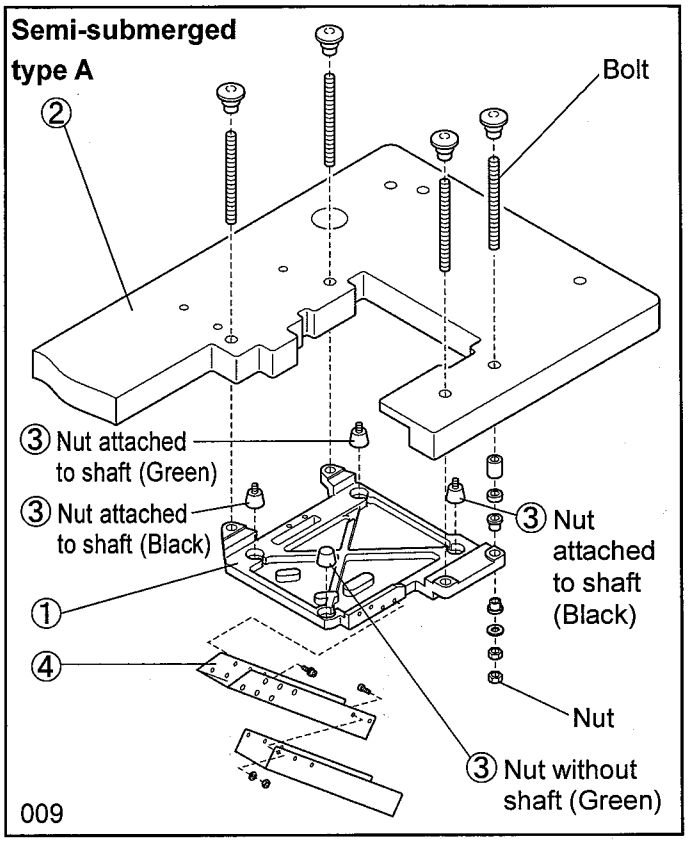


011

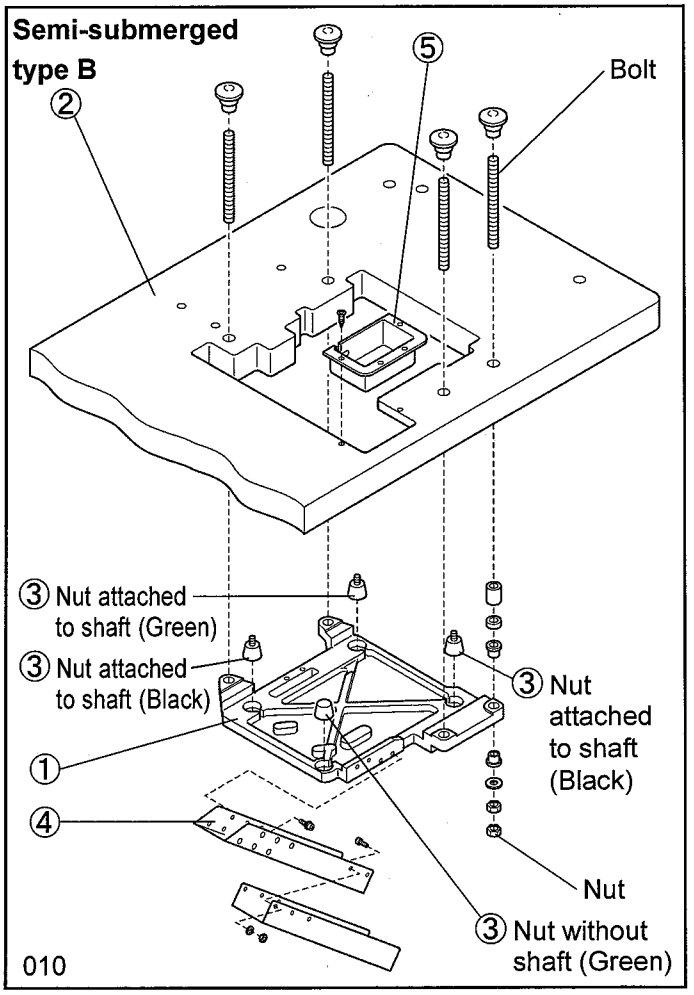
Quantities of spacers A and B

Thickness of table	Quantity of A	Quantity of B
40mm	4	4
45mm	4	Not necessary

Size of spacer: A = 15 m, B = 5 mm

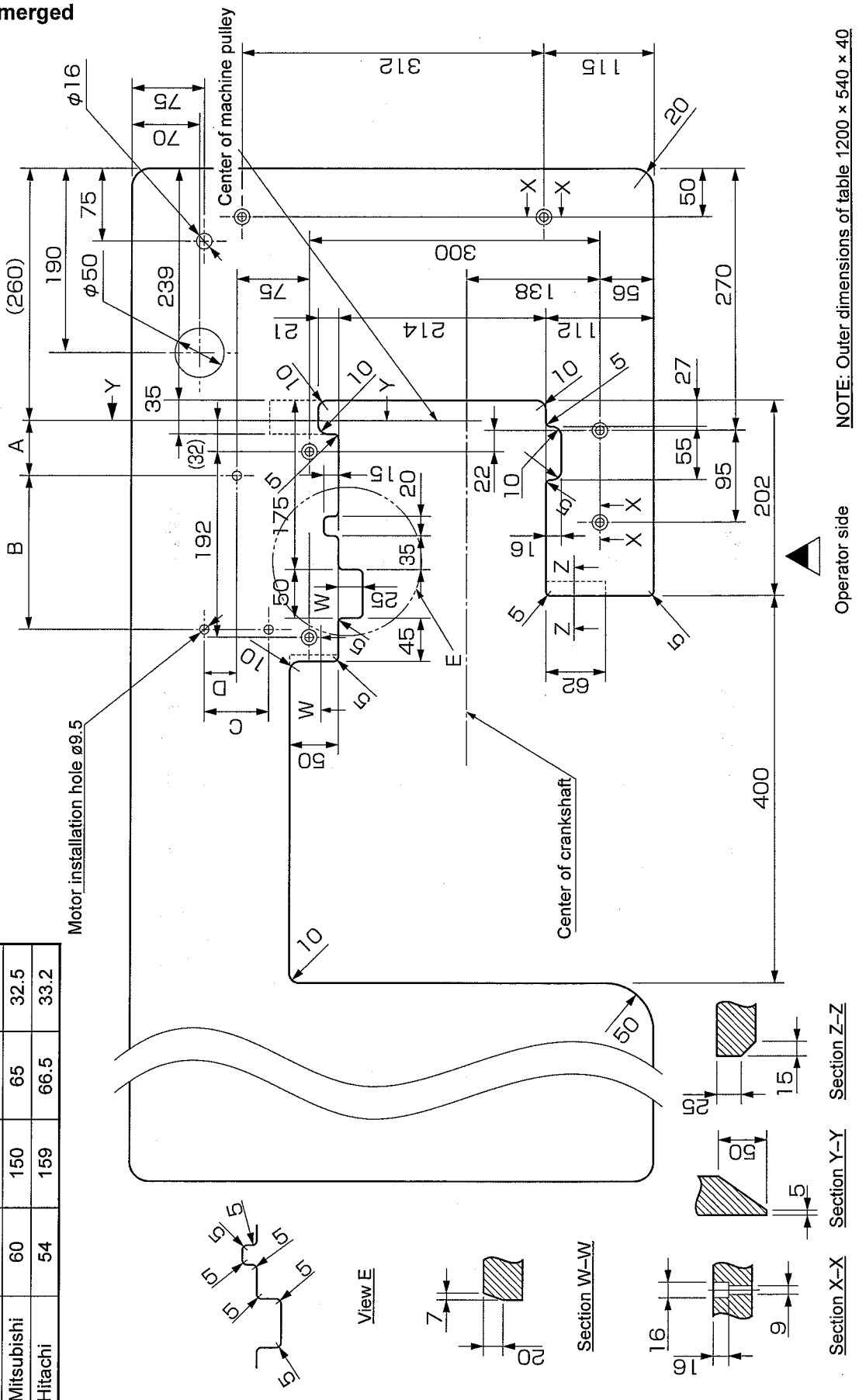


009



010

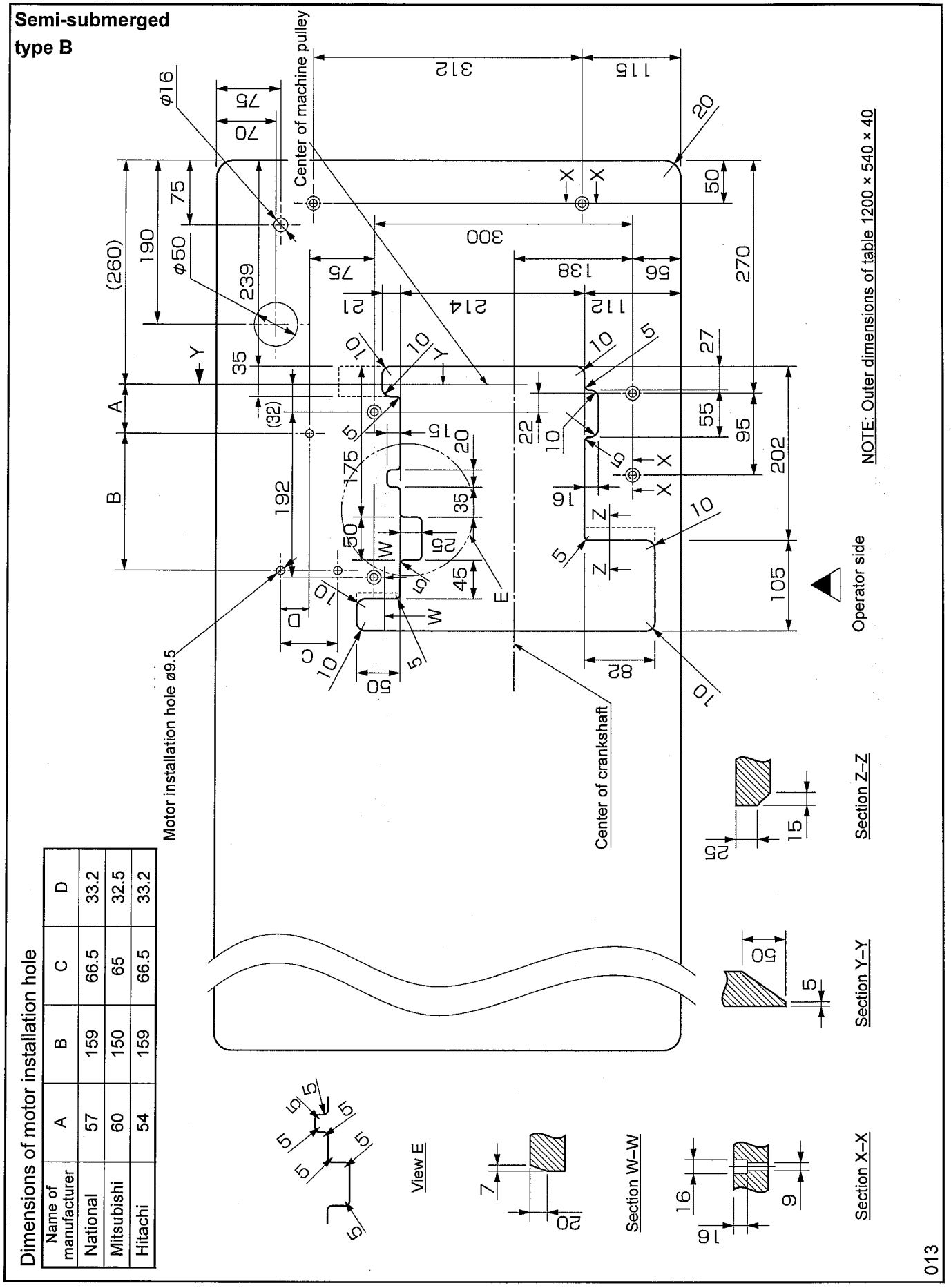
Semi-submerged type A



Dimensions of motor installation hole

Name of manufacturer	A	B	C	D
National	57	159	66.5	33.2
Mitsubishi	60	150	65	32.5
Hitachi	54	159	66.5	33.2

Semi-submerged type B



Dimensions of motor installation hole

Name of manufacturer	A	B	C	D
National	57	159	66.5	33.2
Mitsubishi	60	150	65	32.5
Hitachi	54	159	66.5	33.2

Choosing proper motor pulley and belt

1. Choosing proper motor pulley

The maximum sewing speed of this machine is 6500 r.p.m. (For –10 type, the maximum sewing speed is 5000 r.p.m.)

<Helpful hint>

Run a new machine at 15 - 20% lower rotating speed of its r.p.m. during the first 200 hours (about one month) so that it will offer a long service life in good condition.

⚠ CAUTION

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

2. Regarding belt

Use a V belt of M type.

Motor pulleys and machine's rotating speed

outside diameter of motor pulley (mm)	rotating speed (rpm)	
	50Hz	60Hz
70	-	4500
75	-	5000
80	-	5500
85	4500	6000
90	5000	6500
95	5500	-
100	6000	-
110	6500	-

Note: The table shows the rough relations between motor pulleys' outside diameter and machine's rotating speed when it uses 3-phase, 2-pole, 400W (1/2 HP) clutch motor.

2-2 Installation of motor

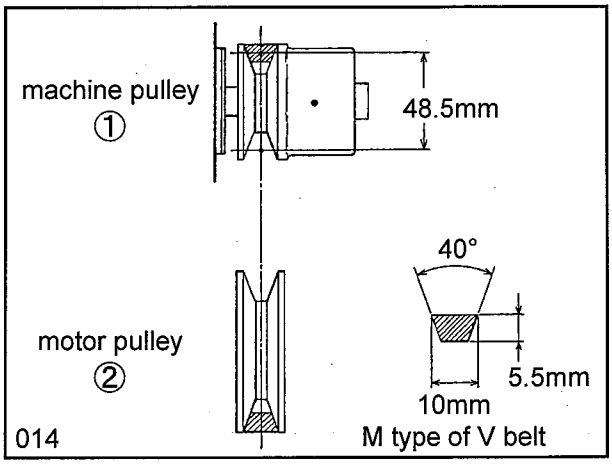
◇ When the pedal is treaded, the motor pulley ② moves to the left. Here, the center of the motor pulley ② and that of the machine pulley ① must be on the same line.

Note: Regarding how to install a motor pulley ②, see the instruction manual for the motor.

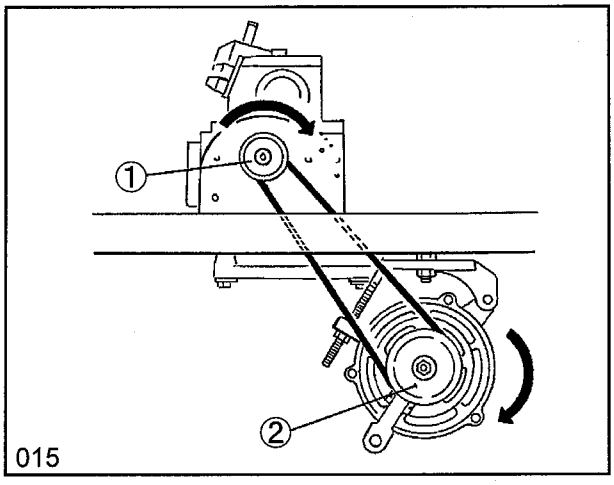
◇ Install the motor so that the machine pulley ① rotates counterclockwise.

⚠ CAUTION

If the machine pulley reverses, oil cannot be supplied properly and the machine can be damaged.



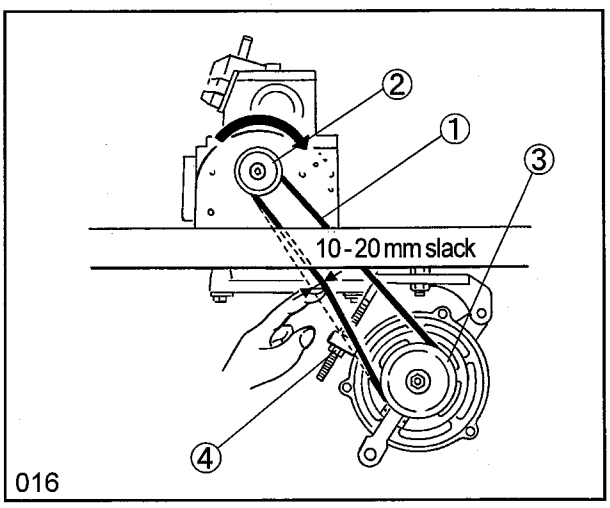
014 M type of V belt



015

2-3 Hanging belt

(1) Hang the belt ① on the machine pulley ②.
(2) While rotating the pulley ②, hang the other end of the belt on the motor pulley ③.
(3) Adjust the belt so that it has 10 - 20 mm slack when its center is pushed with 10 N (1.02 kgf). (After installing the idlers)
(4) After finishing hanging, fix the belt with the rock nut ④.

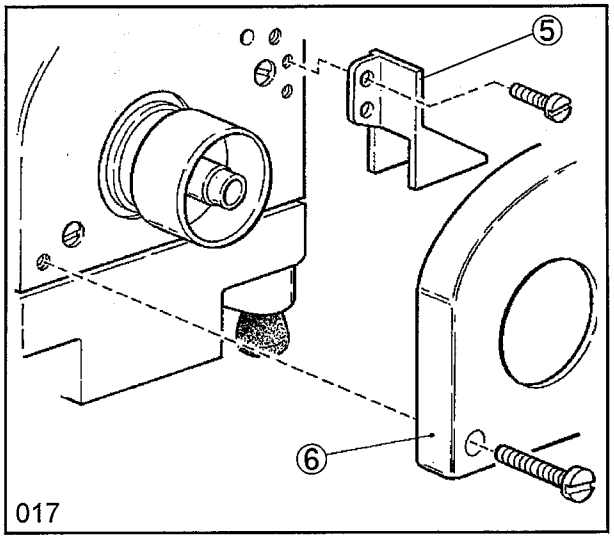


⚠ WARNING

Before changing a belt, ALWAYS turn off the power switch and check if the motor has already stopped.
If not, the belt can entangle in hands and clothes and cause injury.

2-4 Installing belt cover

(1) Install the supplementary belt cover ⑤ to the machine with bolts.
(2) Install the belt cover ⑥ to the machine with bolts.



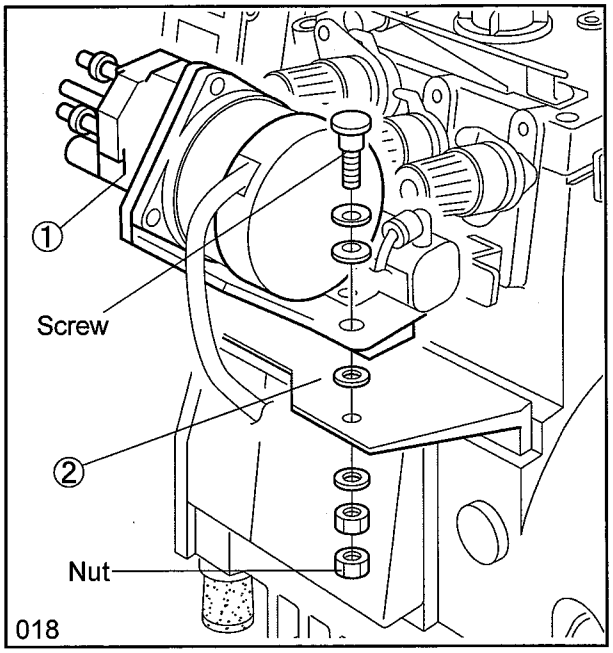
⚠ WARNING

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

2-5 Installation of metering device

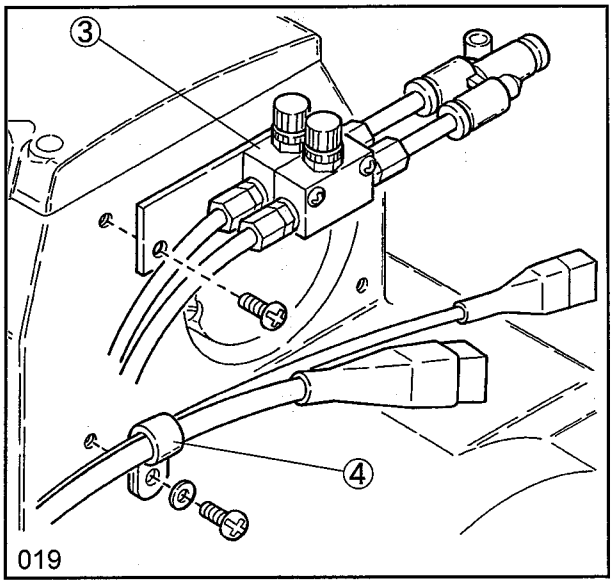
< Standard type >

(1) Fix the metering device ① to the tension roller device basement ② with screws and nuts.

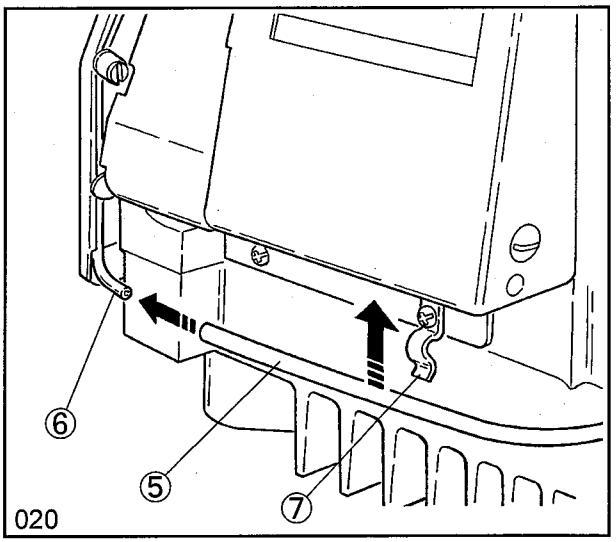


(2) Install the speed controller ③ to the machine with screws.

(3) Hook the cord clamp ④ onto the cords from the stepping motor and the display lamp and attach it to the machine with a screw.

