

**SERVICE MANUAL
&
PARTS LIST**

MODEL: 5060DC

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What to do when

Condition	Cause	How to fix
Skipping Stitches	<ol style="list-style-type: none"> 1. Needle is not inserted properly. 2. Needle is bent or worn. 3. Incorrectly threaded. 4. Needle or thread are inappropriate for the fabric being sewn. 5. Sewing on stretch fabric. 6. Inappropriate needle bar height. 7. Inappropriate needle to hook timing. 8. Inappropriate needle to hook clearance. 	<p>Insert the needle properly.</p> <p>Change the needle.</p> <p>Rethread.</p> <p>Use the recommended sewing needle and thread.</p> <p>Use a HA x #11 blue tip needle.</p> <p>See mechanical adjustment "Needle bar height". (Reference P.11)</p> <p>See mechanical adjustment "Adjustment of hook timing". (Reference P.10)</p> <p>See mechanical adjustment "Clearance between needle and tip of the rotary hook". (Reference P.12)</p>
Fabric not moving	<ol style="list-style-type: none"> 1. Incorrect feed dog height. 2. Feed dog is in down position. 3. Thread on bottom side of fabric is jammed up. 4. Feed dog teeth are worn. 	<p>Adjustment of Feed Dog Height. (Reference P.13)</p> <p>Raise the feed dog.</p> <p>Make sure to bring both needle and bobbin threads under the foot when start sewing.</p> <p>Change the feed dog.</p>
Breaking upper thread.	<ol style="list-style-type: none"> 1. Thread path is incorrect. 2. Needle is bent or dull. 3. Top tension is too strong. 4. Needle size is inappropriate for fabric. 5. Needle eye is worn. 6. Needle hole in needle plate is worn or burred. 	<p>Use the proper thread path.</p> <p>Replace with a new needle.</p> <p>Adjust top tension correctly.</p> <p>Use appropriate needle for fabric and thread in use.</p> <p>Change the needle.</p> <p>Repair the hole or replace the needle plate.</p>

Condition	Cause	How to Fix
	<ol style="list-style-type: none"> 1. Bobbin holder is incorrectly threaded. 2. Too much thread is wound on the bobbin. 3. Lint is stuck inside the bobbin holder. 4. Thread quality is too low. 5. Thread is jamming around the bobbin holder. 	<p>Set the bobbin thread correctly.</p> <p>Adjust the position of bobbin winder stopper.</p> <p>Clean the bobbin holder.</p> <p>Change to a high quality sewing thread.</p> <p>Clear out the jamming thread.</p>
Needle breaks	<ol style="list-style-type: none"> 1. Needle is hitting the needle plate. 2. Needle is bent or worn. 3. Needle is hitting the hook. 4. Fabric is being pulled too strongly while sewing. 	<p>Adjustment of Needle Drop Position (Reference P.9)</p> <p>Change the needle.</p> <p>Adjustment of Clearance between Needle and Tip of Hook Rotary (Reference P.12)</p> <p>Guide the fabric gently while sewing</p>
Noisy operation	<ol style="list-style-type: none"> 1. Lower shaft gear is loose. 2. Inappropriate belt tension. 3. Not enough oil. 4. Upper shaft gear is loose. 	<p>Eliminate the looseness.</p> <p>See part removal and replacement "driving motor (DC motor)". (Reference P.25)</p> <p>Oil all moving parts.</p> <p>Eliminate the looseness.</p>
Deformation pattern	<ol style="list-style-type: none"> 1. Top tension is too strong. 2. Inappropriate feed balance. 	<p>Adjustment of top tension.</p> <p>Adjust the feed balancing screw.</p>

Changing External Parts (1)

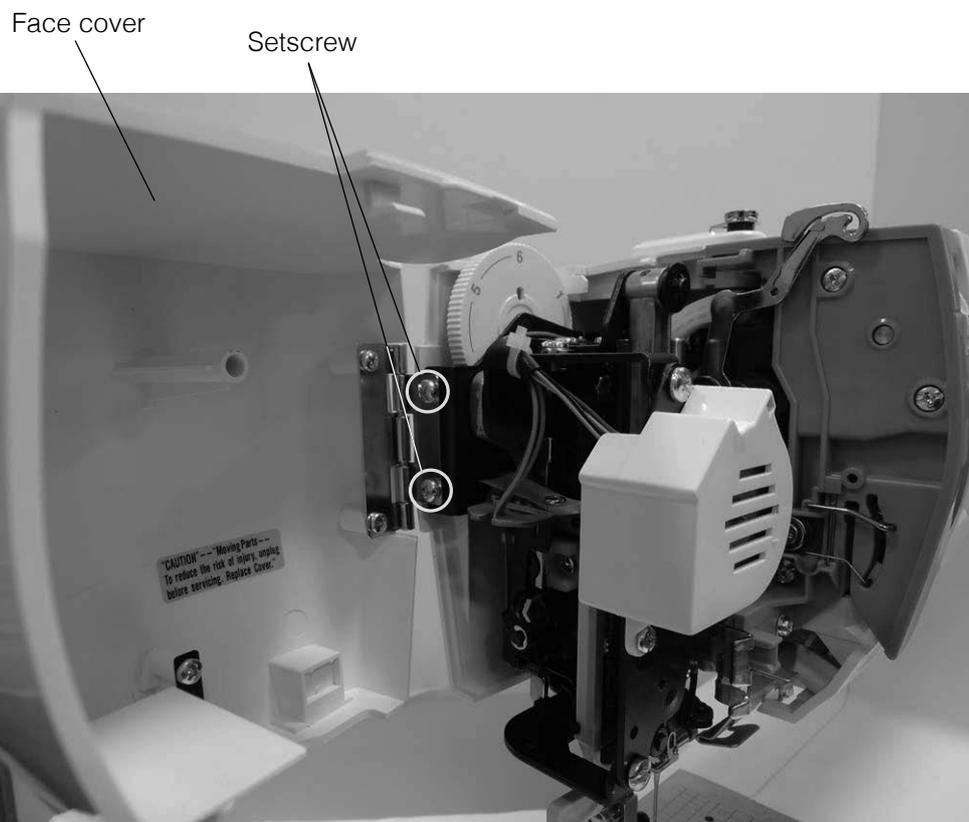
Face Cover

To remove:

1. Remove the setscrews (2 pcs.).
Remove the face plate.

To attach:

2. Follow the above procedure in reverse.
- * Make sure that the face plate can be closed fitting with the thread tension and the rear cover.



Changing External Parts (2)

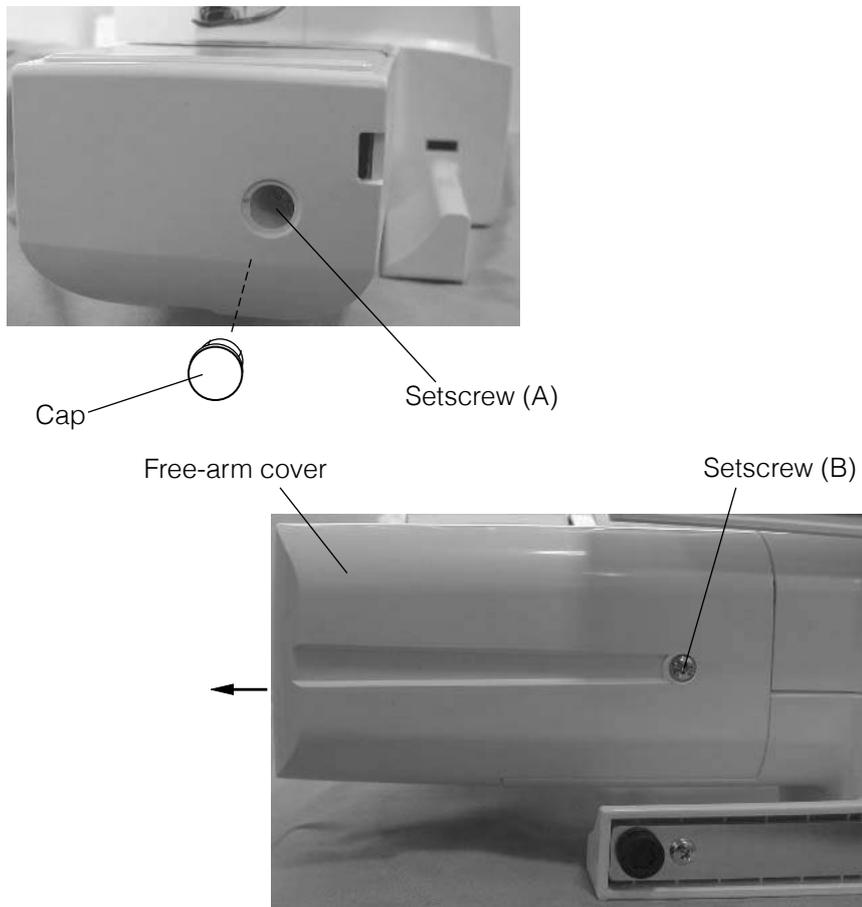
Free-arm Cover

To remove:

1. Remove the cap and setscrew (A).
2. Remove the setscrew (B). Move the free-arm cover to the left. Remove the free-arm cover.

To attach:

3. Insert the free-arm cover
Tighten the setscrew (A) and (B).
4. Attach the cap.



Changing External Parts (3-1)

Front Cover

To remove:

1. Remove the face cover.
2. Remove the setscrews (A) (2 pcs.).
3. Loosen the setscrew (B) (1 pcs.).
4. Remove the setscrews (C) (1 pcs.), setscrews (D) (4 pcs.), and back cover.
(Disconnect the connectors)
5. Remove the setscrews (E) (2 pcs.).
6. Remove the front-cover (Reference P.6), disconnect all the connectors from the circuit board A.

Notes:

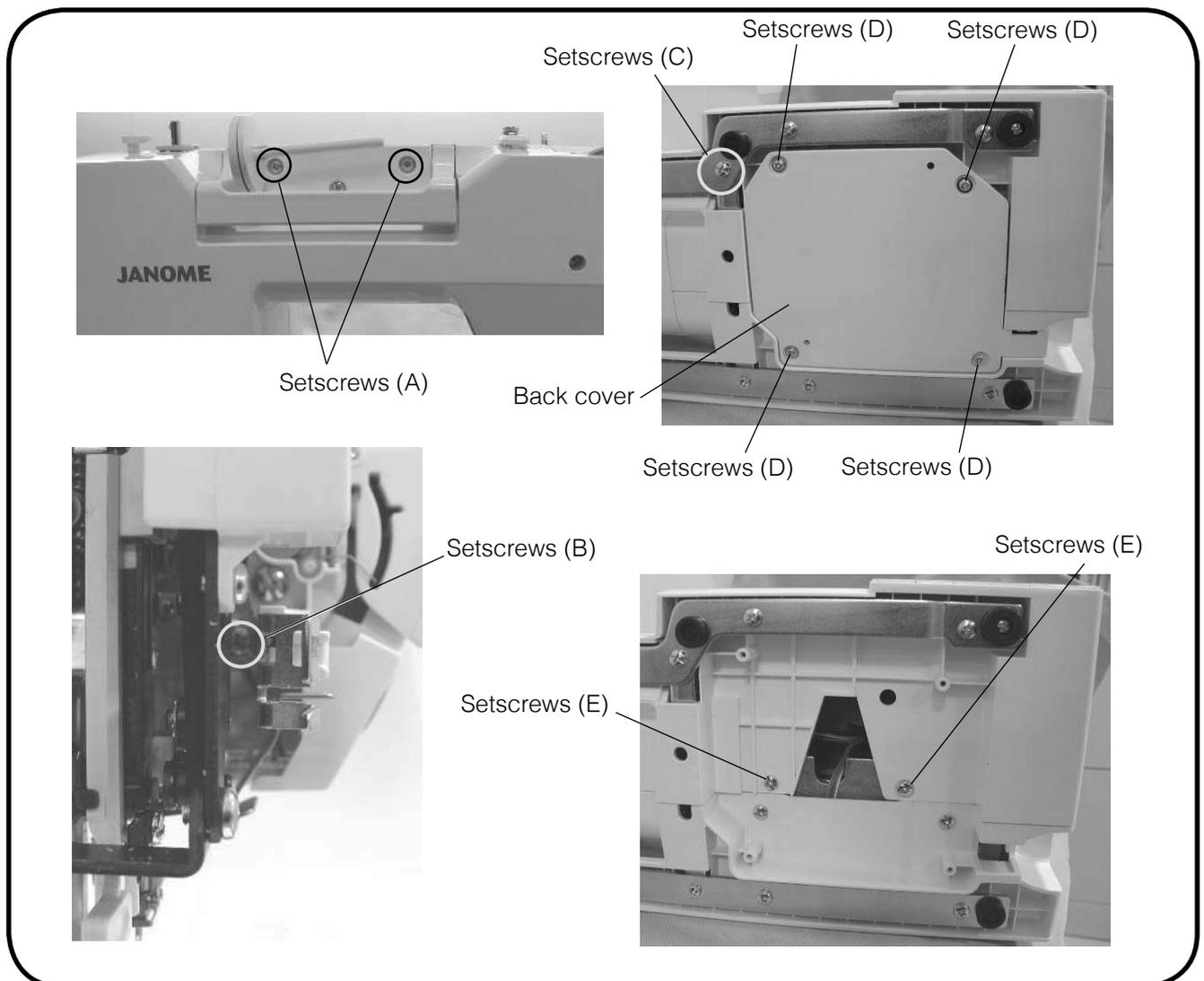
Do not disconnect the connectors by pulling on cord.
To disconnect, grasp the connector, not the cord.

To attach:

1. Follow the above procedures in reverse.

Notes:

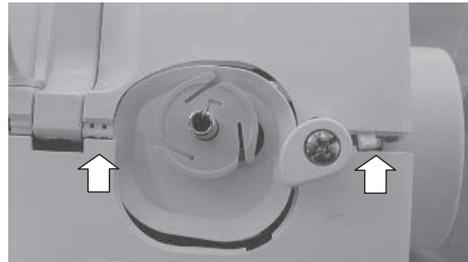
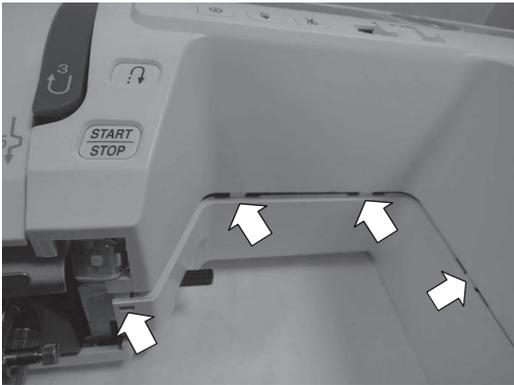
1. Make sure to insert the connector into the connector receptacle of the same color on the board.
2. Make sure to insert the connector in the correct direction pushing to snap it in place.



Changing External Parts (3-2)

Front Cover

1. Disengage the front cover and rear cover hooks.



Changing External Parts (4)

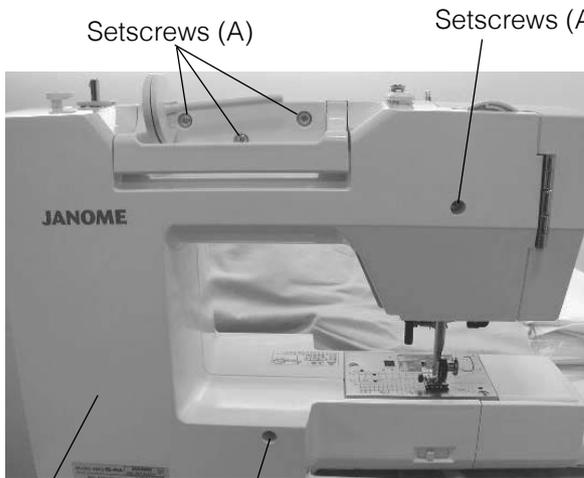
Rear Cover

To remove:

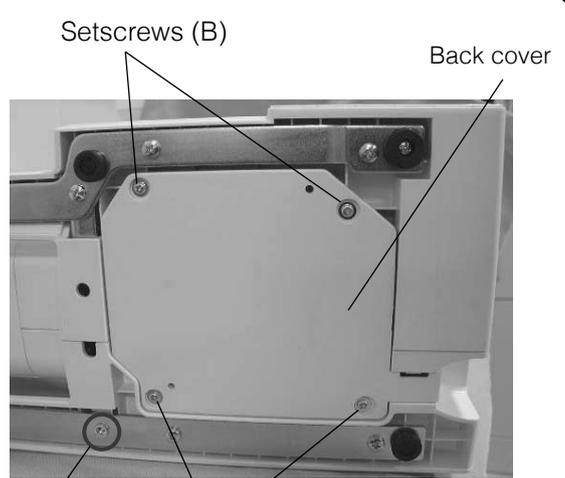
1. Remove the free-arm cover.
2. Remove the setscrews (A) (5 pcs.).
3. Remove the setscrews (B) (4 pcs.) and back cover.
4. Remove the setscrews (C) (1 pcs.) and setscrews (D) (2 pcs.). Remove the rear cover.
Lower the presser foot lifter.
Remove the part around the presser foot lifter, and remove the part around the machine socket.

