PFirst Edition: 05 September 2017

SERVICE MANUAL

MC6700P

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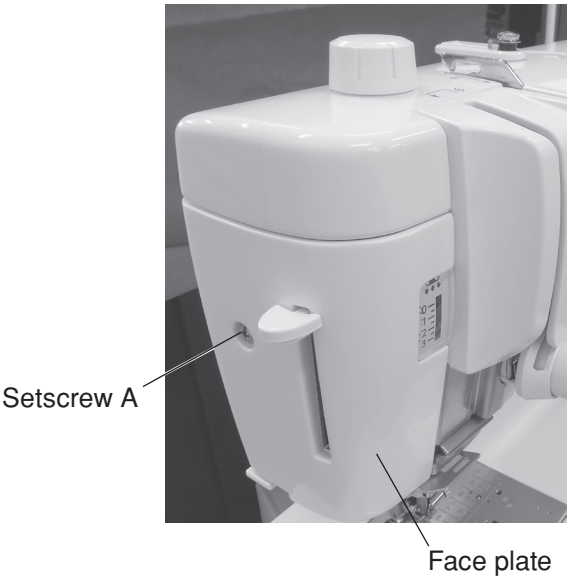
Changing external parts

Replacing Electronic Components

Mechanical Adjustment

Changing external parts (1)

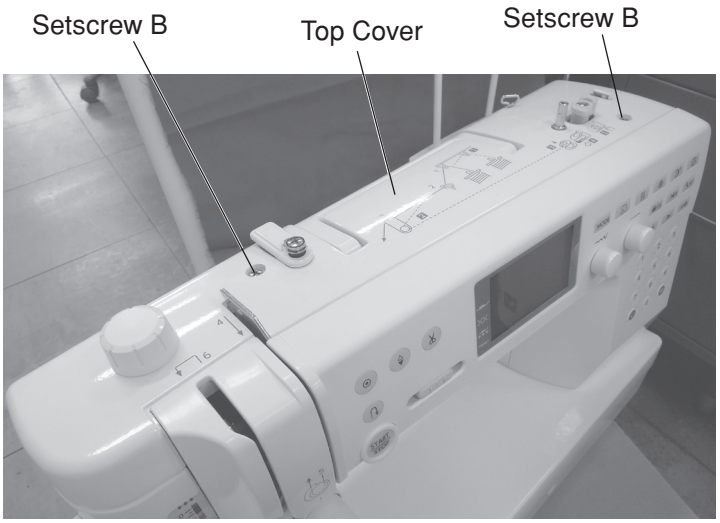


Face plate

To remove and attach the:

1. Remove the setscrew A to remove the face plate. fix the face plate with the setscrew A.

Top cover



To remove:

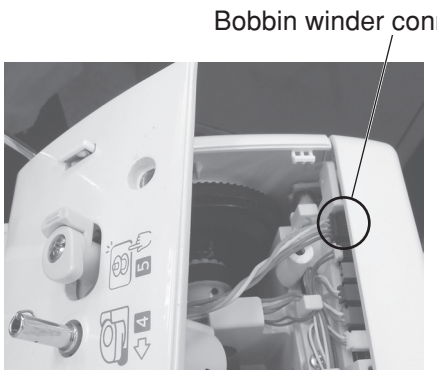
1. Remove the setscrews B (2 pcs.) .

2. Remove the bobbin winder connector and remove the top cover.

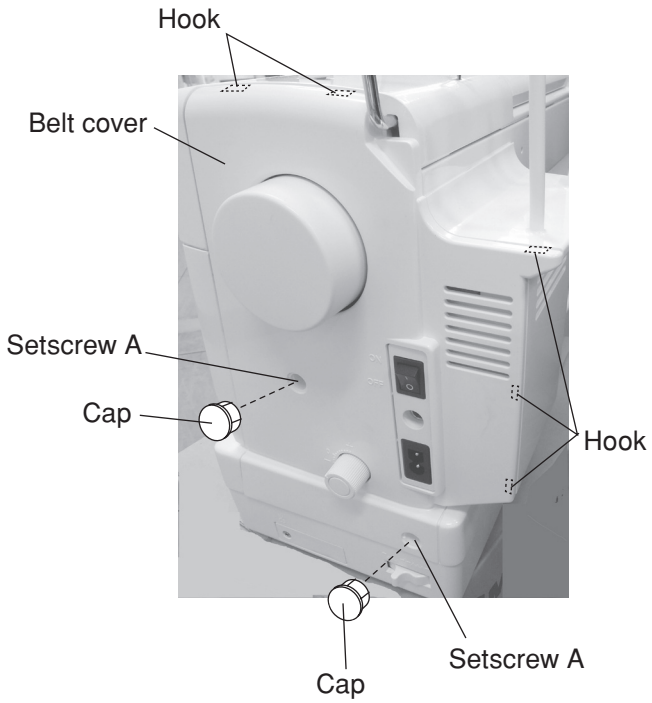
To attach:

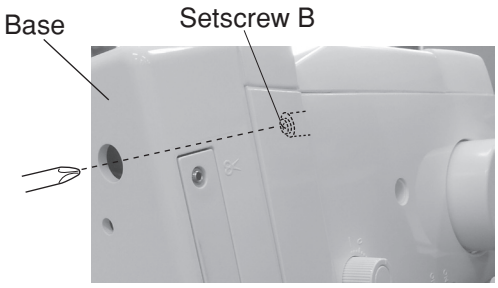
3. Insert the bobbin winder connector and fix the cop cover with setscrews B (2 pcs.) .

   * Turn the foot pressure dial lightly to attach the top cover, if necessary.



Changing external parts (2)





Belt cover

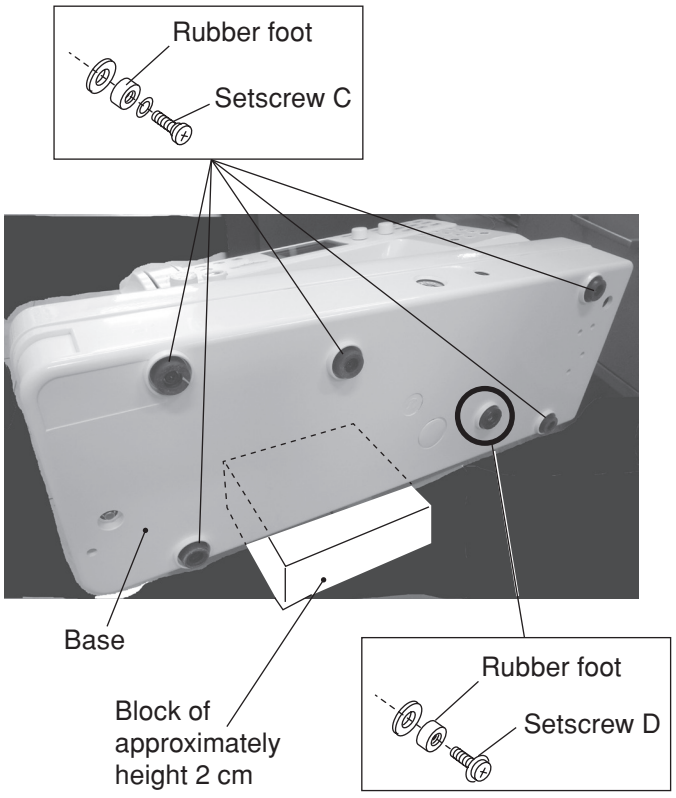
To remove:

1. Remove the top cover.
   Remove the caps and setscrews A (2 pcs.).

2. Loosen the setscrew B and remove the belt cover.

To attach:

3. Attach the belt cover and tighten the setscrews A (2 pcs.) and setscrew B.



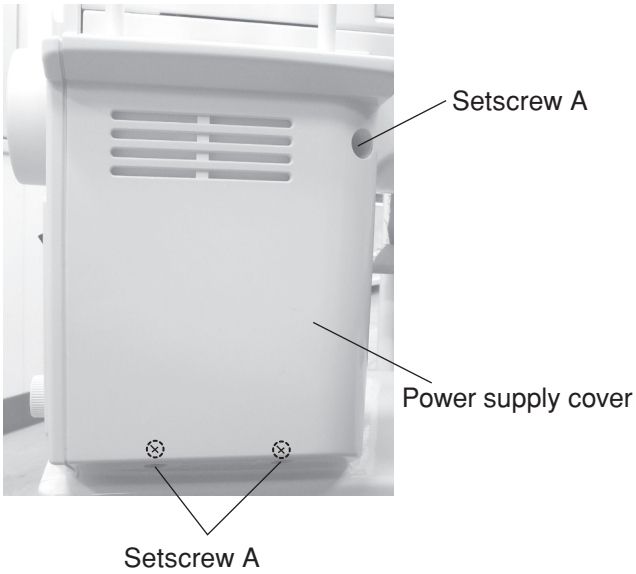
Base

To remove and to attach:

1. Remove the setscrews C (5 pcs.) and setscrew D to remove the base.
   Fix the base with setscrews C (5 pcs.) and setscrew D.

   * Note that different rubber feet are used for the setscrew C and setscrew D.

Changing external parts (3)



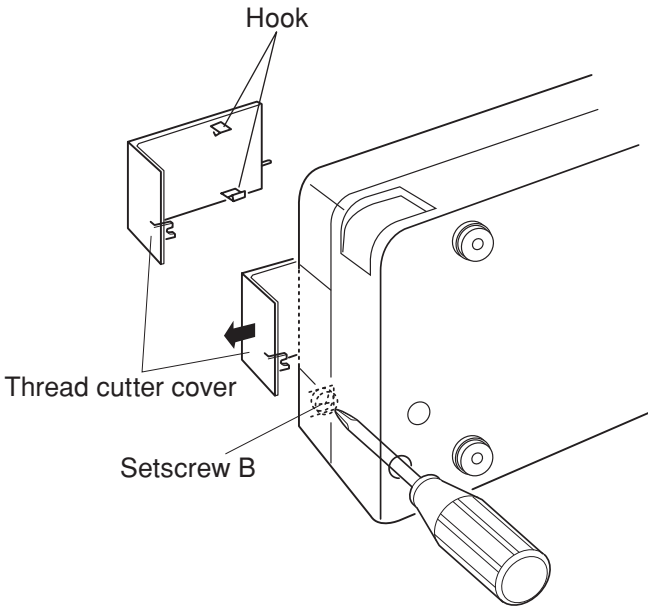
Power supply cover

To remove:

1. Remove the setscrews A (3 pcs) and remove the power supply cover.

To attach:

2. Fix the power supply cover with setscrews A (3 pcs.).



Thread cutter cover

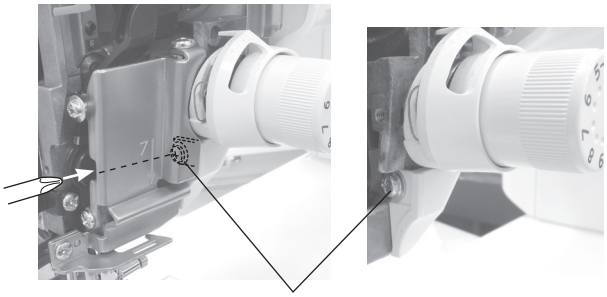
To remove:

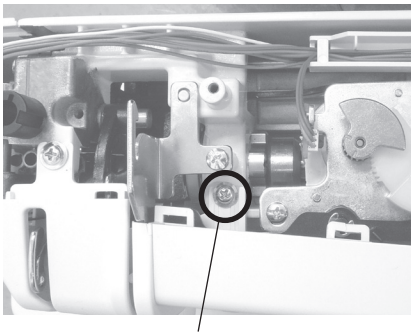
1. Loosen the setscrew B and remove the thread cutter cover.

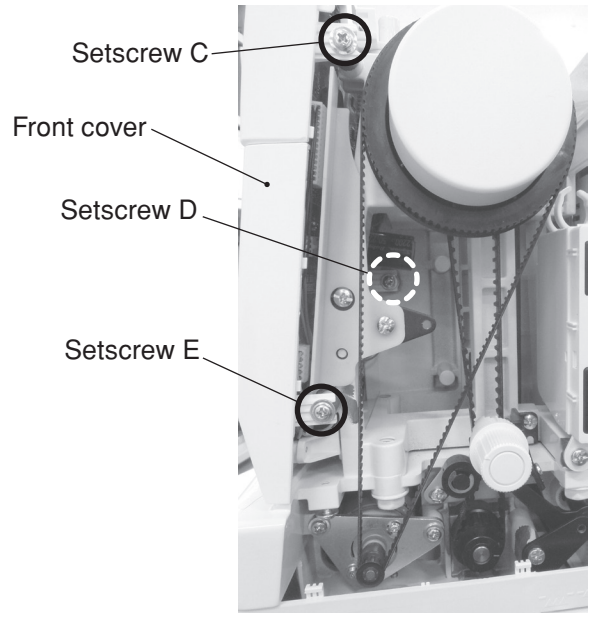
To attach:

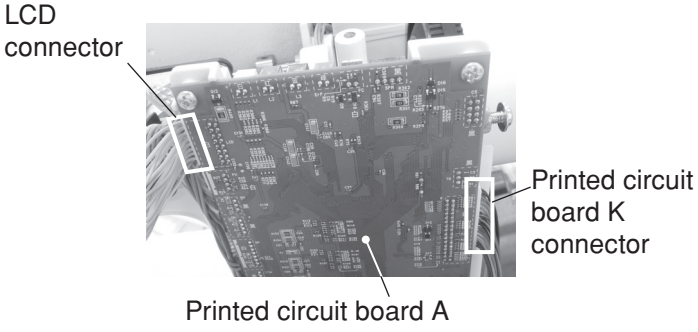
2. Fix the thread cutter cover with the setscrew B.

Changing external parts (4)









Front cover

To remove:

Remove the face plate, top cover and belt cover.

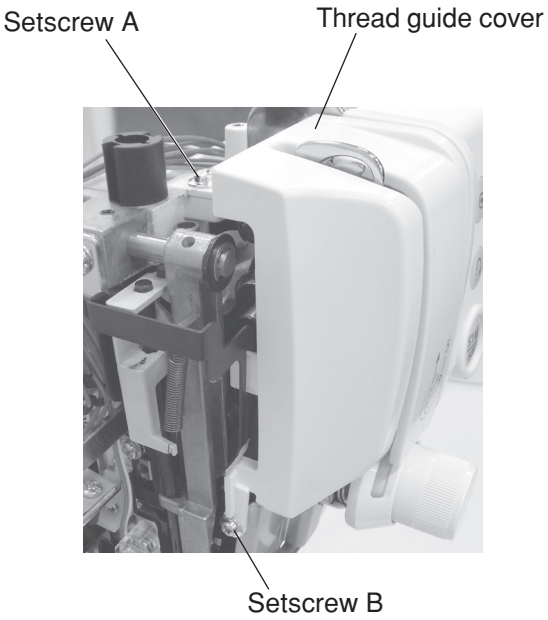
2. Loosen the setscrews A, B, C, D and E (5 pcs.).

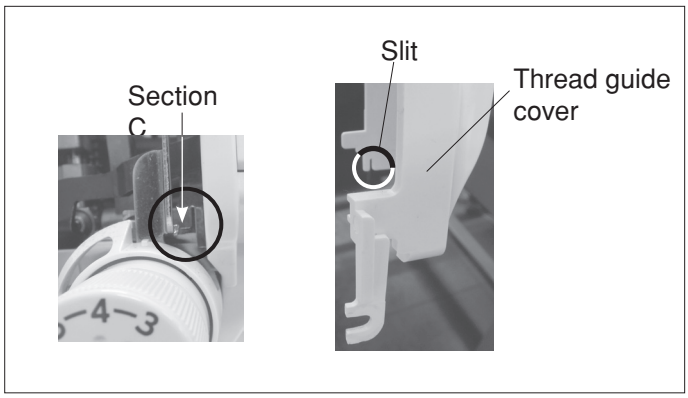
3. Disconnect the LCD connector and printed circuit board K connectors (2 pcs.) from the printed circuit board A, and remove the front cover.

