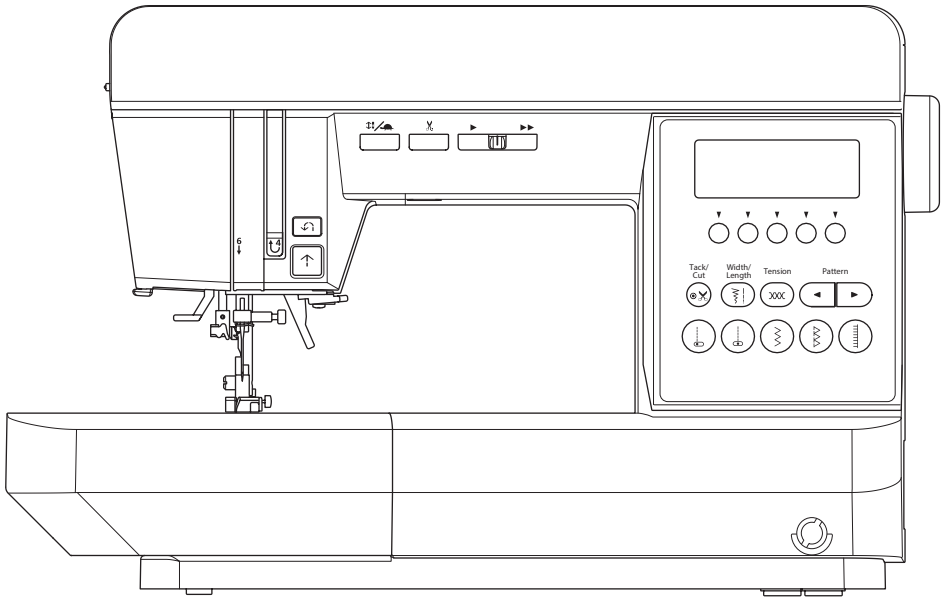
SERVICE MANUAL

Model: Sparrow QE



04/10/2018

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REMOVING THE EXTERIOR PARTS

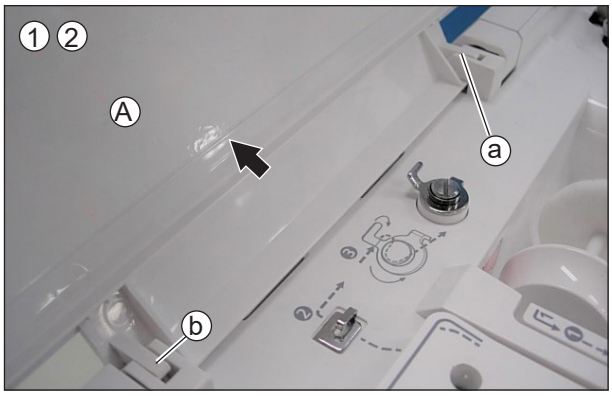
The exterior parts should be removed in sequence as followings.

⚠CAUTION:
Always disconnect the main lead plug from electcrial outlet when removing the exterior parts.

A. Top Cover (Flap)

1. Open the top cover.
   Tip back posteriorly the top cover and off the hinge (a).

2. Off the hinge (b) in the same way.



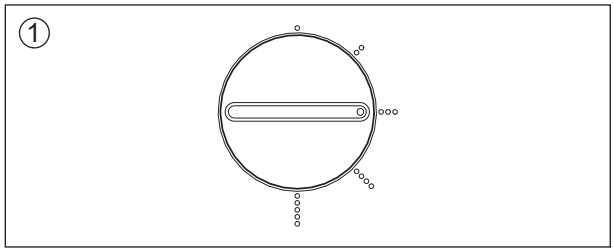
B. Light Cover

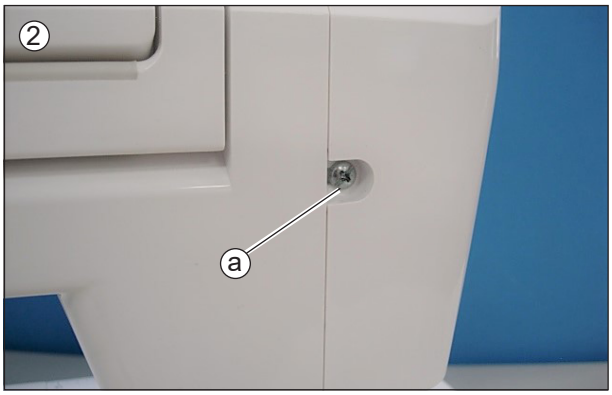
Remove the top cover beforehand.

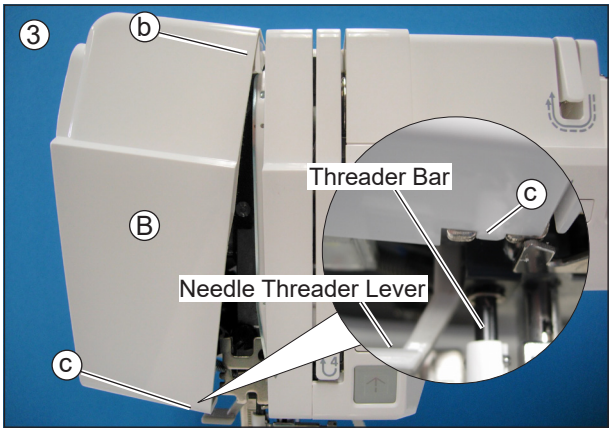
1. Turn the pressure regulator toward the third step (○ ○ ○ : standard) and make the knob horizontally.
   If you do not make it horizontally, you cannot remove the light cover.

2. Loosen the light cover set screw (a).

3. Pull light cover as shown so that the light cover hook (b, c) will come off.

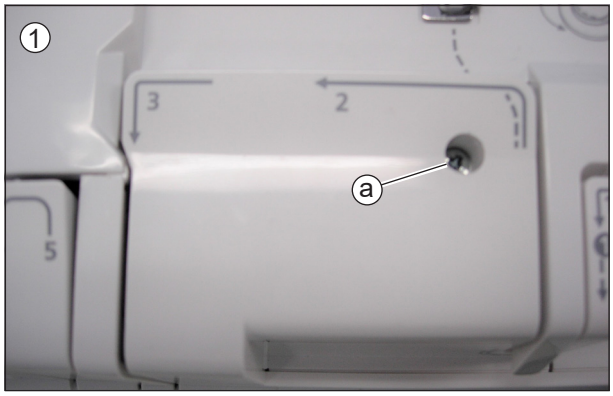




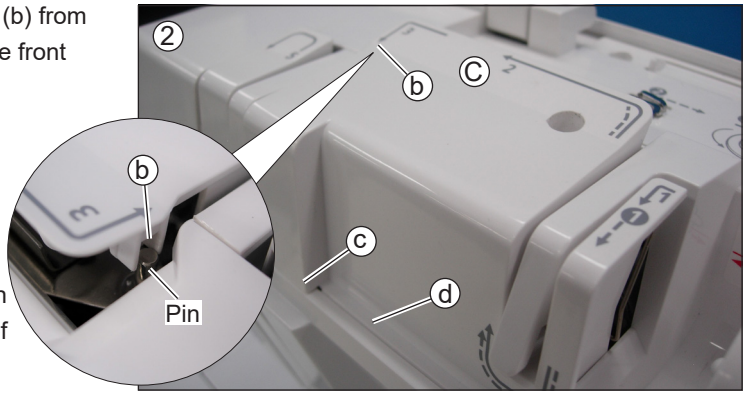


C. Thread Tension Cover

1. Remove the screw (a).



2. Lift the thread tension cover and off the hook (b) from the pin. Then, off the hook (c) and (d) from the front enclosure.



The groove (b) and the pin as seen from the back of the sewing machine.

3. Pull the Thread tension cover toward you and remove the tension cover.

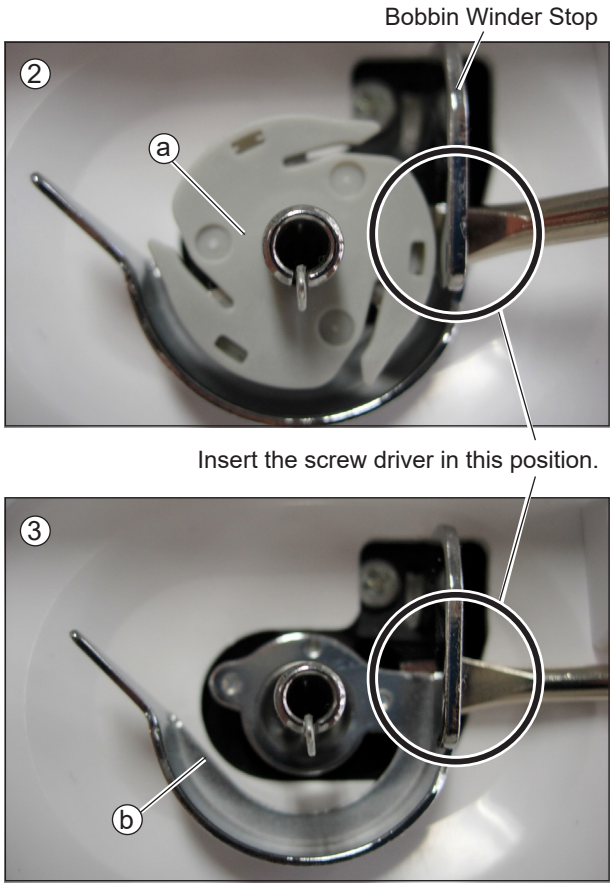
D. Bobbin Winder Thread Holding Plate and Guide

1. Check whether the bobbin winder spindle is in the left. If it is in the right, push it to the left.

2. Insert the thin screw driver under the bobbin winder thread holding plate (a). Then, lift and remove it.

> ⚠CAUTION:
> Insert the screw driver deeply as close to the bobbin winder spindle as possible as shown on the right. Insert shallowly and forcibly lift the outer periphery of the bobbin winding thread holding plate, it may be damaged.

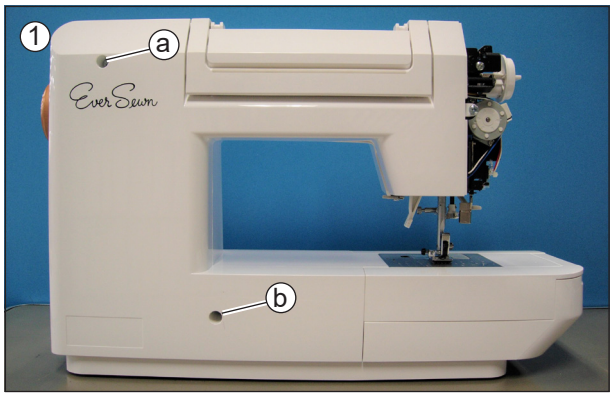
3. Insert the thin screw driver under the bobbin winder thread holding guide (b). Then, lift and remove it.



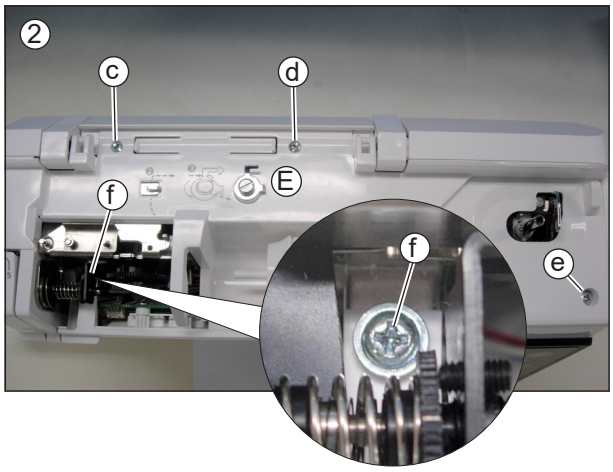
E. Unit Cover

Remove from the top cover to the bobbin winder thread holding plate and guide beforehand.
To make it easier to work, lay down the handle.

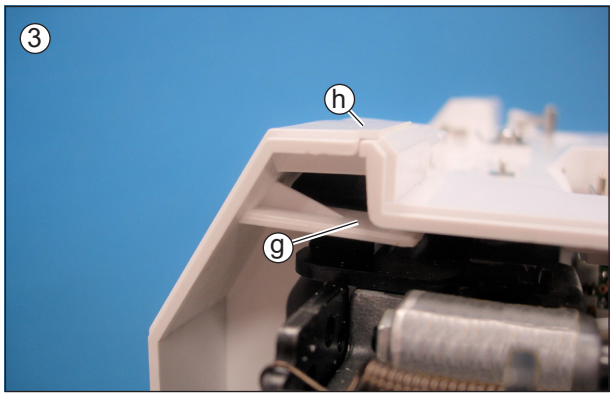
1. Loosen the 2 screws (a, b).



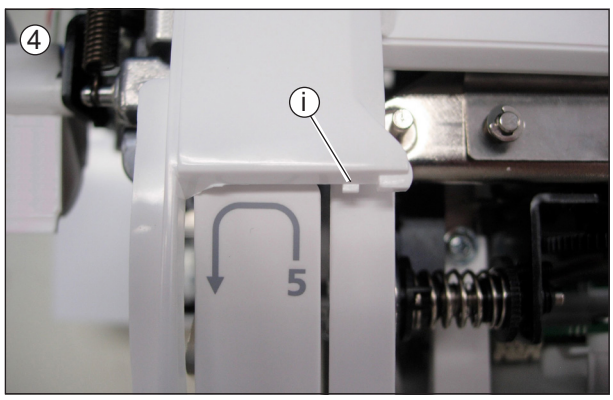
2. Remove the 3 screws (c, d, e).
   Loosen the screw (f).



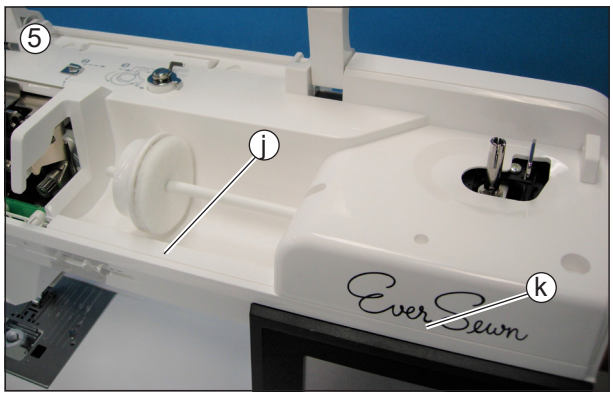
3. Push down (g) of the rear enclosure lightly, and off the hook (h) on the left corner of the unit cover.



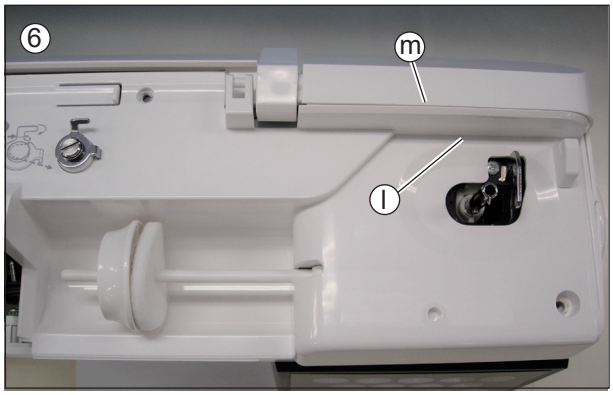
4. To make it easier to work, stand the handle.
   Lift the left side of the unit cover with pushing backward.
   Off the hook (i).



5. Off the guide (j) and hook (k) of the front of the unit cover. Put your finger on the front cover, open lightly toward you so that create a gap between the front cover and the unit cover. The guide and the hook come off.



6. Push down (l) lightly, and off the hook (m) of the unit cover.

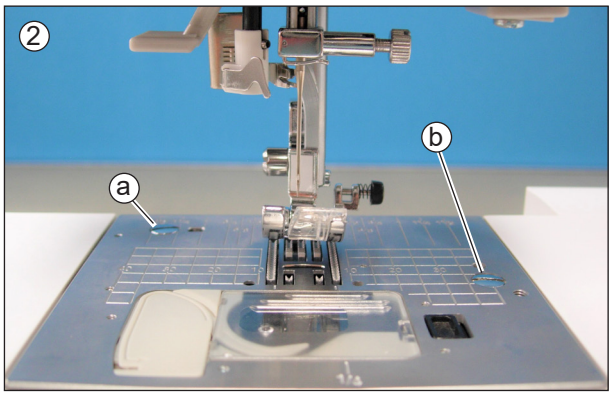


7. Lift the unit cover and remove it.

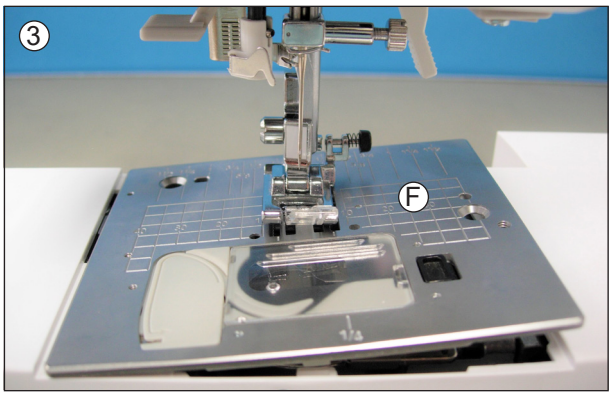
F. Needle Plate

To make it easier to work, raise up the presser foot and the needle.
Pay attention to the point of the needle.