To attach:

5. Follow the above procedures in reverse.



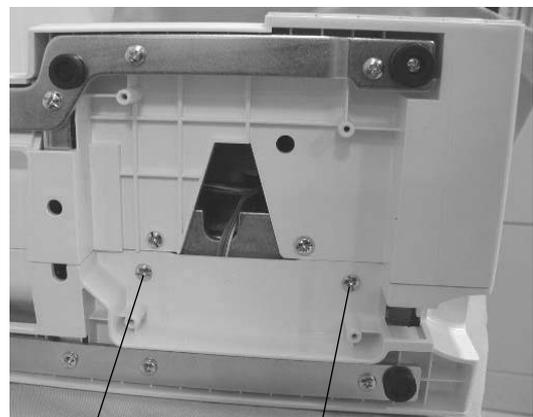
Rear cover Setscrews (A)



setscrews (C) Setscrews (B)



Presser foot lifter

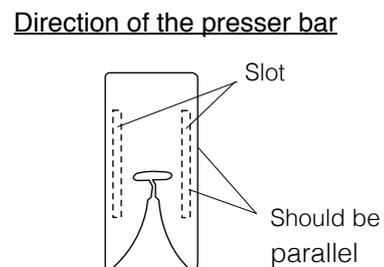
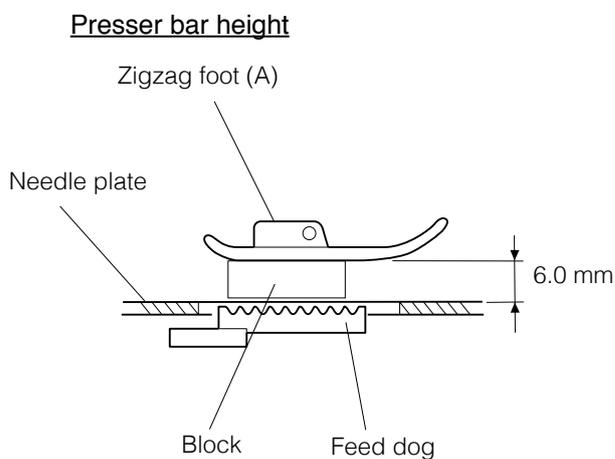
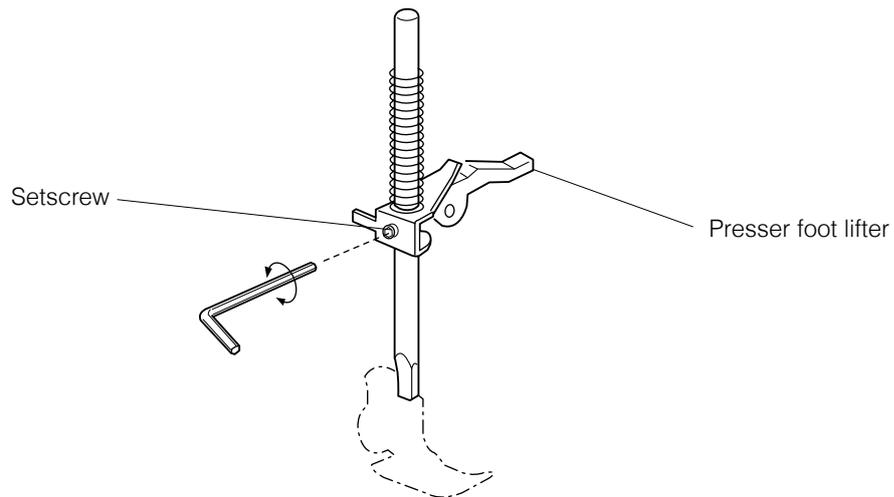


Setscrews (D) Setscrews (D)

Presser Bar Height

The distance between the bottom of the presser foot in up position and the needle plate should be 6.0 mm. Make sure that the presser foot should be parallel to the feed dog slots in the needle plate.

1. Remove the face plate.
2. Raise the presser foot and presser foot lifter and loosen the setscrew.
Place the 6mm spacer (block) between the presser foot and the needle plate.
Adjust the direction of the presser bar.
3. Tighten the setscrew firmly.
4. Attach the face plate.



Needle Drop Position

Set the stitch pattern to “”. The standard needle drop position should be at center of the needle plate hole. Select zigzag stitch “”, and set the stitch width at “7.0”.

The clearance between the needle and the edge of the needle hole in the needle plate should be at least 0.2 mm on either side. If not, adjust as follows:

1. Turn the power switch on. Set the stitch pattern to “”, and select zigzag stitch “”.
Check that the needle drop position.
2. If the needle drop position is not correct, turn the power switch off and remove the face cover.
Loosen the hexagonal socket screw 3 x 4. Adjust the needle drop position by turning the eccentric pin.

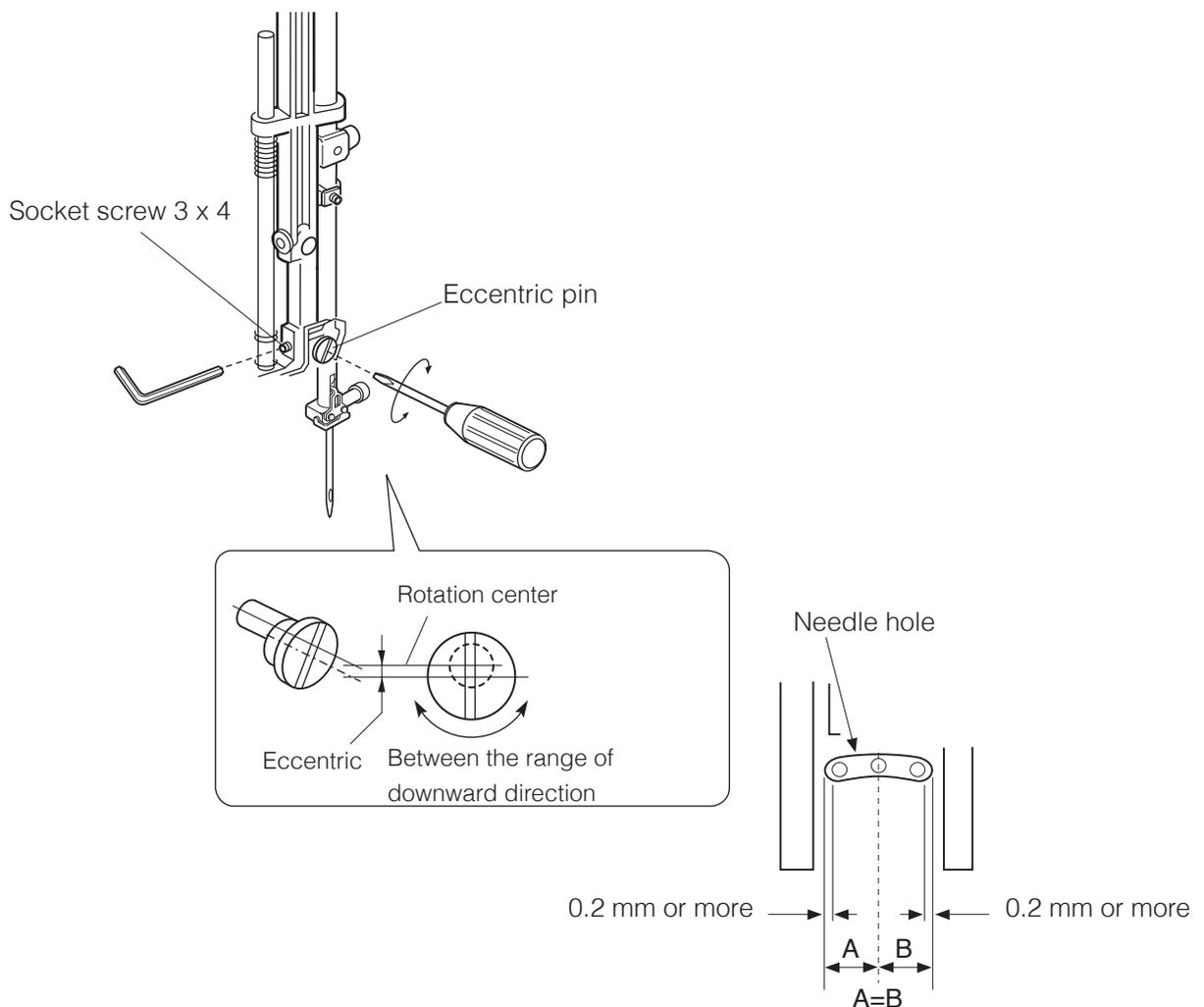
Note:

Make sure to adjust the eccentric pin between the range of downward direction.

3. Tighten the socket screw 3 x 4.
Attach the face cover.

Note:

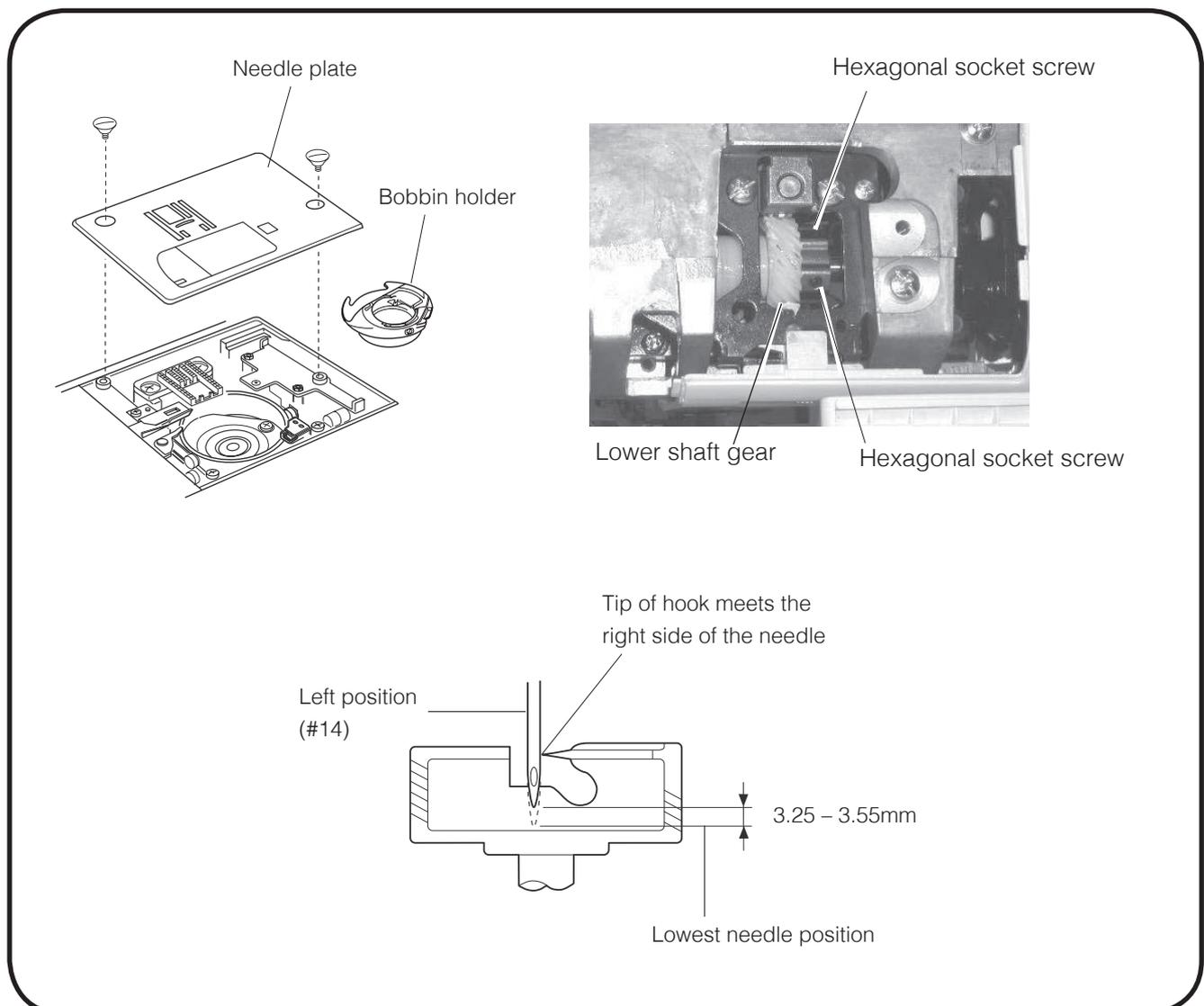
Check the hook timing after this adjustment.



Adjustment of 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 should be 3.25 to 3.55 mm.

1. Remove the needle plate and bobbin holder.
2. Remove the free-arm cover.
3. Turn the power switch on. Select the pattern ⊖ (left position). Set the zigzag width at 0.
4. Turn the handwheel toward you to lower the needle at its lowest position.
5. Loosen the hexagonal socket screw (2 pcs.).
6. Move the needle bar 3.4 mm from the lowest position.
7. Turn the lower shaft gear until the tip of hook meets the right side of the needle while holding the handwheel.
8. Tighten the hexagonal socket screw (2 pcs.).
9. Attach the free-arm cover, bobbin holder and needle plate.



Adjustment of Needle Bar Height

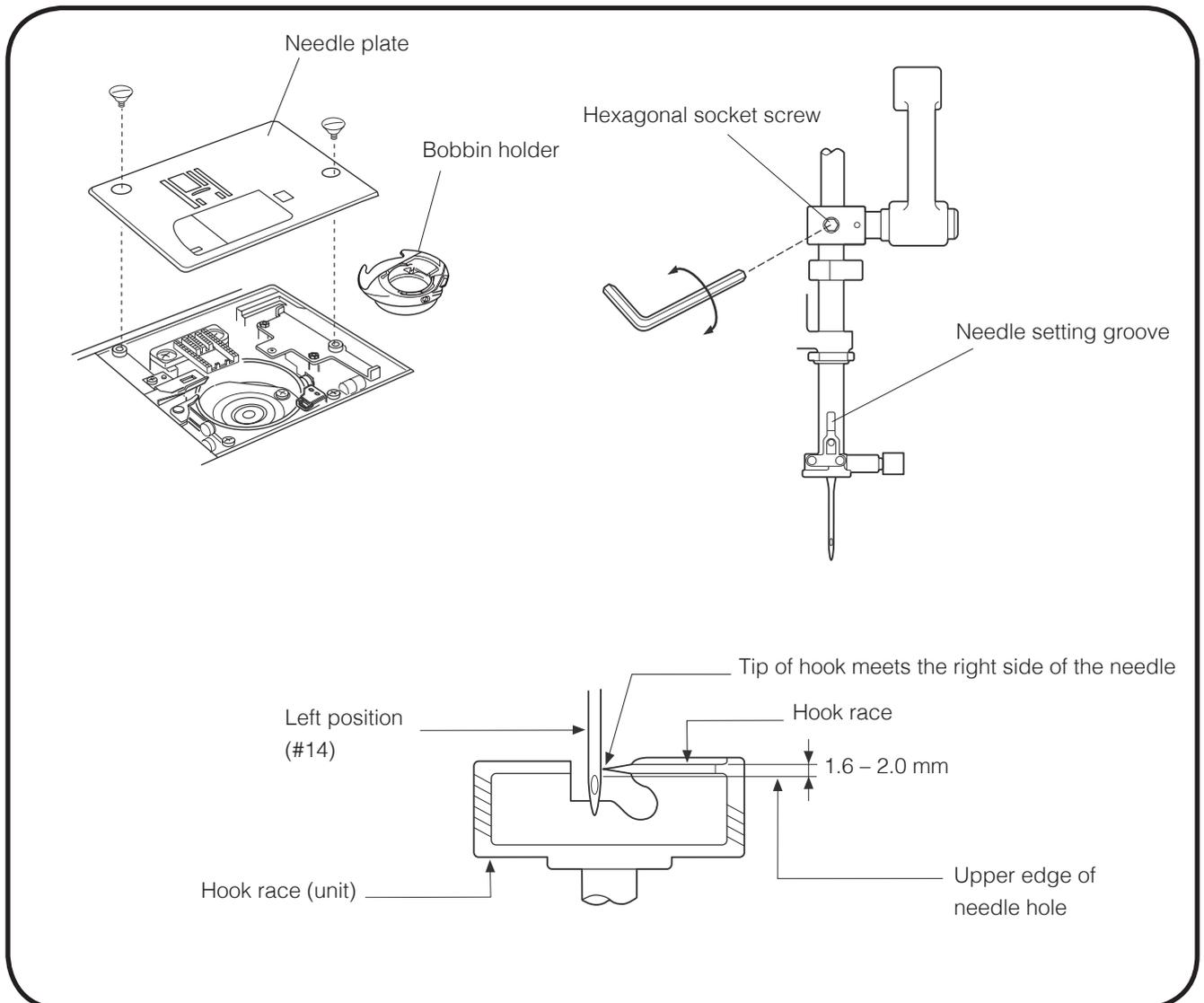
Before proceeding with this adjustment, check the hook timing (refer to page 10).

