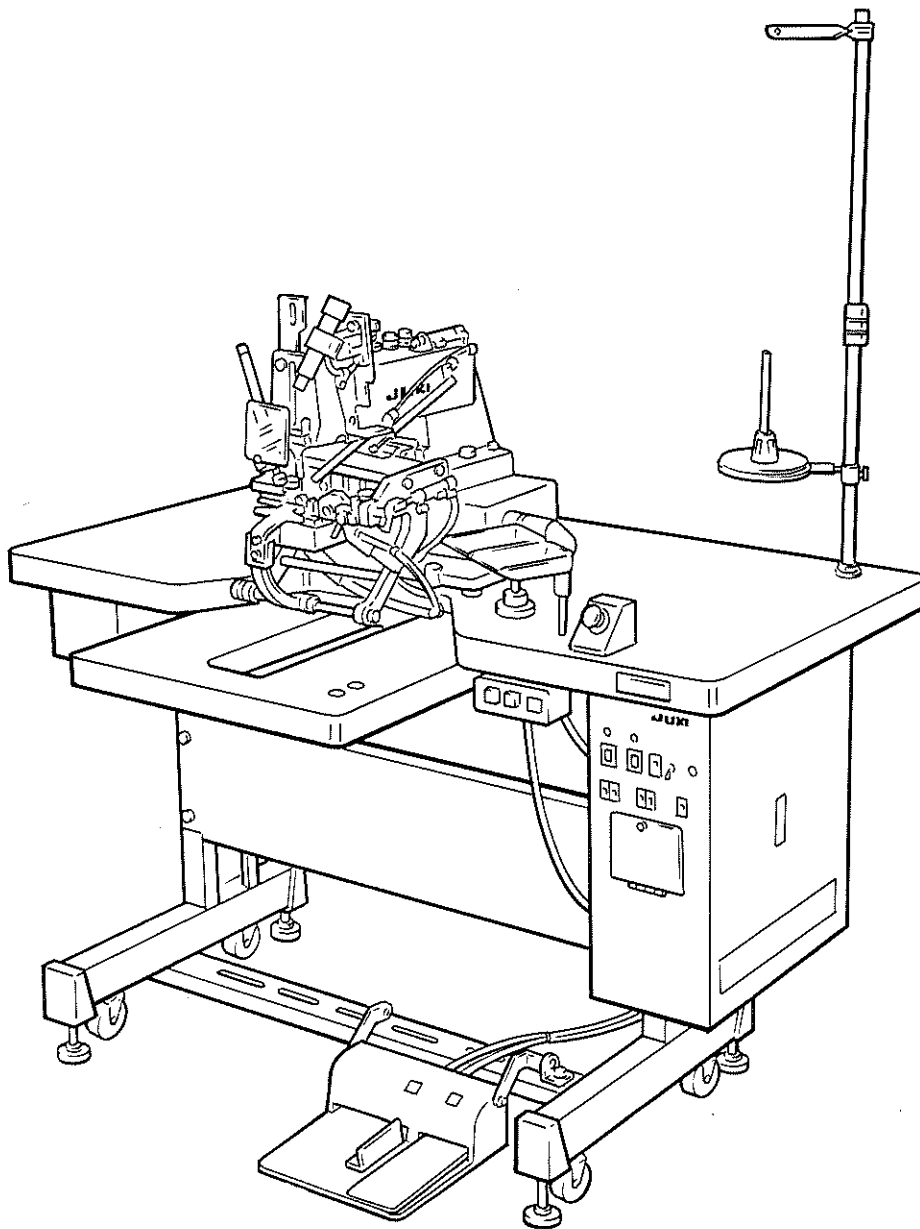


Computer-controlled, single-thread chainstitch,
button neck wrapping machine
(for shank buttons and marble buttons)

AMB-188

INSTRUCTION MANUAL



No.00

29071503

PREFACE

Congratulations on your purchase of the JUKI AMB-188 computer-controlled, single-thread chainstitch, button neck wrapping machine (for shank buttons and marble buttons).

Please read this instruction manual carefully before using this unit in order to get the most out of it and to enjoy using it for a long time.

PRECAUTION BEFORE OPERATION

1. Confirmation of the direction of rotation of the sewing machine.

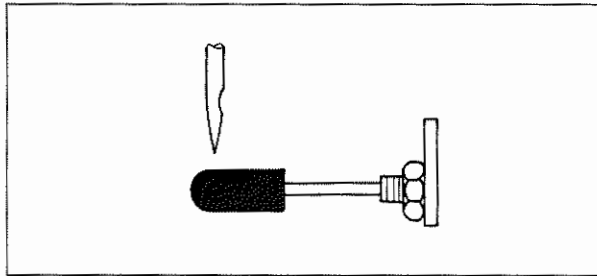
The sewing machine should rotate away from the operator.

Check for the correct direction of rotation of the sewing machine following the procedure stated below.

- 1) Set the operation mode selector switch to the manual mode.
 - 2) Bring the cloth holder (tongue) to the throat plate.
 - 3) Depress the right-hand side pedal of the 2-pedal unit.
 - 4) Check the direction of the rotation of the sewing machine when depressing the left-hand side pedal of the 2-pedal unit.
2. Make sure that the air pressure gauge indicates 5 kg/cm^2 .

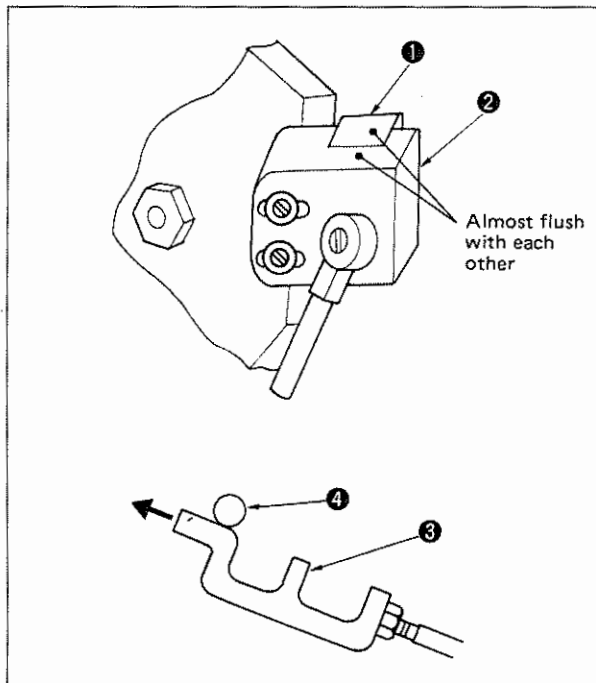
Caution to be taken during operation

1. Whenever changing the material or button to be sewn, check the performance of the machine by carrying out a test sewing taking care of the following points.
 - 1 Caution to be taken when changing the type of material to be sewn
 - Phenomena such that a too long thread remains on the top face of the button, and such that the thread is likely to come off the material are contrary to each other. In this case, stitch skipping may result. It is therefore necessary to feed first a longer thread and gradually decrease the length of thread to be fed while confirming the finished state of stitches by carrying out trial stitching. (Refer to "9. Adjusting the length of thread remaining" on page 20.)
 - Use the thread presser to ensure the length of needle thread remaining after thread trimming when sewing light-weight materials. (Refer to "8. Adjusting the thread presser" on page 19.)
 - 2 Caution to be taken when changing the type of button to be sewn
 - Whenever changing the type of button to be sewn, re-specify the distance between the sole of the button to the center of button hole in the button changed and the needle entry of neck wraps to determine the position of buttons. (Refer to "5. Setting the position of the buttons" on page 15.)
2. Caution to be taken when changing the stitching method to triangular stitching
Replace the current tongue with the tongue for triangular stitching. Change the sewing pattern accordingly using the DIP switch SW1. Check needle entries, then perform a trial stitching.
(Refer to "14. Changing over the stitching mode from the standard stitching to the triangular stitching" on page 23.)
3. Caution to be taken when operating the machine under the manual mode



When operating the sewing machine under the manual mode without sewing buttons, the needle may enter the button presser in accordance with the position of center of holes in the button specified. So be careful.

4. Caution to be taken when replacing the button chuck

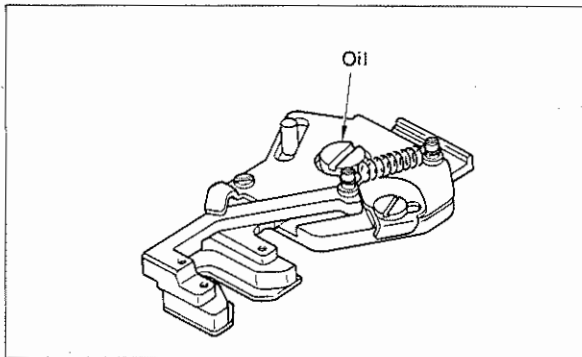
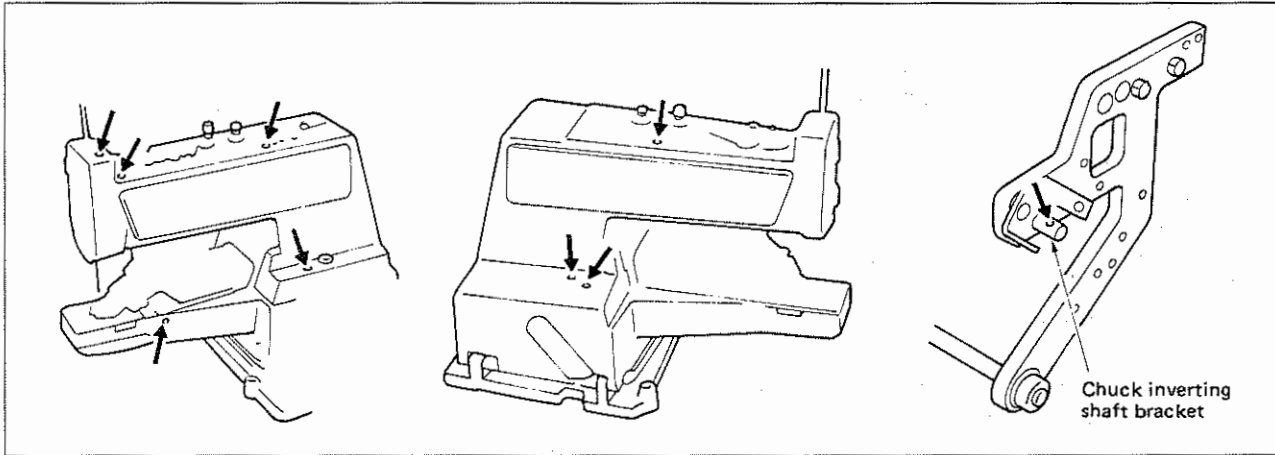


After replacing the button chuck, adjust so that adjusting slide ① is almost flush with button chuck adjusting base ②.

If it is difficult to make them flush with each other, suppose that pin ④ of the button chuck is not correctly set on chuck actuating lever ③. In this case, move chuck actuating lever ③ in the direction of the arrow in the figure to position the button chuck in the correct manner.

(See "13. How to replace the button chuck" on page 22.)

5. During an operation, be careful not to allow your head or fingers or those of any other person to come close to the throat plate or any other driving components. At the same time, do not place anything close to such components.
6. If any of the following phenomenon occurs, immediately turn OFF the power switch, and ask the maintenance personnel to inspect the machine.
 - ① Frequent needle breakage or thread breakage. The machine often fails to attach the buttons properly.
 - ② The machine performs an unusual operation.
7. Whenever changing the button to be sewn or the thickness of the material, confirm the input data and check the performance of the machine by operating it manually. Then start trial stitching.
8. Whenever changing the count of thread, re-adjust the timing to release the thread tension. (Refer to "11. Adjusting the timing to release the thread tension" on page 21.)
9. Lubrication
 - ① Lubricated the red-painted points indicated by the arrows in the figure and the hole in the chuck inverting shaft bracket, using JUKI New Defrix Oil No. 1.
 - ② Check whether the oil level reaches the top of the oil felt inside the bed mounting base. If not, supply oil until the oil felt is immersed in oil up to the top.



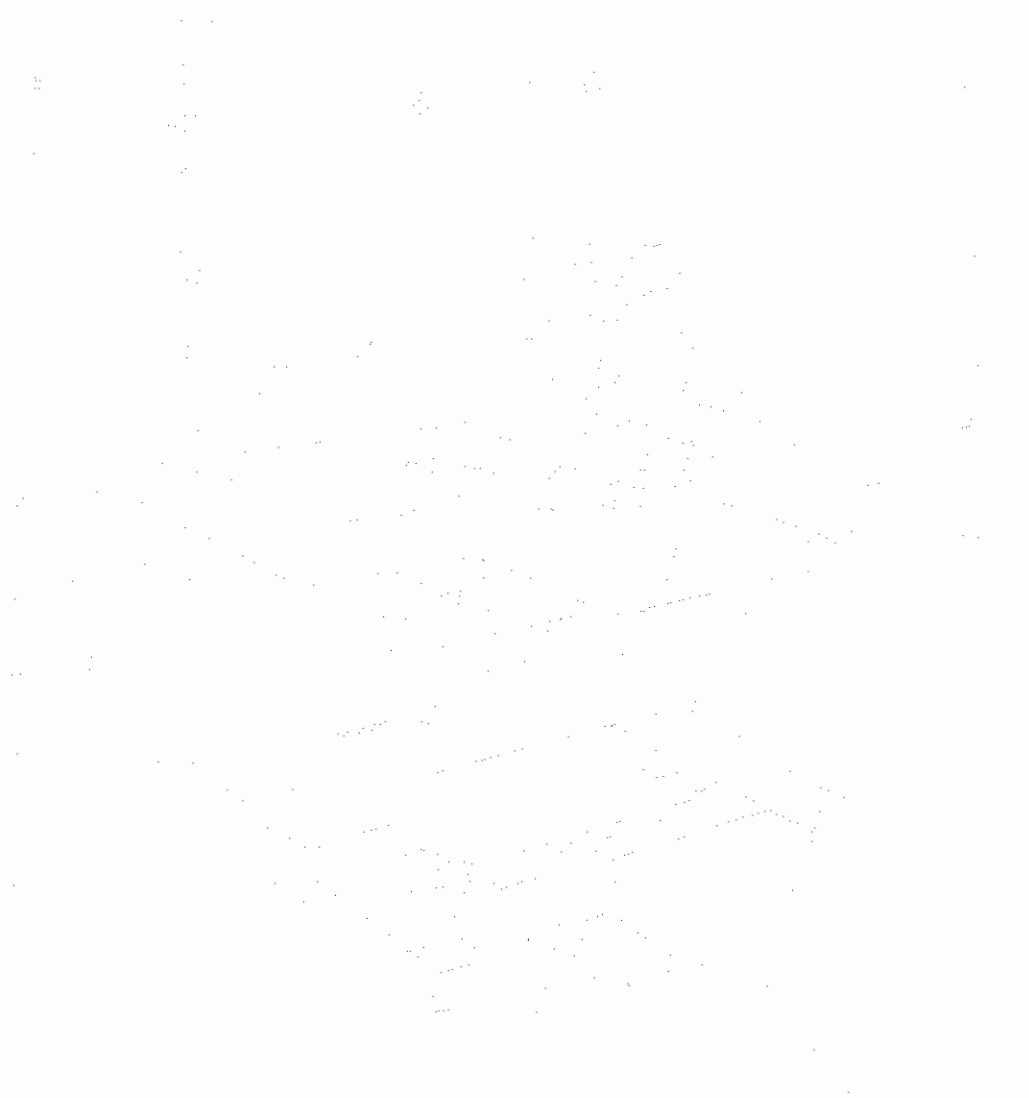
- ③ Periodically apply a drop of JUKI New Defrix Oil No. 1 to the chuck opening gear once three month.

10. Do not turn OFF the power and air supply to the sewing machine.

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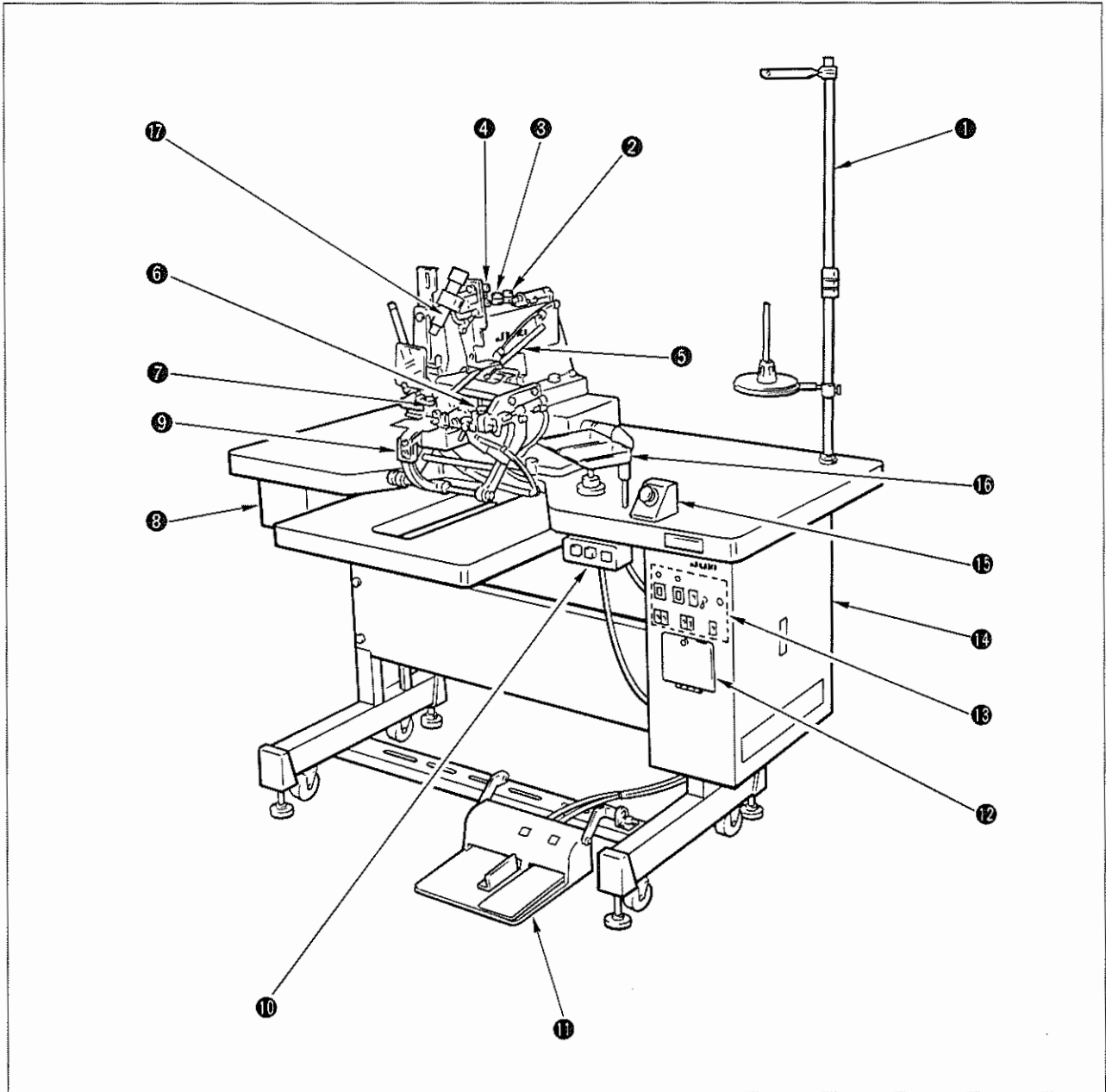
I. GENERAL

This is a computer-controlled, single-thread chainstitch, button neck wrapping machine (for shank buttons and marble buttons) intended to be used to sew buttons on ladies' wear, blazer coats and skirts. It allows the operator to attach buttons in one operation cycle consisting of the 1st and 2nd neck wrapping processes only by pressing the start switch after the buttons and the garment cloth have been set in the predetermined location on the machine.

