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SERVICE MANUAL
PARTS LIST

MODEL : Jeans & Stretch 8077

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WHAT TO DO WHEN

CONDITION	CAUSE	HOW TO FIX	REFERENCE
1. Skipping stitches	1. Needle is not inserted properly.	Insert the needle properly.	
	2. Needle is bent or worn.	Change the needle.	
	3. Incorrectly threaded.	Rethread.	
	4. Needle or thread are inappropriate for fabric being sewn.	Use the recommended sewing needle and thread.	
	5. Sewing on stretch fabric.	Use a #11 blue tip needle.	
	6. Inappropriate needle bar height.	See mechanical adjustment “Needle bar height”.	P. 11
	7. Inappropriate needle to hook timing.	See mechanical adjustment “Needle to hook timing”.	P. 12
	8. Inappropriate needle to hook clearance.	See mechanical adjustment “Clearance between needle and hook”.	P. 13
2. Fabric not moving	1. Incorrect feed dog height.	See mechanical adjustment “Feed dog height”.	P. 15
	2. Feed dog Is in down position.	Raise the feed dog level.	
	3. Thread on bottom side of fabric is jammed up.	Make sure to bring both needle and bobbin thread under the foot when starting sewing.	
	4. Feed dog teeth are worn.	Change the feed dog.	
3. Breaking upper thread	1. Initial sewing speed is too fast.	Start with medium speed.	
	2. Thread path is incorrect.	Use the proper thread path.	
	3. Needle is bent or dull.	Replace with a new needle.	
	4. Upper thread tension is too strong.	Adjust needle thread tension correctly.	
	5. Needle size is inappropriate for fabric.	Use appropriate needle for fabric and thread in use.	
	6. Needle eye is worn.	Change the needle.	
	7. Needle hole in needle plate is worn or burred.	Repair the hole or replace the needle plate.	

CONDITION	CAUSE	HOW TO FIX	REFERENCE
4. Breaking bobbin thread	1. Incorrectly threaded bobbin holder.	Thread bobbin holder correctly.	
	2. Too much thread is around on the bobbin.	Adjust the position of stopper.	
	3. Lint is stuck inside the bobbin holder.	Clean the bobbin holder.	
	4. Thread quality is too low.	Change to a high quality sewing thread.	
	5. Thread is jamming around the bobbin.	Clear out the jamming thread.	
5. Needle breaks	1. Needle is hitting the needle plate.	See mechanical adjustment “Needle drop position”.	P. 10
	2. Needle is bent or worn.	Change the needle.	
	3. Needle is hitting the hook.	See mechanical adjustment “Clearance between needle and hook”.	P. 13
	4. The fabric moves while the needle is piercing it, or the needle zigzags while in fabric.	See mechanical adjustment “Zigzag synchronization”.	P. 16
	5. Fabric is being pulled too strongly while sewing.	Guide the fabric gently while sewing.	
6. Noisy operation	1. Backlash between hook gear and lower shaft gear is too great.	See mechanical adjustment “Backlash (between lower shaft gear and shuttle hook gear)”.	P. 14
	2. Lower shaft gear is loose.	Eliminate the looseness.	
	3. Inappropriate belt tension.	See “Replacing DC motor and adjusting motor belt tension”.	P. 29
	4. Not enough oil.	Oil all moving parts.	P. 36
7. Deformation pattern	1. Inappropriate feed balance.	See mechanical adjustment “Stretch stitch feed balance”.	P. 19
	2. Inappropriate zigzag synchronization.	See mechanical adjustment “Zigzag synchronization”.	P. 16
	3. Upper thread tension is too strong.	See mechanical adjustment “Needle thread tension”.	P. 18

SERVICE ACCESS (1)

FACE COVER

TO REMOVE:

1. Remove the cap.
2. Remove the setscrew (A) and face cover.

TO ATTACH:

3. Insert the 2 ribs of the face cover into the rear cover and tighten the setscrew, then attach the cap.

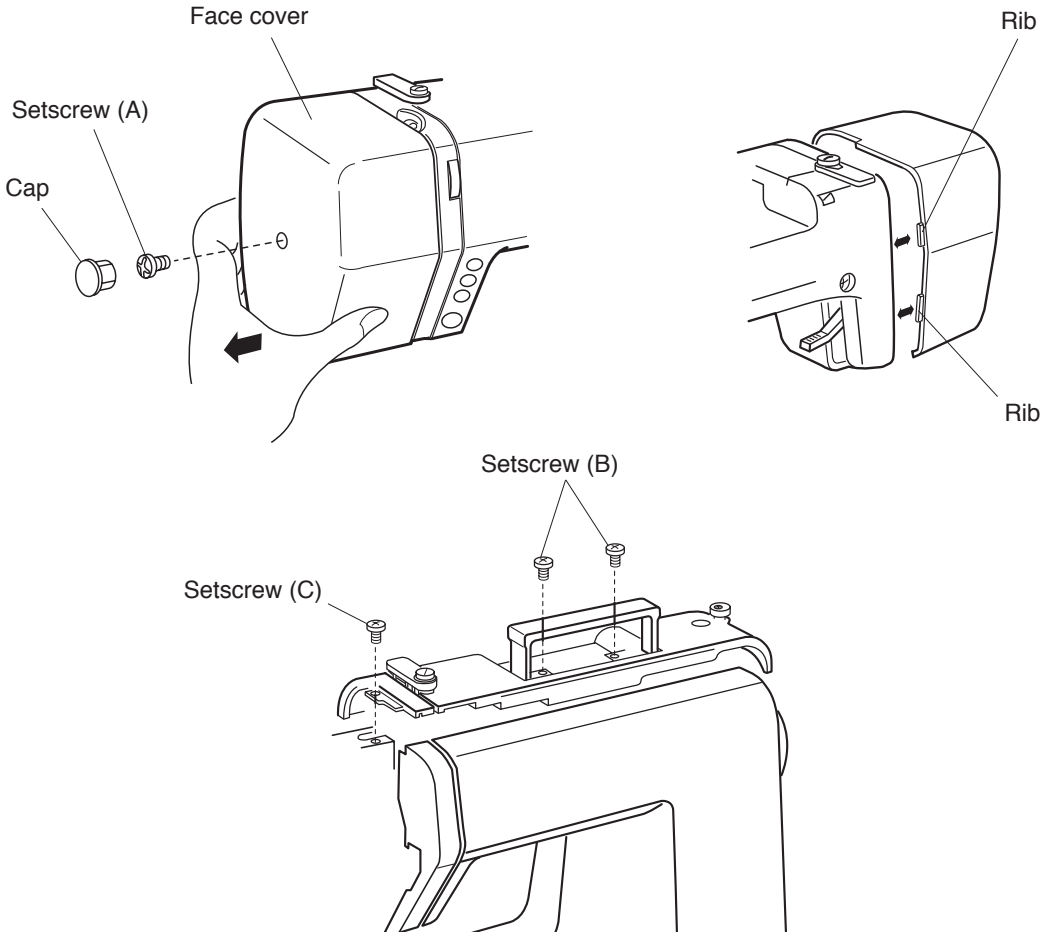
TOP COVER

TO REMOVE:

1. Remove the face cover.
2. Remove the setscrew (B), (C), and top cover.

TO ATTACH:

3. Follow the above procedure in reverse.



SERVICE ACCESS (2)

BASE

TO REMOVE:

1. Remove the 4 setscrews (A) and the setscrew (B), remove the base.

TO ATTACH:

2. Attach the base with the 4 setscrews (A) and the setscrew (B).

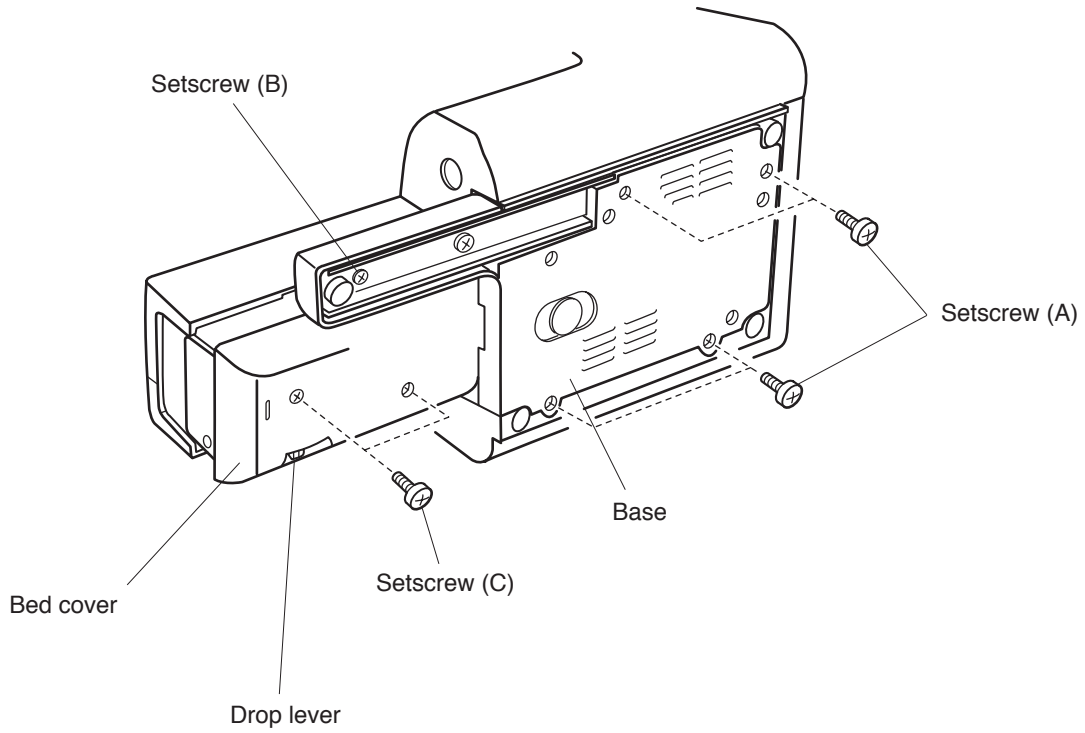
BED COVER

TO REMOVE:

1. Set the drop lever to the left and remove the 2 setscrews (C), and the bed cover.

TO ATTACH:

2. Set the drop lever to the left and attach the bed cover.
   Secure it in place with the 2 setscrews (C).



SERVICE ACCESS (3)

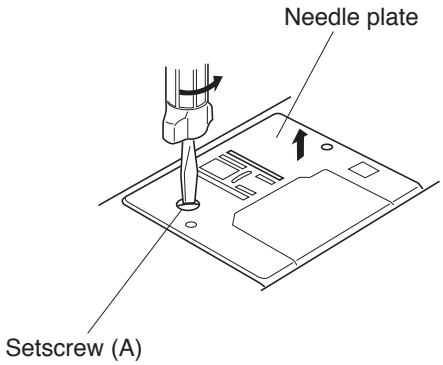
FREE ARM COVER

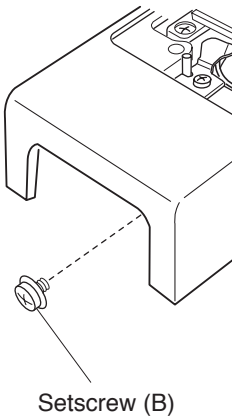
TO REMOVE:

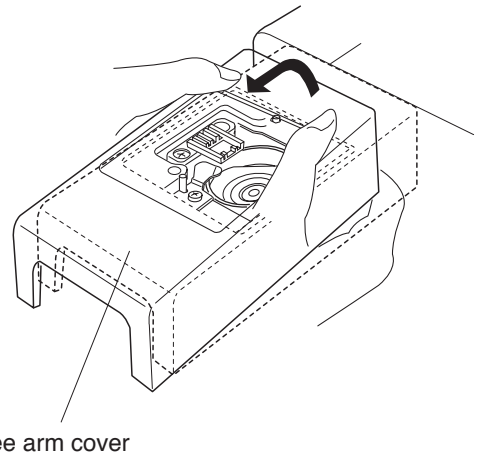
1. Remove setscrew (A) and the needle plate.
2. Remove the bed cover (see page 4).
3. Loosen the setscrew (B) and remove the free arm cover.