The distance between the upper edge of the needle eye and the tip of the hook should be in the range of 1.6 to 2.0 mm when the tip of the hook timing meets right side of the needle in the left needle position () as the needle ascends from its lowest position.

1. Remove the needle plate, bobbin holder and face plate.
2. Turn the power switch on.
3. Select the pattern (left position). Set the zigzag width at 0.
4. Turn the handwheel toward you until the tip of hook meets the right side of the needle.
5. Loosen the hexagonal socket screw.
6. Move the needle bar to adjust the needle bar height, and tighten the hexagonal socket screw.

Be careful not to turn the needle bar.

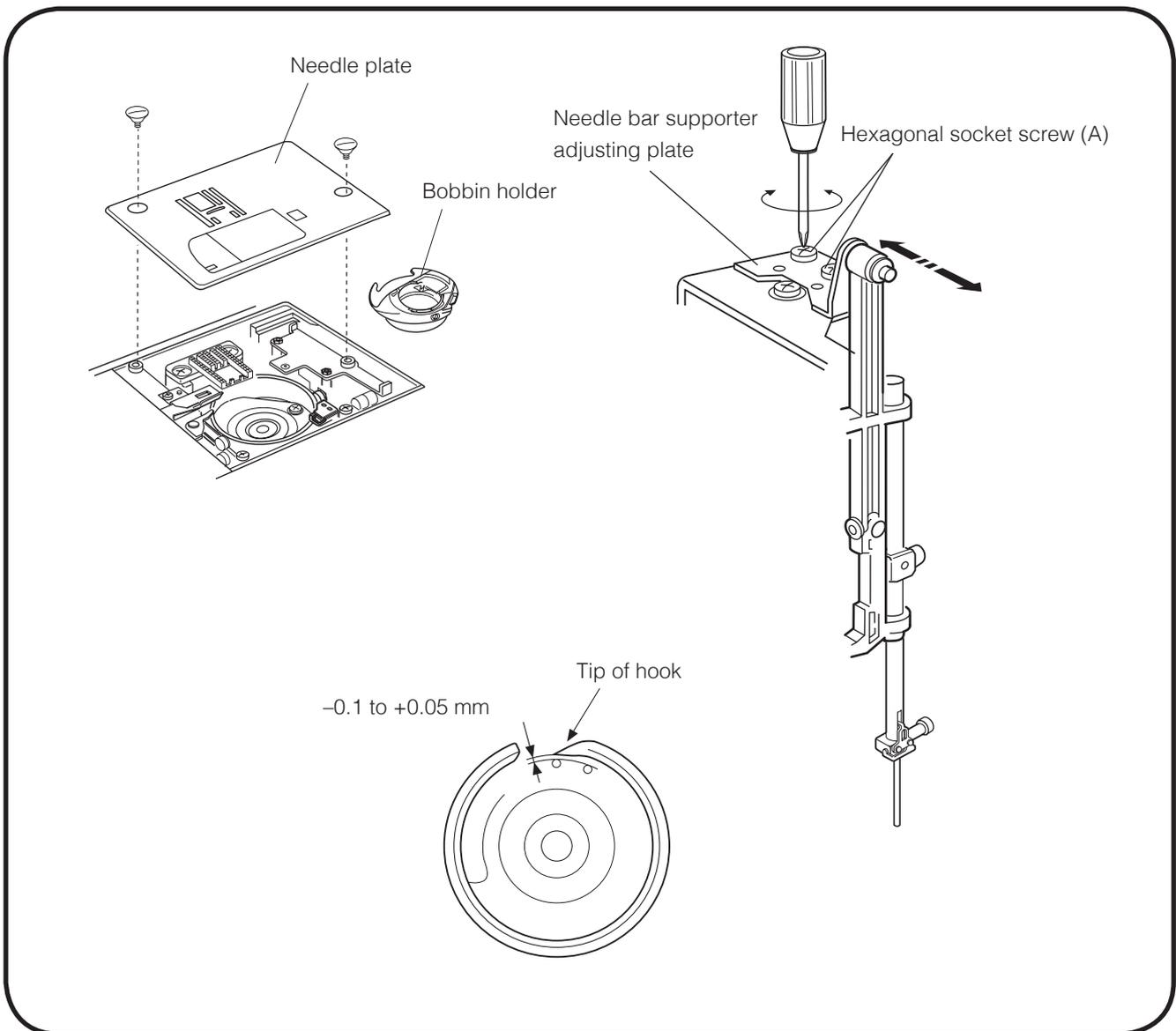
7. Attach the bobbin holder, needle plate and face cover.



Clearance between Needle and Tip of Hook Rotary

The clearance between the needle and the point of hook should be -0.1 to $+0.05$ mm.

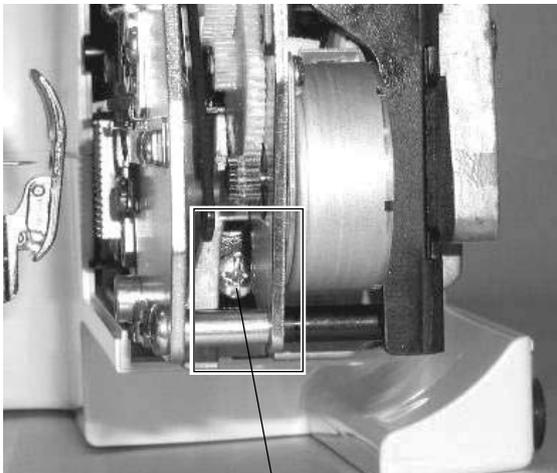
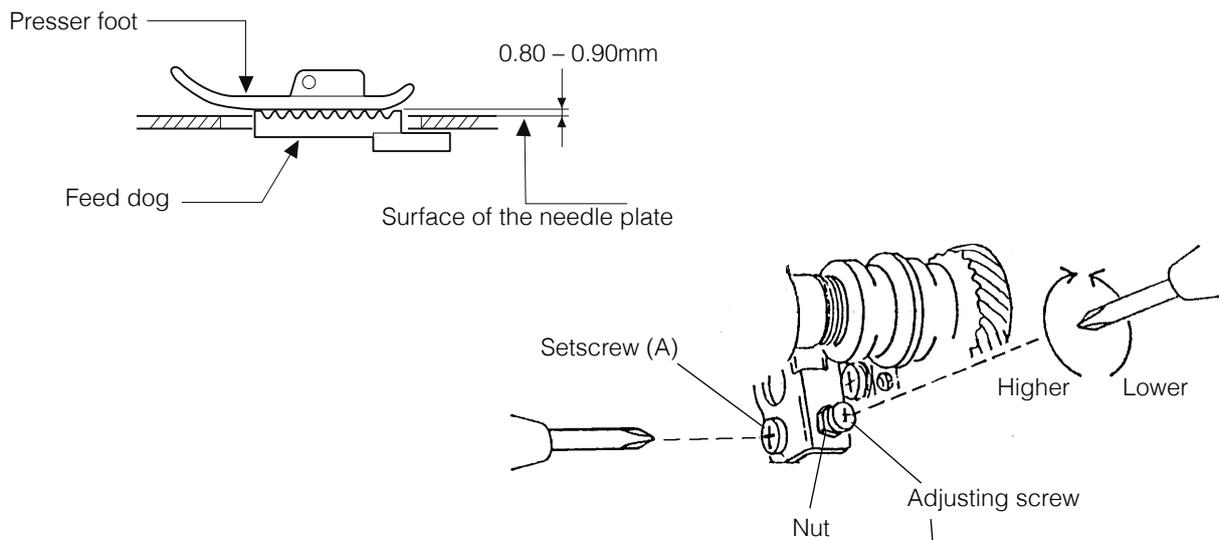
1. Remove the needle plate and bobbin holder. Attach the master needle. Turn the power switch on and set the zigzag width at maximum.
2. Remove the face cover.
3. Loosen the setscrew (A) (2 pcs.).
4. Turn the handwheel toward you. Adjust the clearance between the needle and the tip of the rotary hook, by moving the hook base plate up or down, to within -0.1 to $+0.05$ mm at the left and right needle position.
5. Tighten the setscrew A (2 pcs.).
6. Attach the face cover. Remove the master needle. Attach the bobbin holder and needle plate.
7. Check the clearance between the needle and the edge of the needle hole in the needle plate.



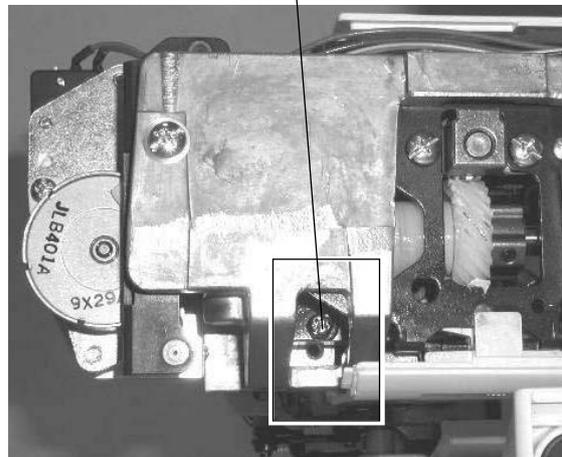
Feed Dog Height

The highest position of the feed dog should be between 0.80 and 0.90 mm from the surface of the needle plate.

1. Remove the free-arm cover.
2. Lower the presser foot and turn the power switch on.
3. Turn the handwheel toward you to set the feed dog at the highest position.
4. Loosen the setscrew (A) and nut.
5. Adjust the feed dog height by turning the adjusting screw. The highest position of the feed dog should be between 0.80 and 0.90 from the surface of the needle plate.
6. Tighten the nut and setscrew (A) .
7. Attach the free-arm cover.



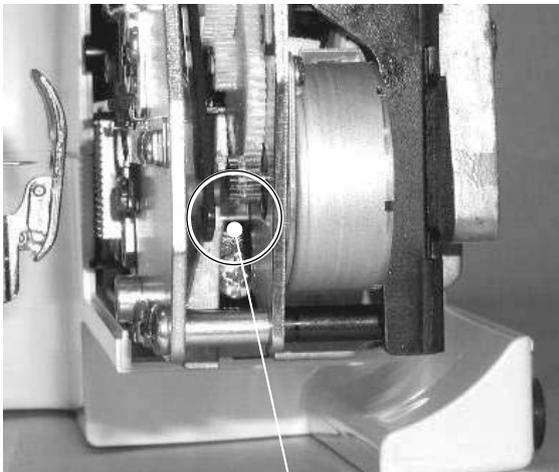
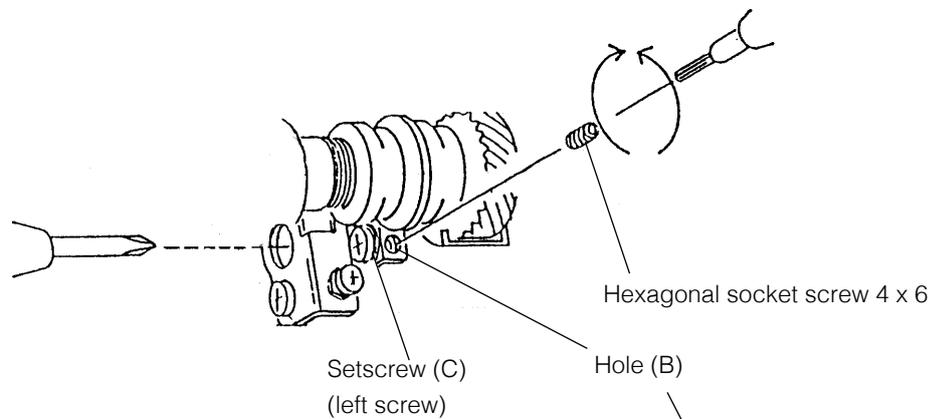
Setscrew (A)



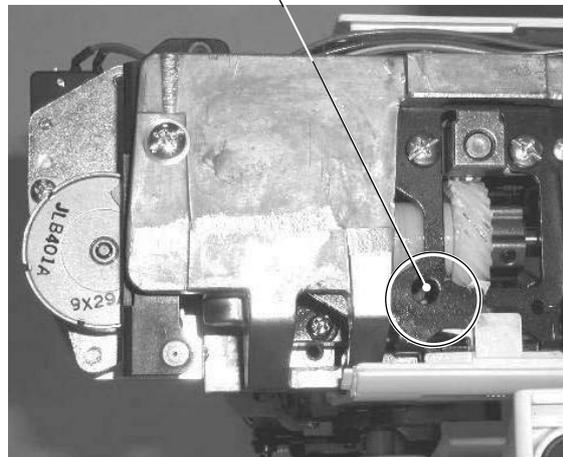
Feed Dog Adjustment

The highest position of the feed dog should be parallel to the surface of the needle plate.
If not, adjust as follows.

1. Use a hexagonal socket screw (4 x 6).
Insert the screw to the hole (B). Tighten the hexagonal socket screw as far as it goes.
2. Loosen the setscrew (C).(left screw)
3. Turn hexagonal socket screw to adjust the feed dog (should be parallel to the surface of the needle plate).
4. Tighten the setscrew (C).(left screw)
5. Loosen the hexagonal socket screw and remove it.



Setscrew (C)

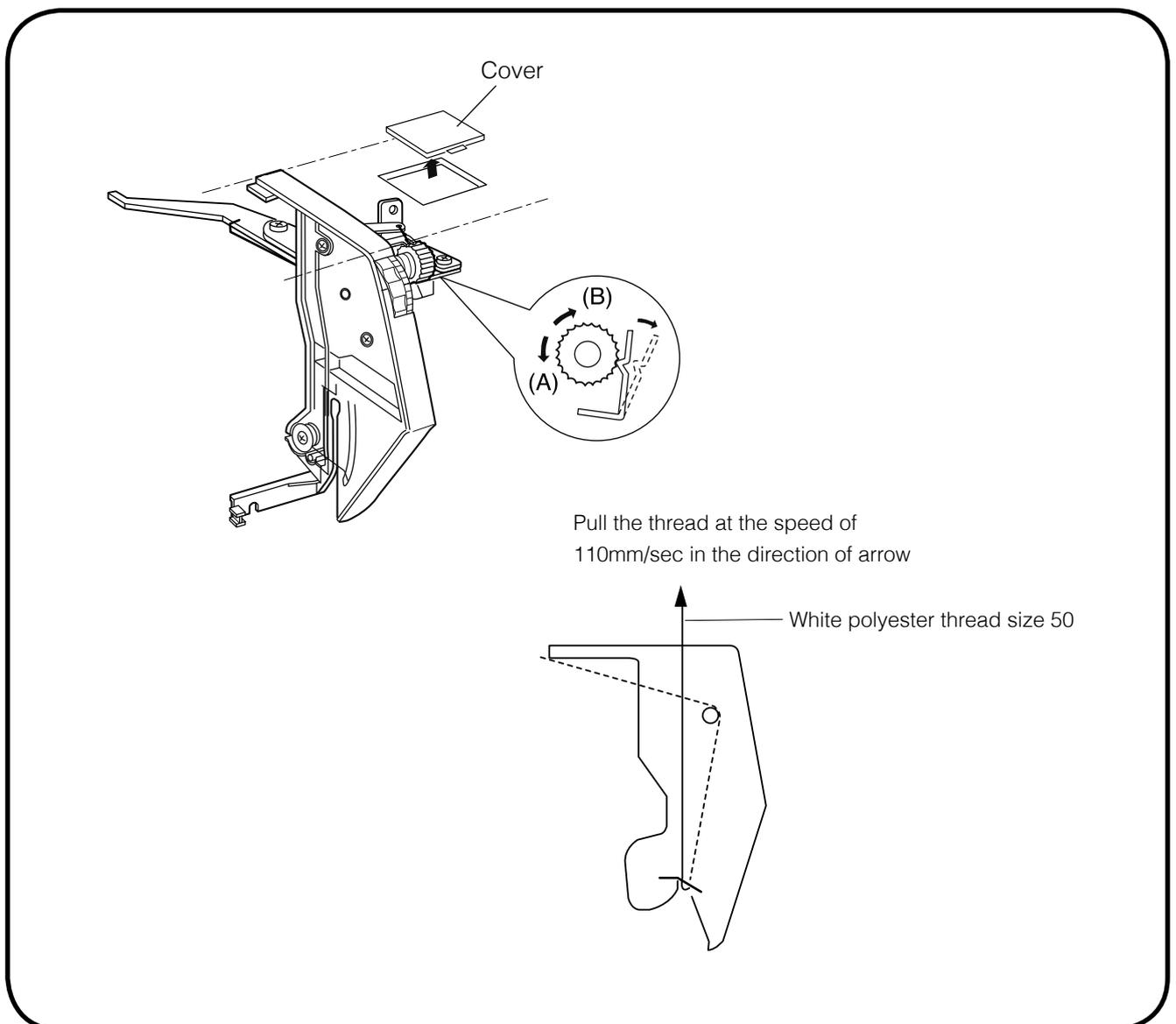


Top Tension

The top tension should be between 65 and 80g when set the tension dial "4".