1. Remove the presser foot and the extension table.
2. Remove the 2 screws (a, b) with the driver for needle plate.



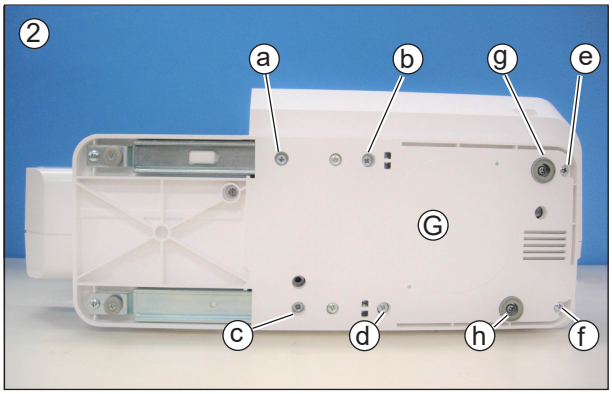
3. Lift up the right side of needle plate and remove it.



G. Front Enclosure

1. Open the top cover and remove the screw (a).
2. Tilt the machine backward and remove the 8 base set screws (a, b, c, d, e, f, g, h). Remove the base.

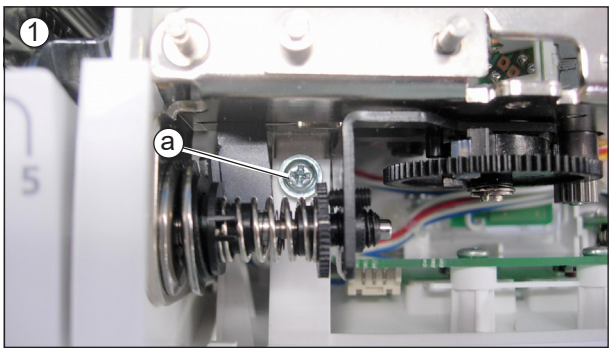
> ⚠CAUTION:
> The screw (g) and (h) have the rubber feet. Pay attention to not lose them.



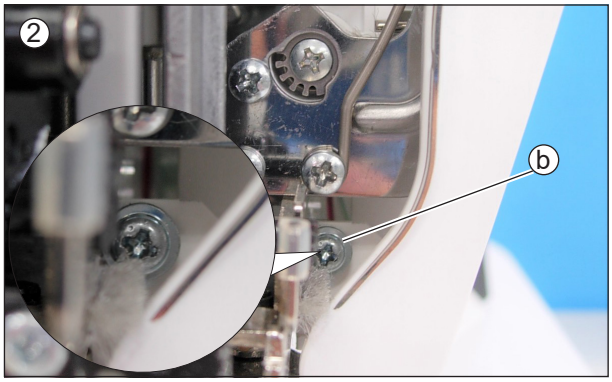
H. Front Enclosure

Remove from the top cover to the base.

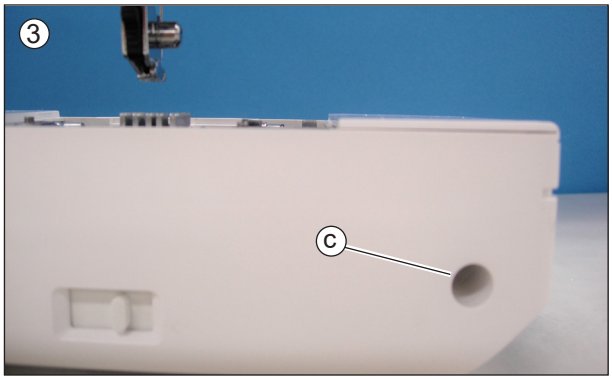
1. Loosen the screw (a).



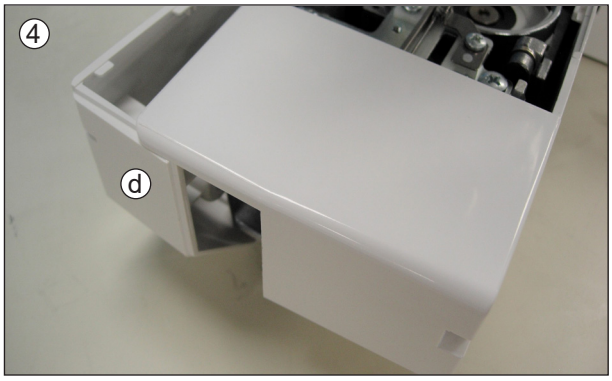
2. Loosen the screw (b).



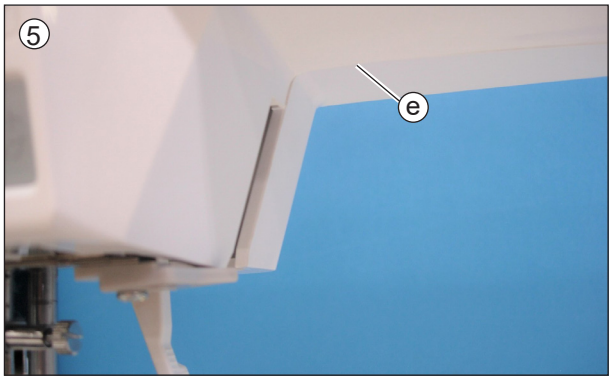
3. Remove the screw (c) of the rear enclosure.



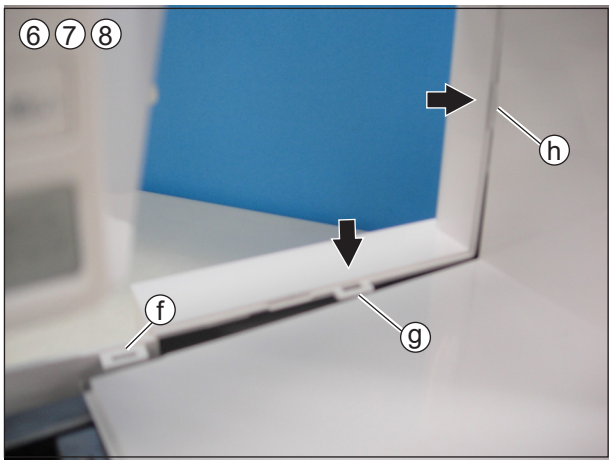
4. Push the left side of rear enclosure (d) and pull the front enclosure toward you.



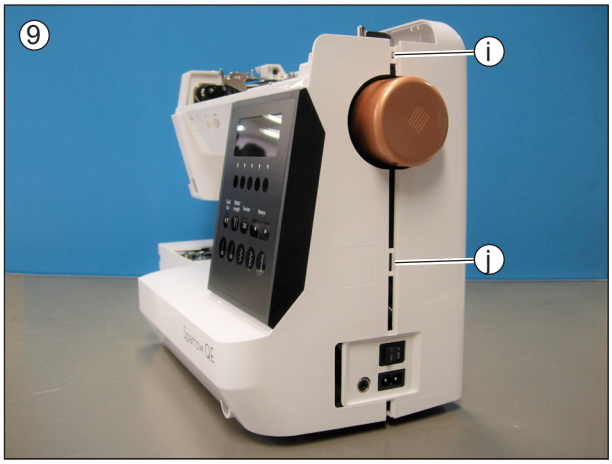
5. Lower the presser foot lifter.
   Insert your hand into the gap above the presser foot lifter, pull the front enclosure toward you and off the hook (e).



6. Pull up the front enclosure and come off the hook (f).
7. Push down the rear enclosure lightly, and pull the front enclosure toward you to off the hook (g).
8. Off the hook (h).
   Pushing the rear enclosure toward inside of the machine and pull the front enclosure to the front, the hook will come off.

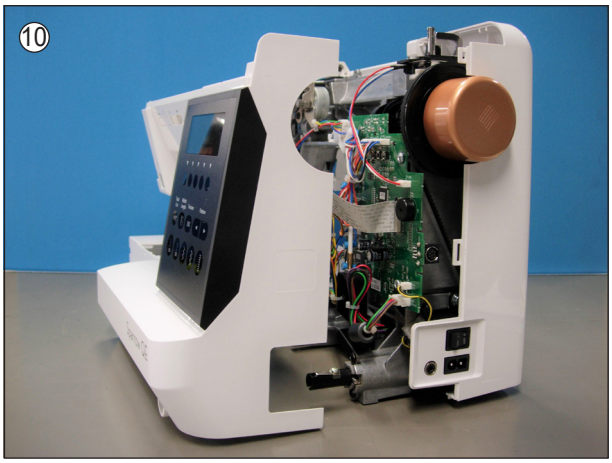


9. Off the 2 hooks (i, j) above and below the hand wheel.
   Pushing the rear enclosure toward inside of the machine and pull the front enclosure to the front, the hook will come off.



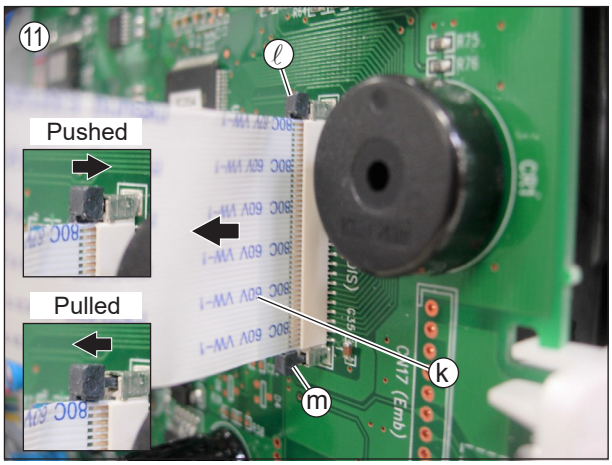
10. Pull the front enclosure slowly and disconnect from the rear enclosure.

> ⚠CAUTION:
> The front enclosure and the rear enclosure are connected with a cable. Do not remove the front enclosure vigorously. It may be cause of damages of the cable or a cable insertion port.



11. Disconnect the flexible flat cable (k) from the machine as follows.
    Pull the black 2 knobs (ℓ, m) toward the arrows slowly.
    Next, pull out the flexible flat cable (k).

> ⚠CAUTION:
> Because the 2 knobs are fragile easily, do not pull them vigorously. It may be cause of damages.



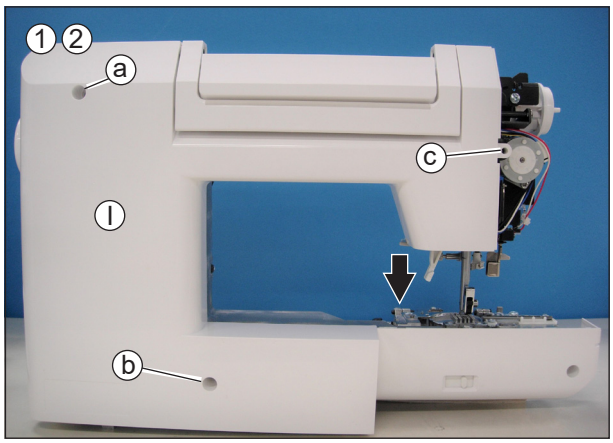
12. Remove the front enclosure.

I. Rear Enclosure

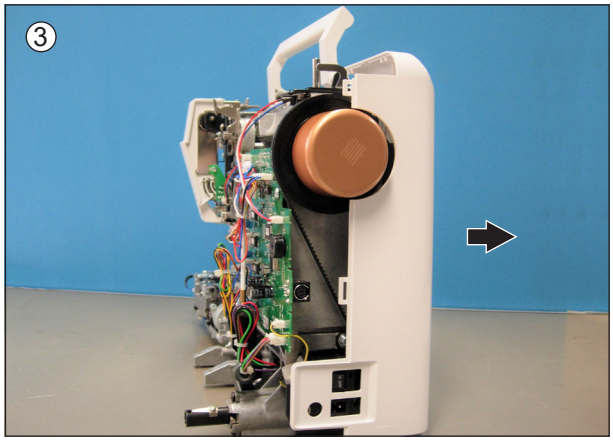
Remove from the top cover to the front enclosure.

1. Lower the presser foot lifter.

2. Remove the 3 screws (a, b, c).
   The screw (c) is longer than others.



3. Stand the handle.
   Remove the rear enclosure by pulling backward.
   At that time, open the enclosure outward so that it does not hook into the power switch.

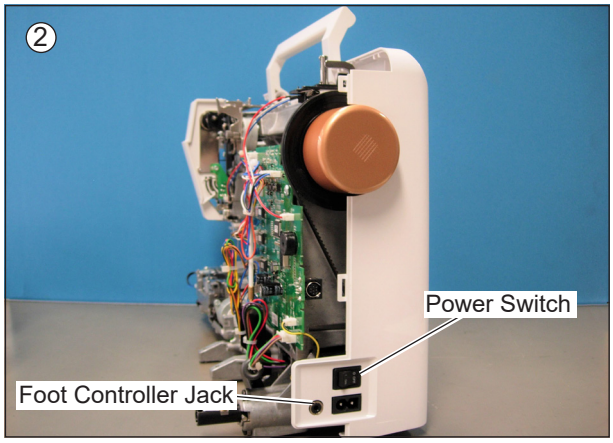


REPLACING THE EXTERIOR PARTS

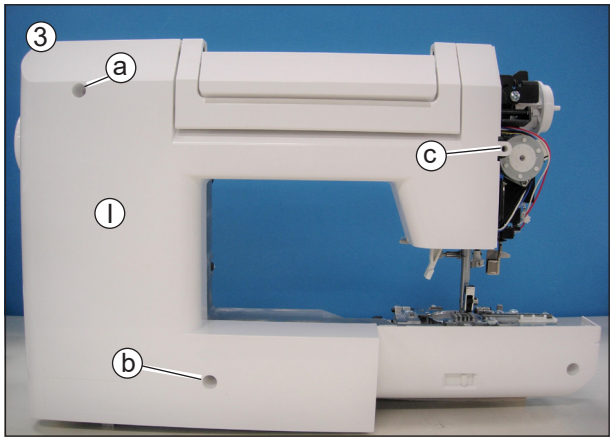
The exterior parts should be attached in sequence as followings.

I. Rear Enclosure

1. Lower the presser foot lifter.
2. Fit the rear enclosure so that the power switch and the foot controller connection hole match to the hollow of the enclosure.



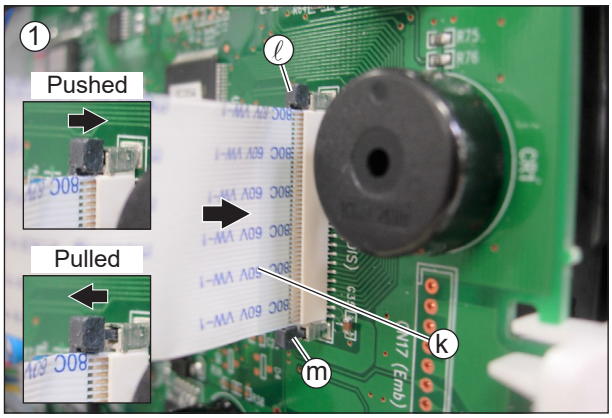
3. Replace the 3 screws (a, b, c) loosely.
   When you fit the unit cover and the light cover, retighten completely.
   The screw (c) is longer than others.



⚠CAUTION:
When the rear enclosure hooks into the power switch, the switch is turn on in some cases.
Confirm that the switch is turned to “OFF”.
If it is pushed to the ON side, power is turned on unexpectedly when the power cord is plugged into an outlet, which is dangerous.

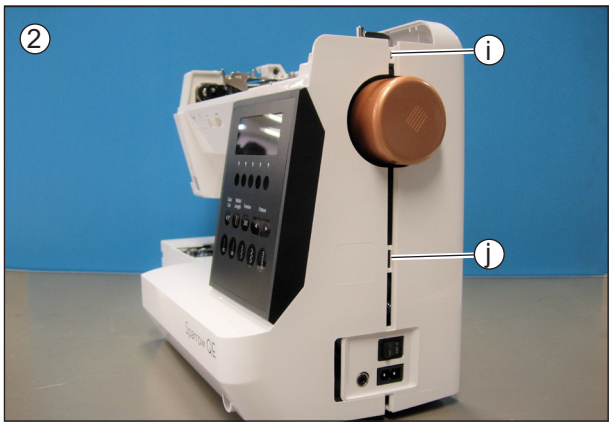
H. Front Enclosure

1. Connect the flexible flat cable (k) to the machine as follows.
   Pull the black 2 knobs (ℓ, m) toward the arrows slowly. Next, insert the terminal of the flexible flat cable (k) into the CPU board and fix by pushing the knobs.