It is a very convenient machine since it has been designed also to sew buttons without neck wraps and to permit easy selection of sewing pattern using the switch.

1. Configuration

The following shows the main components of the AMB-188.



- | | | |
|--|-----------------------------------|-------------------------|
| ① Thread stand | ⑦ Knob to adjust tie stitch depth | ⑬ Control panel |
| ② Thread tensioner No. 1 (for neck wrapping) | ⑧ Drawer | ⑭ Control box |
| ③ Thread tensioner No. 1 (for button sewing) | ⑨ Cloth holder (tongue) | ⑮ Emergency stop switch |
| ④ Thread tensioner No. 2 | ⑩ Power switch | ⑯ Button tray |
| ⑤ Wiper | ⑪ 2-pedal unit (PK-62) | ⑰ Marking lamp |
| ⑥ Knob to adjust neck wrap height | ⑫ Input data panel | |

2. Features

1) The machine can be easily adapted to change in size of buttons to be used.

The machine comes with two different kinds of button chuck, i.e., one is for buttons of $\phi 10$ to $\phi 16$ mm and the other is for buttons of $\phi 14$ to $\phi 25$ mm. They can be changed over with ease by simply operating the lock lever without using any tool, allowing woman operators to perform the change-over procedure with ease.

2) Thanks to the built-in micro-computer, the sewing data can be changed with ease.

Data on the center of holes in the button, the depth of tie stitches, the number of stitches, triangular stitching can be changed with ease, thereby minimizing the waste of time in the case of set-up changing.

3) The machine is capable of sewing light-weight material with consistency.

The thread presser unit prevents slip-off the thread when sewing light-weight materials. As a result, the machine is capable of sewing light-weight materials with consistency.

4) Highly reliable machine head and the X-Y drive technology finish products with high quality.

It comes with the highly reliable MB-373 (single-thread chainstitch, button sewing machine with an automatic thread trimmer) combined with the JUKI's unique X-Y control mechanism, thereby achieving high-quality and good-feeding button sewing with consistency.

Furthermore, reinforcing stitches prevents stitches from fraying.

5) Reduced cycle time dramatically enhances productivity.

It is provided with the marking lamp as standard which facilitates determination of the button sewing position. As a result, the operator can set the button in place by single hand. Furthermore, the material holder (tongue) has been designed to be automatically released after sewing the buttons. All these features reduce the cycle time necessary to finish all the processes related to button sewing, thereby greatly contributing to enhanced productivity.

6) Cotton thread and spun thread are applicable to this machine, thereby permitting thread selection from many different colors of thread and allowing the machine to be used in wider variety of processes.

This machine does not use its exclusive thread but use many different types of thread including cotton thread and spun thread. Wider selection of thread colors is possible. The threads of count #30 through #60 are applicable to the machine, thereby allowing the machine to be used in wider variety of processes.

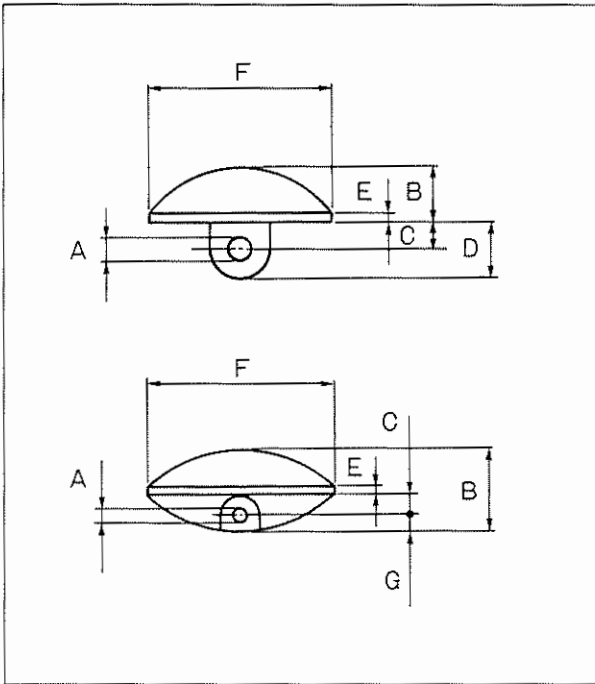
7) It flexibly corresponds to various types of sewing production line.

It is equipped with casters as standard device. They help move the machine with ease, thereby facilitating lay-out changing. Since the adjustable range of the machine height is possible, the machine can be introduced to the setting operation line as well as the standing operation line.

3. Specifications

| | |
|--|--|
| Model | : AMB-188 |
| Name | : Computer-controlled, single-thread chainstitch, button neck wrapping machine (for shank buttons and marble buttons) |
| Stitch system | : Single-thread chainstitch |
| Application and features | : Sewing buttons with neck wraps on ladies' uppers, blouses and skirts |
| Sewing speed | : 600 s.p.m. |
| Needle bar stroke | : 58.6 mm |
| Needle | : ORGAN SM x 332 EXTLG standard #14 (#12) |
| Thread | : Spun thread #30 to #60, cotton thread #30 to #60 |
| Lubrication | : Manual |
| Outside diameter of button | : ϕ 10 to ϕ 16 mm (button chuck, small) ϕ 14 to ϕ 25 mm (button chuck, large) |
| Number of stitches for sewing a button | : 2 to 30 in 2-stitch steps |
| Number of neck wraps | : 2 to 30 in 2-stitch steps |
| Height of the button neck | : 0 to 3 mm, to be set in increments of 0.4 mm |
| Number of stay stitches | : 1 or 2 |
| Stay stitch feed amount | : 0 to 3 mm, to be set in increments of 0.2 mm |
| Number of reinforcing stitches | : To be selected from among 2 to 5 (standard: 2) |
| Setting the neck wrapping | : Select either "with neck wraps" or "without neck wraps". |
| Neck wrapping position | : Start position of neck wraps: 1 to 4 mm, to be set in increments of 0.2 mm Feed amount for neck wrapping: 0 to 3 mm, to be set in increments of 0.2 mm |
| Position of holes in the button | : 0 to 5 mm, to be set in increments of 0.2 mm |
| Depth of tie stitches | : 0 to 3 mm, to be set in increments of 0.2 mm |
| Stitch width for neck wrapping | : 2 to 8 mm, to be set in increments of 0.4 mm |
| Position of stay stitches | : 0.6 to 1.6 mm, to be set in increments of 0.2 mm |
| Stitching method | : Either the standard stitching or the triangular stitching is to be selected |
| Production capacity | : 2,038 buttons/8 hrs. Condition: The number of tie stitches is set to 8. The number of neck wraps is set to 6. Machine time is set to 3.8 seconds. The time required to set a button and material and remove the finished material is 7.5 seconds. Allowance rate is set to 25%. |
| Power supply | : Single-phase, 100V, 110V, 120V, 200V, 220V, 240V 3-phase, 200V, 220V, 240V, 380V, 415V, 440V |
| Power consumption | : 300W |
| Compressed air | : 5 kg/cm ² |
| Air consumption | : 15 l/min. |
| Dimensions | : 1,110 mm (W) x 810 mm (D) Table height, 750 – 1,030 mm |
| Weight | : 120 kg |

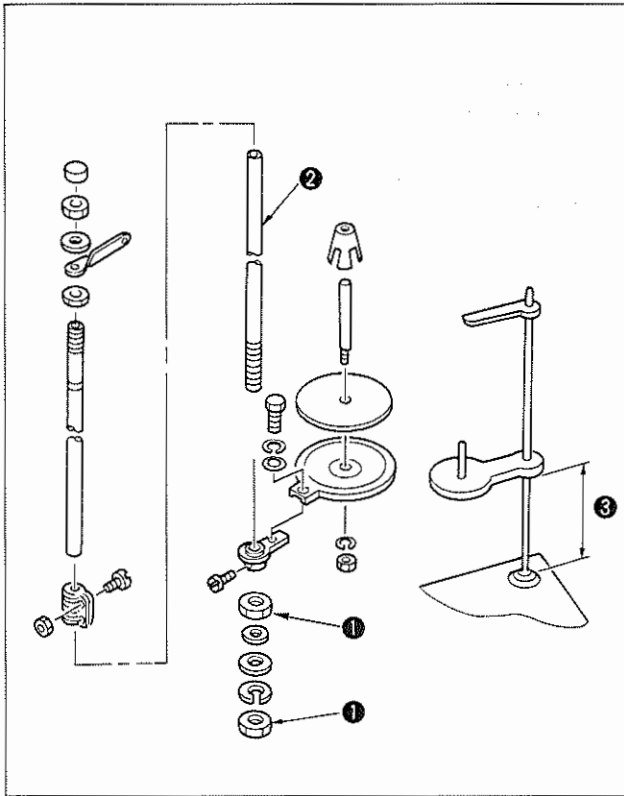
(1) Specifications of the buttons to be used for the AMB-188 (specifications for shank buttons and marble buttons)



- A. Button hole diameter
 $\phi 1.5$ mm or more
- B. Thickness of button
 $\phi 6.8$ mm or less
- C. Distance between the sole of button to the center of button hole
Shank buttons: 1 to 6 mm
Marble buttons: 1.5 mm or more
- D. Shank length
8 mm or less
- E. Straight section on the side face of button
3.5 mm or less
- F. Outside diameter
Min. $\phi 14$ mm
Max. $\phi 25$ mm
(When using the button chuck for small buttons
Min. $\phi 10$ mm
Max. $\phi 16$ mm)
- G. Distance between the center of button hole to the button edge
2 mm or less

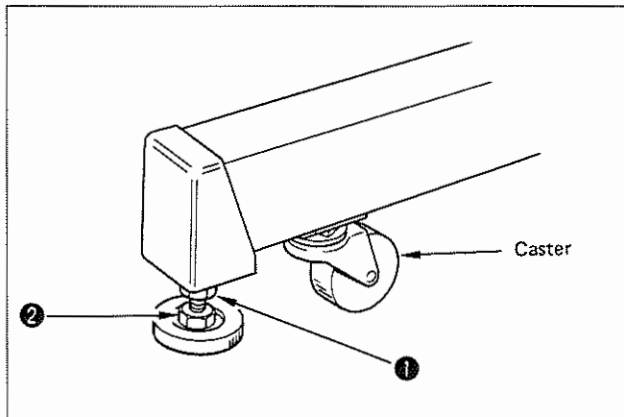
II. INSTALLATION

1. Attaching the thread stand



- 1) Assemble the thread stand, and put it in the hole in the right corner of the machine table.
- 2) Set the height of ③ to approximately 100 mm.
- 3) Tighten locknut ① to securely fix the thread stand.
When ceiling wiring is possible, pass the power cable through spool rest rod ②.

2. Attaching the table stand components



To ensure that the machine operates properly, it is necessary to set up the sewing machine on a flat surface free from vibration.

[How to adjust the machine so that it is level]

Loosen four locknuts ① installed on the bottom of the main unit, and turn adjustment bolts ② to level the whole machine. After adjusting the machine so that it is level, be sure to tighten up the locknuts.

III. OPERATION

1. Operation panel

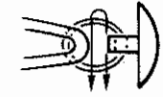
(1) Operation panel

Power indicator lamp

Lights up in green when the power to the machine is turned ON.

Error indicator

The lamp lights up in red when an error occurs. This lamp also lights up when the needle bar fails to stop in the highest position. The lamp will flash on and off when the stop position of the machine is adjusted from the incorrect position to the correct position.




Number of neck wraps

Select the desired number of neck wraps out of the following numbers.


| | |
|-----------------|-----------------|
| 1 → 2 stitches | 9 → 18 stitches |
| 2 → 4 stitches | A → 20 stitches |
| 3 → 6 stitches | B → 22 stitches |
| 4 → 8 stitches | C → 24 stitches |
| 5 → 10 stitches | D → 26 stitches |
| 6 → 12 stitches | E → 28 stitches |
| 7 → 14 stitches | F → 30 stitches |
| 8 → 16 stitches | |

Setting with/without neck wraps

Changing from sewing buttons with neck wraps to sewing buttons without neck wraps and vice versa.




Without neck wraps




With neck wraps

Setting with/without stay stitches

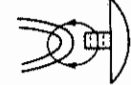


With stay stitches



Without stay stitches

Setting the number of tie stitches





Setting the number of tie stitches

| Standard stitching | Triangular stitching |
|--------------------|----------------------|
| 1 → 2 stitches | 2 → 4 stitches |
| 2 → 4 stitches | 4 → 8 stitches |
| 3 → 6 stitches | 6 → 12 stitches |
| 4 → 8 stitches | 8 → 16 stitches |
| F → 30 stitches | E → 28 stitches |

Switch to set the operation mode

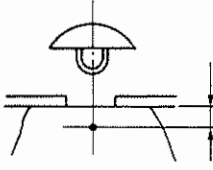
- Used to select the automatic operation mode or the manual operation mode. (The switch is a two-step seesaw switch.)

- Automatic operation**
 - Set the switch to the position to select the automatic sewing mode , and the machine will start sewing by depressing the left-hand side pedal of the 2-pedal unit after depressing the right-hand side pedal of the 2-pedal unit to fix the button. Then the machine will perform sewing until the sewing end is reached.

(Caution) Be sure to run the machine under the automatic operation mode after you have confirmed the stitch diagram by operating the machine in the manual operation mode and then have performed a trial stitching.
- Manual operation**
 - When this switch is set to select the manual operation mode , the machine will run under the manual operation mode.
 - You can manually operate the machine through whole of the 1st and 2nd processes of the button sewing with neck wrapping.
 - The stitch diagram is confirmed and a trial stitching is performed under the manual operation mode.

Setting the depth of tie stitches

Set the depth of tie stitches.



Setting **00** to **25**

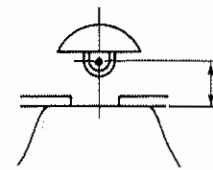
-2 to 3 mm

The depth of tie stitches can be set in increments of 0.2 mm (one graduation on the scale corresponds to 0.2 mm).

| | |
|----|-----------|
| 0 | → -2 mm |
| 1 | → -1.8 mm |
| ⋮ | |
| 24 | → 2.8 mm |
| 25 | → 3 mm |

Setting the center of hole in the button

Set the distance from the cloth edge to the center of hole in the button.

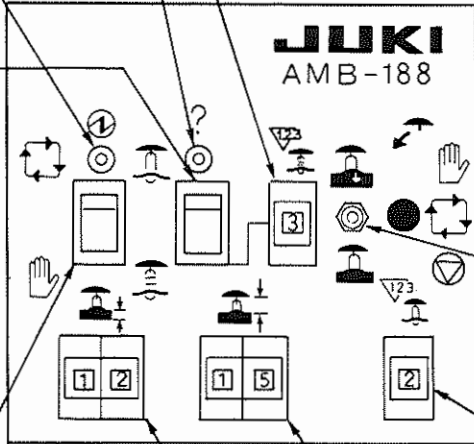


Setting **00** to **25**

0 to 5 mm

The center of hole in the button can be set in increments of 0.2 mm (one graduation on the scale corresponds to 0.2 mm).

| | |
|----|----------|
| 0 | → 0 mm |
| 1 | → 0.2 mm |
| ⋮ | |
| 24 | → 4.8 mm |
| 25 | → 5 mm |



JUKI AMB-188

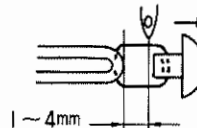
(2) Explanation of the input data panel

| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--------------------|---|-----|----------------------|--|----|---|---|--------|----------------------------|--|--------|-------------------------|---|----|--------|-----|--|--------|----|---|--|---|-----|--|---|----|
| <p>Stitching method Switch No. 1 of SW1</p> <p>Specify the stitching method.</p> <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">Standard stitching</td> <td></td> <td style="text-align: center;">OFF</td> </tr> <tr> <td style="text-align: center;">Triangular stitching</td> <td></td> <td style="text-align: center;">ON</td> </tr> </table> | Standard stitching | | OFF | Triangular stitching | | ON | <p>Number of stitch length for triangular stitching Switch No. 2 of SW1</p> <p>Specify the stitch length for triangular stitching.</p> <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="text-align: center;"></td> <td style="text-align: center;">1.2 mm</td> <td style="text-align: center;">OFF</td> </tr> <tr> <td style="text-align: center;"></td> <td style="text-align: center;">2.4 mm</td> <td style="text-align: center;">ON</td> </tr> </table> | | 1.2 mm | OFF | | 2.4 mm | ON | <p>Compensating the depth of tie stitches for triangular stitching</p> <p>Specify the compensating value of tie stitches when performing the triangular stitching.</p> <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="text-align: center;"></td> <td style="text-align: center;">0.2 mm</td> <td style="text-align: center;">OFF</td> </tr> <tr> <td style="text-align: center;"></td> <td style="text-align: center;">0.4 mm</td> <td style="text-align: center;">ON</td> </tr> </table> | | 0.2 mm | OFF | | 0.4 mm | ON | <p>Number of stay stitches Switch No. 4 of SW1</p> <p>Specify the number of stay stitches.</p> <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="text-align: center;"></td> <td style="text-align: center;">1</td> <td style="text-align: center;">OFF</td> </tr> <tr> <td style="text-align: center;"></td> <td style="text-align: center;">2</td> <td style="text-align: center;">ON</td> </tr> </table> | | 1 | OFF | | 2 | ON |
| Standard stitching | | OFF | | | | | | | | | | | | | | | | | | | | | | | | | |
| Triangular stitching | | ON | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1.2 mm | OFF | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 2.4 mm | ON | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 0.2 mm | OFF | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 0.4 mm | ON | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1 | OFF | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 2 | ON | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Angle of button chuck Switch No. 5 of SW1</p> <p>Specify the angle of button chuck.</p> <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">Button chuck is positioned at right angles.</td> <td></td> <td style="text-align: center;">OFF</td> </tr> <tr> <td style="text-align: center;">Button chuck is positioned with inclined by 45°.</td> <td></td> <td style="text-align: center;">ON</td> </tr> </table> <p style="text-align: center; font-size: small;">(Caution) Do not set the button chuck with inclined by 45° when sewing marble buttons. Doing so may result in needle breakage.</p> | | Button chuck is positioned at right angles. | | OFF | Button chuck is positioned with inclined by 45°. | | ON | <p>Setting with/without the thread presser Switch No. 6 of SW1</p> <p>Specify with/without the thread presser. * Use the thread presser when sewing light-weight materials.</p> <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">Without the thread presser</td> <td style="text-align: center;"></td> <td style="text-align: center;">OFF</td> </tr> <tr> <td style="text-align: center;">With the thread presser</td> <td style="text-align: center;"></td> <td style="text-align: center;">ON</td> </tr> </table> | | Without the thread presser | | OFF | With the thread presser | | ON | | | | | | | | | | | | |
| Button chuck is positioned at right angles. | | OFF | | | | | | | | | | | | | | | | | | | | | | | | | |
| Button chuck is positioned with inclined by 45°. | | ON | | | | | | | | | | | | | | | | | | | | | | | | | |
| Without the thread presser | | OFF | | | | | | | | | | | | | | | | | | | | | | | | | |
| With the thread presser | | ON | | | | | | | | | | | | | | | | | | | | | | | | | |

Setting the start position of neck wrapping
SW4

The start position of neck wrapping is specified from the cloth edge toward the button within the range of 1 to 4 mm in increments of 0.2 mm.

| [Position of the switch] | [Distance between the neck wraps and the cloth] |
|--------------------------|---|
| 0 | → 1 mm |
| 1 | → 1.2 mm |
| 2 | → 1.4 mm |
| 3 | → 1.6 mm |
| ⋮ | |
| 15 | → 4.0 mm |

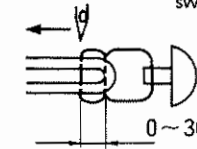


To set the start position of neck wrapping to the position 2.2 mm away from the cloth, set the rotary switch at "6."