* Use polyester sewing thread #50 (White).

1. Set the tension dial "4".
2. Remove the cover.
3. Lower the presser foot.
 - If the top tension is too loose, turn the lead screw in the direction (A).
 - If the top tension is too tight, turn the lead screw in the direction (B).
4. Check the top tension and attach the cover.



Circuit Board A connection

Insert all the connectors according to the diagram shown below.

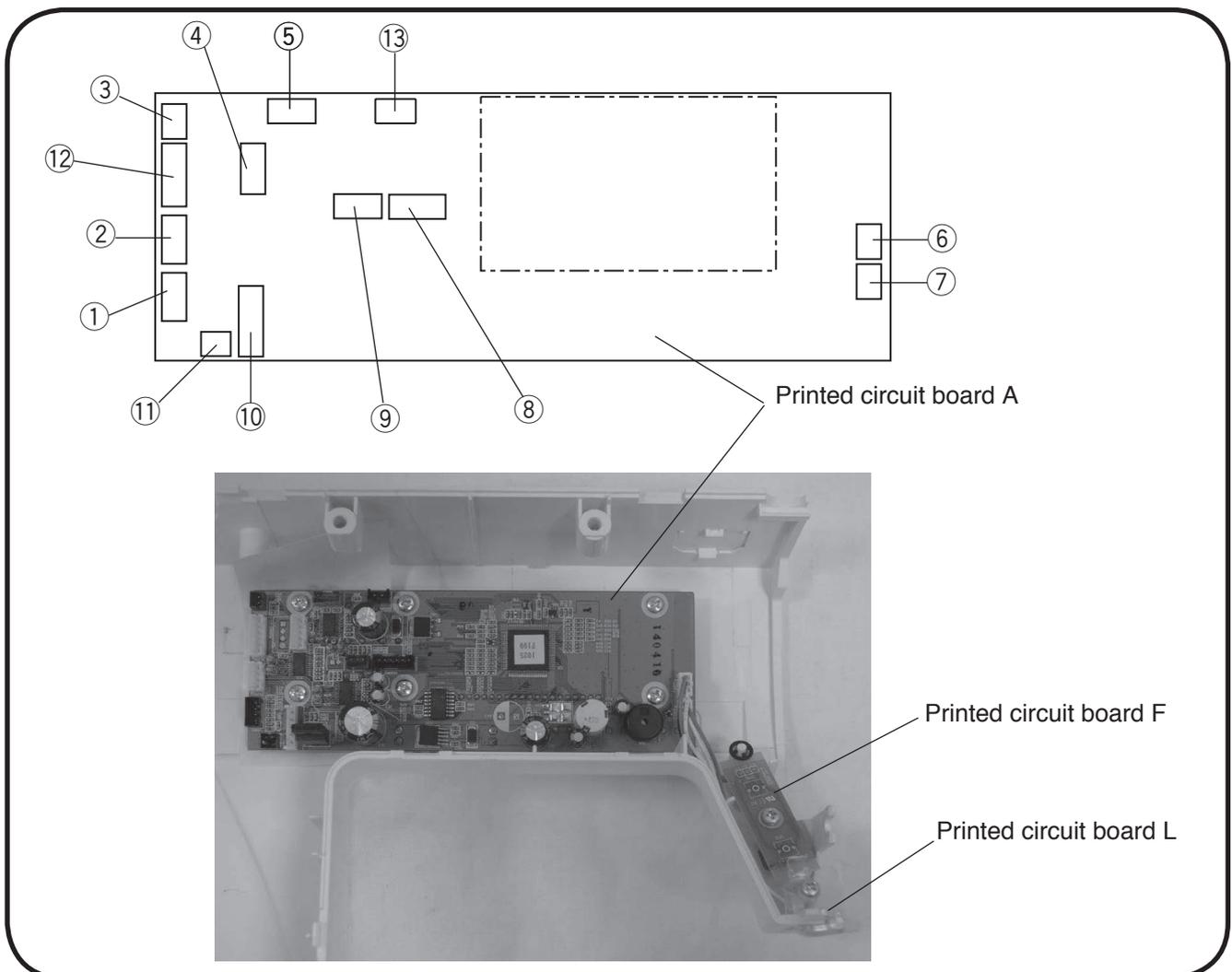
NOTE:

Do not disconnect the connectors by pulling on cord.
To disconnect, grasp the connector, not the cord.

- ① Printed circuit board P (Black)
- ② Feed motor (White)
- ③ Bobbin winding switch (Blue)
- ④ Power switch (White)
- ⑤ Zigzag width motor (Green)
- ⑥ Printed circuit board F (White)
- ⑦ Printed circuit board L (White)
- ⑧ Program (Black)
- ⑨ Buttonhole sensor program (Red)
- ⑩ DC motor (White)
- ⑪ Controller (Black)
- ⑫ Thread cutter motor (White)
- ⑬ Solenoid (Black)

NOTE:

- 1. Make sure to insert the connector into the connector receptacle of the same color on the board.
- 2. Make sure to insert the connector in the correct direction pushing to snap it in place.



Self-diagnostic Test

Preparation:

1. Turn the power switch off.
2. Move the bobbin winder spindle to the left.
3. Raise the feed dog.
4. Set the speed control lever to the left.
5. Remove the presser foot and raise the presser foot lifter.
6. Turn the hand wheel toward you to raise the needle to its highest position.

Notes:

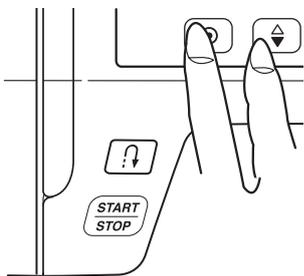
- Be careful: the sewing machine may start running in its own while in test mode.
- Turn off the power switch before replacing any parts.
- Repeat the diagnostic test until the problem has been resolved.
- You can skip steps in the diagnostic procedure and go directly to the test you want to perform. (Enter self-diagnostic mode, then select the step number of the diagnostic test you require by pressing the start/stop button)

To begin:

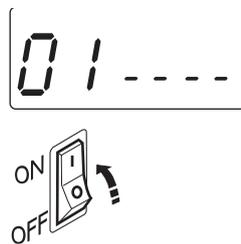
Turn on the switch, if any of the following problems occur, take the recommended actions in the order they are shown.

1. The machine does not respond when the power switch is turned on:
 - Check each connector connection
 - Replace the machine socket
 - Replace the Switching regulator.
 - Replace the A-board
2. The sewing machine lamp does not light up:
 - Replace the light bulb
 - Replace the A-board

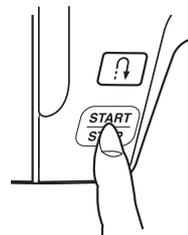
To enter self-diagnostic mode:



Turn the power switch on while simultaneously pressing needle up/down button and the locking stitch button.

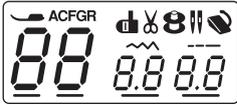
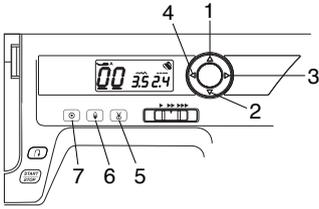
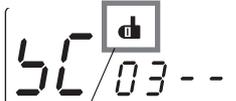


The LCD display will indicate "01".

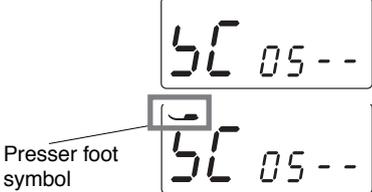
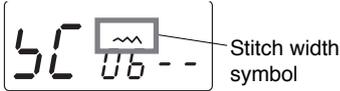
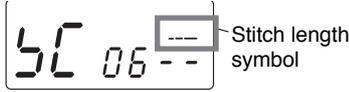
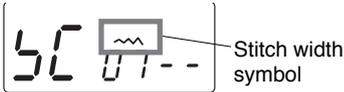
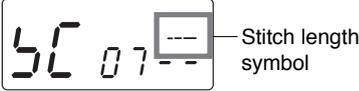


Press the start/stop button to enter the self-diagnostic mode.

Self-diagnostic Test

Step and items to check	Procedure	Correct Condition	Defective Condition
01) Function of LCD, buzzer and lamp	<p>Turn on the power switch while simultaneously pressing the start/stop button and locking stitch button.</p> <p>Press the start/stop button.</p> <p>If the result is correct condition, press the start/stop button to proceed the next step.</p> <p>If the result is defective condition, press the reverse stitch button to proceed the next step.</p>	<p>Sewing lamp and LCD backlight lits. LCD displays "01".</p>  <p>Buzzer sounds.</p> <p>LCD displays symbols and numbers in order. LCD repeats displaying after all symbols and numbers are shown.</p> 	<p>Sewing lamp does not lit. LCD backlight does not lit. LCD does not display "01". Buzzer does not sound. LCD does not turned on. LCD does not display any symbols or not in order.</p> <p>–REMEDY– Replace the circuit board A. Replace the circuit board F.</p>
02) Button	<p>Press buttons 1– 7.</p>  <p>If the result is correct condition, press the start/stop button to proceed the next step.</p> <p>If the result is defective condition, press the reverse stitch button to proceed the next step.</p>	<p>LCD displays "SC 02".</p> <p>Buzzer sounds when button is pressed. Button number is displayed when the button is pressed.</p>   <p>LCD displays "S3" when button 1 is pressed. LCD displays "S4" when button 2 is pressed. LCD displays "S5" when button 3 is pressed. LCD displays "S6" when button 4 is pressed. LCD displays "S7" when button 5 is pressed. LCD displays "S8" when button 6 is pressed. LCD displays "S9" when button 7 is pressed.</p>	<p>Buzzer does not sound. LCD does not display the number correctly.</p> <p>–REMEDY– Replace the circuit board A.</p>
03) Buttonhole Sensor	<p>Lower the buttonhole lever.</p> <p>Move the buttonhole lever back and front.</p> <p>If the result is correct condition, press the start/stop button to proceed the next step.</p> <p>If the result is defective condition, press the reverse stitch button to proceed the next step.</p>	<p>LCD displays "SC 03".</p> <p>When the buttonhole lever is pulled, buzzer sounds and LCD displays BH symbol.</p> <p>When the buttonhole lever is pushed, buzzer sounds and LCD displays BH symbol.</p>   <p>BH symbol</p>	<p>Buzzer does not sound. BH symbol does not appear.</p> <p>–REMEDY– Replace the circuit board A. Replace the BH sensor.</p>
04) Bobbin winder switch	<p>Move the bobbin winder spindle to the right.</p> <p>Return it to the left.</p> <p>If the result is correct condition, press the start/stop button to proceed the next step.</p> <p>If the result is defective condition, press the reverse stitch button to proceed the next step.</p>	<p>LCD displays "SC 04".</p> <p>When the bobbin winder spindle is moved to the left, buzzer sounds.</p> <p>When the bobbin winder spindle is moved to the right, buzzer sounds and LCD displays the bobbin symbol.</p>   <p>Bobbin symbol</p>	<p>Buzzer does not sound. Bobbin symbol is not displayed.</p> <p>–REMEDY– Replace the circuit board A. Replace the Bobbin winder switch.</p>

Self-diagnostic Test

Step and items to check	Procedure	Correct Condition	Defective Condition
<p>05) Presser foot lifter switch</p>	<p>Raise or lower the presser foot lifter.</p> <p>If the result is correct condition, press the start/stop button to proceed the next step.</p> <p>If the result is defective condition, press the reverse stitch button to proceed the next step.</p>	<p>LCD displays "SC 05".</p> <p>Buzzer sounds when presser foot lifter is raised or lowered.</p> <p>The presser foot symbol appears when the foot lifter is lowered.</p> 	<p>Buzzer does not sound.</p> <p>The presser foot symbol does not appear when the presser foot is lowered, or does not disappear when the presser foot is raised.</p> <p>–REMEDY– Replace the circuit board A. Replace the presser foot lifter switch. Adjust the presser foot lifter switch position.</p>
<p>06) Upper shaft positioning sensor</p>	<p>Turn the handwheel toward you.</p> <p>Lower the needle bar from its highest to its lowest position.</p> <p>Raise the needle bar from its lowest position to its highest position.</p> <p>If the result is correct condition, press the start/stop button to proceed the next step.</p> <p>If the result is defective condition, press the reverse stitch button to proceed the next step.</p>	<p>LCD displays "SC 06".</p>  <p>Turn the handwheel.</p> <p>LCD displays stitch width symbol when the needle bar is at zigzag phase.</p>  <p>LCD displays stitch length symbol when the needle bar is at feed phase.</p> 	<p>Buzzer does not sound.</p> <p>Stitch width or length symbol does not appear.</p> <p>–REMEDY– Replace the circuit board A. Replace the circuit board P.</p>
<p>07) Zigzag motor (Step motor) Feed motor</p>	<p>Turn the handwheel toward you.</p> <p>Lower the needle bar from its highest to its lowest position.</p> <p>Raise the needle bar from its lowest position to its highest position.</p> <p>If the result is correct condition, press the start/stop button to proceed the next step.</p> <p>If the result is defective condition, press the reverse stitch button to proceed the next step.</p>	<p>LCD displays "SC 07".</p>  <p>LCD displays stitch width symbol when the needle bar is at middle position. (Zigzag motor get default position.)</p>  <p>LCD displays stitch length symbol when feed motor gets default position.</p>  <p style="text-align: center;">Bobbin symbol</p>	<p>Zigzag motor does not get default position.</p> <p>–REMEDY– Replace the zigzag motor. Replace the circuit board A.</p> <p>Feed motor does not get default position.</p> <p>–REMEDY– Replace the feed motor. Replace the circuit board A.</p>

Self-diagnostic Test

Step and items to check	Procedure	Correct Condition	Defective Condition
08) Foot control	<p>Attach the foot control to the sewing machine. Depress the foot control as far as it goes, then release it.</p> <p>If the result is correct condition, press the start/stop button to proceed the next step.</p> <p>If the result is defective condition, press the reverse stitch button to proceed the next step.</p>	<p>LCD displays "SC 08".</p>  <p>The foot control symbol appears when the foot control is attached.</p>  <p>Buzzer sounds when the foot control is deeply depressed. Buzzer sounds when the foot control is released.</p>	<p>The foot control symbol does not appear. Buzzer does not sound.</p> <p>-REMEDY- Replace the foot control. Replace the machine socket. Replace the circuit board A.</p>
09) Slide volume	<p>Shift the slide volume from left to right, then return to the left.</p> <p>If the result is correct condition, press the start/stop button to proceed the next step.</p> <p>If the result is defective condition, press the reverse stitch button to proceed the next step.</p>	<p>LCD displays "SC 09".</p>  <p>Buzzer sounds at right or left position.</p>	<p>Buzzer does not sound.</p> <p>-REMEDY- Replace the circuit board A.</p>
10) DC motor	<p>Press the needle up/down button.</p> <p>If the result is correct condition, press the start/stop button to proceed the next step.</p> <p>If the result is defective condition, press the reverse stitch button to proceed the next step.</p>	<p>LCD displays "SC 10".</p>  <p>Machine runs slow, then fast, and the needle bar stops at its highest position.</p>	<p>The machine motor does not start. The motor stops immediately. The motor runs unstable.</p> <p>-REMEDY- Replace the DC motor. Replace the circuit board A.</p>
11) Solenoid (Applicable for only model 3160QDC)	<p>Lower the presser foot. Press the needle up/down button.</p> <p>If the result is correct condition, press the start/stop button to proceed the next step.</p> <p>If the result is defective condition, press the reverse stitch button to proceed the next step.</p>	<p>LCD displays "SC 11". Press the needle up/down position button to display "on" or "off"(off). Thread tension disc opens while the LCD displays "on".</p>  	<p>The thread tension disc does not open.</p> <p>-REMEDY- Replace the solenoid Replace the circuit board A.</p>
12) Thread cutter motor, Thread cutter button (Applicable for only model 3160QDC)	<p>Turn the handwheel toward you to raise the needle bar at its highest position. Press the needle up/down button.</p> <p>If the result is correct condition, press the start/stop button to proceed the next step.</p> <p>If the result is defective condition, press the reverse stitch button to proceed the next step.</p>	<p>LCD display "12". Thread cutter motor will be initialized. Press the thread cutter button. The thread cutter icon will appear and blink as long as the thread cutter button is pressed.</p> 	<p>The thread cutter motor does not work. Thread cutter symbol does not appear when the thread cutter button is pressed. Thread cutter symbol appears when the thread cutter button is not pressed.</p> <p>-REMEDY- Replace the thread cutter motor. Replace the thread cutter switch. Replace the circuit board A.</p>

Self-diagnostic Test

Buzzer sounds after few seconds when the self-diagnostic test has been finished.
The test result has been determined.