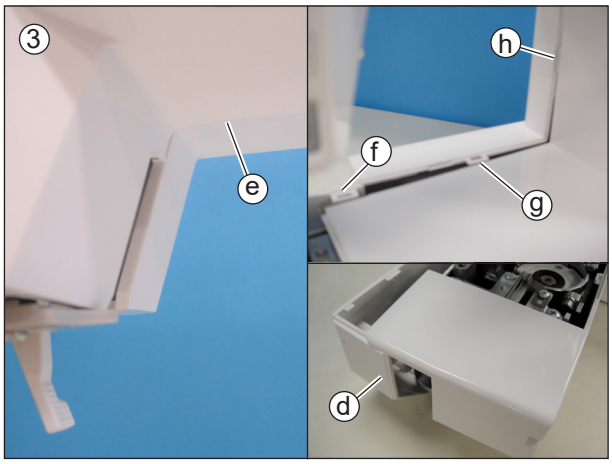


⚠CAUTION:
Because the 2 knobs are fragile easily, do not pull them vigorously. It may be cause of damages.

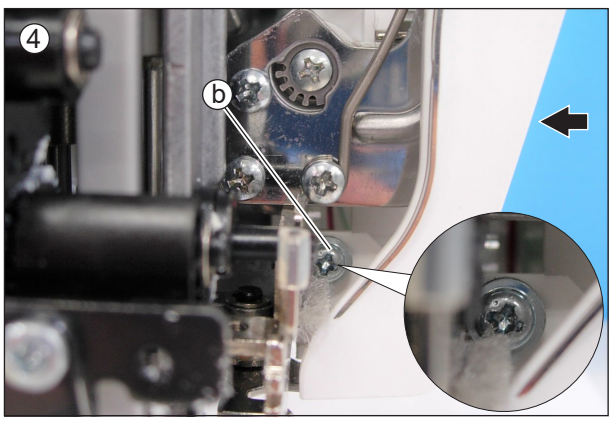
2. Replace the front enclosure into the rear enclosure.
   Fit the 2 hooks (i, j) above and below the hand wheel.



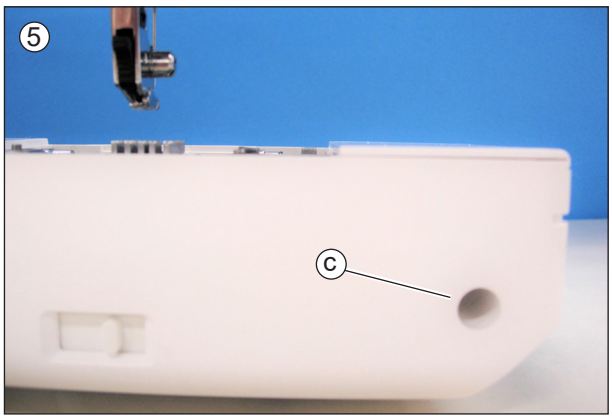
3. Replace the front enclosure into the rear enclosure (d) so that the 4 hooks (e, f, g, h) are set into place.



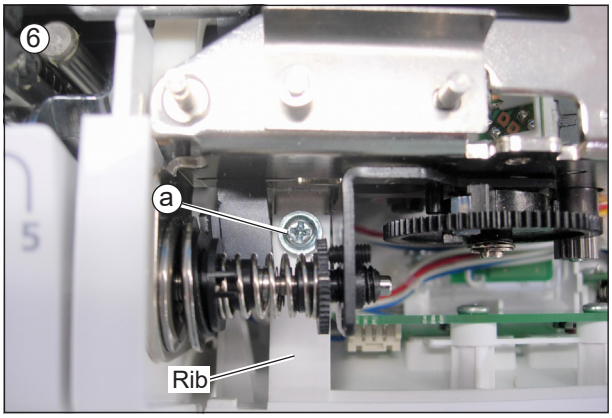
4. Retighten the screw (b) while pushing the lower edge of the arm of the front enclosure backward.



5. Replace the screw (c).



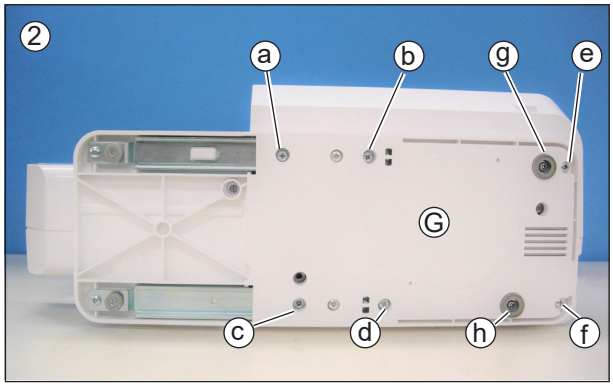
6. Replace the rib of the front enclosure to under the screw (a).
   Do not retighten the screw (a) yet.
   When you fit the unit cover, retighten completely.



G. Base

1. Tilt the machine backward.
2. Replace the base and fix the 8 screws (a, b, c, d, e, f, g, h).
   The screw (g) and (h) have the rubber feet. Retighten the 2 screws after fit the rubber feet into the holes.

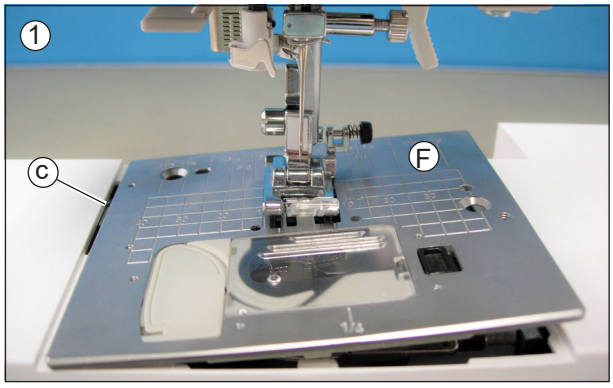
⚠CAUTION:
Pay attention not to get the power cord or plug sandwiched between the main unit and the base.



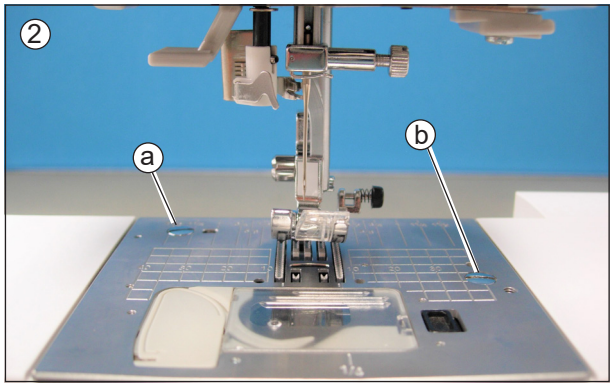
F. Needle Plate

To make it easier to work, raise up the presser foot and the needle.
Pay attention to the point of the needle.

1. Insert the hook (c) of needle plate to the machine.

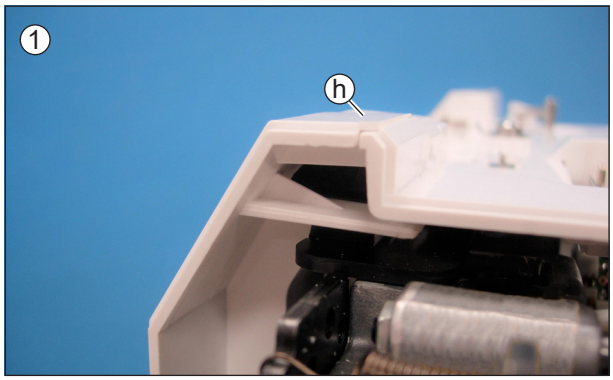


2. Retighten the 2 screws (a, b) with the driver for needle plate.

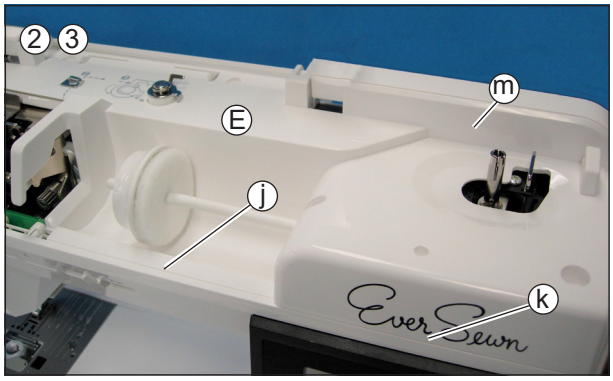


E. Unit Cover

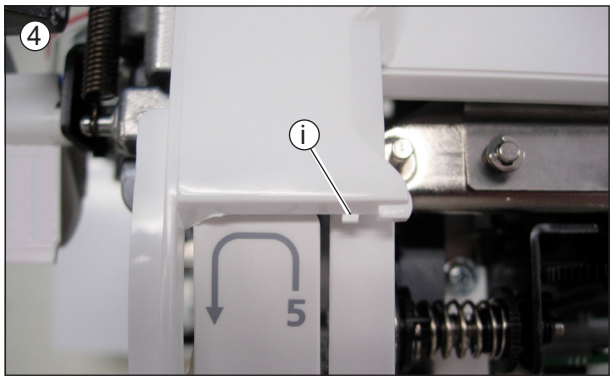
1. Replace the unit cover to the rear enclosure in order from the back side.
   Insert the hook (h) on the left corner of the unit cover to the rear enclosure.



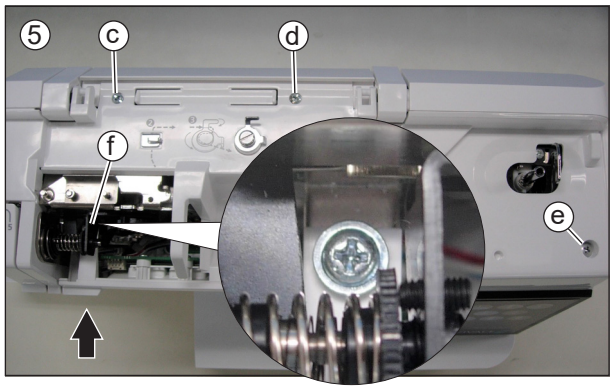
2. Insert the hook (m) on the right corner of the unit cover to the groove of the rear enclosure.
3. Insert the guide (j) and hook (k) to the front enclosure.
   Put your finger on the front cover, open lightly toward you so that create a gap between the front cover and the unit cover.



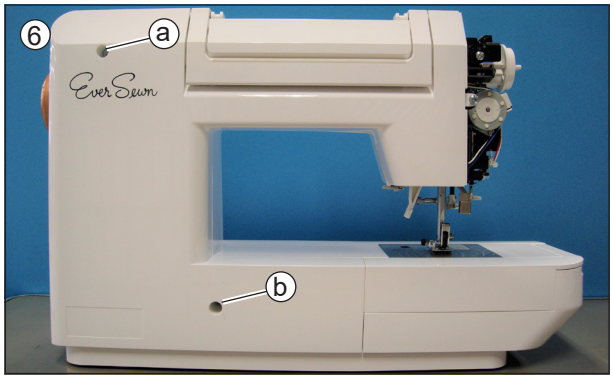
4. Insert the hook (i) the thread guide.
   At this time, raise the handle makes it easier to fit.



5. Replace the 3 screws (c, d, e).
   Retighten the screw (f) while pushing the front enclosure toward the arrow.

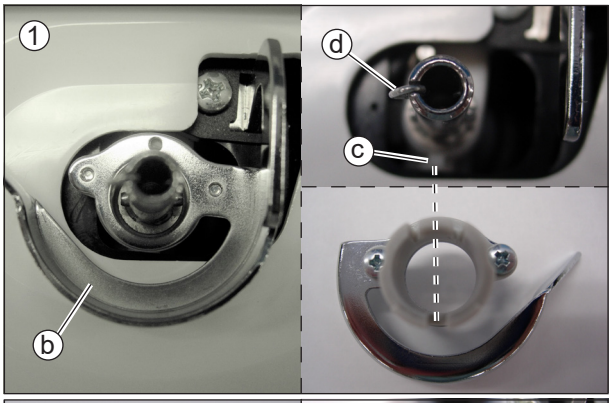


6. Retighten the 2 screws (a, b).

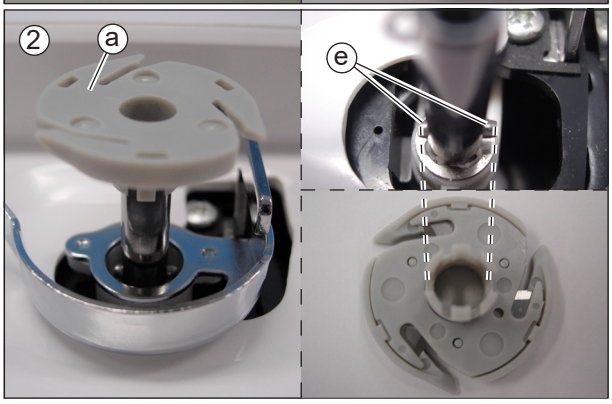


D. Bobbin Winder Thread Holding Guide and Plate

1. Insert the guide (b) to the bobbin winder spindle so that the groove (c) fits into the projection of winder shaft base.



2. Insert the plate (a) into the winder shaft so that the groove (d) fits into the pin (e) of shaft.

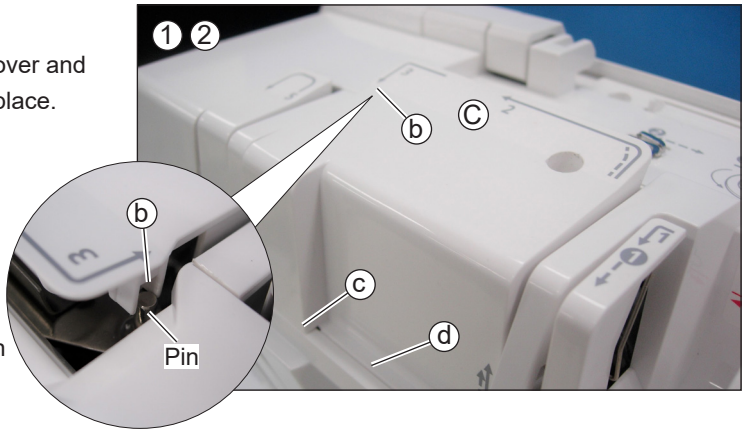


⚠CAUTION:
Pay attention not to bend the spring above the winder shaft.

C. Thread Tension Cover

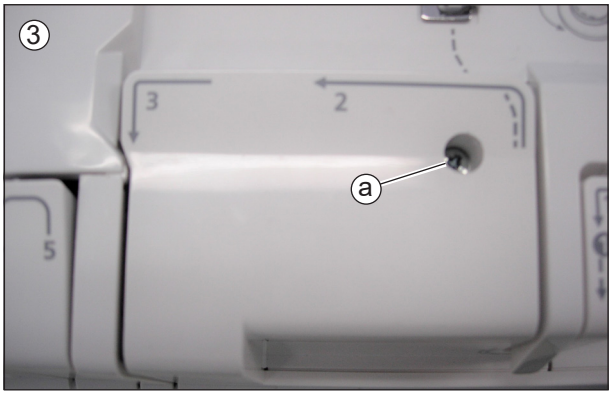
1. Pull up the upper end of the thread tension cover and replace it so that the each hook (c, d) fit into place.

2. Fit the pin in the groove (b).



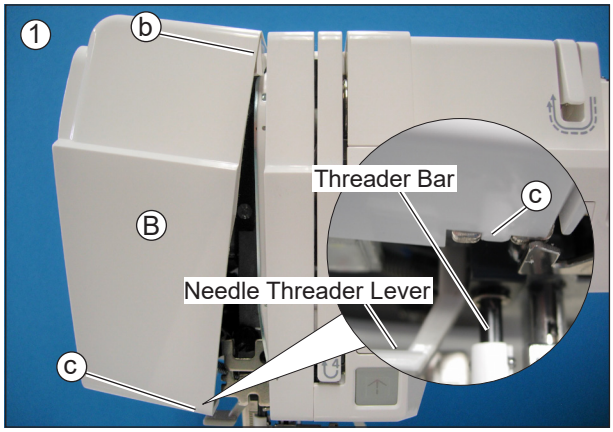
The groove (b) and the pin as seen from the back of the sewing machine.