TO ATTACH:

4. Follow the above procedure in reverse.







SERVICE ACCESS (4)

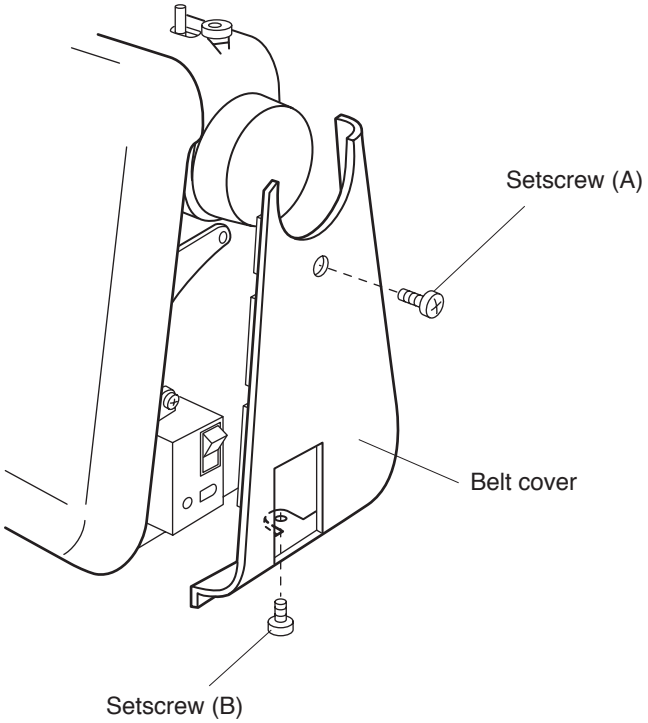
BELT COVER

TO REMOVE:

1. Remove the setscrew (A), (B), and the belt cover.

TO ATTACH:

2. Attach the belt cover with the setscrew (A) and (B).



SERVICE ACCESS (5)

FRONT COVER

TO REMOVE:

1. Remove the top cover and belt cover (see pages 3 and 6).
2. Loosen the setscrews (A), (B), (C), (D) and (E), then remove the setscrew (F).
3. Disconnect each switch connectors of printed circuit board "A".

NOTES: TO DISCONNECT THE CONNECTORS:

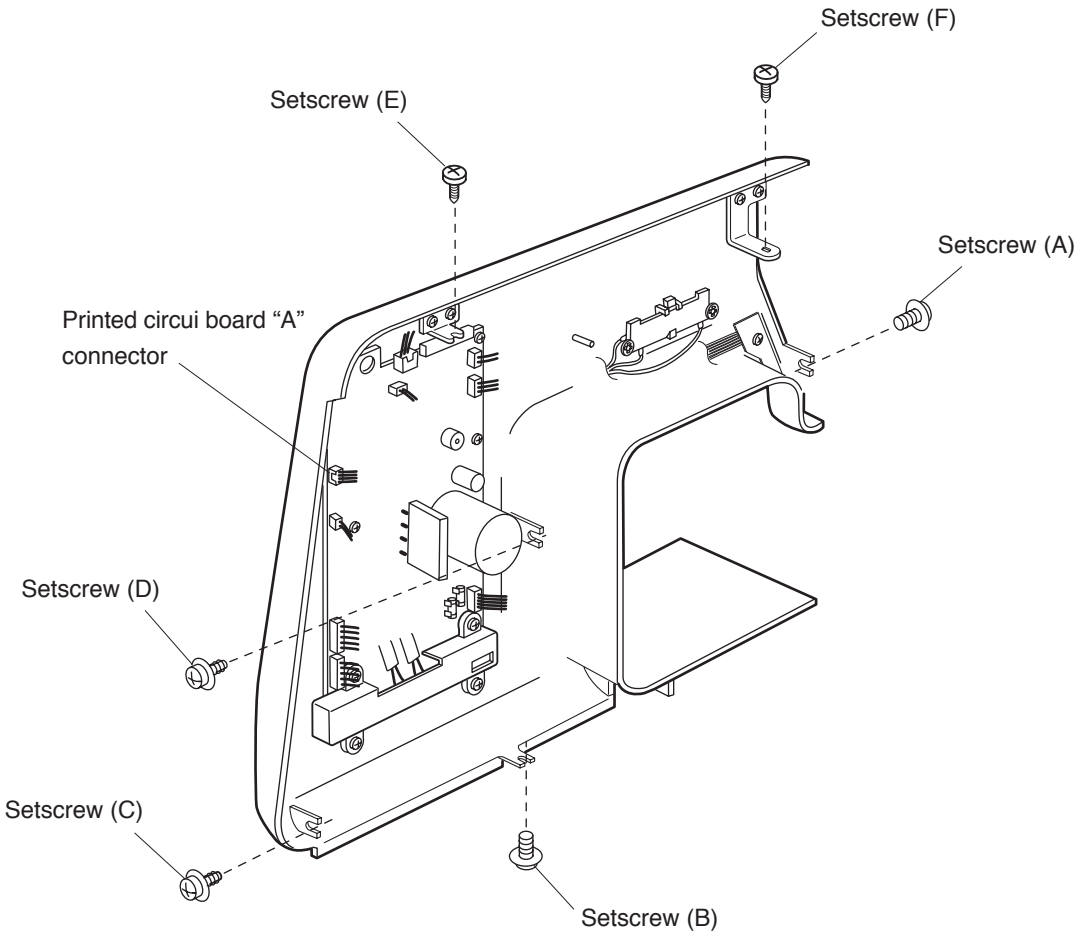
Grasp the connector directly with your fingers and pull. Do not pull on the lead wire, as this may damage the contact sleeve inside the connector.

TO ATTACH:

4. To attach the front cover, follow the above procedure in reverse.

NOTES: TO CONNECT THE CONNECTORS:

1. Be sure that the color of each connector corresponds to the color of the connector post on the printed circuit board (PCB) to which it is connected.
2. Insert the connector at the right angle. Then push it straight down until it locks in place.



SERVICE ACCESS (6)

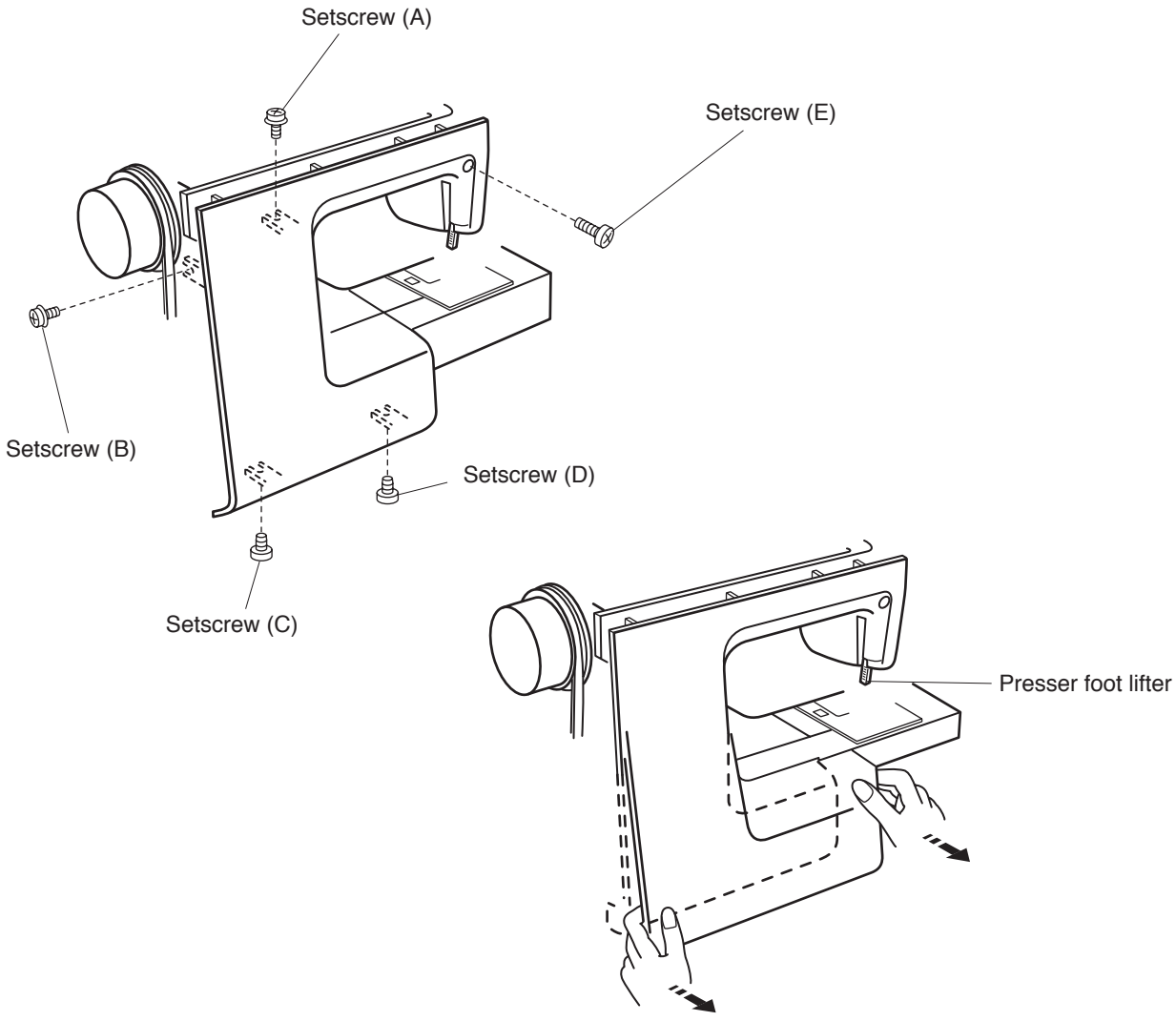
REAR COVER

TO REMOVE:

1. Remove the top cover and belt cover (see pages 3 and 6).
2. Loosen the setscrews (A), (B), (C), and (D), then remove the setscrew (E).
   * To remove the cover, detach the presser foot lifter section first, with the presser foot lifter in the down position.