Correct:

Buzzer sounds and LCD displays "00"



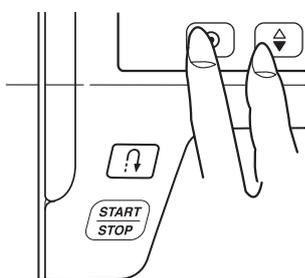
Defective:

Caution buzzer sounds and LCD displays the defective part number. Refer to page 18-20 and fix the defective part.

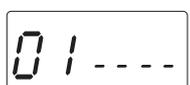
The defective part number.
See page 18-20 "Steps and items" section.

Turn the power switch off when the self-diagnostic test is finished.

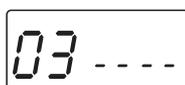
To display the version of the program



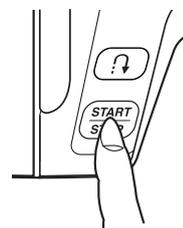
Turn the power switch on while simultaneously pressing needle up/down button and the locking stitch button.



The LCD display will indicate "01".



Press the cursor button "△" twice to display the "03".



Press the start/stop button to display the version of the program.

Replacing the Circuit Board A

To remove:

1. Remove the front cover.
2. Pull out connectors from the circuit board-A.
3. Remove the setscrews (6pcs.) and the circuit board-A.

Note:

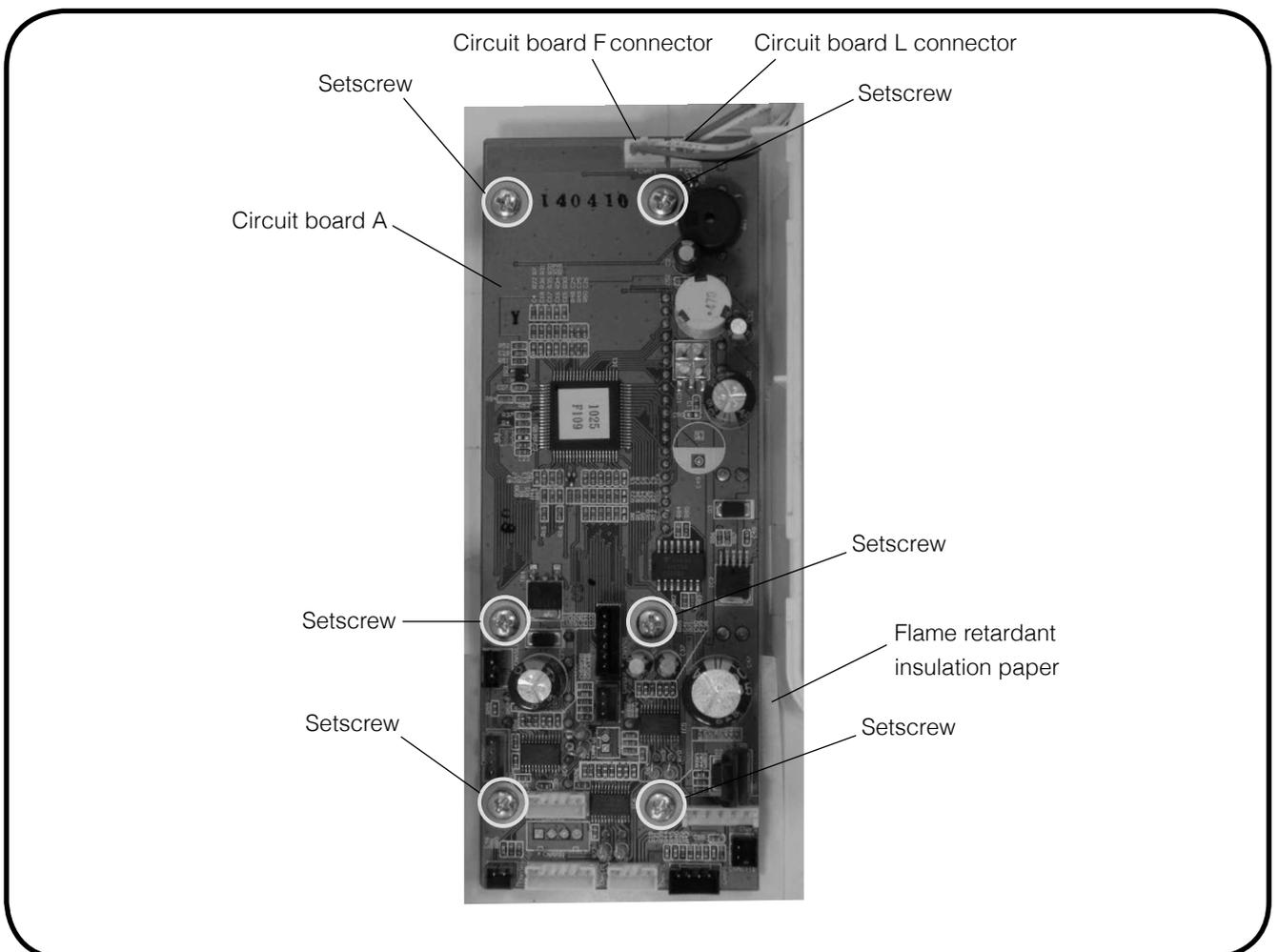
Do not disconnect the connectors by pulling on cord.
To disconnect, grasp the connector, not the cord.

To attach:

1. Follow the above procedures in reverse.
(Attach the flame retardant insulation paper).

Note:

1. Make sure to insert the connector into the connector receptacle of the same color on the board.
2. Make sure to insert the connector in the correct direction pushing to snap it in place.



Replacing the Circuit Board F, L

Circuit board-A

To remove:

1. Remove the front cover.
2. Pull out connectors from the circuit board A.
3. Remove the setscrew (A).

Remove the Lamp holder by pulling them downward and remove the circuit board L.

Remove the setscrew (B) and the circuit board F.

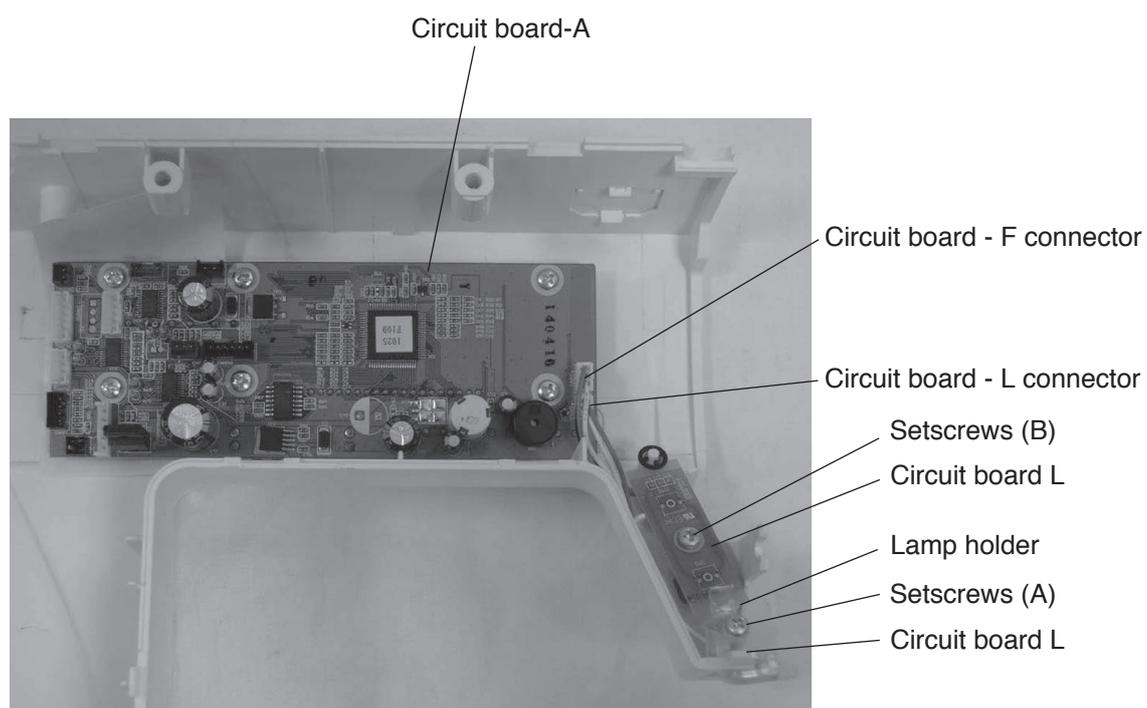
Note:

Do not disconnect the connectors by pulling on cord.

To disconnect, grasp the connector, not the cord.

To attach:

1. Follow the above procedures in reverse.



Replacing the Driving Motor

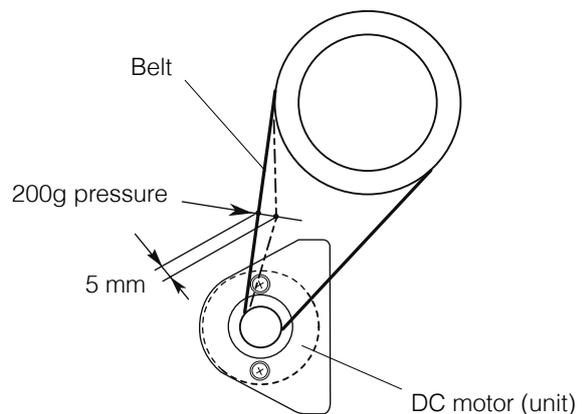
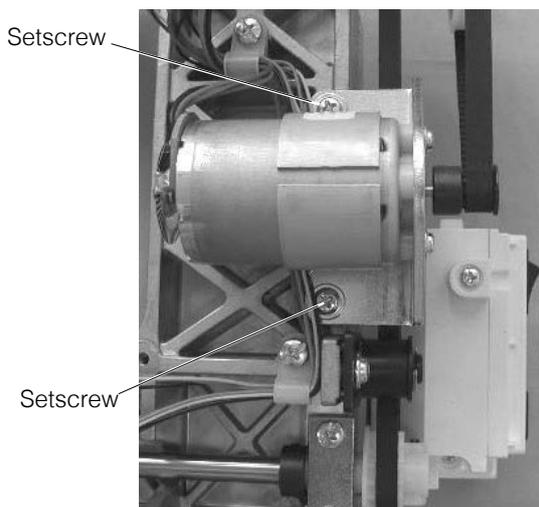
Change the DC motor belt and adjust the belt tension as follows

To remove:

1. Remove the front cover.
2. Remove the setscrews (2pcs.) and the driving motor and the belt.

To attach:

1. Install the driving motor and the motor belt. Tighten them with setscrews (2pcs.) lightly.
2. Move the motor up or down to adjust the motor belt tension.
The belt should deflect 5 mm when applying 200 grams of load to the middle of the belt.
Tighten the setscrews (2pcs.) firmly.
3. Attach the front cover.



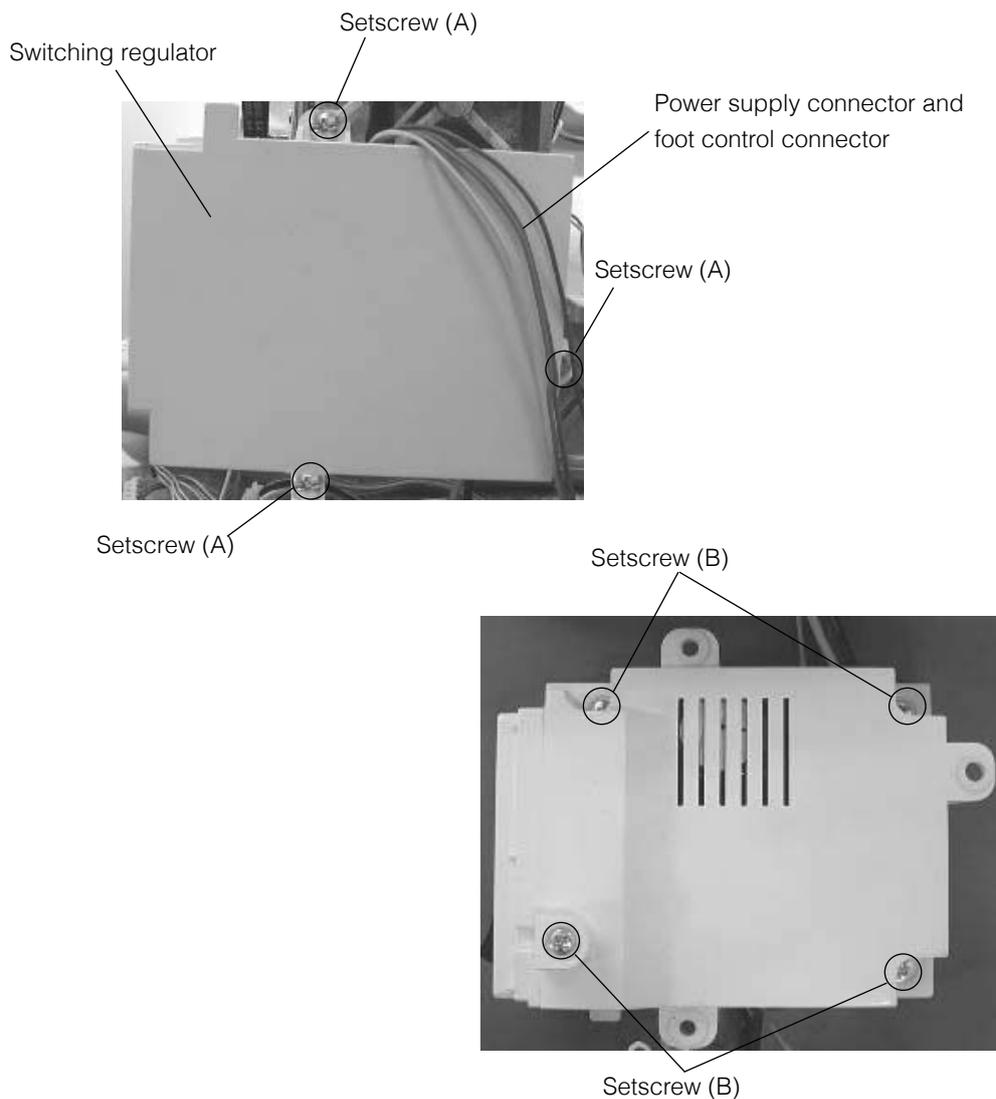
Replacing the Switching Regulator unit

To remove:

1. Remove the front cover and the rear cover.
2. Remove the setscrews (A) (3 pcs.) and the switching regulator.
3. Remove the setscrews (B) (4 pcs.), power supply connector and foot control connector.

To attach:

4. Follow the above procedures in reverse.



Adjustment of Buttonhole Lever Position

To adjust the buttonhole lever guide:

1. Enter the buttonhole sensor adjusting mode.
2. Remove the face cover and loosen the setscrew (A) .
3. Move the buttonhole lever guide so the BH symbol disappear when the buttonhole lever is lowered.
Tighten the setscrew (A).

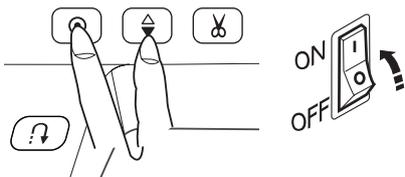
To adjust the buttonhole sensor position:

4. Attach the buttonhole foot (R) .
5. Lower the buttonhole lever to its lowest position and open a 1.6 mm gap between the slider and the buttonhole foot.
6. Turn the adjusting screw t to the left until the LCD display buttonhole symbol.
7. Next, turn the adjusting screw to the right until the buttonhole symbol disappears.
8. Turn off the power switch.
9. Attach the face cover.
10. Turn on the power switch and sew a test buttonhole.