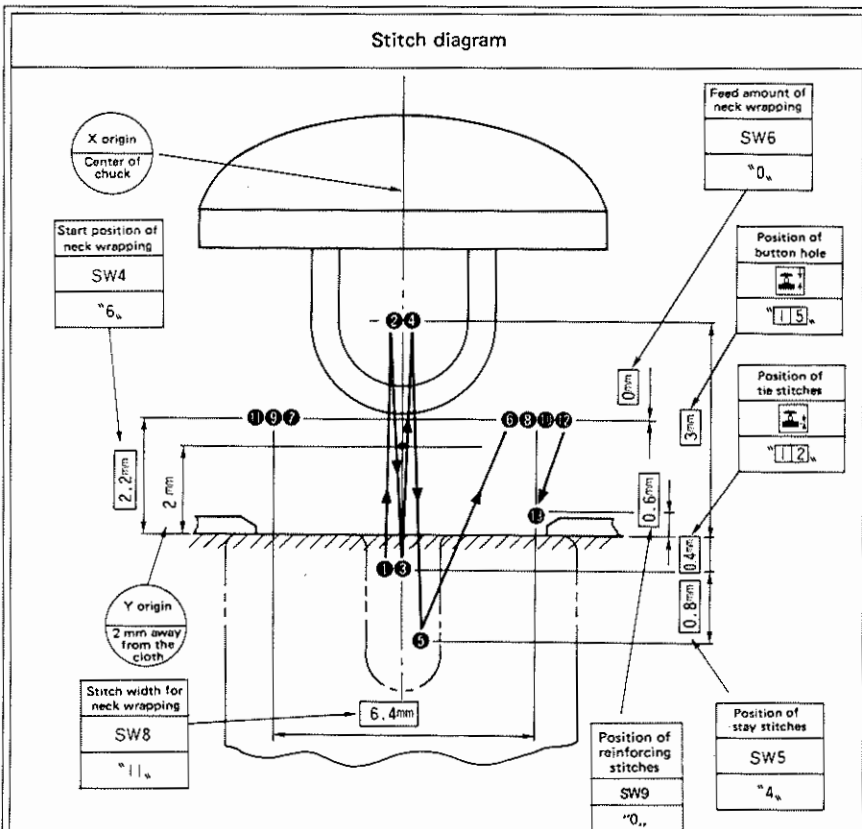
Setting the position of stay stitches
SW5

The position of stay stitches is specified from the position of tie stitches toward the cloth within the range of 0 to 3 mm in increments of 0.2 mm.

| [Position of the switch] | [Distance between the stay stitches to the tie stitches] |
|--------------------------|--|
| 0 | → 0 mm |
| 1 | → 0.2 mm |
| 2 | → 0.4 mm |
| 3 | → 0.6 mm |
| ⋮ | |
| 15 | → 3.0 mm |



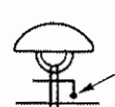
To set the position of stay stitches to the position 0.8 mm away from the position of tie stitches, set the rotary switch at "4."



Number of reinforcing stitches
SW7

Specify the number of reinforcing stitches within the range of 2 to 5 stitches.

| [Position of the switch] | [Number of stitches] |
|--------------------------|----------------------|
| 2 | → 2 stitches |
| 3 | → 3 stitches |
| 4 | → 4 stitches |
| 5 | → 5 stitches |



To set the number of reinforcing stitches to 2 stitches, set the rotary switch at "2."

Adjusting the origin in the X direction SW2

The origin in the X direction has been adjusted for each unit of the sewing machine. So no adjustment is necessary.

X origin

Button chuck gauge

Adjusting the origin in the Y direction SW3

The origin in the Y direction has been adjusted for each unit of the sewing machine. So no adjustment is necessary.

Y origin

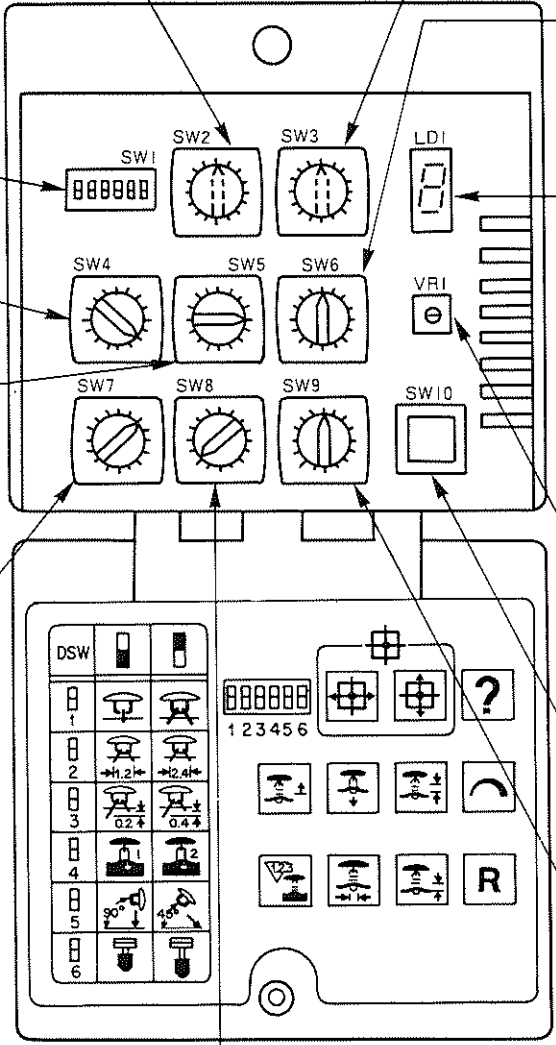
2mm

Setting the feed amount for neck wrapping SW6

The feed amount for neck wrapping is specified from the start position of neck wrapping toward the button within the range of 0 to 3 mm in increments of 0.2 mm.

| [Position of the switch] | [Feed amount] |
|--------------------------|---------------|
| 0 | → 0 mm |
| 1 | → 0.2 mm |
| 2 | → 0.4 mm |
| 3 | → 0.6 mm |
| ⋮ | |
| 15 | → 3.0 mm |

To set the feed amount to 0 mm, set the rotary switch at "0".



Indication of the error code and the number of stitches LD1

- This LED indicates the error code or the specified values of the number of tie stitches and the number of neck wraps.
- Since the LED only indicates the number of single digit, it shows the number in turn.
For "AL13" It indicates as "A → L → 1 → 3" while flashing on and off.
For "4 tie stitches and 6 neck wraps"
It indicates as "4 → [] → 6" while flashing on and off.
- It repeats indicating the number of tie stitches and the number of neck wraps three times after the relevant data changing.

Setting the number of revolutions of the sewing machine VR1

Specify the number of revolutions of the sewing machine.
200 - 600 s.p.m.

Reset switch SW10

This switch is pressed to reset the machine to the normal operation mode after correcting an error.

Setting the stitch width for neck wrapping SW8

The stitch width can be set within the range of 2 to 8 mm in increments of 0.4 mm.

| [Position of the switch] | [Stitch width] |
|--------------------------|----------------|
| 0 | → 2 mm |
| 1 | → 2.4 mm |
| 2 | → 2.8 mm |
| 3 | → 3.2 mm |
| ⋮ | |
| 15 | → 8.0 mm |

To set the stitch width to 6.4 mm, set the rotary switch at "11."

Setting the position of reinforcing stitches SW9

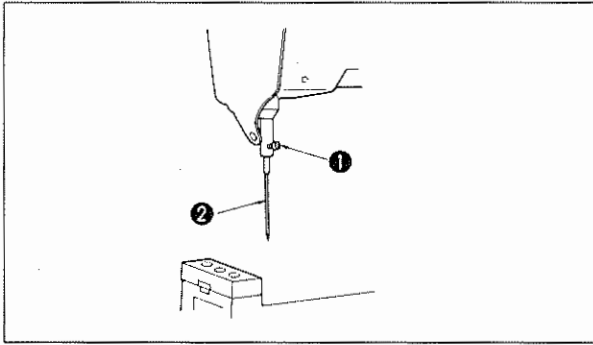
Specify the position of reinforcing stitches.

| [Position of the switch] | [Distance between the reinforcing stitches and the cloth] |
|--------------------------|---|
| 0 | → 0.6 mm |
| 1 | → 0.8 mm |
| 2 | → 1.0 mm |
| 3 | → 1.2 mm |
| 4 | → 1.4 mm |
| 5 | → 1.6 mm |

(Caution)
Adjust so that a distance of 0.1 to 0.3 mm is provided between the cloth edge and the needle.

To set the position of reinforcing stitches to the position 0.6 mm away from the cloth, set the rotary switch at "0".

2. Attaching the needle

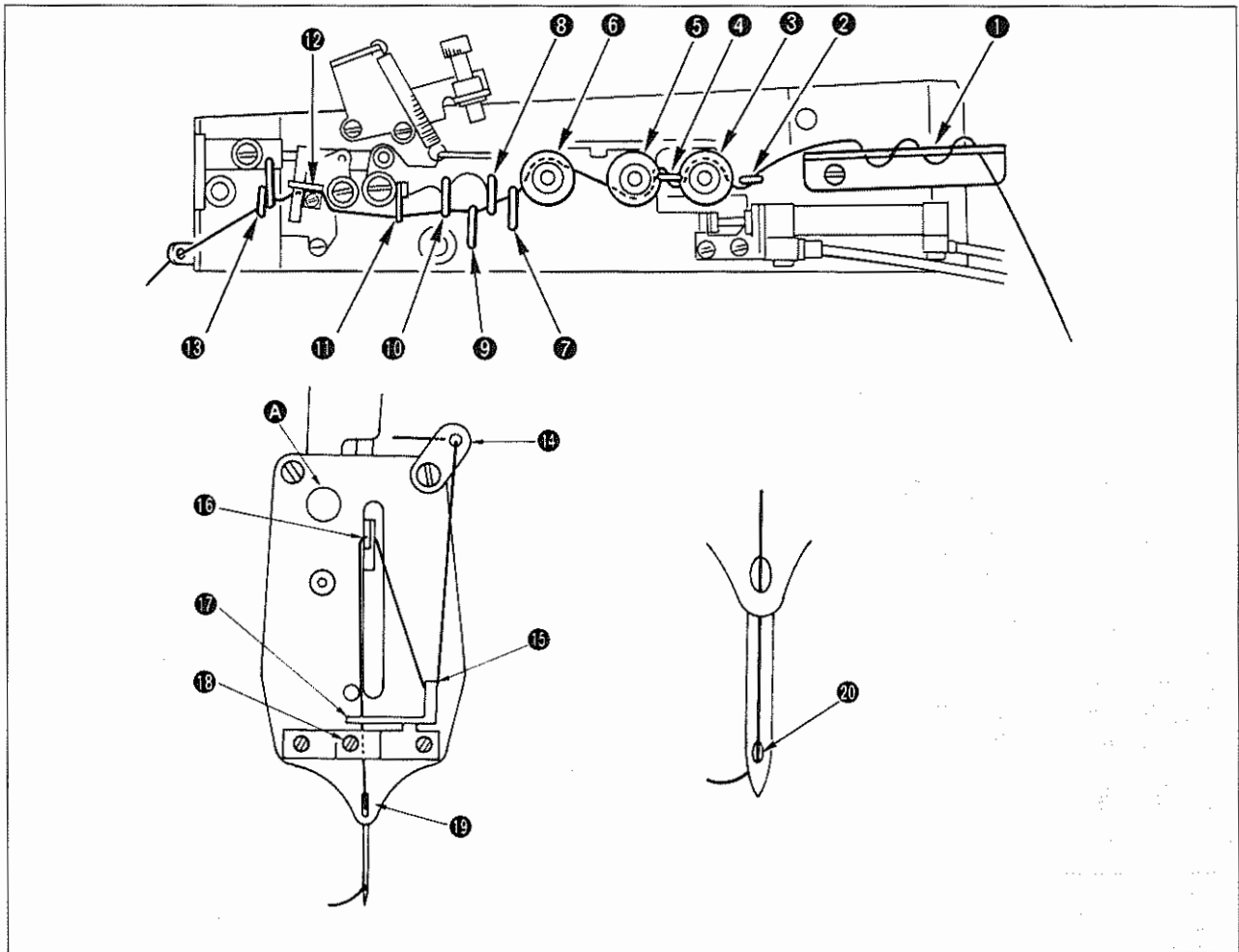


- 1) Loosen screw ①, and hold needle ② with its long groove faced toward you.
- 2) Insert needle ② until the top of the needle hole in the needle bar is reached.
- 3) Securely tighten screw ①.

(Caution) When attaching the needle, turn OFF the power to the motor.

The standard needle is ORGAN SMX332EXTLG #14.

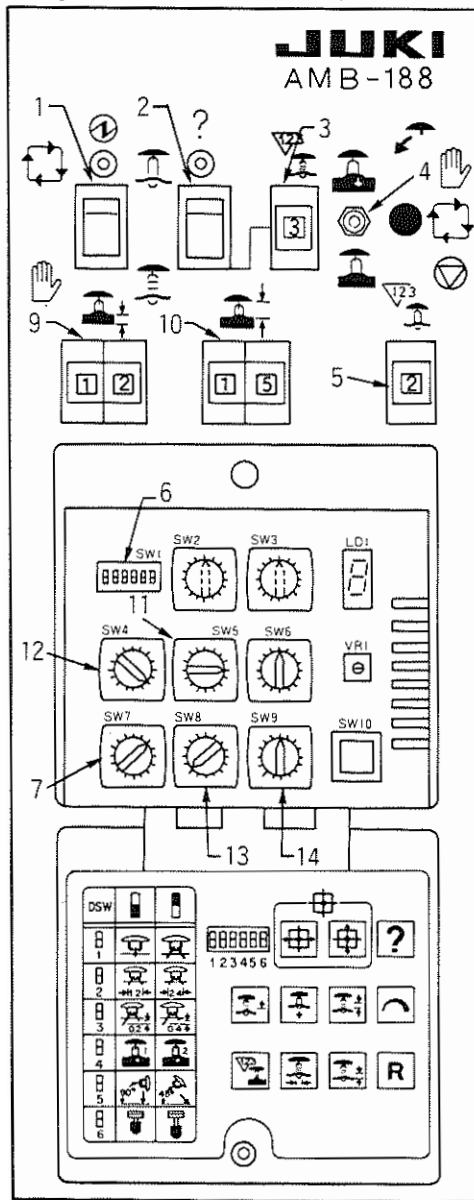
3. Threading the machine head



Thread the machine head in the order as illustrated in the figure. Then draw out the needle toward you by approximately 80 to 90 mm while pressing nut **A** in the nipper releasing plunger from this side of the needle eyelet away from you.

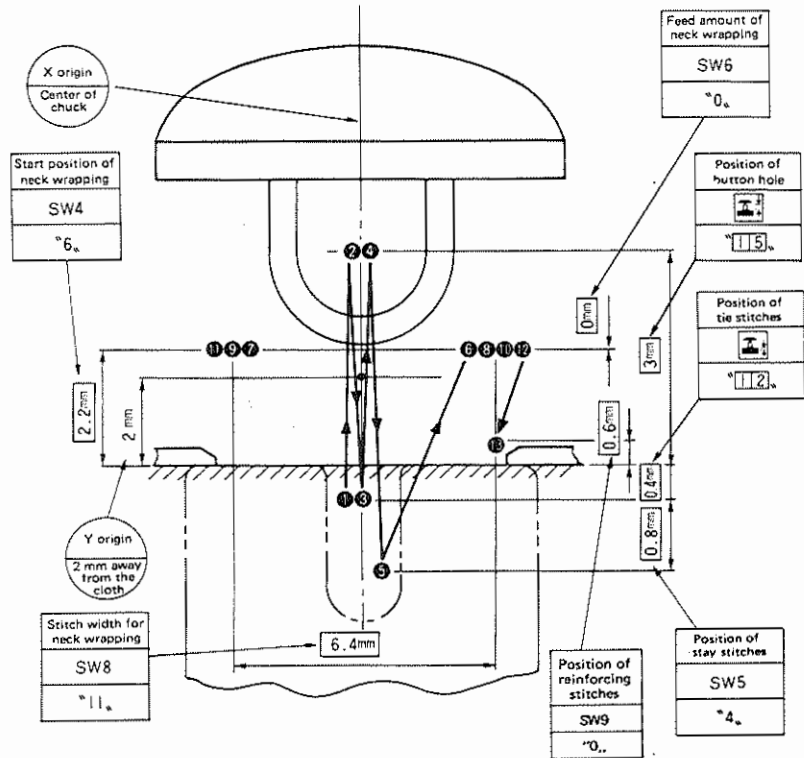
(Caution) Be sure to turn OFF the power to the motor.

