



Instruction Manual

Parts List

MANUAL BACK-TACKING DEVICE

BT43

AZ7000SD-8, AZ8000SD-8, AZF8000G class

Thank you for purchasing BT43.

For properly your BT43, please read over this manual and the manual for sewing machine together to fully understand their contents.

After reading the instruction manual, please keep it in a location where it is easily accessible to the operator.



YAMATO SEWING MACHINE MFG. CO., LTD.

CONTENTS

1. Overview	1
2. Installation	2
2.1 Check and change of voltage	2
2.2 Control box Installation	3
2.3 Wiring diagram	4
2.4 Power cord connection	5
2.5 Precautions	5
2.6 Synchronizer installation	6
2.7 Automatic motor stop function	6
2.8 Automatic presser foot lifter device (special order parts)	7
3. Proper operation	10
 3.1 Seam condition and device operation	10
 3.2 Each section name and function of control panel	11
 3.3 Adjustment at beginning of sewing	12
3.3.1 Tension releaser adjustment at beginning of sewing	12
3.3.2 Stitch plate tongue adjustment at beginning of sewing	12
 3.4 Adjustment at end of sewing	13
3.4.1 Tension releaser adjustment at end of sewing	13
3.4.2 Stitch plate tongue adjustment at end of sewing	13
 3.5 Mesh materials	14
3.6 Automatic motor stop function setting	14
3.7 Automatic presser foot lifter mechanism	15
4. Adjustments	16
 4.1 Thread chain holding pressure	16
4.2 Knife change	16
4.3 Lower looper adjustment	17
4.4 Stitch plate tongue front-and-rear position	17
5. Troubleshooting	18

CONTENTS

6. Test mode usage	19
6.1 Solenoid function test	19
6.2 Reset	19
6.3 Fabric sensor function test	19

**** ILLUSTRATED PARTS LIST ****

Attention

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

Attention

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

1. Overview

- Name: Manual back-tacking device
- Applied machine: 2-needle machine for AZ7000SD-8 class, AZ8000SD-8 class and AZF8000G class
- Features:
- ◇ This BT43 device is applied to both stable seam condition on the material and beautiful back-tacking of soft thread chain into the seam by using the movable middle stitch plate tongue and tension releaser interlocked with the electrooptical function for detecting the material.
 - ◇ This BT43 device is applied to a short sewing distance by providing short length of thread chain to be sewn into the seam. (as compared with our conventional machines)
 - ◇ This BT43 device is applied to mesh materials and prevents malfunctions during operation.
 - ◇ This BT43 device improves usability of the machine because of making the length of the thread chain the same by stopping the motor automatically.
 - ◇ With use of automatic presser foot lifter mechanism (special ordered), this BT43 device also improves usability of the machine because of automatically raising the presser foot after motor stop and lowering it at the time of setting material.
- Notes:
- ◇ Use a positioner motor for detecting the needle position.
 - ◇ automatic motor stop function needs a motor that stops by external input signal.
 - ◇ Automatic presser foot lifter mechanism needs a motor that stops by external input signal and outputs signal for the presser foot lifter.

2. Installation

2.1 Check and change of voltage

2.1.1 Checking power supply voltage

Before operation, check that the power supply voltage used is the same as the voltage printed on the control box. (It is printed on the plate on the rear of the control box.)

At shipment, the voltage printed on the control box is 220 V and the usable range is 220 to 240 V.

If using this BT43 device at a voltage other than this range, please contact our technician in our agencies.

If you have your own technician of electronics, take the following steps.

2.1.2 Changing of set voltage

⚠ CAUTION

Make this work before installing the control box to the table.



Before starting the work, pull the power plug out of the control box and wait more than 5 minutes.

If the power source voltage is different from the set voltage of the control box, remove the cover of the control box and change the position of the tap on the transformer terminal to the proper one. (See Table. 1) Change also the fuse and the voltage panel to ones applicable to the power supply voltage, referring to Tables 1 and 2.

⚠ CAUTION

If taking wrong steps, the control box can be damaged. Be sure to follow proper steps.

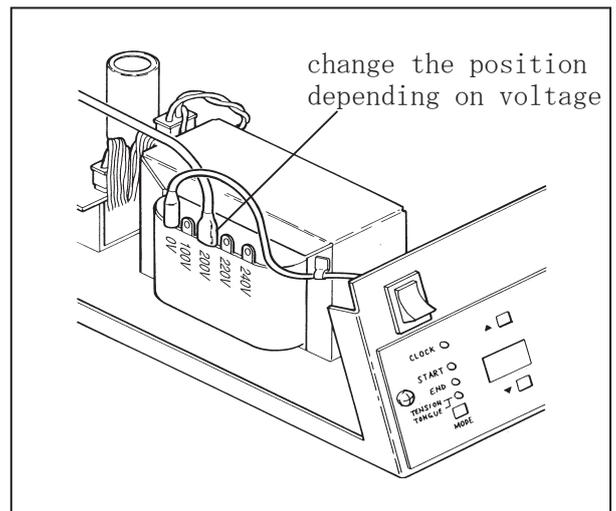


Fig. 2-1

power supply voltage	voltage of transformer terminal	description of voltage indicate plate	part number of power indicate plate
100V	100V	100V	000805
200V	200V	200V	000806
220V	220V	220V	000742
240V	240V	240V	393120

Table 1

power supply voltage	fuse capacity	part number of fuse
100 - 110 V	2 A	1070020
200 - 240 V	1 A	0010912

Table 2

2.2 Control box installation

Install the control box under the table with the wood screws referring to Fig.2-2.