To attach:

4. Follow the steps of removal procedure in reverse.

Changing external parts (5)





Thread guide cover

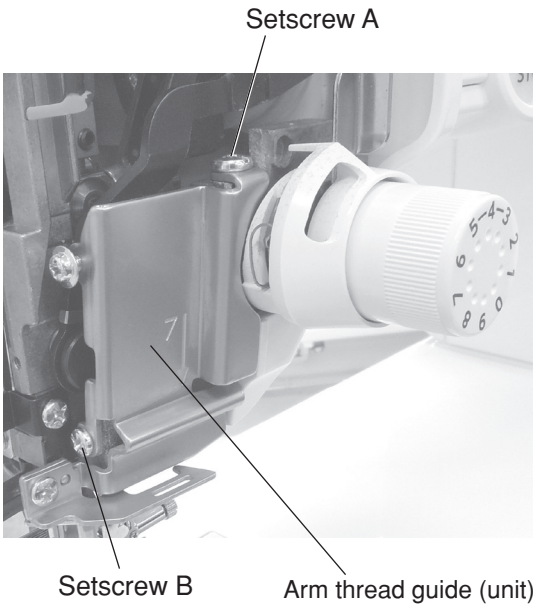
To remove:

1. Remove the face plate and top cover.
2. Loosen the setscrews A and B, and remove the thread guide cover.

To attach:

3. Follow the steps of removal procedure in reverse.

Changing external parts (6)



Arm thread guide (unit)

To remove:

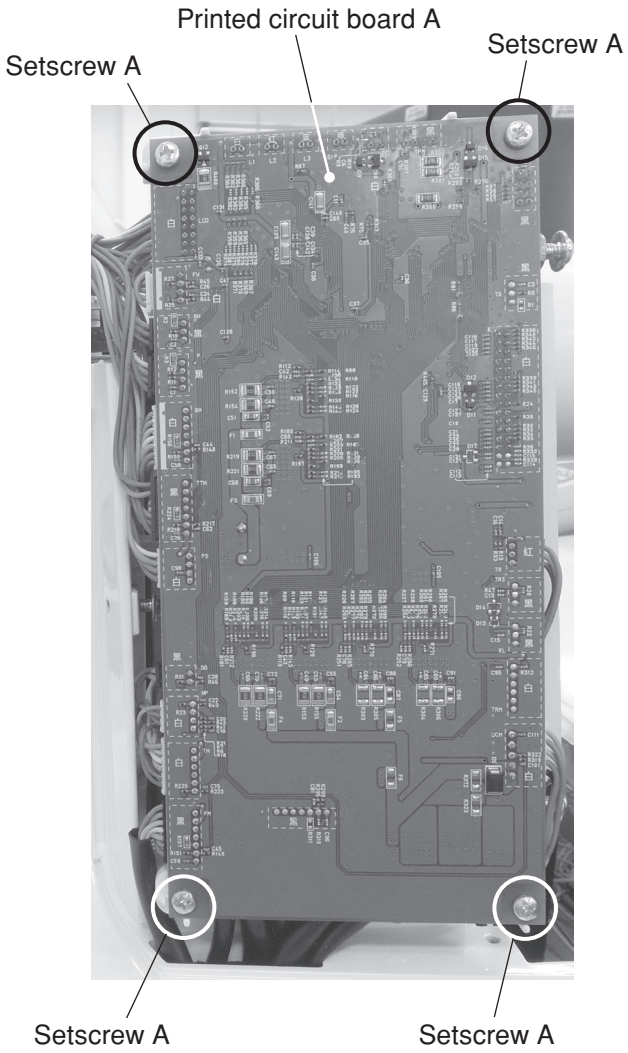
Remove the face plate, top cover and thread guide cover.

2. Loosen the setscrews A and B, and remove the arm thread guide (unit).

To attach:

3. Follow the steps of removal procedure in reverse.

Changing the printed circuit board A



To remove:

1. Remove the front cover.

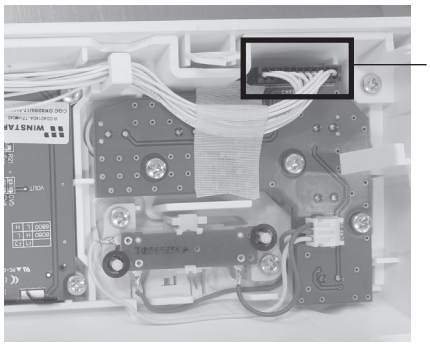
2. Remove the setscrews A (4 pcs.) and disconnect all the connectors from the printed circuit board A, and remove the printed circuit board A.

To attach:

3. Follow the steps of removal procedure in reverse.

* See page 11 for disconnecting and connecting connectors.

Changing the printed circuit board K



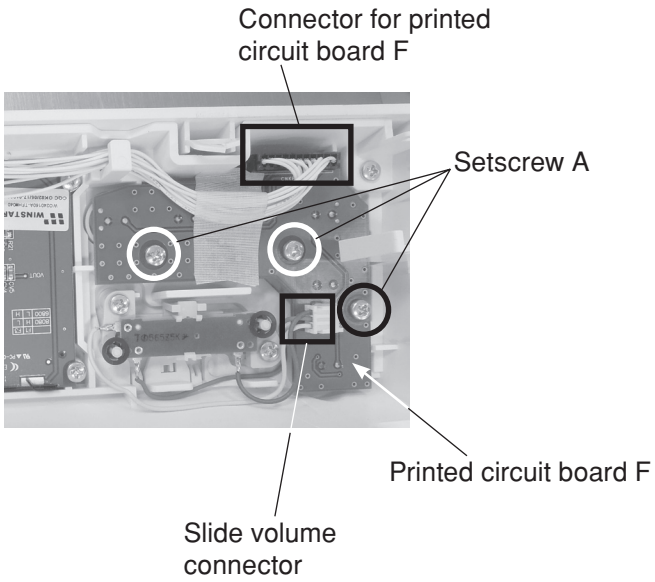
To remove:

1. Remove the front cover.
2. Disconnect the connector for printed circuit board F.
3. Remove the setscrews A (6 pcs.) and printed circuit board K.
4. Disconnect the relay cable.

To attach:

5. Follow the steps of removal procedure in reverse.

Changing the printed circuit board F and slide volume



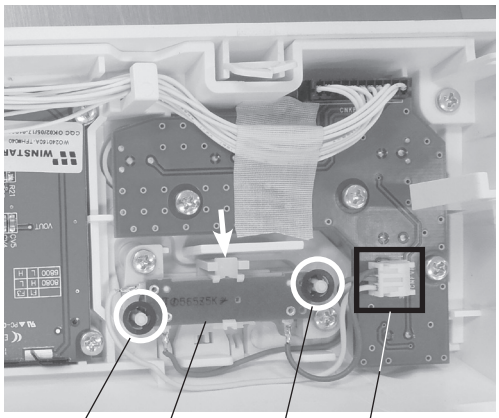
Printed circuit board F

To remove:

1. Remove the front cover.
2. Disconnect the connector for printed circuit board F and slide volume connector.
3. Remove the setscrews A (3 pcs.) and reomve the printed circuit board F.

To attach:

4. Follow the steps of removal procedure in reverse.



Slide volume

To remove:

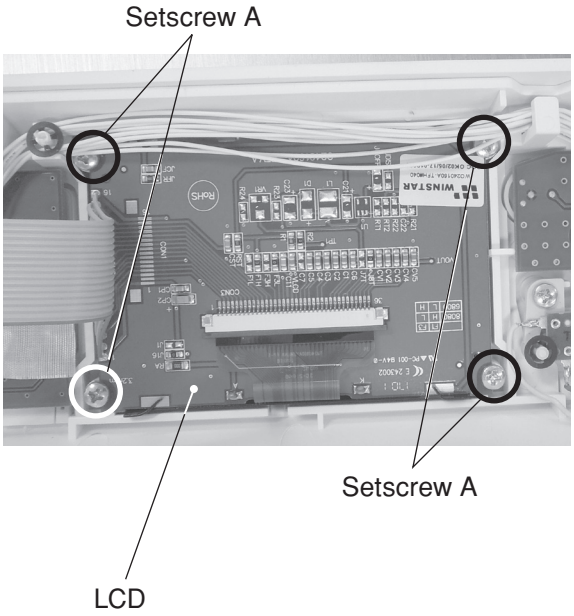
1. Remove the front cover.
2. Disconnect the slide volume connector from the printed circuit board F.
3. Remove the snap rings CS-3 (2 pcs.) and remove the slide volume.

To attach:

4. Follow the steps of removal procedure in reverse.

* Insert the projection of slide volume into the convex of speed control slider and fix it with the snap rings (indicated by an arrow).

Changing LCD



To remove:

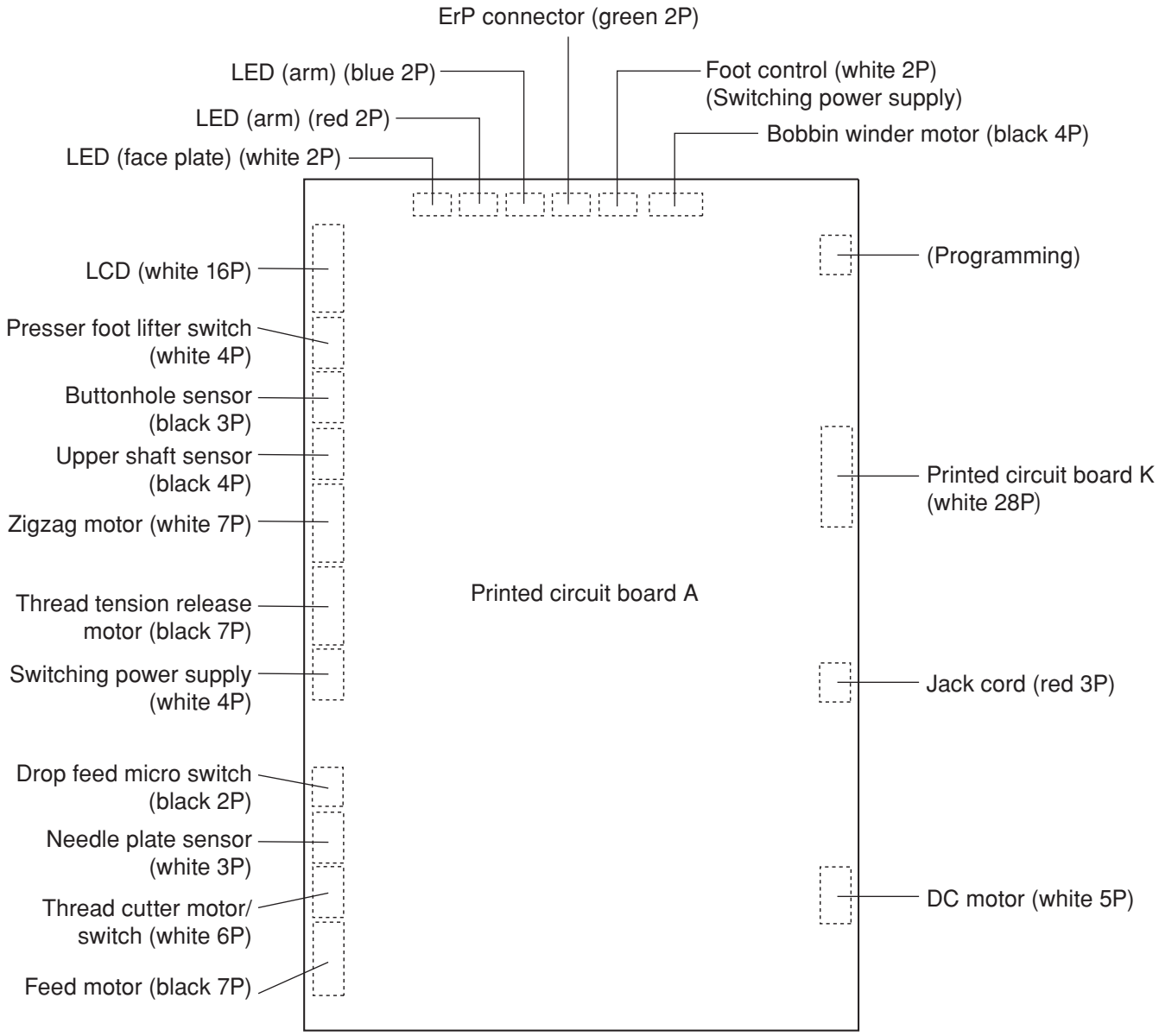
1. Remove the front cover.
2. Remove the setscrews A (4 pcs.) and remove the LCD.

To attach:

3. Follow the steps of removal procedure in reverse.

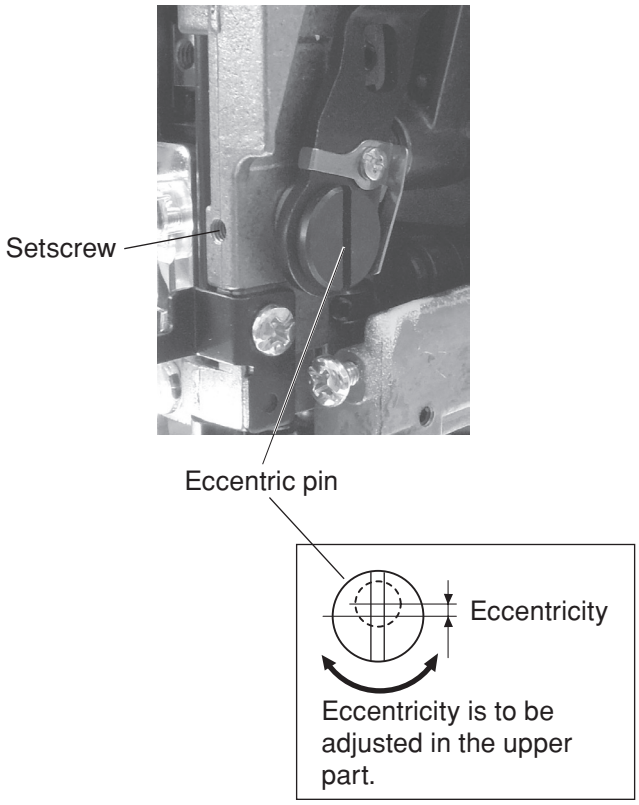
Wiring diagram

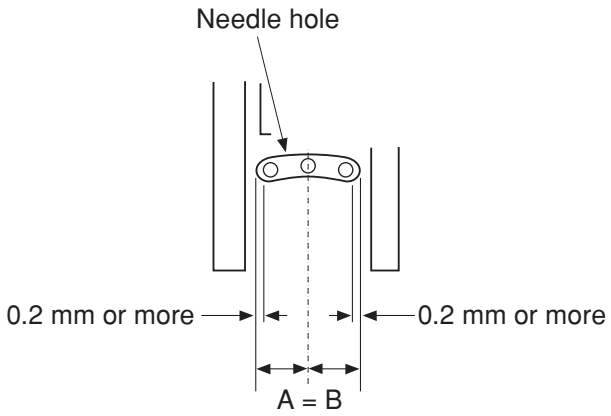
Refer to the board A schematic for locating the connectors on the printed circuit board A.



Needle drop position

When the straight stitch is selected, the needle should be positioned in the center of the needle plate hole.
When the zigzag stitch is selected with the maximum stitch width of 9.0, the clearance between the side of the needle and needle hole should be 0.2 mm or more.





1. Remove the face plate. Select straight stitch #1 ( ) in mode 1 and check the needle drop position. Select zigzag stitch #5 ( ) in mode 1 and check the needle drop position.

2. To adjust the needle drop position, loosen the setscrew and turn the eccentric pin.
   (The direction of eccentricity should be in the upper part.)
   * Remove the arm thread guide (unit) (see page 6).

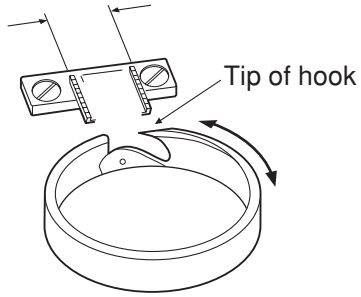
3. Tighten the setscrew.

4. Attach the face plate.

Backlash between hook drive gear and lower shaft gear

The gears turn smoothly and rotary play of the hook should be 0.8 mm or less when the tip of hook is within the width of the feed dog as shown below.

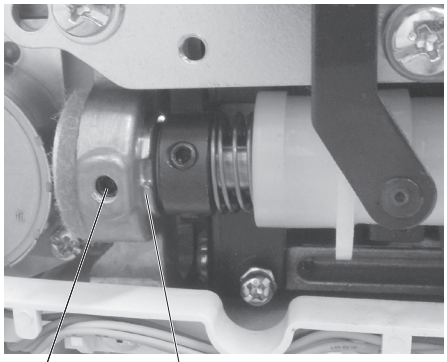
Play: 8 mm or less with hook tip within feed dog width

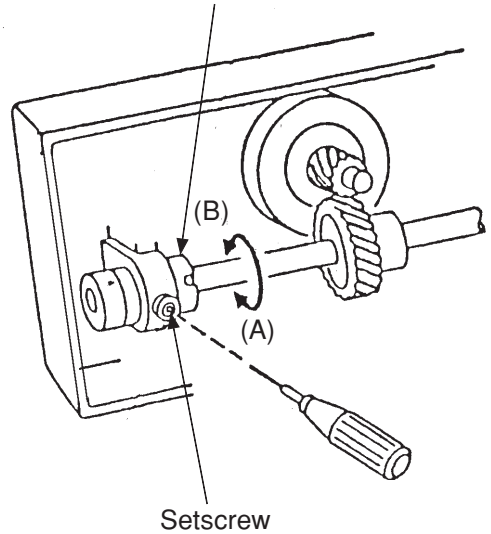


1. Remove the base.
2. Remove the needle, needle plate and bobbin holder.
3. Turn the handwheel toward you so that the tip of the rotary hook is within the width of feed dog. Turn the rotary hook and check the clearance .
4. If the backlash is too much or too little, loosen the setscrews of lower shaft bushings (front/rear) and adjust the backlash following the adjustment procedure in step 5.
   * Turn the lower shaft bushings (front and rear) in the same direction simultaneously and evenly.
5. If the backlash is too much, turn the lower shaft bushing in direction A.