4. Example of operating procedure of the control panel switches (The thread tensioner adjusting procedure is excluded.)





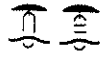

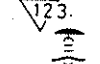






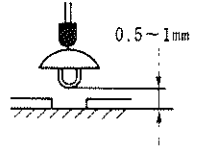
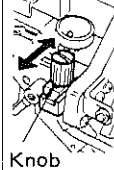
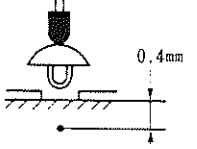

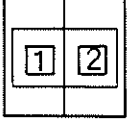
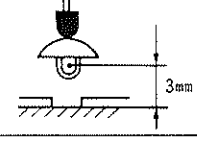

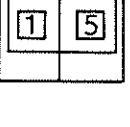
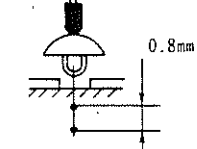


[Example of setting]

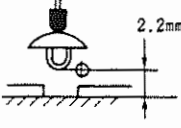



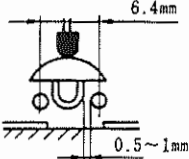

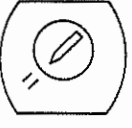
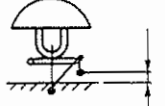
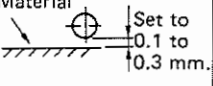

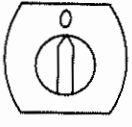
Shank buttons are sewn with neck wraps. The number of stitches for sewing a button is set to 4. The number of neck wraps is set to 6. The number of reinforcing stitches is set to 2. The number of stay stitches is set to 1. The height of neck wraps is set to 0.



(1) Inputting data

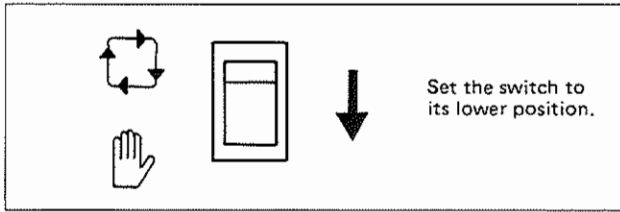
Turn ON the power to the machine, and operate the control panel following the procedure shown below.

| Step of procedure | Item input | Data input | Input switch | | Inputting data and operating the panel | Remarks |
|-------------------|--|---------------|---|---------------------|---|---|
| | | | Panel | Switch No. | | |
| 1 | Operation selecting switch | Manual switch |  | - |  Set the switch to its lower position. | |
| 2 | With/without neck wraps | With |  | - |  Set the switch to its lower position. | |
| 3 | Number of neck wraps | 6 |  | - | Set the counter at "3." | |
| 4 | With/without stay stitches | With |  | - |  Set the switch to its upper position. | |
| 5 | Number of tie stitches | 4 |  | - | Set the counter to "2." | |
| 6 | Number of stay stitches | 1 |  | Switch No. 4 of SW1 |  Set the switch No. 4 to its lower (OFF) position. | |
| 7 | Number of reinforcing stitches | 2 |  | SW7 | Set the counter to "2." | |
| 8 | Adjusting the position of the button and cloth  | - | - | - | - |  Set the knob to adjust the height of neck wraps to "0." Loosen the knob in the figure on the left. Then adjust the position of the button and cloth. Knob |
| 9 | Setting the depth of tie stitches  | 0.4 mm |  | - | Set the counter to "12."  | Turn the handwheel of the sewing machine by hand to check the needle entry. |
| 10 | Setting the stitch length between the center of button hole and the cloth  | 3 mm |  | - | Set the counter to "15."  | - Ditto - |
| 11 | Setting the position of the stay stitches  | 0.8 mm |  | SW5 | Set the rotary switch to "4."  | - Ditto - |

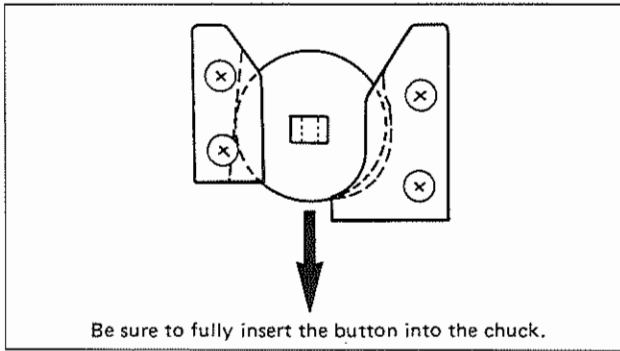
| Step of procedure | Item input | Data input | Input switch | | Inputting data and operating the panel | Remarks |
|-------------------|---|------------|--|------------|---|---|
| | | | Panel | Switch No. | | |
| 12 | Setting the start position of neck wrapping   | 2.2 mm |  | SW4 |  | Turn the handwheel of the sewing machine by hand to check the needle entry. |
| 13 | Setting the stitch width of neck wraps  Adjust so that a clearance of 0.5 to 1 mm is provided between the needle and the button. | 6.4 mm |  | SW8 |  | - Ditto - |
| 14 | Setting the position of reinforcing stitches  Material  | 0.6 mm |  | SW9 |  | - Ditto - |

(Caution) The needle entry specified may change according to the thickness of material and the shape of buttons. So it is necessary to set the data from step ⑧ through ⑭ by manually operating the machine and performing a trial stitching.

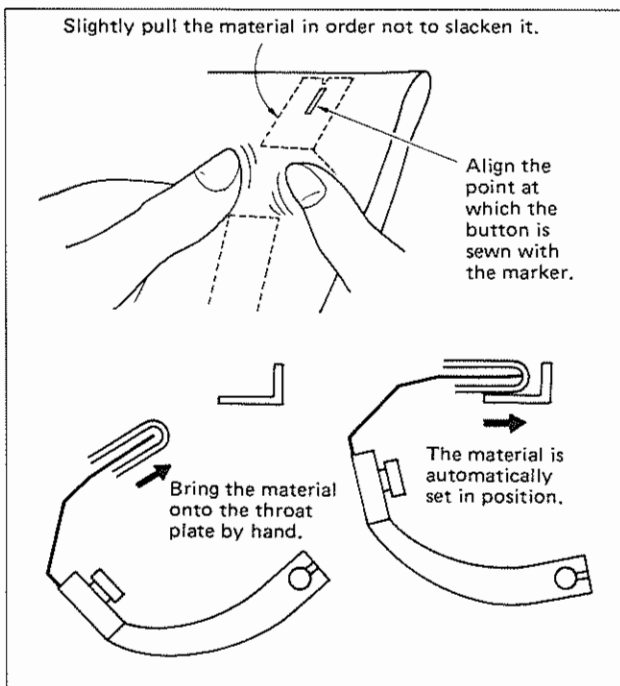
(2) Confirming the stitch diagram by way of manual operation of the machine



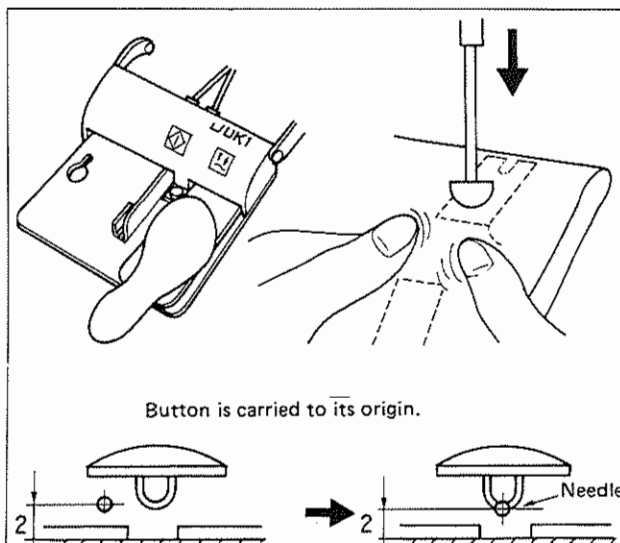
- 1) Set the operation mode to the manual operation mode.



- 2) Insert the button in position.



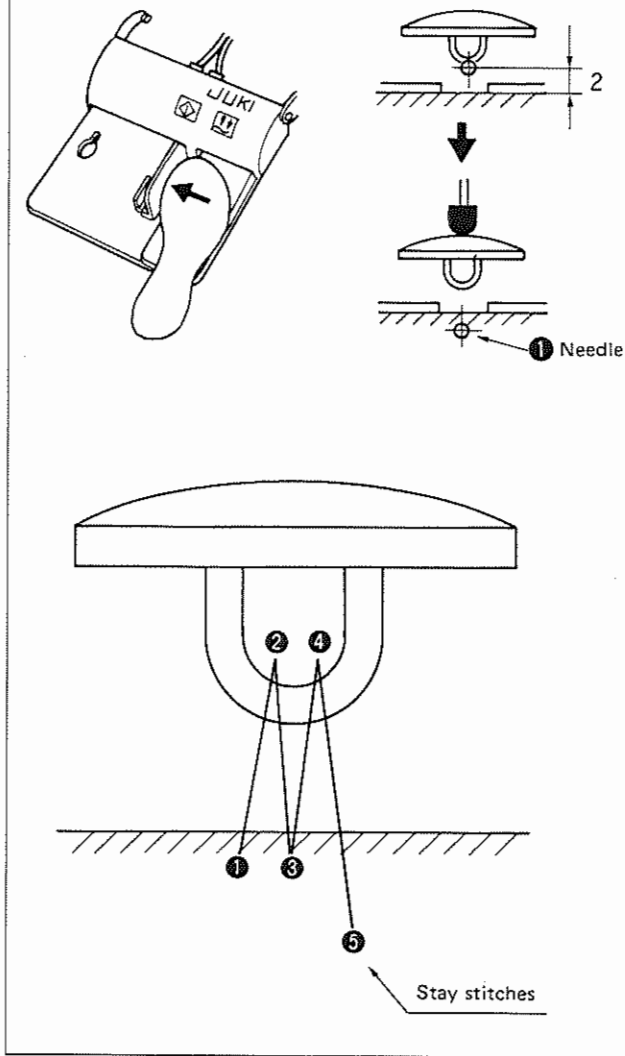
- 3) Set the material on the tongue.
- When the tongue on which the material is set is brought onto the throat plate, the air may be automatically actuated to set the material in position on the throat plate.
 - Once the material is set in position, take care not to apply external load to the tongue.



- 4) Depress the right-hand side pedal of the 2-pedal unit, then the following operation will be automatically carried out.
- The chuck fixes the button.
 - The work clamp actuates.
 - The button is brought to the origin.
(Depress the pedal again, and the machine will be reset.)

(Caution) Take care not to allow your hand to come in contact with the work clamp.

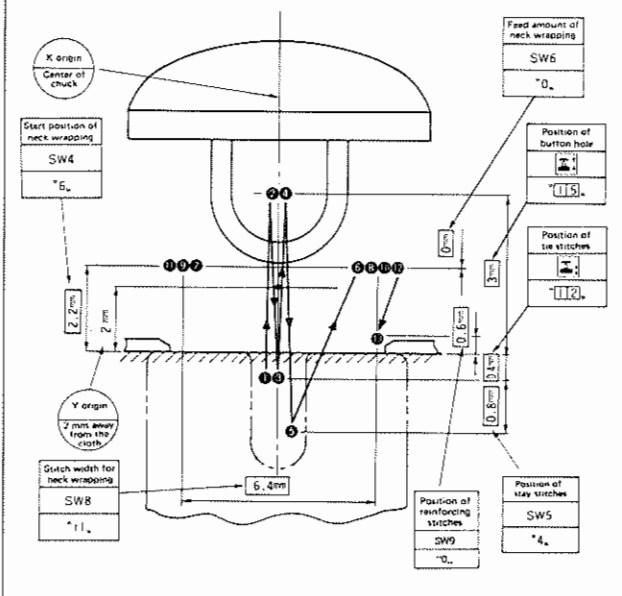
Button sewing process



- 5) Depress the left-hand side pedal of the 2-pedal unit, the following operation will be carried out automatically.
 - The button presser presses the button to bring the button from the origin to the position of tie stitches (the 1st stitch).
- 6) Every time you depress the left-hand side pedal of the 2-pedal unit, the button will move stitch by stitch from the needle entry ② to needle entry ⑤.

The machine performs the above-stated procedure by turning the handwheel of the sewing machine by hand.

Stitch diagram



- 7) Depress the left-hand side pedal of the 2-pedal unit, and the button presser will be released.
- 8) Every time you depress the left-hand side pedal of the 2-pedal unit, the button will move stitch by stitch from the needle entry ⑥ to needle entry ⑬.

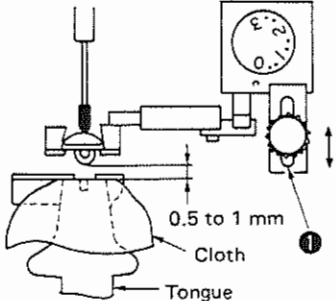
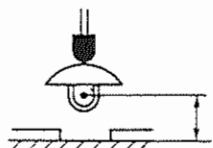
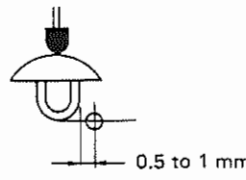
The machine performs the above-stated procedure by turning the handwheel of the sewing machine by hand.
- 9) Depress the left-hand side pedal, and the thread trimmer will be automatically actuated.
- 10) Depress the left-hand side pedal of the 2-pedal unit, the following operation will be carried out automatically.
 - The work clamp returns to the home position.
 - The chuck is released.
 - The tongue is released.

If sewing buttons without neck wraps, the machine stops after completing the first process (step 8 is excluded), i.e., the button sewing process.

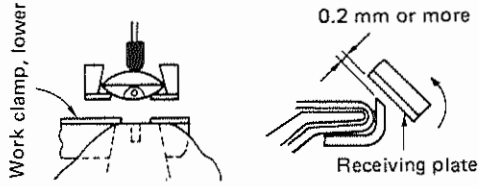
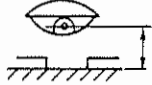

5. Setting the position of buttons

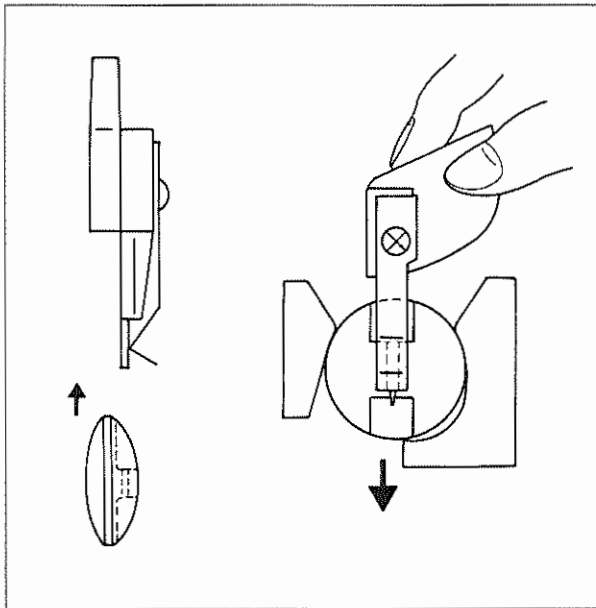
Whenever changing the type of button to be sewn, perform the following adjustment.

(1) For shank buttons

| No. | Item to be adjusted | Page for reference | Description of adjustment |
|-----|---|--|--|
| 1 | Adjusting the position of the button and cloth  | Step 8 on page 11 | Loosen screw ① in the adjusting base, and move the adjusting base so that the button is positioned 0.5 to 1 mm away from the cloth. Then tighten screw ①. Set the knob to adjust the height of neck wraps to 0. |
| 2 | Setting the stitch length between the center of button hole and the cloth  | Step 10 on page 11 | Adjust the set value of the center of button hole using the counter. |
| 3 | Setting the needle entry in the neck wrapping process  | Step 12 on page 12 Step 13 on page 12 | Adjust so that the end of the button shank is aligned with the center of the needle using the rotary switch SW4, and adjust so that a lateral clearance of 0.5 to 1 mm is provided between them. |

(2) For marble buttons

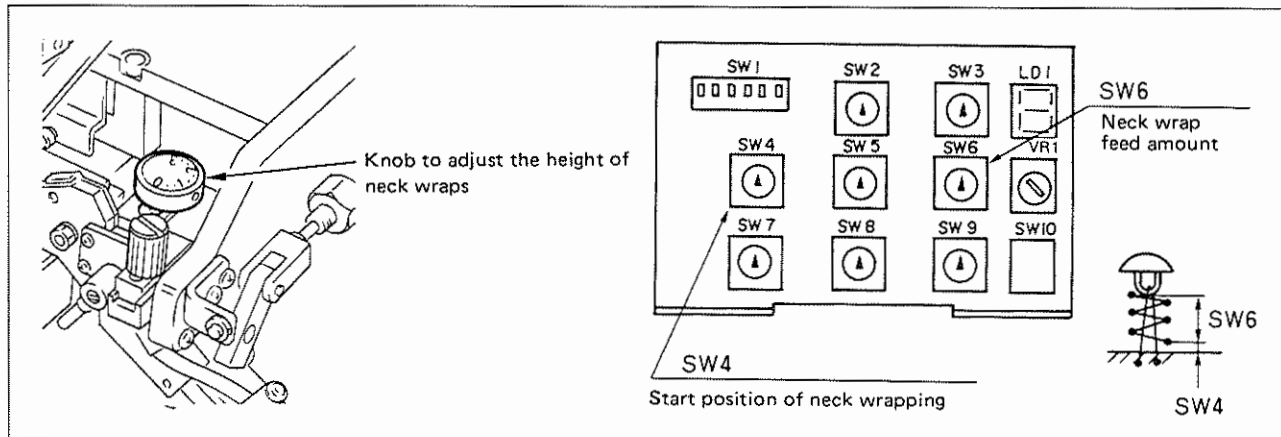
| No. | Item to be adjusted | Description of adjustment |
|-----|---|--|
| 1 | Adjusting the position of the button and cloth.  | To bring the button closer to the cloth, turn the button chuck by hand to make sure that a clearance 0.2 mm or more is provided between the button and the work clamp, lower. (Caution) If the tie stitch depth adjusting dial is moved in direction A on page 19, the clearance between the button and the work clamp, lower may be less than 0.2 mm. So be sure to re-confirm the clearance between them after moving the dial in direction A. |
| 2 | Setting the stitch length between the center of button hole and the cloth.  | Adjust the set value of the center of button hole using the counter. |
| 3 | Setting the needle entry in the neck wrapping process.  | Adjust so that the needle enters the center of the clearance provided between the receiving plate and the cloth or between the button and the cloth using the SW4 and SW8. |



The button setting knob supplied with the machine as an accessory should be used when setting small marble buttons to the button chuck.