3. Replace the screw (a).

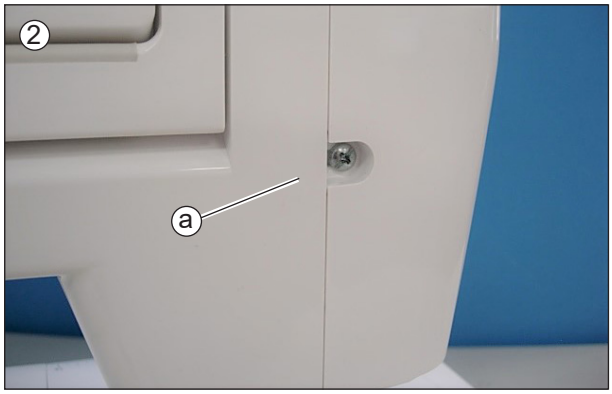


B. Light Cover

1. Replace the light cover so that the hooks (b, c) will fit into place.



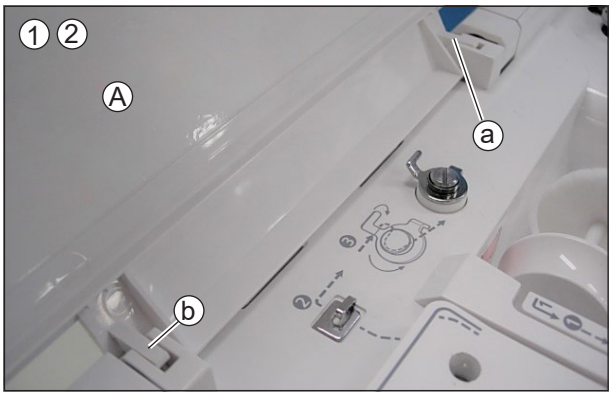
2. Retighten the screw (a).



A. Top Cover (Flap)

1. Insert the hinge (a) of the top cover into the unit cover.

2. Insert the hinge (b) in the same way.



CHECK AND ADJUSTMENT

⚠CAUTION:
Depending on the work you need to turn on the power. Turn on the power only when necessary.
Turn off the power when unnecessary, and unplug the power cord from the outlet.

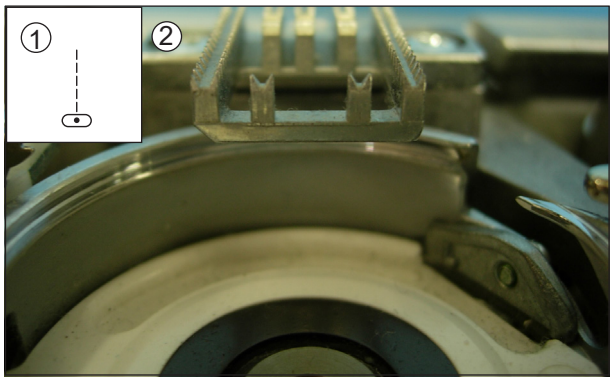
1. HEIGHT OF NEEDLE BAR

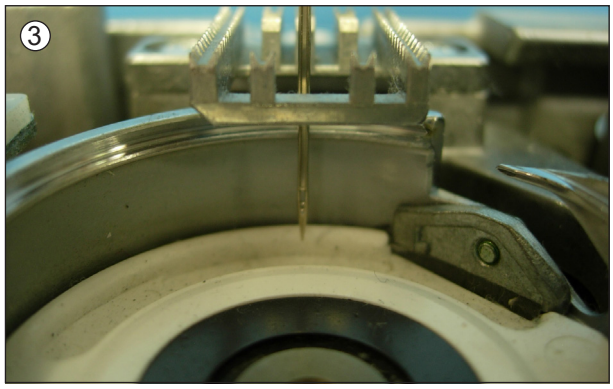
Height of needle bar could be the cause for stitches to skip. Check as the following procedures.

1. Set the pattern to straight stitch on center needle position.

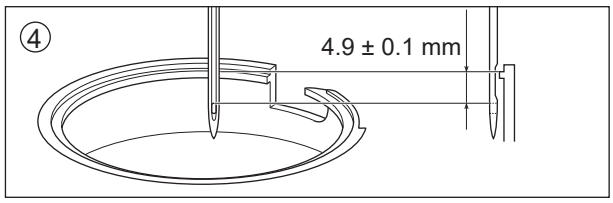
2. Raise the needle bar to its highest point by turning the hand wheel toward you. Remove the presser foot. Remove the needle plate. Lift up the bobbin holder and remove it.

3. Turn the hand wheel toward you until the needle comes to its lowest point.



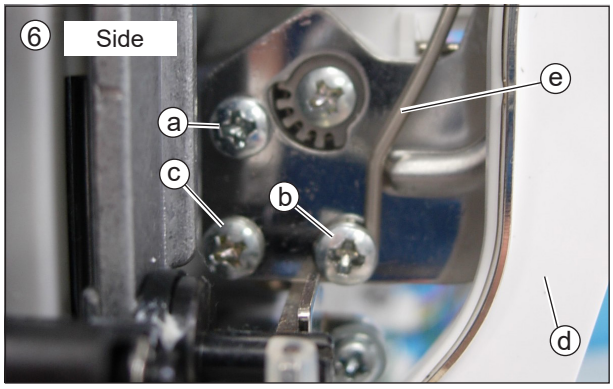


4. Then, the spacing between the surface of hook race and the top edge of needle eye must be (4.9±0.1 mm).

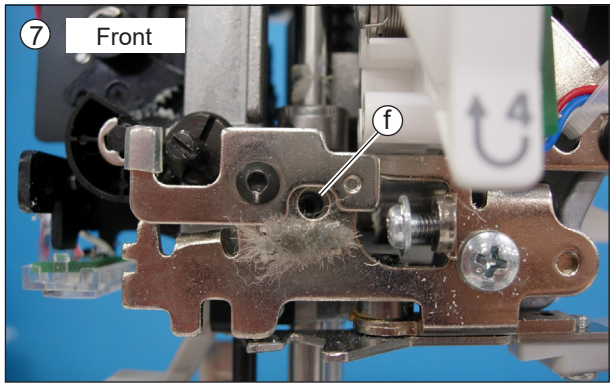


If this spacing is not correct, adjust as follows.

5. Remove the light cover.
6. Remove the 3 screws (a, b, c), the thread take-up lever cover and bracket (d) and the take-up lever thread guide (e).



7. Loosen the screw (f) on the needle bar holder. (2 mm hex. wrench)
   Adjust the needle bar so that the spacing between the surface of hook race and the top edge of needle eye must be 4.9 mm.
   Retighten the screw (f) and check the height.

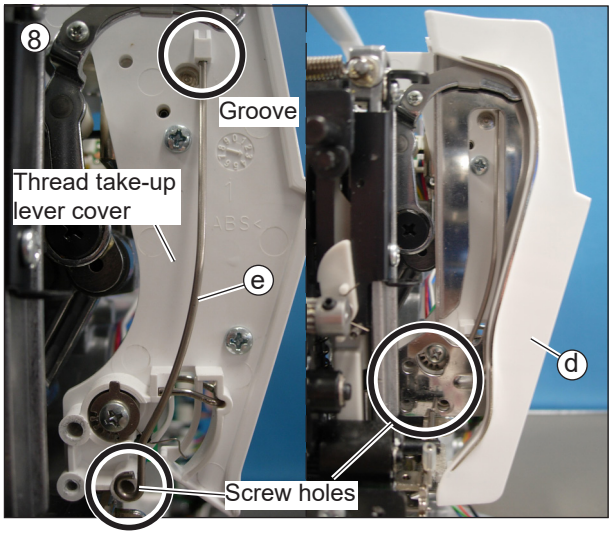


⚠CAUTION:
Do not change the needle bar direction at this adjustment. The long groove of needle must be facing frontward.

8. Replace the take-up lever thread guide (e), the thread take-up lever cover and bracket (d) in this order.
   When you install the take-up lever thread guide (e); Insert top edge into the groove of the thread guide cover and align lower end of the guide with the screw hole and install.

   When you install the thread take-up lever cover and bracket (d);

   Align the screw hole of the tread guide cover with the screw hole of the (d) and tighten the 3 screws (a, b, c).

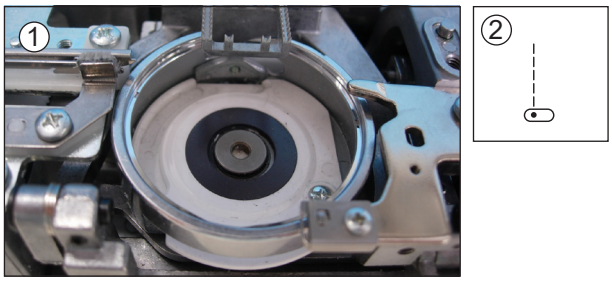


2. GAP BETWEEN NEEDLE AND HOOK

If the needle hits against the hook, it may be the cause of needle and thread breakages. If the gap between needle and hook is too big, it will cause to skip stitches. Check and adjust as follows:
Prior to make this adjustment, check that the needle is not bent and the needle is inserted correctly.

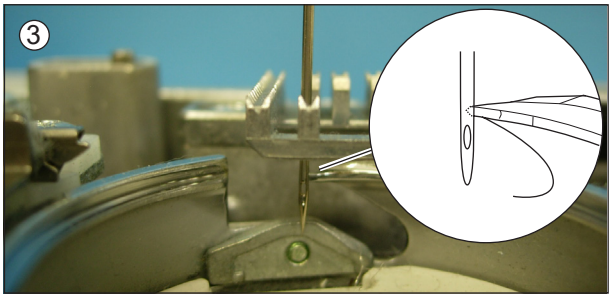
1. Remove the needle plate and bobbin holder.

2. Set the pattern to straight stitch on left needle position.



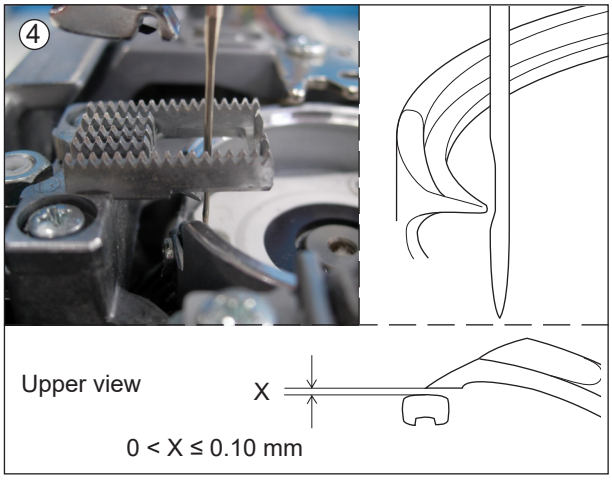
3. Turn the hand wheel toward you until the needle will cross over the hook.

4. Then, check the gap between needle and hook is 0.10 mm or less.



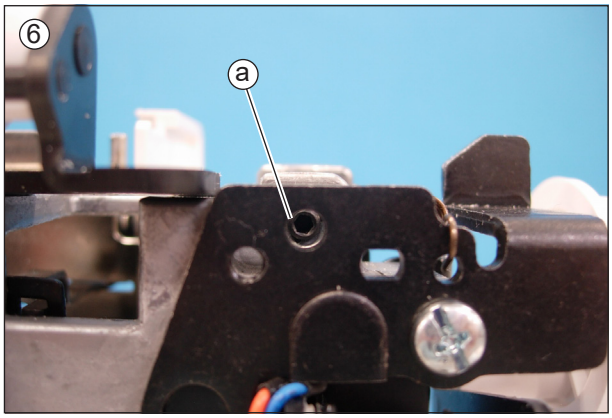
If the needle is hitting against the hook or if the gap is too much, adjust as follows:

5. Remove the light cover.



6. Adjust the gap by turning the adjusting screw (a) with 2 mm hex. wrench.
· If the gap is too big, turn the screw to the left with viewing from frontward.
· If the needle is hitting the hook, turn the screw to the right with viewing from frontward.

7. Replace the bobbin holder and needle plate and light cover.

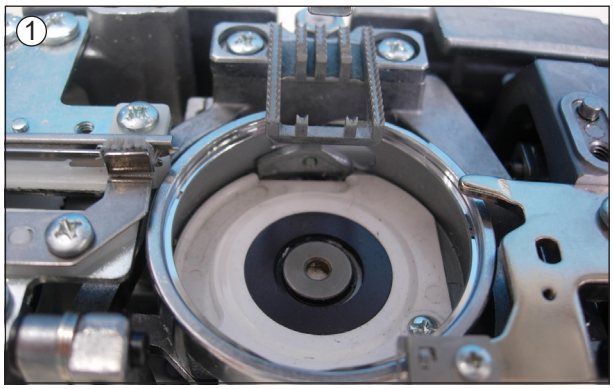


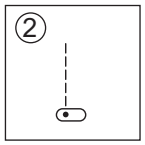
3. TIMING OF THE HOOK

Prior to making this adjustment, be sure that the needle bar is set at the correct height. (Sec. 1)
Check the timing of hook as follows:

1. Remove the needle plate and bobbin holder.

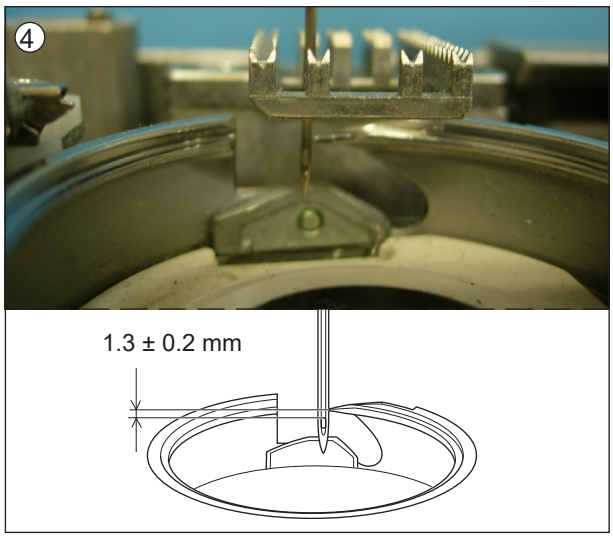
2. Set the pattern to straight stitch on left needle position.





3. Turn the hand wheel toward you until the needle is at its lowest point.

4. Then, turn the hand wheel slowly to turn the hook counter-clockwise until the tip of hook is aligned with the right side of needle.
   At this time, the gap between the tip of hook and the top edge of needle eye should be (1.3±0.2 mm).



If the gap is too small or too large, adjust as follows:

5. Remove the front enclosure.

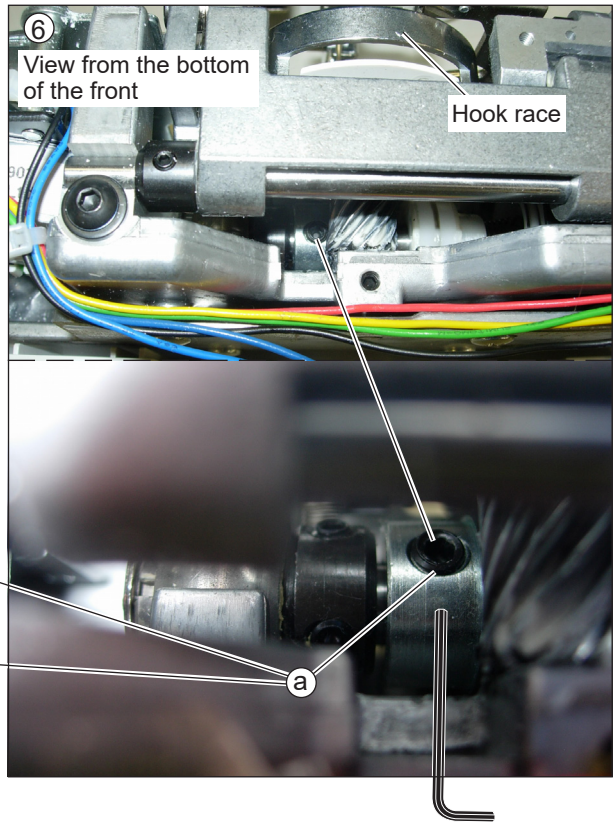
6. Loosen the two 2 screws (a) on the lower shaft gear with a 2.5 mm hex. wrench.

7. Turn the hook race by hand so that the tip of hook will align with the right side of needle.

8. In this position, hold the hook race with your left hand and turn the hand wheel toward you to obtain the correct gap (1.3 mm).