TO ATTACH:

3. Follow the above procedure in reverse.

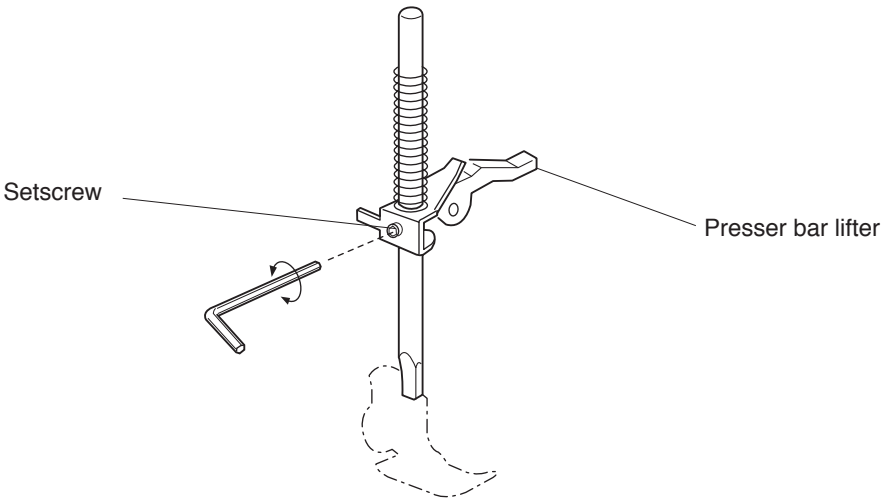


MECHANICAL ADJUSTMENT

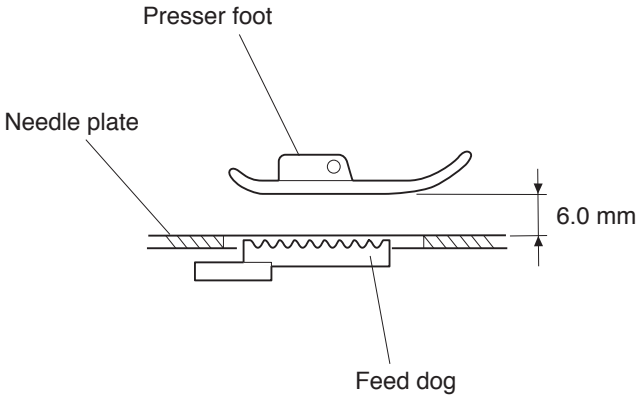
PRESSER BAR HEIGHT AND ALIGNMENT

When the presser foot is raised, the clearance between the presser foot and the needle plate should be 6.0 mm.
When the presser foot is lowered, the edge of the foot and the feed dog window on the needle plate should be parallel.

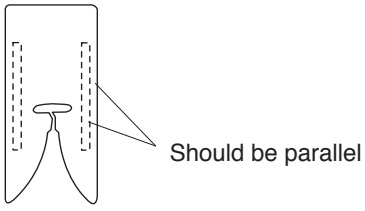
1. Remove the face cover (see page 3) and raise the presser foot.
   Loosen the setscrew to adjust the presser foot height (6.0 mm) and the presser foot alignment.
2. Tighten the setscrew firmly.
3. Attach the face cover.



[Height of presser foot]



[Presser foot alignment]



MECHANICAL ADJUSTMENT

NEEDLE DROP POSITION

Set the stitch pattern at "  "; the standard needle drop position should be at the center of the needle plate hole.

When the needle swings in maximum zigzag width "  ", the distance between both ends of the needle hole on the needle plate and the needle should be 0.2 mm or more. If not, adjust as follows.

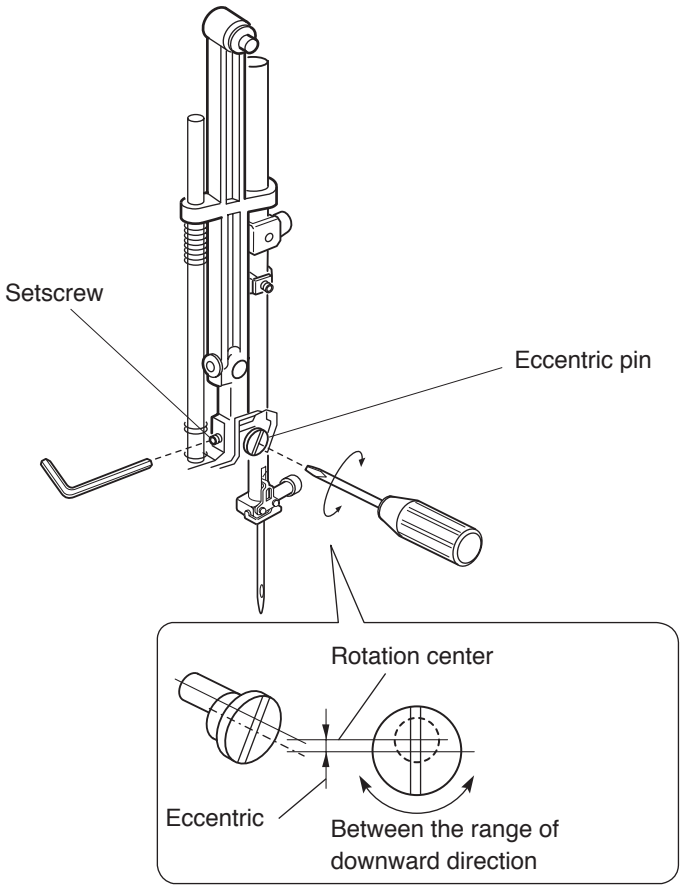
ADJUSTMENT PROCEDURE:

1. Turn on the power switch, set the stitch pattern at straight "  " and the zigzag width at maximum "  " then check the needle drop position.
2. If the needle drop position is not in the center of the needle plate hole when the straight stitch is selected, or if the clearance between the needle and edge of the needle plate hole on both side is less than 0.2 mm when the stitch pattern is set to maximum zigzag width, remove the face cover (see page 3) and loosen the setscrew, then adjust the needle drop position by turning the eccentric pin.

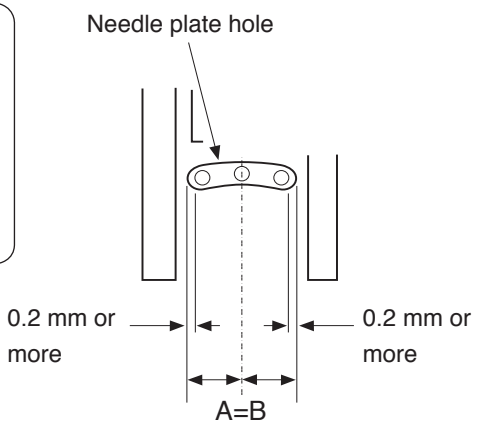
NOTE:

Make sure the eccentric pin is positioned with its off-center head facing downward.

3. When you have finished adjusting the needle drop position, tighten the setscrew and attach the face cover.



Adjust the needle drop position by turning the eccentric pin as the illustration.

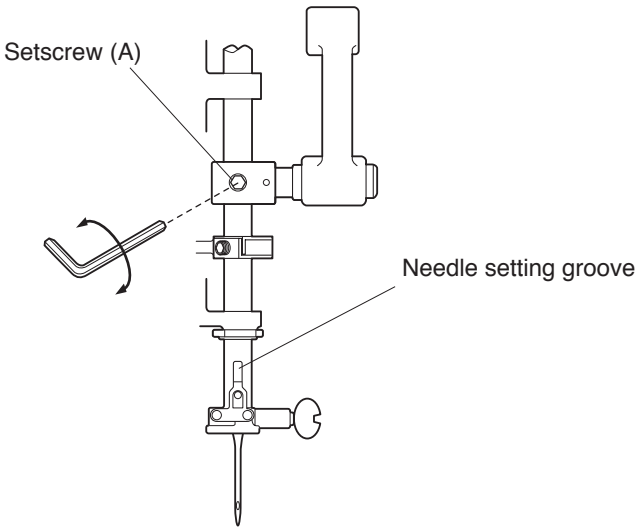


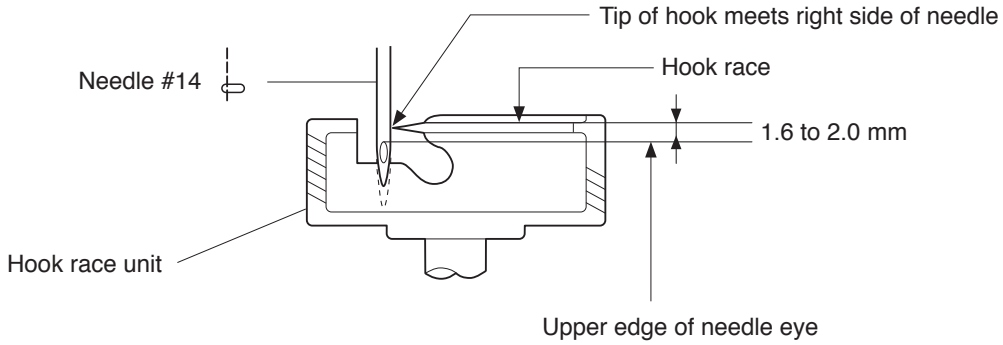
MECHANICAL ADJUSTMENT

NEEDLE BAR HEIGHT

The distance between the upper edge of needle eye and the tip of the hook should be in the range of 1.6 to 2.0 mm when the tip of hook meets the right side of the needle in ascending travel of needle from its left and lowest poosition.

1. Remove the needle plate and bobbin holder.
2. Turn on the power switch.
3. Select the pattern " " (simple zigzag). (Maximum zigzag width)
4. Turn the handwheel toward you until the tip of hook meets the right side of the needle.
5. Loosen the setscrew (A).
6. Adjust the height of the needle bar by moving the needle bar upward or downward without turning it. (Make sure that the needle setting groove of the needle bar is in the front).
7. Tighten the setscrew (A).
8. Attach the bobbin holder, then the needle plate.



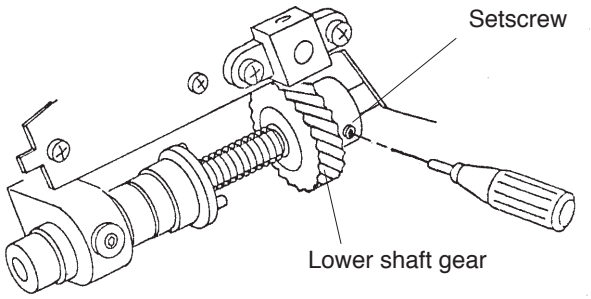


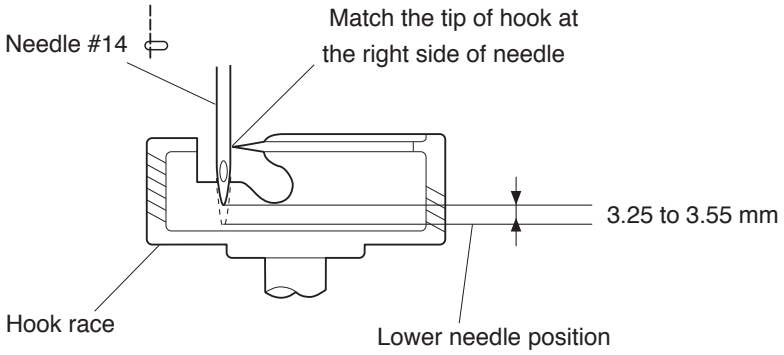
MECHANICAL ADJUSTMENT

NEEDLE TO HOOK TIMING

When the machine is set the straight stitch pattern no.2 (⇦ left needle position), the amount of ascending travel of the needle bar from its lowest position to the position where the tip of the hook meets the right side of the needle should be 3.25 to 3.55 mm.

1. Remove the needle plate and bobbin holder.
2. Turn on the power switch, set the straight stitch pattern no.2 (left needle position).
3. Remove the bed cover (see page 4).
4. Turn the handwheel toward you, and set the needle bar at the lowest position.
5. Loosen the setscrews on the lower shaft timing gear.
6. Raise the needle bar between 3.25 to 3.55 mm from the lowest position of the needle bar.
7. Turn the lower shaft timing gear until the tip of hook meets with the right side of needle.
8. Tighten the setscrews on the lower shaft timing gear.
9. Attach the bed cover, bobbin holder and needle plate.