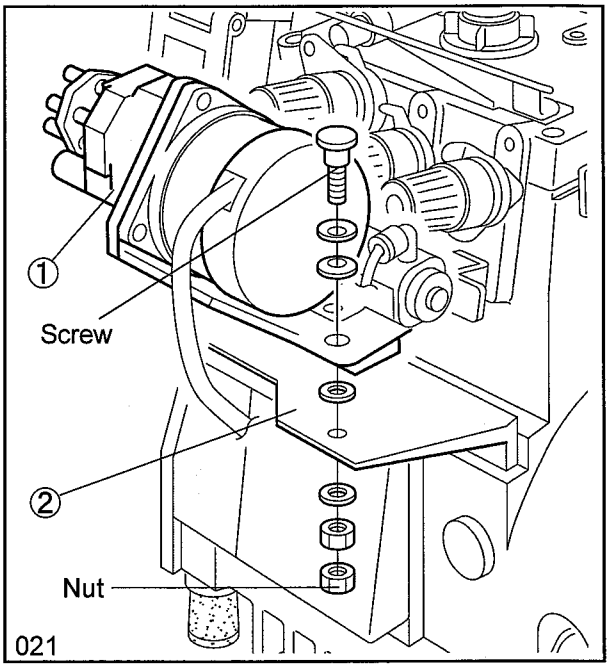


(4) Insert the pipe ⑤ of the speed controller into the air pipe ⑥ and secure it by the pipe support ⑦.

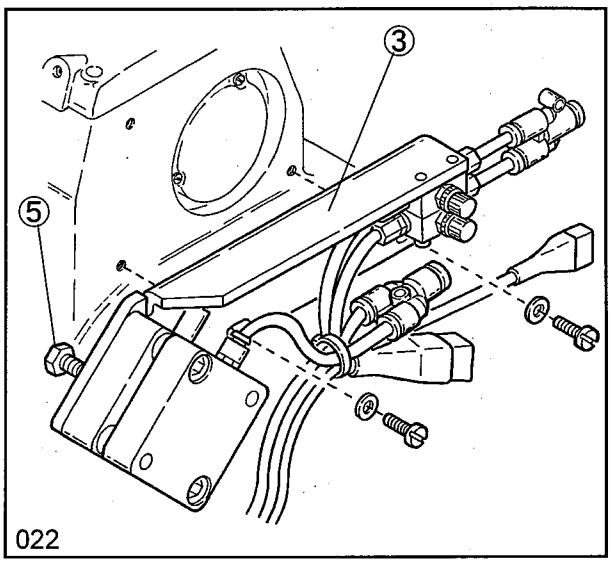


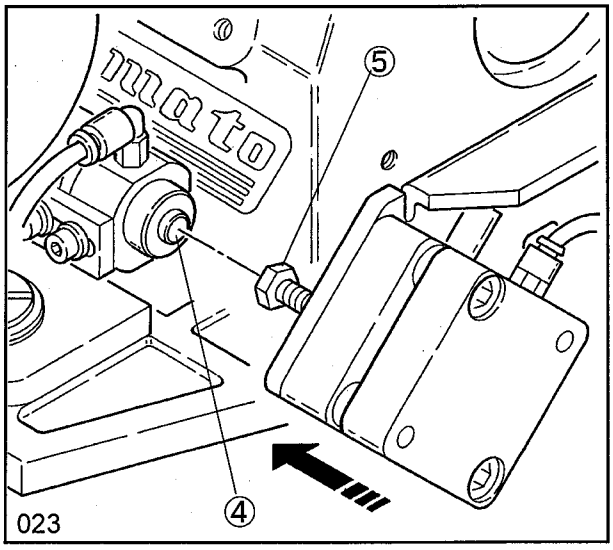
< –10 type >

(1) Fix the metering device ① to the tension roller device basement ② with screws and nuts.

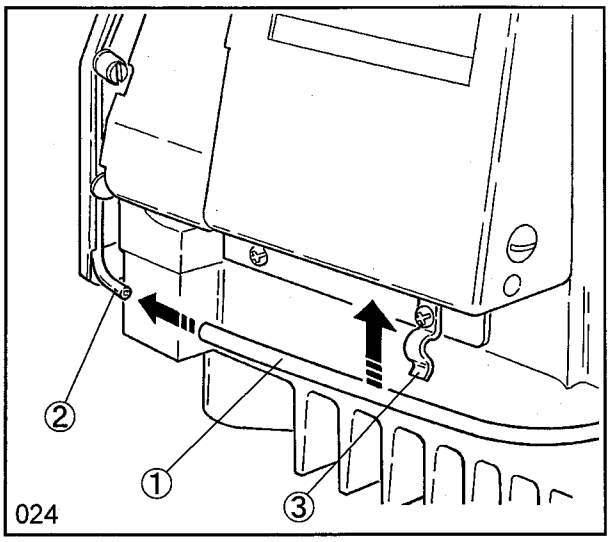


(2) Install the cylinder bracket ③ to the machine using screws.
Make adjustment so that the center of the air cylinder rod ④ is aligned with that of the bolt ⑤ of the cylinder bracket and fix them securely.



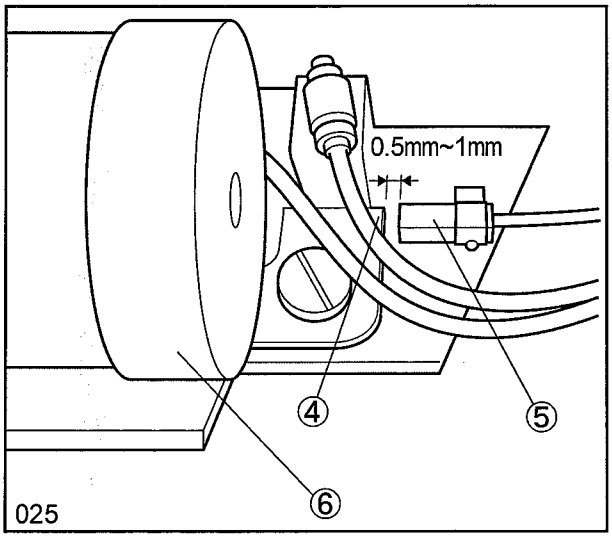


(3) Insert the pipe ① of the speed controller into the air pipe ②, and fix it with the pipe support ③.



< Adjustment of clearance with metal sensing switch >

Check the clearance between metering device installation part ④ and the metal sensing switch ⑤ is in a range of 0.5 mm - 1 mm. Turn ON the power switch and see if the lamp of the switch ⑤ lights up. Check this lamp goes off when the metering device ⑥ is opened.

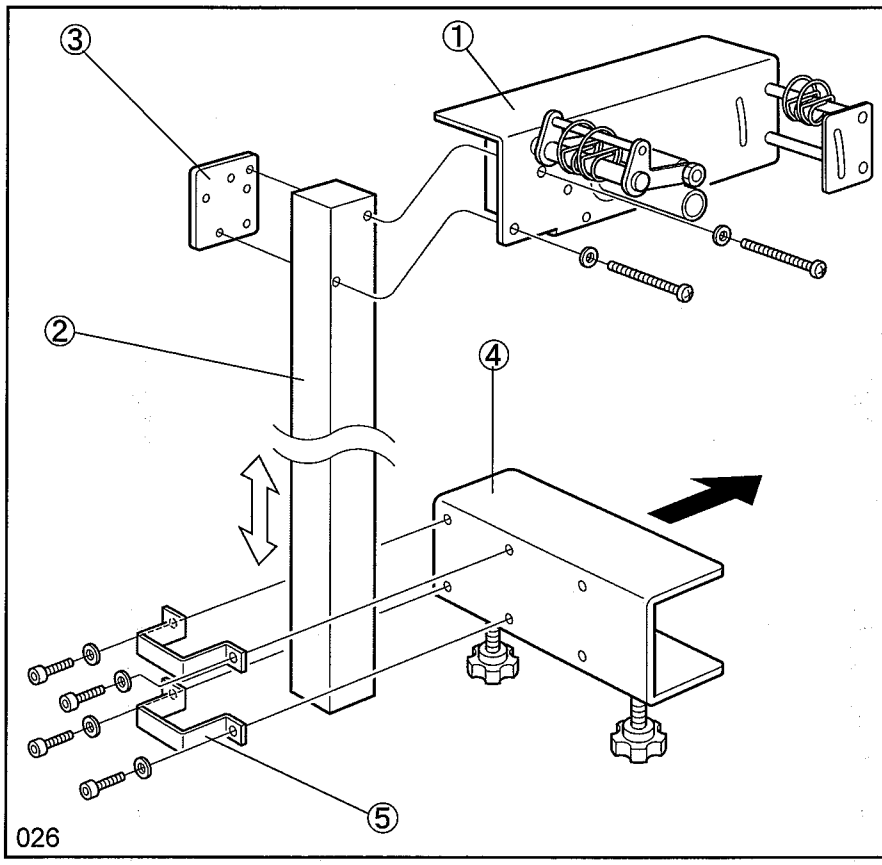


⚠ CAUTION

The clearance between metering device installation part and the metal sensing switch should be 0.5 mm - 1 mm. If it is more than 1 mm, the metal sensing switch may not be actuated and the cutter may not be operated. If there is no clearance (less than 0 mm), the metal sensing switch will be borken.

2-6 Installation of tape feeder

(1) Install the tape feeder ① to the pole ② with bolts and the tape spool bar plate ③.
(2) Fix the pole ② to the clamp ④ with the supporter ⑤ and bolts.
(3) Install the clamp ④ to the table.
(4) Install the guide bar ⑥ as shown in Figure 027.



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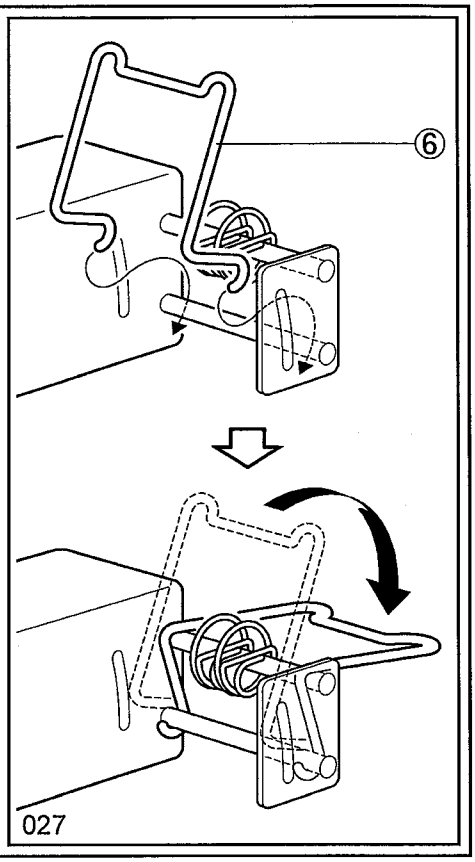
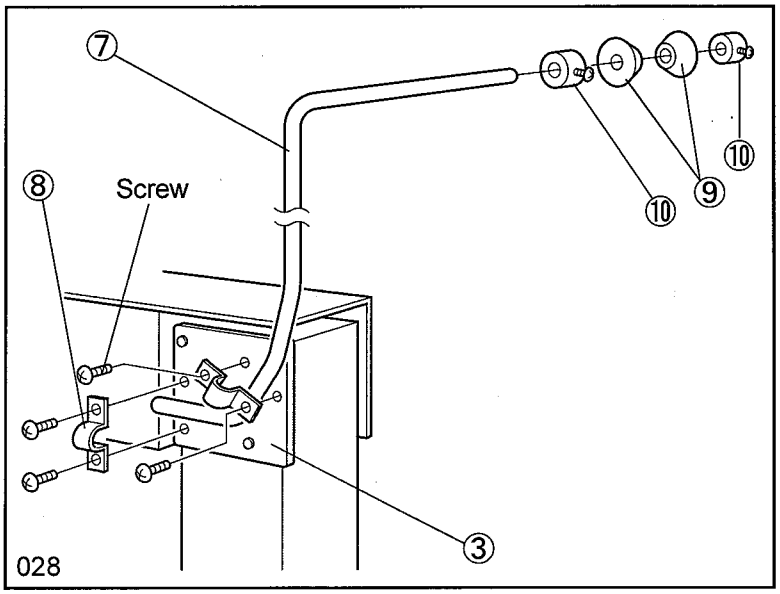


027

(5) Install the tape spool bar ⑦ to the tape spool bar plate ③ with the clamp ⑧ and screws.
(6) Install the tape guide ⑨ and the collar ⑩ to the tape spool bar ⑦.

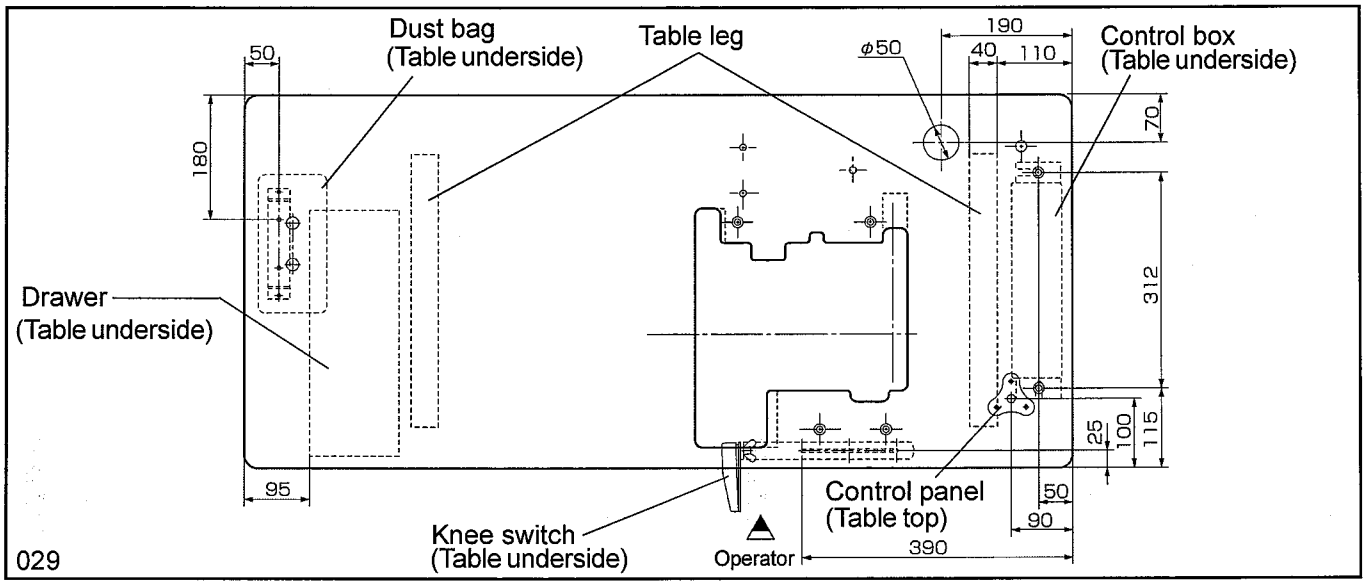


028

2-7 Other installation parts

2-7-1 Installation positions of the other installation parts

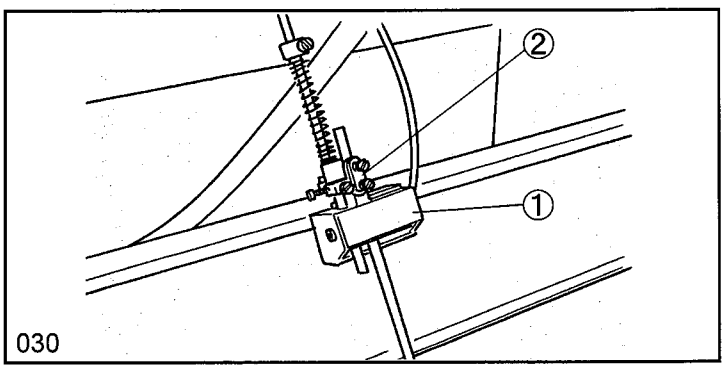
Install each part to the table as shown in Figure 029.



2-7-2 Installation of presser foot lifter switch

Install the presser foot lifter switch ① to the pitman ② that connects between the pedal and the motor lever.

Adjust the pitman ② so that the switch is turned ON when the pedal is pressed again.

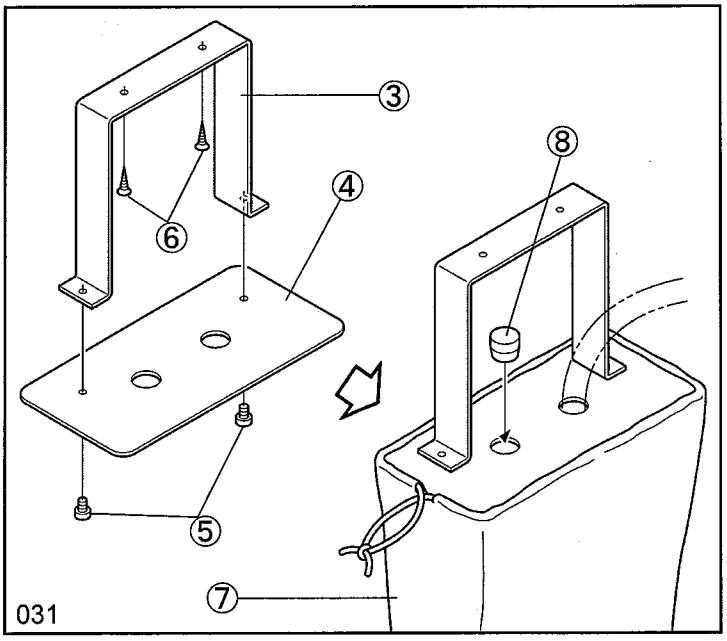


2-7-3 Installation of dust bag

(1) Attach the dust bag lid ④ to the dust bag holder ③ and mount them in the position shown in Figure 029 using wood screws ⑥.

(2) Cover the dust bag ⑦ with dust bag lid ④ and secure it by pulling the string.

(3) Put the seal plug ⑧ into the hole in one side of the dust bag lid ④.



2-8 Checking power voltage

⚠ WARNING

Do not connect the power cord to the service outlet until all installation works are completed.

At factory, the power cord was connected to the 220 - 240 V terminal ① of the voltage transformer (in the control box), and a fuse of 2 A was installed.

◇Check the voltage to be used (supply voltage). In the case of 200 V or 100 V, change the connection to the voltage terminal shown on the voltage information label.

◇At the same time, check the voltage of the power supply fuse. In the case of 100 V, disconnect the fuse holder ② and insert a fuse rated at 4 A.

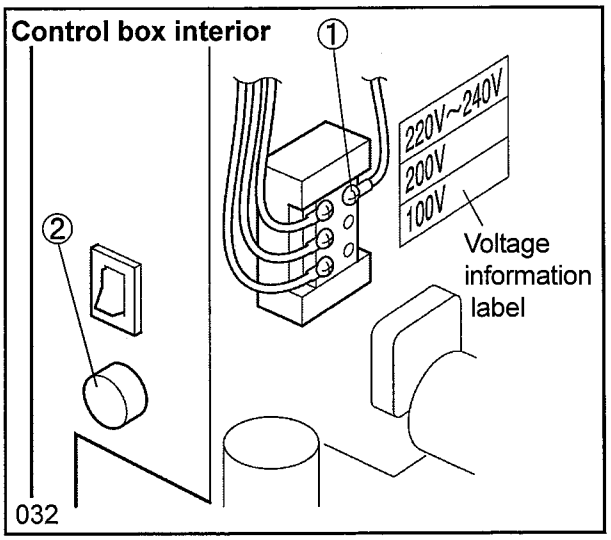
Rating of fuse: 2 A for 220 - 240 V/200 V,
4 A for 100 V

⚠ CAUTION

The voltage used (supply voltage) must be the same as the connection voltage of the terminal board on the control box.

The rating of the fuse must be as specified.

If the voltage is different or any fuse other than the specified one is used, an accident or a machine failure can result.



2-9 Wiring

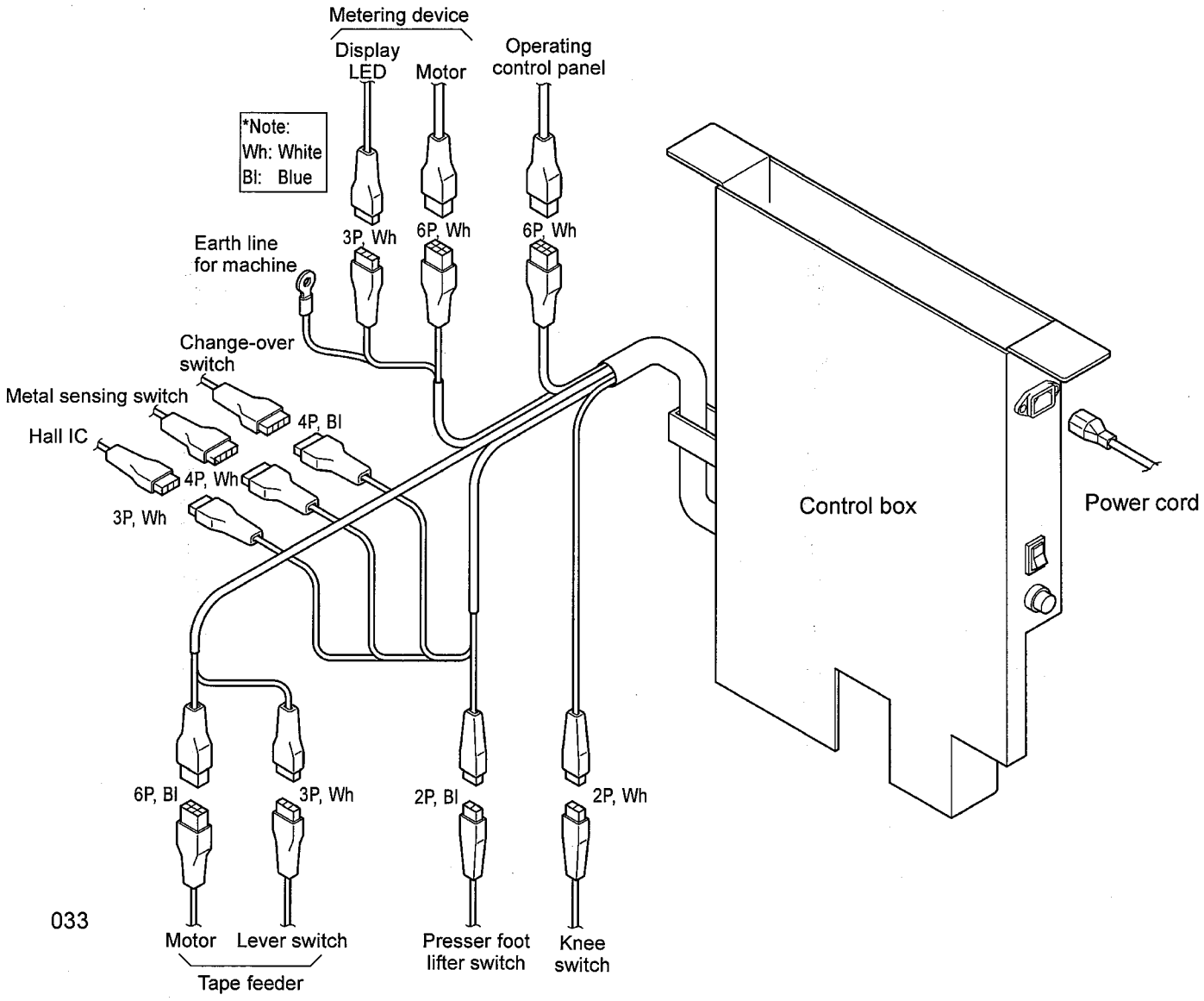
⚠ WARNING

Do not connect the power cord into the service outlet until all installation works are completed.