9. Tighten the screws and check the timing again.

10. Replace the front enclosure.



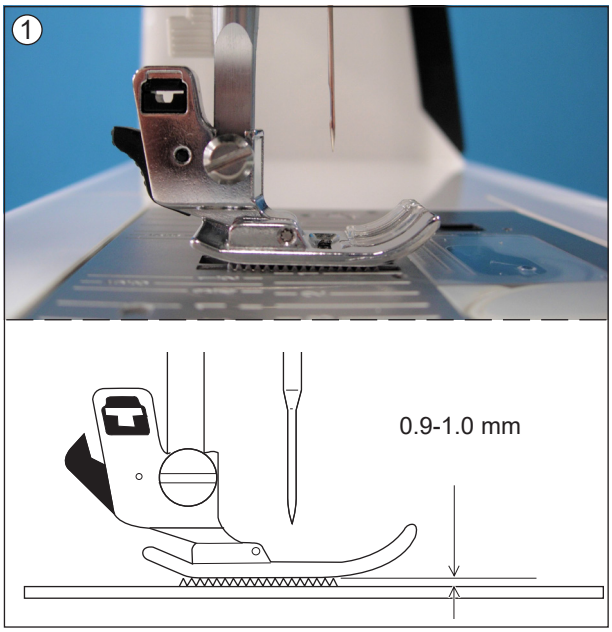
4. HEIGHT OF THE FEED DOG

If the feed dog does not come up over the needle plate enough, it will result in insufficient and/or uneven feed of fabrics.

1. The feed dog should come up over the needle plate (0.9-1.0 mm) when its highest position.

If it does not come up enough, adjust as follows:

2. Remove the needle plate and presser foot.

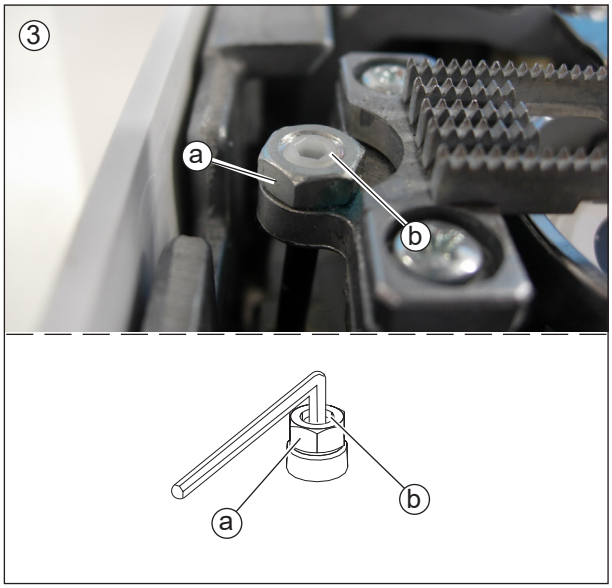


3. Loosen the nut (a) (8 mm hex.) behind the feed dog.

· If the feed dog is too low;
Turn the adjusting screw (b) (2.5 mm hex. wrench) clockwise.
· If the feed dog is too high;
Turn the screw (b) counterclockwise.

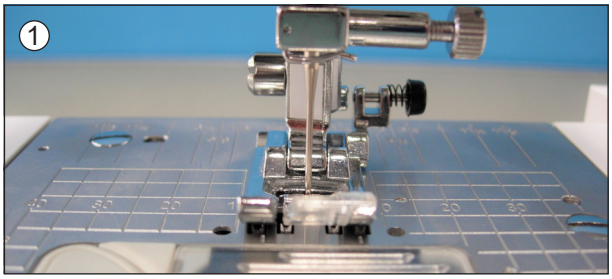
4. Re-tighten the nut (a) so that the screw (b) will not move.

5. Re-check the height of feed dog.



5. NEEDLE PLATE AND NEEDLE POSITION

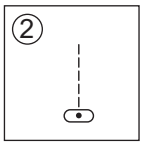
1. When the straight stitches is set at center needle position, the needle should fall into the center of needle plate hole (the distance needle and edge of hole at each side).



If it is not so, adjust as follows:

2. Set the pattern to straight stitch center needle position.

3. Remove the presser foot and the light cover.



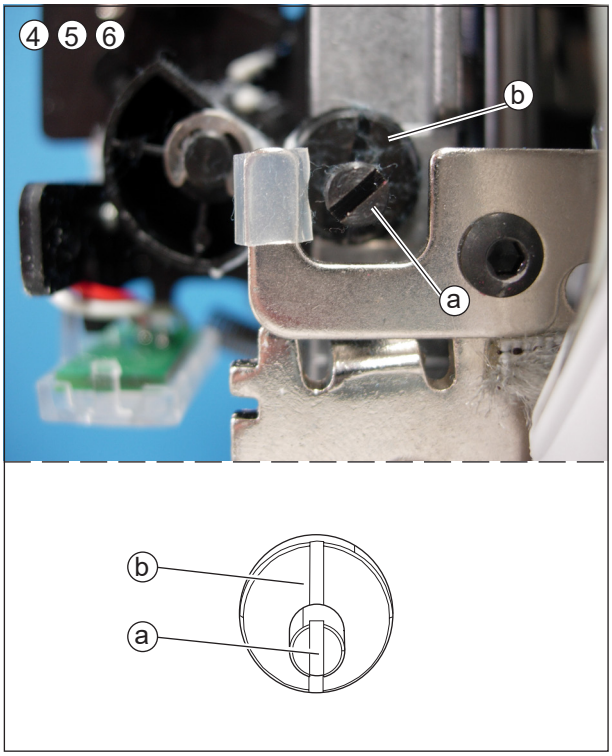
4. Loosen the center screw (a).

5. Turn the adjusting screw (b) left or right until the needle falls center position into the hole.

· When you turn the screw to the right, needle will move to the left.
· When you turn the screw to the left, needle will move to the right.

6. Retighten the screw (a) and re-check the position of needle.

7. When you have adjusted the this position, check the timing of the hook again. (Sec. 3)



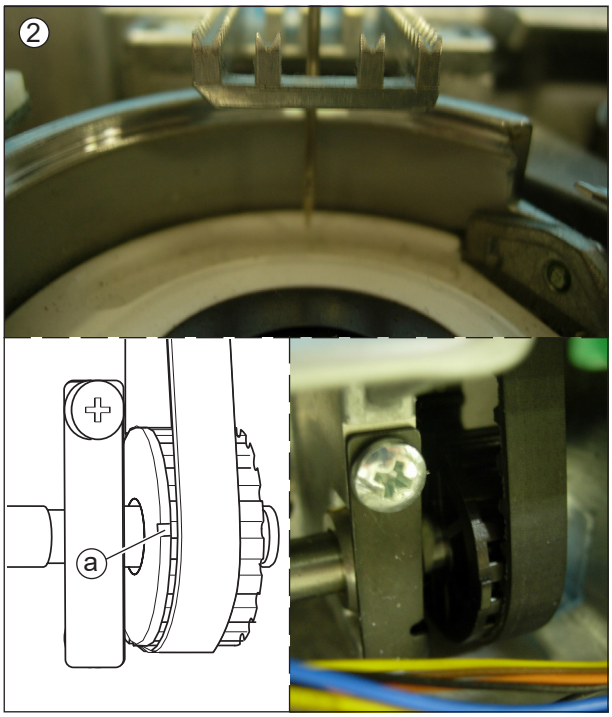
6. TIMING OF THE UPPER AND LOWER SHAFT

The upper and lower shaft must be positioned correctly as follows.

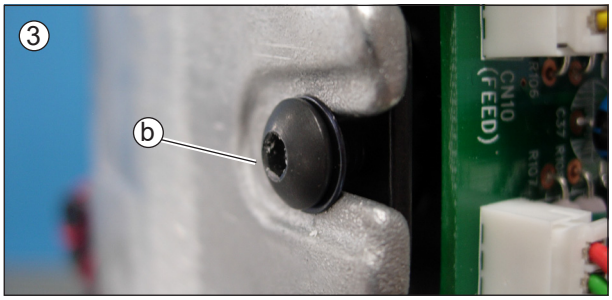
1. Remove the front enclosure.

2. Turn the hand wheel toward you until the needle is its lowest point. At this time, the mark (a - very small molded line on edge) on the lower shaft timing pulley must be facing toward you.

If it is not so, adjust as follows:



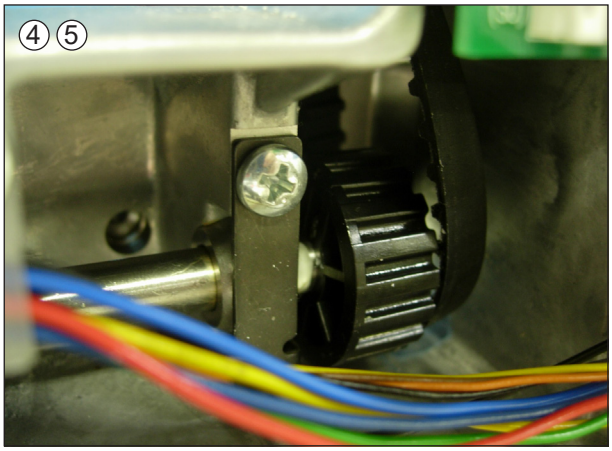
3. Loosen the screw (b) (2.5 mm hex.) tightening the tension pulley bracket.



4. Slip out the timing belt from lower shaft timing pulley.

5. Turn the lower shaft timing pulley so that the mark faces toward you.

6. Hook the timing belt on the pulley.

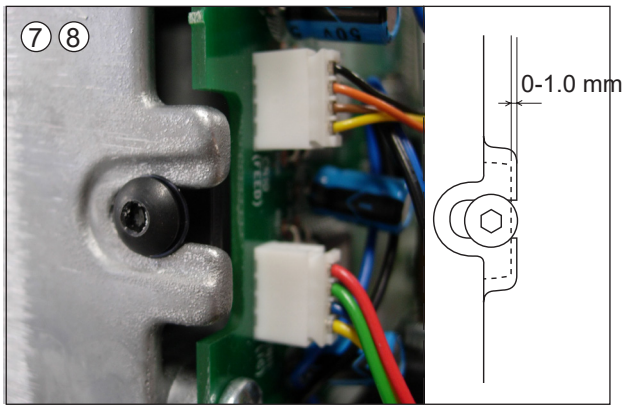


7. Push the tension pulley bracket so that the edge of bracket should be 0-1 mm lower than the casting.

8. Retighten the screw (b).

9. Check the timing again and replace the front enclosure.

10. When you have adjusted it, check the timing of the hook again. (Sec. 3)



7. ADJUSTING THE FORWARD REVERSE STITCH

When stretch stitch sewing, the lengths of the forward and reverse stitches should be the same.
Check and adjust as follows.

- We recommend checking “Height of the Feed dog (Sec. 4)” before you make this adjustment.

1. Display the mode selection screen.
   See page. 34 “2. The self-diagnostic program”.

2. Switch to adjusting the forward reverse stitch mode by pushing the leftmost function button.
   “Feed Adjust” is displayed on the screen.

3. Attach the regular foot and spread a paper under it.

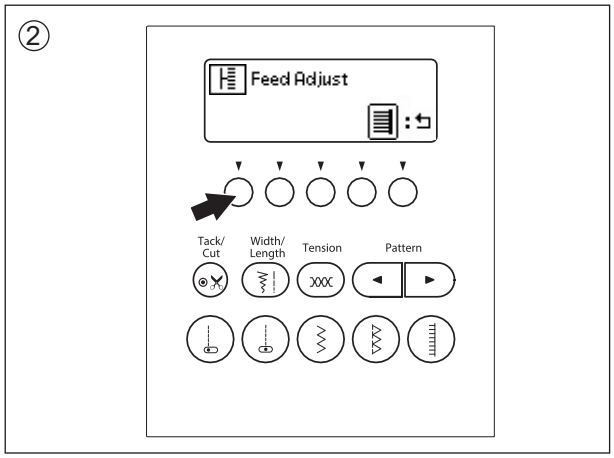
4. Start the machine and open holes of test pattern. The holes (a) and (b) should be same position.

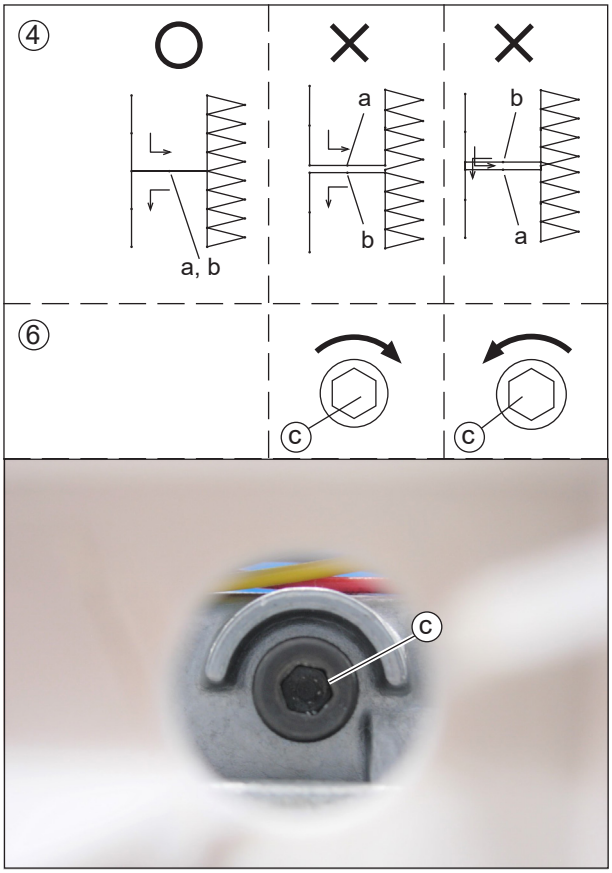
If they are not so, adjust as follows.

5. Tilt the machine backward and remove the base.

6. The screw hole (c) to adjust length of the forward reverse stitch is on the bottom of the machine. Adjust the length by the turning the screw hole, according to condition of the hole of the test pattern. (4 mm hex. wrench)

- If the reverse stitch is finer than the forward stitch, turn the screw hole (c) to the right (-).
- If the reverse stitch is coarser than the forward stitch, turn the screw hole (c) to the left (+).

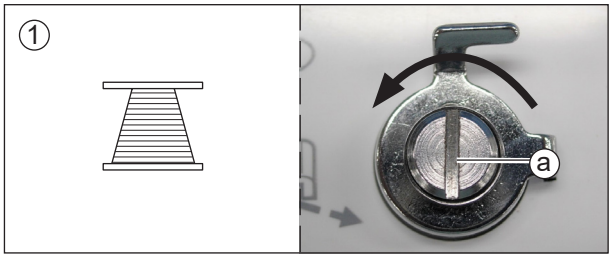




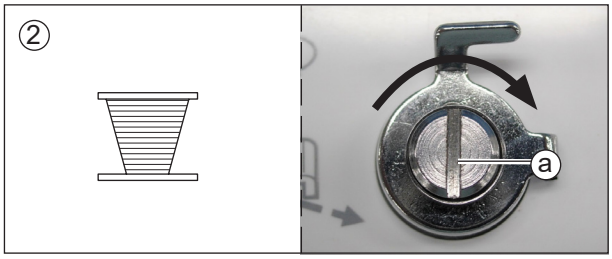
8. BOBBIN WINDER

If bobbin winds unevenly, adjust as follows:

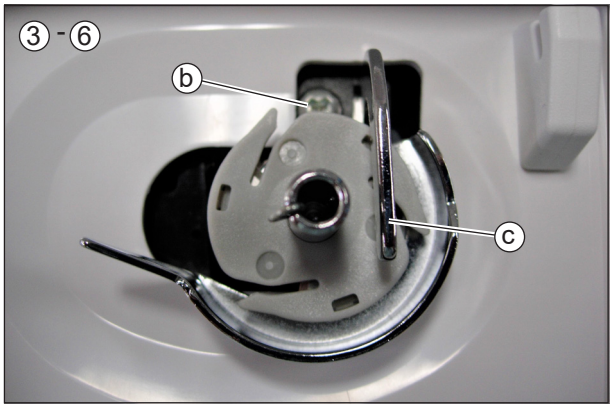
1. If the bobbin winds as shown, turn the screw (a) counter clockwise.



2. If the bobbin winds as shown, turn the screw (a) clockwise.



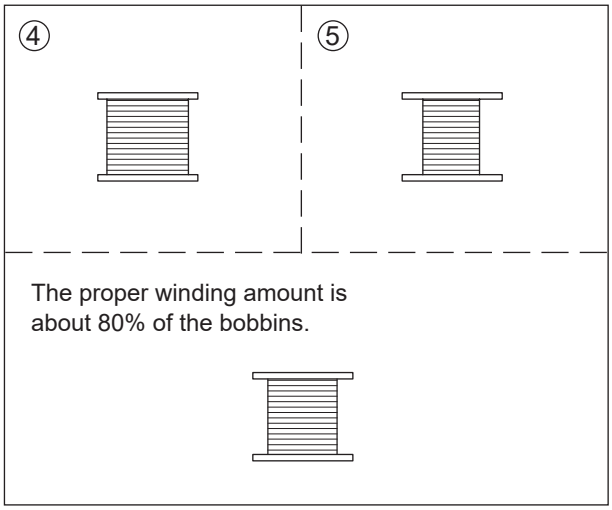
3. The proper winding amount is about 80% of the bobbins. If the bobbin thread is wound too little or too much, loosen the screw (b) and adjust the bobbin winder stop (c) as follows.