6. Adjusting the height of neck wraps

If you need to change the height of neck wraps, adjust it using the knob to adjust the height of neck wraps. In this case, operate the knob taking care of the following items.



- 1) When the knob to adjust the height of neck wraps is adjusted to increase the height of neck wraps as 0 → 1 → 2, the position of the center of button hole will automatically change accordingly. (It is not necessary to re-adjust the center of button hole.) → Fig. 1
- 2) When the knob to adjust the height of neck wraps is adjusted to increase the height of neck wraps as 0 → 1 → 2, neck wrapping can be performed with higher consistency by changing the neck wrap feed amount using the SW6. → Fig. 2

| Knob to adjust the height of neck wraps | 0 | 1 | 2 | 3 |
|---|---|---|---|---|
| Stitch diagram | | | | |

Fig. 1

| Knob to adjust the height of neck wraps | 0 | 1 | 2 | 3 |
|---|--------------------------------------|-----|------|------|
| SW6 | Position of the rotary switch "0" | "5" | "10" | "15" |
| Stitch diagram | | | | |

Fig. 2

- 3) When sewing marble buttons, neck wrapping can be performed with higher consistency by changing the position of neck wrapping. (Specify better conditions for neck wrapping by adjusting the start position of neck wrapping using the SW4 and the feed amount for neck wrapping using the SW6.) → Fig. 3

| | | | | |
|---|---|---|---|----|
| Knob to adjust the height of neck wraps | 0 | 2 | 2 | 2 |
| SW4 | — | 6 | 6 | 1 |
| SW6 | — | 0 | 5 | 10 |
| Stitch diagram | | | | |
| Uniformity of neck wraps | — | X | Δ | ○ |

(Caution) Increasing the set value of the SW4 or SW6 will make the needle come in contact with the button in accordance with the height of neck wraps specified. Be sure to check the stitch diagram by manually operating the machine.

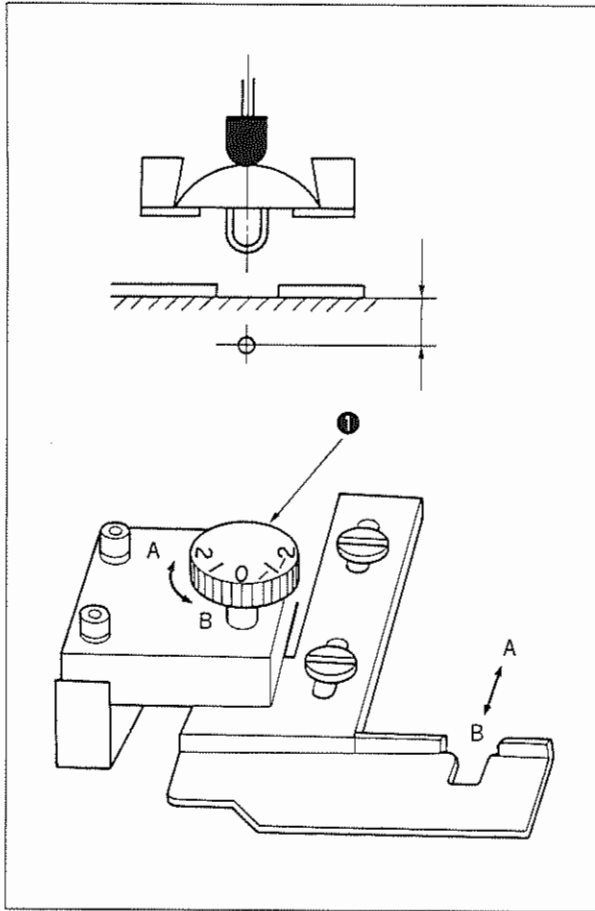
4) Setting the height of neck wraps

Feeling and height of the finished neck wraps is affected by the type of thread, yarn count, type of material, tie stitch depth, type of button, stitch diagram, thread tension, etc. The type of button, yarn count of the thread and the number of neck wraps greatly affect the feeling and height of the neck wraps in particular. Set the height of neck wraps referring to the table shown below.

| Scale on the knob to adjust the height of neck wraps | Shank button | | Marble button | | | |
|--|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| | Thread used | | Actual height | Thread used | | Actual height |
| | Spun thread #50 | Spun thread #30 | | Spun thread #50 | Spun thread #30 | |
| 1 | 4 to 8 stitches | 4 to 6 stitches | 0.5 to 1.5 mm | 8 to 14 stitches | 4 to 10 stitches | 1 to 1.5 mm |
| 2 | 12 to 16 stitches | 8 to 12 stitches | 1.5 to 2.5 mm | 14 to 20 stitches | 10 to 16 stitches | 1.5 to 2.5 mm |
| 3 | 16 to 22 stitches | 12 to 16 stitches | 2.5 to 3.5 mm | 20 to 30 stitches | 16 to 26 stitches | 2.5 to 3.5 mm |

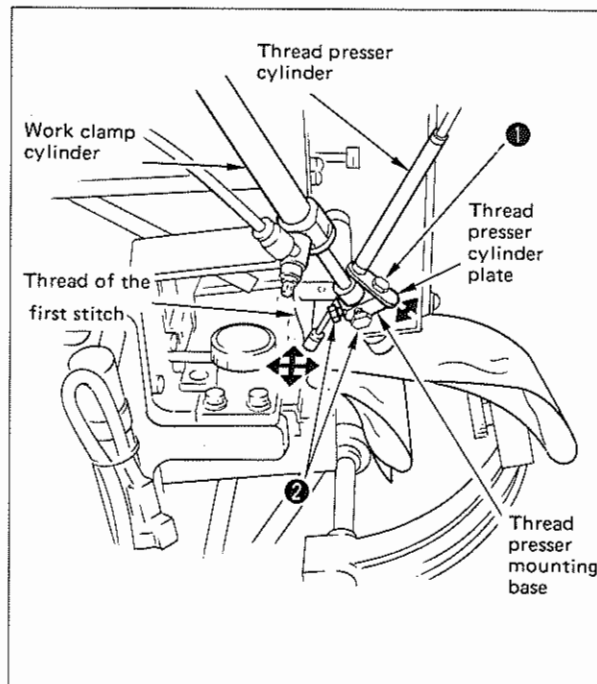
(Caution) The scales used to set the height of neck wraps are only used as reference. Be sure to adjust the height of neck wraps while checking the actual height of neck wraps.

7. Adjusting the depth of tie stitches



- 1) Adjust the set value of the depth of tie stitching using the counter. (Refer to step 9 on page 11.)
- 2) Fine adjust the depth of tie stitches using knob ①.
 - Turn the dial from 0 toward -2 to decrease the depth of tie stitches.
 - Turn the dial from 0 toward 2 to increase the depth of tie stitches.The depth of tie stitches can be adjusted in increments of 0.05 mm (corresponds to one division of the scale). The standard position is 0 on the scale.

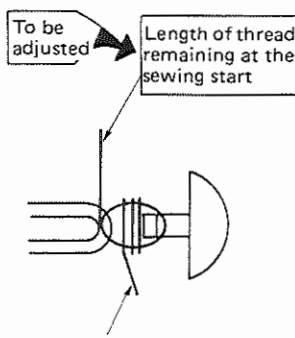
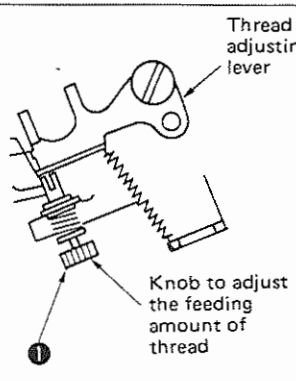
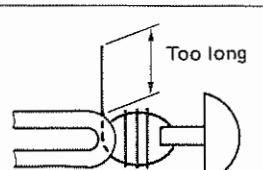
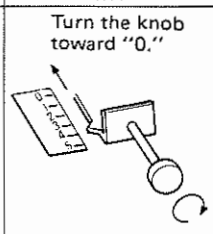
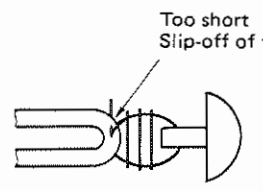
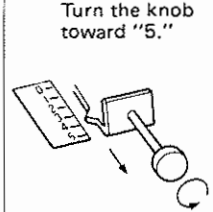
8. Adjusting the thread presser (when using light-weight materials)



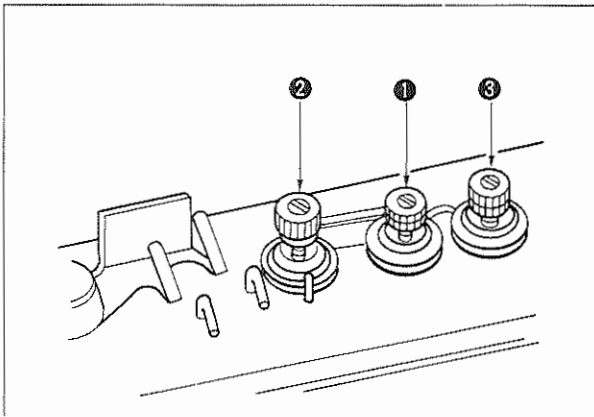
- 1) Set the switch No. 6 of DIPSW1 to its upper (ON) position.
- 2) Make the needle enter the material once.
- 3) Loosen hexagon head screw ①, and adjust the lateral position and longitudinal position of the thread presser so that it clamps the thread of the first stitch by moving the thread presser cylinder plate.
- 4) Loosen two hexagon head screws ②, and adjust the stroke of the thread presser cylinder as well as the moving direction of the cylinder.

9. Adjusting the length of thread remaining

Adjust the length of thread remaining following the procedure described below.

| Section at which the thread remains after thread trimming | Adjusting knob | Troubles and corrective measures | |
|---|--|--|--|
| | | Trouble | Corrective measure |
|  <p>To be adjusted</p> <p>Length of thread remaining at the sewing start</p> <p>Length of thread remaining after thread trimming</p> |  <p>Thread adjusting lever</p> <p>Knob to adjust the feeding amount of thread</p> |  <p>Too long</p> |  <p>Turn the knob toward "0."</p> |
| | |  <p>Too short Slip-off of thread</p> |  <p>Turn the knob toward "5."</p> |

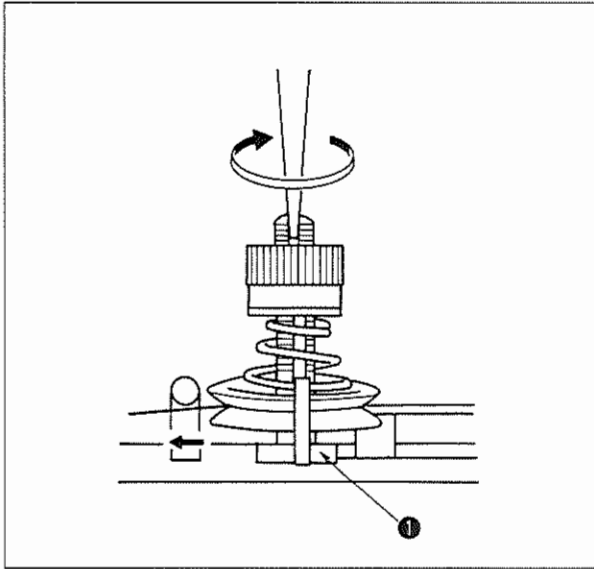
10. Adjusting the thread tension



| Name of thread tensioner | No. | Process | Function |
|--|-----|--|---|
| Tension adjustment nut No. 1 for button sewing | ① | First process of button sewing | Used to adjust the thread tension for button sewing. |
| Tension adjustment nut No. 1 for neck wrapping | ③ | Second process of button sewing | Used to adjust the thread tension for button neck wrapping. |
| Tension adjustment nut No. 2 | ② | First and second processes for button sewing | Used to adjust the tension of the thread sewn on the wrong side of the material for button sewing and button neck wrapping. |

- Turning each adjustment nut clockwise will increase the thread tension or counterclockwise will decrease it.
- The tension adjustment nut No. 2 is capable of adjusting the thread tension to higher value than the tension adjustment nut No. 1 and it needs to be adjusted in accordance with the thread, material or thickness of the button to be used.

11. Adjusting the timing to release the thread tension



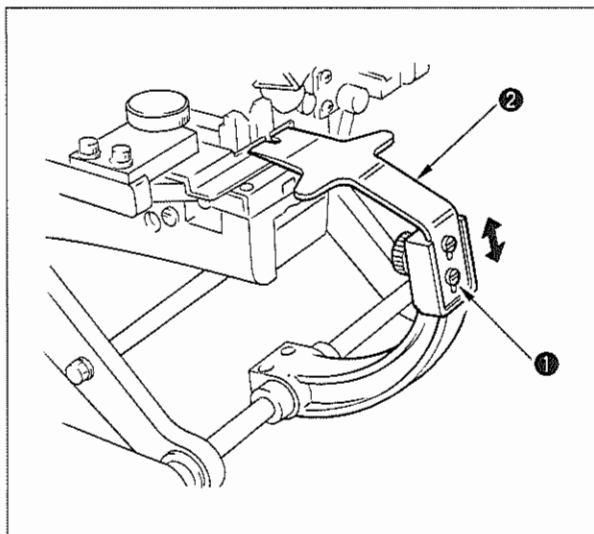
Pulling the thread in the direction of the arrow, turn the handwheel until you find the position where the thread tension guide No. 2 comes up to allow the thread to draw out. At this time, the standard distance of 49 to 52 mm should be provided between the surface of the needle bar upper bushing and the top end of the needle.

The below-stated adjustment is necessary especially when the following phenomenon frequently occur.

Loosen nut ①. Fit a screwdriver into the thread tension guide, and turn it in the direction of the arrow to lower the needle bar or in the opposite direction of the arrow to raise the needle bar.

| Phenomenon and change of thread | Height of the needle bar |
|--|--------------------------------|
| 1) Loose stitches are observed on the wrong side of the material | Slightly raise the needle bar. |
| 2) Thread breakage frequently occur. | Slightly lower the needle bar. |
| 3) When the thread is changed for thicker one. | Slightly lower the needle bar. |

12. Adjusting the tongue



Whenever the material thickness changes, adjust the tongue following the procedure described below.

- 1) Loosen screw ①.
- 2) Move tongue ② up or down in accordance with the material thickness.
- 3) Tighten screw ①.

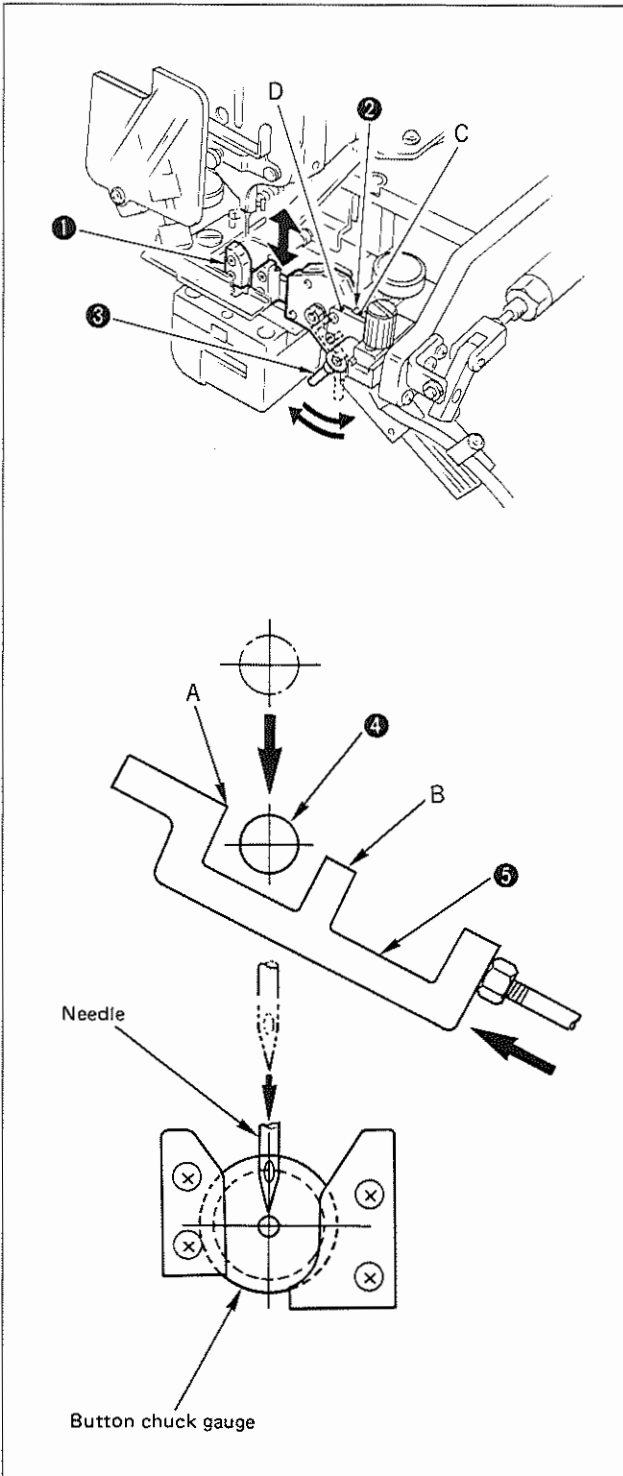
13. How to replace the button chuck

Attach/remove the button chuck following the procedure described below.

Button chuck comes in two different types, i.e., large and small in accordance with the size of buttons to be sewn.

Button chuck, large: Outside diameter of button $\phi 14$ to $\phi 25$ mm

Button chuck, small: Outside diameter of button $\phi 10$ to $\phi 16$ mm

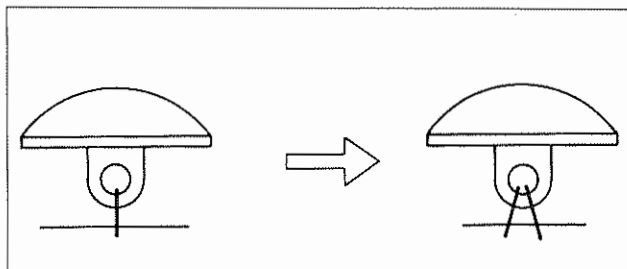


- 1) To remove button chuck ①, release lock lever ③, and draw out button chuck ① upward.
- 2) To attach button chuck ①, insert it between lock lever ③ and guide ② along with guide ②. Then fix lock lever ③.
- 3) As long as pin ④ of button chuck ① is securely fitted in the space provided between A and B of button chuck actuating lever ⑤ when inserting the button chuck as described above, plane C will be almost flush with plane D. If the pin is not securely placed between A and B, plane D will be positioned above plane C. As a result, there will be a difference in height between the two planes. At this time, move chuck actuating lever ⑤ in the direction of the arrow until ④ is securely placed between A and B of ⑤.

(Supplementary explanation)

Check the lateral direction (X direction) of the button chuck at the center hole in the button chuck gauge supplied with the machine.