MECHANICAL ADJUSTMENT

CLEARANCE BETWEEN NEEDLE AND HOOK

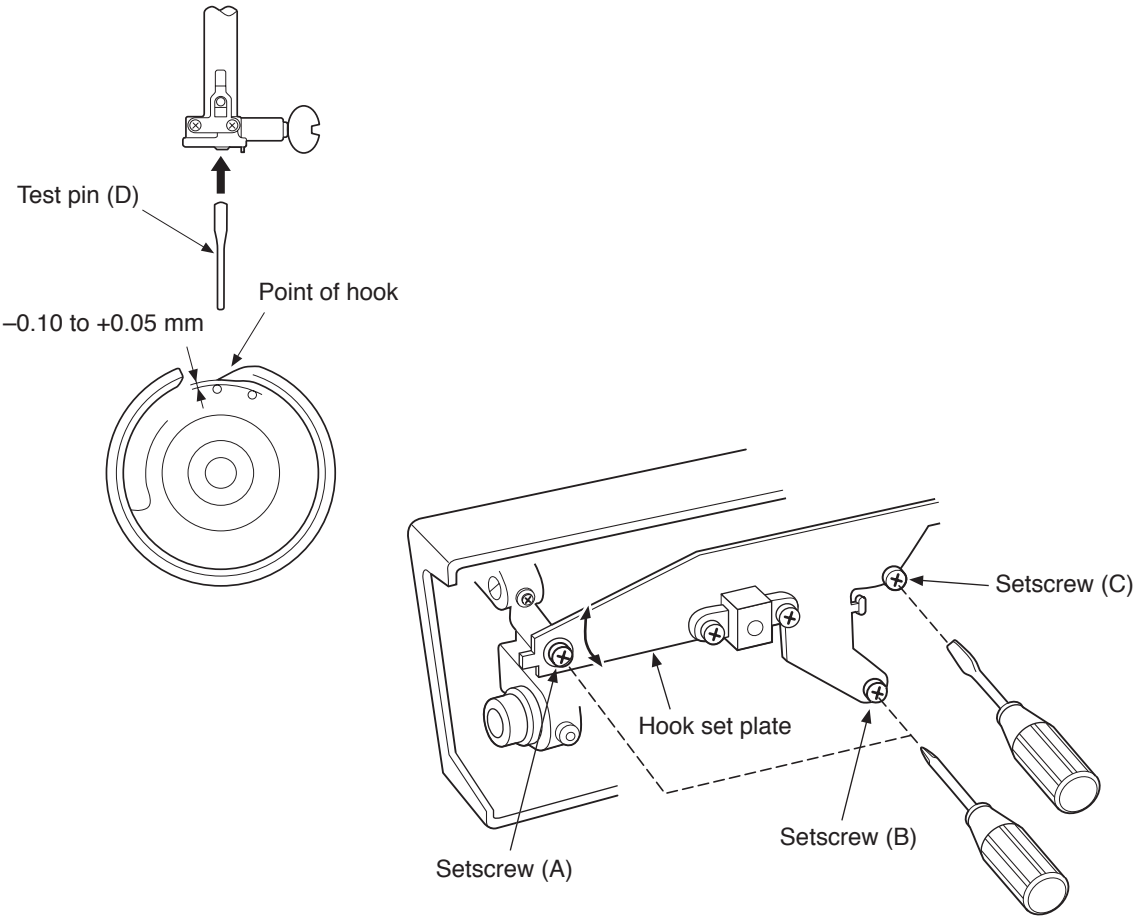
The clearance between the needle and the tip of hook should be -0.10 to +0.05 mm.

PREPARATION:

1. Remove the needle plate, bobbin holder, and bed cover, and replace the needle with the test pin (D).
2. Turn the power switch on, and select pattern " " (simple zigzag). (Maximum zigzag width)

ADJUSTMENT PROCEDURE:

1. Loosen the setscrews (A), (B), (C), then slightly tighten the setscrew (C).
2. Turn the handwheel toward you, and adjust the clearance between master needle and the point of the hook in the left and right needle position to –0.10 to +0.05 mm by moving the hook in the left and right by moving the hook set plate up or down.
3. Tighten the setscrews (A), (B), (C).
4. Check the backlash of the hook drive, gear and lower shaft gear. If the backlash is too great or not enough, adjust the backlash in accordance with "to adjust the backlash of hook drive gear and lower shaft gear".
5. Attach the bed cover, needle plate and bobbin holder, and remove the test pin (D).



MECHANICAL ADJUSTMENT

BACKLASH (BETWEEN LOWER SHAFT GEAR AND SHUTTLE HOOK GEAR)

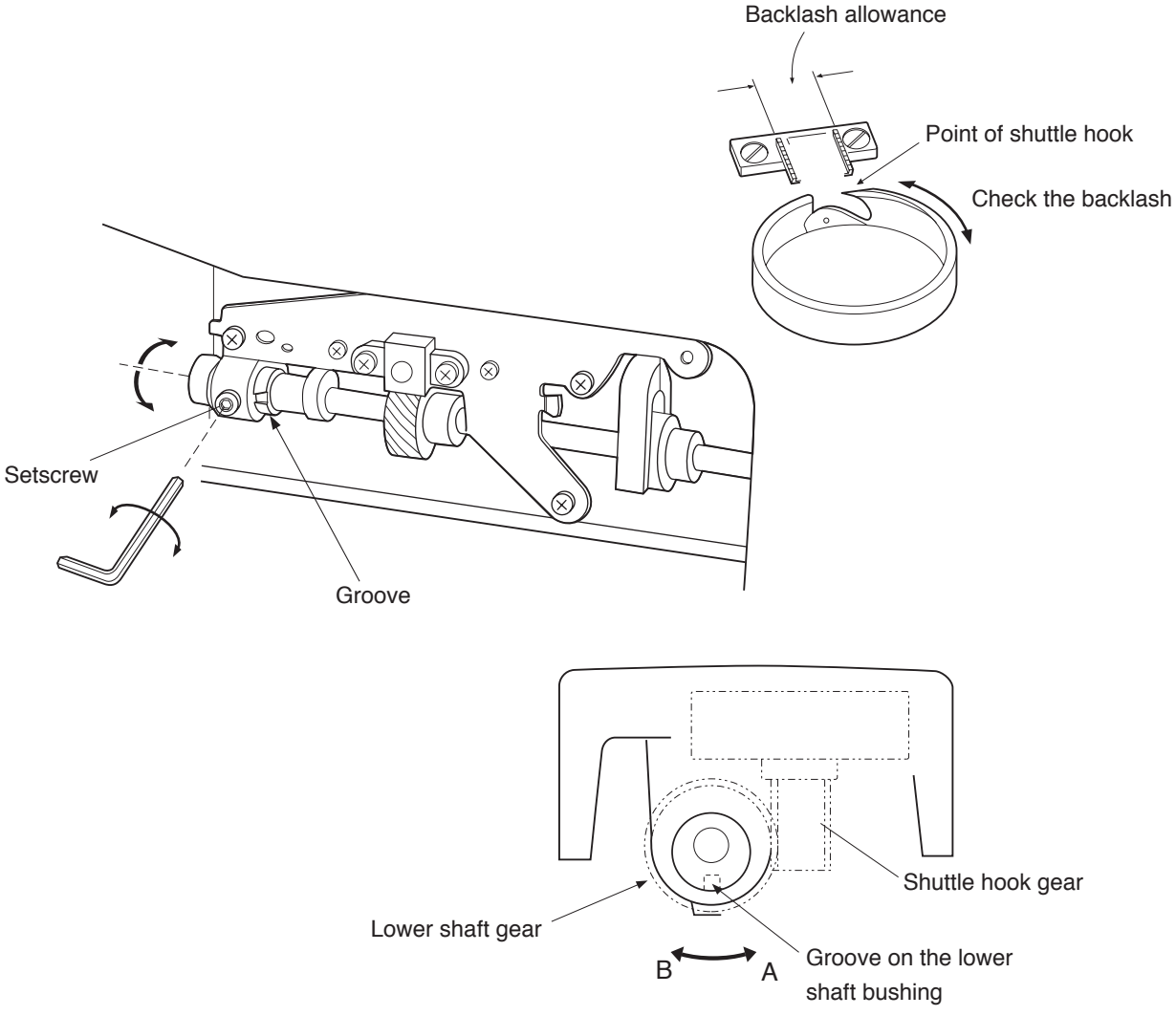
Jog the hook race back and forth to check rotary play.
The standard play should be 0.8 mm or less when the hook point is within the feed dog width. If play excess 0.8 mm, adjust as follows.

ADJUSTMENT:

1. Remove the bed cover (see page 4).
2. Loosen the setscrew.
3. Turn the lower shaft bushing (eccentric bushing) clockwise (B) if there is too much play in the shuttle hook.
   Turn the lower shaft bushing (eccentric bushing) counterclockwise (A) if there is too little play in the shuttle hook.
4. Tighten the setscrew securely after adjustment and attach the bed cover.

NOTE:

After adjusting the backlash, be sure to check the needle to shuttle timing and the feed dog height.

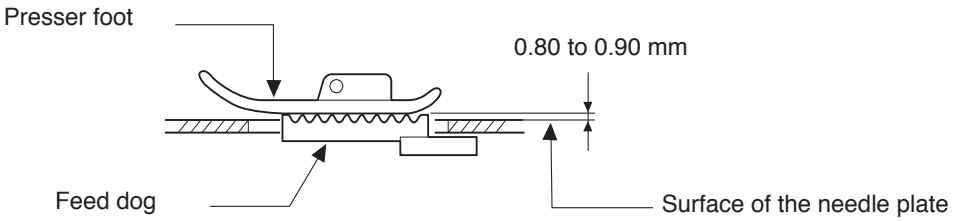


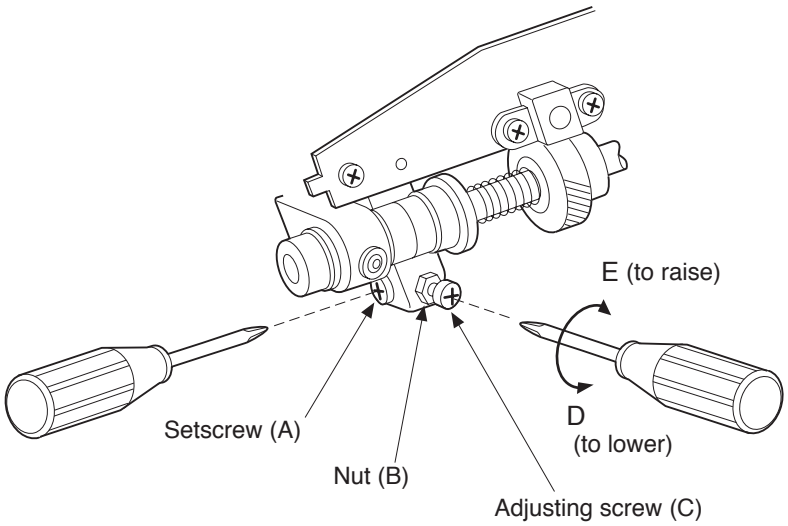
MECHANICAL ADJUSTMENT

FEED DOG HEIGHT

The highest position of the feed dog should be between 0.80 to 0.90 mm from the surface of the needle plate when the presser foot is raised.

1. Lower the presser foot.
2. Turn on the power switch.
3. Remove the bed cover (see page 4).
4. Turn the handwheel toward you to set the feed dog at the highest position.
5. Loosen the setscrew (A) and nut (B).
6. Adjust the feed dog height by turning the adjusting screw (C).
7. Tighten the nut (B) and setscrew (A).