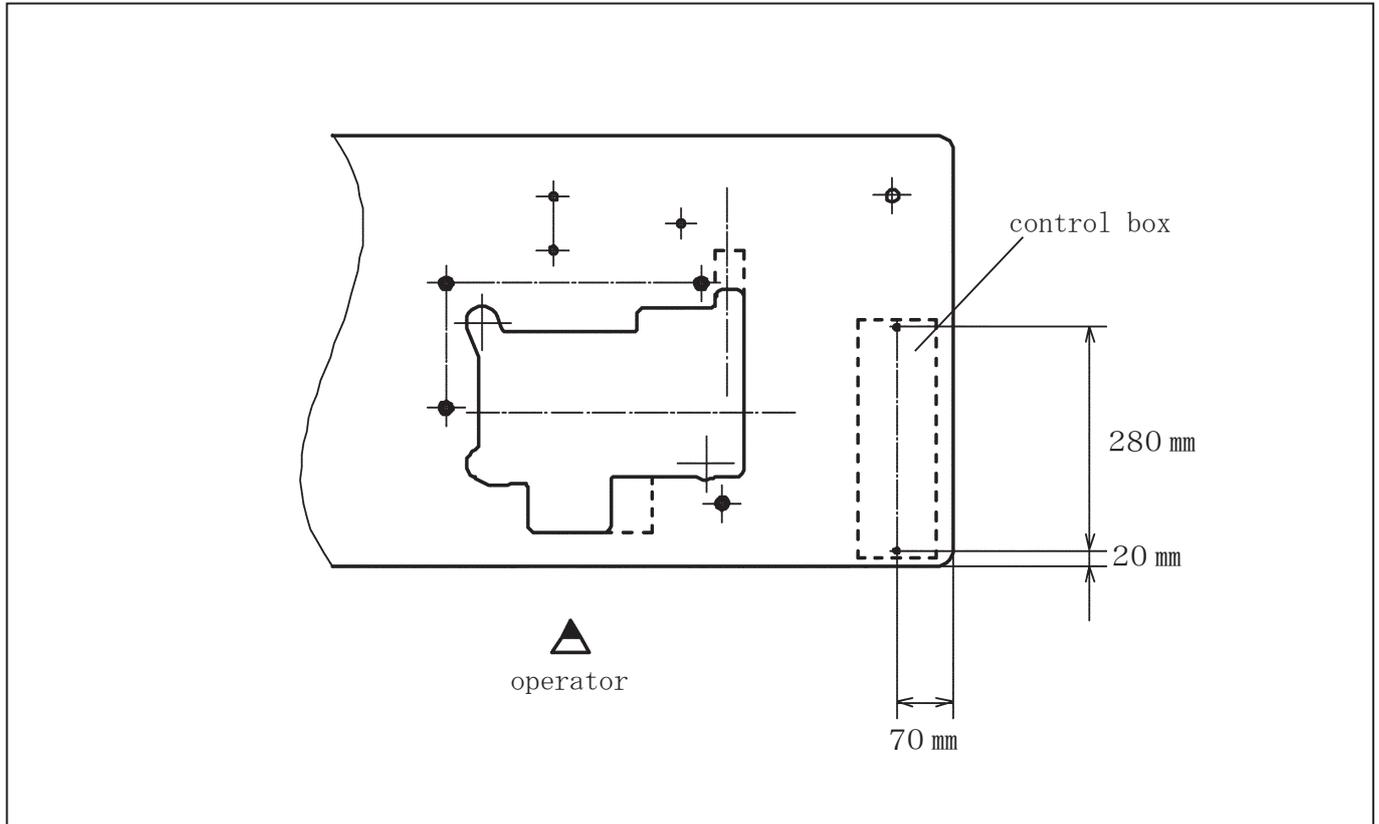


Fig. 2-2

2.3 Wiring diagram

⚠ CAUTION



Unplug the power cord from outlet before operating.

Connect the connecting plugs referring to Fig.2-3. Be sure to connect those plugs each other with the same color and shape.

Connect the power plug to the control box.

⚠ CAUTION

To prevent the cord from hitting against a moving object and thereby tearing, attach the cord securely to some place like the table leg.

Be careful not to damage the cord.

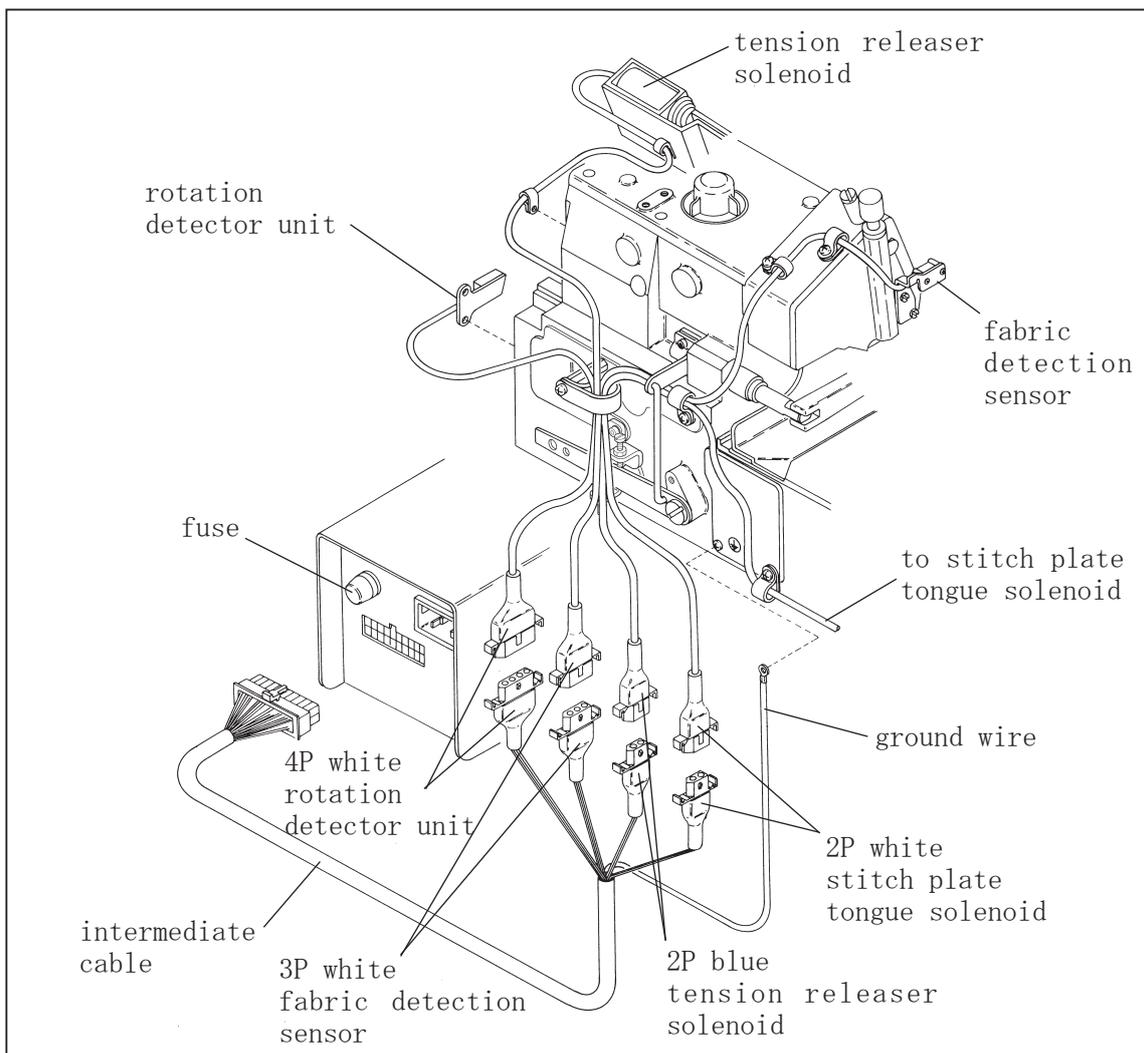


Fig. 2-3

CAUTION

Unplug the power cord from outlet before operating.

2.4 Power cord connection

Connect the brown and blue cords to the terminal on the motor's side of the power switch.

The green/yellow cord is a ground wire. Connect it to the same screw to which the ground wire of the motor's side is connected as shown in Fig.2-4.

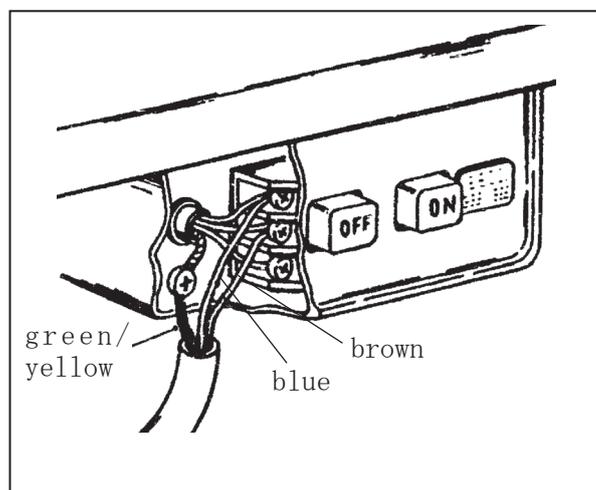


Fig. 2-4

2.5 Precautions

- ◇ Use always a fuse applicable to the capacity of the power voltage used, referring to Table 3.
- ◇ Even if the glass tube for the fuse has the same size as applicable one, its capacity may be different. Be sure to check the printed capacity.

power supply voltage	fuse capacity	part number
100 - 110 V	2 A	1070020
200 - 240 V	1 A	0010912

Table 3

CAUTION

Using a fuse with inapplicable capacity can damage the machine.