⚠ CAUTION

The cord may be broken if it is subject to constant contact with any moving article. Hold it to a table leg or any other place where it will not be damaged.

Connect each wiring connector with one that is the same in color and number of pins as shown in Figure 033.

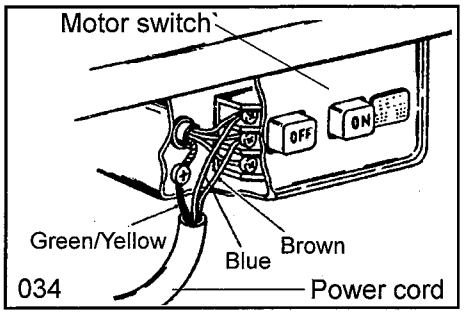


033

< Connection of power cord >

The following describes how to connect the machine to 100 240V powersupply.

Connect the blue and brown power cords to the appropriate terminals of the power switch. The green/ yellow cord is for grounding. Connect it to the same setscrew as used by the grounding cord from the motor as shown in Figure 034.

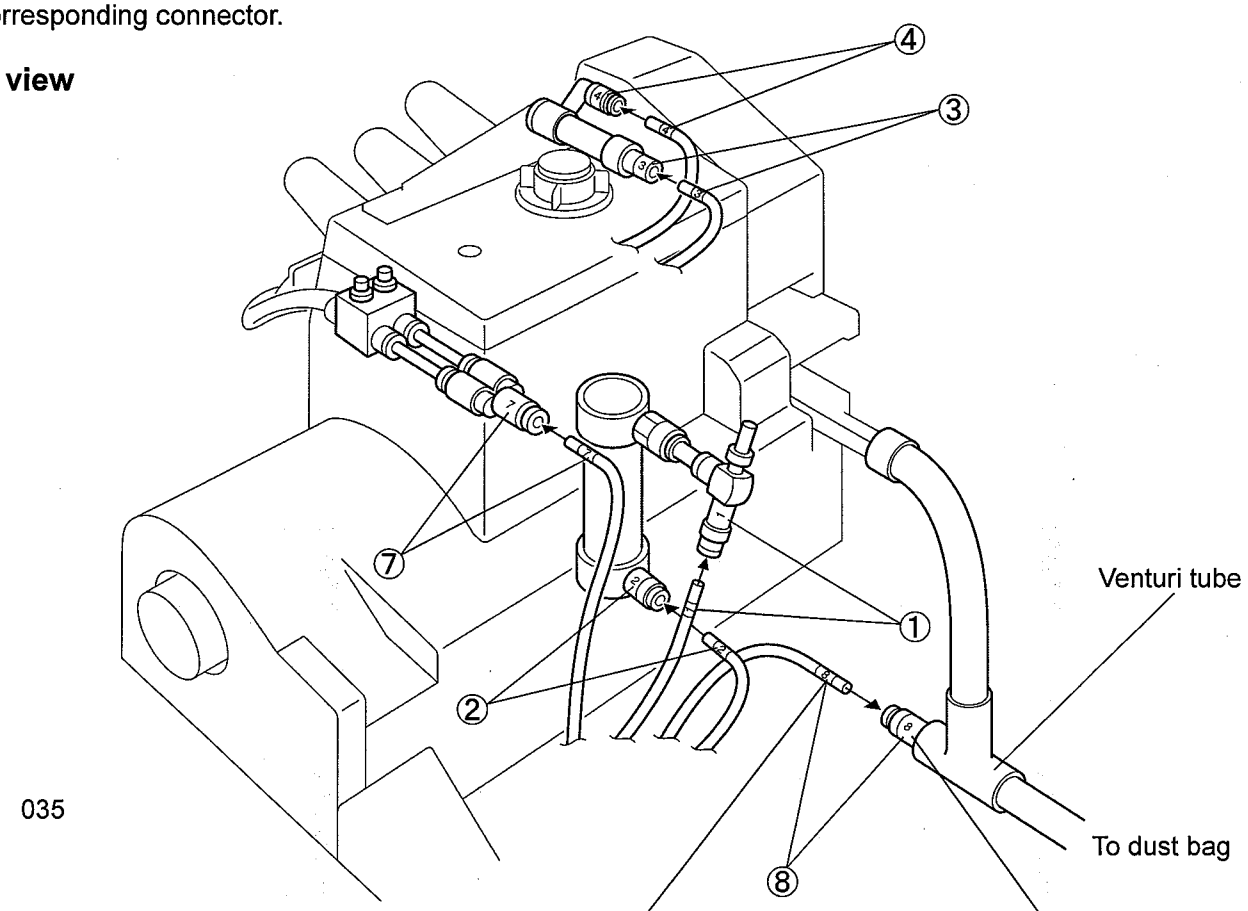


034

2-10 Piping

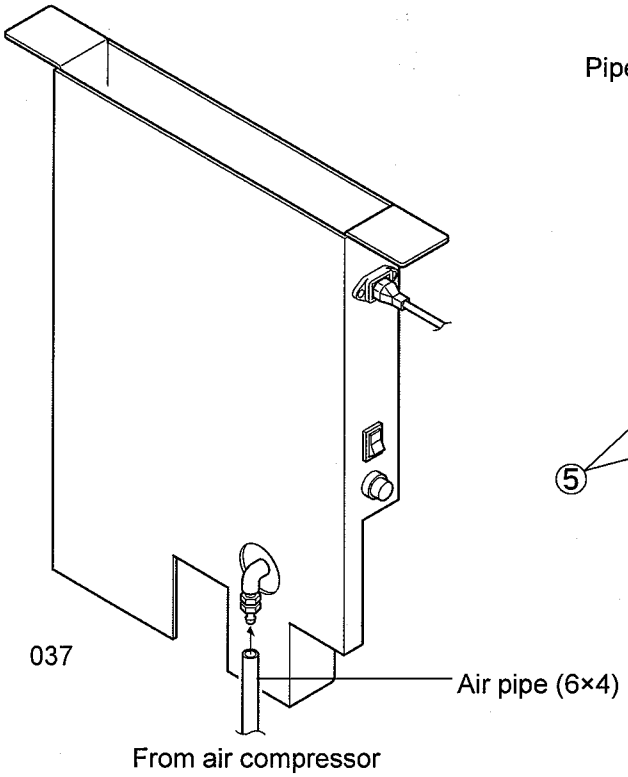
Check the number (label) of each pipe and insert it into the corresponding connector.

Rear view

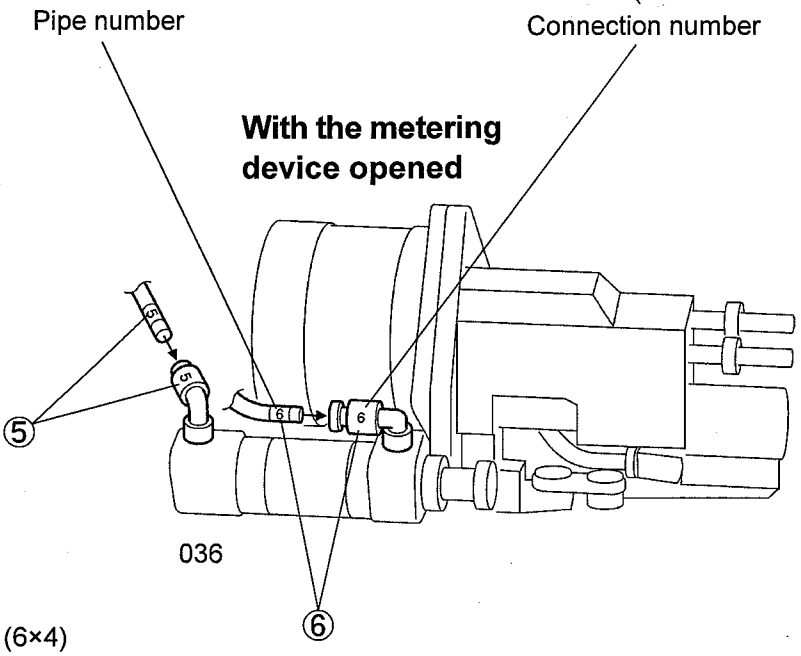


035

Control box



037



036

3. Lubrication

3-1 Filling oil tank with lubricating oil

< First using the machine >

The lubricating oil has been factory drained off. Be sure to fill the machine with the lubricating oil before use.

◇Oil to be used: Yamato SF oil 28

◇Amount of oil: 1000 cc

⚠ CAUTION

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

For supplying oil, remove the oil cap ① indicated 'OIL' and supply the oil to the upper level of the oil gauge ② .

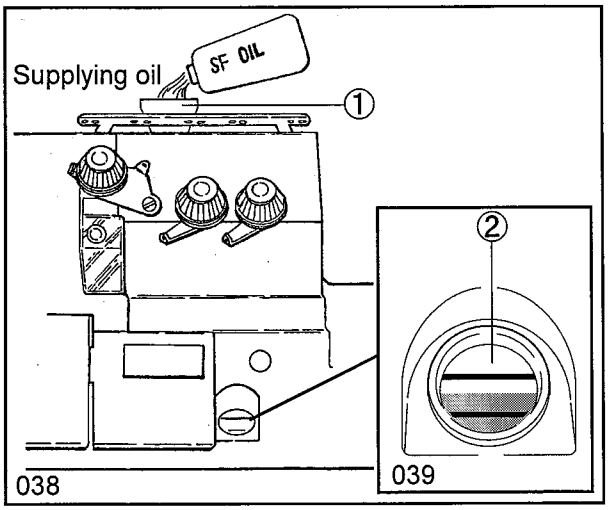
<Inspection before running the machine>

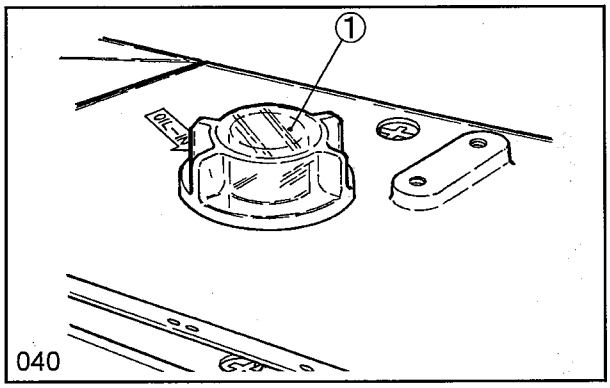
(1) Check the oil gauge ② to see if the lubricating oil level is between two red lines. When the oil surface is below the lower line, supply oil .(See page 38.)

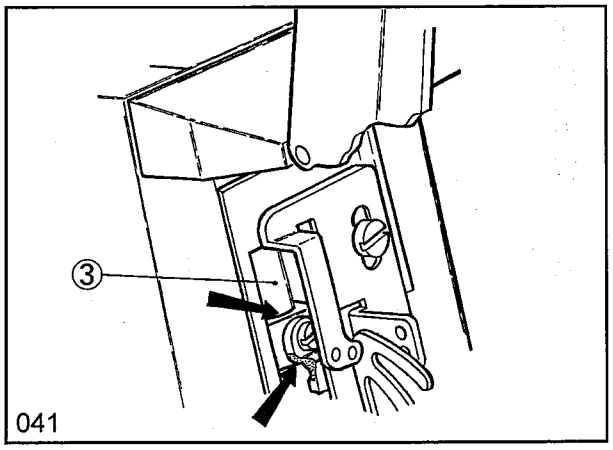
(2) When running the machine, check oil splashes from the nozzle inside of the oil cap ①. If oil does not come out from the nozzle, see the section 'Checking and replacing oil filter'. (See page 39.)

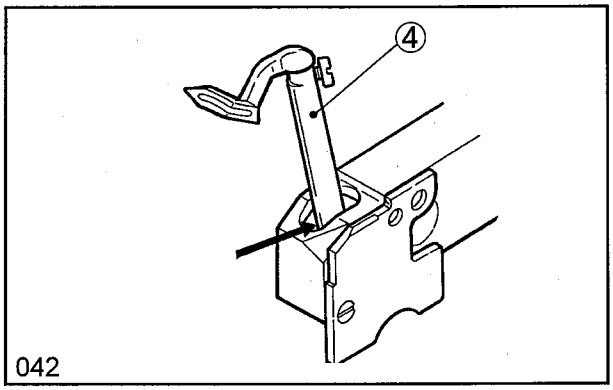
3-2 Applying lubricating oil

If you use a new machine or a machine which has not been run for a while, oil the needle bar ③ and the looper bar ④ with 2 or 3 drops.









4. Proper operation

4-1 Needle to be used

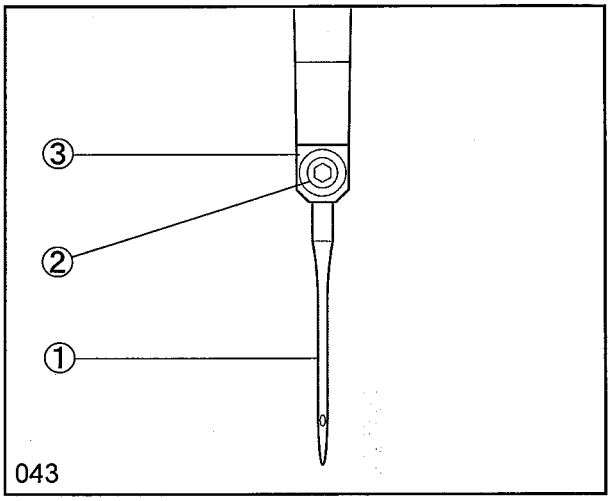
Proper needles for this machine are DC×1 (81×1) #8 - 14. (#9 is used as the standard.)

Japanese standard	8	9	10	11	12	13	14
Metric standard	60	65	70	75	80	85	90

4-2 Installing needle

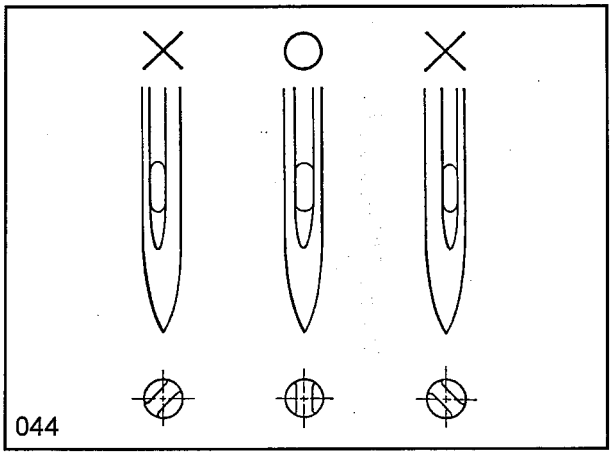
⚠ CAUTION

ALWAYS turn OFF the power switch and check that the motor has already stopped before installing the needles.
Otherwise, you may be injured.



< Installation of needle >

(1) Open the metering device.
(2) Loosen the screw ② for the needle ① with a screwdriver. To replace the needle ①, pull out the old needle with tweezers.
(3) Insert a new needle with tweezers deep into a hole of the needle clamp ③ so that the scarf of the needle is positioned to the right rear.
(4) Fasten the screw ② of the needle ① securely.

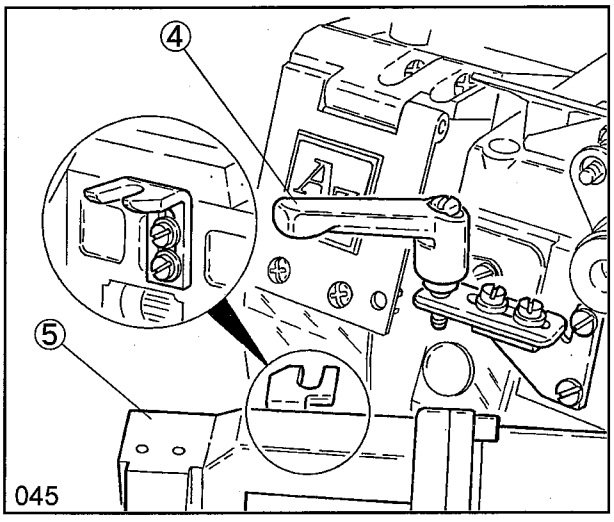


IMPORTANT

Whenever a needle is replaced, be sure to check the clearance between the needle and the looper or the needle guard. (See page 32- 34.)

< Opening and closing of metering device for –10 type >

To open the device, loosen the clamp lever ④ and then open the metering device ⑤.
To close the device, close the metering device ⑤ and tighten the clamp lever ④.



4-3 Threading

Open the metering device and pass a needle thread and a looper thread correctly according to the passing illustration (label) provided at the rear of front opening cover.

⚠ CAUTION

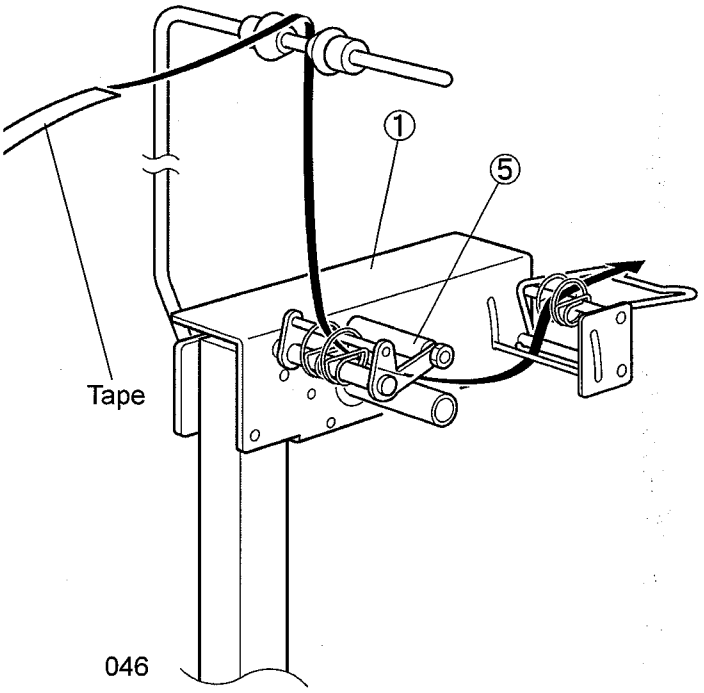
◇Whenever a thread is passed, be sure to turn OFF the power and check that the motor has stopped completely. Otherwise, you may be injured.

◇If a thread is passed incorrectly, slip stitch, thread breakage or irregularity may result.

4-4 How to get the tape through

< How to get through >

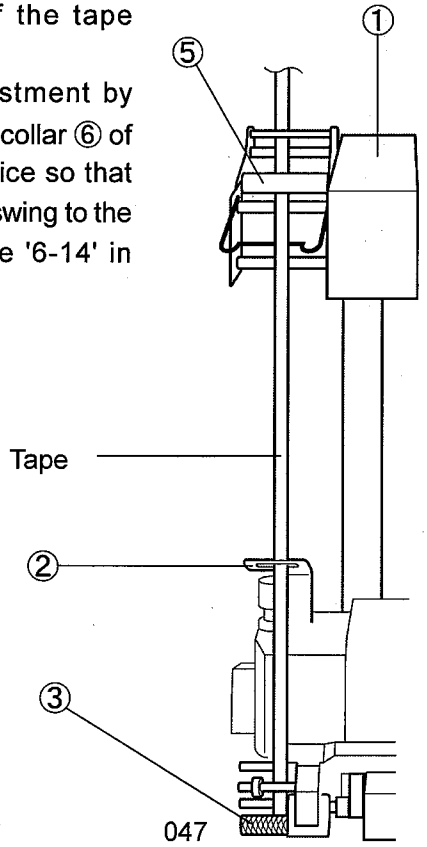
Get the tape through the tape feeder ① as shown in Figure 046, and through the tape guide ② of the machine, and insert it into the roller ③.
To open roller ③ of the metering device, press the lever ④ by a finger.



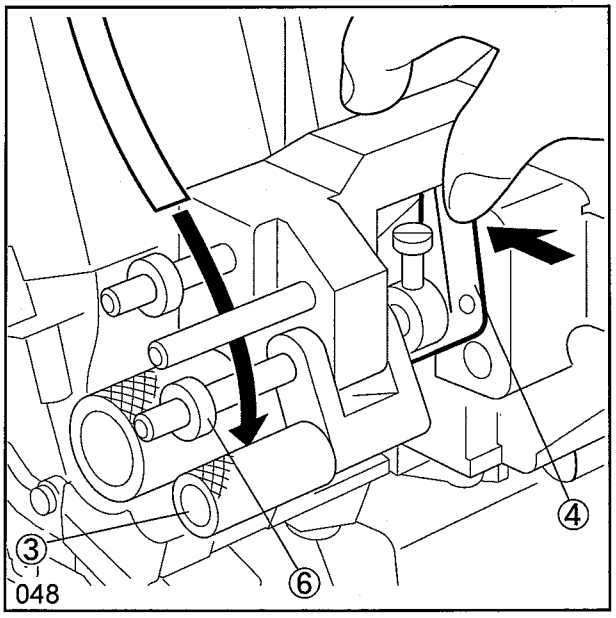
046

< Position adjustment >

Adjust the position of the tape feeder ① to the right or left so that the tape may pass straight through (straightway) the roller part ⑤, tape guide ②, and roller part ③ of the tape feeder ①.
Also make adjustment by moving the guide collar ⑥ of the metering device so that the tape may not swing to the right or left. (See '6-14' in page 36.)