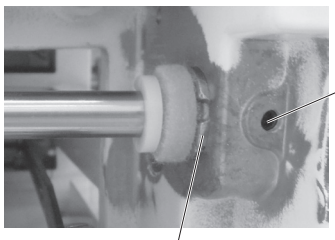
   If the backlash is too little, turn the lower shaft bushing in direction B.
6. Tighten the setscrews.
   * After adjusting the backlash, check the needle bar hight and hook timing. Adjust, if necessary.
7. Attach the bobbin holder, needle plate, presser foot and needle.
8. Attach the base.

Lower shaft bushing of the front side



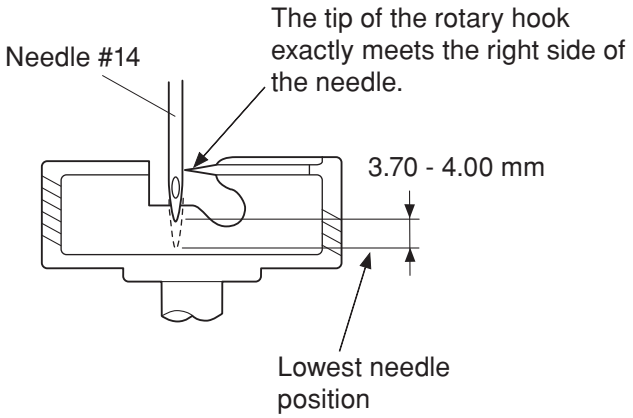


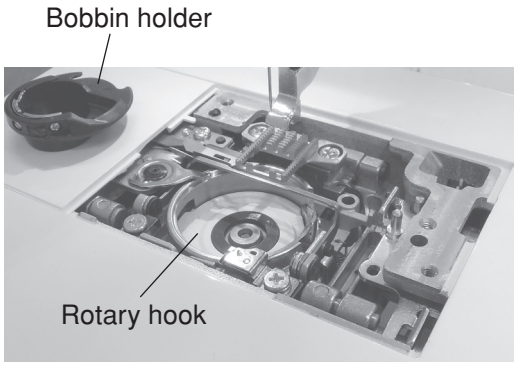
Lower shaft bushing on the rear side

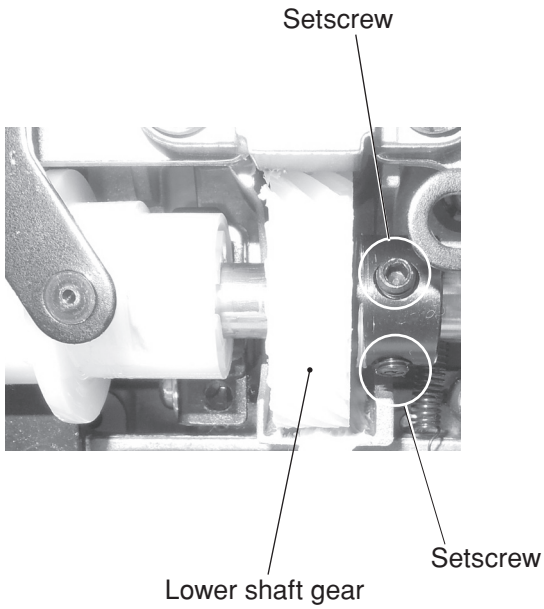


Hook timing

The amount of ascending travel of the needle bar from its lowest position to the position where the tip of the rotary hook exactly meets the right side of the needle in the left needle position (“0.0”) should be 3.70 to 4.00 mm.



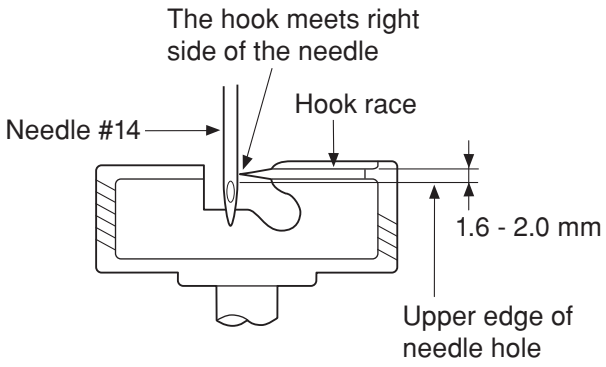


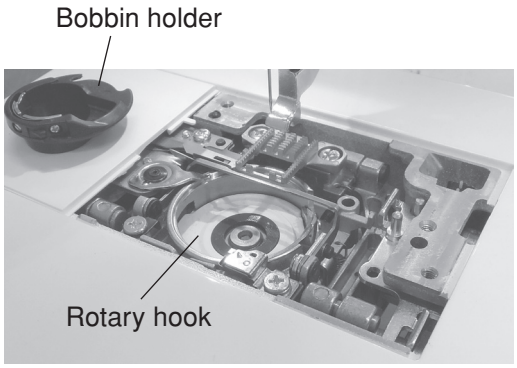


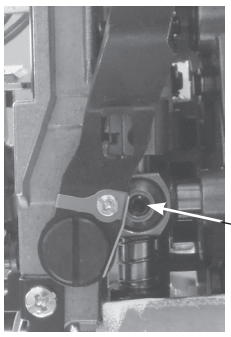
1. Attach the #14 needle.
2. Turn the power switch on and select the straight stitch #1 ( ). Set the zigzag width at “0.0” (left needle position) and turn the power switch off.
3. Remove the presser foot, needle plate and bobbin holder.
4. Lower the needle bar to the lowest position by turning the hand wheel toward you.
5. Remove the base.
6. Loosen the setscrews (2 pcs.) of the lower shaft gear.
7. Move the needle bar 3.85 mm from the lowest position by turning the hand wheel toward you.
8. Turn the lower shaft gear until the tip of the hook meets the right side of the needle and tighten the setscrews (2 pcs.).
   * After adjusting the hook timing, check the needle bar height.
9. Attach the bobbin holder, needle plate and presser foot.
10. Attach the base.

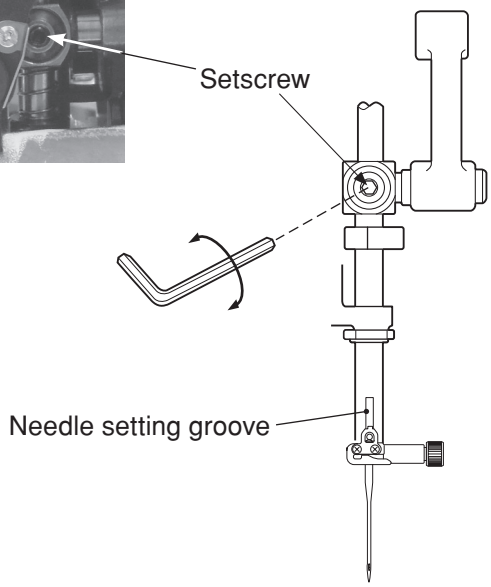
Adjustment of needle bar height

Before proceeding with this adjustment, check the hook timing.
The distance between the upper edge of the needle eye and the tip of the hook should be in the range of 1.6 - 2.0mm when the tip of the hook meets right side of the needle in the left needle position (“0.0”) as the needle ascends from its lowest position.





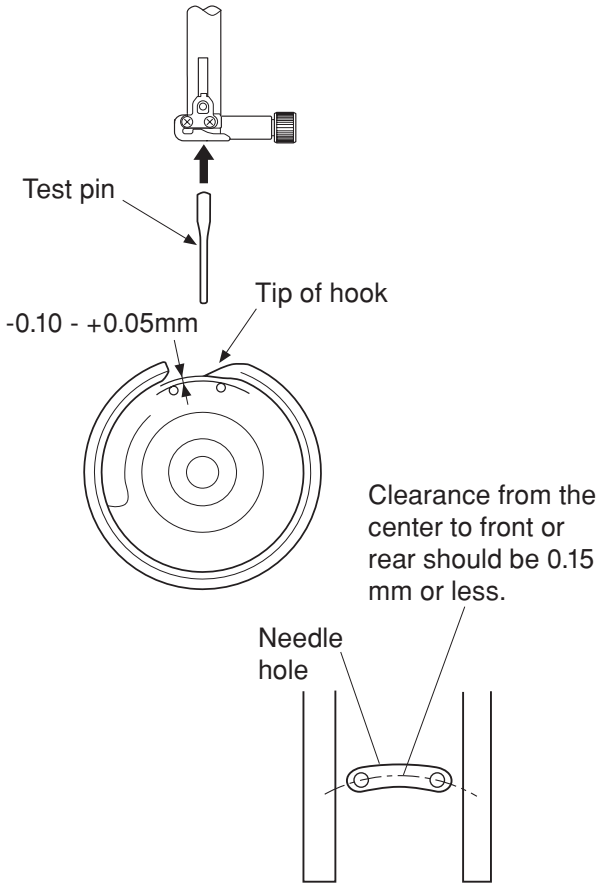




1. Attach the #14 needle.
2. Turn the power switch on and select the straight stitch #1 ( ). Set the zigzag width at “0.0” (left needle position).
   * Do not turn the power switch off.
3. Remove the presser foot, needle plate and bobbin holder.
4. Remove the face plate and arm thread guide (unit).
5. Turn the handwheel toward you until the tip of the hook meets right side of the needle.
6. Loosen the setscrew with an allen wrench. Move the needle bara to adjust needle bar height as 1.8 mm.
7. Tighten the setscrew with the needle setting groove to the front.
8. Attach the arm thread guide (unit) and face plate.
9. Attach the bobbin holder, needle plate and presser foot.

Clearance between needle and tip of the rotary hook

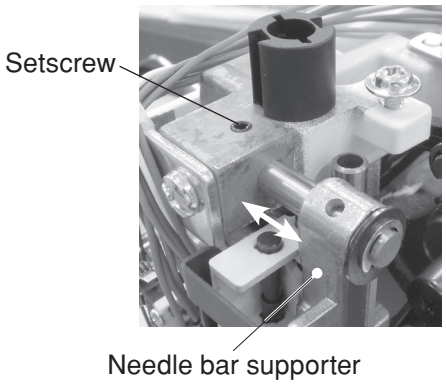
The clearance between needle and the tip of the rotary hook should be between -0.10 and +0.05 mm.



Clearance adjustment 1

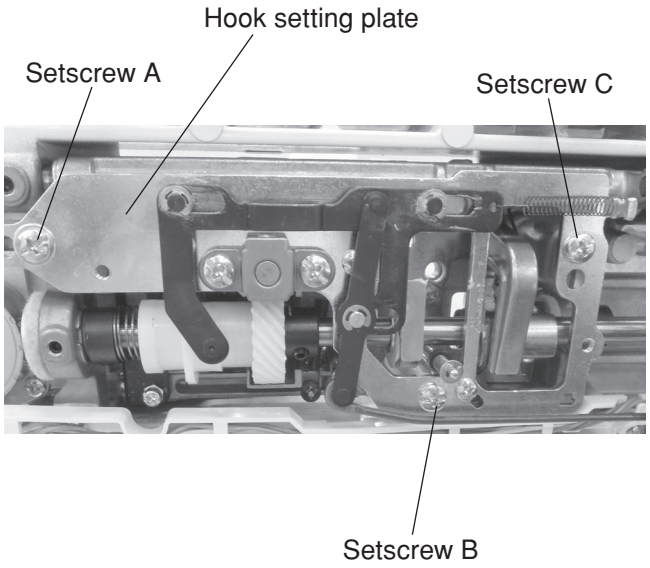
1. Remove the top cover and face plate.
2. Remove the needle, needle plate and bobbin holder.
3. Attach the test pin.
4. Turn the power switch on and select the zigzag stitch #5 ( ) and set the stitch width to the maximum “9.0”.
5. Loosen the setscrew and adjust the clearance between the needle and the tip of the rotary hook as -0.10 - +0.05 mm, by moving the needle bar supporter in the directions of arrows.
6. Tighten the setscrew.
7. Attach the needle plate and check if the clearance from the center to front or rear is 0.15 mm or less.

* If the clearance is more than 0.15 mm, adjust the clearance in the procedure of clearance adjustment 2.



Clearance between needle and tip of the rotary hook

The clearance between needle and the tip of the rotary hook should be between -0.1 and +0.05 mm.



Clearance adjustment 2

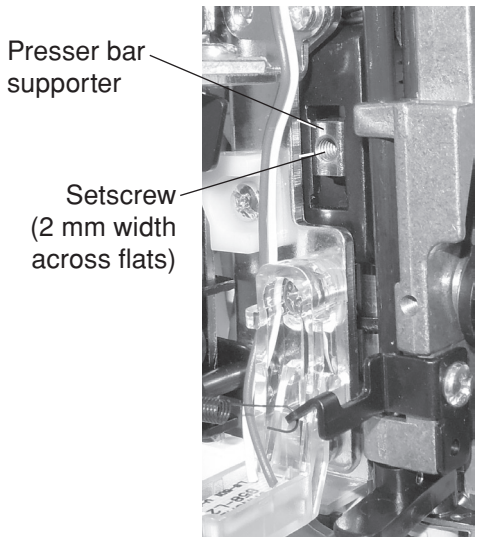
1. Remove the base.
2. Loosen the setscrews A, B and C, and tighten setscrew C lightly.
3. Adjust the clearance by moving the hook setting plate. Turn the handwheel and make sure that the clearance between the needle and the tip of the rotary hook is -0.10 - +0.05 mm.
4. Tighten the setscrews A, B and C firmly.

* After adjusting the clearance by the procedure of clearance adjustment 2, check the backlash between hook drive gear and lower shaft gear, hook timing and needle bar hight. Adjust, if necessary.

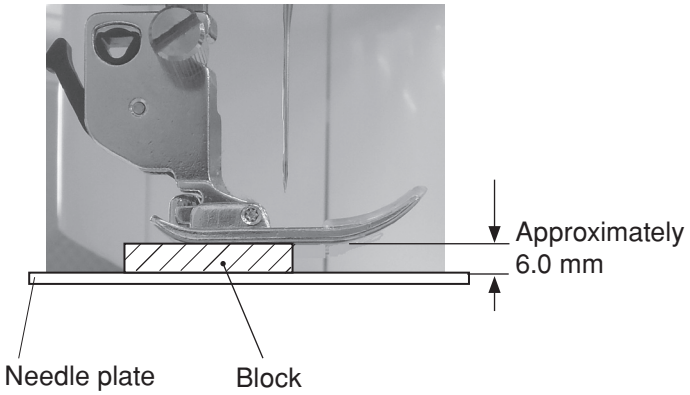
5. Attach the base, bobbin holder, needle plate, presser foot and needle.

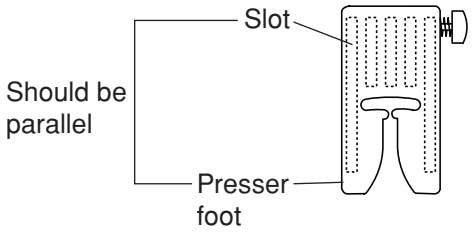
Adjustment of height and direction of presser bar

The clearance between the presser foot and the surface of the needle plate should be 6.0 mm when the presser foot is raised.
The presser foot should be parallel to the slot of the feed dog teeth when attached.



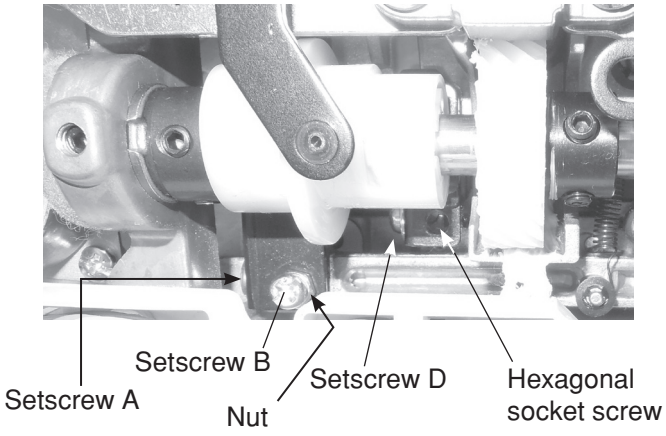
1. Raise the presser foot lifter.
2. Attach the zigzag foot A.
3. Set the foot pressure at “3”.
4. Drop the feed dog.
5. Remove the face plate.
6. Loosen the setscrew on the presser bar supporter to adjust the presser foot direction so that the slot for the feed dog teeth and the zigzag foot should be parallel.
7. Place a 6 mm block between the presser foot and the needle plate. Tighten the setscrew holding the presser foot against the block.