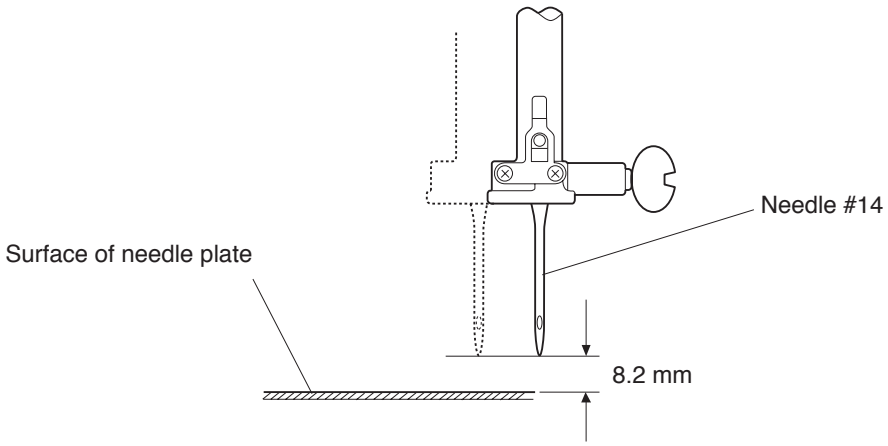


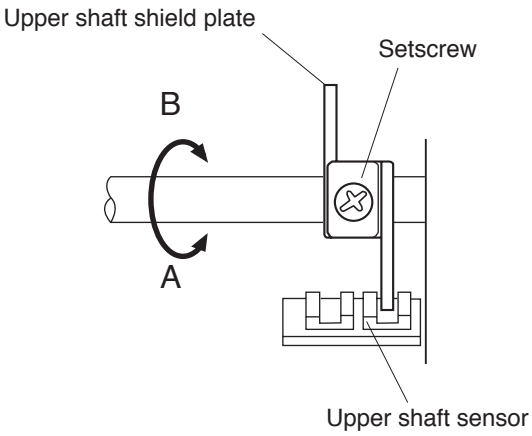
MECHANICAL ADJUSTMENT

ZIGZAG SYNCHRONIZATION

The needle should start swing between 8.2 mm above the surface of the needle plate when the machine is set for zigzag stitching.

1. Remove the front cover (see page 7).
2. Turn on the power switch, select the pattern no. 2 and set the machine at the maximum zigzag width.
3. Turn the handwheel toward you slowly with your hand until the needle start to sewing. Loosen the setscrew and turn the upper shaft shield plate in the direction of;
   * A. If the swing point is higher than 8.2 mm.
   * B. If the swing point is lower than 8.2 mm.
4. Position the upper shaft shield plate as close as possible to the left.
   (It should not touch the upper shaft sensor).
5. Check the swing point by turning the handwheel, then tighten the setscrew.
6. Attach the front cover.



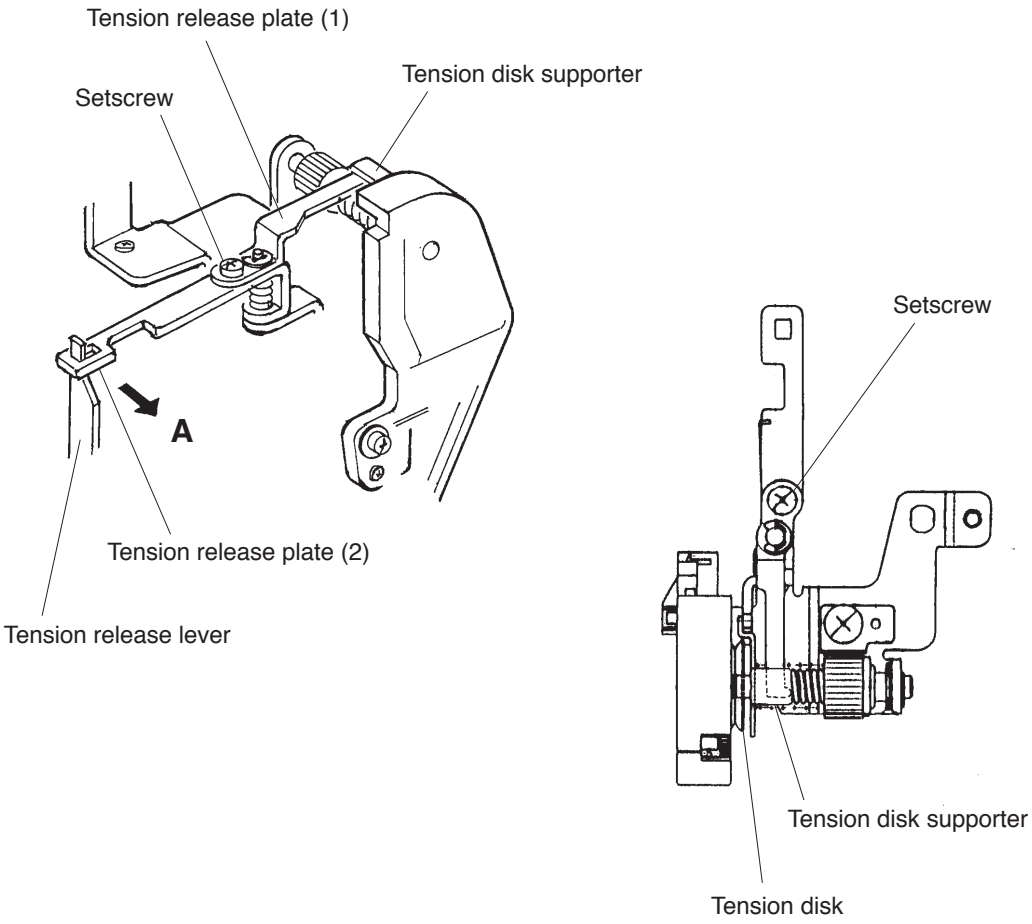


MECHANICAL ADJUSTMENT

TENSION RELEASE MECHANISM

When the presser foot lifter is raised, the tension disk supporter should move approximately 1 mm.

1. Remove the front cover (see page 7).
2. Lower the presser foot lifter, and set the thread tension dial at "9". Then loosen the setscrew (A).
3. While pushing the tension release plate (2) in the direction of "A", move the tension release plate (1) until it touches tension disk supporter. In this condition, tighten the setscrew (A).
4. Raise the presser foot lifter, and check the tension release mechanism.
5. Set the thread tension dial at "0". Lower the presser foot lifter. Move the tension release plate (2) back and forth. In this condition, the tension disk supporter should not move.
6. Attach the front cover.



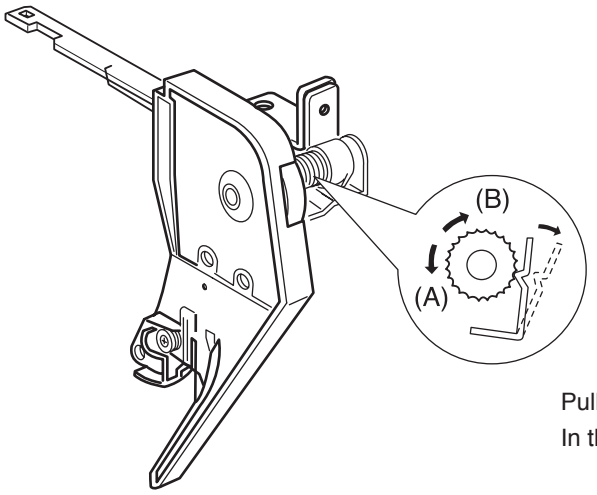
MECHANICAL ADJUSTMENT

NEEDLE THREAD TENSION

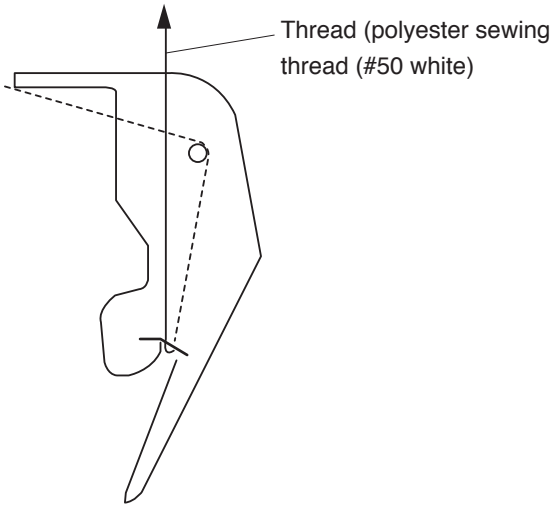
The standard tension should be 75 to 90 grams-force when the tension dial is set at "4", measured with a #50 white polyester thread being pulled at approximately 110 mm/sec.
If it is not within the above limit, adjust as follows:

ADJUSTMENT:

1. Set the tension dial at “4”.
2. Remove the front cover (see page 7).
3. Turn the adjusting screw in the direction “B” if the tension is less than 75 grams-force.
   Turn the adjusting screw in the direction “A” if the tension is more than 90 grams-force.
4. Attach the front cover unit.



Pull the thread at a speed of approx. 110 mm/sec.
In the direction of arrow.



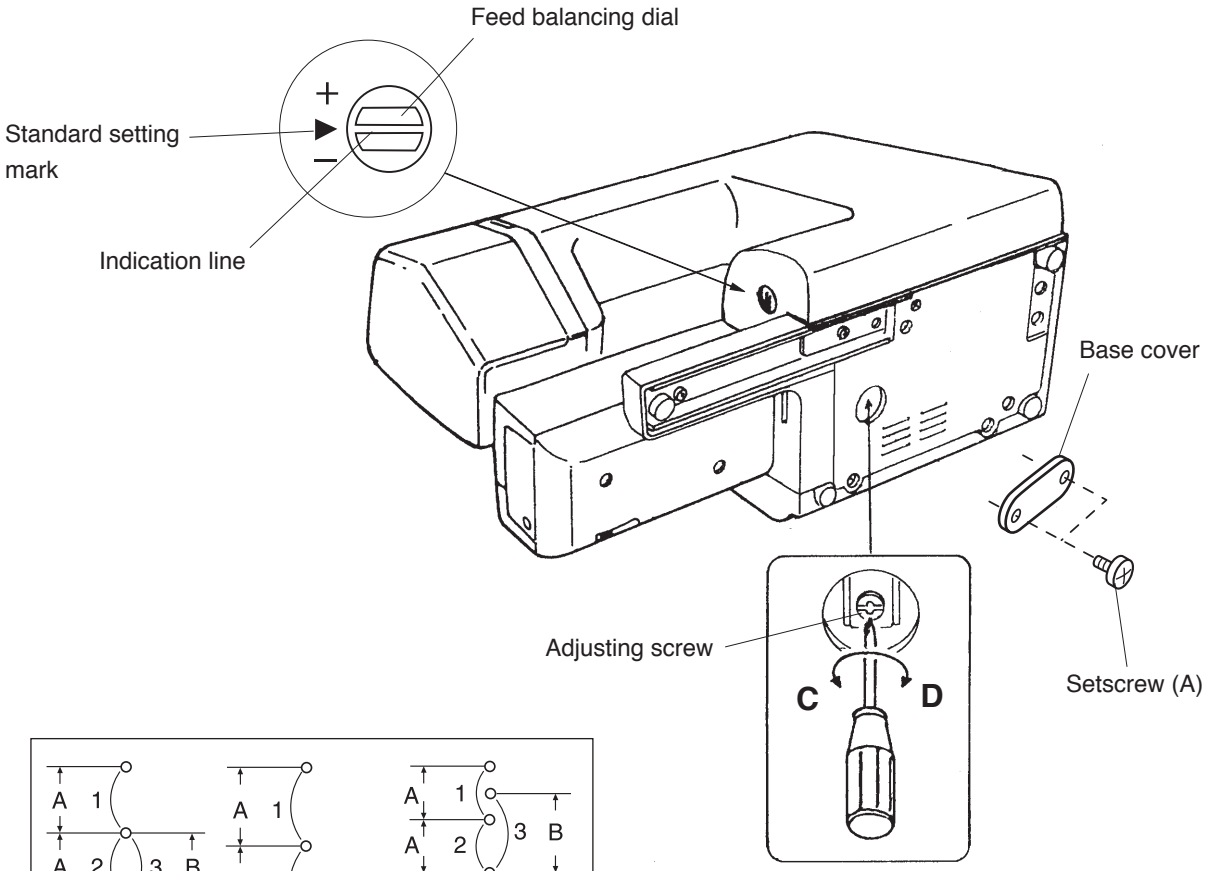
MECHANICAL ADJUSTMENT

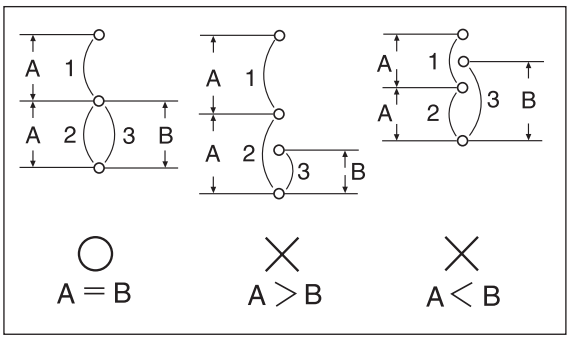
STRETCH STITCH FEED BALANCE

When a stretch stitch pattern is sewn with the feed balancing dial position set at the standard setting mark " ▶ ", the stitch pattern should look like the one marked with a " ○ " (A=B) in the diagram below.
If forward and backward feeding is unbalanced (A>B or A<B), adjust as follows.