047



048

4-5 Adjusting stitch length

⚠ CAUTION

Whenever stitch length is adjusted, be sure to turn OFF the power and check that the motor has stopped completely. Otherwise, you may be injured.

< Adjusting stitch length >

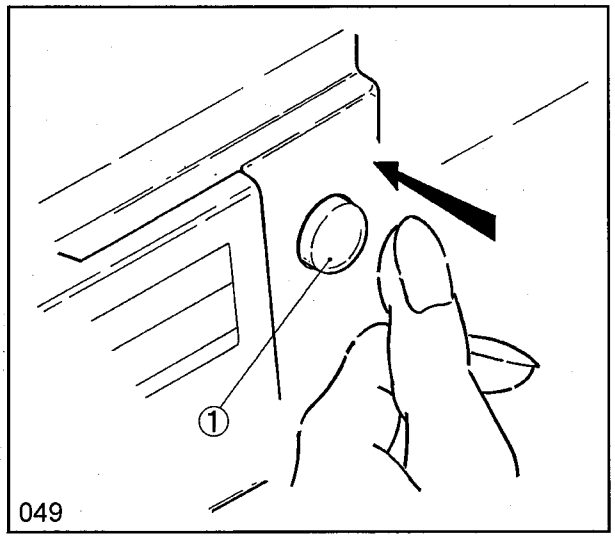
The stitch length is variable continuously from 1 mm to 3.5 mm.

*The actual stitch length after stitching is different depending on the kind and thicknesses of materials.

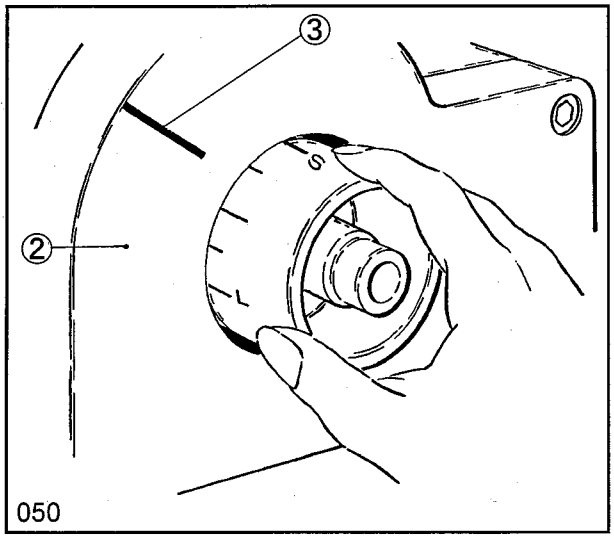
< How to change stitch length >

Press the push button ① lightly by your left hand. You can feel its front edge touching internal parts. Keep pushing lightly and turn the pulley by your right hand. The push button ① will engage at a certain point. Press strongly the push button ① again to disenagethe feed dog regulating gear. Following this, start turning the pulley.

Each graduation on the scale on the outer surface of the pulley indicates one stitch length (mm). Set the mark of the desired stitch length to the mark ③ on the belt cover ② and then release your left hand.



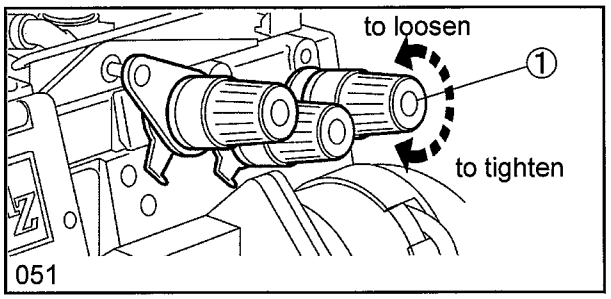
049



050

4-6 Adjusting thread tension

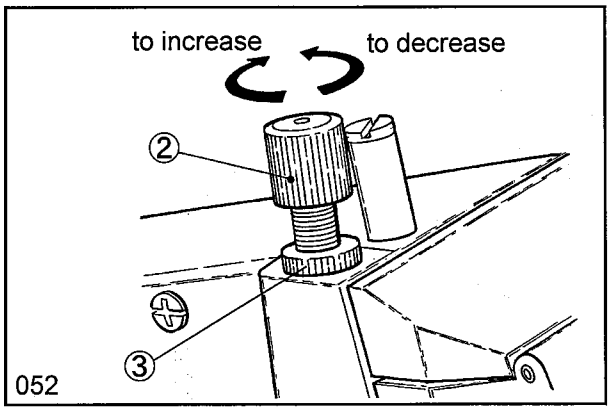
Thread tension varies according to kinds of materials, threads, sewing widths, stitch lengths, and application conditions.
Obtain proper thread tension by the thread tension spring caps ①.



4-7 Adjusting presser foot pressure

The presser foot pressure should be minimized so long as stable stitches can be formed.To adjust the pressure, loosen the lock nut ② and turn the adjusting screw ③.

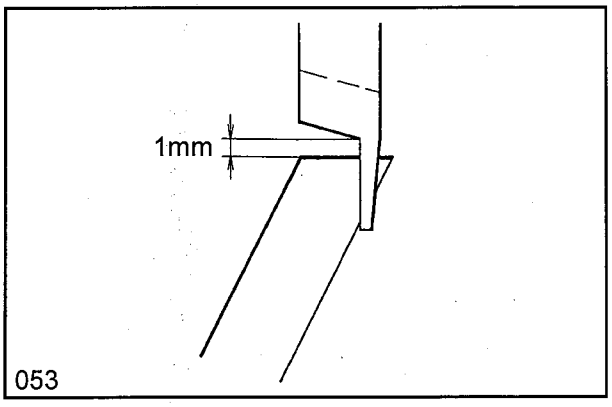
- To increase the pressure, turn the screw clockwise.
- To decrease the pressure, turn the screw counter-clockwise.



4-8 Adjusting overedge seam width

IMPORTANT

When adjusting overedge seam width, turn the pulley so that the blade of the upper knife is 1 mm above from that of the lower knife as shown in Figure 053.

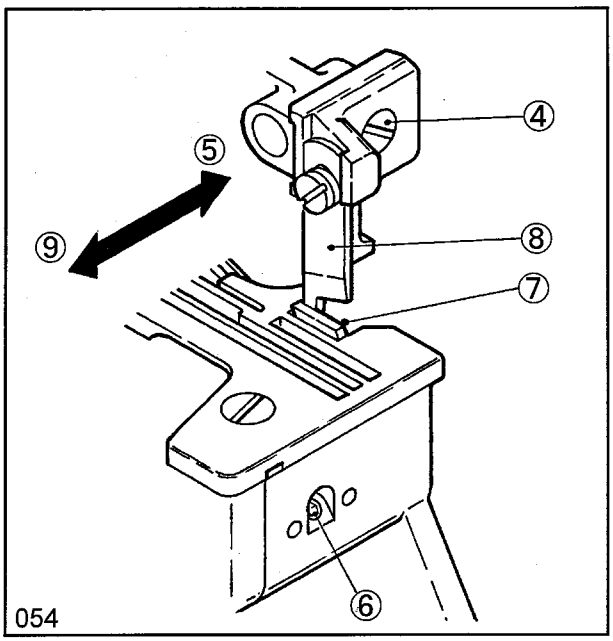


< Widening >

(1) Loose the screw ④, move upper knife holder in the arrow direction ⑤ as much as required, and tighten the screw ④ securely.
(2) When loosen the lower knife base screw ⑥, the lower knife base moves in the arrow direction ⑤ due to pressure of the internal spring, and the lower knife ⑦ and the upper knife ⑧ engage each other with a proper strength. Tighten the screw ⑥ in this state.

< Narrowing >

(1) Loosen the screw ⑥ and move the lower knife holder in the arrow direction ⑨ as much as required, and tighten the screw ⑥ securely.
(2) Loose the screw ④, move the upper knife holder in the arrow direction ⑨ so that it makes contact with the lower knife ⑦ closely, and tighten the screw ④ securely.
(3) Loosen the screw ⑥ again, make the lower knife ⑦ contact with the upper knife ⑧ closely, and tighten the screw ⑥ securely.

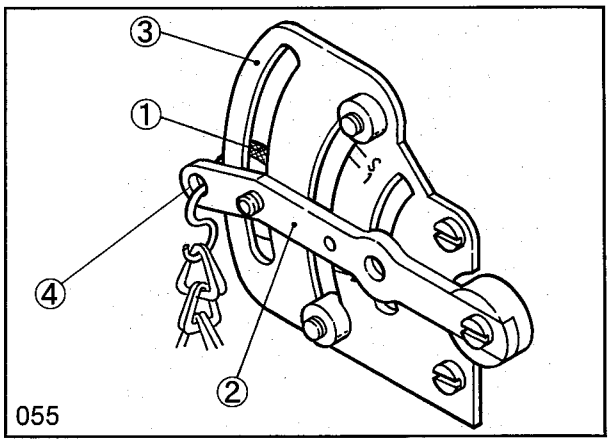


4-9 Adjustment of differential feed

< Normal differential feed (gathering seam) >

Loose the nut ①, move the differential lever(left) ② up or down, and tighten the nut ① securely in the desired position. If the lever is set to the scale [2], the ratio of the differential feed to the main feed will be 1 : 2. If it is set to scale [1], the main feed will become equal to the differential feed, thus making the differential motion ineffective.

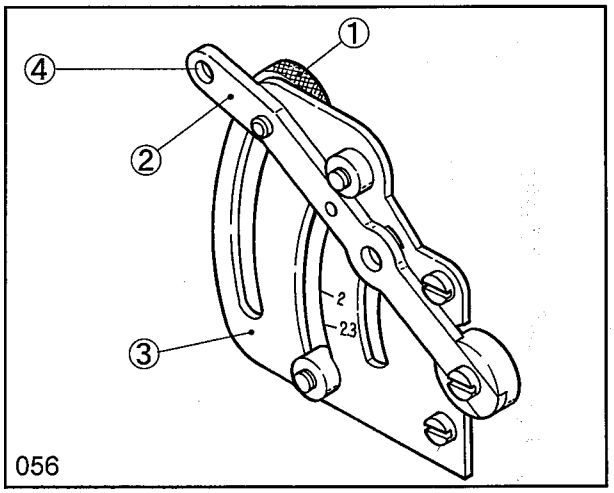
NOTE: When the pulley scale is set to less than [2], the differential ratio is available up to 1 : 2. If it is more than [2], the differential ratio is available up to 1 : 1.4.



< Reverse differential feed (stretching seam) >

The reverse differential feed increases as the differential lever(left) ② is raised in the direction from [1] to [S] on the scale plate ③.

If it is set to [S], the ratio of the differential feed to the main feed becomes 1 : 0.8.



< Adjustment of differential amount during machine operation >

When the differential a mount need to be adjusted during machine operation, pass a chain though the chain hooking hole ④ of the differential lever(left) ② and make adjustment.

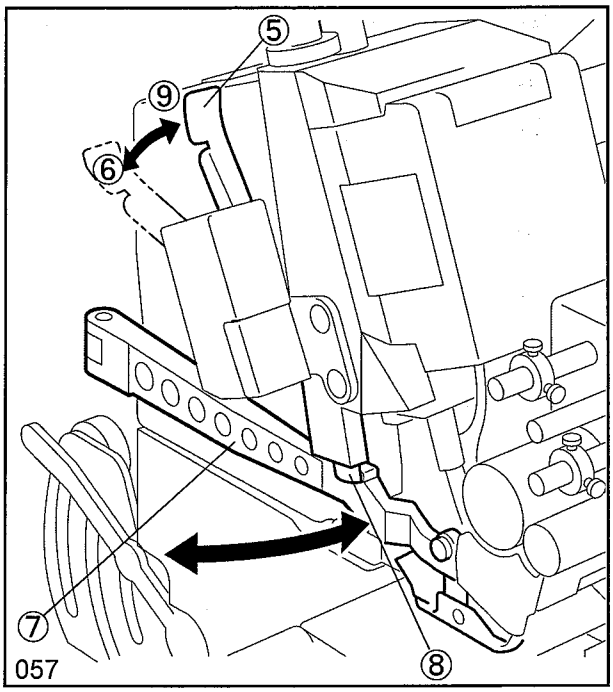
4-10 Opening and closing of presser foot

< Opening >

(1) Rotate the machine pulley and raise the needle bar to the highest position.
(2) Press the presser foot release lever ⑤ in the arrow direction ⑥.
(3) Open the presser arm ⑦ to the left.

< Closing >

(1) Rotate the machine pulley and raise the needle bar to the highest position.
(2) While pushing the release lever ⑤ to the arrow direction ⑨, close the presser arm ⑦ and engage it to the presser bar ⑧.



⚠ CAUTION

Check that the presser arm ⑦ is inserted securely into the groove under the presser bar ⑧.

4-11 Eye guard and finger guard

⚠ CAUTION

Whenever using the machine, never remove the eye guard or finger guard.
In addition, be sure to lower the eye guard to the set position.

4-12 SP device and HR device

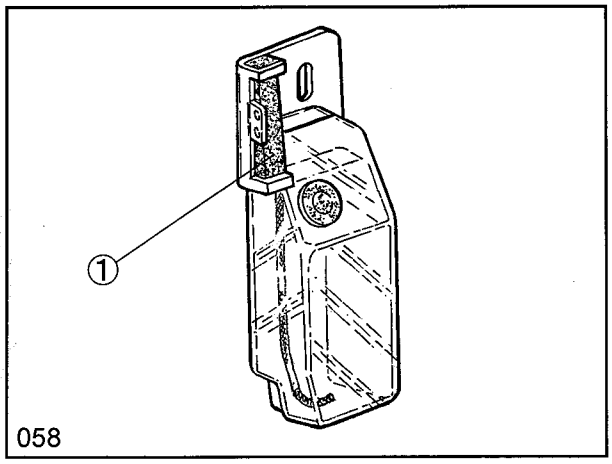
The SP device (needle thread oiling) and the HR device (needle point cooling) come as standard (except for some models). Use them to prevent thread breakage and skip stitches, when running the machine at high speed or using synthetic threads and/or synthetic materials. Silicone oil (dimethyl silicone) should be used for both devices.

< Inspections before running machine >

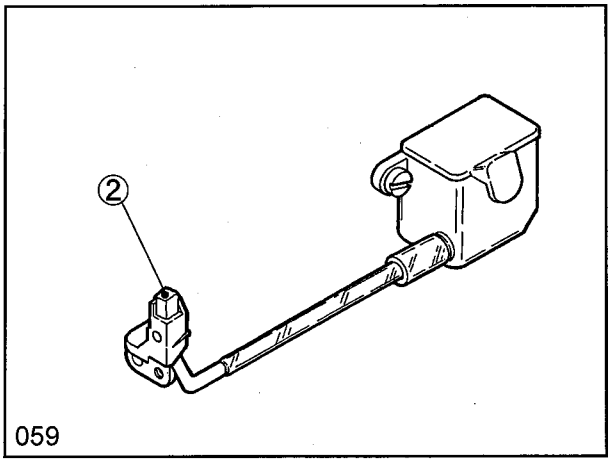
Check that the tank is filled with silicone oil. If the silicone oil level is low, supply silicone oil (dimethyl silicone).

⚠ CAUTION

◇When the device is not used, remove the felt ①② from the device. If it is left in the device, the sewing condition may be adversely affected.
◇When silicone oil is adhered to other than the device, be sure to wipe it off. If this precaution is not observed, a failure may result in the machine.



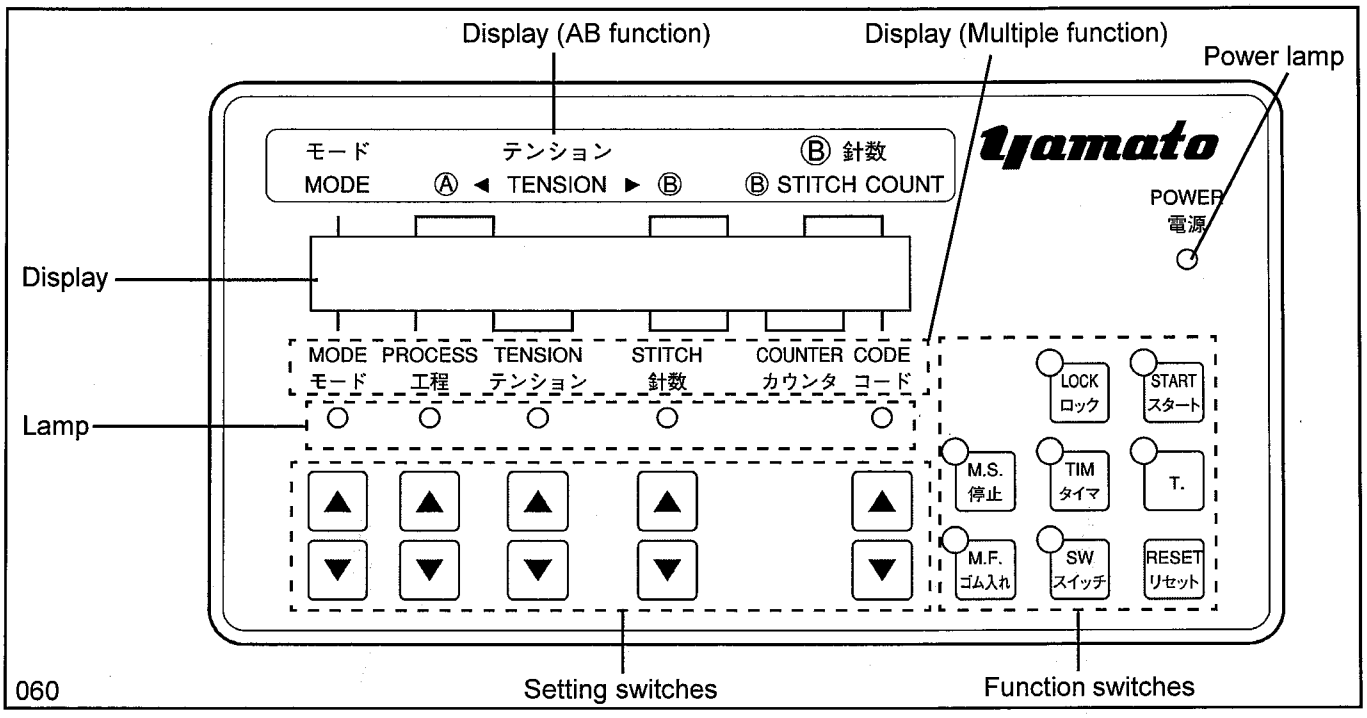
058



059

4-13 Description of operation control panel

4-13-1 Name of each part



< Power lamp >

This lamp lights up when the control panel functions properly.

< Display >

Numerals and alphabets are displayed to indicate current control status.

< Display (AB function) >

When AB function is used, display unit is explained here.

< Display (Multiple-function mode) >

When the multiple-function mode is used, the display unit is explained here.

< Lamp >

As long as this lamp is illuminated, it means that the following switches are valid.

< Setting alteration switches >

By pressing ▲, the value increases. By pressing ▼, the value decreases. If the key is held down, the value increases or decreases rapidly.

< Function switches >

[START : Start]

As long as this lamp is on, the sewing operation is possible.

[LOCK : Lock]

This is used to disable specific switches in order to prevent malfunction during operation.(See page 46)

[TIM : Timer]

This is used to set the parameters related to tape feeding. See the list on page 48 for the functions available.

[SW : Switch]

This is used for the automatic setting. See the list on page 49 for the functions available.

[M.S. : Stop]

Press this switch when tape feeding is not used. (See page 46.)

[M.F. : Elastic tape insertion]

This is used when a tape is passed through the metering device. (See page 46.)

[T.]

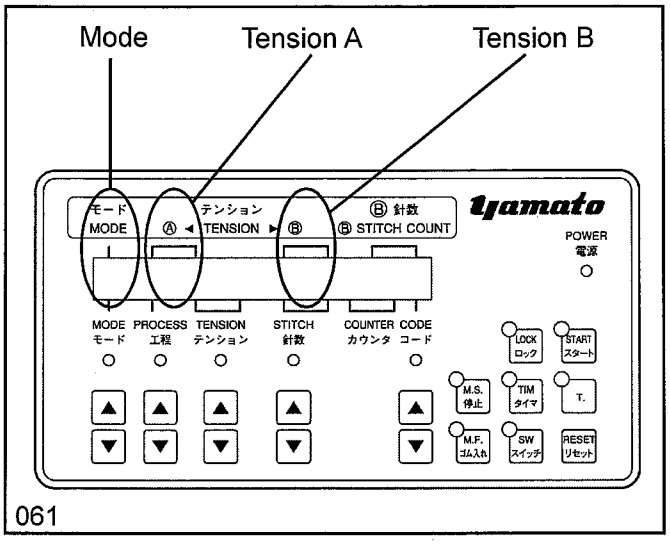
This is used to store the settings for multiple functions.

[RESET : Reset]

This is used to return to the previous process.

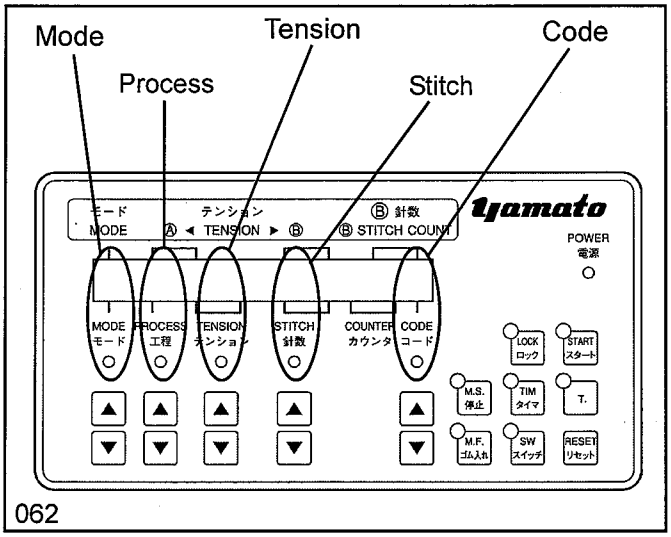
4-13-2 Description of AB function

Two kinds of tensions (feed amounts of elastic tape) may be combined. Whenever the change-over switch is pressed, two kinds of tensions are toggled.
A total of 26 kinds (A - Z) modes can be stored.
See pages 25 and 29 for details on the setting procedure.