4. If the bobbin thread is wound too much, slide the bobbin winder stop (c) to the left.

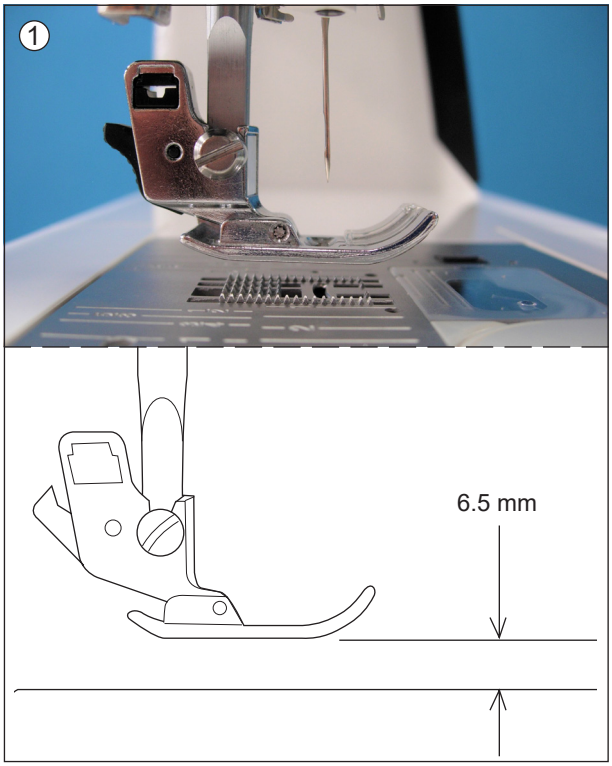
5. If the bobbin thread is wound too little, slide the bobbin winder stop (c) to the right.

6. Retighten the screw (b).



9. HEIGHT AND DIRECTION OF PRESSER FOOT

1. The height of the presser foot from the needle plate should be 6.5 mm when it is lifted up.
   The presser foot should be facing frontward (the edge of foot is parallel with the feed dog slot on needle plate).



If adjustment is needed, follow these procedures:

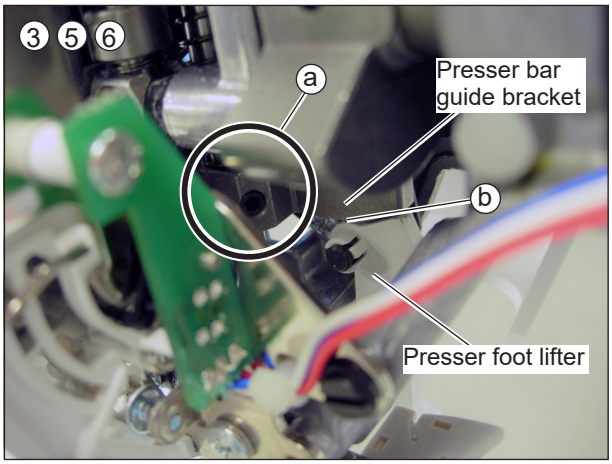
2. Remove the rear enclosure.

3. Loosen the screw (a) located behind of the machine.

4. Adjust the height and direction of presser foot.

5. Retighten the screw (a).

6. Check if the presser foot lifter has a slight play (b) between the presser bar guide bracket in down position.

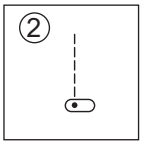


10. HEIGHT OF NEEDLE THREADER

If the height of needle threader is not correct, the hook on threader will not enter the needle eye. Adjust as follows:

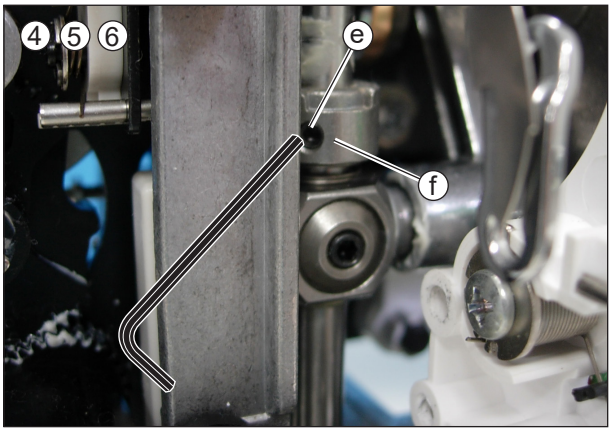
1. Remove the light cover.

2. Set the pattern to straight stitch left needle position.



3. Raise the needle to its highest point by turning the hand wheel.

4. Loosen the screw (e) on the needle threader bar stopper. (1.5 mm hex. wrench)



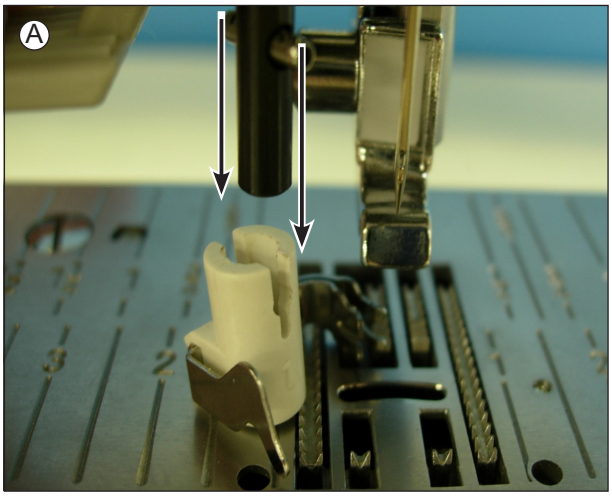
5. Adjust the height of stopper (f) so that the hook enter the needle eye.

6. Tighten the screw (e) and confirm the height of needle threader again.

> ⚠CAUTION:
> Be careful with direction of stopper when tighten the screw.
> If direction of stopper NOT right, machine makes noise and/or threader does NOT work smoothly.

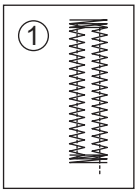
7. Replace the light cover.

A. If the hook has bent, change the threader hook assembly. To remove the hook assembly, pull it downward.



11. ADJUSTMENTS FOR BUTTONHOLE LEVER POSITION

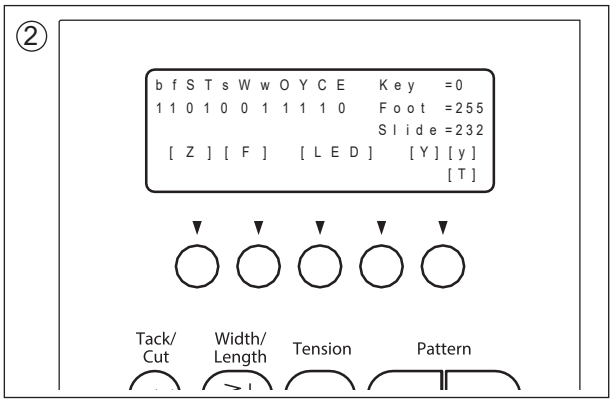
1. If the machine dose not sew even with the buttonhole lever all the way down, it means that the buttonhole lever is not positioned properly. Also, if the buttonhole lever is not positioned properly, the machine will sew buttonhole as shown or incorrectly.



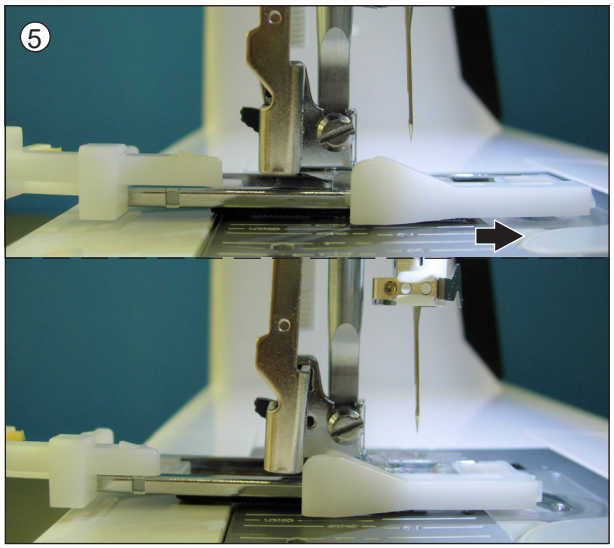
2. Run the self-diagnostic program.
   See page. 34 “2. The self-diagnostic program”.

3. Attach the buttonhole foot.

4. Lower the presser foot and the buttonhole lever.



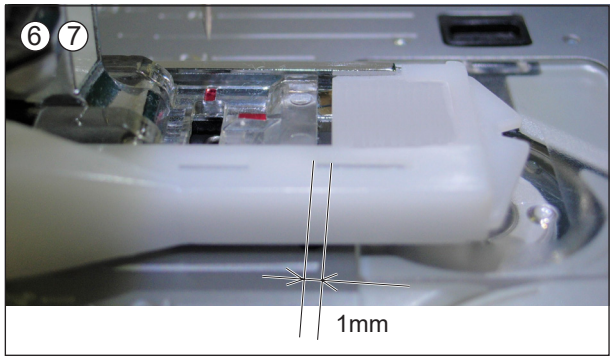
5. Pull the presser foot frame frontward about 1cm while lifting the presser foot lever slightly. Then slowly move the frame backward.
   Lower the lever when [f] on the LCD changes from [0] to [1].



6. At this time, the presser foot frame should be 1 mm frontward from the extreme end.

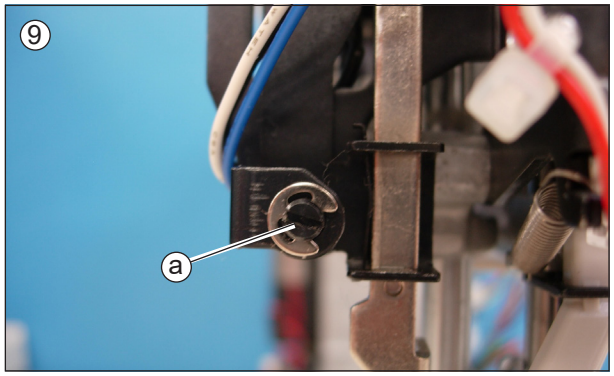
If it is not in correct position, adjust as follows:

7. Lower the presser foot by pushing the frame 1 mm frontward from the extreme end.



8. Remove the light cover.

9. Turn the eccentric pin (a) left or right so that the L[f] changes from [0] to [1].



10. When adjustments have been completed, confirm the buttonhole lever position again.

12. MOTOR BELT TENSION

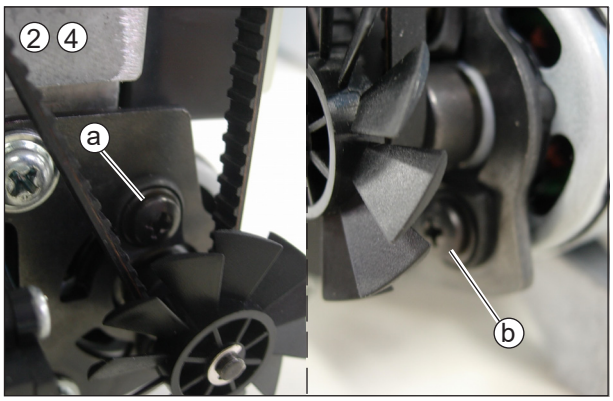
If the motor belt tension is too tight or too loose, machine will not run smoothly.
Adjust as follows:

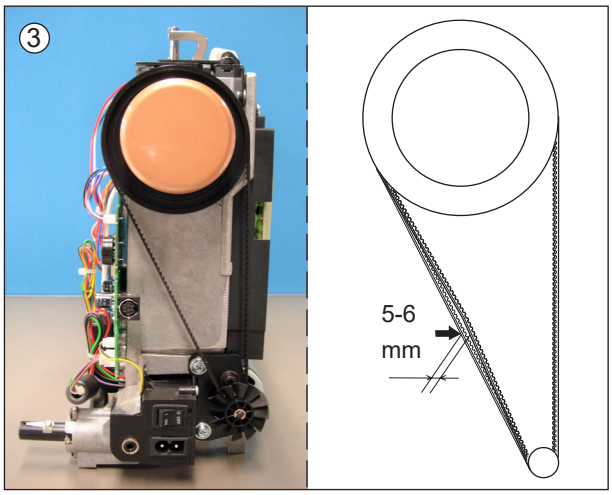
1. Remove the front enclosure.

2. Loosen the 2 screws (a, b)

3. Move the motor up or downward and tentatively tighten the screws.
   Check the belt tension as follows:
   · The belt does not touch to the casting or other parts.
   · The belt must have flexibility of 5-6 mm when average pressure is applied on its side.

4. When correct tension has been obtained, tighten the screws (a, b) securely.





13. TIMING BELT TENSION

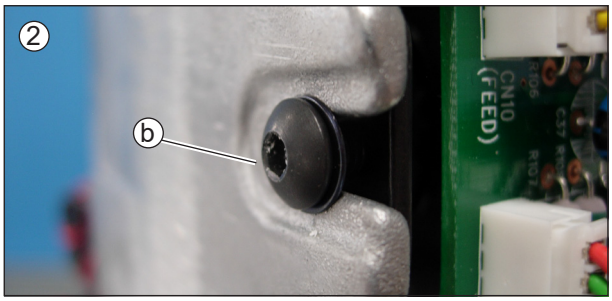
If the timing belt tension is too tight or too loose, the machine will run heavily or the timing of hook and feed motion will be changed incorrectly.
Adjust as follows:

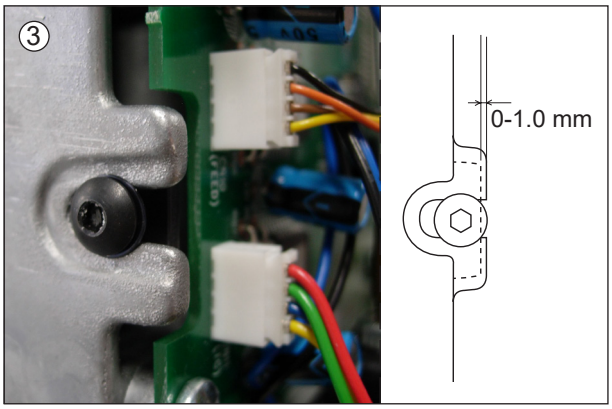
1. Remove the front enclosure.

2. Loosen the screw (a) tightening the tension pulley bracket.

3. Push the tension pulley bracket so that the edge of bracket should be 0-1 mm lower than the casting and retighten the screw (a).

4. When you have adjusted the timing belt tension, recheck the timing of the upper and lower shaft (Sec. 6) and the timing of the hook (Sec. 3) again.





14. BACKLASH OF HOOK GEAR

If there is too much play on the hook gear on the turning direction, it may be the cause for machine not to sew properly and/or making excessive sewing noise.

1. Play at the tip of the hook may be 0.1-0.3 mm.
   If it is not so, adjust as follows.

2. Remove the front enclosure.

3. Loosen the screw (a) and turn the lower shaft ball

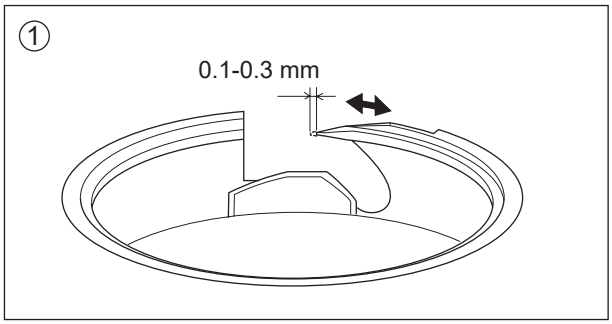
   bushing up or down by hooking the tip of flathead screw driver into the left side groove (b) of bushing.