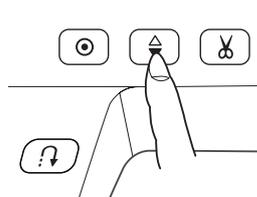
Note: If there is any lint or dust in the buttonhole sensor slit, loosen the 2 screws (B) and clean it out with a swab.

To enter adjusting mode

① Turn the power switch ON while pressing the needle up/down button and locking stitch button simultaneously.



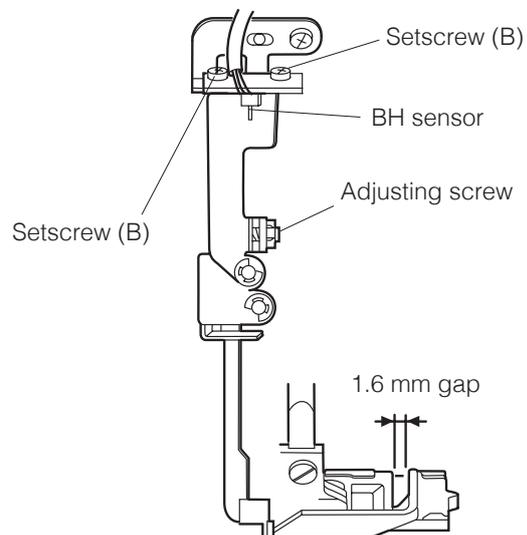
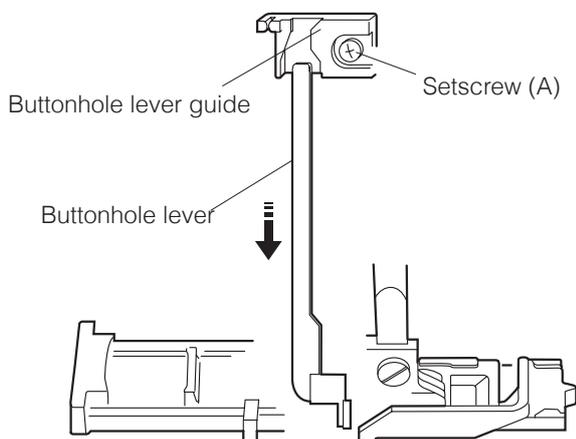
② Press the needle up/down button within 1.5 sec after the beep. (The LCD display will indicate "----".)



③ Press the cursor button twice to display the #5.



Buttonhole symbol



Adjustment of Needle Threader Plate

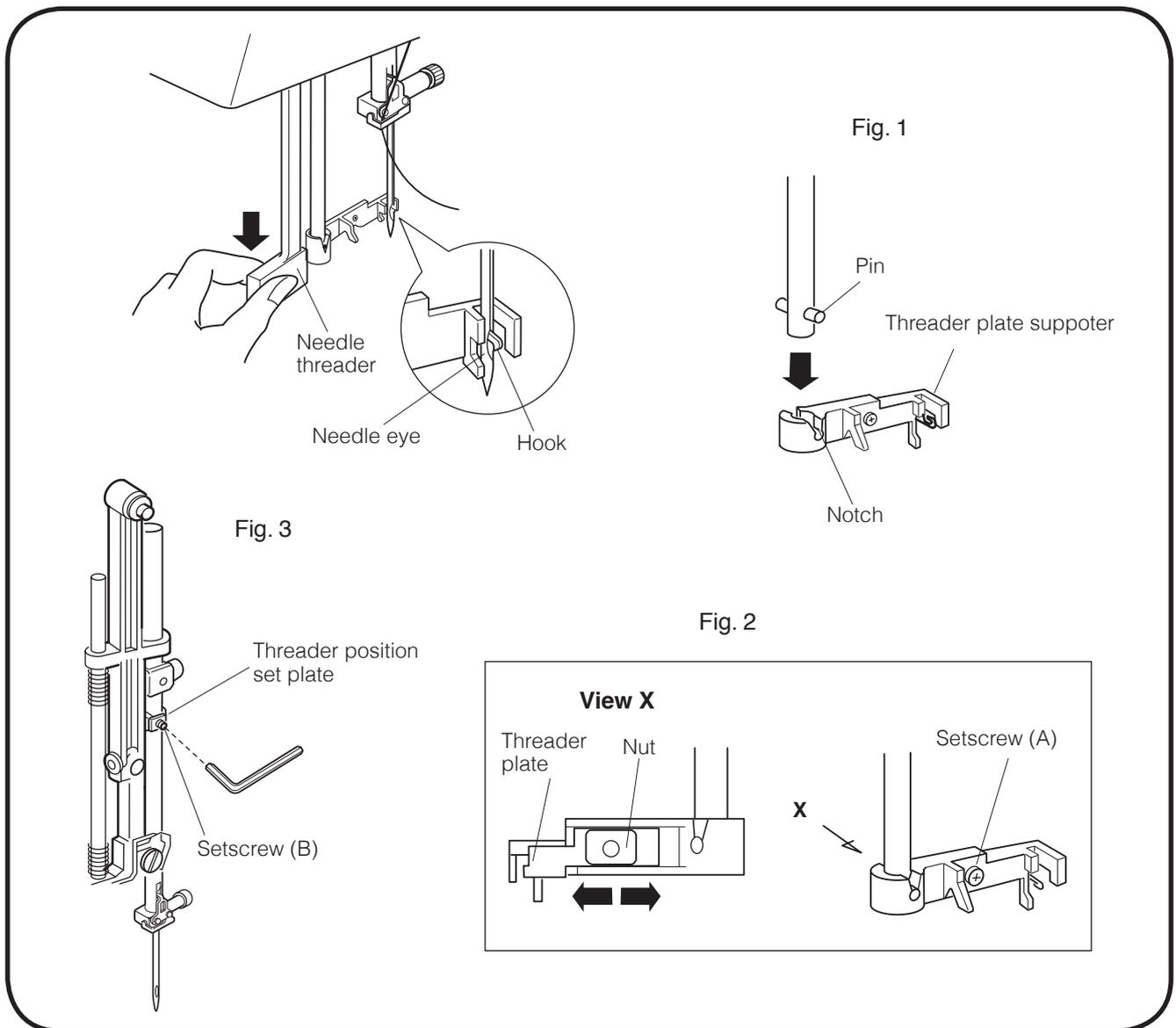
If the hook of the threader plate is damaged, change or adjust the part as follows:

To remove:

1. Remove the presser foot holder and needle.
2. Pull the needle threader plate down to remove it (Fig. 1)
3. Attach the new threader plate supporter so that the pin fits into the notch.

To adjust:

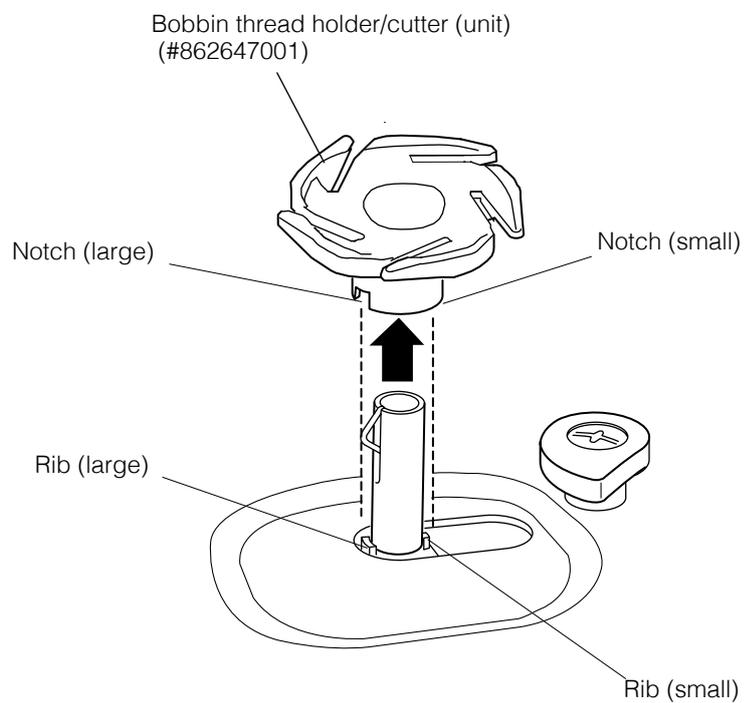
1. If the hook on the threader plate touches the left or right side of the needle eye, loosen setscrew (A) and adjust the hook position.(Fig. 2)
 2. If the hook on the threader plate touches the top or bottom edge of the needle eye, remove the face plate, loosen setscrew (A) and adjust the position of the threader position set plate as follows. (Fig.3)
- If the hook on the threader plate touches the top edge of the needle eye, loosen setscrew (B) and lower the threader position set plate.
 - If the hook on the threader plate touches the bottom edge of the needle eye, loosen setscrew (B) and raise the threader position set plate.



Replacing the Bobbin Thread Holder/Cutter unit

Change the bobbin thread holder/cutter (unit) as follows.

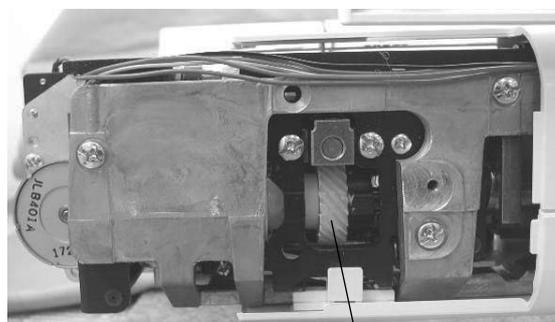
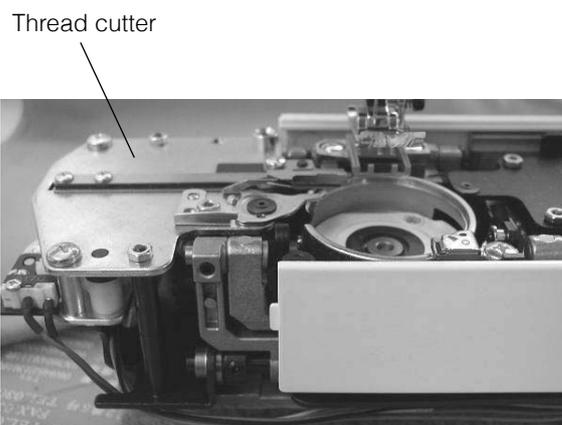
1. Pulling the bobbin thread holder/cutter (unit) upward straight and remove it from the bobbin winder spindle.
2. Attach the new bobbin thread holder/cutter (unit) on the bobbin winder spindle so that the rib (large) fits into the notch (large) and the rib (small) fits into the notch (small).



Cleaning area of Thread Cutter and Lower Shaft Gear

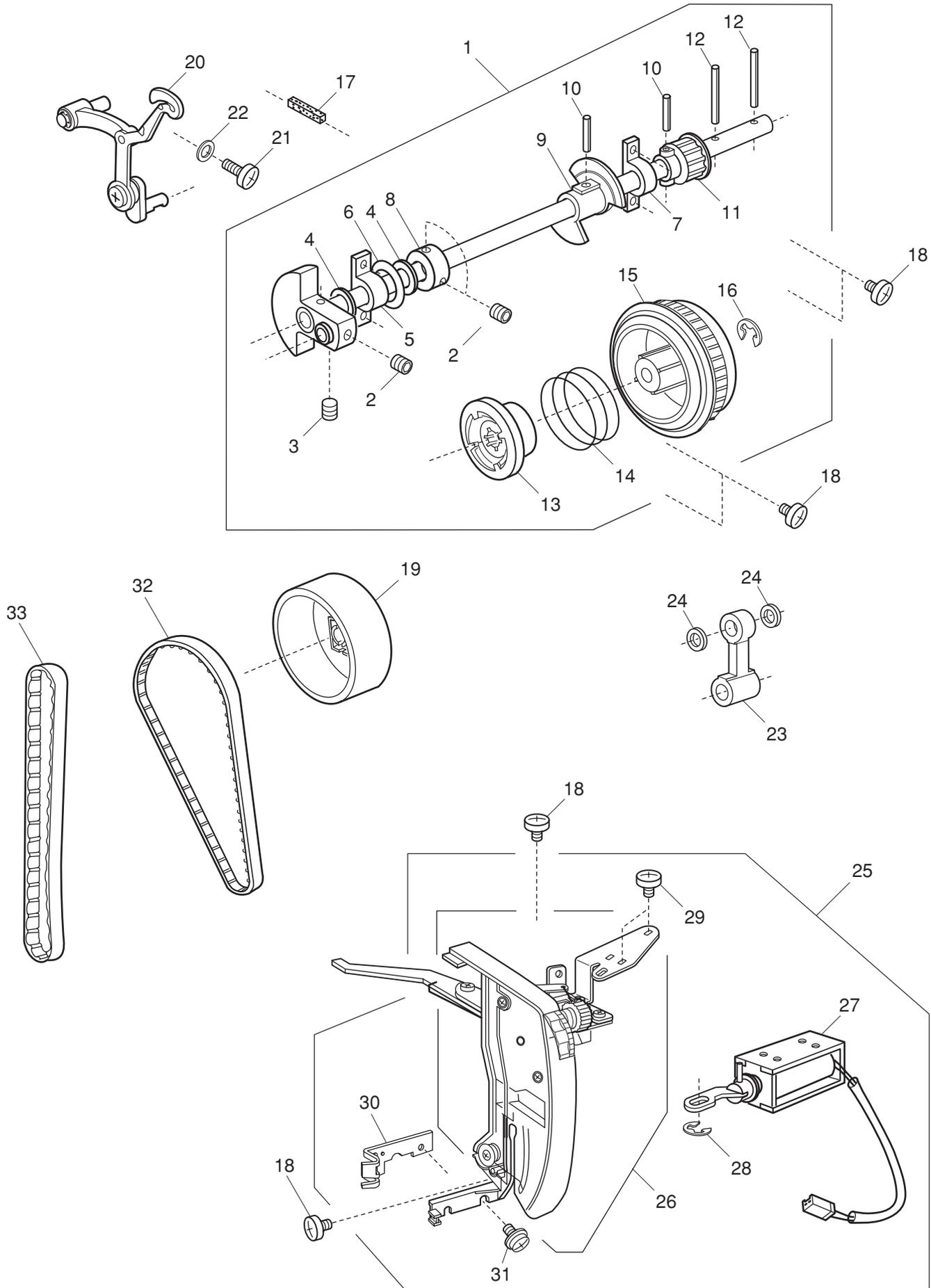
Remove the dust on the area of the thread cutter and the lower shaft gear as follow.

1. Remove the free arm cover and clean the area of the thread cutter and the lower shaft gear.
2. After cleaning, replace the free arm cover.