4-13-3 Description of multiple-function mode

Jobs (processes) using different stitch counts and tensions (feed amounts of elastic tape) may be combined for the continuous sewing operation (mode).
Up to 20 kinds of jobs (processes) can be combined.
A total of 26 kinds (A - Z) modes can be stored.
See page 28 for details on the setting procedure.



In the following description, [mode] denotes [combination], and [job] denotes [process].

4-14 Selection of AB function

This device has been factory set to the multiple-function.

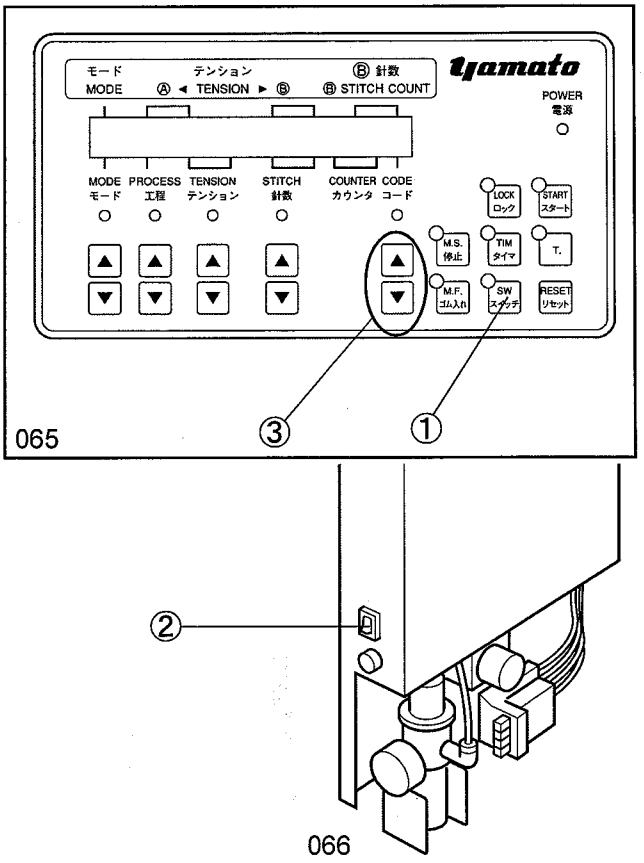
If you want to select the AB function mode, perform the following steps:

(1) Turn ON the power switch ② while holding down the switch ①.
The [MC MODE] will be displayed.

(2) Press the switch ③ to select the [AB MODE] display.

(3) Once turn OFF the power switch ② and turn ON the switch ② again five seconds later.

The device will be set to the [AB function] mode.



4-15 Regulation used to eliminate changes in amount of tape fed at low/high speed

Select the appropriate tension from the table given on the right side, so that flat sewing can be carried out at a machine speed of less than 3000 rpm. (Values are controllable in a range of 000 - 119.)

Adjustment of values:

Multiple function: Press [▲ · ▼] of switch ①.

AB function: Press [▲ · ▼] of the switch ② for tension A and of the switch ③ for tension B.

- In case gathering is involved inevitably, press ▲ to increase the value.
- In case the tape is fed too much, press ▼ to decrease the value.

In the case gathering is involved in finished sewing at high speed (more than 5000 rpm or more than 6000 rpm), increase the value of [T06] and [T07] according to [Setting] shown in page 47. (Values can be controlled in a range of 00 - 10.)

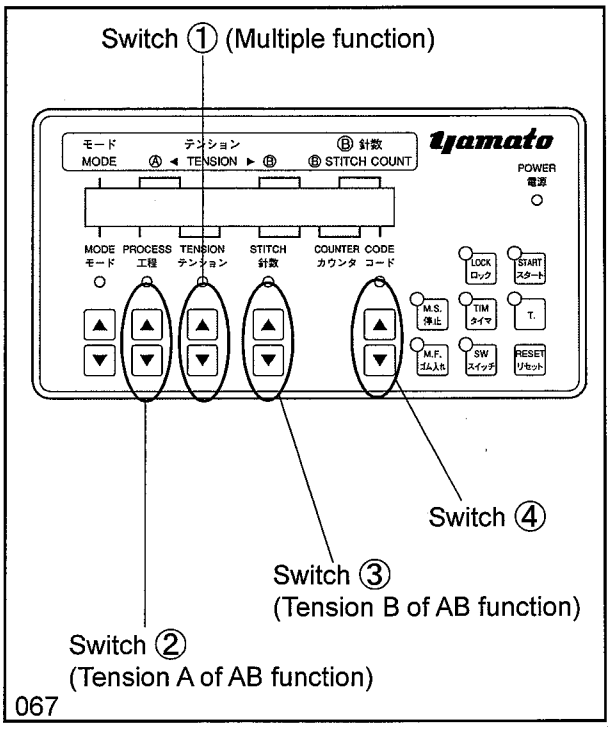
Increase the value ⑤ by pressing the switch ④.

value ⑤

Example of display	T06	COR.	5000	5
Example of display	T07	COR.	6000	6

If the maximum machine speed is more than 6000 rpm and it is difficult to adjust the sewing speed to 5000 rpm and to adjust the amount of tape feeding, the value of T06 should be made lower than that of T07 by 1.

Stitch length (mm)	Tension
2	050
2.5	070
3	090
3.5	110



4-16 Other setting changes

4-16-1 Change-over of foot switch

If the foot switch is used for a standing job, change it according to the following procedures:

(1) Turn ON the power switch ② while holding down the switch ①.

Display	MC MODE

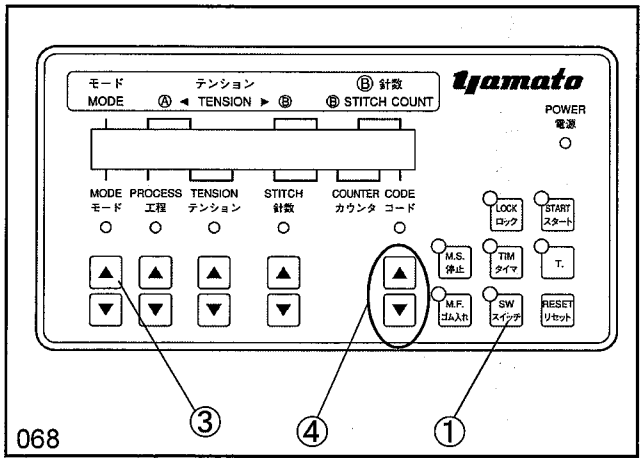
(2) Press [▲] of the switch ③ to display [STANDARD SW].

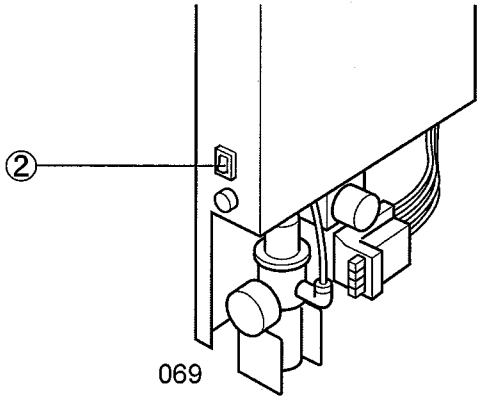
Display	STANDARD SW

(3) Press the switch ④ to shift it to [MOTOR SW] display.

Display	MOTOR SW

(4) Once turn OFF the power switch ② and turn ON the switch ② again after five seconds.





4-16-2 Alarm buzzer setting

The alarm buzzer sounds warning when a tape feeder detects something wrong.
The alarm buzzer has been factory set as follows:

Display	ERR PATERN 1

To change the buzzer sound, perform the following steps. One of four kinds of buzzer sounds can be selected from [ERR PATERN 1 - 4]. (If [ERR PATERN 0] is selected, the buzzer becomes silent.)

(1) Turn ON the power switch ② while holding down the switch ①.

Display	MC MODE

(2) Press [▲] of the switch ③ to display [ERR PATERN 1].

Display	ERR PATERN 1

(3) Press the switch ④ to obtain desired display from [ERR PATERN 0] - [ERR PATERN 4].

Display	ERR PATERN 4

When the display appears, the buzzer sounds too.

(4) Turn OFF the power switch ② and turn ON the switch ② again after five seconds.

From now on, the alarm buzzer will sound with the selected tone.

4-17 Example of simple setting

< Description of codes >

A : Pressing the change-over switch will go to the next process.
B : Reaching the specified stitch count will go to the next process.
C : Reaching the specified stitch count will automatically actuate the cutter.
D : The machine will reverse by the specifies stitch count.
■ : This code denotes the end of the process.

With code B, C, and D, the counter increases as sewing is made. When the stitch count reaches the value on the counter, the next process begins.
The counter display shows the approximate position of the current sewing.

NOTE: Determine the optimal level of the actual tension during the sewing operation.

4-17-1 Example of selecting multiple-function mode

< How to set tension >

The following selection procedures explain the cases where three processes are selected in [B] mode as shown in Figure 070.

(1) Select mode [B] with the switch ①.
(2) Select code [A] with the switch ②.
(3) Select tension [046] with the switch ③.

Display	B	1	046	A

(4) Select process [2] with the switch ④.
(5) Select code [B] with the switch ②.
(6) Select tension [010] with the switch ③.
(7) Select stitch count [050] with the switch ⑤.

Display	B	2	010	050	B

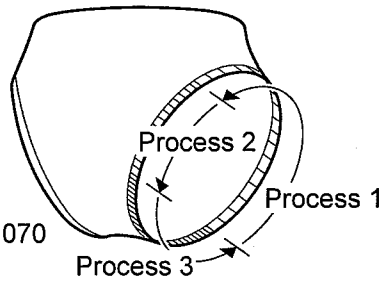
(8) Select process [3] with the switch ④.
(9) Select code [C] with the switch ②.
(10) Select tension [030] with the switch ③.
(11) Select stitch count [130] with the switch ⑤.

Display	B	3	030	130	C

(12) Select process [4] with the switch ④.
(13) Select code [■] with the switch ②.

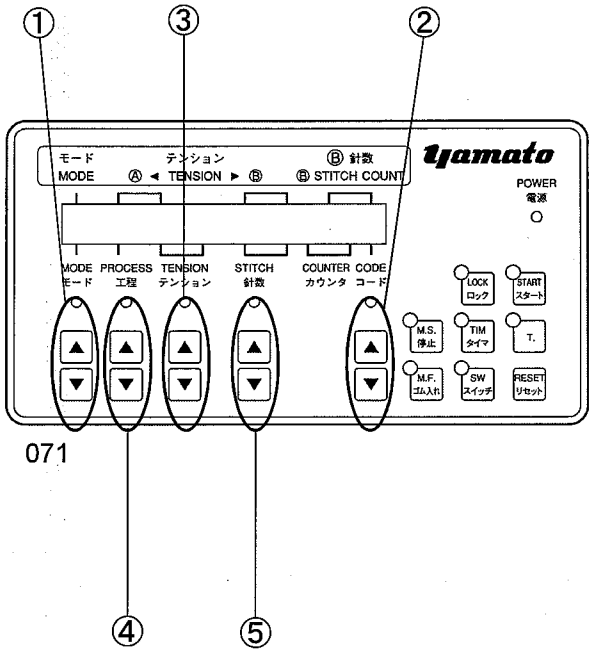
Display	B	4	000	000	■

***Be sure to select code [■] for the process next to the final process.**



– Settings –

In mode B:
Tension 46 and code A are selected for process 1.
Tension 10, stitch count 50, and code B are selected for process 2.
Tension 30, stitch count 130, and code C are selected for process 3.



071

NOTE

When changing a current mode to a new mode, programmed values including processes, timer, and switch return to the defaults. (See p.48 and 49.)
Set a mode depending on a sewing garment.
Rechange a mode if timer or switch are changed.

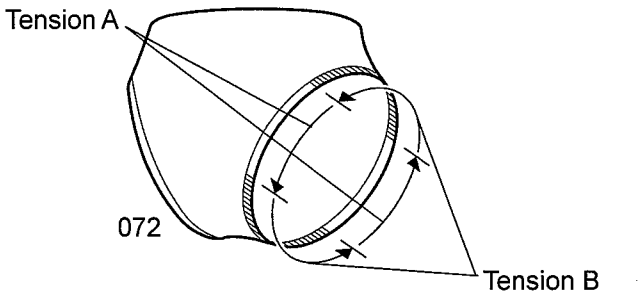
4-17-2 Example of setting of AB function

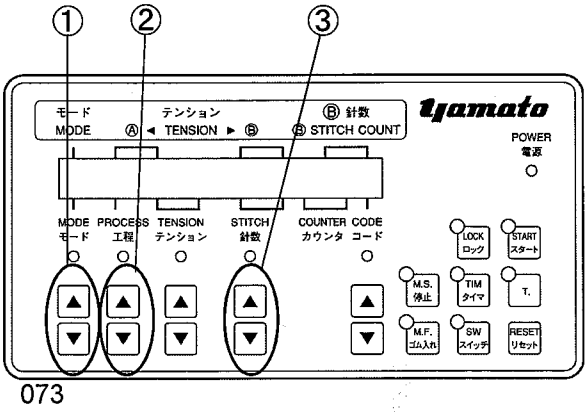
< How to set tension >

The setting procedure below explains the case where tension A is set to [090] and tension B is set to [050] in mode [C] as shown in Figure 072.

(1) Select mode [C] with the switch ①.
(2) Select tension [090] with the switch ②.
(3) Select tension [050] with the switch ③.

Display	C	090	050

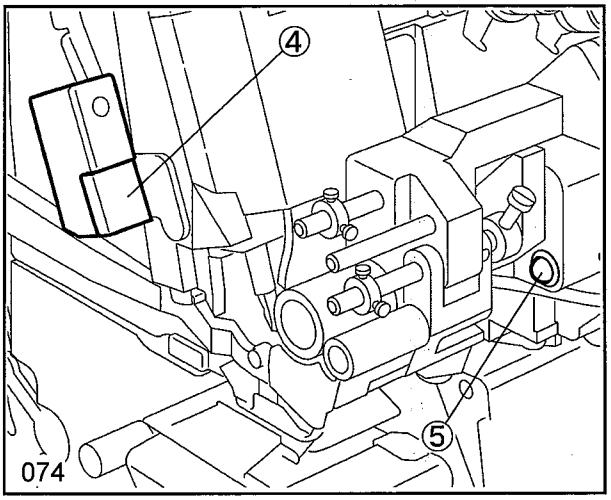




073

To toggle between tension A and tension B, press the change-over switch ④.
While tension A is valid, the set point of tension A blinks, and tension display lamp ⑤ is illuminated in green.
While tension B is valid, the set point of tension B blinks, and tension display lamp ⑤ is illuminated in red.

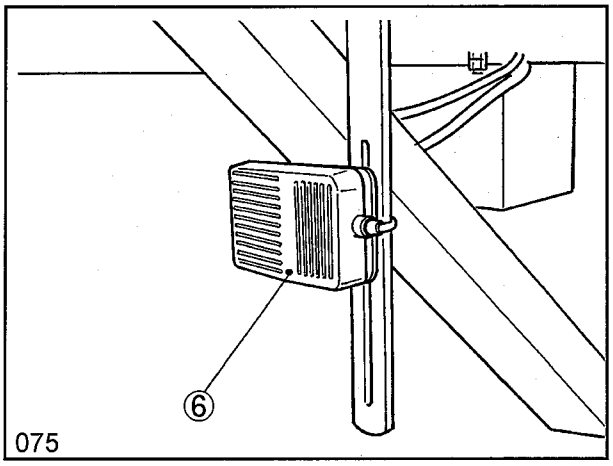
NOTE: Determine the optimal level of the actual tension during the sewing operation.



074

4-18 Cutting of tape

◇The tape can be cut in a desired position with the knee switch ⑥.
◇The tape can also be cut automatically through the corresponding setting. (In the multiple-function mode only)



075

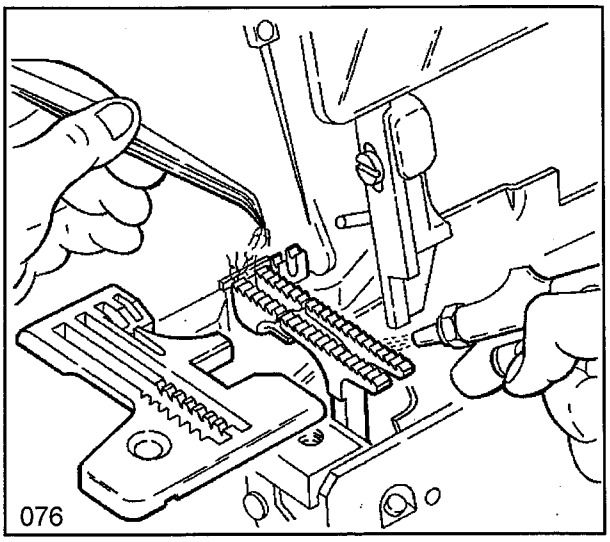
5. Upon completion of works

⚠ WARNING

ALWAYS turn OFF the power switch and check that the motor stops before the cleaning. Otherwise, your hand or clothe might be caught by the belt resulting in injury.

◇Remove waste thread and dust from the machine at the end of work every day.

◇Remove the presser foot and the stitch plate holder at least once a week to clean the grooves in the stitch plate and the feed dog area.



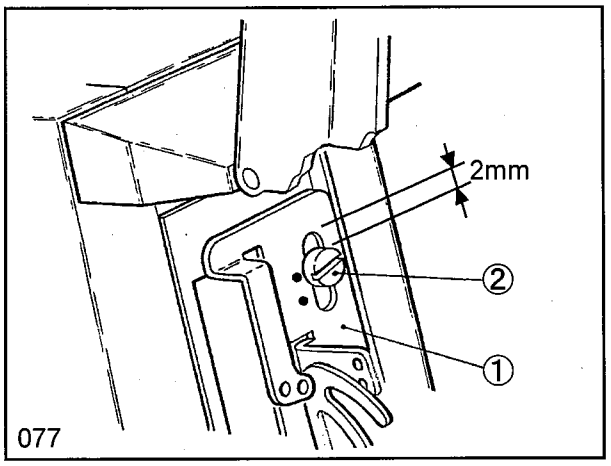
6. Maintenance and inspection

⚠ WARNING

ALWAYS turn OFF the motor switch and check that the motor has already stopped before the work.

6-1 Adjusting needle thread tension

In case of hemming tension, position the needle thread eyelet ① at the uppermost.
When you need to tighten the needle thread, loosen the screw ② to lower the needle thread eyelet ①. When you need to loosen the needle thread, raise it.
The standard position is 2 mm above the upper end of a long hole of the needle thread eyelet ① as shown in the figure.



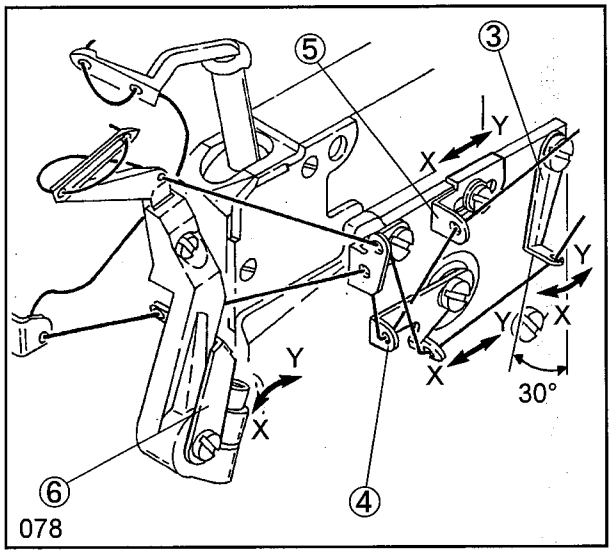
6-2 Adjustment of looper thread tension

◇When the lower looper thread eyelet ③ is positioned in X-direction, the lower looper will be loosened. When it is positioned in Y-direction, the same will be fastened. The standard position is swung 30° from vertical line.

◇When the looper thread pull-off (right) ④ is positioned in X-direction, the upper and lower looper threads are loosened. When it is positioned in Y-direction, the upper looper thread is loosened. The standard position is horizontal when the upper looper is paid out most and is located at the center of the long hole.

◇When the upper looper needle eyelet ⑤ is positioned in X-direction, the upper looper thread is be loosened. When it is positioned in Y-direction, the thread will be fastened.

◇When the upper looper thread pull-off ⑥ is positioned in X-direction, the upper looper thread is loosened. When it is positioned in Y-direction, the thread will be fastened. The standard position is that a clearance between the front edge and the lower looper is 5 mm.



6-3 Basic adjustment of thread and looper

Make adjustments by taking the following steps:

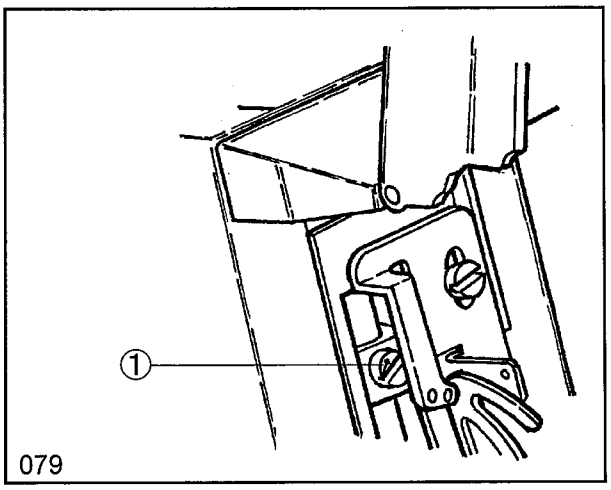
(1) Height of thread
(2) Withdrawal of lower looper
(3) Front and rear position of lower looper
(4) Protrusion of upper looper
(5) Front and rear position of lower looper
(6) Timing between lower looper and upper looper

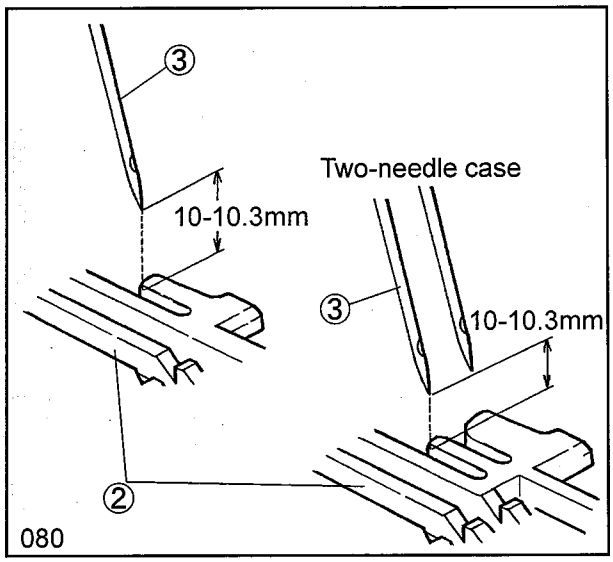
6-4 Adjusting needle height

(1) Turn the machine pulley clockwise and the position where the needle bar is at the uppermost.
(2) Loosen the screw ① for the needle bar connecting bracket and make adjustment by moving the needle bar up or down.