2.Installation

2.6 Synchronizer installation

For a machine with this BT43 device, use always a positioner motor.

- (1) Set the motor to Position 1.
- (2) Install the synchronizer ① to the machine and tighten it lightly with the screws ②.
- (3) Fasten the synchronizer ① to the machine with the positioner pin.
- (4) Turn the motor's power switch ON, run the machine, and stop it after several stitches. Then, the needle stops at the certain point.
- (5) Loosen the screws ② and rotate the machine pulley clockwise while taking care not to move the synchronizer ①.
- (6) When the upper looper ③ is at the extreme left, tighten the screws ② securely.
- (7) Run the machine again and check that the machine stops when the upper looper ③ is at the extreme left.

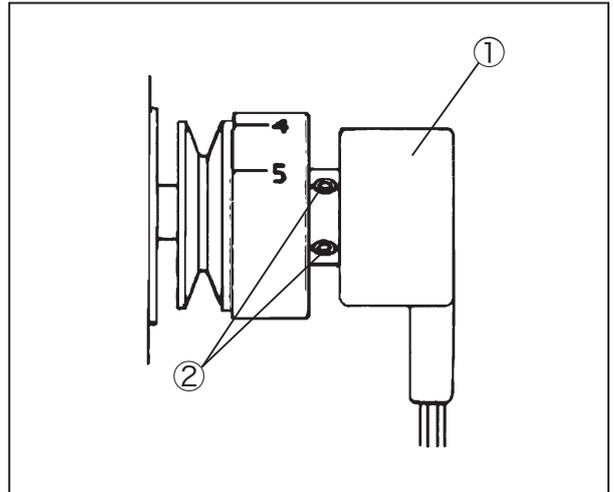


Fig. 2-5

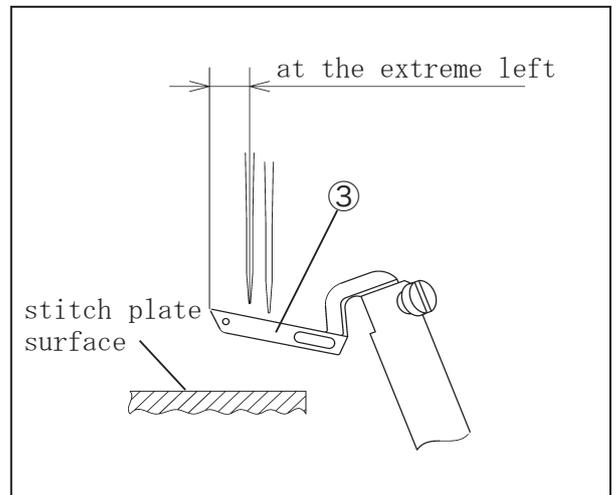


Fig. 2-6

2.7 Automatic motor stop function

Note: This function needs a motor that stops by external input signal.

- ◇ Connect the black wire ④ (for GND) and the white wire ⑤ (for signal) of the intermediate cable to the tap for automatic motor stop, referring to Fig.2-7.

black wire ④ to "0V", "GND", or "circuit ground" (The name differs depending on the manufacturer.)

white wire ⑤ to "motor stop signal"

Refer to the instruction manual for the motor used for details.

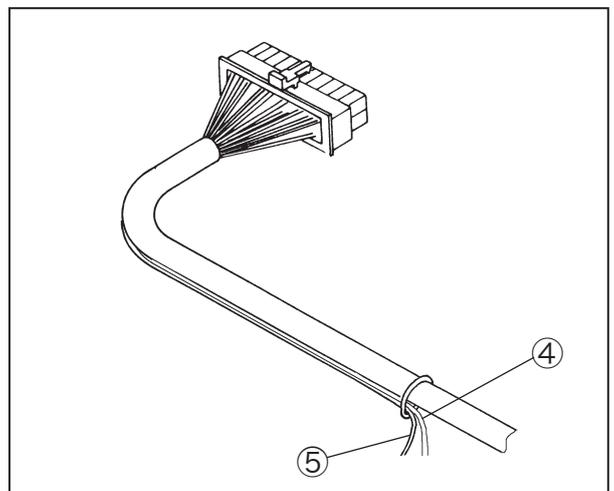


Fig. 2-7

2.8 Automatic presser foot lifter mechanism (special order parts)

Note: This mechanism needs a motor that stops by external input signal and outputs signal for the presser foot lifter.

2.8.1 Installing presser foot lifter mechanism

- (1) Install the regulator and the solenoid valve on the proper position under the machine table.
- (2) Set the air cylinder ① on the rear of the machine. Insert the groove of the lifter holder ② to the lifter lever ③.

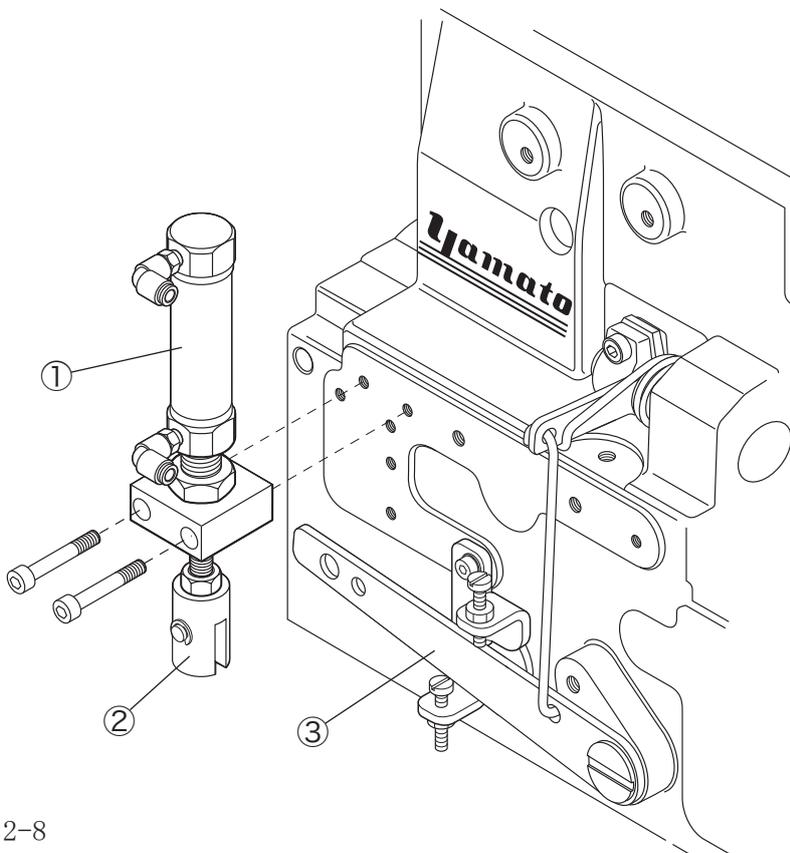


Fig. 2-8

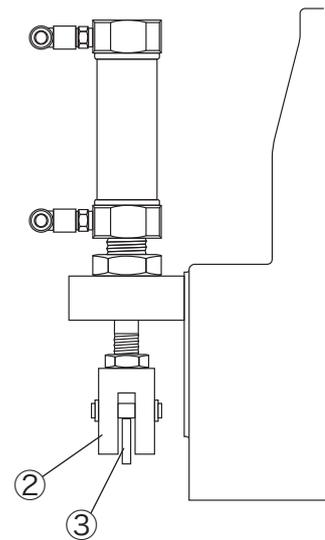


Fig. 2-9

2.Installation

2.8.2 Air piping

Refer to Fig. 2-10 to connect the air tubes. Cut the tubes properly for the connection. Set the regulator at 0.2 to 0.4 MPa.