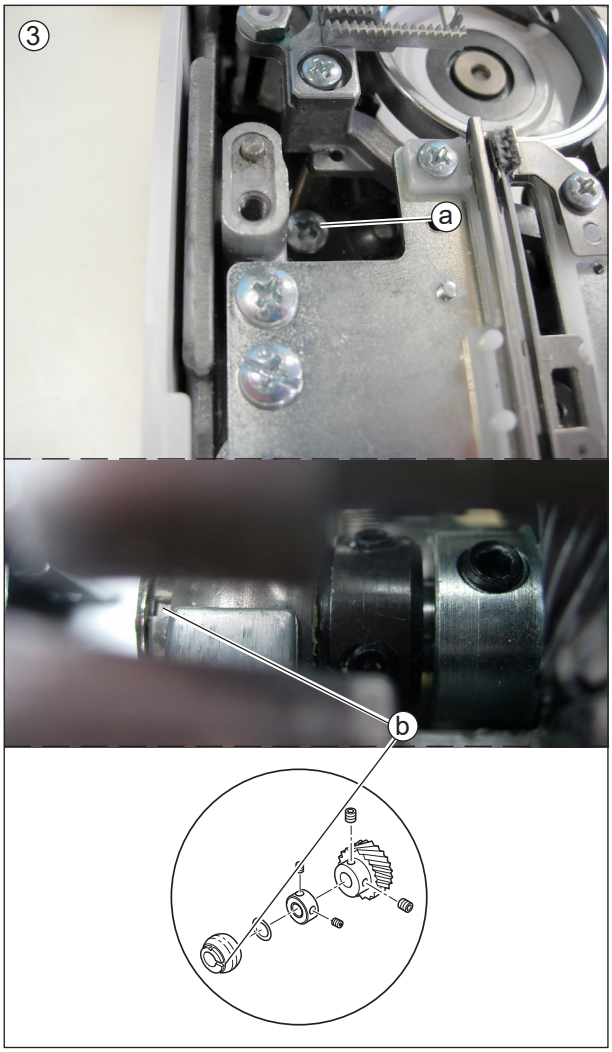
   · Turn upward: The play will increase
   · Turn downward: The play will decrease.

4. Re-tighten the screw (a) tentatively and check that the correct play has obtained.

5. Tighten the screw (a) securely.

6. When you have adjusted the backlash of hook gear, check the timing of the hook again. (Sec. 3)

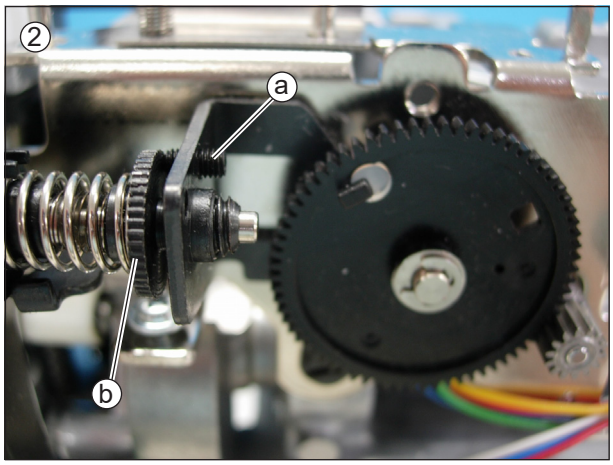




15. UPPER THREAD TENSION UNIT

The upper thread tension regulator unit has been adjusted to the best sewing conditions at the position [A]. However, if you wish to change this, do it as follows:

1. Remove the thread tension cover.
2. Loosen the screw (a).
3. Adjust the tension by turning the tension regulator screw (b) either to the front or back.
   · For a stronger tension, turn screw backward
   · For a weaker tension, turn screw frontward.
4. Tighten the screw (a) and replace the thread tension cover.



16. ADJUSTING THE LOWER THREAD TENSION

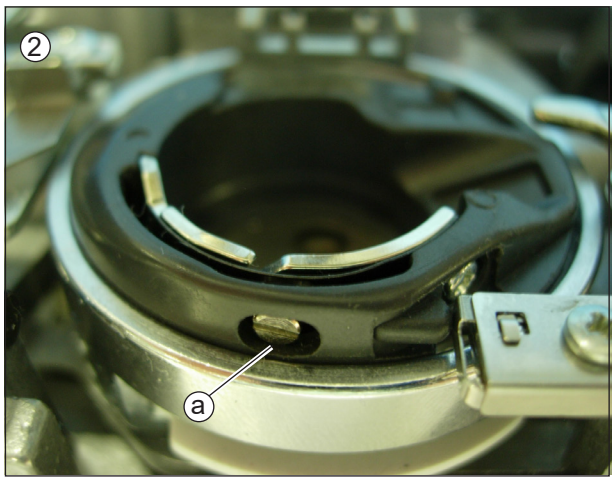
The bobbin thread tension is correctly adjusted at the factory and normally it would not be necessary for you to make adjustments yourself.

If adjustments are necessary adjust as follows.

1. Remove the needle plate.

2. To obtain a weaker bobbin thread tension, turn the screw (a) which is located on the front part of bobbin case counter clockwise, and for a stronger tension, turn screw clockwise.

3. Replace the needle plate.

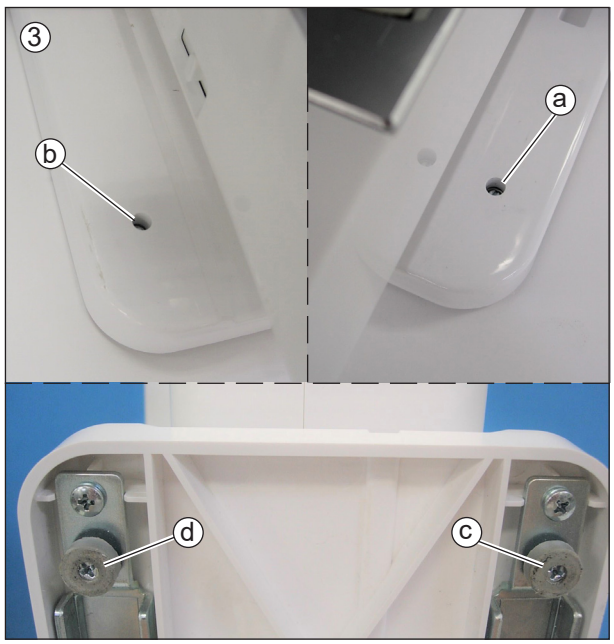


17. FLATNESS OF THE BASE

1. Remove the Extension Table.

2. Place the machine on flat stable table.

3. Adjust the height of the rubber feet (c, d) by turning the adjusting screws (a, b) so that the base will be stabilized.



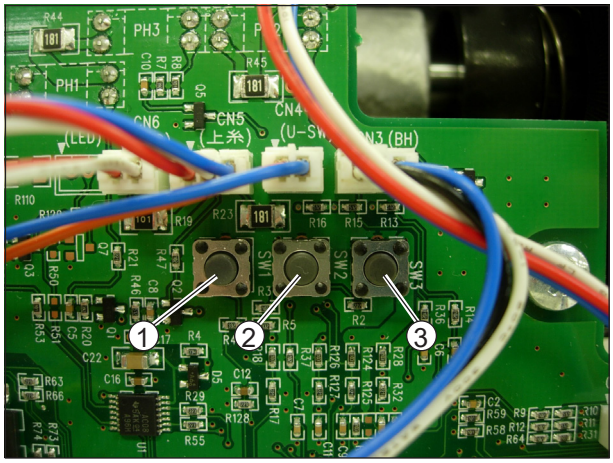
18. OPERATING WITHOUT FRONT ENCLOSURE

Depending on the content of confirmation and adjustment, you can operate without the front enclosure.
Move the bobbin winder spindle shaft either the left or the right, turn on the power switch by pressing the CPU board switches.

Contents of confirmation and adjustment	Bobbin winder spindle	Switch 1	Switch 2	Switch 3
Adjusting the forward reverse stitch	Left	✓	N/A	N/A
Adjusting the gap between needle and hook		N/A	✓	N/A
Running in (Run with the maximum value and the minimum value of stitch length and zigzag width) *		N/A	N/A	✓
Operating in the way of movement when sewing " ああ 9".	Right	✓	N/A	N/A
Keyhole stitch sewing		N/A	✓	N/A
Center straight stitch		N/A	N/A	✓

* You can use this mode for adjusting the tread tension to assembling of machines since the preset value of the thread tension is set to “10”. Usually, this pattern is not used to sew.

CPU board switches 1, 2, 3



⚠CAUTION:
Do not touch parts except for the switches. It may cause malfunction.

LOCATING THE DEFECTED ELECTRICAL PART

1. Setting of LCD, LED light and Beep

You can adjust the brightness of the LCD screen when it is hard to see. Also, you can switch LED light on and off. By setting off of the beep, you can operate the machine without beep.

1. Turn off the power switch. (Symbol O)

2. Push the bobbin winder spindle to the right.

3. While touching the needle up-down/slow button, turn on the power switch. (Symbol I)
   The setting screen for LCD, LED light and beep is displayed.

4. Set each function as below.

a: LED light

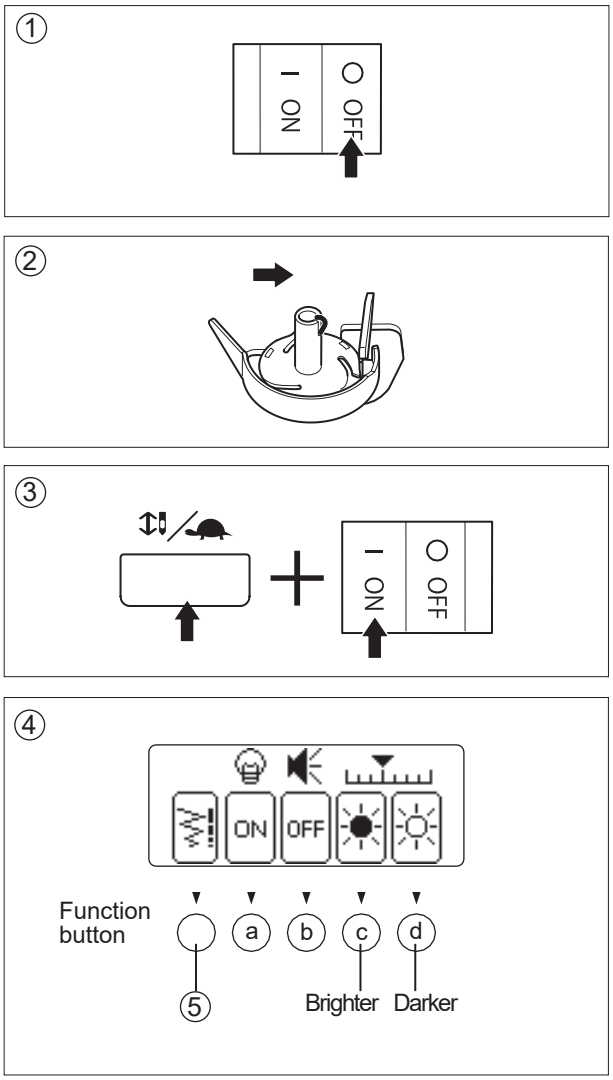
Every time touching the function button (a), LED light switches on or off.
ON : LED light turns on.
OFF: LED light turns off.

b: Beep

Every time touching the function button (b), beep switches on or off.
ON : Beep sounds.
OFF: Beep does'nt sound.

c, d: LCD

Every time touching the function button (c) or (d), ▼ of the scale will move and the brightness changes.
: Touch the function button (c), if you want to make the brightness of the screen brighter.
: Touch the function button (d), if you want to make the brightness of the screen darker.



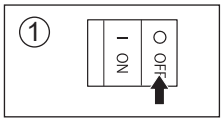
5. When you finish setting, press the function button on the left end ( ).
   After the setting screen of “winding the bobbin” will appear, push the bobbin winder spindle to left and continue operating.
   If you want to keep setting, you have to touch the function button on the left end ( ) before turning off the power switch.

⚠CAUTION:
- If you turn off beep, the warning sound will not sound when you operate the machine incorrectly. Pay attention to operation.
- When call this function, do not press the button other than the needle up-down/slow button. It may cause malfunction.

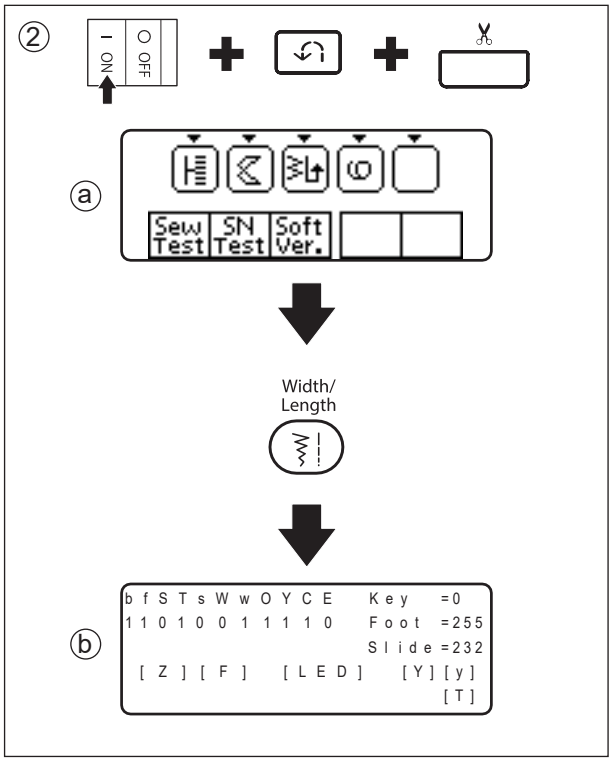
2. The self-diagnostic program

This machine has the self-diagnostic program to locate the defected electronic part.
If your machine functions are not normally, run this program.

1. Turn off the power switch.



2. As shown on the right, turn on the power switch while holding down the button.
   The mode selection screen is displayed on the LCD. (a)
   Pressing the Width/Length button activates the self-diagnostic program. The status of the electrical parts is displayed on the LCD. (b)



3. See next pages to check each electrical part.

4. To quit this program, turn off the power switch. When you return to the mode selection screen, press .

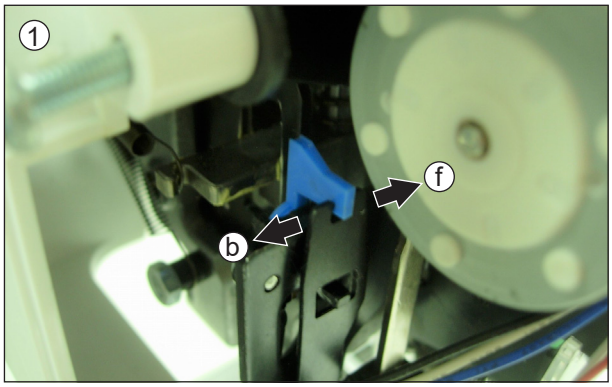
⚠CAUTION:
When you turn on the power switch, do not press buttons except for the reverse button and the thread cutter button. It may cause malfunction.

(1) Condition of switches and sensors

The self-diagnostic program can check the status of each switch, sensor etc.
The condition of each switch and sensor is indicated as follows.

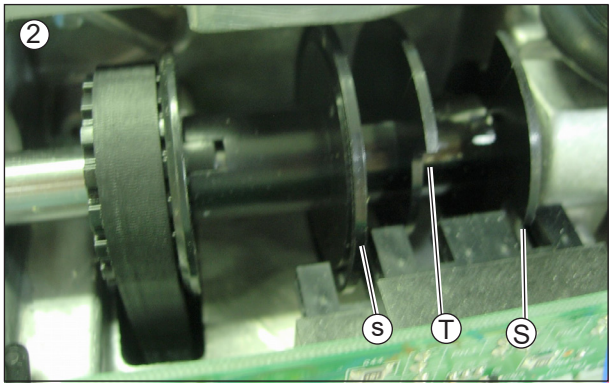
1. Buttonhole lever switches: b, f
   Lower the buttonhole lever and check these switch by pulling or pushing this lever.

   b: Buttonhole lever switch -Rear
   1 = Lever is pulled, 0 = Neutral.
   f: Buttonhole lever switch -Front
   1 = Lever is pushed, 0 = Neutral.



2. STs sensors
   These sensors are intercepted by the slit plates on the upper shaft.
   Stop sensor = Stop slit,
   Timing sensor = Timing slit,
   Speed sensor = Speed slit

   Turn the hand wheel and check the response of each sensor.
   S: Stop sensor,
   1 = intercepted, 0 = not intercepted
   T: Timing sensor,
   1 = intercepted, 0 = not intercepted
   s: Speed sensor, LED
   1 = intercepted, 0 = not intercepted

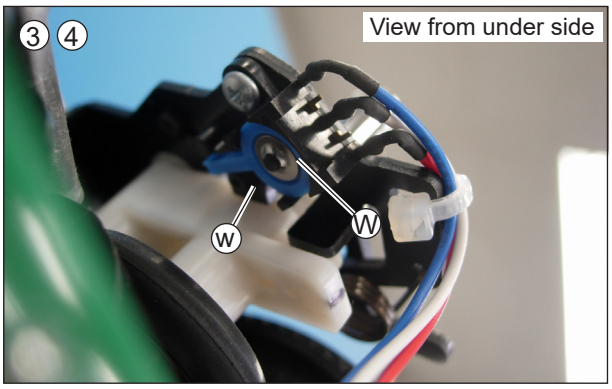


3. Bobbin Winder Switch: W
   Move the bobbin winder spindle left or right and check this switch.

   1 = Bobbin winder spindle is in left position.
   0 = Bobbin winder spindle is in right position.