< Method of adjustment >

While the needle bar is located at the uppermost point, make adjustment so that a distance from top surface of the stitch plate ② to the needle ③ end is 10 - 10.3 mm. At this moment, check if the screw of the needle clamp (left screw for two needle case) comes to the front.





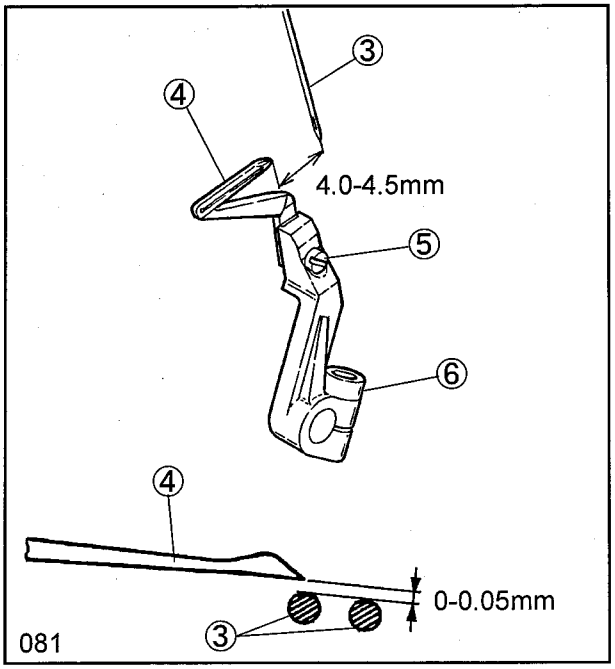
6-5 Adjusting timing between needle and lower looper

6-5-1 Adjusting lower looper withdrawal

Turn the machine pulley clockwise and loose the screw ⑤ for the lower looper holder so that when the lower looper ④ is at the extreme left, the distance between the lower looper ④ edge and the needle ③ center is 4.0 - 4.5 mm.

6-5-2 Adjusting front and rear positions of lower looper

Loose the screw ⑥ for the lower looper holder so that the clearance between the lower looper ④ edge and the needle ③ is 0 - 0.05 mm.



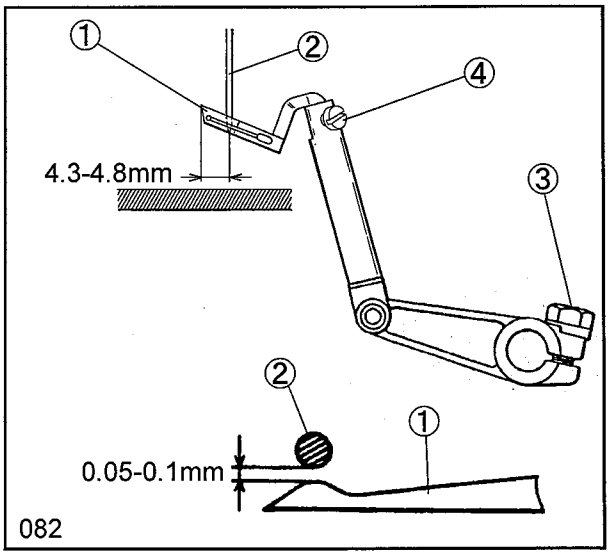
6-6 Adjusting timing between needle and upper looper

6-6-1 Adjusting protrusion of upper looper

Turn the machine pulley clockwise and loose the screw ③ for the upper looper crank so that when the upper looper ① is at the extreme left, the distance between the upper looper edge and the needle ② center is 4.3 - 4.8 mm.

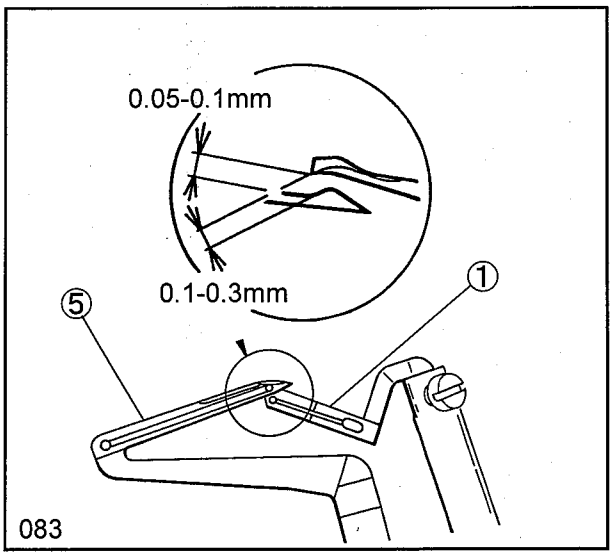
6-6-2 Adjusting front and rear positions of upper looper

When the upper looper ① moves from the extreme left to the right by rotating the machine pulley clockwise, the thickest portion (around needle hole) of the upper looper comes close to the needle ②. (In case of two-needle, it comes close to the right needle.)
Make adjustment by loosening the screw ④ of the upper looper so that the clearance between the rear part of the upper looper ① and the needle ② is 0.05 - 0.1 mm.



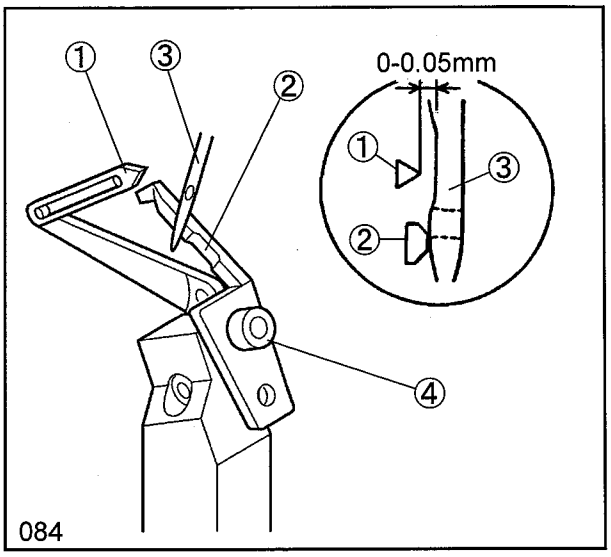
6-7 Adjusting timing between upper looper and lower looper

Rotate the machine pulley clockwise and when the lower looper ⑤ meets the upper looper ①, check if the front and rear clearances are 0.1 - 0.3 mm and the right and left clearances are 0.05 - 0.1 mm.
If the clearance is maintained in the said range, the timing between the needle and the looper is correct.



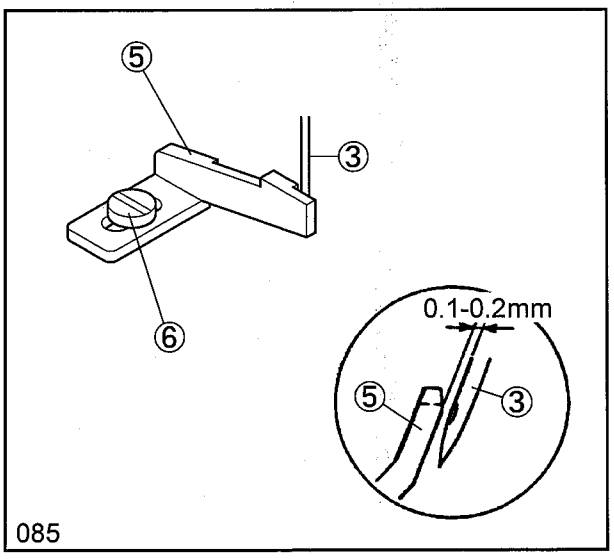
6-8 Adjusting needle and needle guard (rear)

The movable needle guard (rear) ② that is interlocked with the lower looper ① is provided.
When the needle ③ meets the lower looper edge ① during upward movement process from the lowest point, the needle guard (rear) ② retains the needle ③ at the rear thereby protecting the lower looper edge ①.
Loose the screw ④ and make adjustment so that the clearance between the lower looper edge ① and the needle ③ is 0 - 0.05 mm.
In case of two-needle, make adjustment in a similar manner to one needle case relative to the left needle.



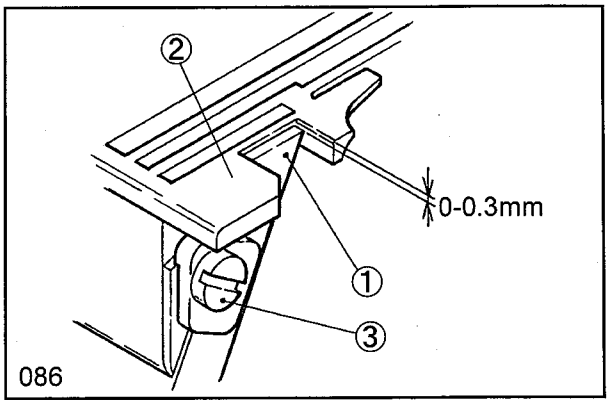
6-9 Adjusting needle and needle guard (front)

In principle, adjust the clearance between the needle ③ and needle guard (front) ⑤ to the thickness of the needle thread used.
Loosen the screw ⑥ and make adjustment so that the clearance between the needle ③ and the needle guard (front) ⑤ is 0.1 - 0.2 mm.
In the two-needle case, make adjustment in a similar manner to the one-needle case relative to the left needle.



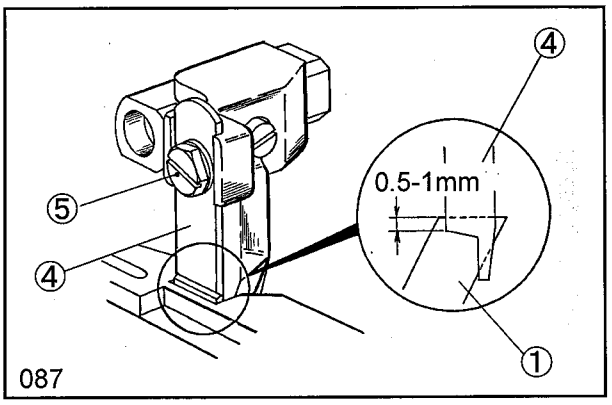
6-10 Adjusting lower knife height

Position the lower knife ① so that its cutting edge is level with or slightly lower (by 0 to 0.3 mm) than the top surface of the stitch plate ②.
To make this adjustment, loosen the screw ③.



6-11 Adjusting upper knife height

Position the upper knife ④ by loosening the screw ⑤, so that when the upper knife ④ is lowered most, the engagement with the lower knife ① is 0.5 - 1.0 mm.

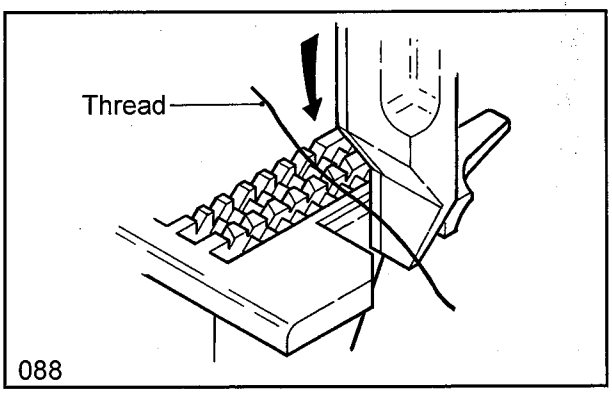


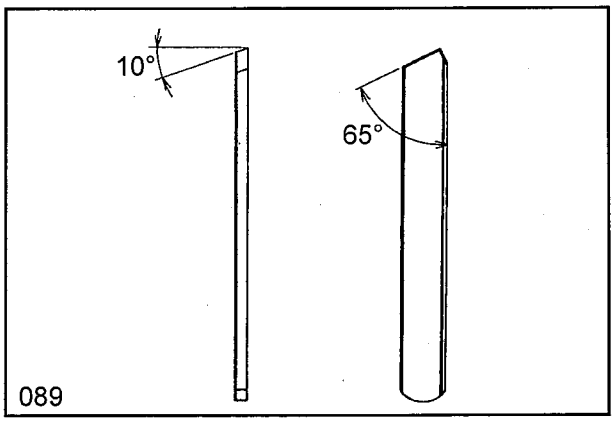
6-12 Sharpness of knives and sharpening of lower knife

After adjusting the knives and overedge seam, insert a thread between the upper and lower knives and check sharpness of the knives by manually rotating the pulley.

< Sharpening of knife >

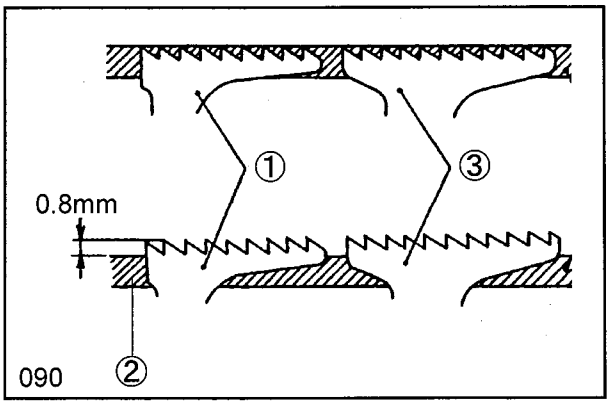
The upper knife ④ is made of cemented carbide requiring no re-sharpening for approximately one year.
If the lower knife ① deteriorates in sharpness during this period, re-sharpen it.
See Figure 089 for re-sharpening the lower knife ①.
When the upper knife ④ is to be re-sharpened, an ordinary grinder would not meet this purpose. Keep a spare upper knife ④ and when necessary, contact the agent or YAMATO for re-sharpening.





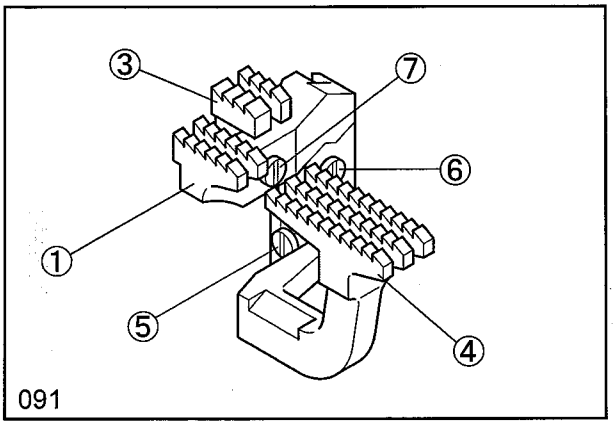
6-13 Adjusting height of feed dog

In the standard condition, when the feed dog is moved up and its top surface agrees with that of the stitch plate, both become parallel with each other.
When the feed dog is positioned at the highest point, it is 0.8 mm above from the top surface of the stitch plate ② at the rear of the main feed ①.
As for the auxiliary feed dog ③, install it at the point 0 - 0.3 mm lower than the main feed ①. Make adjustment by loosening the screw ⑤ for the differential feed ④, the screw ⑥ for the main feed ①, and the screw ⑦ for the auxiliary feed dog ③.



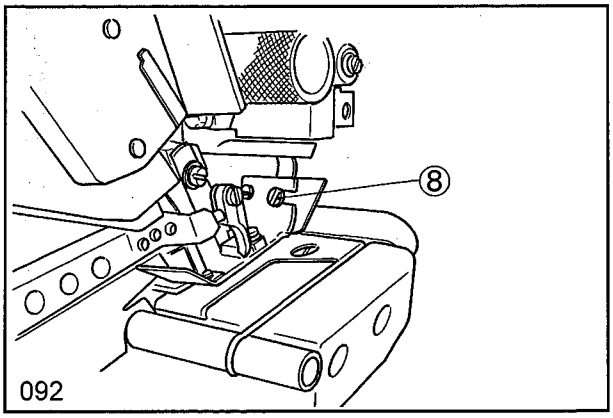
IMPORTANT

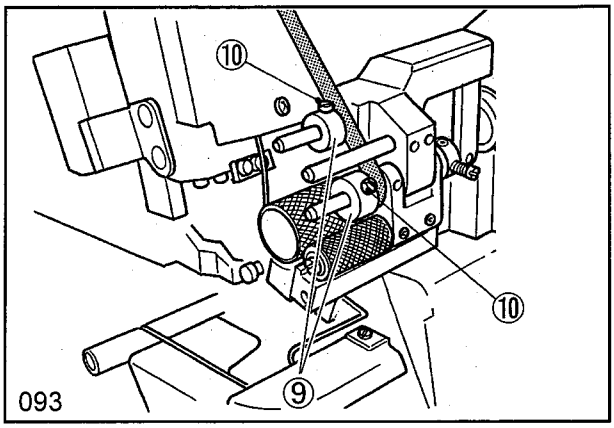
Any difference between the height of the main feed dog ① and the height of the differential feed dog ③ may cause feeding irregularity and feeding flaw. Therefore, take care to prevent this. For a knit product uses a thick material or a material that is partially different in thickness, set the differential feed dog ③ at a higher level (1.0 mm).



6-14 Adjusting tape width

Loosen the screw ⑧ of the tape guide, and make adjustment so that an elastic tape runs on the right track, according to the elastic tape width.
Also adjust the position of the collar ⑨ by loosing the screws ⑩, according to the elastic tape width.

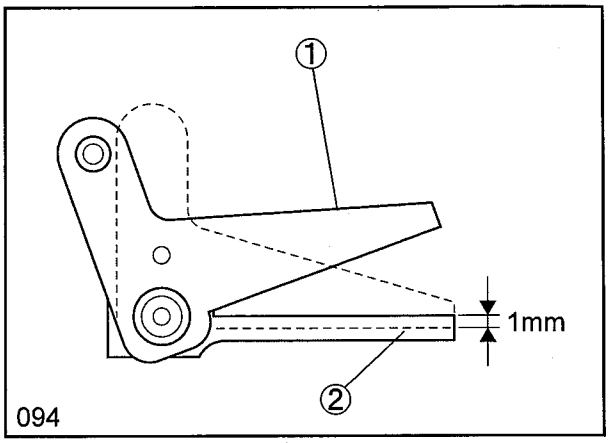




6-15 Adjusting and replacing tape cutter

< How to adjust >

When the air cylinder functions, the engagement of the moving knife ① with the fixed knife ② should become 1 mm as shown in Figure 094. To make this adjustment, loosen the lock nut ③ of the air cylinder and turn the cylinder rod.



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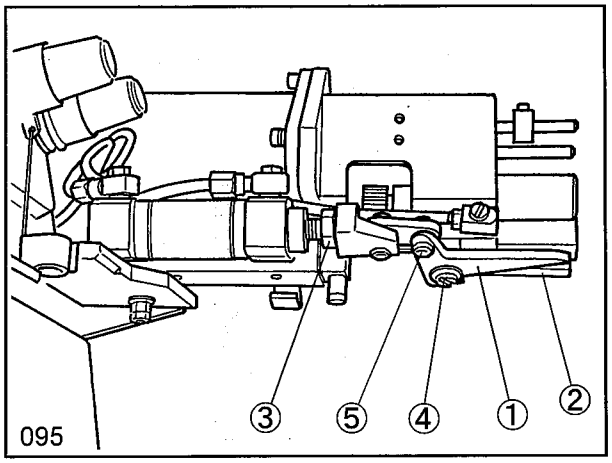
< Replacement of knives >

Replace the moving knife ① by removing its locking screws ④ and ⑤.

The tightening torque applied to the screw ④ of the fulcrum of the moving knife ①and fixed knife ② should be around 0.5 N・m. If the screw is tightened excessively, the durability of the knife will detereriorate.

After adjusting the tightening torque of the screw ④, lock the screw with a nut.



095

6-16 Changing lubricating oil

< Time of changing lubricating oil >

Change the lubricating oil after the operation of the first approximately 250 hours. After that, change the lubricating oil every six months.

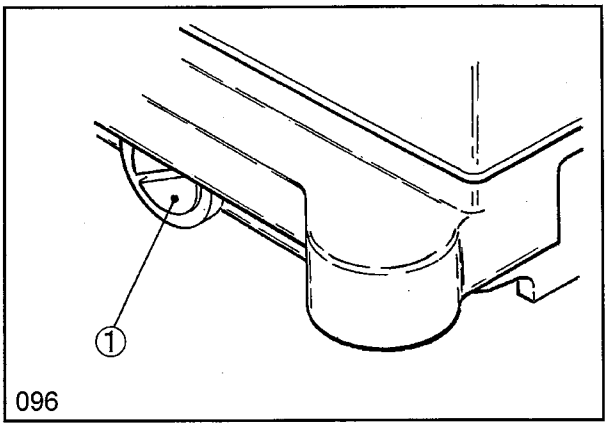
< The procedure for changing lubricating oil is as follows >

(1) Remove the belt cover. (See page 7.)
(2) Remove the V-belt from the motor pulley. (See page 7.)
(3) Remove the machine from the table.
(4) Set a vessel under the drain hole screw ① to receive lubricating oil.
(5) Remove the drain hole screw ①. The lubricating oil will be drained.

⚠ CAUTION

Take care so that oil may not adhere to the V-belt.

(6) Reinstall the drain hole screw ① to the original position.
(7) Remove the oil cap ② indicated with [OIL].
(8) After removing the oil cap ②, supply new lubricating oil up to the upper red line marked on the oil gauge ③ from the hole.
Recommended oil: YAMATO SF oil 28
(9) Set the machine onto the table.
(10) Hang the V-belt to the motor pulley and reattach the belt cover to the original position. (See page 7.)