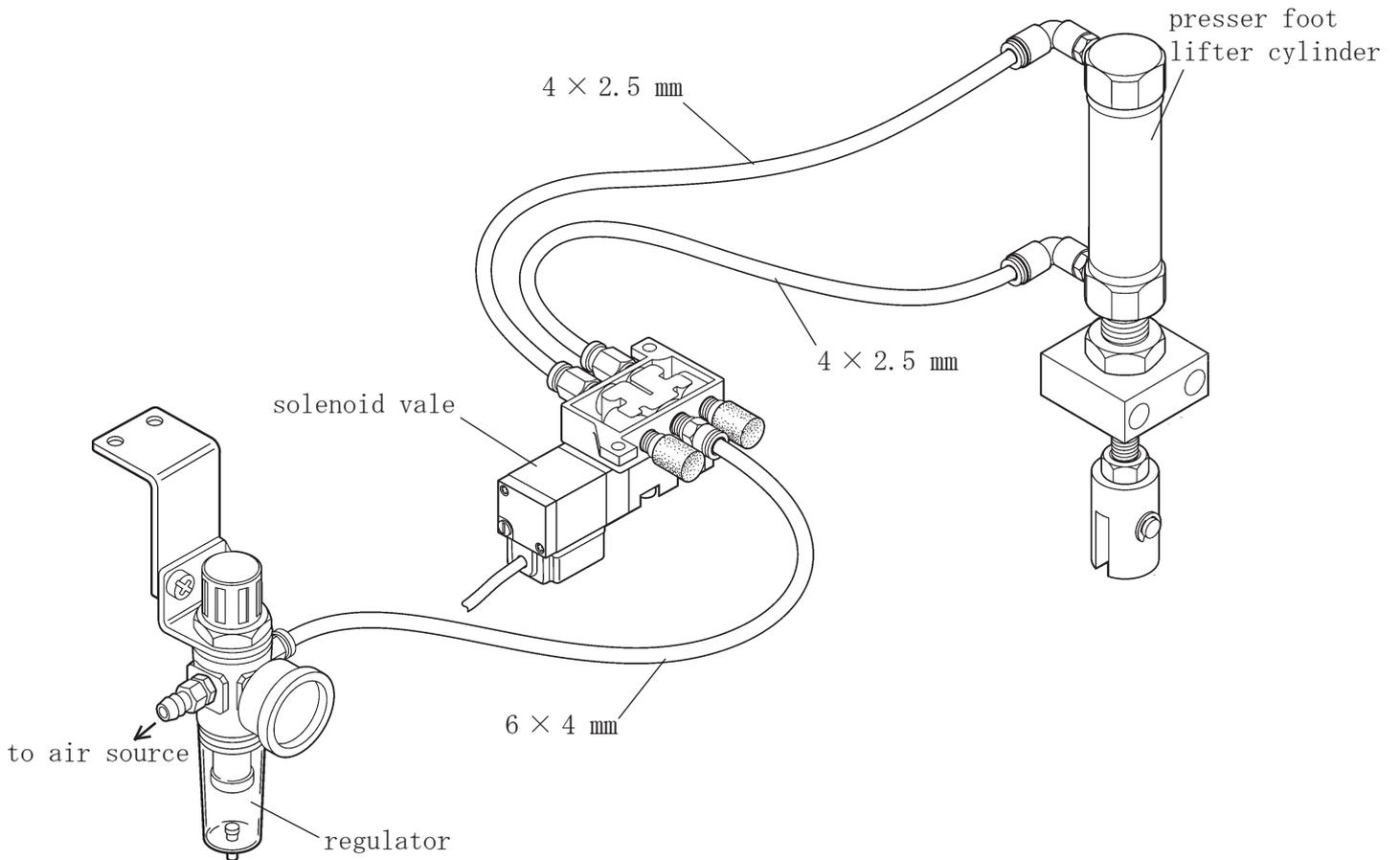


Fig. 2-10

2.8.3 Wiring

- (1) Connect the black wire ① (for GND) and the white wire ② (for signal) of the intermediate cable to the tap for automatic motor stop and presser foot lifter.

black wire ① to "0V", "GND", or "circuit ground" (The name differs depending on the manufacturer.)

white wire ② to "motor stop signal" and "presser foot lifter"

Refer to the instruction manual for the motor used for details.

- (2) Connect the solenoid valve cord to the connector for the presser foot lifter of motor.

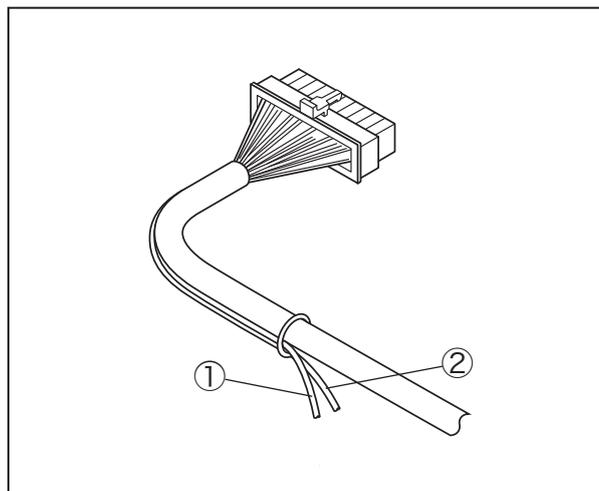


Fig. 2-11

Note: Some manufacturers use the same connector for the input and output signals of presser foot lifter.

(Example) In case of Y motor

Connect the black wire ① and the white wire ② of the intermediate cable to the pin with the number as below. (Fig. 2-12)

Option A(white 12P)

black wire ① to pin No. 10 for "0V"

white wire ② to pin No. 4 for "Up position stop input"

Presser foot lifter(blue 3P)

white wire ② to pin No. 2 for "Presser foot input"

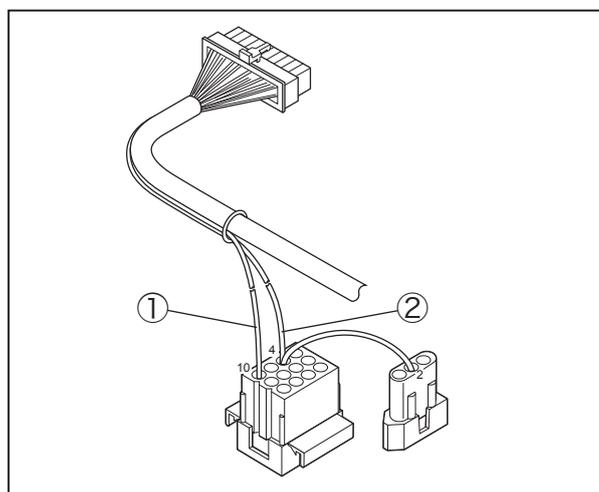


Fig. 2-12

3. Proper operation

3.1 Seam condition and device operation



3.1.1 Tension releaser operation

To adjust the plain sewing seam condition, turn the thread tension spring caps ① to ④ in Fig.3-1.

To adjust the thread chain seam condition, turn the thread tension spring caps ⑤, ⑥ in Fig.3-1.

Thread chain tension adjustment

- (1) Turn the motor switch ON.
- (2) Turn the control box switch ON.
- (3) Sew a material and pull a formed thread chain back.