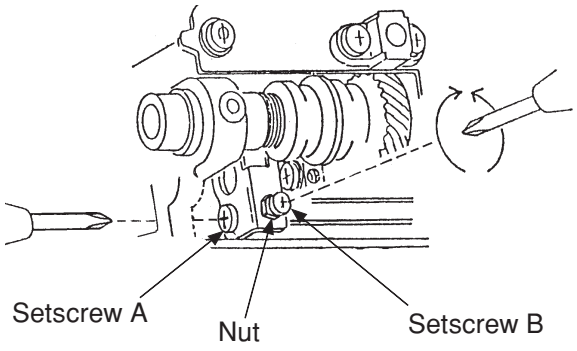


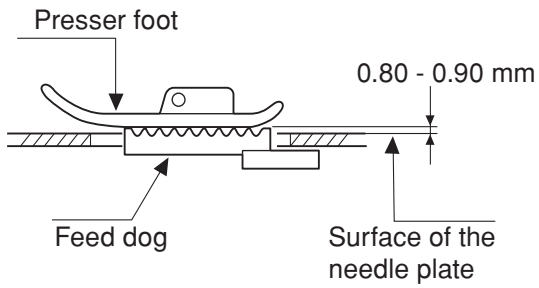


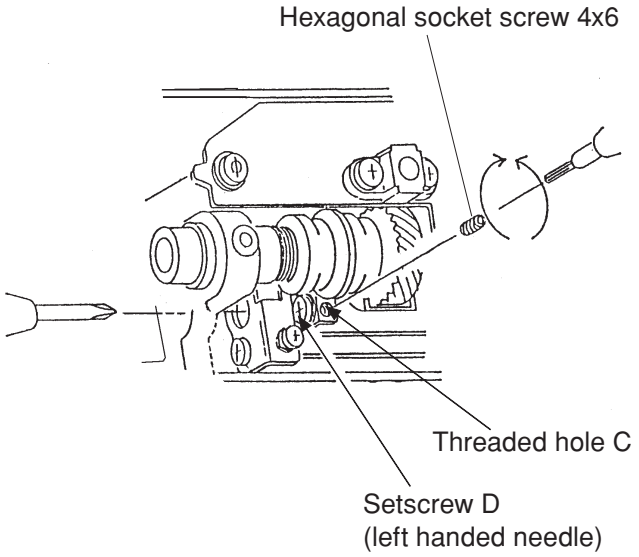
To adjust the feed dog height

When the pressure adjusting dial is at “3” and the presser foot is lowered, the highest position of the feed dog should be 0.80 to 0.90 mm from the surface of the needle plate.









To adjust:

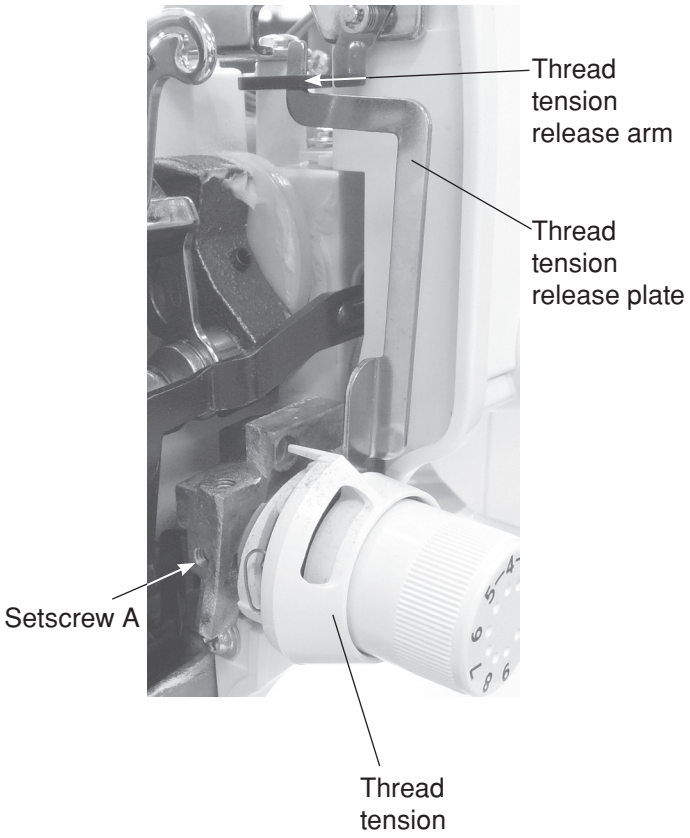
1. Turn the power switch on and set the stitch length to the maximum. Turn the power switch off.
2. Remove the base and thread cutter cover.
3. Set the pressure adjusting dial is at “3” and lower the presser foot.
4. Turn the handwheel toward you to raise the feed dog to its highest position.
5. Loosen the setscrew A.
6. Loosen the nut. Adjust the feed dog height by turning the setscrew B.
7. Tighten the nut.
8. Tighten the setscrew A.

Feed dog parallel adjustment:

If the feed dog is not parallel to the surface of the needle plate at its highest position, adjast as follows:

9. For this adjustment, a hexagonal socket screw 4x6 is required. Insert the hexagonal socket screw into threaded hole C until it stops.
10. Loosen the setscrew D. (Left handed screw)
11. Turn the hexagonal socket screw 4x6 and make sure that the feed dog is parallel.
12. Tighten the setscrew D.
13. Loosen the hexagonal socket screw and remove it.
14. Attach the thread cutter cover and base.

To replace needle thread tension unit



To remove:

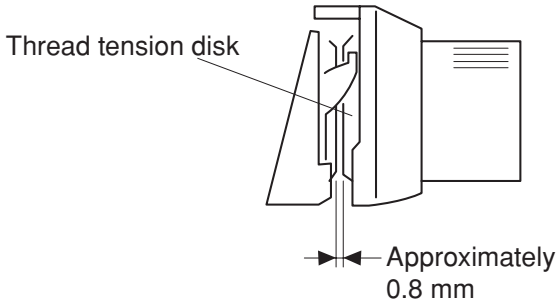
1. Remove the top cover, face plate, thread guide cover and arm thread guide.
2. Lower the presser foot lifter.
3. Loosen the hexagonal socket screw A.
4. Remove the thread release plate from the thread release arm. Remove the thread tension.

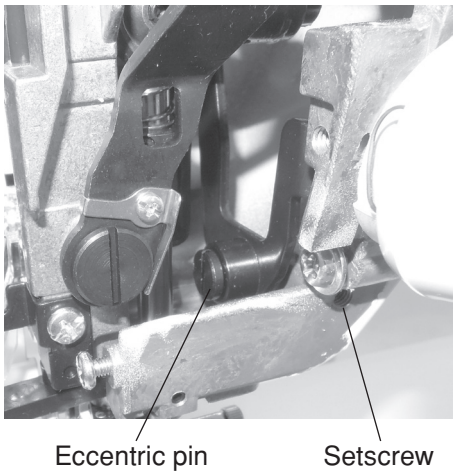
To attach:

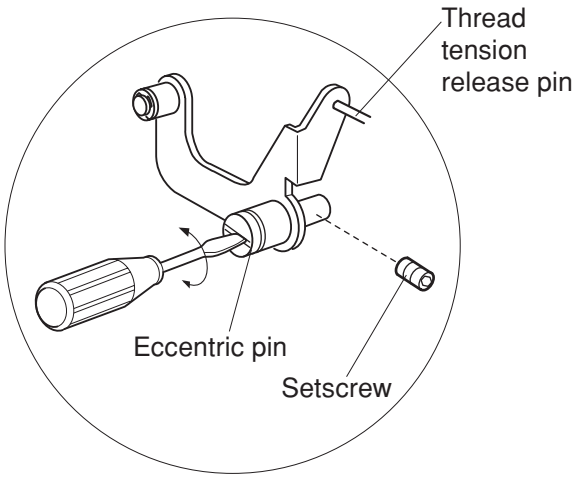
5. Follow the steps of removal procedure in reverse.

To adjust the upper thread tension release (1)

The clearance of upper thread tension disks should be 0.8 mm when the presser foot is raised.



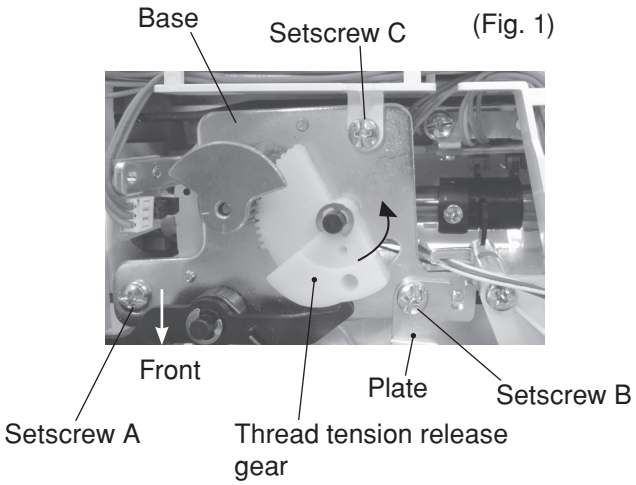


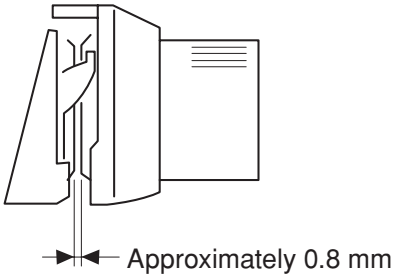


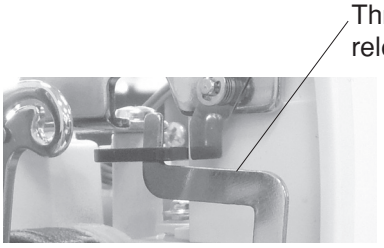
1. Remove the top cover, face plate, thread guide cover and arm thread guide.
2. Remove the front cover.
3. Loosen the setscrew.
4. Adjust the clearance by turning the eccentric pin.
5. Tighten the setscrew.

To adjust the upper thread tension release (2)

Upper thread tension disks should open 0.8 mm when the tension release motor operates. If not, adjust follows.







1. Remove the top cover, face plate and thread guide cover.

2. Set the thread tension dial at “9” and lower the presser foot lifter.

3. Turn the thread tension release gear counterclockwise until it stops. (Fig. 1)

4. Check the gap of upper thread tension disks. The clearance should be 0.8 mm.

If the clearance is smaller than 8.0 mm:

Loosen the setscrews A and B. Tighten the setscrew B lightly. Remove setscrew C and slide the base to the front. Tighten the setscrew A and B securely. Tighten the setscrew C.

If the clearance is larger than 8.0 mm:

Loosen the setscrews A and B. Tighten the setscrew B lightly. Remove setscrew C and slide the base to the rear. Tighten the setscrew A and B securely. Tighten the setscrew C.

NOTE:
Turn the setscrew B with the plate positioned in the front cover.

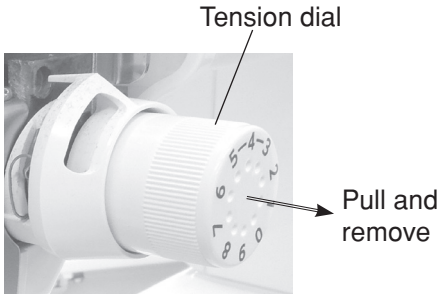
5. Attach the thread guide cover, face plate and top cover.

To check

Make sure that the thread tension release plate has a play when turning the thread tension release gear counterclockwise until it stops.

Adjusting the bobbin thread tension

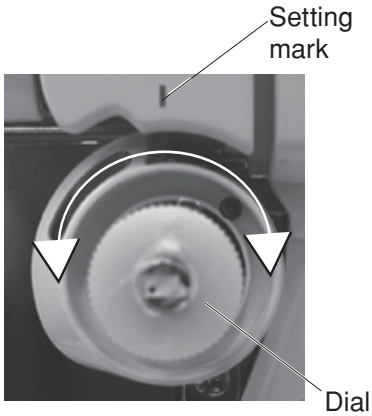
The upper thread tension should be 75 - 90 grams when pulling the thread (white polyester thread size 50) at the speed of 110 mm/sec. with the tension dial at “4”.

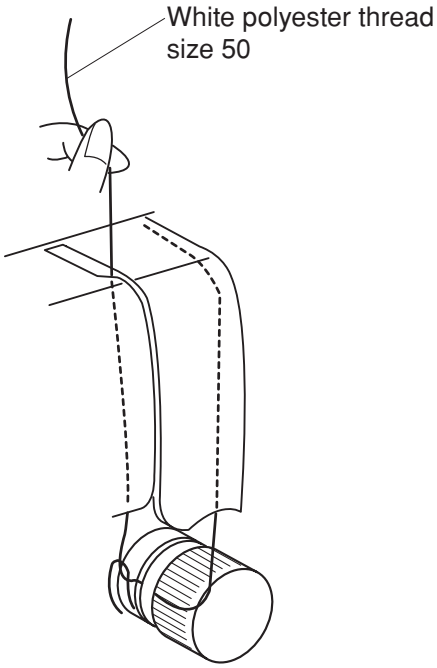


1. Set the thread tension dial at “4”.
2. Pull the tension dial to remove it.
3. Lower the presser foot.
4. Turn the dial to adjust the tension.

To loosen the tension, turn the dial counterclockwise.
To tighten the tension, turn the dial clockwise.

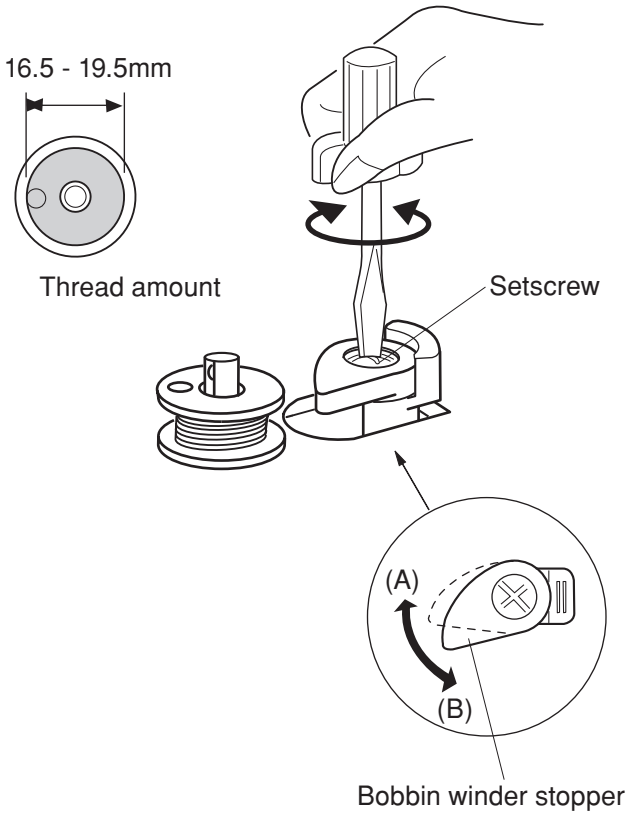
5. Push in the tension dial aligning “4” with the setting mark.





To adjust the bobbin winder stopper

The diameter of thread wound on bobbin should be 16.5 to 19.5 mm.



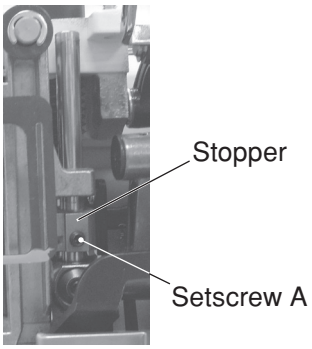
1. To adjust the thread amount for bobbin, loosen the setscrew and turn the bobbin winder stopper

   Turn the bobbin winder stopper in the direction of (A) when the thread amount for bobbin is too large.
   Turn the bobbin winder stopper in the direction of (B) when the thread amount for bobbin is too small.

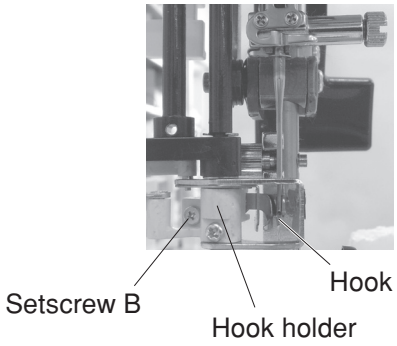
2. Tighten the setscrew.

Needle threader hook position

The threader hook comes out through the needle eye from behind when the needle threader lever is lowered.