ADJUSTMENT PROCEDURE:

1. Turn the power switch on and select the stitch pattern " ||| ".
2. Set the slit of the feed balancing dial to the standard setting mark " ▶ " on the front cover.
3. Put a piece of paper under the presser foot and lower it.
   Turning the handwheel toward you, and check the needle mark at "A" and "B".
4. Remove the setscrews (A) and base cover (see page 4).
5. If A>B, turn the adjusting screw counterclockwise "C".
6. When A<B, turn the adjusting screw clockwise "D".
7. Attach the cap.





MECHANICAL ADJUSTMENT

REPLACEMENT AND ADJUSTMENT OF THE NEEDLE THREADER PLATE

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

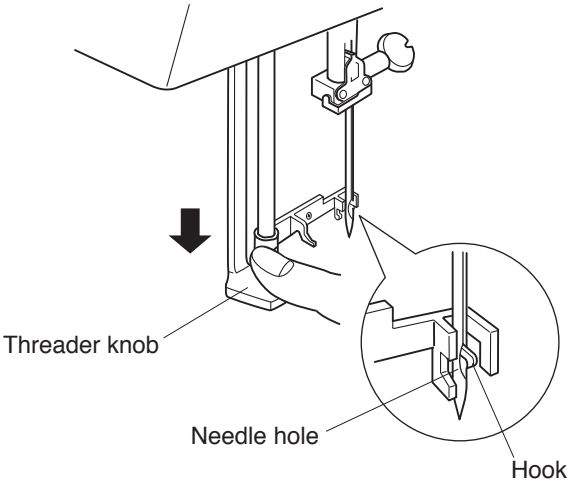
TO CHANGE THE THREADER PLATE:

TO REMOVE:

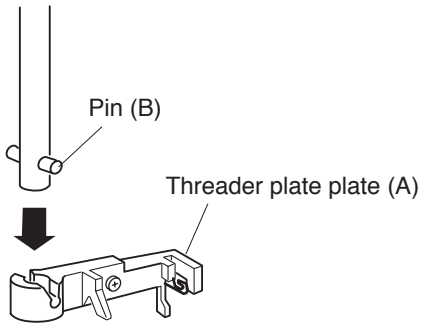
1. Push down the needle threader knob and pull the needle threader plate (A) down to remove it (FIG. 1).
2. To attach the needle threader plate, line the groove up with the pin (B) and push it up to snap fit.

TO ADJUST THE THREADER PLATE POSITION:

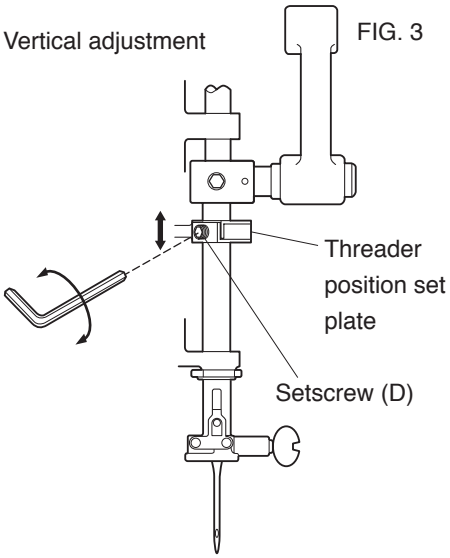
1. If the hook on the threader plate touches the left or right side of the needle hole, loosen setscrew (C) and adjust the hook position (FIG 2).
2. If the hook on the threader plate touches the top or bottom side of the needle hole, loosen setscrew (D) and adjust the hook position (FIG.3)



Replacing the needle threader cover (with the threader plate attached) FIG. 1

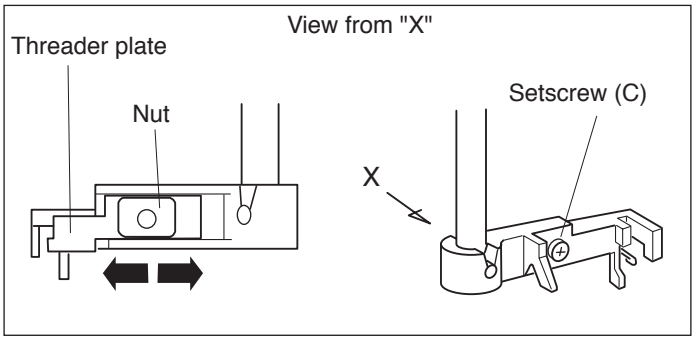


Vertical adjustment FIG. 3



Adjustment of left or right direction

FIG. 2



CONNECTOR DIAGRAM

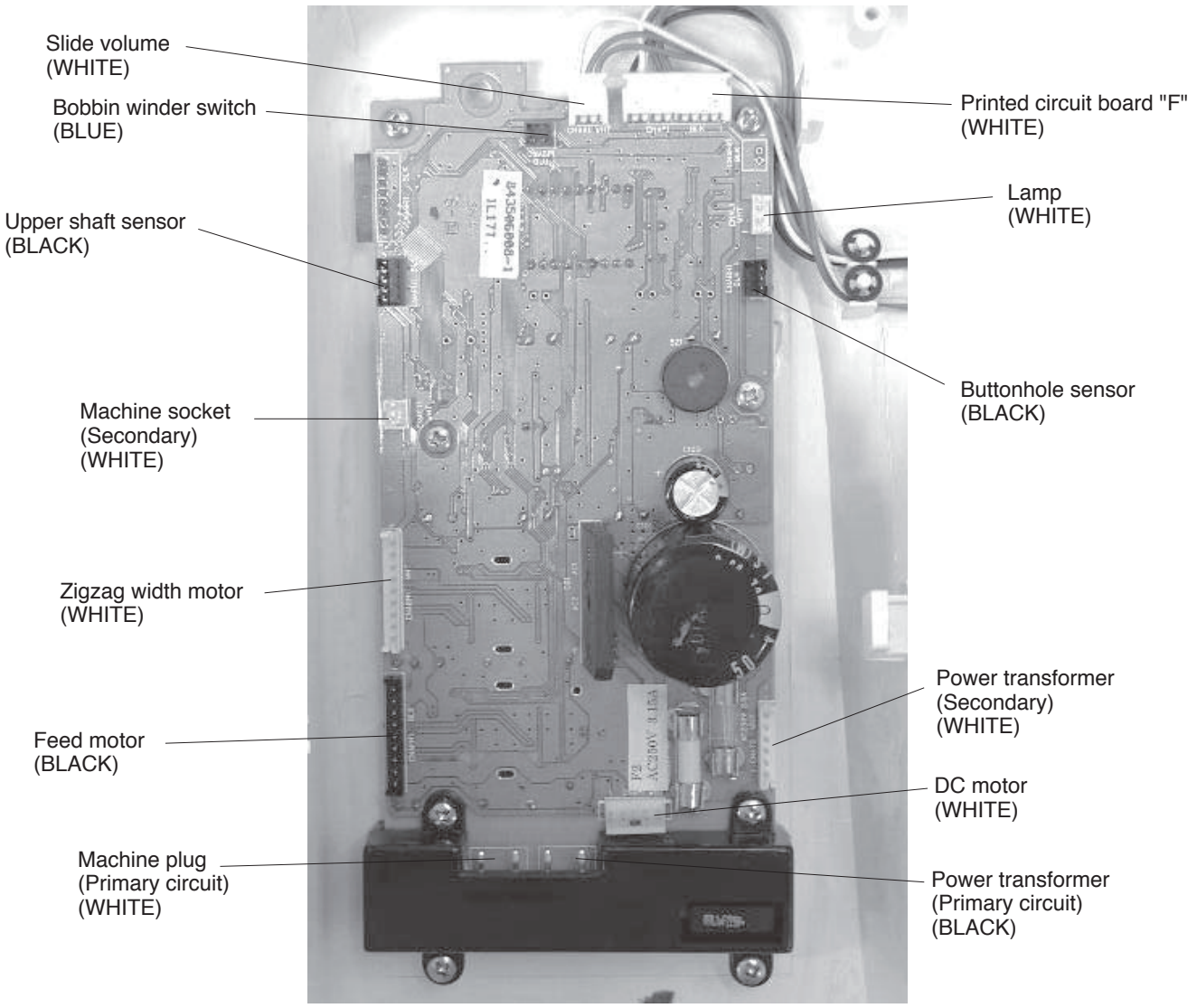
Refer to the diagram for locating the connector posts to which each connectors should be connected.

TO DISCONNECT THE CONNECTORS:

1. Grasp the connector directly with your fingers and pull.
   Do not pull the lead wire, as this may damage the contact sleeve inside the connector.
2. When disconnecting the machine socket and power transformer connectors, pull them while pushing them toward the printed circuit board to unlock them.

TO CONNECT THE CONNECTORS:

1. Be sure that the color of each connector corresponds to the color of the connector post on the printed circuit board (PCB) to which it is connected.
2. Position the connector correctly, then push it straight down until it locks in place.



SELF DIAGNOSTIC TESTS

PREPARATION:

* Turn off the power switch.
* Shift the bobbin winder spindle to the left.
* Raise the feed dog.
* Shift the slide volume to the left.
* Remove the presser foot and raise the presser foot lifter.
* Turn the handwheel toward you to raise the needle to its highest position.

NOTE:

* 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 problems 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 press the needle up/down button until the step number of the required test is indicated.)

PRELIMINARY TEST:

Turn on the power switch. If any of following problems occur, take the recmmended actions in the order they are shown.

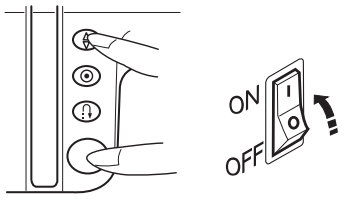
* The machine does not respond when the power switch is turned on.
    1. Check each connector connection.
    2. Replace the machine socket.
    3. Replace the printed circuit board "A".
    4. Replace the power transformer.
* The sewing machine light does not light up.
    1. Replace the lamp.
    2. Replace printed circuit board "A".
* The display shows " E 1 " to " E 9 ",
    1. Replace the printed circuit board "A".