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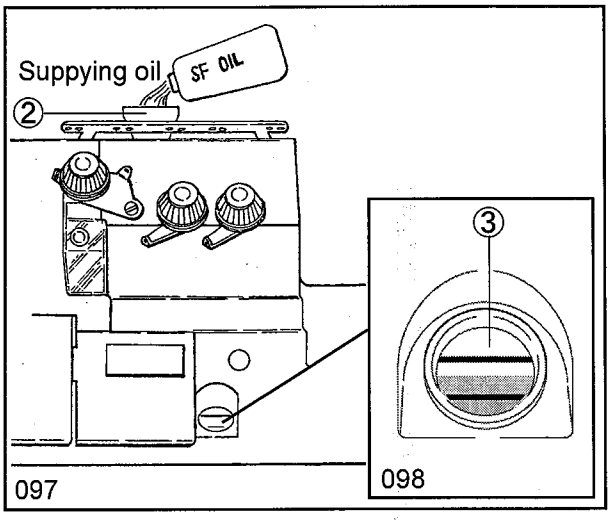


097 098

⚠ CAUTION

The lubricating oil level should be between the two red lines on the oil gauge ③.
If it is above the upper red line, an oil leak may occur.
If it is lower than the lower red line, a machine failure may occur.

6-17 Checking and replacing oil filter

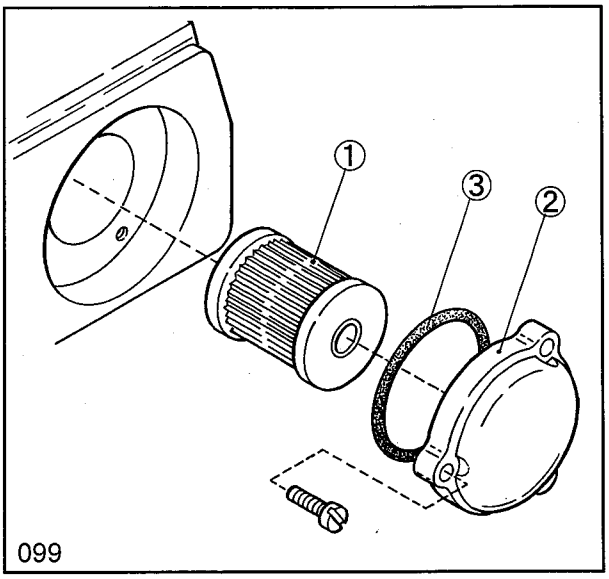
If the oil filter ① is clogged with dust, lubrication will not be performed properly. Check the filter every six months.

< Checking and replacing >

(1) Remove the oil filter cap ② and take out the O-ring ③ and oil filter ① for checking.
(2) If the oil filter ① is clogged with dust, replace it.

⚠ CAUTION

When removing the oil filter cap ②, be careful as the lubricating oil remaining in the oil filter ① may leak.



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7. Setting up control panel

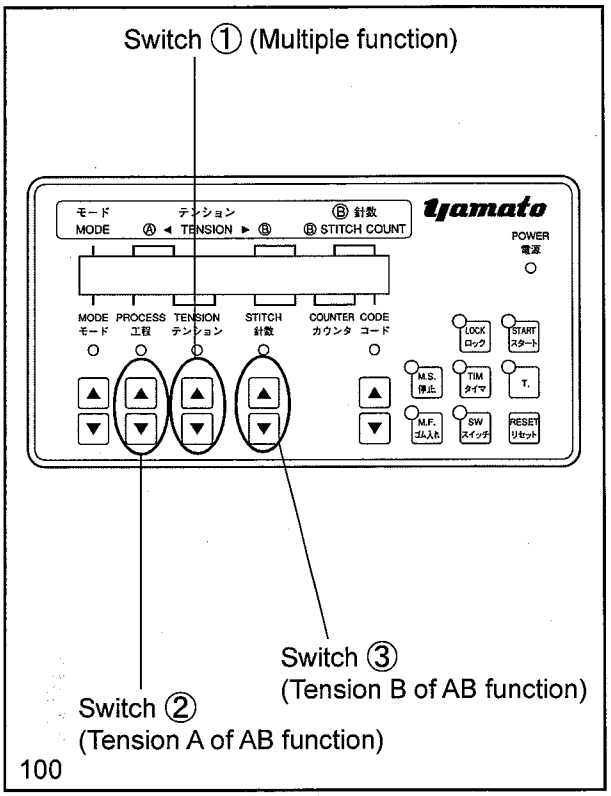
7-1 Reducing gathering at sewing finish

To reduce gathering, increase the tension.

Multiple function: Press [▲] of the switch ①.

AB functions: Press switch ② for tension A and press [▲] of the switch ③ for tension B.

If the tension is increased excessively, the tape may become too much on the presser foot resulting in troubles.



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7-2 Increase gathering at sewing finish

To increase gathering, decrease the tension.

Multiple function: Press [▼] of the switch ①.

AB functions: Press switch ② for tension A and press [▼] of the switch ③ for tension B.

7-3 Adjusting tape held under presser foot at beginning of sewing

7-3-1 Adjusting length

Referring to 7-8-2 [Timer setting] on page 48, adjust the parameter [T00] so that the tape may be positioned at the center of the differential feed dog. If the parameter is set to a higher level, the tape becomes longer.

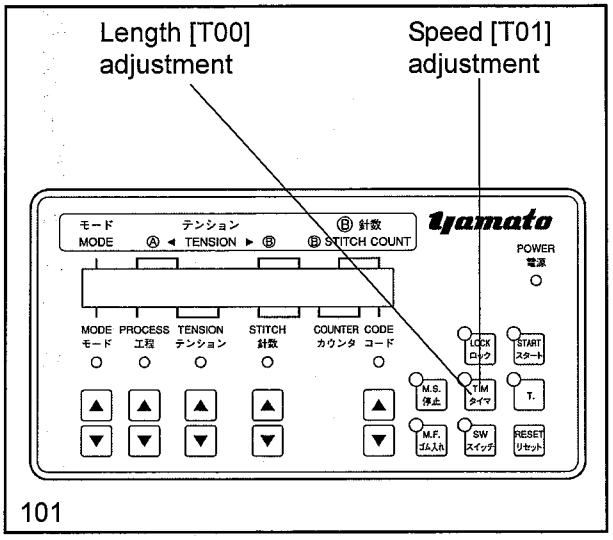
Example of display	T00 IN TAPE L 10

7-3-2 Adjusting speed

Referring to 7-8-2 [Timer setting] on page 48, adjust the parameter [T01]. If the parameter is set to a higher level, the speed becomes faster.

If the tape is bent at insertion, decrease the parameter to reduce the speed.

Example of display	T01 IN SPEED 10



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7-4 Flat or gathering at beginning of sewing

Referring to 7-8-2 [Timer setting] on page 48, adjust the parameters [T02] and [T03].

7-4-1 Flat sewing from beginning

Set the parameters [T02] and [T03] to [00].

Example of display	TO2	STOP	00

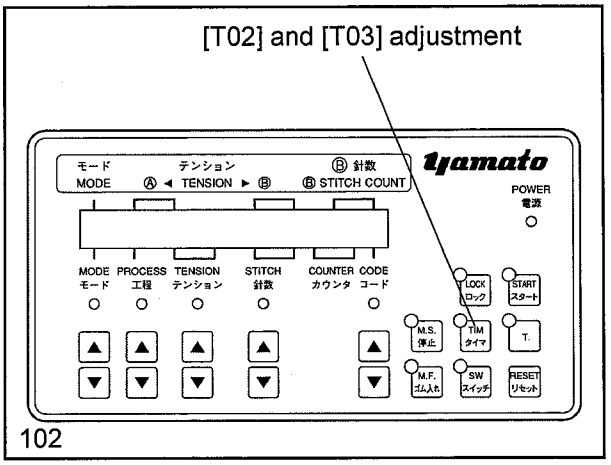
Example of display	TO3	PULL UP	00

7-4-2 Gathering sewing from beginning

Increase parameter [T03]. If the tape is slipped, increase parameter [T02].
(Adjustable range of parameter is 00 - 99.)

Example of display	TO3	PULL UP	40

Example of display	TO2	STOP	10



7-5 Adjusting thread chain

Referring to 7-8-2 [Timer setting] on page 48, adjust parameter [T04] or [T05].
(Adjustable range of parameter is 00 - 10.)

7-5-1 Adjusting thread chain at beginning of sewing

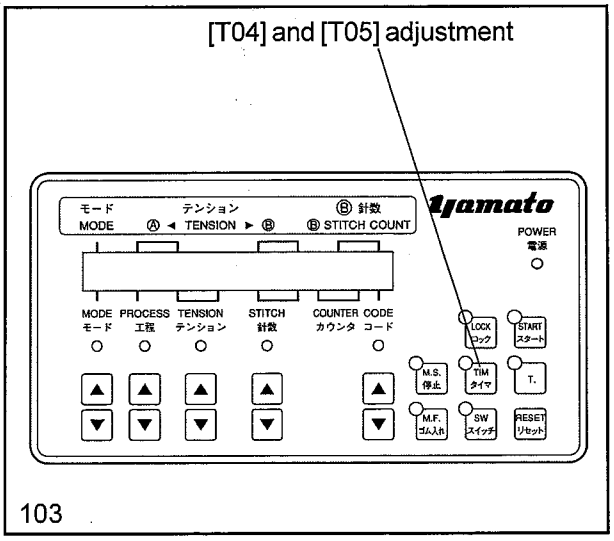
Adjust parameter [T04].
Increase the parameter when a thread chain is not cut.

Example of display	TO4	C DEV	OFF	30

7-5-2 Adjusting thread chain at end of sewing

Adjust parameter [T05].
When the tension release functions on a material, increase the parameter.

Example of display	TO5	C DEV	ON	30



7-6 Convenient functions

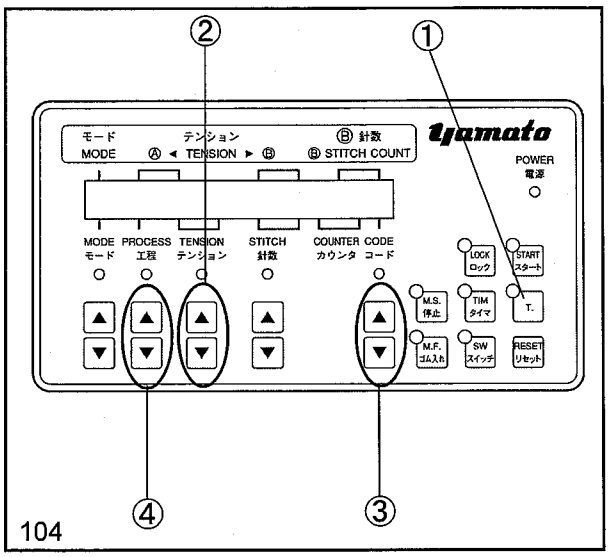
7-6-1 Learning function (available in multiple function mode)

When the learning function is used, the stitch count of the sewn product is measured by the device.
The setting of the stitch count is simple.

< Application >

(1) Press the switch ①. Lamp [T] will light up.
(2) Set the tension suited to the intended sewing with the switch ②, and set the code to either [B], [C] or [D] with the switch ③.
***If the code is set to [A], the learning function is not available.**
(3) After sewing has started, the counter starts counting stitches.
(4) It stops once in the position where the process is changed.
(5) Press [▲] of the switch ④.

The next process will be displayed with the stitch count in the previous process being displayed on the counter.



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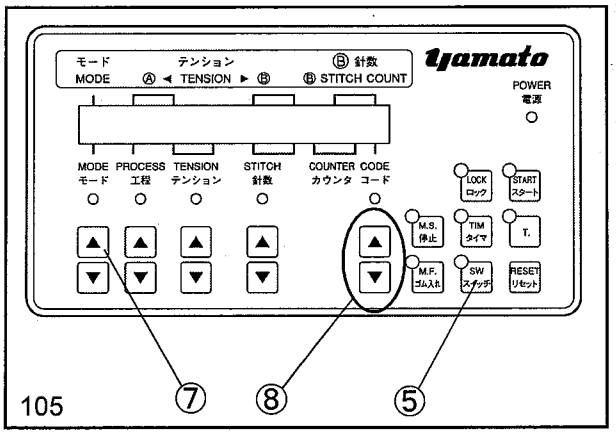
7-6-2 Combining multiple modes in multiple-function mode (changeover between modes; for alternative uses or sequential uses)

Sewing can be carried out from one mode to another, using two different modes alternately, or sequentially using different modes.
For example, such a combination of modes is useful for right and left around leg opening (sewing is carried out while two modes are being used alternately) or right and left around leg opening and around waist (three modes are used in sequence).
To toggle between modes, change the control mode setting by taking the following steps:



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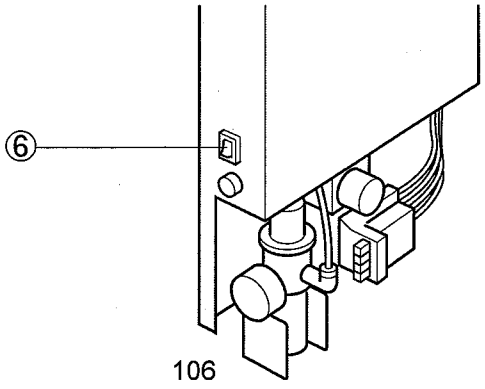
< Control mode setting >

(1) Turn ON the power switch ⑥ while holding down the switch ⑤.
(2) Press [▲] of the switch ⑦ to display [MODE X MODE].
(3) Press the switch ⑧ to change the display to [MODE O MODE].
(4) Turn OFF the power switch ⑥ and the turn it ON again after five seconds.



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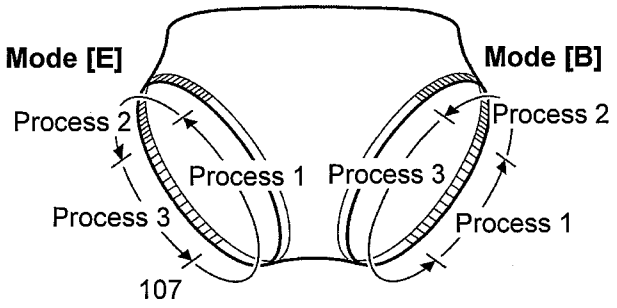
< Example of combination of modes >

This example explains the settings for the sewing that is carried out in the order of right leg opening (mode [B]) and left leg opening (mode [E]).
* All modes from [A] to [Z] can be used.



– Set point –

◇Right of leg opening: Mode [B]

Process 1 : Tension [090], code [A]
Process 2 : Tension [040], stitch count [050], code [B]
Process 3 : Tension [096], code [A]
Process 4 : Tape is cut with knee switch.
Process 5 : [GO MODE E] display code [■]

◇Left of leg opening: Mode [E]

Process 1 : Tension [080], code [A]
Process 2 : Tension [035], stitch count [045], code [B]
Process 3 : Tension [087], code [A]
Process 4 : Tape is cut with knee switch.
Process 5 : [GO MODE B] display code [■]

– Setting method –

(1) Enter processes 1, 2, and 3 in mode [B] referring to instructions on page 28.
(2) Set the process to [4] with the switch ①, and set the code to [■] with the switch ②.
(3) Press [▲] of the switch ③ to change [A] to [E].

Example of display	B 4 GO MODE E ■

***After changed to [E], according to this setting, the machine will proceed to mode [E] upon completion of mode [B].**

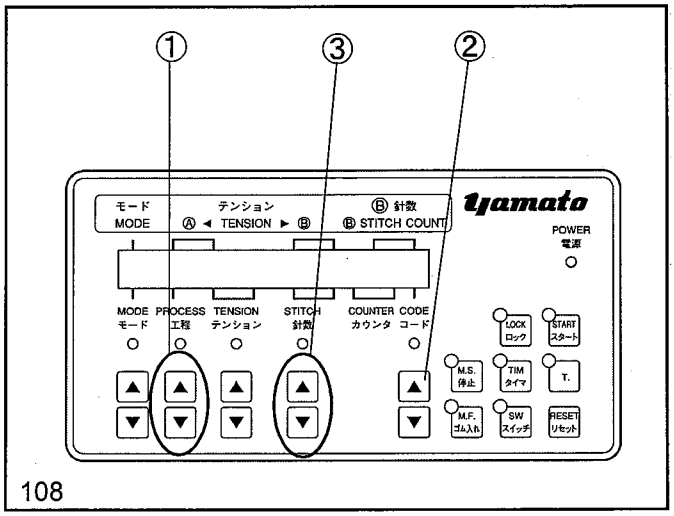
(4) Set the mode to [E] and enter processes 1, 2, and 3.
(5) Set the process to [4] with the switch ①, and set the code to [■] with the switch ②.
(6) Press [▲] of the switch ③ to change [A] to [B].

Example of display	E 4 GO MODE B ■

(7) Return the mode to [B].

From now, the machine will proceed to mode [E] upon completion of mode [B], and proceed to mode [B] upon completion of mode [E]. Then, sewing will be carried out using mode [B] and [E] alternately.

Operations will be carried sequentially in this order: process 1 → process 2 → process 3 in mode [B], and then process 1 → process 2 → process 3 in mode [E].



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7-6-3 Tension B is automatically returned to tension A by AB function.

After sewing has been carried out at tension B, it is automatically shifted to tension A at the specified stitch count.

(1) Change [S01] setting from [0] to [1] referring to 7-9-2 [Setting of switches] on page 49.

Example of display	SO1	AUTO	B → A	1

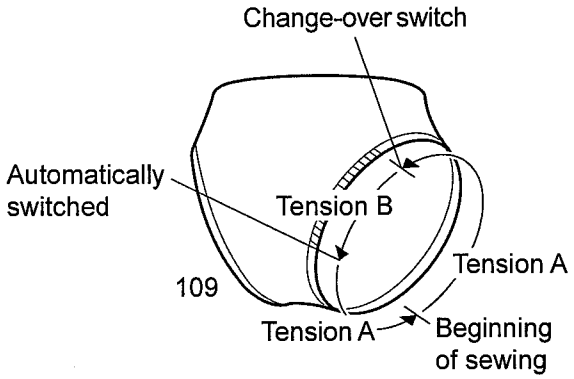
(2) Press the switch ①. Then the values for tension A and B, and stitch count will appear as[000].

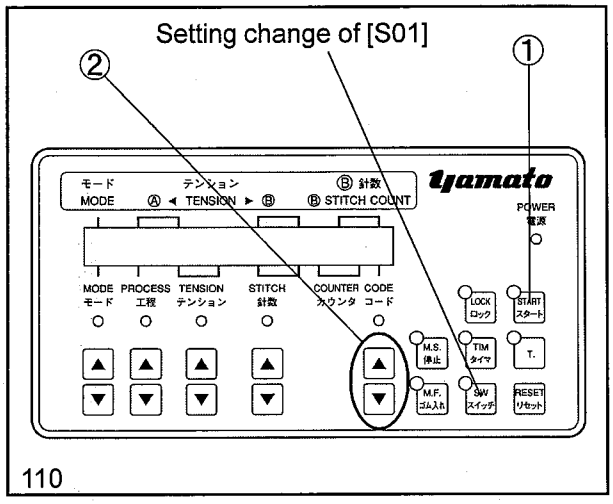
Example of display	A	080	050	000

(3) Set the stitch count with the switch ②.
(If the stitch count is set to 75, the following display will appear.)

Example of display	A	080	050	075

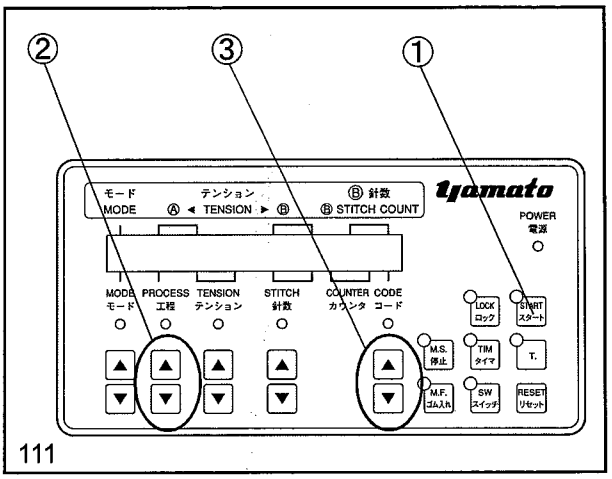
NOTE: Determine the optimal level of the actual stitch count during the sewing operation.





7-6-4 Tape counter

This device has a tape counter to measure the length of the tape used for each run of sewing.
The length of the tape used and its tolerance may be specified.
After sewing, the measured length is compared to thespecified length. If the difference is more than the specified tolerance, the alarm buzzer sounds.
If the buzzer sounds, reset it by pressing the switch ①.
Note:The specified length is approximate, which means that the actual length may be slightly different from the specified value.



< Setting of tape counter >

(1) Press the switch ① for more than a second. The taper counter will be displayed.

Display	0000	0000	00

Tape length to be set
Tape length to be measured
Tolerance to be set
All units are in mm

(2) Enter the tape length with the switch ②.
(3) Enter the tolerance with the switch ③.
(4) Press the switch ①.

Now the settings have been completed (the settings are possible in each mode).

< Example of application >

Assume that the tape length is specified as 450 mm and its tolerance as 10 mm.

Display	0450	0000	10

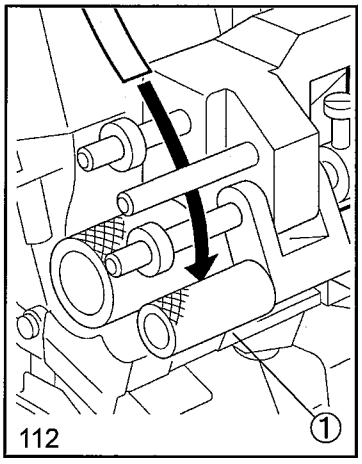
If the tape used for sewing is 440 - 460 mm in length, the alarm buzzer will not sound.
If the length of the tape used is less than 440 mm or more than 460 mm, the alarm buzzer will sound.
Reset the buzzer by pressing the switch ①. To see the measurement, press the switch ① for more than a second. The measured value will be displayed on the tape counter.

Display	0450	0465	10

(Measurement by the tape counter is 465 mm.)

7-6-5 Passing tape automatically through metering device

After a tape has been brought to a position just before the roller (the metering device) ①, press the switch ②. The motor will be actuated to pass the tape through.