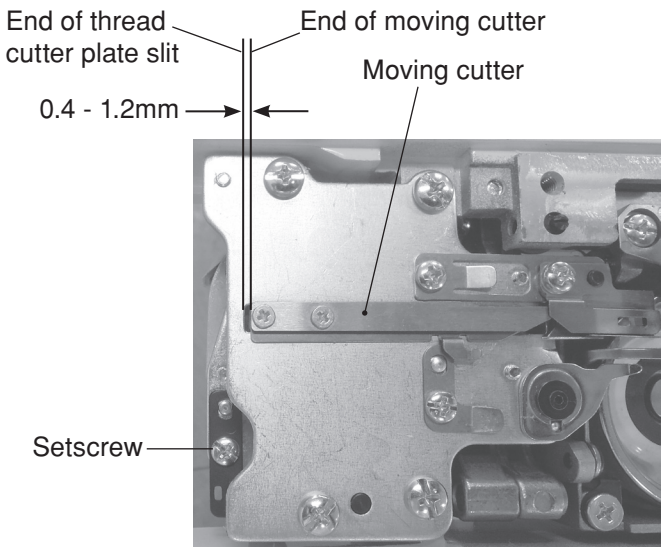


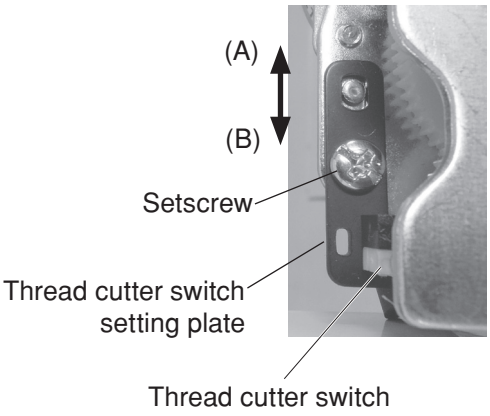
1. Push down the threader lever and hold it just before the threader hook enters the needle eye.
2. If the threader hook is not aligned vertically with the needle eye, loosen the setscrew A. Adjust the stopper position so that the hook enters into the needle eye.
3. Tighten the setscrew A.
4. If the threader hook is not aligned horizontally with the needle eye, loosen the setscrew B. Adjust the stopper position so that the hook enters into the needle eye.
5. Tighten the setscrew B.



Thread cutter switch

The distance between the end of thread cutter plate slit and the end of moving cutter should be in the range of 0.4 to 1.2 mm.





1. Turn the poewr switch off.
   Remove the needle plate, base and thread cutter cover.

2. Slide the moving cutter to the right with your finger.

3. Turn the power switch on.
   The moving cutter motor is initialized, and moving cutter moves to its home position automatically.

4. The distance between the end of moving cutter and the end of thread cutter plate slit should be 0.4 to 1.2 mm.

* If not, adjust as follows.

To adjust:

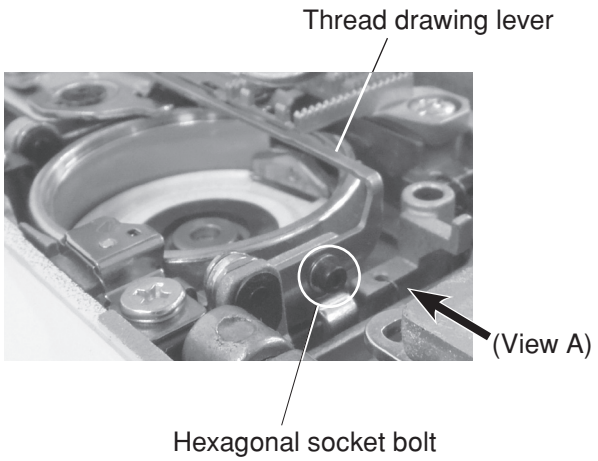
1. Loosen the setscrew on the sensor plate.

2. If the distance is smaller than 0.4 mm, move the sensor plate in the direction of (A).

   If the distance is larger than 1.2 mm, move the sensor plate in the direction of (B).

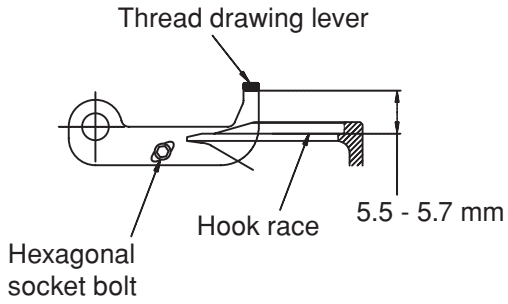
To adjust thread drawing lever

The maximum height of the thread drawing lever should be between 5.5 to 5.7 mm.



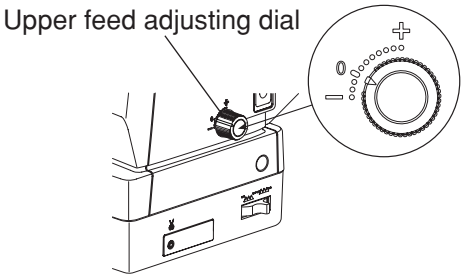
1. Remove the needle plate.
2. Loosen the hexagonal socket screw.
   When the thread drawing lever is at the highest position, adjust the drawing lever so that the distance between bobbin holder and the drawing lever is 5.5 - 5.7 mm.
3. Tighten the hexagonal bolt.
4. Attach the needle plate.

(View A)



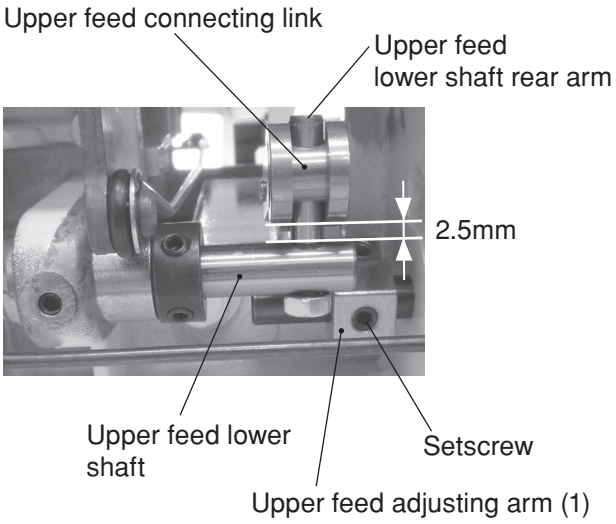
Upper feed dog (1)

The clearance between the upper feed link shaft and upper feed lower shaft should be 2.5 mm when the upper feed adjusting dial is set to “0”.



To check

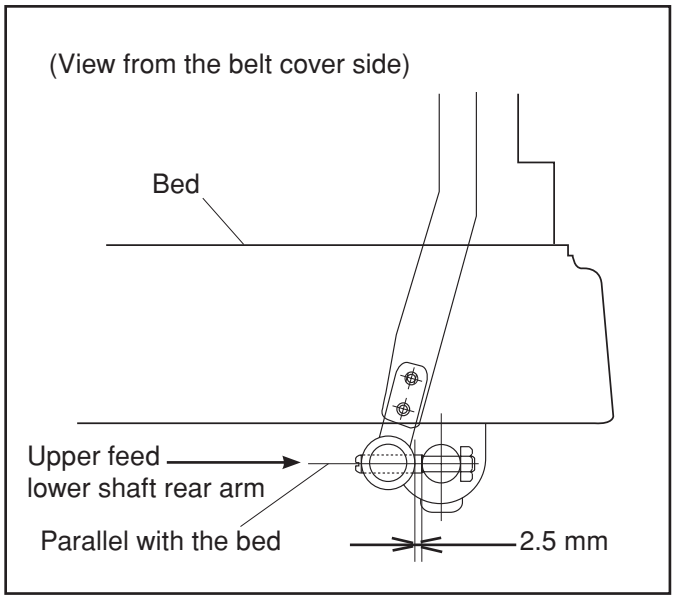
1. Turn the power switch on and select the straight stitch #1 ( ). Set the zigzag width at “0”.
2. Lower the feed dog and press the needle up/down key twice to raise the needle. Turn the power switch off.
3. Remove the base.
4. Check if the bed and upper feed lower shaft rear arm are parallel.



To adjust:

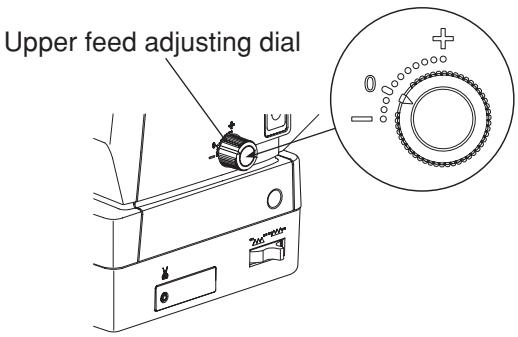
5 Set the upper feed adjusting dial at “0”.

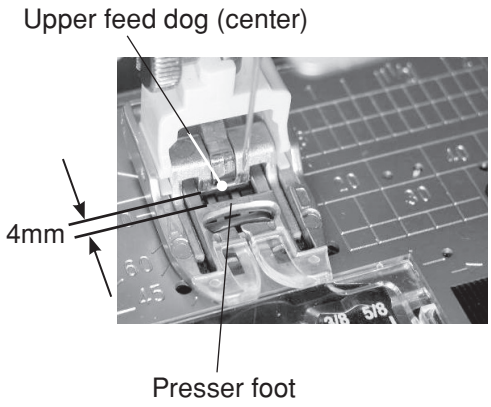
6. The clearance between the upper feed link shaft and upper feed lower shaft should be 2.5 mm. Loosen the setscrew of the upper feed adjusting arm (1) to adjust the clearance.
7. Attach the base.

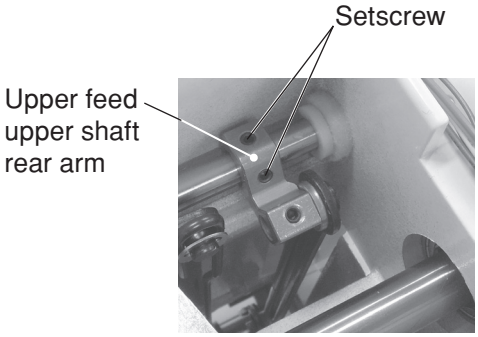


Upper feed dog (2)

After adjusting the clearance between the upper feed link shaft and upper feed lower shaft, adjust the horizontal position of upper feed dog.







1. Attach the dual feed foot.
2. Turn the power switch on and select the straight stitch #1 ( ). Set the zigzag width at “0”.
3 Set the upper feed adjusting dial at “0”.
4. Lower the feed dog and press the needle up/down key twice to raise the needle. Turn the power switch off.

* To initialize the feed dog position, be sure to press the needle up/down key twice to raise the needle.

5. Lower the presser foot lifter, check the clearance. The clearance between the dual feed foot and upper feed dog should be 4 mm.

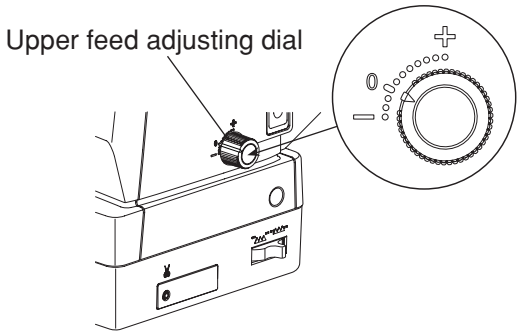
To adjust:

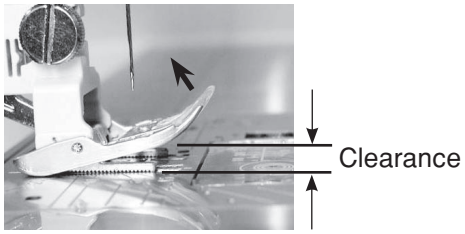
If the clearance is not 4 mm, adjust as follows,

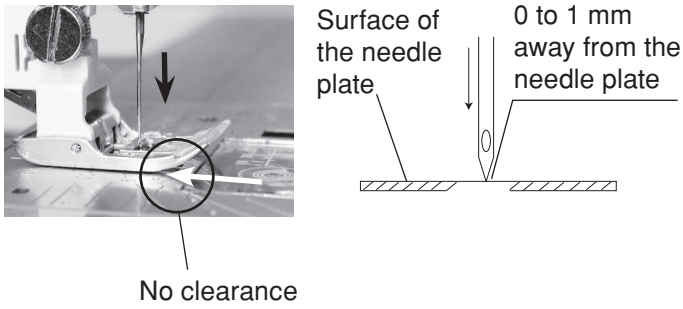
6. Remove the top cover.
7. Loosen the setscrews (2 pcs.) on upper feed rear arm.
8. Insert a 4 mm spacer between the upper feed foot and upper feed dog (center). Tighten the setscrews (2 pcs.).
9. Attach the top cover.

Upper feed dog (3)

The needle tip should be 0 to 1 mm above the surface of the needle plate when the toe of the dual feed foot touch the needle plate.

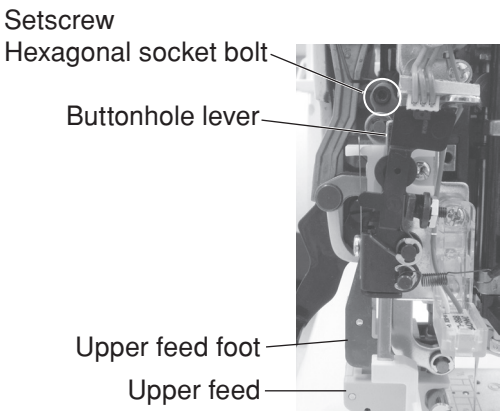


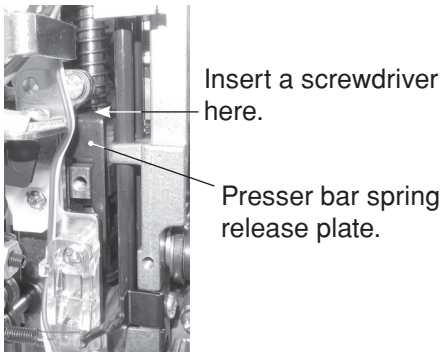




To check:

1. Attach the dual feed foot and needle #14.
2. Turn the power switch on and select the straight stitch #1 ( ). Set the zigzag width at “0”.
3 Set the upper feed adjusting dial at “0”.
4. Lower the feed dog and press the needle up/down key twice to raise the needle. Turn the power switch off.
   * To initialize the feed dog position, be sure to press the needle up/down key twice to raise the needle.
5. Lower the presser foot lifter.
6. Raise the toe of the dual feed foot and leave it as it is.
7. Turn the handwheel toward you to lower the needle until the needle tip comes 1 mm or less above the needle plate. The toe of the foot lands on the needle plate and there is no gap to allow the foot flapping. If not, adjust it as follows.





To adjust:

1. Follow steps 3 - 5 of “To check” procedure (with the power switch turned off), and turn the handwheel toward you to raise the needle.

2. Remove the top cover and face plate.

3. Loosen the hexagonal bolt.

4. Turn the handwheel toward you to lower the needle until the needle tip matches with the surface of the needle plate.
   * If necessary, lower the buttonhole lever slightly, or insert a screwdriver between the front bracket and presser bar spring release plate.

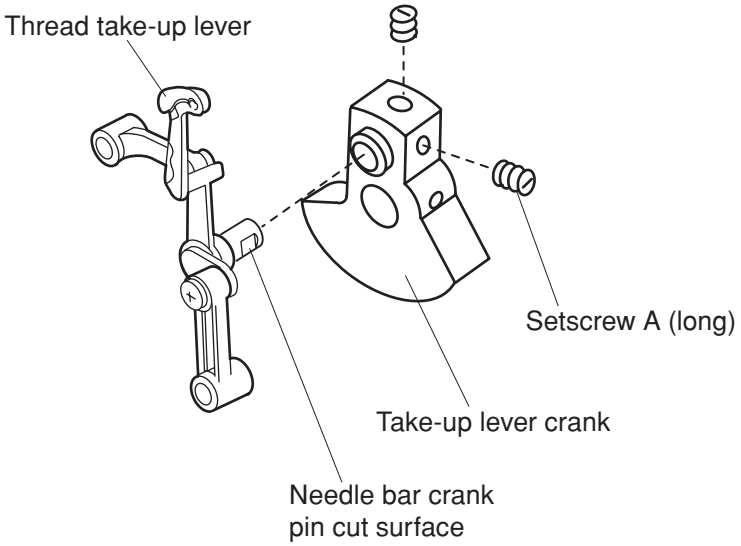
5. Tighten the hexagonal socket bolt while pressing the dual feed foot against the needle plate.