TO ENTER THE SELF-DIAGNOSTIC MODE:

If you do not press the next button within 2.5 sec, the machine will revert to normal sewing mode. Should this occur, start over again from step No.1.

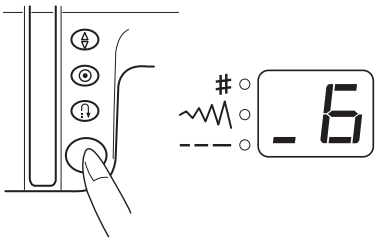
No.1

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



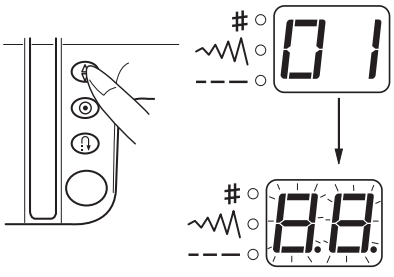
No.2

Press the reverse button five times to select menu item "6".

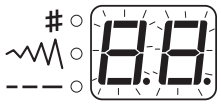
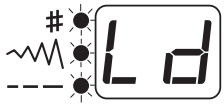
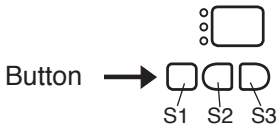
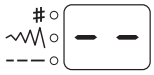
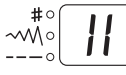
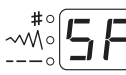


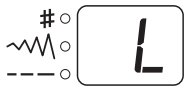
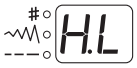
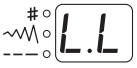
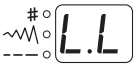
No.3

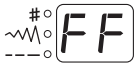
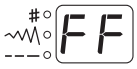
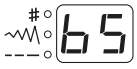
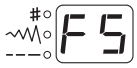
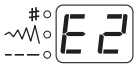
Press the needle up/down button.

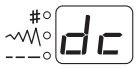
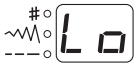


SELF DIAGNOSTIC SHEET

STEP AND ITEMS TO CHECK	PROCEDURE	CORRECT RESULTS	DEFECTIVE RESULTS
01) 7-segment LED	Turn on the power switch while simultaneously pressing the needle up/down button and the reverse button. Press the reverse button five times to select menu item "6". Press the needle up/down button: The LED indicates "01" for one second. If you don't press the reverse button within 2.5 seconds, the machine automatically reverts to normal sewing mode.	* Beep sounds when the buttons are pressed. * LED displays "8.8", and blinks in 1-sec. Intervals. LED 	* No beep sound. * Does not enter self-diagnostic mode. * LED does not blink on or off. 1. Replace board "A".
02) Mode LED	Press needle up/down button, LED displays "02" for one second.	7- segment LED displays "Ld" 3 mode LEDs blink in 1-sec. Intervals. LED 	* LED does not blink. 1. Replace board "A".
03) Switch	Press needle up/down button, LED displays "03" for one second. Press buttons S1 to S3. 	* LED indicates "--".  * Button number is displayed when the button is pressed. 	* LED display is different from that shown to the left. 1. Replace board "A".
04) Bobbin winder switch	Press needle up/down button, LED displays "04" for one second. * Move the bobbin winder spindle to the right. * Return it to the left.	* LED indicates "II".  (At left position)  (At right position)	* LED display is different from that shown to the left. 1. Adjust bobbin winder switch position. 2. Replace bobbin winder switch. 3. Replace board "A".
05) Not applicable to this model	Skip this step by pressing the needle up/down button.		

STEP	OPERATION	CORRECT CONDITION	DEFECTIVE CONDITION
06) Buttonhole sensor	Press needle up/down button, LED displays "06" for one second. 1. Lower the buttonhole lever. 2. Move the buttonhole lever back and forth.	 * When the buttonhole lever is pulled, LED displays "H".  * When the buttonhole lever is free (positioned in the center), LED displays "L".  * When the buttonhole lever is pushed, LED displays "H". 	LED display is different from that shown to the left. 1. Adjust the buttonhole sensor position. 2. Replace buttonhole sensor. 3. Replace board "A".
07) Upper shaft sensor	Press needle up/down button, LED displays "07" for one second. * Turn the handwheel toward you to raise and lower the needle to its highest and lowest position.	* When the needle is at the highest position, LED displays "HL".  * When the needle is halfway, LED displays "LL".  * When the needle is at the lowest position, LED displays "LH".  * When the needle is halfway, LED displays "LL". 	* LED display is different from that shown to the left. 1. Adjust upper shaft shield plate. 2. Replace upper shaft sensor. 3. Replace board "A".
08) Sewing speed sensor	* Press the needle up/down button. LED displays "08" for one second. * Turn the handwheel clockwise by hand and check the counter value displayed by the LEDs.	* LED displays "00" first and the indicates value increases as you turn the handwheel. (When the value reaches 100, it will return to "00" and one mode LED lights up. For example, 2 mode LEDs and "78" means "278".)    The maximum value should be 370 to 390. 	* LED displays different from that shown to the left. 1. Replace the DC motor. 2. Replace board "A".

STEP	OPERATION	CORRECT CONDITION	DEFECTIVE CONDITION
09) Slide volume	Press needle up/down button, LED displays "09" for one second. Slide the speed control lever from the left to the right, then return it to the left.	When the speed control lever is at the left, LED displays "00".  The indicated value (hexadecimal) increases as you move the speed control lever to the right, and finally it shows "FF" when the lever reaches the right-most position. 	* LED display is different from that shown to the left. 1. Replace slide volume. 2. Replace board "A".
10) Foot controller	Press needle up/down button, LED displays "10" for one second. Connect the foot control to the machine. Depress the foot controller down all the way and release. Remove the foot control.	When the foot control is not depressed, LED should display "F0" to "FF" (hexadecimal value).  When the foot control is fully depressed, LED should display "05" to "2F".  When the control is disconnected, LED should show "00" to "04". 	* LED display is different from that shown to the left. 1. Replace foot control. 2. Replace machine socket. 3. Replace board "A".
11) Zigzag width motor	Press needle up/down button, LED displays "11" for one second. * Press the start/stop button.	* LED displays "bs".  Zigzag width motor is set to the initial position. (Needle centered)	* LED displays different from that shown to the left.  If LED displays "E1", replace the width motor or board "A".
Feed motor	Turn the handwheel toward you to lower the needle to its lowest position, then press start/stop button.	* LED displays  Feed motor is set to the initial position. (Stitch length : 0)	* LED display is different from that shown to the left.  If LED displays "E2", replace motor or board "A".

STEP	OPERATION	CORRECT CONDITION	DEFECTIVE CONDITION
12) DC motor	Press needle up/down button, LED displays "12" for one second. * Press foot control.	* LED indicates "dc". * Machine runs at the speed set by the speed control lever.  Full left: 80 ~100 SPM Full right: 800 ~840 SPM	Machine does not run, LED displays "Lo".  1. Replace DC motor. 2. Replace board "A".

THE END OF TEST: All of test is finished, turn off the power switch.

REPLACING PRINTED CIRCUIT BOARD A

TO REMOVE:

1. Remove the front cover (see page 7).
2. Unplug the connectors from the board "A".
3. Remove the 6 setscrews and remove board "A".

NOTE: TO DISCONNECT THE CONNECTORS:

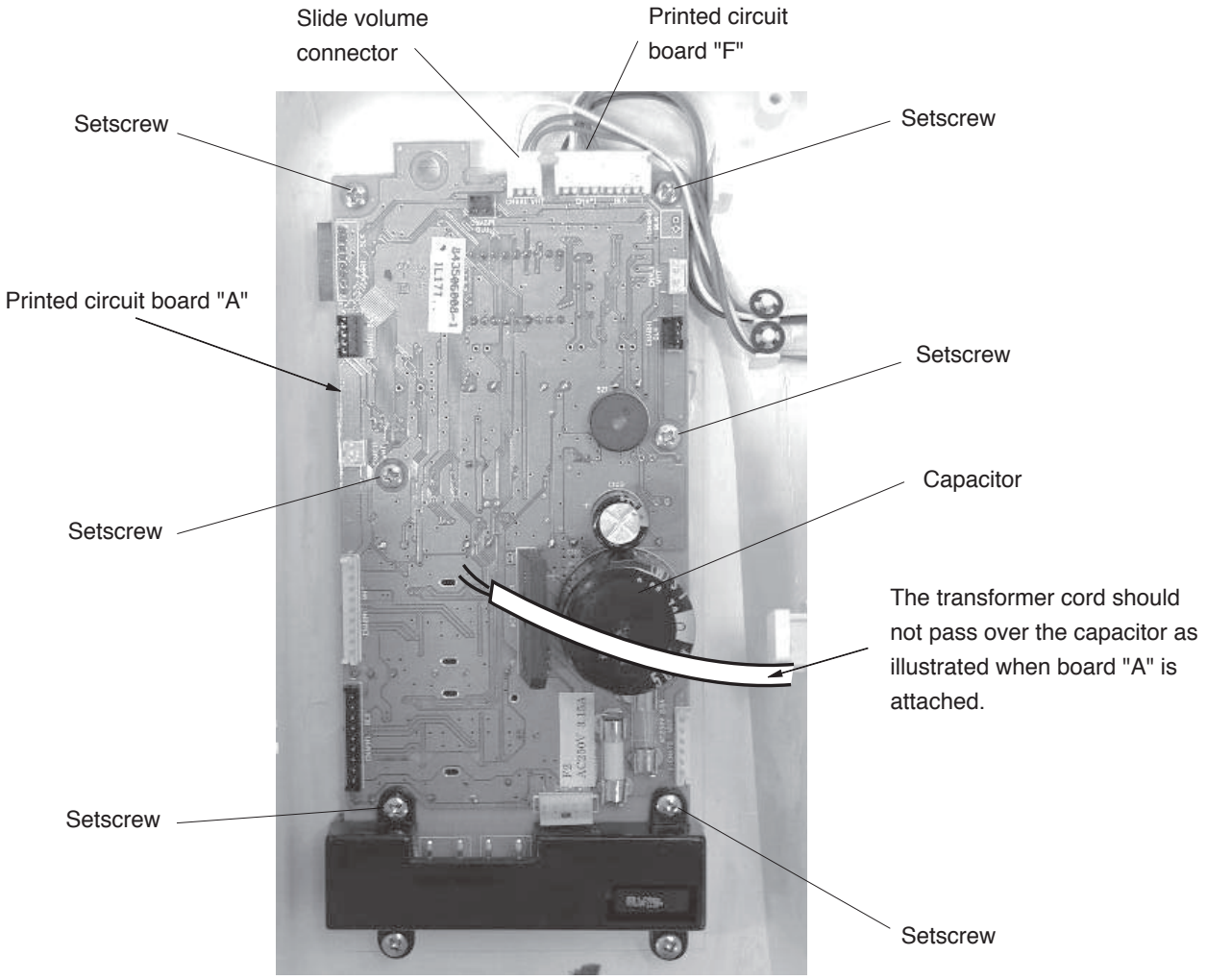
1. Grasp the connector directly with your fingers and pull.
   Do not pull on the lead wire, as this may damage the contact sleeve inside theconnector.
2. When disconnecting the machine socket and power transformer connectors, pull them while pushing them toward the a board to unlock them.

TO ATTACH:

4. To attach, follow the above procedure in reverse.

NOTE:

When installing board "A" in the machine.
The transformer wire should not pass over the capacitor when board "A" is attached.
If the cord is resting on the capacitor, it may interfere the pattern selector button after the front cover is attached.



* Replace the printed circuit board A when fuse replacement is necessary.