At this moment, adjust the caps ⑤ and ⑥ so that the thread chain forms a cord. (Under this seam condition, the needle threads are loose and the looper threads are tight.)

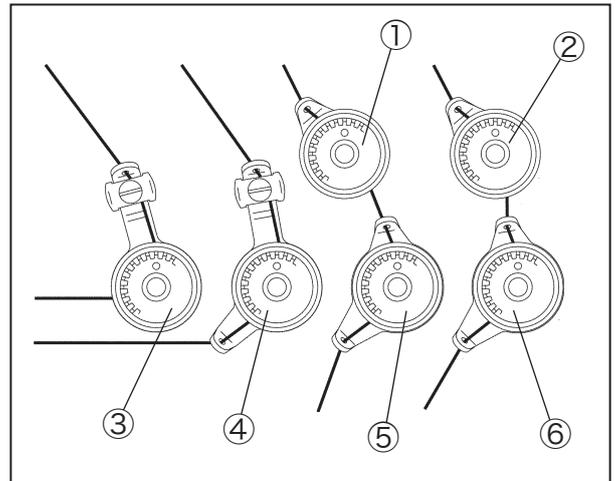


Fig. 3-1

3.1.2 Device operation

- (1) Pull a thread chain backward and bring it to the front.
- (2) Pull a thread chain from the left to the right along the cloth plate. Then, the thread chain cutter cuts the thread chain and holds the remaining portion. (At this moment, preparation for back-tack sewing is completed.)
- (3) Sew a material.
- (4) Raise the presser foot to pull a thread chain backward.
- (5) Bring the thread chain to the front.
Pull the thread chain from the left to the right along the cloth plate.
Then, the thread chain cutter cuts the thread chain and holds the remaining portion.

Repeat Steps (3) to (5).

3.2 Each section name and function of control panel

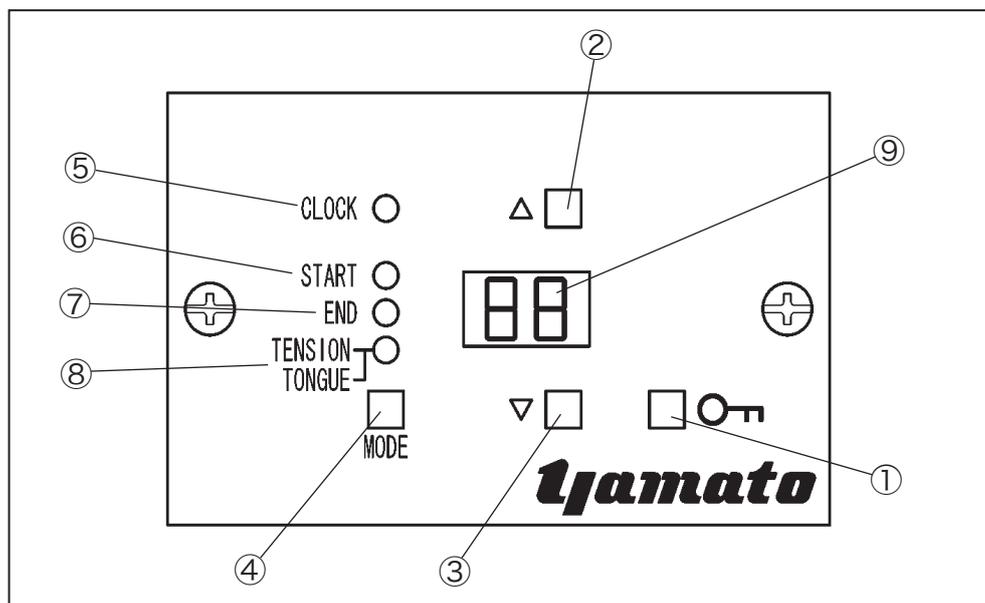


Fig. 3-2

- ① “Lock” key
This is for making all the switches invalid to prevent wrong operation.
(When this key is pressed, all the lamps are lighted.)
- ② “▲” key
This is for increasing the set value.
- ③ “▼” key
This is for decreasing the set value.
- ④ “MODE” key
This is for changing the selected mode.
- ⑤ “CLOCK” lamp
This is lighted by detection of the machine’s rotation.
(This blinks two times for each rotation.)
- ⑥ “START” lamp
This is lighted when the count at the beginning of sewing is adjusted.
- ⑦ “END” lamp
This is lighted when the count at the end of sewing is adjusted.
- ⑧ “TENSION” / “TONGUE” lamp
This shows the current setting mode by combination with other lamps.
- ⑨ Display
This displays the set value.

3.3 Adjustment at beginning of sewing



3.3.1 Tension releaser adjustment at beginning of sewing

- (1) Press the “MODE” key several times to light the “START” lamp only.
- (2) Adjust the count by pressing the “▲” and “▼” keys so that the tension releaser changes the thread chain seam condition to the plain sewing seam condition when the sensor detects the material end and the material reaches the needle holes. (Two counts indicate one stitch.)

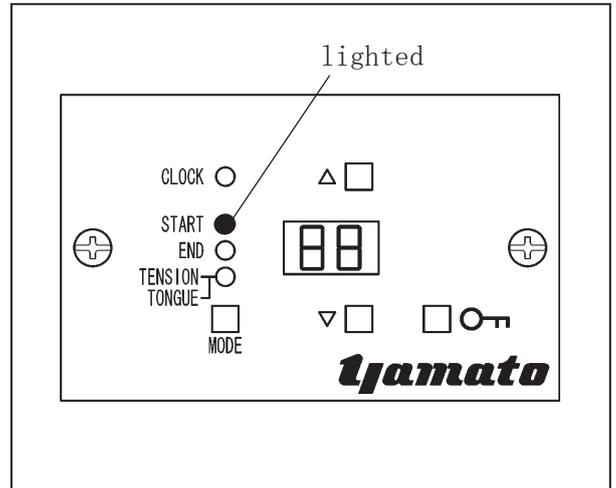


Fig. 3-3

3.3.2 Stitch plate tongue adjustment at beginning of sewing

- (1) Press the “MODE” key several times to light the “START” and “TONGUE” lamps.
- (2) Adjust the count by pressing the “▲” and “▼” keys so that the stitch plate tongue sticks out when the sensor detects the material end and the material reaches the needle holes. (Two counts indicate one stitch.)

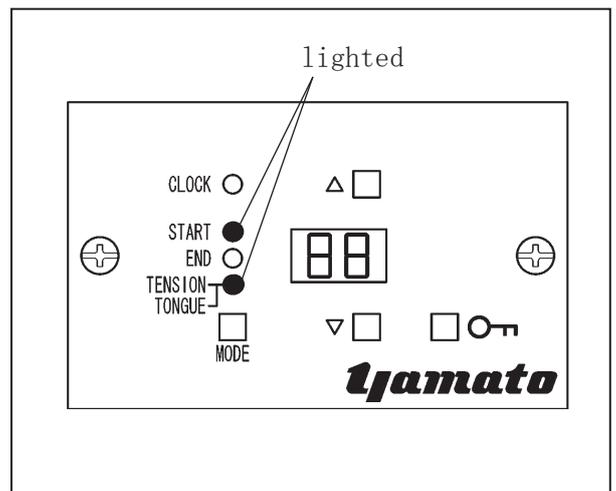


Fig. 3-4

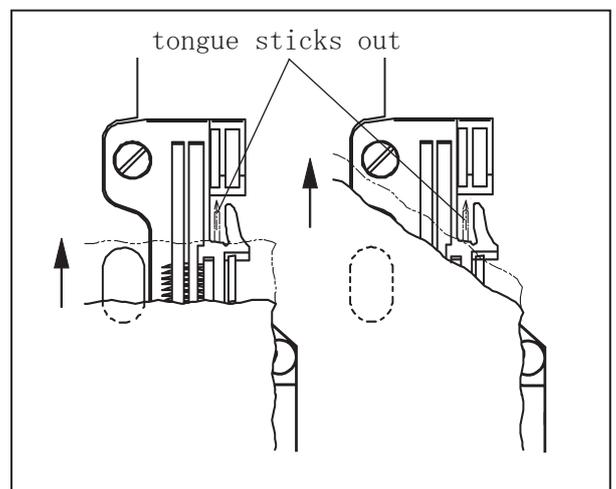


Fig. 3-5

3.4 Adjustment at end of sewing



3.4.1 Tension releaser adjustment at end of sewing

- (1) Press the “MODE” key several times to light the “END” lamp only.
- (2) Adjust the count by pressing the “▲” and “▼” keys so that the tension releaser changes the thread chain seam condition to the plain sewing seam condition when the sensor detects the material end and the material reaches the needle holes. (Two counts indicate one stitch.)