6. Check if there is no gap (see “To check” procedure).

7. Attach the face cover and top cover.

Thread take-up lever phase

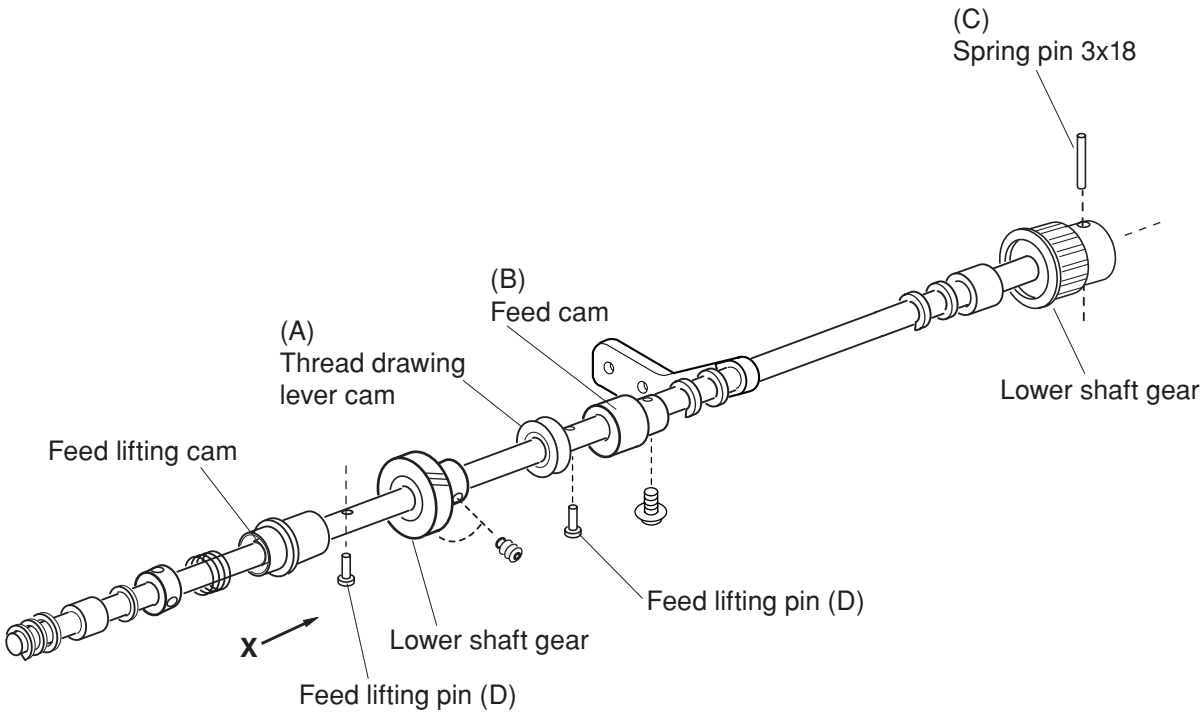
Insert the needle bar crank pin into the take-up lever crank as illustrated. The setscrew A (long) must hold the needle bar crank pin cut surface.

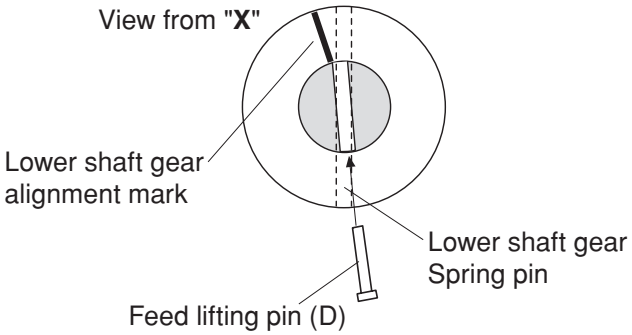


Lower shaft

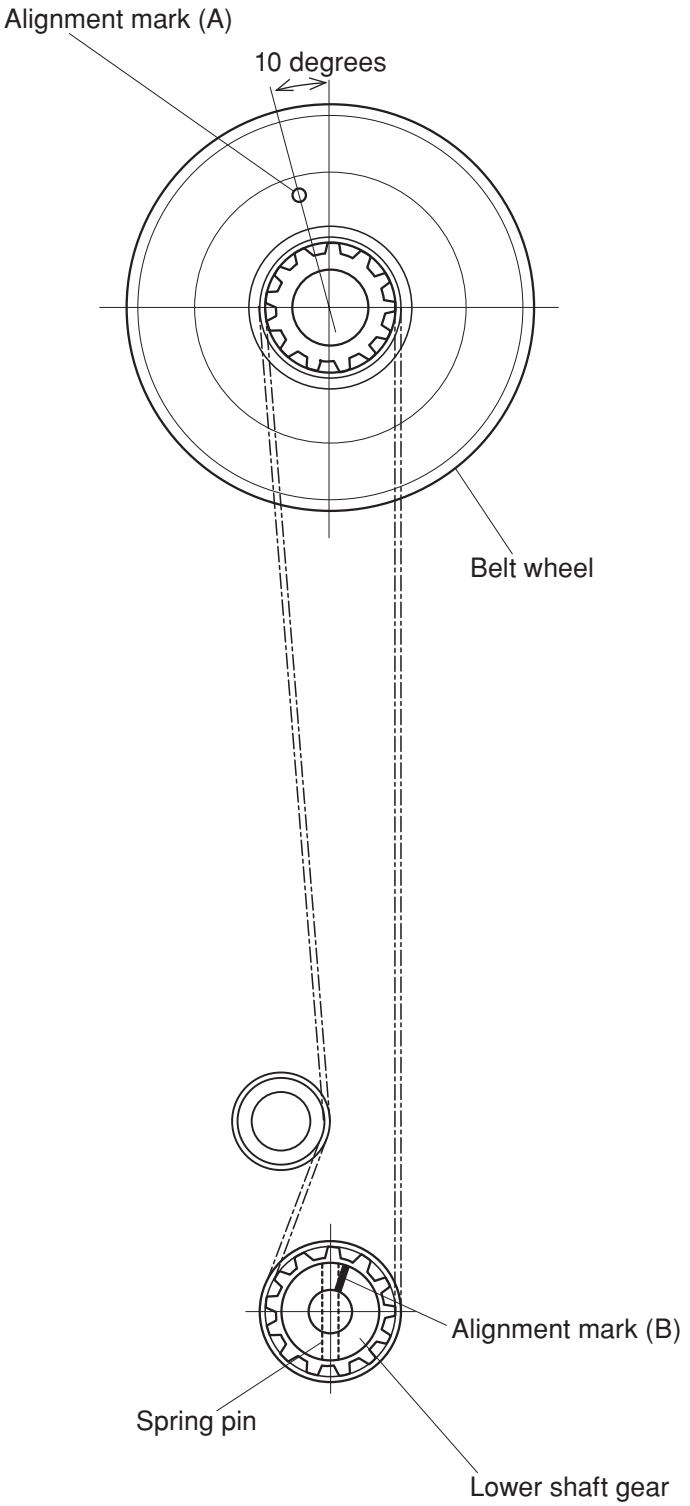
To attach the lower shaft parts

The phases for (A) and (B) are the same as that of the spring pin (C). The phase of (D) is shown below.



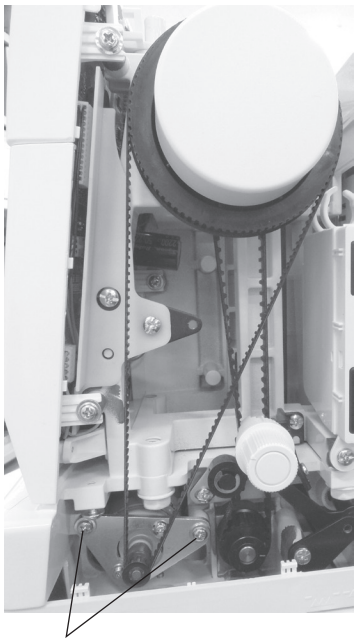


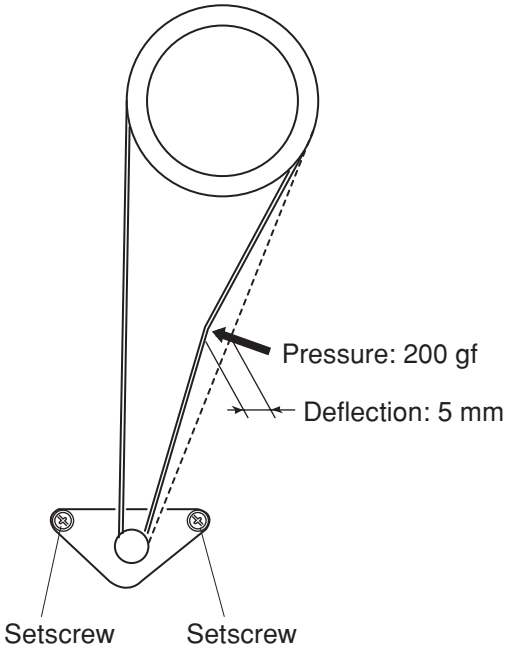
Timing belt



Attach the timing belt when the alignment mark (A) on the belt wheel and the alignment mark (B) on the lower shaft gear are positioned as illustrated.

To replace driving motor





To remove:

1. Remove the top cover, face plate, front cover and belt cover.
2. Remove the motor belt.
3. Disconnect the motor connector from the printed circuit board A.
4. Remove the setscrews (2 pcs.) and replace the motor.

To attach:

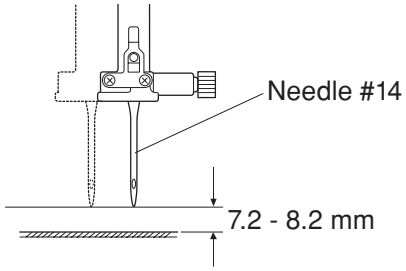
5. Fix the motor by tightening the setscrew (2 pcs.) lightly.
6. Adjust the belt tension and tighten the setscrew (2 pcs.) securely.
7. Connect the motor connector to the printed circuit board A.

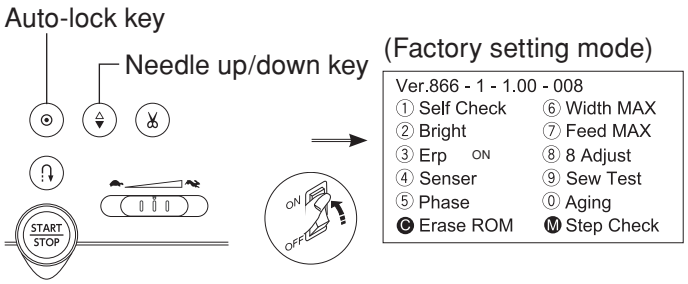
Correct motor belt tension:

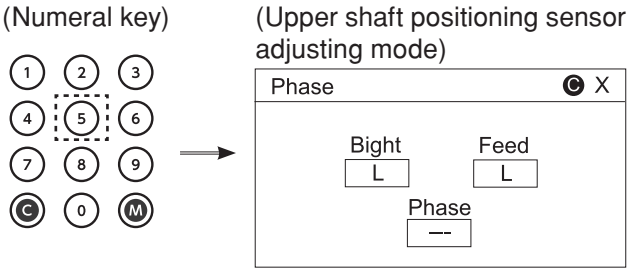
Adjust the motor belt deflection to about 5 mm by pressing the middle of the motor belt with your finger with approximately 200 grams of pressure.

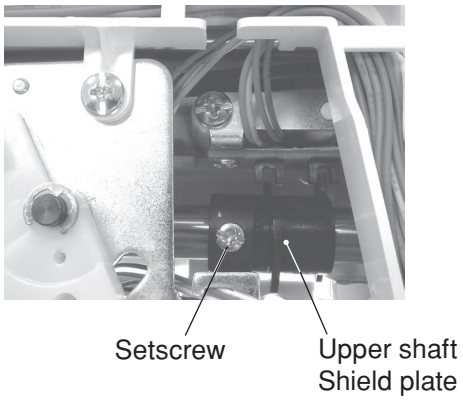
Upper shaft shield plate position

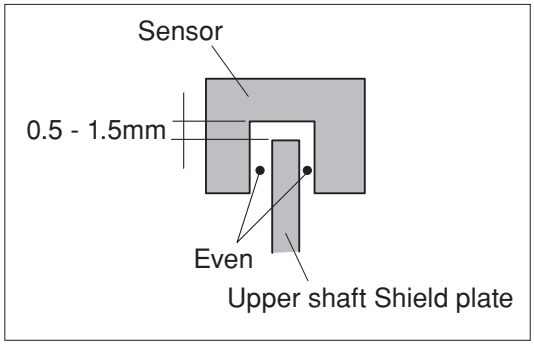
When the machine is set for zigzag stitch, the needle should start to swing 7.2 - 8.2 mm above the surface of the needle plate.











1. Attach the #14 needle.

2 Turn the power switch on while pressing the auto-lock key and needle up/doun key to enter the factory setting mode.

3. Press the numeral key “5” to select the upper shaft positioning sensor adjusting mode.

4. Turn the handwheel toward you slowly to bring the needle up from its lowest position until the indication below "Bight" changes from “L” to “H”.

5. The needle height should be 7.2 – 8.2 mm above from the surface of the needle plate.

* If not, adjust as follows.

To adjust:

1. Remove the top cover.

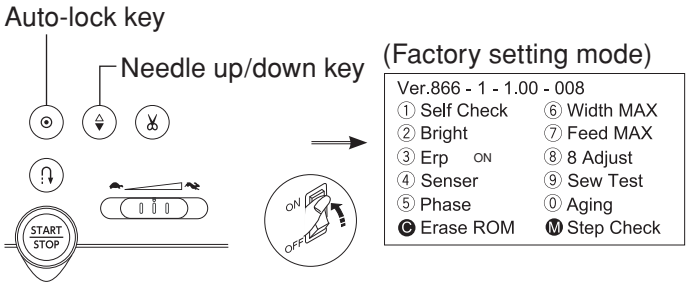
2. Turn the handwheel toward you slowly to bring the needle up from its lowest position to 7.7 mm above the surface of the needle plate.

3. Loosen the setscrew of the upper shaft shield plate. Turn the upper shaft shield plate away from you until the indication below "Bight" changes from “L” to “H”. Tighten the setscrew.

* The position of the upper shaft shield plate should be in the center of the upper shaft sensor.

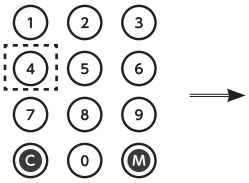
4. Attach the top cover.

Adjusting buttonhole lever position



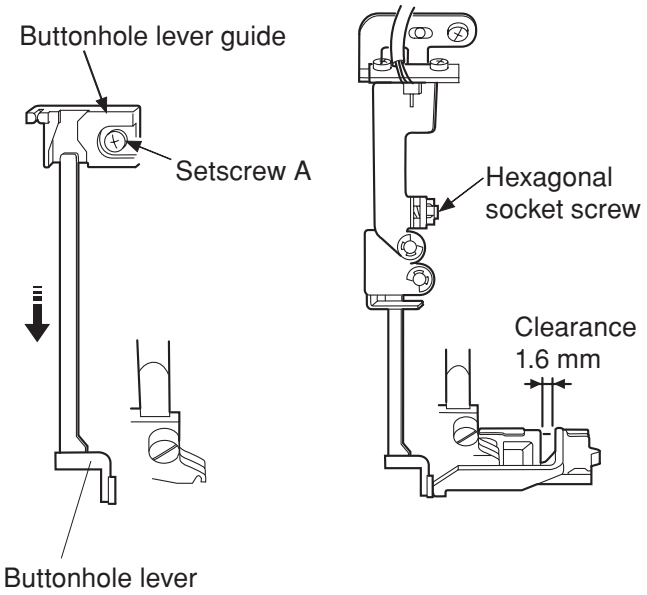
(Factory setting mode)

Ver.866 - 1 - 1.00 - 008	
① Self Check	⑥ Width MAX
② Bright	⑦ Feed MAX
③ Erp ON	⑧ 8 Adjust
④ Senser	⑨ Sew Test
⑤ Phase	⓪ Aging
Ⓒ Erase ROM	Ⓜ Step Check



(Sensor adjusting mode)

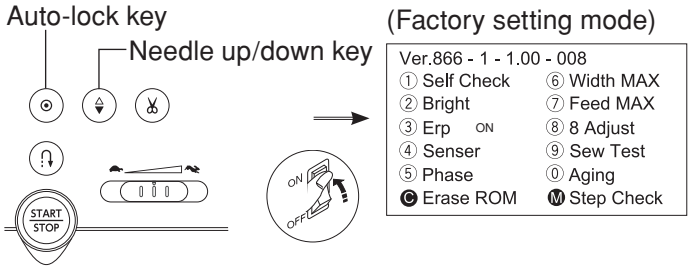
Sensor		Ⓒ X	
Spool	:L	BH Sen	:H
Foot L	:H	FeedDog	:L
Assist L	:H	TrimFoot	:L
Straight	:L	FootCont	:255
ZigZag	:H	SlideVol	:255

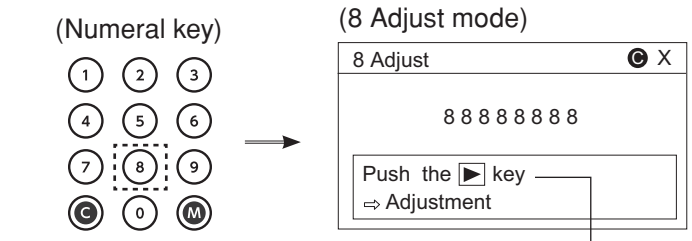


1. Turn the power switch on while pressing the auto-lock key and needle up/doun key to enter the factory setting mode.
2. Press the numeral key “4” to select the upper shaft positioning sensor adjusting mode.
3. Remove the face plate and lower the feed dog. (Place a piece of paper under the presser foot.)
4. Without attaching the buttonhole foot R, lower the buttonhole lever. Loosen the setscrew A of the buttonhole lever guide and move the buttonhole lever guide to the front or to the rear until until the indication beside "BH Sen" changes to “L”. Tighten the setscrew.
5. Attach the buttonhole foot R and lower the buttonhole lever.
6. Lower the buttonhole R.
   Adjust the clearance between the stopper and the presser foot slider to 1.6 mm.
7. Loosen the hexagon socket screw until the indication beside "BH Sen" changes to “H”. Tighten the hexagon socket screw slowly until the the indication beside "BH Sen" changes from “H” to “L”.
8. Turn the power switch ff.
9. Attach the face cover.