14. Changing over the stitching mode from the standard stitching to the triangular stitching



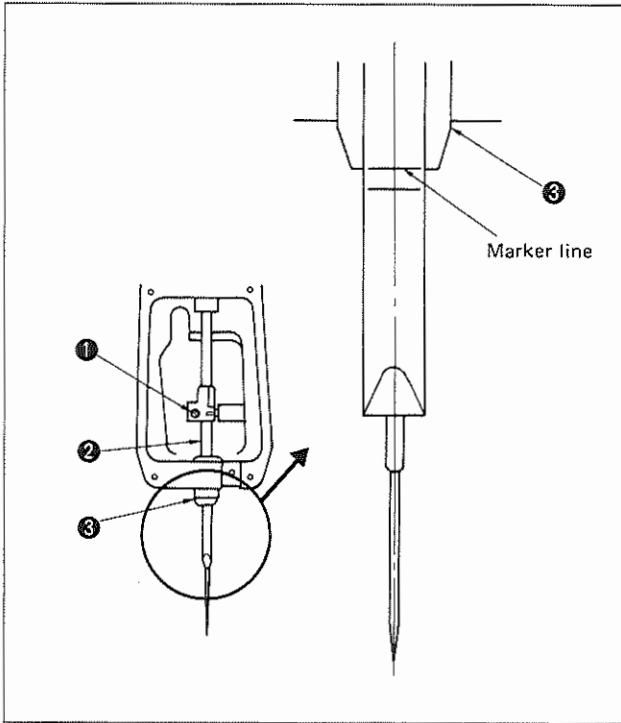
When changing over the stitching mode from the standard stitching to the triangular stitching, perform the operation shown in the table below.

| No. | Item | Description |
|-----|--|---|
| 1 | Loosen tongue fixing knob ② which is used to fix tongue ① in place, and replace the tongue for the standard stitching with the tongue for the triangular stitching. | |
| | Change the data input and check it. 1. Changing the sewing pattern. Set the switch No. 1 of SW1 to its ON position. | |
| 2 | 2. Set the stitch length. Select the stitch length desired using the switch No. 2 of SW1. | |
| | 3. Compensate the depth of tie stitches, left. Compensate the difference between the depth of tie stitches, left and that of tie stitches, right using the switch No. 3 of SW1. | |
| 3 | Adjust the thread presser. | Refer to "Adjusting the thread presser" on page 00. |
| 4 | Setting the number of tie stitches. | 2 (4 stitches), 4 (8 stitches), 6 (12 stitches), E (28 stitches) (Caution) If setting the number of tie stitches to 3, 5, 7, 9, B, D or F. AL0 will be shown on the display. |

IV. MAINTENANCE

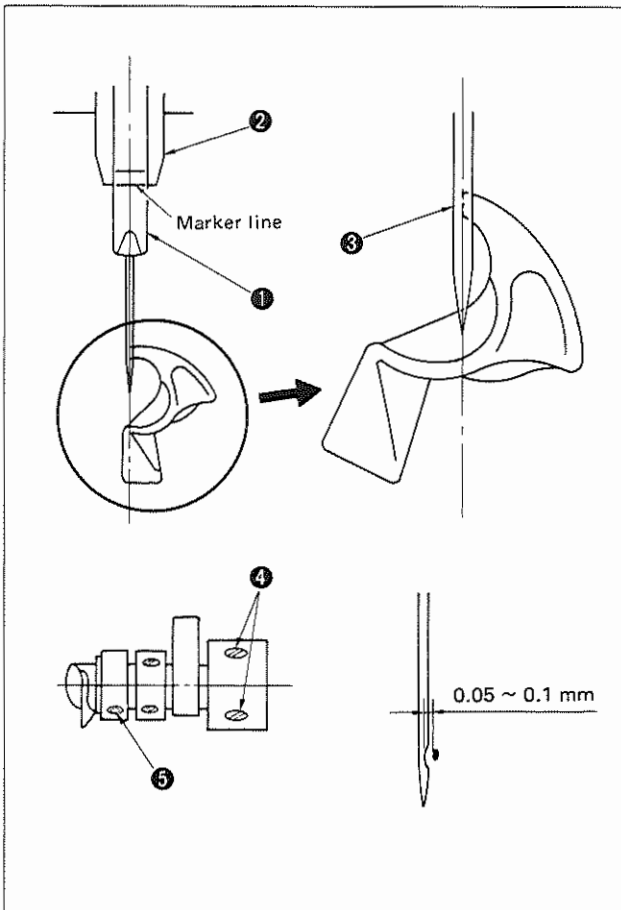
1. Adjusting the needle and the looper

(1) Adjusting the height of the needle bar



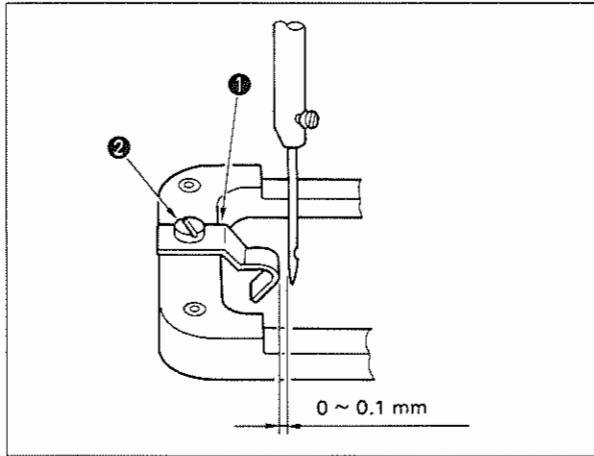
- 1) Turn the handwheel in the rotational direction to bring the needle bar to its lowest position. Then loosen screw ① .
- 2) Align the second marker line engraved on needle bar ② as counted from the bottom with the bottom end of needle bar lower bushing ③ . Then tighten screw ① .

(2) Adjusting the position of the needle and that of the looper



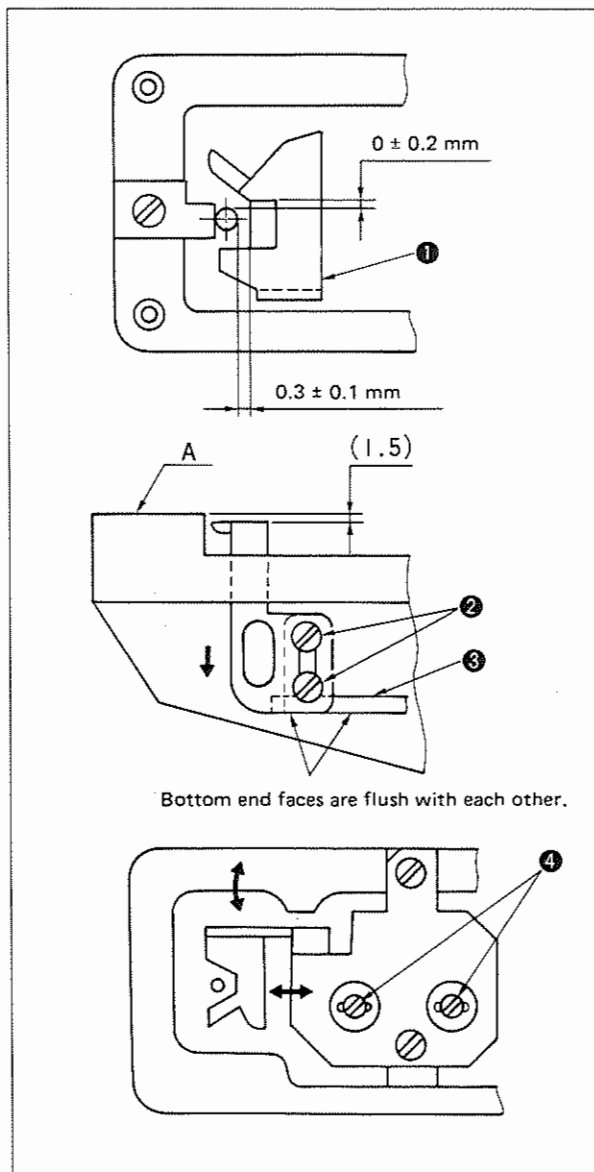
- 1) Loosen screws ④ , and turn the handwheel until the lowest line engraved on needle bar ① is aligned with the bottom end of needle bar lower bushing ② .
- 2) At this time, align blade point ③ of the looper with the center of the needle. Then tighten screws ④ .
- 3) Loosen screw ⑤ , and adjust the clearance between the looper and the needle to 0.05 to 0.1 mm. Then tighten screw ⑤ .

2. Adjusting the needle and the needle guide



Bring the needle bar to the lowest position of its stroke, and loosen screw ②. Move needle guide ① to the left or right to adjust the clearance between the needle and needle guide ① to 0 to 0.1 mm. Then tighten screw ②.

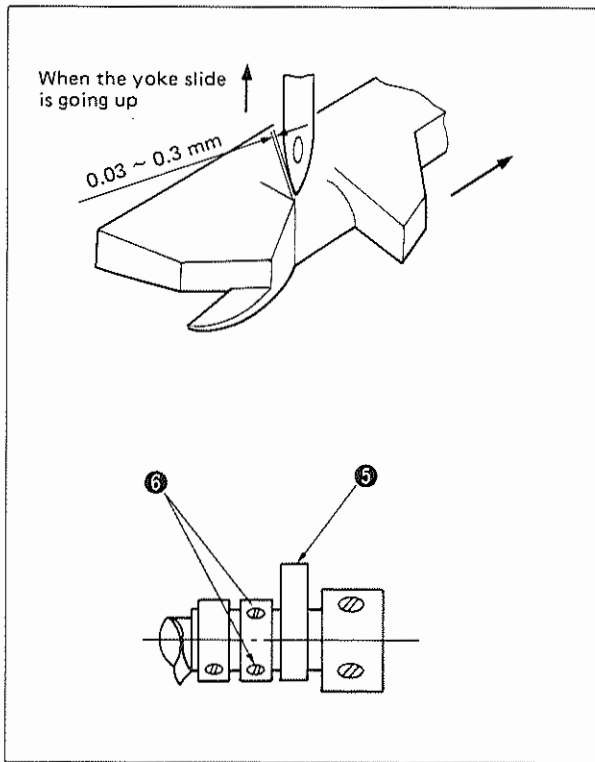
3. Adjusting the position of the yoke slide



- 1) When the needle bar is in the lowest position of its stroke, yoke slide ① is positioned so that a lateral clearance of 0.3 ± 0.1 mm and a longitudinal clearance of 0 ± 0.2 mm are provided between the needle and the yoke slide as illustrated in the figure on the left.

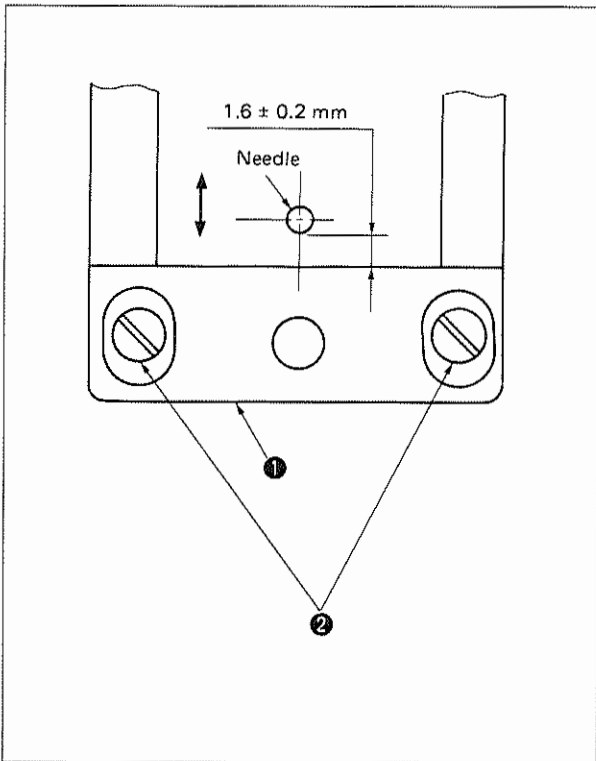
Yoke slide ① is vertically positioned so that the bottom end face of yoke slide installing plate ③ is flush with the bottom end face of yoke slide ①.

- 2) Loosen screws ②, and adjust the vertical position of yoke slide ① so that the bottom end face of yoke slide ① is flush with the bottom end face of yoke slide installing plate ③. Then tighten screws ②.
- 3) To adjust the longitudinal position and lateral position of yoke slide ①, loosen screws ④ in yoke slide ①, and adjust so that the specified clearances are provided between the needle and yoke slide ① by moving yoke slide ① back or forth and in the left or right.



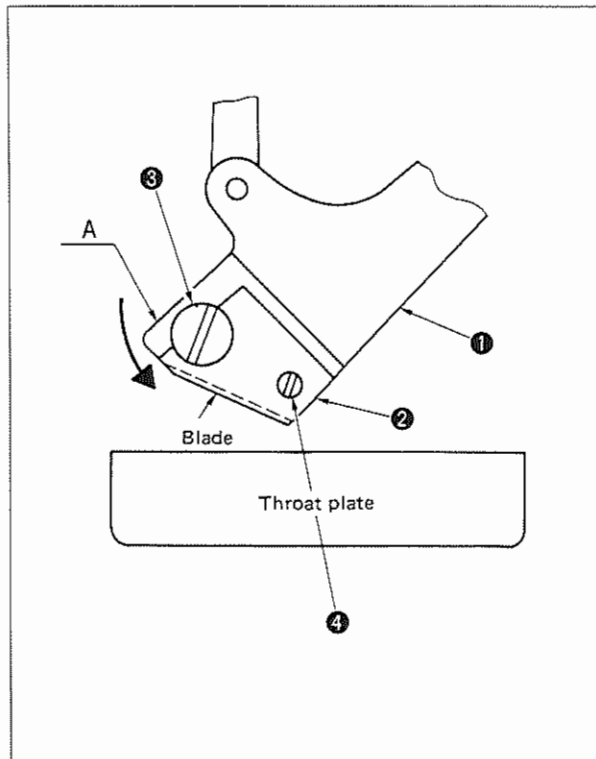
- 4) Yoke slide ① has been assembled so that a clearance of 0.03 to 0.3 mm is provided between yoke slide ① and the needle when the needle comes off the top surface of yoke slide while yoke slide ① is returning from its leftmost position to its rightmost position.
- 5) Loosen screws ⑥ in yoke slide triangular cam ⑤, and adjust so that the aforementioned clearance is obtained by turning the triangular cam in its direction of rotation.

4. Adjusting the clearance between the needle and the throat plate



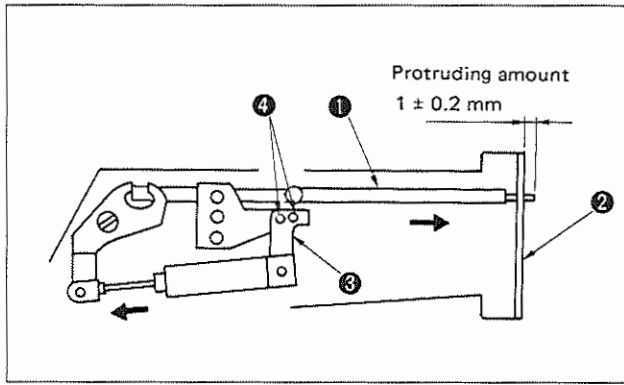
- 1) Throat plate ① has been assembled so that a clearance of 1.6 ± 0.2 mm is provided between throat plate ① and the needle.
- 2) Loosen screws ② in throat plate ①, and adjust so that the aforementioned clearance is obtained between the throat plate and the needle by moving throat plate ① back or forth.

5. Replacing the moving knife



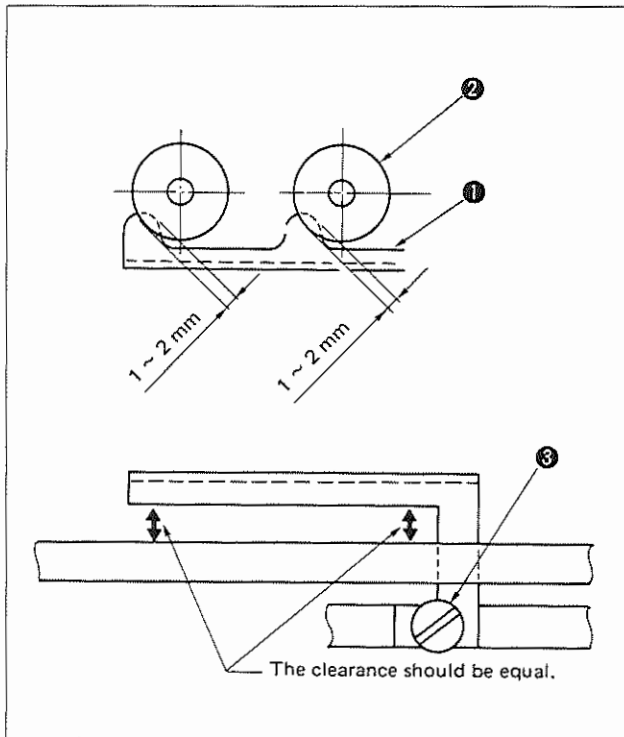
- 1) Turn OFF the power switch.
- 2) Remove the button chuck (asm.).
- 3) Holding section A of moving knife fixing plate ① from the left-hand side of the bed, draw out the moving knife unit in the direction of the arrow.
- 4) Loosen screw ③ in moving knife ②, and replace moving knife ② with a new one. After the replacement, fit the new moving knife under screw ③. Then fit the knife over positioning screw ④, and tighten screw ③.
Be careful not to allow any object to hit against the blade of moving knife ② when replacing the moving knife.

6. Adjusting the thread tension adjustment rod.



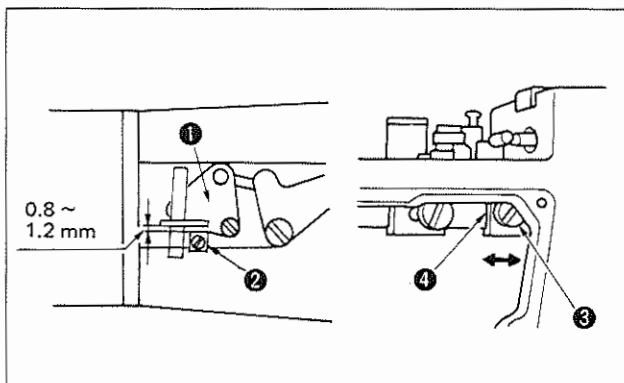
- 1) Nipper bar ① is assembled so that it is 1 ± 0.2 mm away from the face plate when it reaches its stroke end ②.
- 2) Loosen two screws ④ in thread tension guide base B ③, and move thread tension guide base B ③ to the left or right to adjust the position of the nipper bar.