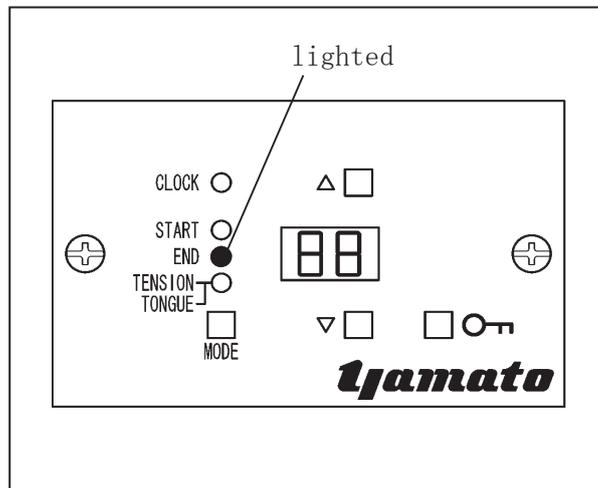


Fig. 3-6

3.4.2 Stitch plate tongue adjustment at end of sewing

- (1) Press the “MODE” key several times to light the “END” and “TONGUE” lamps.
- (2) Adjust the count by pressing the “▲” and “▼” keys so that the stitch plate tongue is retracted when the sensor detects the material end and the material reaches the needle holes. (Two counts indicate one stitch.)

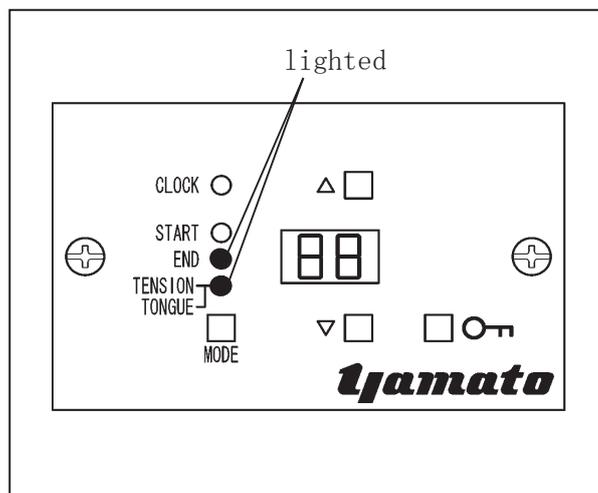


Fig. 3-7

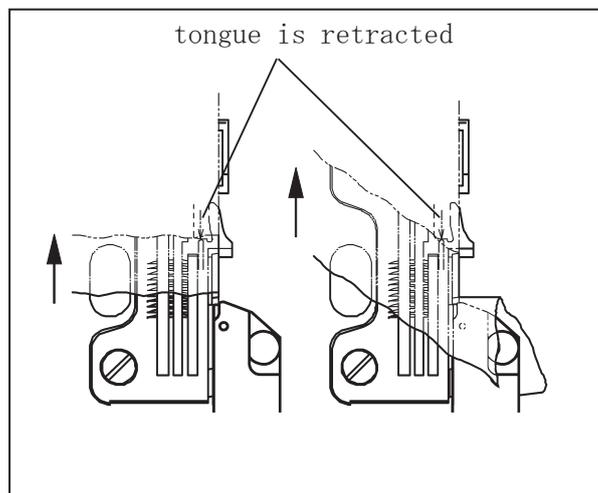


Fig. 3-8

3.5 Mesh materials



If mesh materials are sewn and malfunctions of the sensor occur, make the following adjustment.

- (1) Turn the power OFF.
- (2) While pressing the “▲” and “▼” keys at the same time, turn the power ON.
- (3) Press the “MODE” key several times to light the “START” lamp only.
- (4) Adjust the value with the “▲” and “▼” keys so that the device detects the material end correctly.
- (5) Turn the power OFF.

! ATTENTION

When sewing normal materials other than mesh materials, return the value to 0.

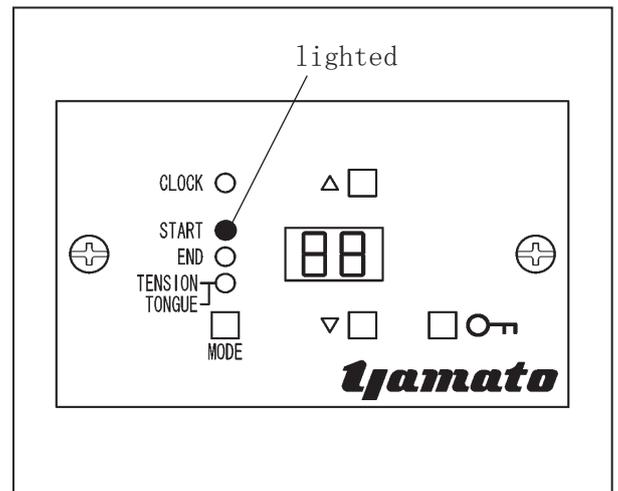


Fig. 3-9

3.6 Automatic motor stop function setting

By using the automatic motor stop function, the count from material end detection of the sensor to motor stop can be set.

- (1) Turn the power OFF.
- (2) While pressing the “▲” and “▼” keys at the same time, turn the power ON.
- (3) Press the “MODE” key several times to light the “START” and “TENSION” lamps.
- (4) With the “▲” and “▼” keys, adjust the count from sewing end to motor stop.
(Two counts indicate one stitch.)
- (5) Turn the power OFF.

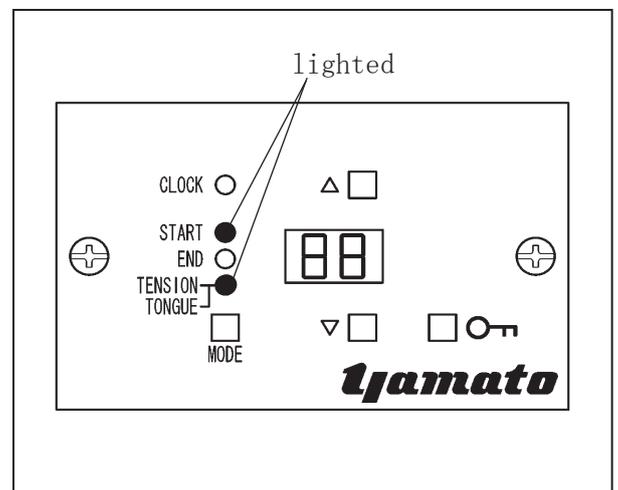


Fig. 3-10

3.7 Automatic presser foot lifter mechanism

The time can be set from material detection of sensor to presser foot lowering.