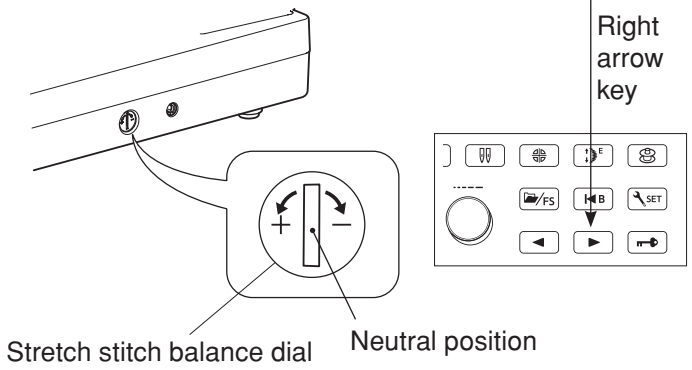
Stretch stitch feed balance

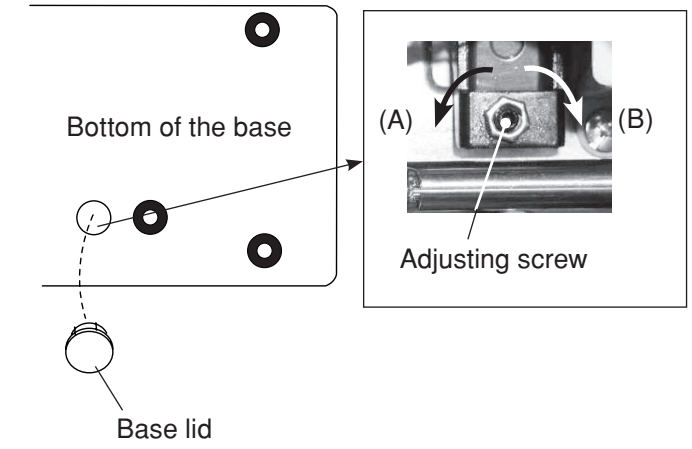
When the stretch pattern "8" is sewn 8 times with the stretch stitch balancing dial at the standard setting mark, the length of five of stretch patterns should be in the range of 33 to 39 mm.

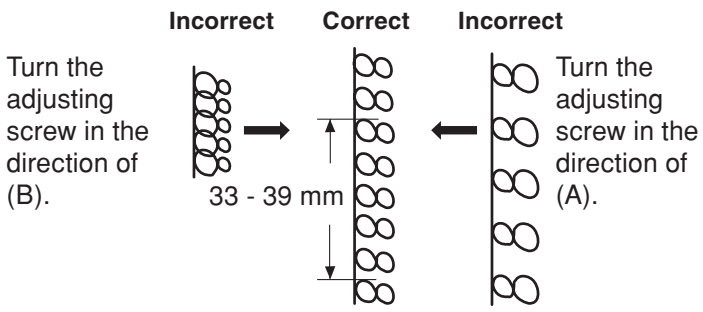




Stretch stitch balance dial position







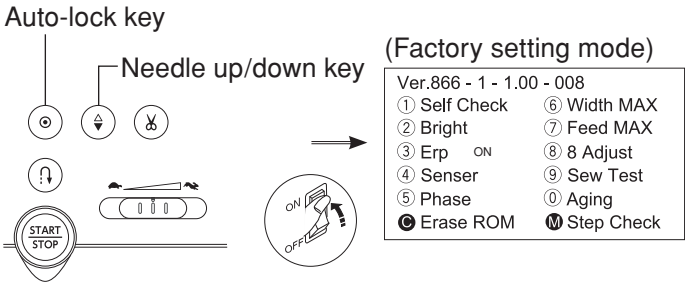
1. Attach the satin stitch foot F.
2. Set the stretch stitch balance dial to the neutral position.
3. Turn the power switch on while pressing the auto-lock key and needle up/doun key to enter the factory setting mode.
4. Press the numeral key “8” to select the “8 Adjust” mode.
5. Start the machine and sew at the maximum speed until it stops automatically.
   The machine sews 8 of number 8 and stops automatically. Measure the length of 5 (from the third to the seventh) of 8.
   (The length 5 of 8 should be 33 mm to 39mm.)

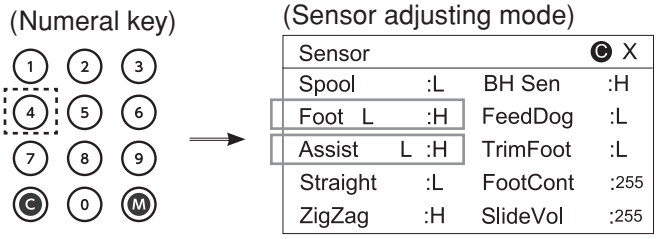
Stretch stitch balance dial position:

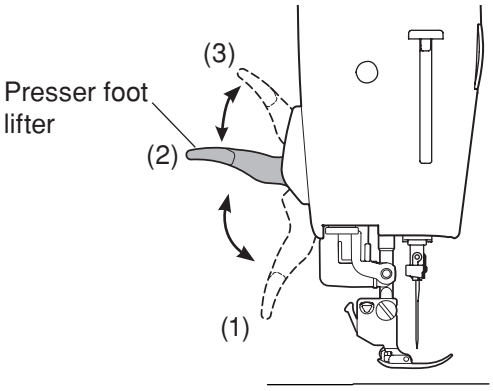
1. Press the right arrow key to lower the needle (the key does not work if the needle is lowered) to move the adjusting screw.
2. Remove the base cap.
3. If the length is longer than 39 mm, turn the adjusting screw in the direction of (A).

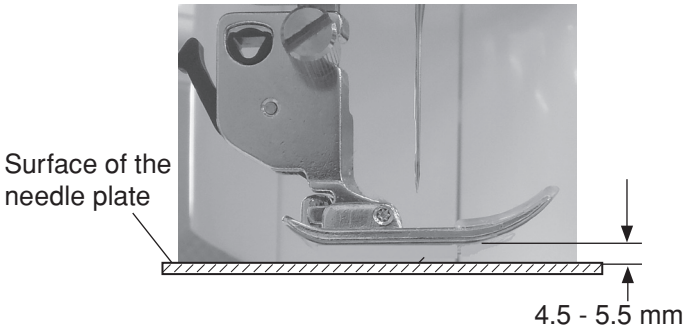
   If the length is shorter than 33mm, turn the adjusting screw in the direction of (B).
4. Sew 8 of number 8.
5. Attach the base cap.

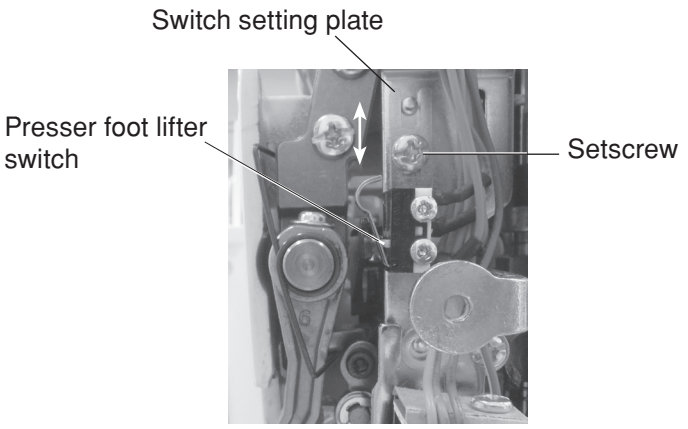
Adjustment of presser bar lifter switch position











To check:

1. Attach the zigzag foot A.
2. Lower the presser foot lifter.
3. Turn the power switch on while pressing the auto-lock key and needle up/doun key to enter the factory setting mode.
4. Press the numeral key “4” to select the sensor adjusting mode.
5. Check if the indication of “Foot L” and “Assist L” are as shown below when the position of the foot lifter is (1), (2) or (3).

   Position of foot lifter: (1)
   Foot L: “L”
   Assist L: “L”

   Position of foot lifter: (2)
   Foot L: “H”
   Assist L: “L”

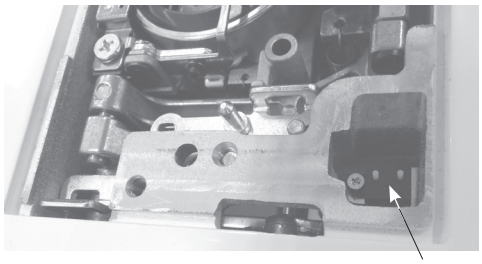
   Position of foot lifter: (3)
   Foot L: “H”
   Assist L: “H”

If not, adjust as follows.

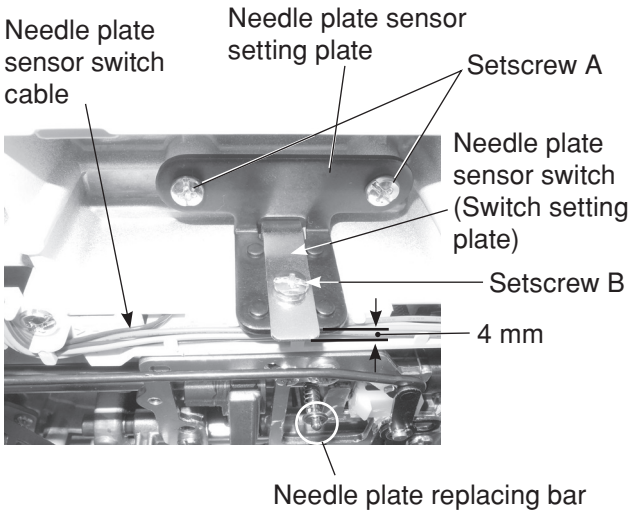
To adjust:

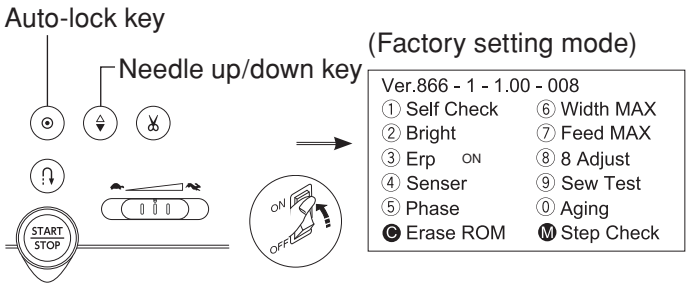
1. Remove the face plate.
2. Place a 5mm block between the presser foot and the needle plate, and lower the presser foot.
3. Loosen the setscrew on the switch setting plate.
4. Raise the presser foot slowly until it stops and hold it as it is.
5. Lower the switch setting plate slowly until the indication of “Foot L” changes from “L” to “H” and tighten the setscrew on the switch setting plate.
6. Remove the 5 mm block. Lower the presser foot lifter and raise it slowly. Check the distance between the presser foot and the surface of the needle plate is 4.5 - 5.5 mm when the indication of “Foot L” changes from “L” to “H”.
7. Follow the step 5 of “**To check**” procedure.

Needle plate sensor switch



(View from the rear bottom side)

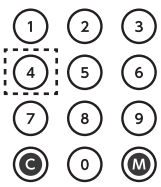




(Factory setting mode)

Ver.866 - 1 - 1.00 - 008	
① Self Check	⑥ Width MAX
② Bright	⑦ Feed MAX
③ Erp ON	⑧ 8 Adjust
④ Senser	⑨ Sew Test
⑤ Phase	⓪ Aging
Ⓒ Erase ROM	Ⓜ Step Check

(Numeral key)



(Sensor adjusting mode)

Sensor			Ⓒ X
Spool	:L	BH Sen	:H
Foot L	:H	FeedDog	:L
Assist L	:H	TrimFoot	:L
Straight	:L	FootCont	:255
ZigZag	:H	SlideVol	:255

To change:

To remove:

1. Remove the base.
2. Remove the front cover.
3. Disconnect the needle plate sensor switch connector from the printed circuit board A.
4. Remove the setscrews A (2 pcs) and remove the needle plate sensor setting plate.
5. Remove the setscrew on the needle plate sensor switch and remove the needle plate sensor switch.

To attach:

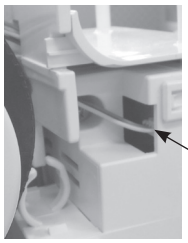
6. Attach the needle plate sensor switch to the needle plate sensor setting plate and tighten the setscrew B lightly.
   * The needle plate sensor switch should be 4 mm to the front from the needle plate sensor setting plate.
7. Tighten the setscrews A (2 pcs) to fix the needle plate sensor setting plate.
8. Connect the needle plate sensor switch connector to the printed circuit board A.
9. After the “To adjust and check” procedure below, tighten the setscrew B securely.

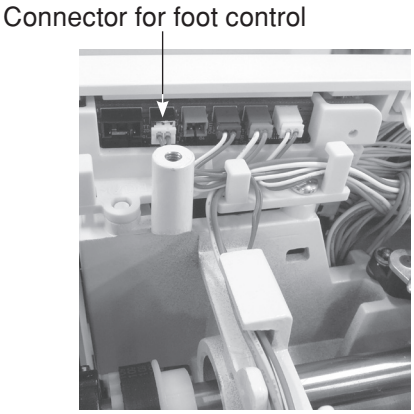
To adjust and check:

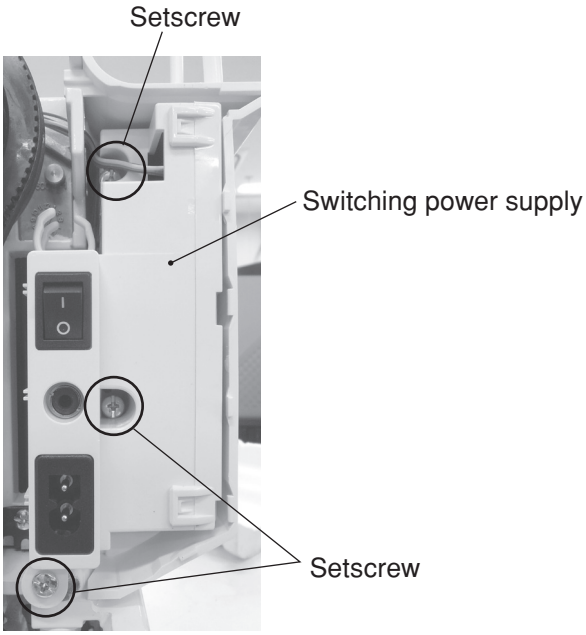
1. Prepare the standard needle plate and the needle plate for straight stitch.
2. Turn the power switch on while pressing the auto-lock key and needle up/doun key to enter the factory setting mode.
3. Press the numeral key “4” to select the sensor adjusting mode.
4. Check if the indication of “Straight” is “L” and the indication of “Zigzag” is “H” when the standard needle plate is attached.
5. Check if the indication of “Straight” is “H” and the indication of “Zigzag” is “L” when the needle plate for straight stitch is attached.

If the indication of “Straight” or “Zigzag” is not correct, adjust the position of the needle sensor switch.

Switching power supply







To remove:

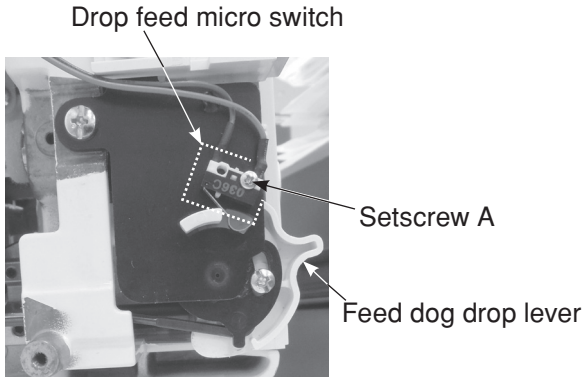
1. Remove the power supply cover and belt cover.
2. Disconnect the connector for power supply from the switching power supply.
3. Disconnect the connector for foot control (connected to the switching power supply) from the printed circuit board A.
4. Remove the setscrews (3 pcs.) and switching power supply.

To attach:

Follow the steps of removal procedure in reverse.

Drop feed micro switch

(View from the belt cover side)



To change:

To remove:

1. Remove the front cover and base.
2. Disconnect the connector for drop feed micro switch from the printed circuit board A.
3. Remove the setscrew A and drop feed micro switch.