7. Adjusting the tension disc releasing plate and the tension disc



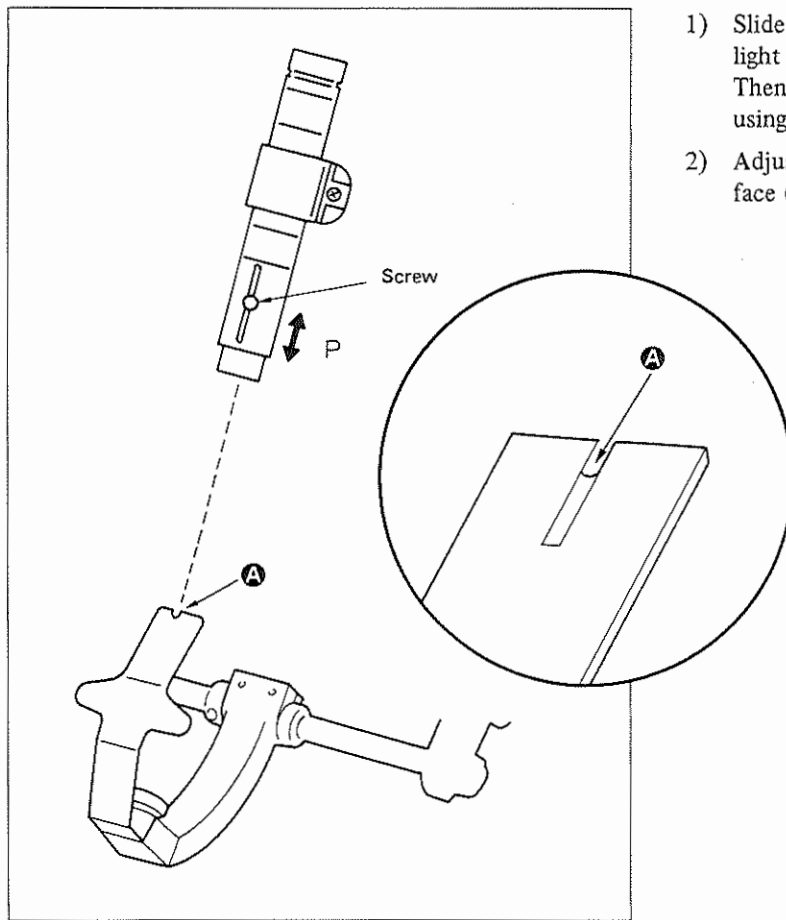
- 1) Tension disc releasing plate ① and tension disc ② are longitudinally assembled so that they are spaced equidistantly with respect to the arm when the plate and disc are engaged with each other by 1 to 2 mm.
- 2) Loosen screw ③ in tension disc releasing plate ①, and position the plate and the disc properly by moving tension disc releasing plate ① to the right or left.

8. Adjusting the nipper



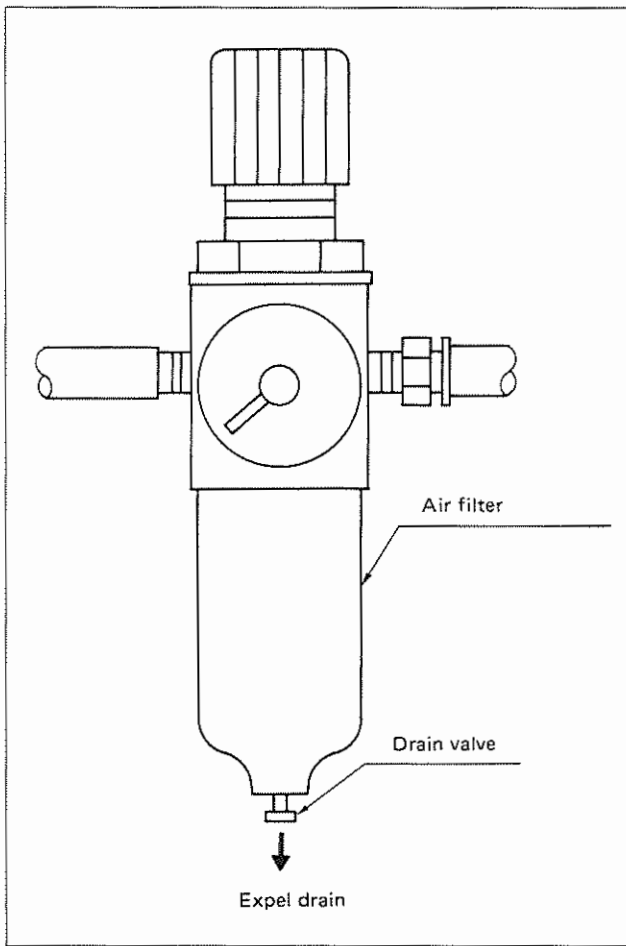
- 1) The nipper is assembled so that a clearance of 0.8 to 1.2 mm is provided between nipper block ② and nipper ① in order to prevent nipper ① from pressing the thread during sewing.
- 2) Loosen screw ③, and move nipper bar block ④ to the left or right so that the nipper is properly positioned.

9. Adjusting the marker lamp



- 1) Slide the marker lamp in direction P so that the light emitted from the marker lamp is in focus. Then fix the marker lamp in the correct position using the screw.
- 2) Adjust so that the lamp throws light on top surface **A** of the tongue.

10. Miscellaneous



After completion of an operation, be sure to carry out the following maintenance.

- 1) Turn OFF the power to the machine.
Turn OFF the air supply, and press the drain valve on the air filter to expel drain from the air filter.
- 2) Clean up the looper units.

V. LIST OF ERROR CODE

| Code | Description of error | Time of detection | Indication of error | How to reset |
|------|--|--|---|--|
| 0 | The number of stitches is improperly set. | When setting the number of stitches. | Display only | Find the desired number of stitches referring to the number of stitches indicating seal, and properly set the number of stitches determined. |
| 1 | — | | | |
| 2 | — | | | |
| 3 | The depth of tie stitches is improperly set. | When setting the depth of tie stitches. | Display only | Set the depth of tie stitches within the range of -2 to 3 mm. |
| 4 | The position of hole in the button is improperly set. | When setting the position of button hole. | Display only | Set the position of button hole within the range of 0 to 3 mm. |
| 5 | The position of tie stitches overlaps the position of hole in the button. | | | Set data correctly so that the difference between the respective set values becomes 10 or more. |
| 6 | The start position of neck wrapping overlaps the position of hole in the button. | | | Set the start position of neck wrapping at a position closer to the material. |
| 7 | — | | | |
| 8 | — | | | |
| 9 | The number of reinforcing stitches is outside the range of data. | When setting the number of reinforcing stitches. | Display only | Set the number of reinforcing stitches within the range of 2 to 5. |
| 10 | Height of neck wraps overlaps the position of hole in the button. | When changing the position of neck wrapping. | Display only | Decrease the set value of neck wrap feed amount. |
| 11 | — | | | |
| 12 | Emergency stop | When the emergency stop switch is turned ON. | All the functions of the machine are inoperative. | Press the reset switch. |
| 13 | Needle-up stop position error | When the power to the machine is turned ON When starting sewing During the manual operation mode | All the functions of the machine are inoperative. Display only | Bring the needle bar to its stop position, and press the reset switch. Bring the needle bar to its stop position. |
| 14 | — | | | |
| 15 | Defective circuit board | When turning ON the power to the machine | All the functions of the machine are inoperative. | Replace the circuit board. |
| 16 | Defective emergency stop switch | When turning ON the power to the machine. | All the functions of the machine are inoperative. | Correct the emergency stop switch. |
| 17 | Defective synchronizer signal | When starting sewing | All the functions of the machine are inoperative. | Correct the synchronizer. |
| 18 | Defective rotation of the motor (Defective start of motor rotation) | During sewing | All the functions of the machine are inoperative. | Correct the sewing machine motor. Correct the synchronizer. |

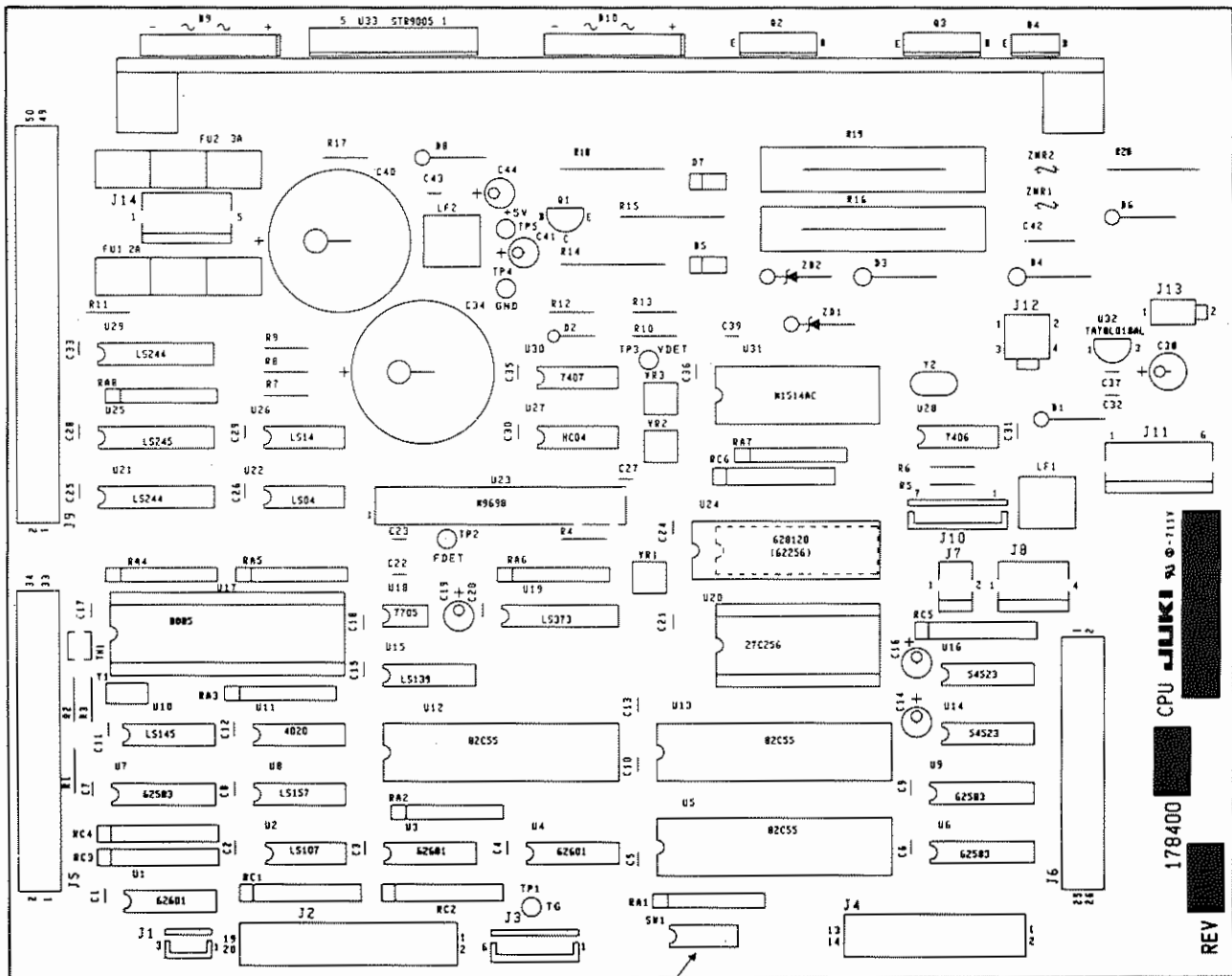
| Code | Description of error | Time of detection | Indication of error | How to reset |
|------|--|---|--|---|
| 19 | Defective rotation of the motor (Defective stop of motor rotation) | During sewing | All the functions of the machine are inoperative. | Correct the sewing machine motor. |
| 20 | Defective rotation of the motor (Defective needle-down signal) | During sewing | All the functions of the machine are inoperative. | Correct the synchronizer. |
| 21 | Defective rotation of the motor (Defective needle-up stop position) | When turning ON the power to the machine | All the functions of the machine are inoperative. | Correct the sewing machine motor. |
| 22 | Defective detection of the X origin | When turning ON the power to the machine | All the functions of the machine are inoperative. | Correct the X sensor. |
| 23 | Defective detection of the Y origin | When turning ON the power to the machine | All the functions of the machine are inoperative. | Correct the Y sensor. |
| 24 | Defective position of the X origin sensor | When turning ON the power to the machine | All the functions of the machine are inoperative. | Correct the position of the X sensor. |
| 25 | Defective position of the Y origin sensor | When turning ON the power to the machine | All the functions of the machine are inoperative | Correct the position of the Y sensor. |
| 26 | Defective position of the encoder | When changing the setting of the dial | Display only | Adjust the position of the encoder. |
| 27 | Sewing speed of the machine exceeds the limit. | During sewing | All the functions of the machine are inoperative. | Adjust the sewing speed to the specified value. |
| 28 | Defective position of the tongue set sensor | When starting sewing | All the functions of the machine are inoperative. | Adjust the position of the sensor. |
| 29 | Chuck position is defective at the time of thread trimming. | When trimming the thread | All the functions of the machine are inoperative. | Correct the angle of the chuck. |
| 30 | Defective position of the origin of the moving knife | When trimming the thread | All the functions of the machine are inoperative. | Correct the position of the moving knife. |
| 31 | Defective angle of the chuck (45°) | When turning ON the power to the machine. When changing the angle of the chuck to 45°. | All the functions of the machine are in operative. | Check the air supply. |
| 32 | Defective angle of the chuck (chuck should be perpendicular) | When turning ON the power to the machine When changing the perpendicularity | All the functions of the machine are inoperative. | Check the air supply. |
| 33 | Defective reset of the tongue | When finishing sewing When turning ON the power to the machine | All the functions of the machine are inoperative. | Check the air supply. |
| 34 | Defective performance of the moving knife | When trimming the thread | All the functions of the machine are inoperative. | Check the air supply. |

| Code | Description of error | Time of detection | Indication of error | How to reset |
|------|-----------------------|--|---|-----------------------|
| 35 | — | | | |
| 36 | — | | | |
| 37 | — | | | |
| 38 | — | | | |
| 39 | Improper air pressure | When turning ON the power to the machine | All the functions of the machine are inoperative. | Check the air supply. |

VI. SETTING THE METHOD TO START SEWING

The starting method of the sewing machine can be selected by changing the setting of the switches No. 1 and No. 2 of the DIPSW (SW1) on the CPU circuit board.

(Caution) Do not change the setting of the DIP switches other than the switches No. 1 and No. 2 of the DIPSW (SW1).

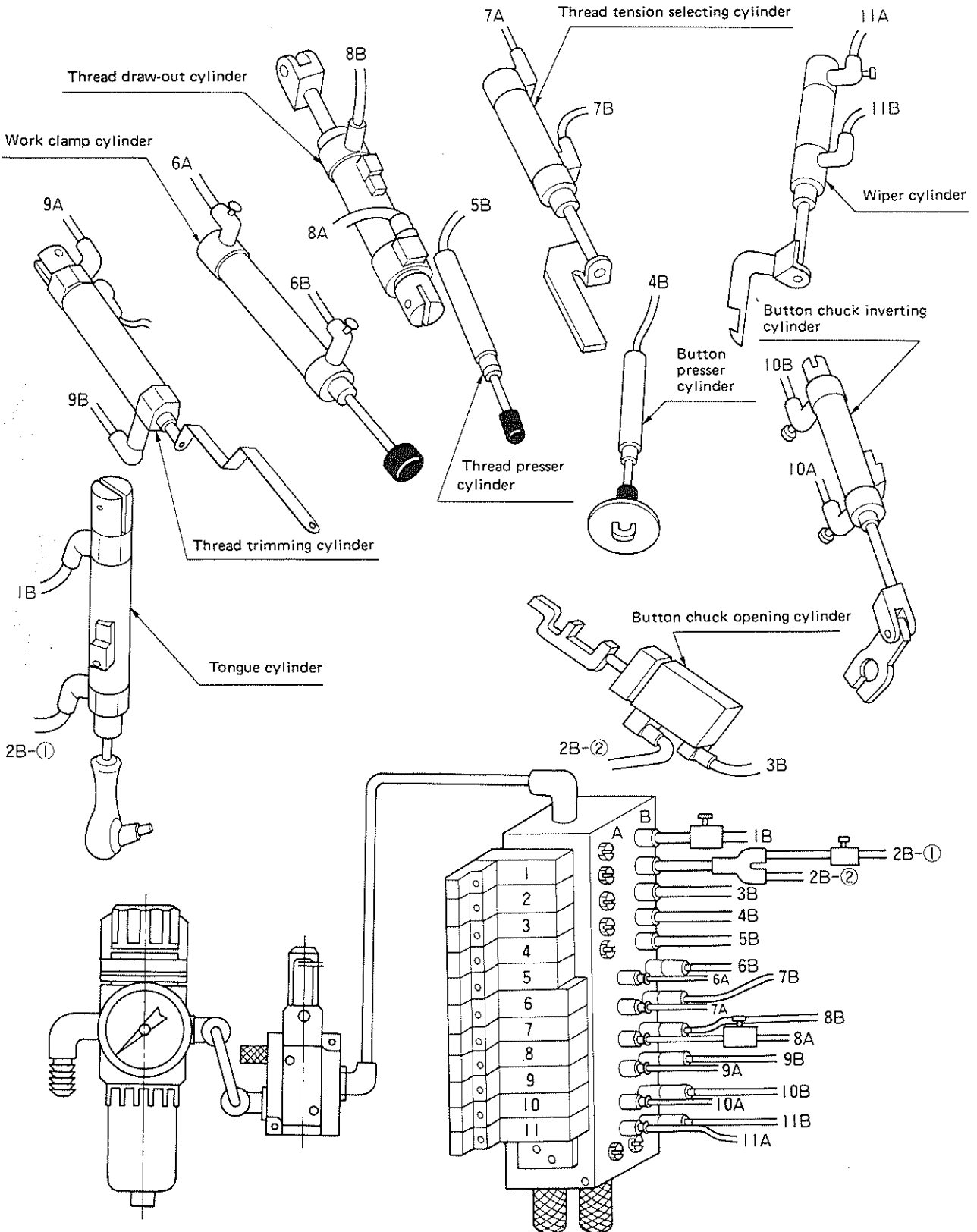


Switches 3 through 6 are set to the OFF position.

| Setting of DIPSW | | Operation to be taken to start sewing | | | |
|------------------|-------|--|---|--|---|
| SW1-1 | SW1-2 | Set the tongue in position. | ⇒ Depress the right-hand side pedal of the 2-pedal unit. | ⇒ Release the right-hand side pedal of the 2-pedal unit. | ⇒ Depress the left-hand side pedal of the 2-pedal unit. |
| OFF | OFF | The tongue is fixed. | The button is fixed. The work clamp is turned ON. The machine moves to the sewing position. | — | The machine starts sewing. |
| ON | OFF | The tongue is fixed. | The button is fixed. The work clamp is turned ON. The machine moves to the sewing position. | The machine starts sewing. | — |
| OFF | ON | The tongue is fixed. The button is fixed. The work clamp is turned ON. The machine moves to the sewing position. | [The tongue is released from the set state.] | — | The machine starts sewing. |
| ON | ON | The tongue is fixed. The button is fixed. The work clamp is turned ON. The machine moves to the sewing position. | — | The machine starts sewing. | — |

VII. AIR PIPING DIAGRAM

This illustration give below is the air piping diagram. Use this diagram as reference.