- (1) Turn the power OFF.
- (2) While pressing the “▲” and “▼” keys at the same time, turn the power ON.
- (3) Press the “MODE” key several times to light the “START”, “END”, and “TENSION” lamps.
- (4) With the “▲” and “▼” keys, adjust the time from material detection of the sensor to presser foot lowering.
- (5) Turn the power OFF.

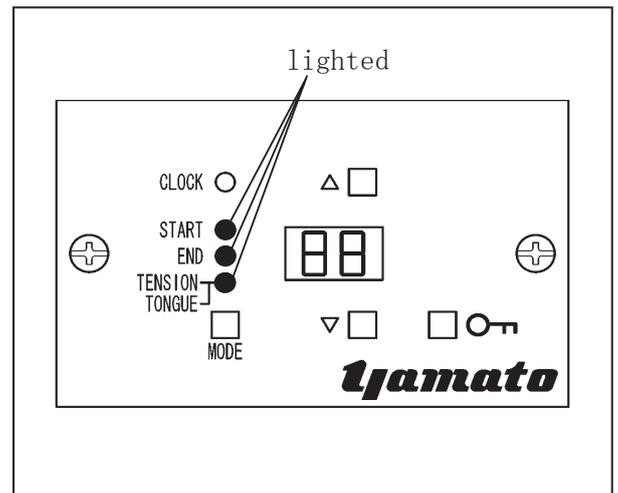


Fig. 3-11

4. Adjustments

4.1 Thread chain holding pressure



To adjust the thread chain holding pressure, turn the nut ①. When the pressure is too low or too high, adjust the pressure.

- To increase the pressure, turn the nut ① clockwise.
- To decrease the pressure, turn the nut ① counterclockwise.

If the pressure is too high, a thread chain can be cut before the thread chain presser holds it or a material can be entangled.

If the pressure is too low, a thread chain comes out of the thread chain holder too early and it is impossible to sew the thread chain into a seam beautifully.

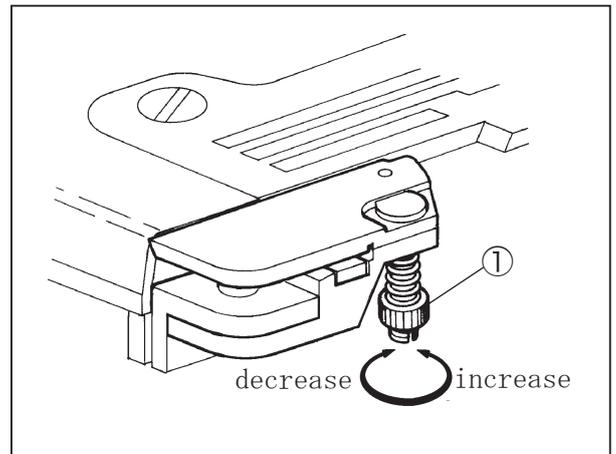


Fig. 4-1

4.2 Knife change

⚠ CAUTION

Before adjusting, ALWAYS turn the motor switch OFF and check that the motor has already stopped.
When removing the knife, be careful not to be cut hands by the knife.

- (1) Turn the thread chain presser plate ② in the arrow direction with raising it slightly. (See Fig. 4-2)
- (2) Loosen the screw ③.
If the knife does not move at this moment, tap the part ④ lightly with something like a screwdriver.
- (3) Change the knife. Regarding the direction and position of a knife, see Fig. 4-2.
- (4) Tighten the screw ③ securely and fasten a new knife.
- (5) Fit the pin hole and the slot for the knife of the thread chain presser plate ② on the pin and the knife respectively and return the thread chain presser plate ② to the original position.

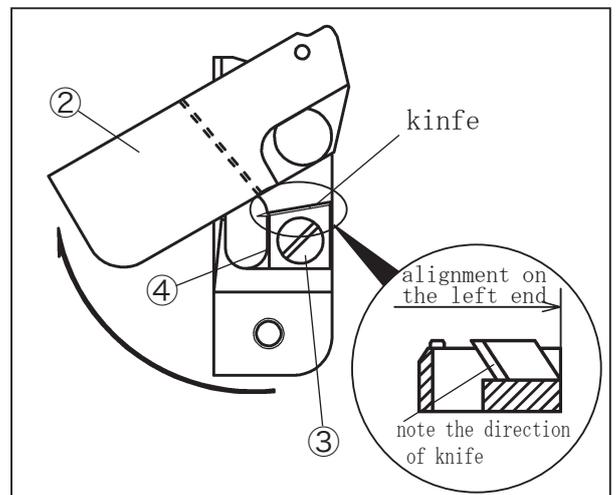


Fig. 4-2

4.3 Lower looper adjustment

⚠ CAUTION

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

To adjust the lower looper of a sewing machine with a BT43 device, take the following steps.

- (1) Loosen the screws ① and turn the solenoid cover ② in the arrow direction.
- (2) Loosen the screws ③ and remove the solenoid.
- (3) Adjust the lower looper.
- (4) Insert the pin screw ④ into the hole of the stitch plate tongue ⑤ and reinstall the solenoid.
- (5) Tighten the screws ③ securely.
- (6) Tighten the screws ① securely.

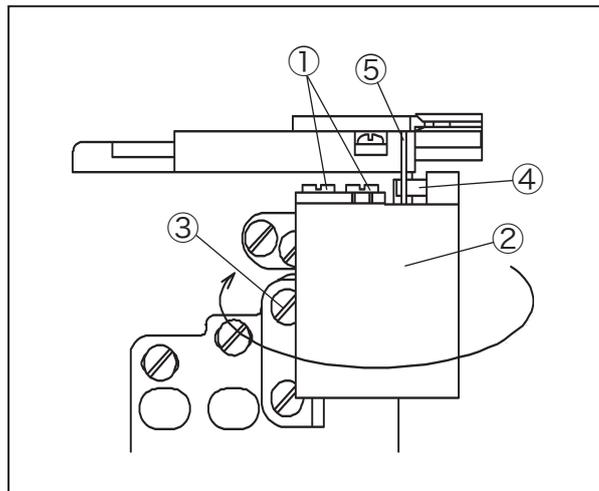


Fig. 4-3

⚠ CAUTION

Always adjust the rear position of the stitch plate tongue.

4.4 Stitch plate tongue front-and-rear position

◇ Front position

- (1) Loosen the screws ① and turn the solenoid cover ② in the arrow direction. (See Fig. 4-3)
- (2) When the stitch plate tongue is out, loosen the screw ⑥ and move the stitch plate tongue arm ⑦.
- (3) When the tongue is out from the stitch plate by 6 mm, tighten the screw ⑥ securely.

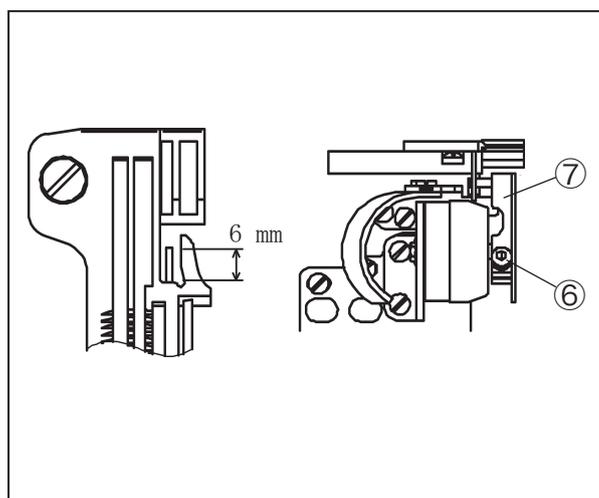


Fig. 4-4

◇ Rear position

- (1) When the tongue is retracted, loosen the screw ⑧.
- (2) Apply the rubber cushion of the arm ⑦ to the solenoid cover ② so that the tongue can be hidden under the stitch plate completely, and tighten the screw ⑧.