Lower shaft gear

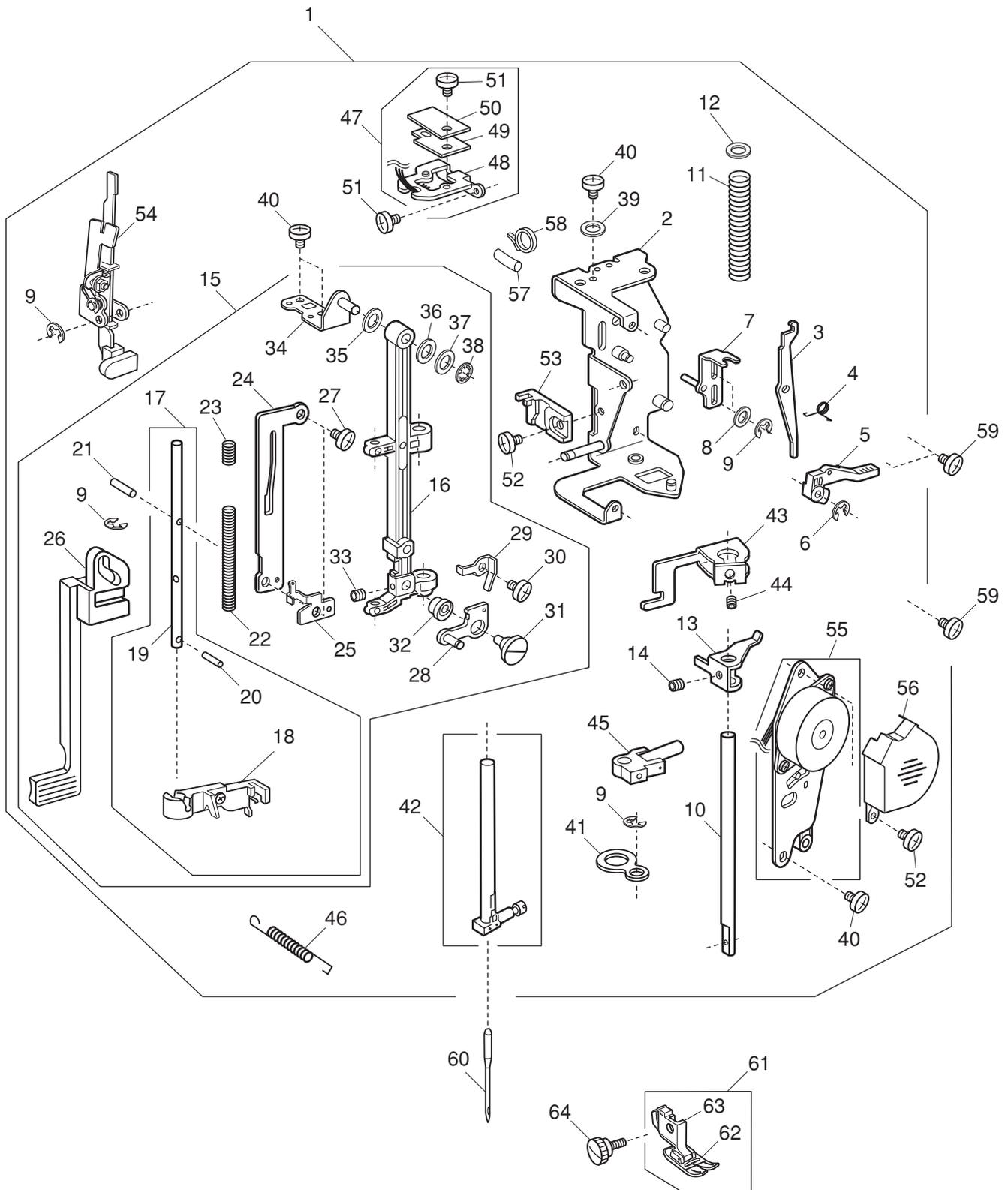
PARTS LIST



PARTS LIST

KEY NO.	PARTS NO.	DESCRIPTION
1	808601005	Upper shaft (unit)
2	000111201	Hexagonal socket screw 4x4
3	000112800	Hexagonal socket screw 4x6
4	000036201	Washer FT80
5	508120006	Shaft fixing metal
6	823110010	Felt
7	508054101	Shaft fixing metal
8	820166001	Lower shaft ring
9	808003001	Upper shaft shielding plate
10	000004200	Spring pin 3x18
11	508021006	Upper shaft gear
12	000024206	Spring pin 3x30
13	502064003	Clutch ring
14	661024007	Clutch spring
15	508055009	Belt wheel
16	000002806	Snap ring E-6
17	731312005	Felt
18	000081005	Setscrew 4x8
19	809100057	Handwheel
20	808648004	Thread take-up lever (unit)
21	000103509	Setscrew 4x10
22	000072302	Washer 4
23	808005003	Needle bar crank rod
24	000036005	Washer FT60
25	809648203	Thread tension (unit)
26	809533101	Thread tension (unit)
27	808604008	Solenoid (unit)
28	000002105	Snap ring E-3
29	000101105	Setscrew 3x4
30	809023000	Face cover spring supporter
31	000114709	Setscrew TP 4x6
32	808021005	Timing belt
33	808037004	Syncro belt

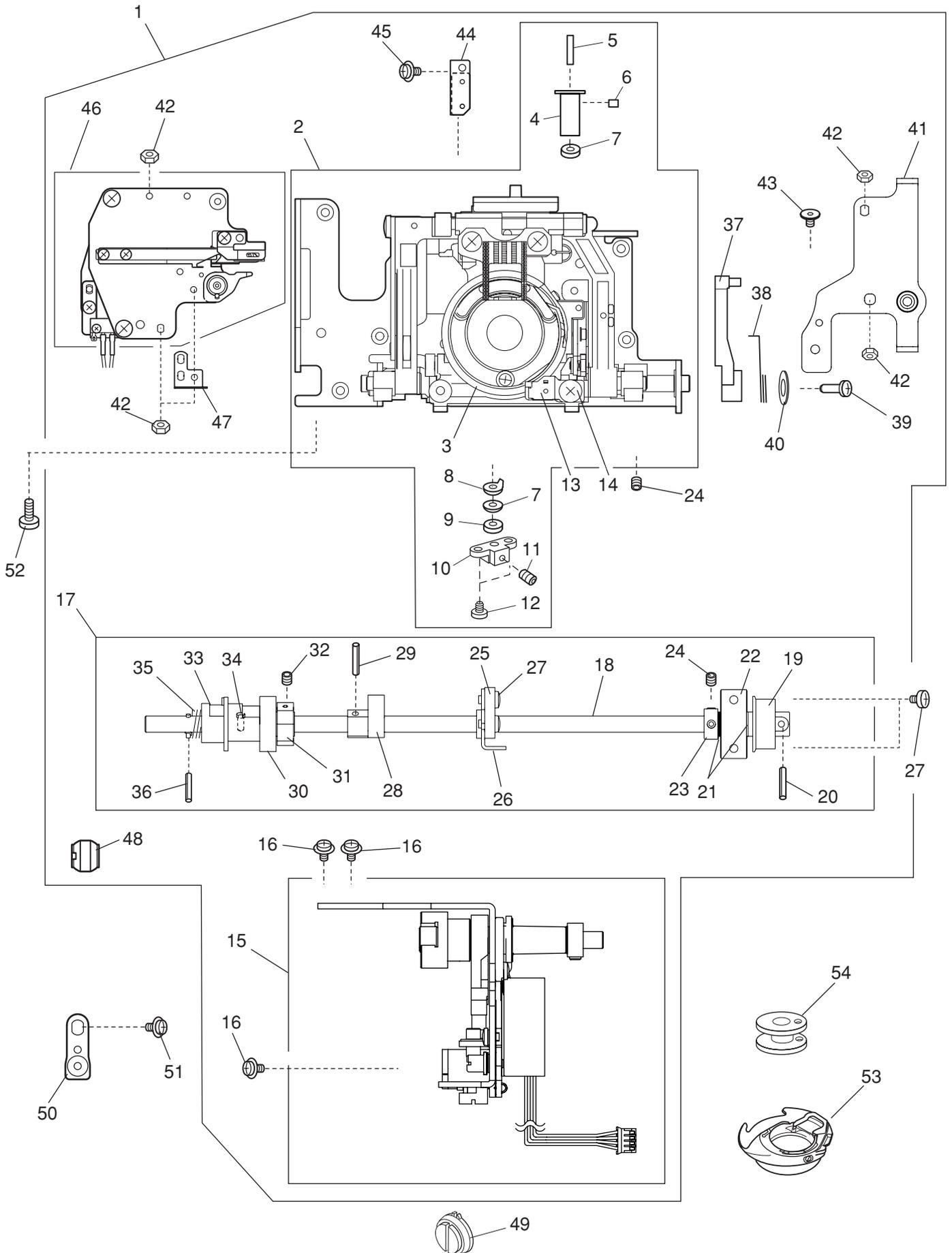
PARTS LIST



PARTS LIST

KEY NO.	PARTS NO.	DESCRIPTION
1	809614060	Presser bar base plate (unit)
2	808006406	Presser bar base plate
3	808007005	Thread tension release lever
4	503041007	Thread tension release spring
5	502024001	Presser foot lifter
6	000001609	Snap ring E-5
7	809128006	Presser bar spring adjusting plate
8	000072508	Washer 4
9	000002105	Snap ring E-3
10	827021107	Presser bar
11	830030006	Presser bar spring
12	826055004	Washer
13	502026003	Presser bar supporter
14	000111500	Hexagonal socket screw 4x8
15	809615005	Needle bar supporter (unit)
16	809129007	Needle bar supporter
17	842637006	Threader shaft (unit)
18	842638007	Threader plate (unit)
19	840036025	Threader shaft
20	000003508	Spring pin 2x8
21	000125105	Guide pin E-2x16-CH
22	842090001	Threader shaft spring
23	842096007	Threader lever spring
24	842091002	Threader guide plate
25	844036027	Threader lever plate
26	842092003	Threader lever
27	000078319	Setscrew 3x6
28	808015006	Zigzag width rod
29	827088009	Zigzag width rod spring
30	820373003	Setscrew 2x3
31	678084007	Eccentric pin
32	808074003	Washer
33	000111902	Hexagonal socket screw 3x4
34	808009007	Supporter adjusting plate
35	000036500	Washer FT60
36	673022002	Spring washer
37	000070609	Washer 6
38	000013903	Snap ring CS-5
39	000072003	Washer 5
40	000101404	Setscrew 4x6
41	808010001	Supporter guide plate
42	751564006	Needle bar (unit)
43	807018006	Threader position set plate
44	000177205	Hexagonal socket screw 3x6
45	809509005	Needle bar connecting stud (unit)
46	844038018	Needle bar supporter spring
47	808606103	Buttonhole sensor (unit)
48	845002005	Sensor set plate
49	843502602	Printed circuit board E1 (unit)
50	845029008	Insulation sheet
51	000101105	Setscrew 3x4
52	000103808	Setscrew 3x5
53	830057021	Buttonhole lever guide
54	843625004	Buttonhole lever (unit)
55	808605102	Zigzag width motor (unit)
56	809019003	Motor cover
57	809046009	Tube
58	000053008	Cord binder
59	000081005	Setscrew 4x8
60	102408089	Needle HA1-14
61	660509008	Presser foot (unit)
62	832523007	Zigzag foot
63	660806008	Presser foot holder
64	647112009	Setscrew

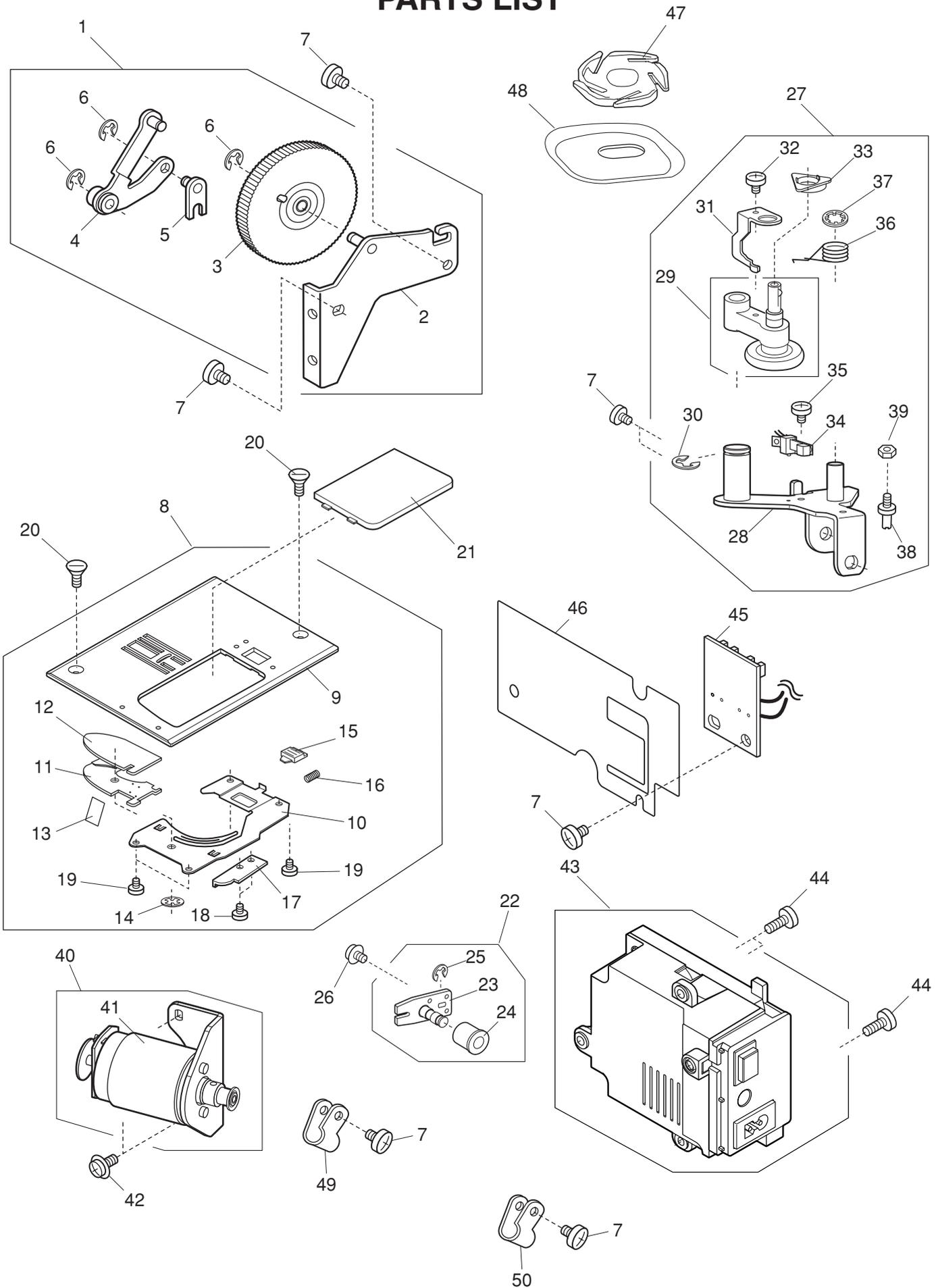
PARTS LIST



PARTS LIST

KEY NO.	PARTS NO.	DESCRIPTION
1	809620014	Hook race (whole unit)
2	809621015	Hook race (unit)
3	660536004	Hook body (unit)
4	820123006	Hook race shaft
5	820124007	Hook shaft oil wick (1)
6	820125008	Hook shaft oil wick (2)
7	000038409	Washer
8	627192001	Washer
9	625102008	Washer
10	508072002	Hook race shaft base
11	000111304	Hexagonal socket screw 5x5
12	000103705	Setscrew 4x5
13	627567104	Bobbin holder stopper (unit)
14	000101404	Setscrew 4x6
15	809607004	Feed regulator (unit)
16	000115205	Setscrew TP4x6
17	809602010	Lower shaft (unit)
18	808027207	Lower shaft
19	508021006	Upper shaft gear
20	000004200	Spring pin 3x18
21	000038502	Washer
22	508054008	Shaft fixing metal
23	820166001	Lower shaft ring
24	000111201	Hexagonal socket screw 4x4
25	809017001	Lower shaft supporter
26	809016000	Lower shaft supporter plate
27	000081005	Setscrew 4x8
28	809014008	Feed cam
29	000005407	Spring pin 3x12
30	508023008	Lower gear
31	508020005	Ring
32	000111108	Hexagonal socket screw 4x6
33	846103000	Feed lifting cam
34	820161006	Feed lifting pin
35	808075004	Feed lifting cam spring
36	000022802	Spring pin 2x12
37	809013007	Feed fork
38	809015009	Feed fork spring
39	820172000	Pin
40	000071105	Washer
41	809064003	Needle plate set plate (right)
42	000063104	Nut 3-2-5.5
43	000193104	Thin-head setscrew TP3x4
44	825515004	Feed base plate (unit)
45	825237009	Setscrew
46	809623006	Thread cutter (unit)
47	808105107	Slide position adjusting plate
48	732034003	Lower shaft bushing
49	809053009	Feedbalancing dial 2
50	809042005	Lower shaft bushing set plate
51	000115607	Setscrew TP4x8
52	000101703	Setscrew 4x12
53	858570009	Bobbin holder (unit)
54	102261000	Bobbin