VIII. Options

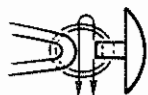
(1) Operation panel

Power indicator lamp

Lights up in green when the power to the machine is turned ON.

Error indicator

The lamp lights up in red when an error occurs. This lamp also lights up when the needle bar fails to stop in the highest position. The lamp will flash on and off when the stop position of the machine is adjusted from the incorrect position to the correct position.





Number of neck wraps

Select the desired number of neck wraps out of the following numbers.



| | |
|-----------------|-----------------|
| 1 → 2 stitches | 9 → 18 stitches |
| 2 → 4 stitches | A → 20 stitches |
| 3 → 6 stitches | B → 22 stitches |
| 4 → 8 stitches | C → 24 stitches |
| 5 → 10 stitches | D → 26 stitches |
| 6 → 12 stitches | E → 28 stitches |
| 7 → 14 stitches | F → 30 stitches |
| 8 → 16 stitches | |

Setting with/without neck wraps

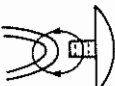
Changing from sewing buttons with neck wraps to sewing buttons without neck wraps and vice versa.

 Without neck wraps
 With neck wraps

Setting with/without stay stitches

 With stay stitches
 Without stay stitches



Setting the number of tie stitches





| Standard stitching | Triangular stitching |
|--------------------|----------------------|
| 1 → 2 stitches | 2 → 4 stitches |
| 2 → 4 stitches | 4 → 8 stitches |
| 3 → 6 stitches | 6 → 12 stitches |
| 4 → 8 stitches | 8 → 16 stitches |
| F → 30 stitches | E → 28 stitches |

Switch to set the operation mode

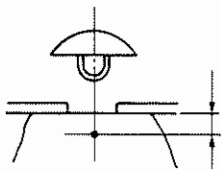
- Used to select the automatic operation mode or the manual operation mode. (The switch is a two-step seesaw switch.)

-  Automatic operation
 - Set the switch to the position to select the automatic sewing mode , and the machine will start sewing by depressing the left-hand side pedal of the 2-pedal unit after depressing the right-hand side pedal of the 2-pedal unit to fix the button. Then the machine will perform sewing until the sewing end is reached.

(Caution) Be sure to run the machine under the automatic operation mode after you have confirmed the stitch diagram by operating the machine in the manual operation mode and then have performed a trial stitching.
-  Manual operation
 - When this switch is set to select the , the machine will run under the manual operation mode.
 - You can manually operate the machine through whole of the 1st and 2nd processes of the button sewing with neck wrapping.
 - The stitch diagram is confirmed and a trial stitching is performed under the manual operation mode.

Setting the depth of tie stitches

Set the depth of tie stitches.



Setting **00** to **25**

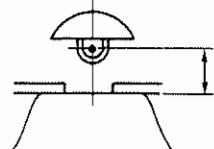
→ 2 to 3 mm

The depth of tie stitches can be set in increments of 0.2 mm (one graduation on the scale corresponds to 0.2 mm).

0 → -2 mm
 1 → -1.8 mm
 ...
 24 → 2.8 mm
 25 → 3 mm

Setting the center of hole in the button

Set the distance from the cloth edge to the center of hole in the button.



Setting **00** to **25**

0 to 5 mm

The center of hole in the button can be set in increments of 0.2 mm (one graduation on the scale corresponds to 0.2 mm).

0 → 0 mm
 1 → 0.2 mm
 ...
 24 → 4.8 mm
 25 → 5 mm

(2) Explanation of the input data panel

Stitching method
Switch No. 1 of SW1

Specify stitching method

| | | |
|----------------------|-----|----|
| Standard stitching | OFF | ON |
| Triangular stitching | OFF | ON |

Number of neck wraps for regular stitching
Switch No. 2 of SW1

Specify the neck length for regular stitching

| | | |
|--------|-----|----|
| 1.2 mm | OFF | ON |
| 2.4 mm | OFF | ON |

Comparing the depth of the stitches for triangular stitching
Switch No. 3 of SW1

Specify the connecting side of the stitches when performing the triangular stitching

| | | |
|--------|-----|----|
| 0.2 mm | OFF | ON |
| 0.4 mm | OFF | ON |

Number of stay stitches
Switch No. 4 of SW1

Specify the number of stay stitches

| | | |
|---|-----|----|
| 1 | OFF | ON |
| 2 | OFF | ON |

Setting the start position of neck wrapping
SW4

The start position of neck wrapping is specified from the cloth edge toward the button within the range of 1 to 4 mm in increments of 0.2 mm.

| [Position of the switch] | [Distance between the neck wraps and the cloth] |
|--------------------------|---|
| 0 | 1 mm |
| 1 | 1.2 mm |
| 2 | 1.4 mm |
| 3 | 1.6 mm |
| 15 | 4.0 mm |

To set the start position of neck wrapping to the position 2.2 mm away from the cloth, set the rotary switch at "6."

Setting the position of stay stitches
SW5

The position of stay stitches is specified from the position of tie stitches toward the cloth within the range of 0 to 3 mm in increments of 0.2 mm.

| [Position of the switch] | [Distance between the stay stitches to the tie stitches] |
|--------------------------|--|
| 0 | 0 mm |
| 1 | 0.2 mm |
| 2 | 0.4 mm |
| 3 | 0.6 mm |
| 15 | 3.0 mm |

To set the position of stay stitches to the position 0.8 mm away from the position of tie stitches, set the rotary switch at "4."

Setting the start position of neck wrapping
SW4

The start position of neck wrapping is specified from the cloth edge toward the button within the range of 1 to 4 mm in increments of 0.2 mm.

| [Position of the switch] | [Distance between the neck wraps and the cloth] |
|--------------------------|---|
| 0 | 1 mm |
| 1 | 1.2 mm |
| 2 | 1.4 mm |
| 3 | 1.6 mm |
| 15 | 4.0 mm |

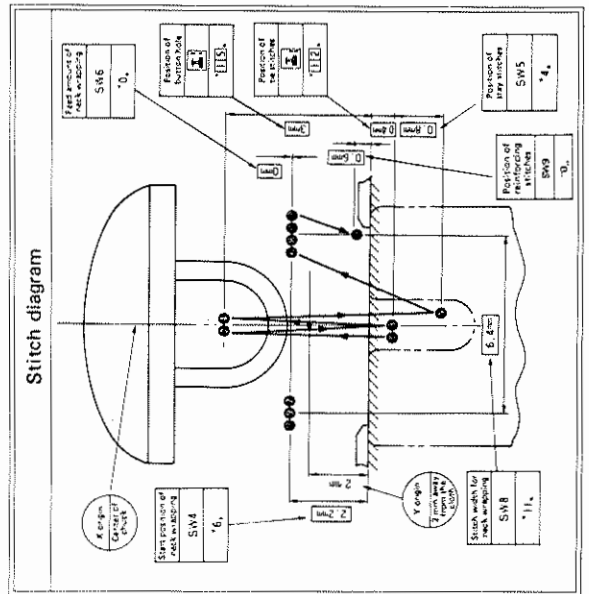
To set the start position of neck wrapping to the position 2.2 mm away from the cloth, set the rotary switch at "6."

Setting the position of stay stitches
SW5

The position of stay stitches is specified from the position of tie stitches toward the cloth within the range of 0 to 3 mm in increments of 0.2 mm.

| [Position of the switch] | [Distance between the stay stitches to the tie stitches] |
|--------------------------|--|
| 0 | 0 mm |
| 1 | 0.2 mm |
| 2 | 0.4 mm |
| 3 | 0.6 mm |
| 15 | 3.0 mm |

To set the position of stay stitches to the position 0.8 mm away from the position of tie stitches, set the rotary switch at "4."



Adjusting the origin in the X direction
SW2

The origin in the X direction has been adjusted for each unit of the sewing machine. So no adjustment is necessary.

Adjusting the origin in the Y direction
SW3

The origin in the Y direction has been adjusted for each unit of the sewing machine. So no adjustment is necessary.

Setting the position of reinforcing stitches
SW9

Specify the position of reinforcing stitches

| [Position of the switch] | [Distance between the reinforcing stitches and cloth edge and the needle] |
|--------------------------|---|
| 0 | 0.6 mm |
| 1 | 0.8 mm |
| 2 | 1.0 mm |
| 3 | 1.2 mm |
| 4 | 1.4 mm |
| 5 | 1.6 mm |

To set the position of reinforcing stitches to the position 0.6 mm away from the cloth, set the rotary switch at "0."

Setting the start position of neck wrapping
SW4

The start position of neck wrapping is specified from the cloth edge toward the button within the range of 1 to 4 mm in increments of 0.2 mm.

| [Position of the switch] | [Distance between the neck wraps and the cloth] |
|--------------------------|---|
| 0 | 1 mm |
| 1 | 1.2 mm |
| 2 | 1.4 mm |
| 3 | 1.6 mm |
| 15 | 4.0 mm |

To set the start position of neck wrapping to the position 2.2 mm away from the cloth, set the rotary switch at "6."

Setting the position of stay stitches
SW5

The position of stay stitches is specified from the position of tie stitches toward the cloth within the range of 0 to 3 mm in increments of 0.2 mm.

| [Position of the switch] | [Distance between the stay stitches to the tie stitches] |
|--------------------------|--|
| 0 | 0 mm |
| 1 | 0.2 mm |
| 2 | 0.4 mm |
| 3 | 0.6 mm |
| 15 | 3.0 mm |

To set the position of stay stitches to the position 0.8 mm away from the position of tie stitches, set the rotary switch at "4."

Setting the feed amount for neck wrapping
SW6

The feed amount for neck wrapping is specified from the start position of neck wrapping toward the button within the range of 0 to 3 mm in increments of 0.2 mm.

| [Position of the switch] | [Feed amount] |
|--------------------------|---------------|
| 0 | 0 mm |
| 1 | 0.2 mm |
| 2 | 0.4 mm |
| 3 | 0.6 mm |
| 15 | 3.0 mm |

To set the feed amount to 0 mm, set the rotary switch at "0."

Setting the position of reinforcing stitches
SW9

Specify the position of reinforcing stitches

| [Position of the switch] | [Distance between the reinforcing stitches and cloth edge and the needle] |
|--------------------------|---|
| 0 | 0.6 mm |
| 1 | 0.8 mm |
| 2 | 1.0 mm |
| 3 | 1.2 mm |
| 4 | 1.4 mm |
| 5 | 1.6 mm |

To set the position of reinforcing stitches to the position 0.6 mm away from the cloth, set the rotary switch at "0."

Setting the number of revolutions of the sewing machine
VRI

Specify the number of revolutions of the sewing machine.
200 — 600 r.p.m.

Reset switch
SW10

This switch is pressed to reset the machine to the normal operation mode after correcting an error.

Setting the number of revolutions of the sewing machine
VRI

Specify the number of revolutions of the sewing machine.
200 — 600 r.p.m.

Reset switch
SW10

This switch is pressed to reset the machine to the normal operation mode after correcting an error.

Setting the position of reinforcing stitches
SW9

Specify the position of reinforcing stitches

| [Position of the switch] | [Distance between the reinforcing stitches and cloth edge and the needle] |
|--------------------------|---|
| 0 | 0.6 mm |
| 1 | 0.8 mm |
| 2 | 1.0 mm |
| 3 | 1.2 mm |
| 4 | 1.4 mm |
| 5 | 1.6 mm |

To set the position of reinforcing stitches to the position 0.6 mm away from the cloth, set the rotary switch at "0."

Setting the stitch width for neck wrapping
SW8

The stitch width can be set within the range of 2 to 8 mm in increments of 0.4 mm.

| [Stitch width] | [Position of the switch] |
|----------------|--------------------------|
| 2 mm | 0 |
| 2.4 mm | 1 |
| 2.8 mm | 2 |
| 3.2 mm | 3 |
| 8.0 mm | 15 |

To set the stitch width to 6.4 mm, set the rotary switch at "11."

Setting the position of reinforcing stitches
SW9

Specify the position of reinforcing stitches

| [Position of the switch] | [Distance between the reinforcing stitches and cloth edge and the needle] |
|--------------------------|---|
| 0 | 0.6 mm |
| 1 | 0.8 mm |
| 2 | 1.0 mm |
| 3 | 1.2 mm |
| 4 | 1.4 mm |
| 5 | 1.6 mm |

To set the position of reinforcing stitches to the position 0.6 mm away from the cloth, set the rotary switch at "0."

Setting the position of reinforcing stitches
SW9

Specify the position of reinforcing stitches

| [Position of the switch] | [Distance between the reinforcing stitches and cloth edge and the needle] |
|--------------------------|---|
| 0 | 0.6 mm |
| 1 | 0.8 mm |
| 2 | 1.0 mm |
| 3 | 1.2 mm |
| 4 | 1.4 mm |
| 5 | 1.6 mm |

To set the position of reinforcing stitches to the position 0.6 mm away from the cloth, set the rotary switch at "0."



(3) <Basic information> Button position setting procedure

| | | | | | |
|-------------------------------|---|---|--|---------------------------------|--|
| <p>1 Manual sewing</p> | <p>2 Turn ON the work clamp.</p> | <p>3 Turn ON the button presser.</p> | <p>4 Adjust the position of button.</p> <p>Shank button</p> <p>0.5 to 1 mm</p> <p>Marble button</p> <p>1 mm or more</p> | <p>Dial "0"</p> <p>Dial "0"</p> | <p>5 Adjust the position of the center of hole in the button.</p> |
|-------------------------------|---|---|--|---------------------------------|--|

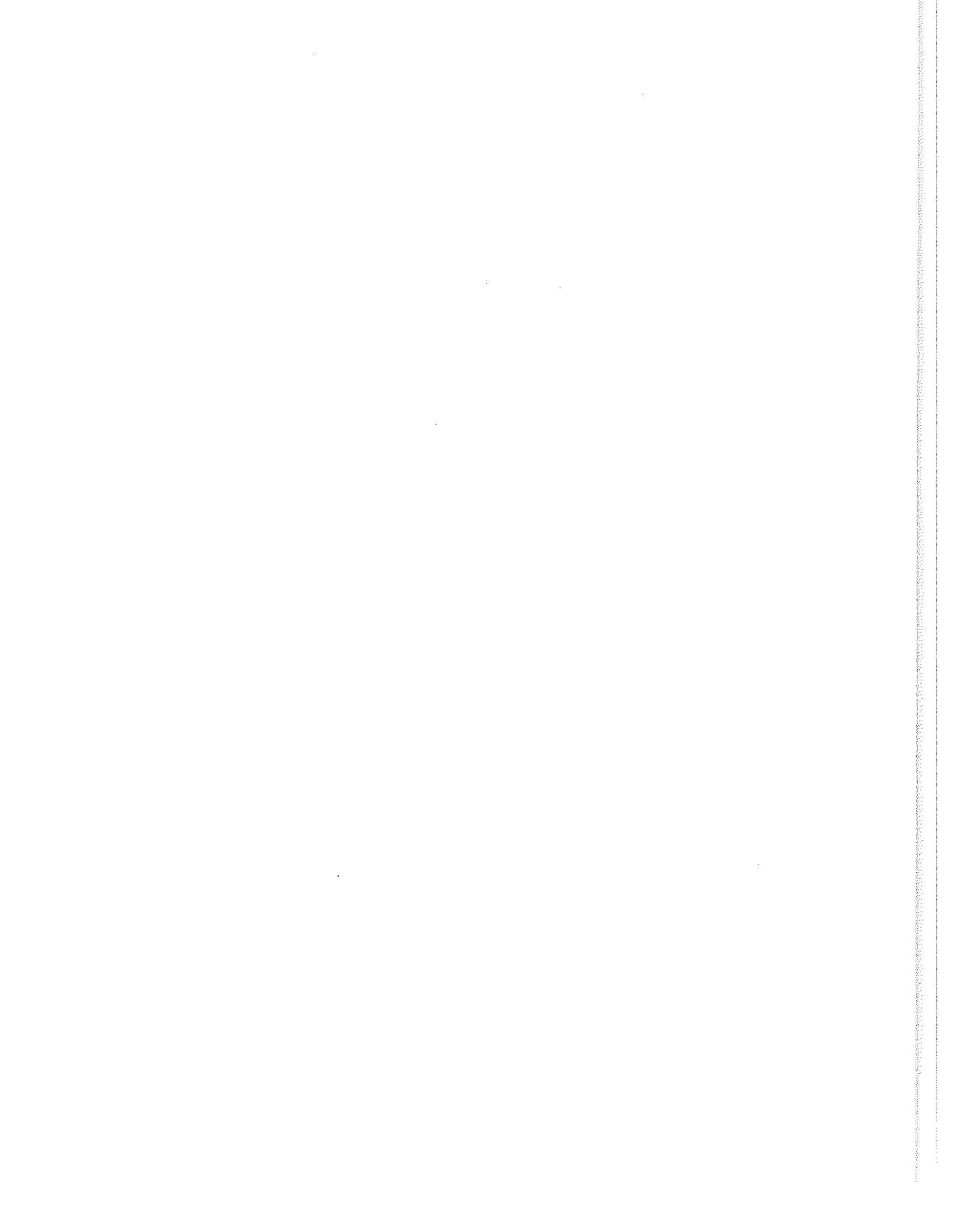
Setting the sewing pattern shape

| | | | |
|--|------------------------------|---|---|
| <p>Operation</p> <p>Sewing pattern shape</p> | <p>Standard stitching</p> | <p>Triangular stitching</p> <p>1.2 mm</p> | <p>Triangular stitching</p> <p>2.4 mm</p> |
| | <p>Set the DIP switches.</p> | <p>Replace the tongue.</p> | <p>ON</p> <p>ON</p> |

(4) <Practical information> Similar button shape setting procedure

| | | |
|---|--|--|
| <p>Type of button</p> <p>Small</p> <p>Large</p> | <p>1 Adjust the position of button using a small button.</p> <p>0.5 to 1 mm</p> <p>Dial "0"</p> | <p>2 Adjust the position of large button by operating the dial.</p> <p>0.5 to 1 mm</p> <p>Operate the dial properly.</p> <p>Operate the dial and adjust the position of the center of hole in the button.</p> <p>Decrease the value on the counter.</p> |
|---|--|--|

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