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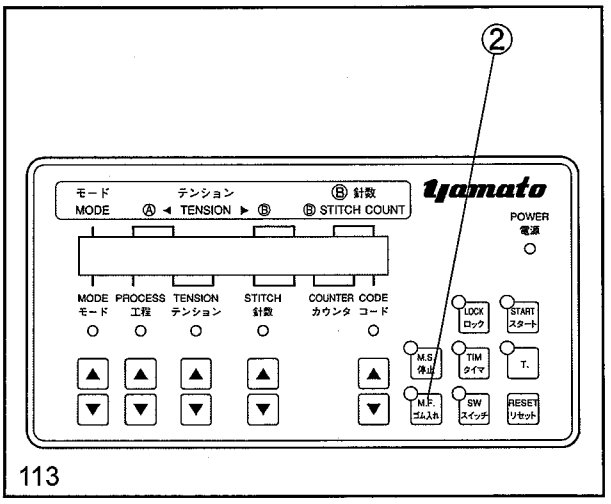

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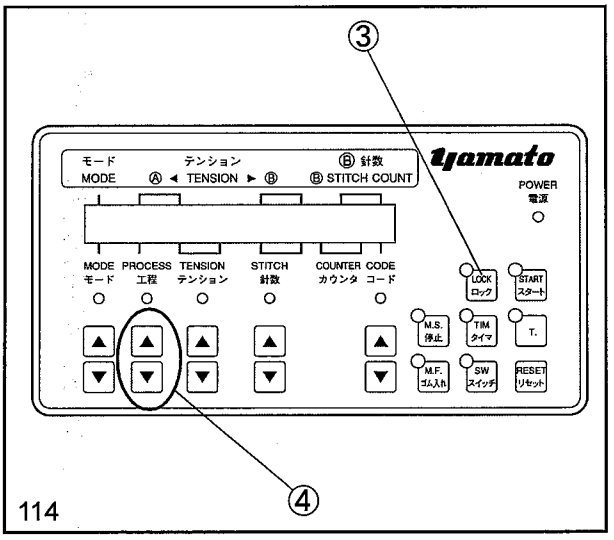
7-6-6 Key lock

Press the switch ③. The locking mechanism will be actuated and all switches except for the switch ④ will be disabled. (The switches will not respond even if they are pressed.)

To release the locking, hold down the switch ③ for more than three seconds.



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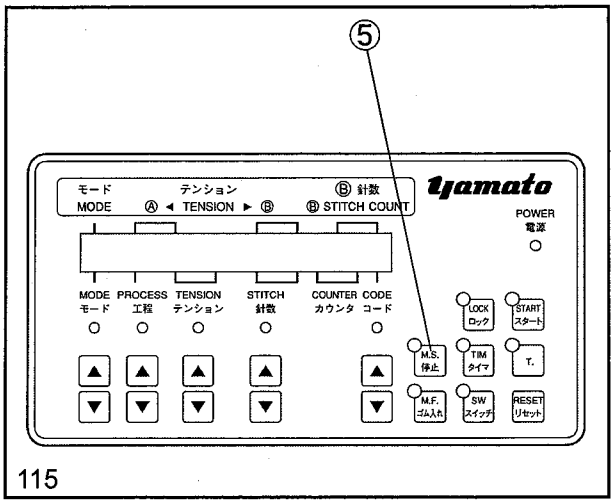
7-6-7 When tape feeder is not used

To get the plain sewing, press the switch ⑤.
The tape feeder will be disabled. (The thread chain device and the presser foot lifter will function normally.)
During operation, the machine speed is displayed.



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7-7 Other functions

7-7-1 Tape feeding amount of tape feeder

Referring to 7-8-2 [Timer setting] on the next page, adjust parameter [T08]. (Adjustable range of parameter is 00 - 99.)
When the parameter is set to a higher level, the feeding amount becomes larger.

Example of display	T08	FEED	LEN.	30

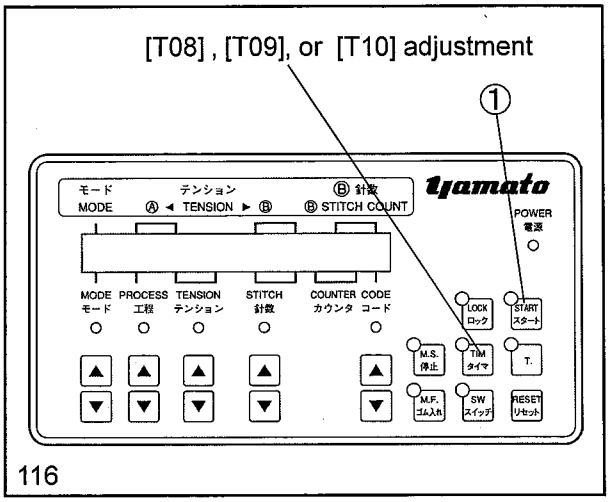
7-7-2 Tape feeding rate of tape feeder

Referring to 7-8-2 [Timer setting] on the next page, adjust parameter [T09]. (Adjustable range of parameter is 0 - 5.)
When the parameter is set to a higher level, the feeding rate becomes faster.
If the tape becomes too much before entering into the tape feeder, decrease the feeding rate.

Example of display	T09	FEED	SPEED	3

7-7-3 Alarm buzzer of tape feeder

The alarm buzzer sounds when not feeding a tape smoothly by causes such as catching a tape in a tape feeder.
Reset the buzzer by pressing the switch ①.
Referring to 7-8-2 [Timing setting] on the next page, adjust parameter [T10]. (Adjustable range of parameter is 00 - 99.)
When the parameter is set to a higher level, the alarm buzzer will sound properly.
If the alarm buzzer sounds late for warning when sewing at a high speed, decrease the value.



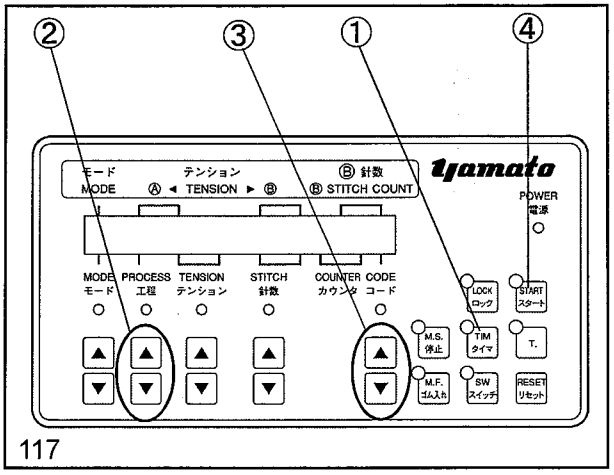
7-8 List of timer functions

7-8-1 Types of timers

Display	Adjustable range	Default	Description
T00 IN TAPE L	00-99	10	Adjustment of tape to be held under presser foot at beginning of sewing
T01 IN SPEED	00-20	10	Adjustment of feeding rate
T02 STOP	00-99	02	Stitch count by which tape feeding is stopped at the beginning of sewing
T03 PULL UP	00-20	02	Stitch count to be reversed at the beginning of sewing Upon completion of T02, T03 operation is made. If T02 and T03 are set to 00, tape feeding starts immediately.
T04 C DEV OFF	00-99	20	Stitch count from starting sewing to stopping K device
T05 C DEV ON	00-99	20	Stitch count at which K-device and tension releaser function after tape is cut by cutter
T06 COR. 5000	0-10	02	
T07 COR. 6000	0-10	03	
T08 FEED LEN.	00-99	20	Adjustment of tape length to be fed when lever of tape feeder is raised
T09 FEED SPEED	0-5	00	Adjustment of tape feeding rate of tape feeder To be set so that the tape fed by tape feeder may not become too much
T10 FEED ERROR	00-99	04	Buzzer sounds when the lever is raised for the time longer than being set Warning when elastic tape is caught and is not raised

7-8-2 Timer setting

(1) Press the switch ① to enter into [TIM] mode.
(2) Select a desired process with the switch ②.
(3) Change the setting with the switch ③.
(4) After the setting has been completed, press the switch ④.



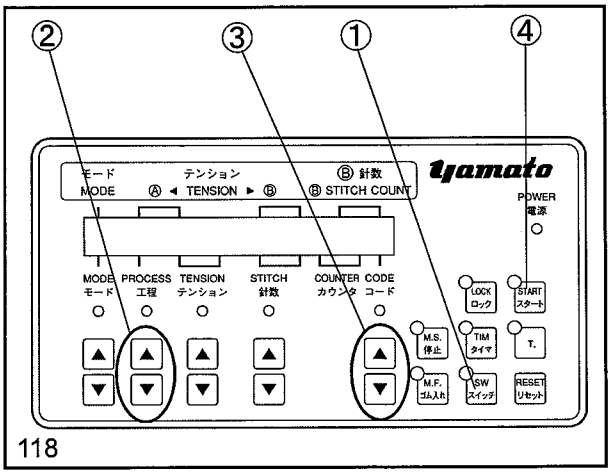
7-9 List of switch functions

7-9-1 Types of switches

Display	Default	Description
S00 AUTO FL UP	0	When the tape should be held automatically under presser upon completion of sewing, set this switch to 1.
S01 AUTO B→A	0	When tension B should be returned automatically to tension A by AB function, set this switch to 1. When set to 1, display is changed from A 080 050 to A 080 050 075 to show stitch count.

7-9-2 Setting of switches

(1) Press the switch ① to enter into [SW] mode.
(2) Select a desired process with the switch ②.
(3) Change the setting with the switch ③.
(4) After the setting has been completed, press the switch ④.



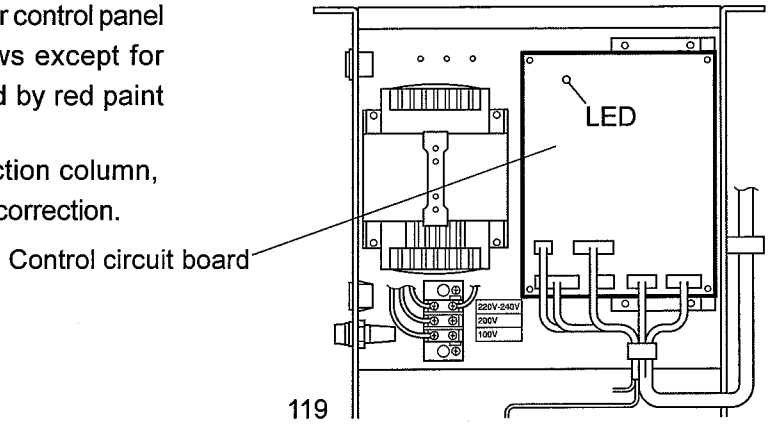
8. Troubleshooting

8-1 Troubleshooting

Symptom	Possible cause	Remedy/Action	Ref.
Stitches are skipped	Thread route is incorrect.	Correct thread route.	18
	Needle is bent or needle point is dull.	Replace needle.	17
	Thread tension is excessive.	Loosen thread tension.	20
	Timing and clearance between needle and upper/lower loopers, are inappropriate.	Adjust timing and clearance.	32 33
	Needle is too thin compared with thread.	Replace needle or thread.	17
	Installation of needle is improper (wrong orientation, insufficient insertion).	Install needle correctly.	17
Thread is broken	Thread is caught by thread eyelet or the like.	Remove winding thread.	
	Thread route is incorrect.	Correct thread route.	18
	Thread tension is excessive.	Loosen thread tension.	20
	Thread is too thick compared with needle.	Replace needle or thread.	
	Quality of thread is low.	Use high-quality thread.	
	Thread is broken by heat.	Use SP device.	22
	Needle is bent or needle point is dull.	Replace needle.	17
	• Needle thread pull-off, presser foot, and stitch plate are damaged. • Any thread hole in needle, looper or eyelet is damaged. • Upper/lower looper edge has burr or flat portion.	Repair or replace.	
Needle is broken	Needle hits upper/lower looper.	Adjust clearance between needle and looper or needle guard appropriately.	32 33
	Needle hits presser foot or stitch plate claw.	Adjust presser foot or stitch plate claw position.	
	Needle guard is pressing the needle excessively.	Adjust clearance between needle and needle guard appropriately.	34
Thread tension is insufficient	Thread route is incorrect.	Correct thread route.	18
	Balance of thread tension between needle thread and looper thread is incorrect.	Adjust balance of thread tension.	20
Stitches are irregular	Thread route is incorrect.	Correct thread route.	18
	Overedge seam is too wide (or too narrow).	Replace presser foot and stitch plate with those suited for overedge seam width.	20
	Knife is dull.	Adjust knife pressure and engagement.	35
		Sharpen knife.	
	Balance of thread tension between needle thread and looper thread is incorrect.	Correct balancing of thread tension.	20
Needle eye	Needle point is damaged.	Replace needle.	17
Irregularity of feeding	Presser foot pressure is excessive.	Adjust presser spring pressure.	20
	Presser foot is not in parallel with stitch plate.	Adjust so that presser foot is in parallel with stitch plate top surface.	
Lubrication oil is not supplied from nozzle	Lubrication oil level is lower than the lower line on oil gauge.	Add lubrication oil.	38
	Oil filter is clogged.	Replace oil filter.	39

Symptom	Possible cause	Remedy/Action	Ref.
Nothing is displayed on the control panel. Lamp does not light up.	Applied voltage is not same as specified voltage.	Use correct cables suited for applied voltage.	13
	Fuse is blown.	Replace fuse.	
		Check to see if capacity and voltage of the fuse are correct.	13
	Power cable is connected incorrectly.	Connect cable correctly.	14
	Panel relay cable is connected incorrectly.	Connect cable correctly.	14
	Control circuit board is defective. (LED at left upper area of control circuit board in the control box is off.) (See below figure 119.)	☆ Replace control circuit board.	
Tape is not fed.	Each cable is connected incorrectly. (Check each input/output signal under input/output signal mode. (See 8-2 [Connection test by control panel].)		14 52 53
	Motor for tape feeder or metering device is not running.	☆ Replacement of control circuit board	
	Roller is not turning although metering motor is running.	☆ Replacement of timing belt	46
		☆ Replacement of timing pulley	
	Tape is not fed when lever switch of tape feeder is pressed down.	☆ Replacement of lever switch	
Motor is not running smoothly	There is rotational irregularity.	☆ Replacement of motor.	
Alarm buzzer sounds	A tape is caught in and lever switch of tape feeder is raised.	Reset the buzzer and set a tape without catching or adjust the parameter of 7-7-3.	47
	The parameter of tape counter is not matched with the sewing length.	Reset the buzzer and adjust the parameter or re-sewing.	45
• Elastic tape cutter does not function. • Presser foot lifter does function. • Tension releasing device does not function. • Thread chain is not sucked.	<Common to each item>		
	Air pressure is not set to 0.45 MPa.	Adjust air regulator.	
	Check each input/output signal under input/output signal mode. (See 8-2 [Connection test by control panel].)		52 53
	Open/close switch lamp of metering device is on.	Close metering device tightly. Adjust clearance between metal sensing switch and motor mounting table.	10

NOTES: When replacing the control circuit board or control panel circuit board, do not loosen the screws except for mounting screws. (The screws marked by red paint should not be loosened.)
As for those with ☆ mark in the correction column, contact your local agent or YAMATO for correction.



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8-2 Connection test by control panel

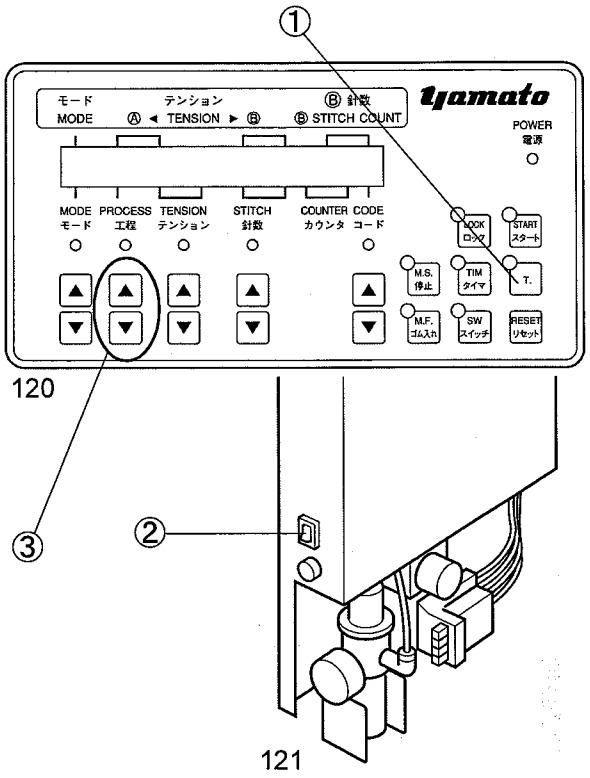
The control panel allows you to test the connections of input devices such as switches and output devices such as solenoid valves.

8-2-1 Input test

(1) Turn ON the power switch ② while holding down the switch ①.

Display	I00	P70	0

(2) Press the switch ③. The input devices shown in the following table will be displayed in sequence.
(3) At the right end of the display, either [0] or [1] is displayed depending on the current condition of the input device.
(4) Upon completion of the test, turn OFF the power switch ②.



8-2-2 List of input signals

Display	Input device	
I00 P70	Not used	
I01 P71	Not used	
I02 P72	Not used	
I03 P73	Not used	
I04 HEELBACK		Foot switch
I05 DEVIC OPN		Metering device open/close switch
I06 KNEE SW		Knee switch
I07 AEF LEVER		Tape feeder lever switch
I08 MAN SW		Change-over switch
I09 HALL SW		Hall IC switch
I10 PWR MNTR	Not used	

8-2-3 Output test

(1) Turn ON the power switch ② while holding down the switch ①.

Display	I00	P70	0

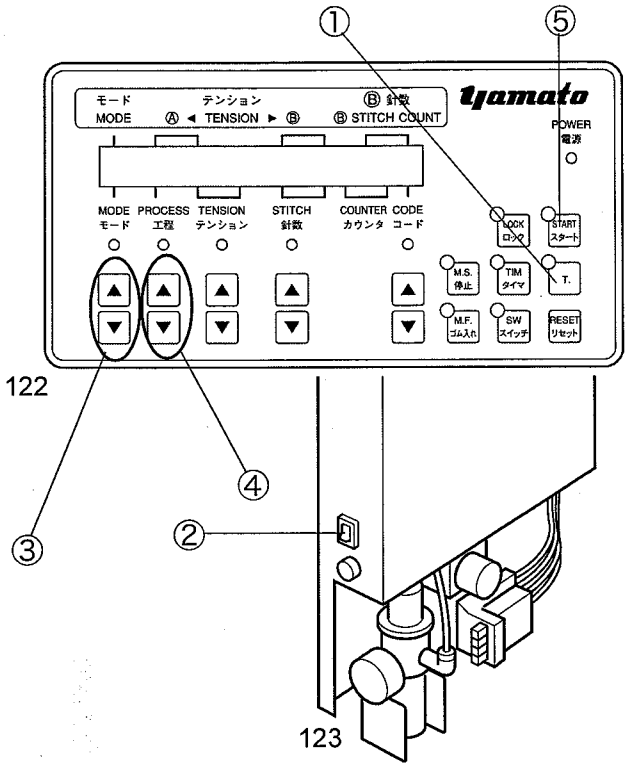
(2) Press the switch ③ to display the output test menu.

Display	O00	FOOT LIFT	0

(3) Press the switch ④. The output devices shown in the following table will be displayed in sequence.

(4) Press the switch ⑤. The displayed output device will start operating.

(5) Upon completion of the test, turn OFF the power switch ②.



8-2-4 List of outputnput signals

Display	Output device	
O00 FOOT LIFT		Presser foot lifter solenoid valve
O01 TR		Tension release
O02 CUTTER		Tape cutter
O03 BLOW AIR		Air blowing
O04 PB4	Not used	
O05 PB5	Not used	
O06 K DEV		Thread chain suction
O07 P44	Not used	
O08 P45	Not used	
O09 P46	Not used	
O10 P47	Not used	
O11 LED GREEN		Green lamp
O12 LED RED		Red lamp
O13 5MOTOR CW		Metering motor normal turning
O14 5MOTOR CCW		Metering motor reverse turning
O15 2MOTOR CW		Upper tape feeder motor normal turning
O16 2MOTOR CCW		Upper tape feeder motor reverse turning

9. Specifications

9-1 Specifications for sewing unit

Model		AZ8451 -O4DF/K2/MA	AZ8451 -O4DF-10/K2/MA	AZ8471 -Y5DF/K2/MA	AZ8471 -Y5DF-10/K2/MA
Description		Ultra high speed cylinderl bed Overlock machine	High speed cylinder bed Overlock machine	Ultra high speed cylinderl bed Overlock machine	High speed cylinder bed Overlock machine
Dimensions (mm)	Total length	375			
	Total width	265			
	Total height	322			
Weight (kg)		31			
Construction		Dust-proof, oil-tight and completely sealed			
Stitch type		ISO 504, 514			
Application		Sewing elastic tape into shorts and swimwear			
Sewing speed (r.p.m.) Max.		6500	5000	6500	5000
Stitch length	Length (mm)	1.0 - 3.5(Factory set to 3 mm)			
	per inch	7.3 - 25 stitches			
	per 30 mm	8.6 - 30 stitches			
Overedge seam	Width (mm)	(3) 4 (5)		5 (6)	
	Symbol	(3) 4 (5)		5 (6)	
Needle distance		O (One needle)		Y (2.4mm)	
Needle stroke (mm)		24.5			
Needle system		DC × 1 (#8 - #14) Factory set to #9			
Presser foot lift (mm)		6			
Feed regulation		Push button system			
Differential ratio		Maximum normal differential (Gather sewing) 1 : 2.0			
		Maximum reverse differential (Stretch sewing) 1 : 0.8			
Regulation of differential feed		To be regulated by external lever (Regulation is possible during machine operation)			
Cloth cutting knives	Upper knife	Flat knife made of cemented carbide			
	Lower knife	Flat knife made of special steel			
Lubrication oil		YAMATO SF Oil			
Lubrication		Forced fed by gear pump			
Capacity of oil reservoir (cc)		1000			
Width of elastic tape (mm)		6 - 12 (12 - 24)*	23 - 40	6 - 12 (12 - 24)*	23 - 40

* Applicable to the case where optional parts are used.

9-2 Electric specifications

- Power supply: Rated voltage ±10% (100 V, 200 V, 220 V, 240 V) 50/60 Hz
- Fuse capacity: 100 V (4A), 220 - 240 V (2A)
- Ambient temperature: +5°C – +40°C
- Humidity: Less than 90% RH
- Power consumption: 80 VA

yamato
ヤマトミシン製造株式会社
YAMATO SEWING MACHINE MFG. CO.,LTD.

4-4-12,NISHITENMA, KITA-KU, OSAKA,JAPAN
TEL：81-6-6364-1321 FAX：81-6-6364-1307

〒５３０-００４７　大阪市北区西天満４丁目４番１２号
TEL(０６)６３６４-１３２１(代) FAX(０６)６３６５-５１７６

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