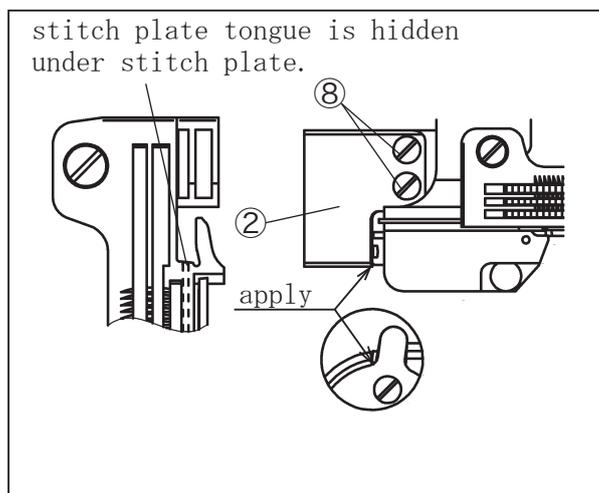


Fig. 4-5

5. Troubleshooting

Malfunctions	Causes	Measures	Refer to
Thread chains are not cut.	The knife is dull.	Change the knife.	4-2
Thread chains are not sewn into seams.	A thread chain does not form a cord.	Loosen the thread chain seam condition.	3-1-1
	Thread chains are pulled out too early.	Increase the holding pressure.	4-1
	Thread chains are not completely pulled out of the stitch plate tongue.	Increase each count at the beginning of sewing so that the stitch plate tongue or the tension releaser functions when materials come at the needle drop.	3-3
The thread tension at the beginning of sewing is too high.	The thread chain holding pressure is too high.	Decrease the holding pressure.	4-1
Changing of the thread chain seam condition is unstable at the end of sewing.	The setting for mesh materials is valid.	Set the mesh count to zero.	3-5
Seams at the of sewing are irregular.	Changing to the plain sewing condition is delayed.	Decrease the value for the tension releaser at the beginning of sewing.	3-3-1
	Sticking out of the stitch plate tongue is delayed.	Decrease the value for the stitch plate tongue at the beginning of sewing.	3-3-2

Table 4

Error indication on the control panel

Error code	Causes	Measures
ES	The tension releaser or the stitch plate tongue cannot be moved. The control board is broken.	Change the control board.
EE	Resetting to the default setting cannot be performed. There is an abnormal state in the memory.	Change the control board.

Table 5 Note: After the above error code is displayed, the control box does not operate.

6. Test mode usage

6.1 Solenoid function test

- (1) Turn the power OFF.
- (2) While pressing the “▲” and “▼” keys, turn the power ON.
- (3) Press the “MODE” key several times to light the lamps as below.
 - “TENSION” lamp The tension releaser solenoid can be tested.
 - “END” lamp The stitch plate tongue solenoid can be tested.
- (4) While keeping pressing the “LOCK” key, each solenoid functions.
- (5) Return to the normal mode by turning the power OFF.

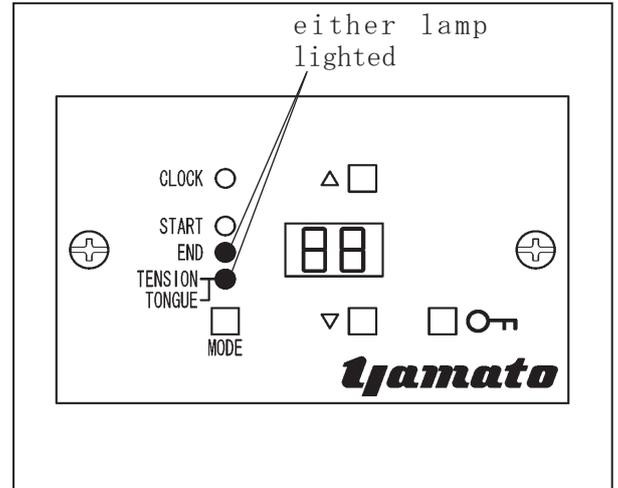


Fig. 6-1

6.2 Reset

This is to reset the memory to the condition at shipment.

- (1) Turn the power OFF.
- (2) While pressing the “▲” and “▼” keys, turn the power ON.
- (3) Press the “MODE” key several times to light the “END” and “TENSION” lamps.
- (4) Press the “LOCK” key and reset the memory.
 - “ok” The memory is reset completely.
 - “EE” The memory is in abnormal condition.
- (5) Turn the power OFF.

If the display shows “EE”, make contact with the agency where you buy this equipment.

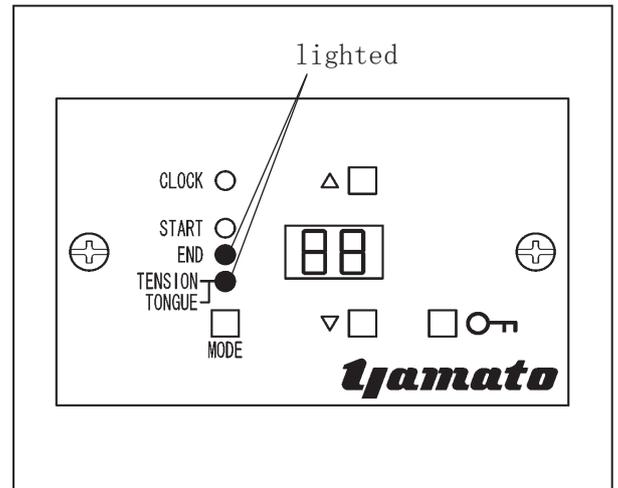


Fig. 6-2

6.3 Fabric sensor function test

- (1) Turn the power OFF.
- (2) While pressing the “▲” and “▼” keys, turn the power ON.
- (3) Press the “MODE” key several times to light the “START” and “END” lamps.
 - “oo” The fabric sensor is covered.
 - “- -” The fabric sensor is not covered.
- (4) Turn the power OFF.

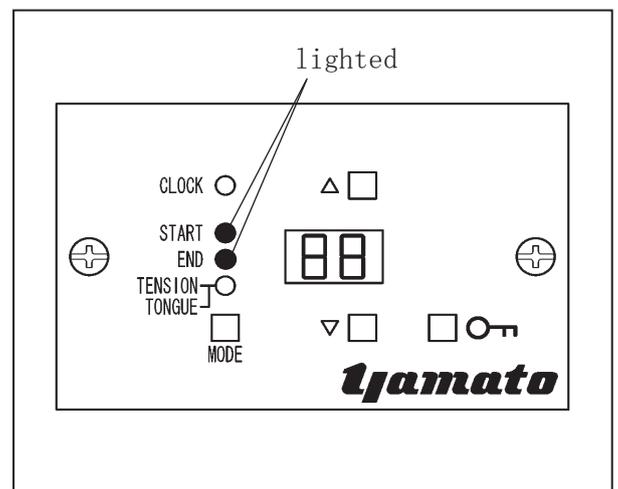


Fig. 6-3

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
530-0047 TEL : 81-6-6364-5621 FAX : 81-6-6364-7185
〒530-0047 大阪市北区西天満4丁目4番12号
TEL (06) 6364-5621 (代) FAX (06) 6364-7185