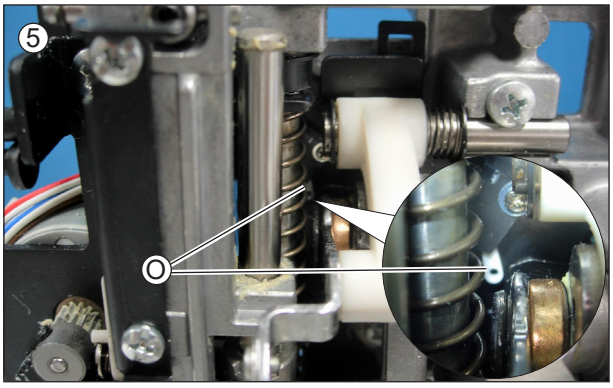
4. Bobbin Winding Stop Switch: w
   Move the bobbin winder stopper to the right and check this switch.

   1 = Bobbin winder stop is pushed to the right
   (Bobbin winding is full.)
   0 = Bobbin winder stop is not pushed .
   (Bobbin winding is not full.)



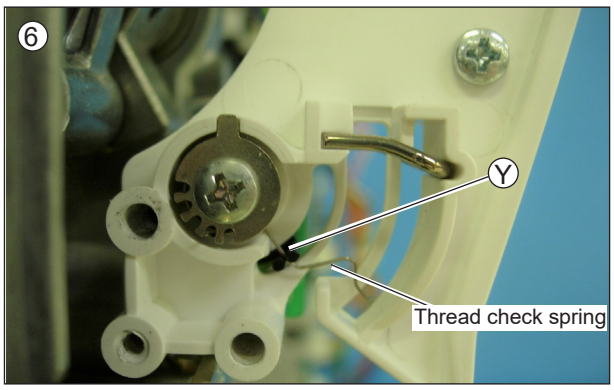
5. Presser foot switch: O
   Lower or lift the presser foot lifter and check the response of this swtich.

   1 = Presser foot is lowerd
   0 = Presser foot is lifted



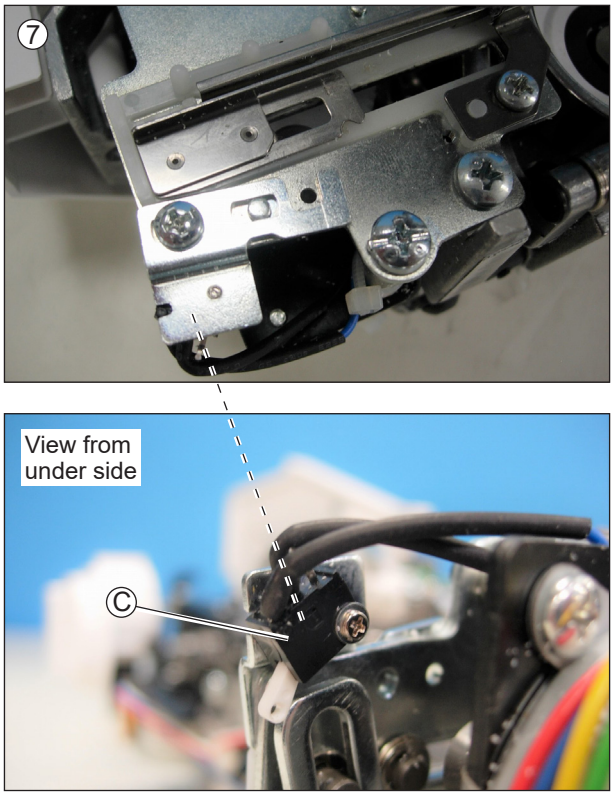
6. Upper thread sensor: Y
   1 = Thread check spring is pulled
   0 = Thread check spring is NOT pulled

   Thread the upper thread.
   Move the thread check spring up and down by pulling or releasing the upper thread, and check the reaction of the sensor.

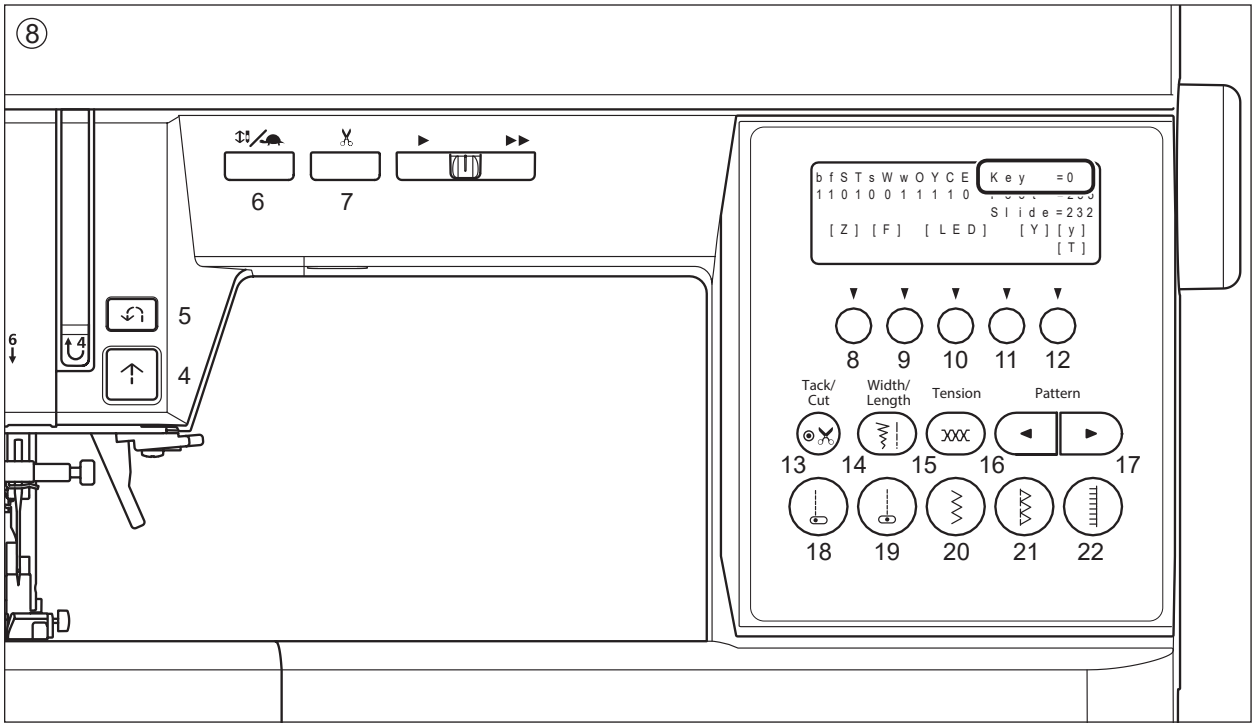


7. Thread cutter origin sensor: C
   1 = Thread cutter origin sensor is ON
   0 = Thread cutter origin sensor is OFF

   Usually this sensor is ON.
   If the sensor is OFF, it is considered that the thread cutter device is not at the origin or is damaged. In such a case, remove the front enclosure and confirm condition of the thread cutter device or sensor.

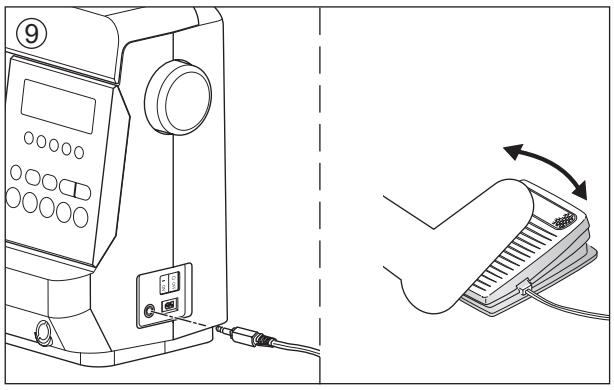


8. Response of buttons: Key =
   By pressing each button on control panel, numbers on the LCD will change as follows :
   For example, when you press the button “4” (the start/stop button), displayed “Key=4”.
   And, when you press the button “22”, back to the mode select screen.
   When no button is selected, displayed “Key=0”.



9. Condition of the foot controller: Foot=
The condition of the foot controller is indicated in numerical value. (0-71, 255)

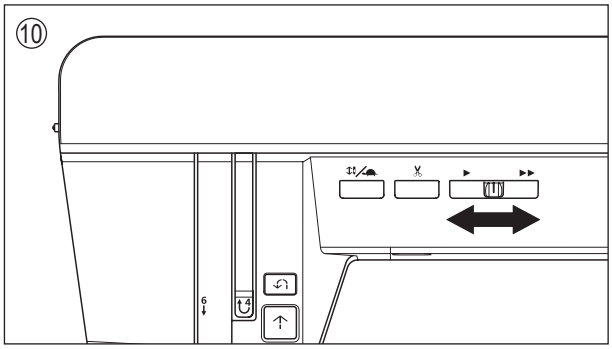
Foot controller is not connected: 255
Foot controller is connected: 66-76
Press foot controller: When pressing on the controller, the numerical value changes depending on the speed. The faster the speed, the smaller the value, and when pressing to the maximum it becomes 0.



10. Speed control button: Slide=
The condition of the speed slide button is indicated in numerical value. (0-255)
Sliding the speed control button left or right changes the value according to the speed. (0-255)

Slide to the left (slow down): The value becomes smaller depending on the speed.
Slide the button all the way to the left end and set the slowest speed, the value will be 0.

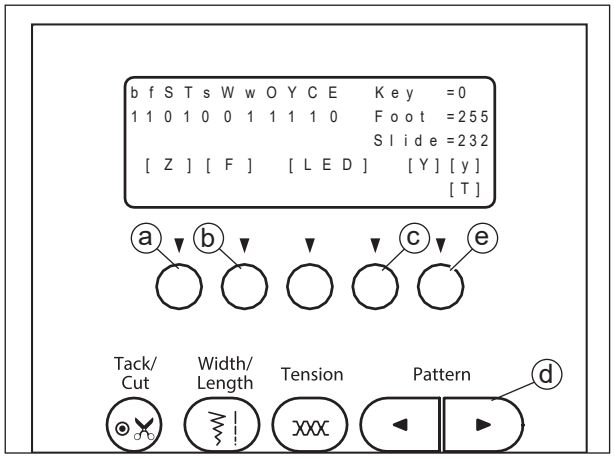
Slide to the right (speed up): The value becomes larger depending on the speed.
Slide the button all the way to the right end and up the speed to the fastest, the value will be 255.



(2) Confirm the start position of each pulse motor

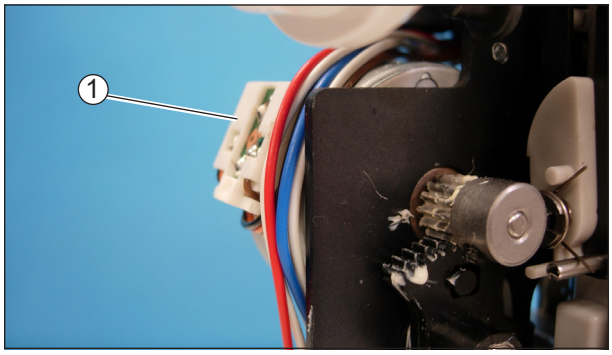
During self-diagnostic program startup;

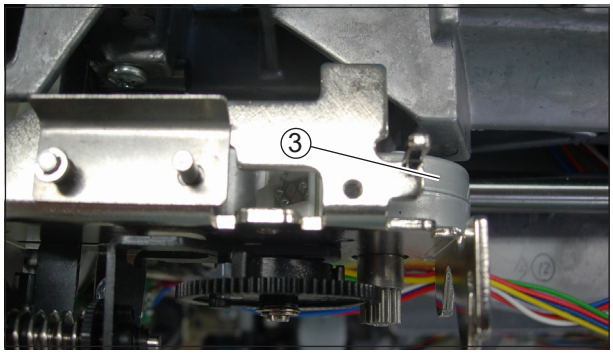
Switch to the pulse motor origin check point by pressing below buttons.

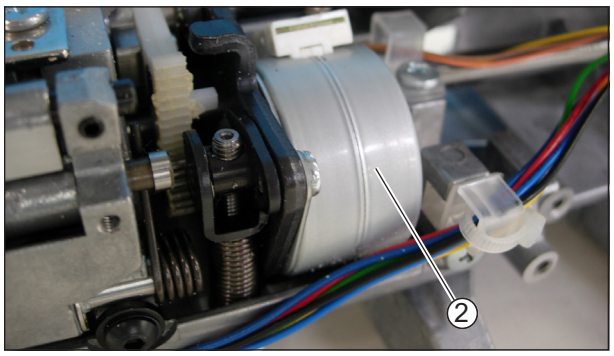


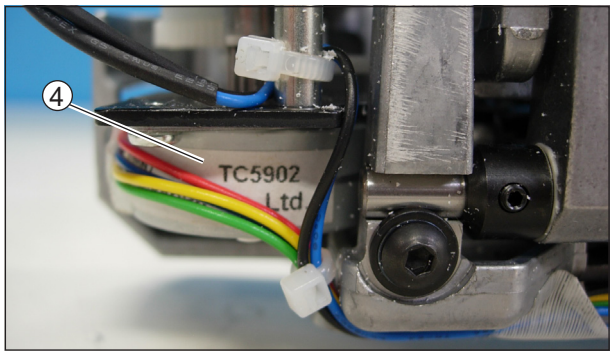
Pressing the button (a), Z pulse motor moves to the start position.
Pressing the button (b), F pulse motor moves to the start position.
Pressing the button (c), thread tension release pulse motor moves to the start position.
Pressing the button (d), thread cutter pulse motor moves to the start position.
Pressing the button (e), power switch of thread tension release pulse motor turns on.

"ON" is indicated on the lower right of the LCD.
Pressing the (e) again or (c), the power is turn off and "ON" indication also disappears.







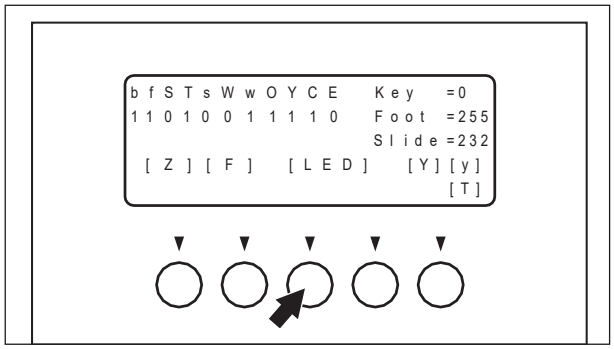


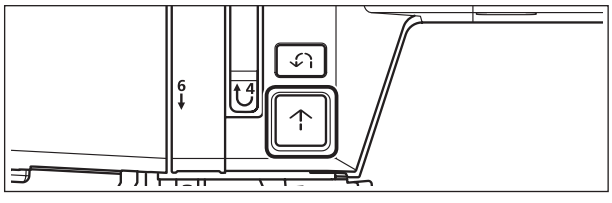
(3) Confirm LED lights

During self-diagnostic program startup;

Every time you press the center function button, the LED lights repeats turning on / turning off.

1. Monitor lamp (Start/Stop button) Green on
2. Monitor lamp (Start/Stop button) Red on
3. White LED light turns off
4. LCD back light turns off
5. Monitor lamp turns off
6. Return to step 1





3. Electrical Parts Connection

(1) 36887 CPU Board Assy.
(2) 36826 Power Circuit Assy.
(3) 35233 Controller Jack Assy.
(4) 35157 Thread Cutter Switch Assy.
(5) 35409 Thread Cutter Pulse Motor
(6) 32894 F Pulse Motor
(7) 32958 Z Pulse Motor
(8) 33288 Tension Release Pulse Motor
(9) 36357 LED Board Assy. (C)
(10)35053 Thread Sensor Board Assy.
(11)35081 Presser Foot Switch Assy.
(12)35214 BH Switch Assy.
(13)32842 Bobbin Winder Switch Assy.
(14)36557-2 Information Plate
(15)36555 Control Panel
(16)36559 DIS Board Assy.
(17)LD295 Relay Board FFC
(18)36434 LCD
(19)LD336-2 Flexible Flat Cable
(20)36353 Switch Board Assy.
(21)36354 Switch Board Assy.