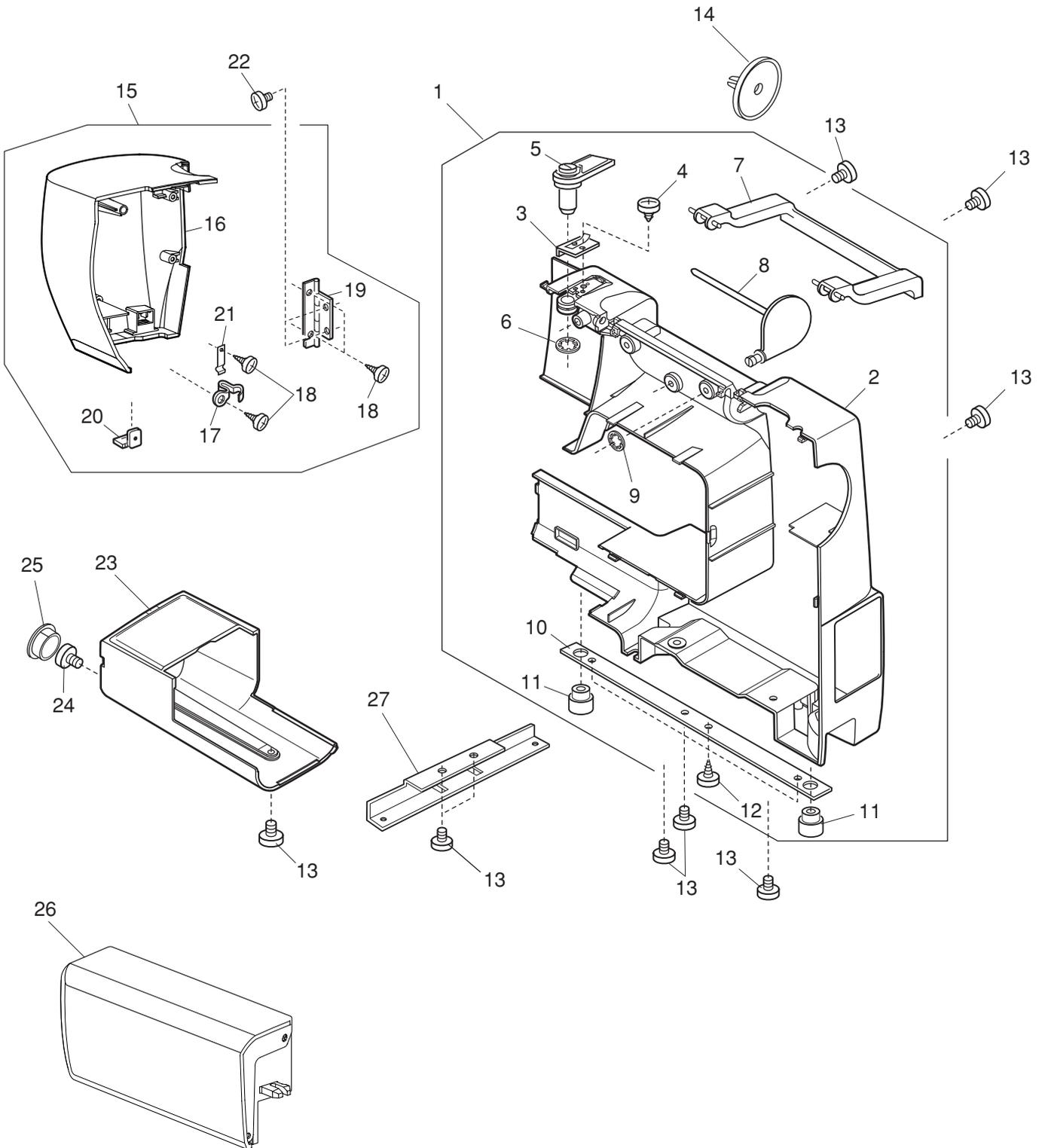
PARTS LIST



PARTS LIST

KEY NO.	PARTS NO.	DESCRIPTION
1	809608005	Presser foot pressure adjustment (unit)
2	809018002	Presser foot pressure adjusting set plate
3	808078203	Presser foot pressure dial
4	808079008	Adjusting arm 1
5	808080002	Adjusting arm 2
6	000002105	Snap ring E-3
7	000081005	Setscrew 4x8
8	809616006	Needle plate (unit)
9	809132003	Needle plate
10	809133004	Hook cover plate supporter
11	809134005	Hook cover plate supporter base
12	809135006	Guide holder
13	809137008	Cutter
14	000014306	Snap ring CS-3
15	825016000	Hook cover plate release button
16	825017001	Spring
17	809050006	Rotation stopper
18	000163703	Setscrew 2x3.5
19	820374004	Setscrew 2x2.3
20	681009101	Setscrew
21	809136100	Hook cover plate
22	808614001	Idler (unit)
23	808038005	Idler set plate
24	625217100	Idler
25	000002806	Snap ring E-6
26	000115607	Setscrew TP4x8
27	809617203	Bobbin winder (unit)
28	809140004	Bobbin winder set plate
29	809505001	Bobbin winder arm (unit)
30	000001609	Snap ring E-5
31	809141005	Clutch lever
32	000120203	Setscrew 3x8 (B)
33	809143007	Cam
34	856512007	Switch (unit)
35	000081706	Setscrew 2.5x5
36	809147001	Spring
37	000013903	Snap ring CS-5
38	809054000	Setscrew
39	000063104	Nut
40	808617004	DC motor (unit)
41	808502005	DC motor (unit)
42	000115700	Setscrew TP4x10
43	808639507	Switching regulator (unit)
44	000103509	Setscrew 4x10
45	808504007	Printed circuit board P (unit)
46	808093101	Cord guide
47	862647001	Thread cutter holder (unit)
48	809118003	Bobbin winder cover
49	000188209	Nylon clip ACC-1.5
50	000188405	Nylon clip ACC-2

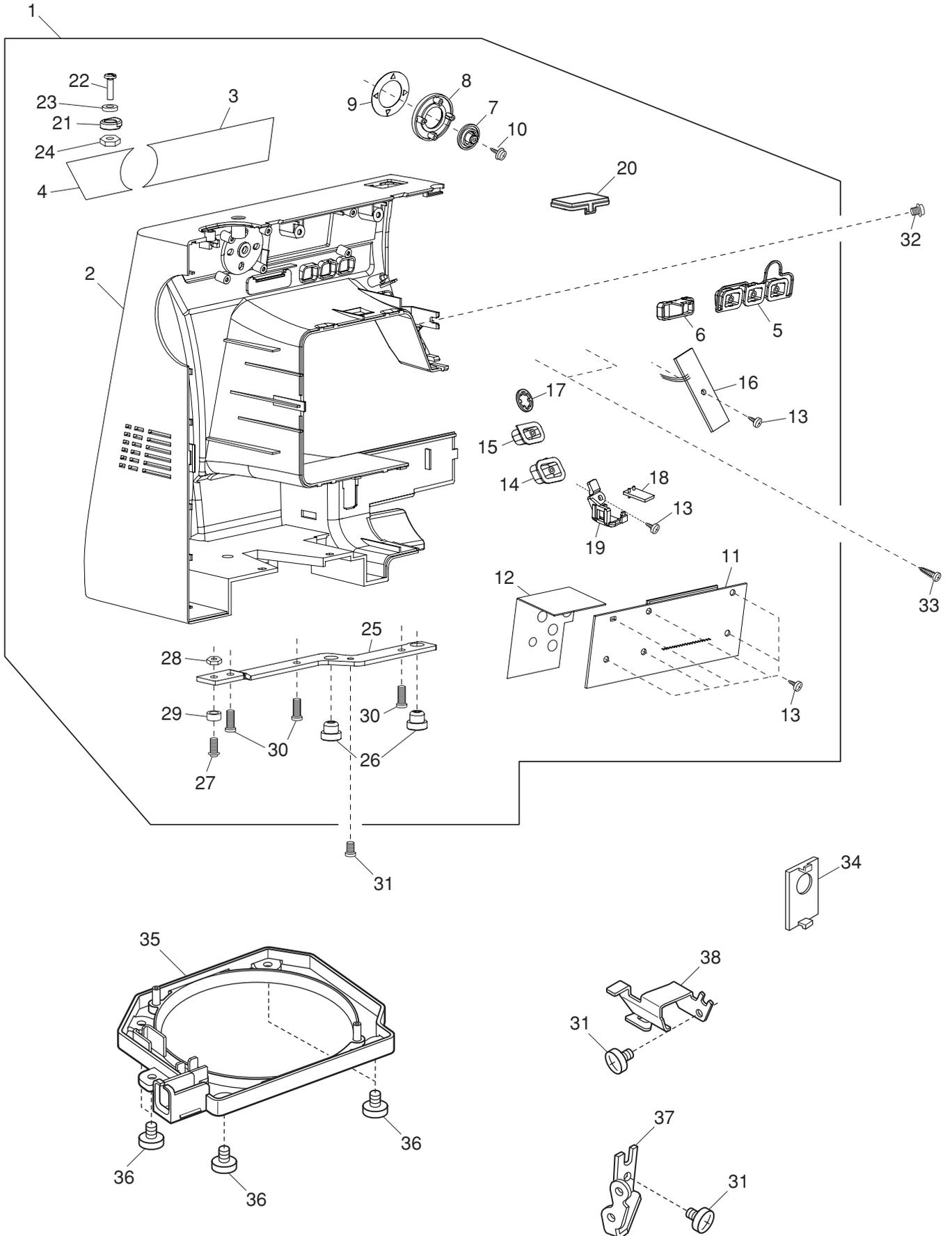
PARTS LIST



PARTS LIST

KEY NO.	PARTS NO.	DESCRIPTION
1	809610402	Rear cover (unit)
2	809104305	Rear cover
3	827503108	Top cover thread guide (unit)
4	000162001	Setscrew 2.6x5
5	650503089	Thread guide (unit)
6	000014409	Snap ring CS-8
7	809105007	Carrying handle
8	809027004	Spool pin
9	000013800	Snap ring CS-6
10	809028005	Arm leg rear
11	735003002	Bed rubber cushion
12	000198604	Setscrew 4x14 (B)
13	000081005	Setscrew 4x8
14	822020503	Spool holder
15	809650002	Face plate (unit)
16	809061A01	Face plate
17	731067002	Face plate spring
18	000161206	Setscrew 3x10 (B)
19	843545009	Face plate hinge (unit)
20	840602006	Thread cutter (unit)
21	859233000	Spring
22	000081119	Setscrew 4x6
23	809124002	Free arm cover
24	000101404	Setscrew 4x6
25	745033002	Cap
26	809531006	Extension table (unit)
27	809024001	Arm sole set plate

PARTS LIST

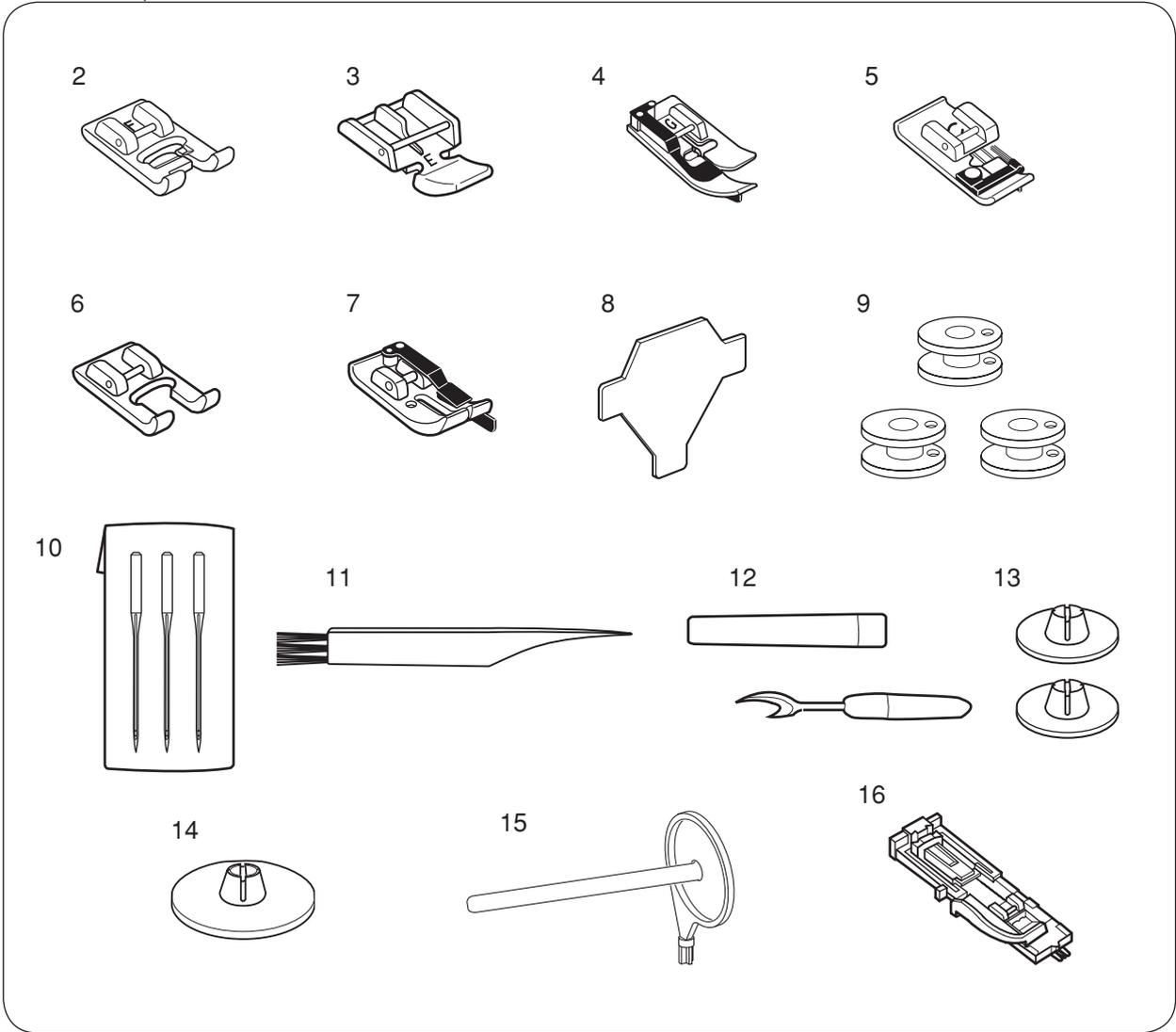


PARTS LIST

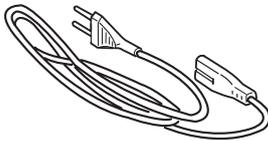
KEY NO.	PARTS NO.	DESCRIPTION
1	809649503	Front cover (unit)
2	809056A04	Front cover
3	809057A01	Ornamental panel 1
4	809058A01	Ornamental panel 2
5	809059B01	Function button
6	809060009	Slide volume
7	806065005	Key
8	806066006	Indicator window
9	806067409	Button supporter
10	000109000	Setscrew 3x6
11	808400219	Printed circuit board A (unit)
12	808121006	Flame retardant insulating sheet
13	000120203	Setscrew 3x8 (B)
14	809035A01	Button 3
15	809034D02	Button 2
16	808507000	Printed circuit board F (unit)
17	000014306	Snap ring CS-3
18	808511105	Printed circuit board L (unit)
19	808118000	Lamp holder 2
20	809119004	Front cover lid
21	846177108	Bobbin winder stopper
22	000101828	Setscrew 4x16
23	000071013	Washer
24	000061205	Nut 4-3-7
25	809125003	Arm sole front
26	735003002	Rubber foot
27	000114802	Setscrew TP4x12
28	000160102	Adjustable lock nut 4
29	639005003	Rubber foot
30	000198604	Setscrew 4x14 (B)
31	000081005	Setscrew 4x8
32	000115205	Setscrew TP4x6
33	000160401	Setscrew 4x16 (B)
34	809039009	Cap
35	808059301	Bed cover
36	000149312	Setscrew 3x8
37	639080002	Front cover set plate
38	808016007	Arm thread guide

PARTS LIST

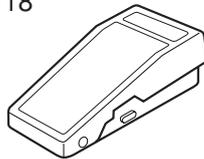
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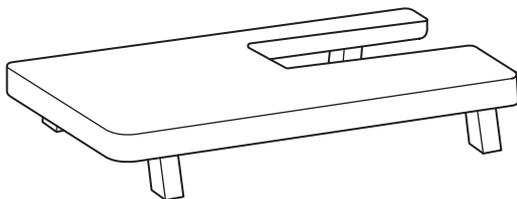
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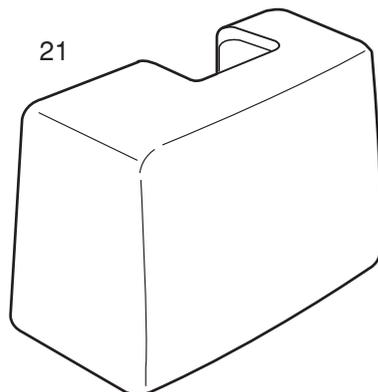
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PARTS LIST

KEY NO.	PARTS NO.	DESCRIPTION
1	808870240	Standard accessory set
2	822804118	Satin foot
3	829801002	Zipper foot
4	825817009	Blind hem foot
5	822801001	Overedge foot
6	832427103	Open toe satin stitch foot
7	200008037	1/4" seam foot
8	653802002	Screw key
9	102261000	Bobbin
10	639804000	Needle set
11	802424004	Lint brush
12	647808009	Seam ripper (Buttonhole opener)
13	822019509	Spool holder (small)
14	822020503	Spool holder (large)
15	809146000	Additional spool pin
16	753801004	BH foot
17	830335004	Power supply cord
18	C-1036	Foot control
19	809850004	Instruction book
20	808401003	Large extension table
21	404701002	Cover