To attach:

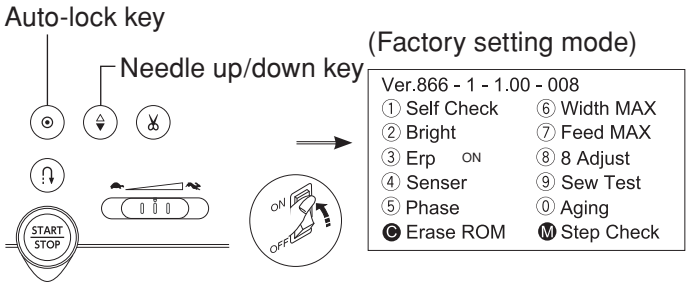
Follow the steps of removal procedure in reverse.

* After attaching the drop feed micro switch, check following the steps below.

To adjust and check:

1. Turn the power switch on while pressing the auto-lock key and needle up/doun key to enter the factory setting mode.
2. Press the numeral key “4” to select the sensor adjusting mode.
3. Check if the indication of “FeedDog” is “L” when the feed dog drop lever is in the right (feed dog raised).
   Check if the indication of “FeedDog” is “H when the feed dog drop lever is in the right (feed dog lowered).

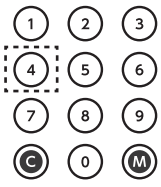
If the indication is not correct, adjust the position of the drop feed micro switch.



(Factory setting mode)

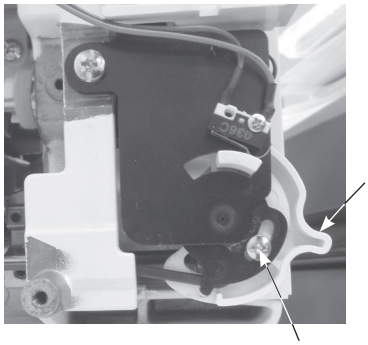
Ver.866 - 1 - 1.00 - 008	
① Self Check	⑥ Width MAX
② Bright	⑦ Feed MAX
③ Erp ON	⑧ 8 Adjust
④ Senser	⑨ Sew Test
⑤ Phase	⓪ Aging
Ⓒ Erase ROM	Ⓜ Step Check

(Numeral key)

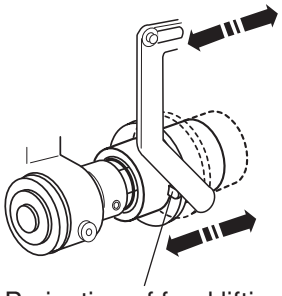


(Sensor adjusting mode)

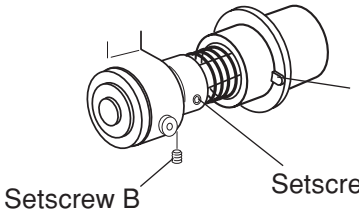
Sensor			Ⓒ X
Spool	:L	BH Sen	:H
Foot L	:H	FeedDog	:L
Assist L	:H	TrimFoot	:L
Straight	:L	FootCont	:255
ZigZag	:H	SlideVol	:255

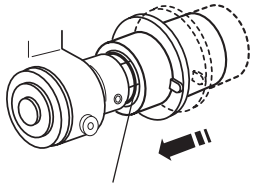


When the feed dog does not return to “UP” position



Projection of feed lifting cam





Feed lifting cam spring

Projection of feed lifting cam

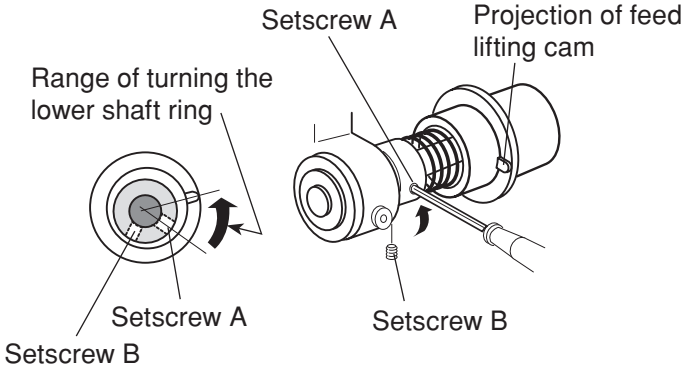
1. Function of the drop feed lever
   1) Remove the base.
   2) Bring the needle bar at the lowest position. (The projection of the feed lifting cam is visible at this position.)
   3) When the drop feed lever is moved left and right, the feed lifting cam should move accordingly.

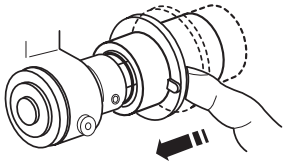
2. Position of the setscrew on the lower shaft ring

   Check if the setscrew A on the lower shaft ring is in line with the projection of the feed lifting cam. The setscrew B should be at the position as shown.

3. Clearance between the feed lifting cam and coil spring.

   When the feed lifting cam is pushed to the left, the coil spring should covered with the feed lifting cam completely.





If the feed lifting cam does not move smoothly, adjust as follows:

1. Loosen the setscrews A and B.

2. Bring the needle bar at the lowest position and turn the lower shaft ring slightly to twist the coil spring lightly. Set the setscrew A in line with the projection on the feed lifting cam and tighten it.

3. Tighten the setscrew B

4. Check following the steps 1-3 above.

5. Make sure that the lower shaft does not have a play. Attach the base.

Self diagnosis

NOTE:

1. The power switch must be turned off when replacing parts.
2. The language on the LCD is English only.

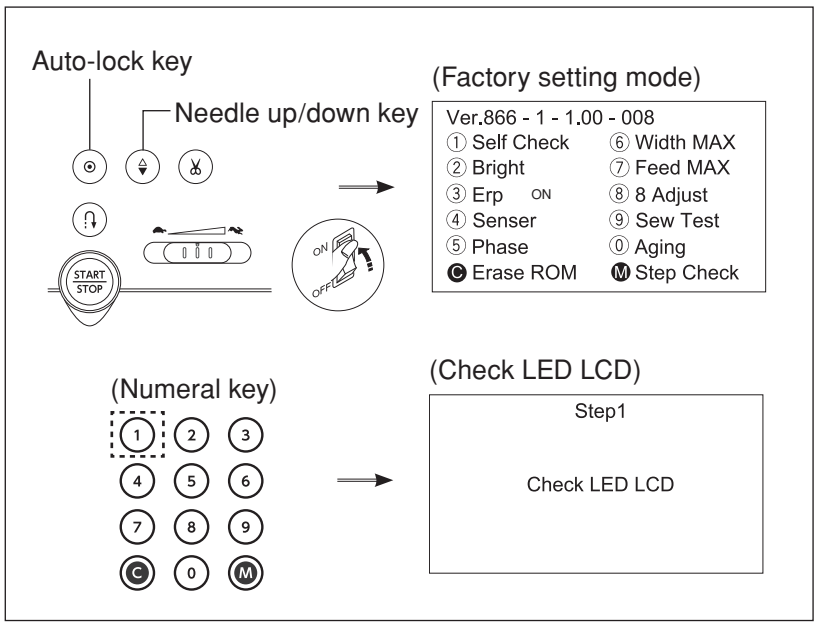
Preparation:

1.Shift the bobbin winder stopper to the right.
2. Slide the drop feed lever to the left to raise the feed dog.
3. Slide the speed control slider to the left.
4. Raise the presser foot lifter and remove the presser foot.
5. Bring the needle bar at the highest position.

Before using the diagnosis device:

1. Check or replace the following part(s) if nothing happens when the power switch is turned on:
   (1) The connectors are connected properly.
   (2) Replace the circuit board A.
   (3) Replace the power supply cord.
   (4) Replace the switching power supply

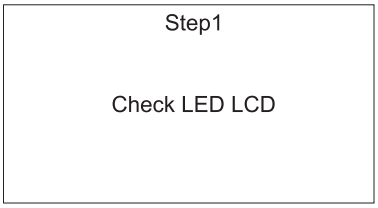
2. When the sewing lamp does not turn on:
   (1) Replace the LED.
   (2) Replace the circuit board A.



1. Turn the power switch on while pressing the auto-lock key and needle up/doun key to enter the factory setting mode.

2. Press the numeral key “1” to select the “Self check” mode.
   * The step 1 screen appears.

1. Function of buzzer, LCD and LED



Correct condition

1. Buzzer sounds
2. LCD and LED blink at 1 second interval.
3. Sewing light turns on.

Press the start/stop key to proceed to the next step.

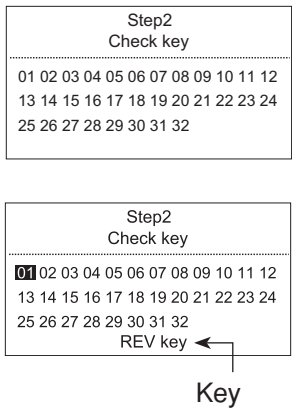
Faulty condition

Buzzer does not sound.
The step 1 screen does not appear.
LED of the start/stop key does not blink.
LCD backlight does not turn on.
Sewing lamp does not turn on.

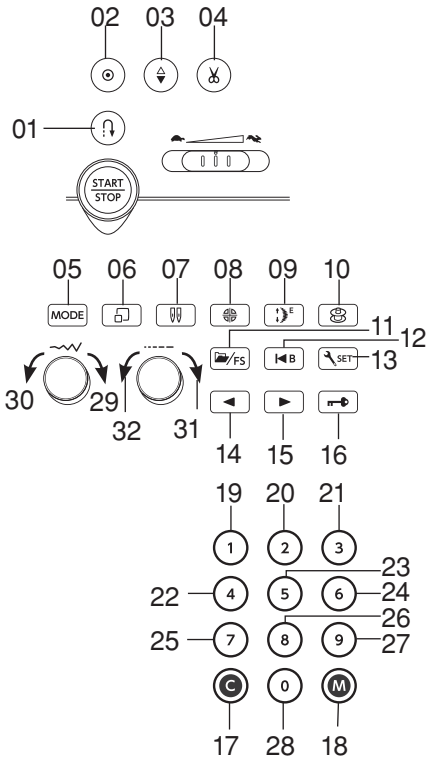
To adjust or replace a part:

Change the LED.
Change the board K.
Change the LCD.
Change the board F.
Change the board A.

2. Function of keys



Key



Correct condition

Press all of the keys in order.
Each time a key is pressed, the buzzer sounds, the number is marked and the name of the key appears on the LCD.

Press the start/stop key to proceed to the next step.

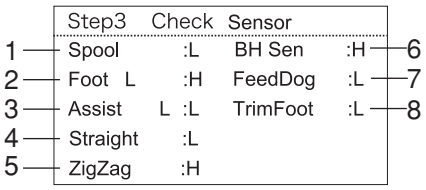
Faulty condition

Buzzer does not sound.
The screen does not change.

To replace a part:

Change the board F.
Change the board K.
Change the board A.

Detecting switch



Correct condition

1. Bobbin winder switch (Spool)
   Move the bobbin winder stopper to the left and right.
   Left: "H"
   Right: "L"

2. Presser foot lifter switch (Foot)
   Raise and lower the presser foot lifter.
   Up position: "H"
   Down position: "L"

3. Auxiliary detecting switch (Assist)
   Raise the presser foot lifter to the up position and to the extra lifted position, and lower the presser foot.
   Extra lifted position: "H"
   Down position: "L"

4. Straight stitch needle plate sensor switch (Straight)
   Attach the straight stitch needle plate.
   Needle plate attached: "H"
   Needle plate removed: "L"

5. Standard needle plate sensor switch (Zigzag)
   Attach the standard needle plate.
   Needle plate attached: "H"
   Needle plate removed: "L"

6. Buttonhole sensor (BH Sen)
   Pull the buttonhole lever toward you: "H"
   Release the buttonhole lever: "L"
   Pull the buttonhole lever to the back: "H"

7. Drop feed micro switch (FeedDog)
   Move the feed dog drop lever to the left and right.
   Left (feed dog lowered): "H"
   Right (feed dog raised): "L"

8. Thread cutter foot switch sensor (TrimFoot)
   Connect the thread cutter switch and press it: "H"
   Release the switch: "L"

Press the start/stop key to proceed to the next step.

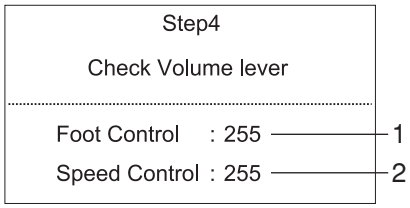
Faulty condition

Buzzer does not sound.
The display does not change or is reversed.

To adjust or replace a part:

Adjust the position of the detecting switch.
Replace the detecting switch.
Change the board A.

Foot control/speed control slider



1. Foot control

Correct condition

When the foot control is not connected: 240 or more
The number changes when the foot control is connected/pressed and released.

Faulty condition

The number is less than 240.
The screen does not change.

To replace:
Foot control
Machine socket
Board A

2. Speed control slider

Correct condition

At the left end: 00
At the right end: 255

Press the start/stop key to proceed to the next step.

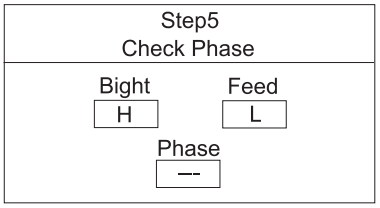
Faulty condition

The number is not 00 (at the left end) or not 255 (at the right end).
The screen does not change.

To replace:

Speed control slider
Board A

Upper shaft phase sensor



Correct condition

Turn the handwheel to check the phase sensor.

In zigzag phase (Bight): “H” Not in zigzag phase: “”L”
In feed phase (Feed): “H” Not in feed phase: “”L”
Buzzer sounds when each sensor changes from “L” to “H” or from “H” to “L”.

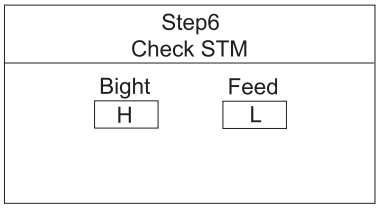
Press the start/stop key to proceed to the next step.

Faulty condition

TBuzzer does not sound when the screen changes.
The screen does not change.

To adjust or replace a part:
Adjust the position of the upper shaft shield plate.
Replace the photo sensor.
Change the board A.

Stepping motors



Correct condition

Turn the handwheel to move the needle bar to the zigzag phase (up position). When pressing the needle up/down key, the buzzer sounds and the zigzag motor is for the middle needle position.

Turn the handwheel to move the needle bar to the feed phase (down position). When pressing the needle up/down key, the buzzer sounds and the feed motor is for no feed.

Press the start/stop key to proceed to the next step.

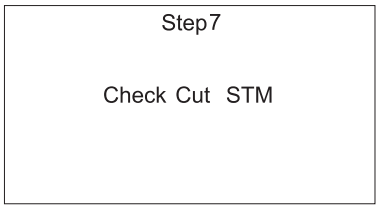
Faulty condition

The zigzag motor is not for the middle needle position.
The feed motor is not for no feed.
“E1” is indicated under “Bight”.
“E2” is indicated under “Feed”.
The caution buzzer sounds when the motor starts running.

To adjust or replace a part:

Adjust the position of the sensor.
Replace the zigzag motor.
Replace the feed motor.
Change the board A.

7. Thread cutter motor



Correct condition

Turn the handwheel to move the needle bar to the zigzag phase (up position). When pressing the needle up/down key, the thread cutter motor is initialized and the buzzer sounds.

Press the start/stop key to proceed to the next step.

Faulty condition

The thread cutter motor is not initialized.
"E4" is indicated.
The caution buzzer sounds when the thread cutting motor starts running.

To adjust or replace a part:

Adjust the position of the sensor.
Replace the thread cutting motor.
Change the board A.

8. Thread tension release motor

Correct condition

When pressing the needle up/down key, the thread cutter motor is initialized and the buzzer sounds.

Press the start/stop key to proceed to the next step.

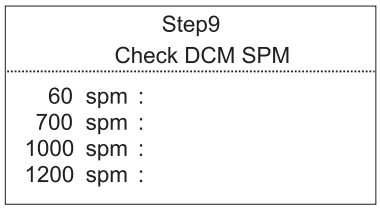
Faulty condition

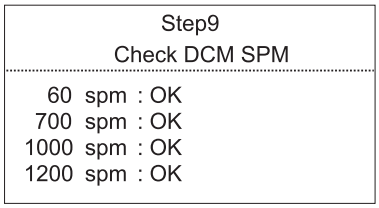
The thread tension release motor is not initialized.
"E3" is indicated.
The caution buzzer sounds when the thread tension release motor starts running.

To adjust or replace a part:

Adjust the position of the sensor.
Replace the thread tension release motor.
Change the board A.

9. Driving motor/bobbin winding motor.





Correct condition

When pressing the needle up/down key, the motor starts running, increasing speed evenly. The motor stops at the needle up position. The screen shows "OK".

When pressing bobbin winding key ( ), the bobbin winding motor runs.

8. Turn the power switch off to finish.

Faulty condition

The motor does not run.
The screen shows "NG".
The bobbin winder motor does not run.
The motor does not run smoothly.

To adjust or replace a part:

Replace the driving motor.
Replace the bobbin winder motor
Change the board A.

Results

* Regarded as good when all the results are correct.
* In case of defect, check again after adjustment or replacement of parts.