REPLACING SLIDE VOLUME AND PRINTED CIRCUIT BOARD F

REPLACING THE SLIDE VOLUME

TO REMOVE:

1. Remove the front cover (see page 7).
2. Unplug the slide volume connector.
3. Remove the four snap rings (A) (CS-3) and remove the side volume.

TO ATTACH:

4. To attach the slide volume, follow the above procedure in reverse.
   * Secure the lead wire on the board using the snap ring (A) (CS-3), as shown.
   * Check to ensure that the slide volume moves smoothly.

REPLACING PRINTED CIRCUIT BOARD "F"

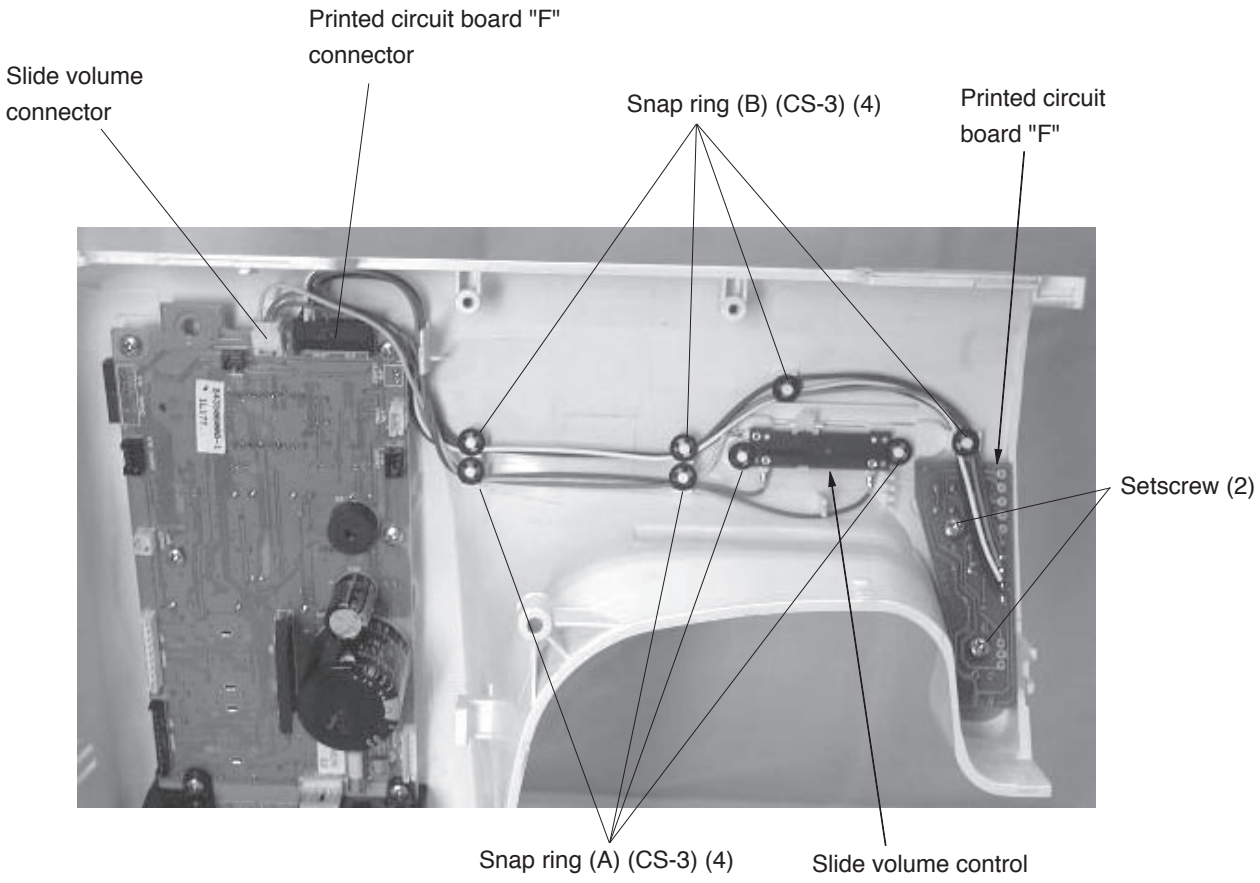
TO REMOVE:

5. Remove the front cover (see page 7).
6. Unplug the printed circuit board "F" connector and remove the four snap rings (B) (CS-3).
7. Remove the two setscrews and remove the printed circuit board "F".

TO ATTACH:

To attach the printed circuit board "F". Follow the above procedure in reverse.

* Secure the lead wire on the board using the snap ring (B) (CS-3), as shown.
* Each button (needle up/down button, start/stop button, reverse button) should "click" when pressed.



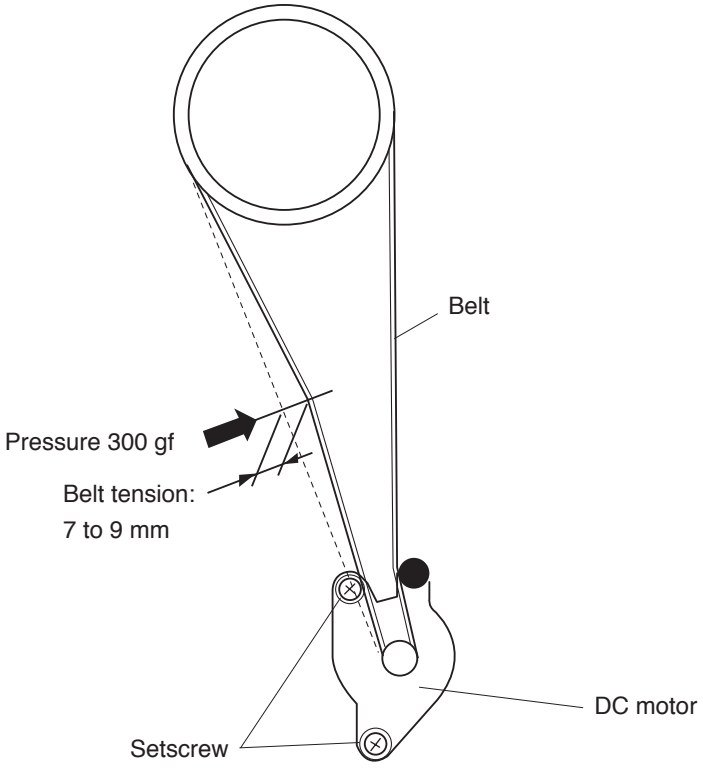
REPLACING DC MOTOR AND ADJUSTING MOTOR BELT TENSION

TO REMOVE:

1. Remove the front and rear covers (see pages 7 and 8).
2. Remove the two setscrews, then remove the DC motor and belt.

TO ATTACH:

3. Lightly tighten the two setscrews.
4. Put the motor belt on the pulley and adjust the belt deflection to about 7 to 9 mm by pressing the middel of the motor belt with your finger (with approximately 300 grams-force of pressure). Then, tighten the setscrews firmly.
5. Attach the front and rear covers.



REPLACING MACHINE SOCKET (UNIT)

REPLACING THE MACHINE SOCKET

TO REMOVE:

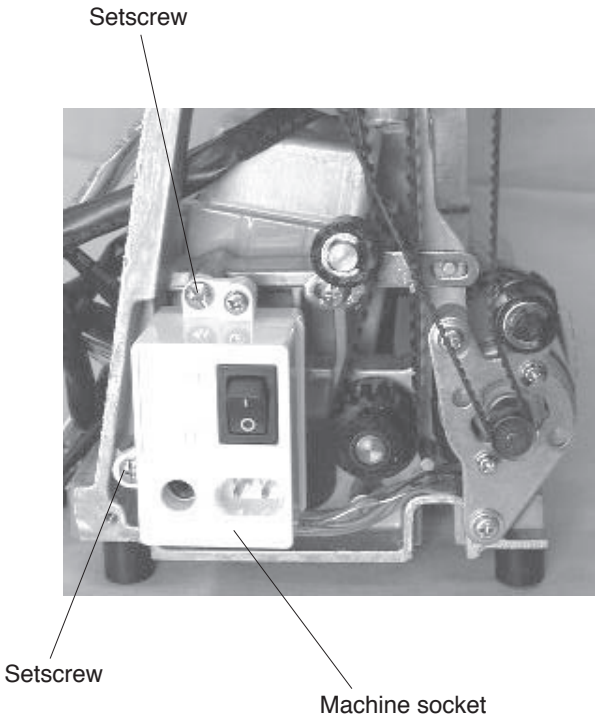
1. Remove the front and rear cover (see pages 7 and 8).
2. Remove the two setscrews and remove the machine socket.

TO ATTACH:

3. To attach the machine socket, follow the above procedure in reverse.

NOTE

Pull out the cord in front of the arm to prevent it from contacting with the lower shaft or other moving parts, and secure it to the feed motor cord with a binder.



REPLACING THE TRANSFORMER

REPLACING THE TRANSFORMER

TO REMOVE:

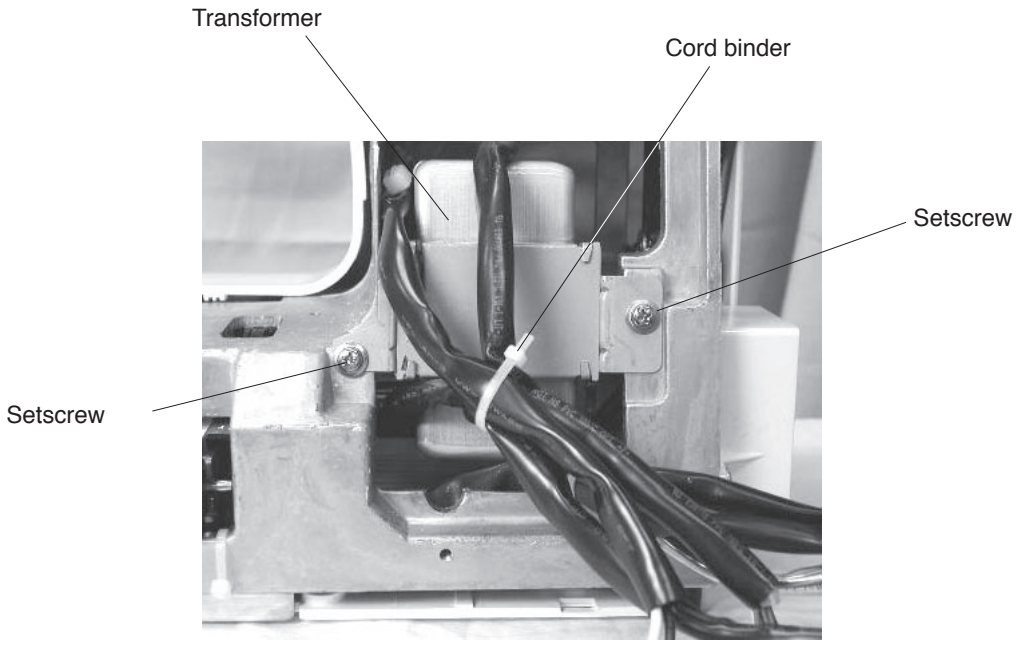
1. Remove the front cover (see page 7).
2. Remove the two setscrews and remove the transformer.
   Cut off the cord binder.

TO ATTACH:

3. To attach the transformer, follow the above procedure in reverse.

NOTE

Place the rear end of the transformer on the transformer support.
Slide the two transformer wire tubes to the side of transformer and secure them to the zigzag stepping motor wire so they will not come in contact with any moving parts.



REPLACING THE ZIGZAG WIDTH MOTOR

REPLACING THE ZIGZAG WIDTH MOTOR

TO REMOVE:

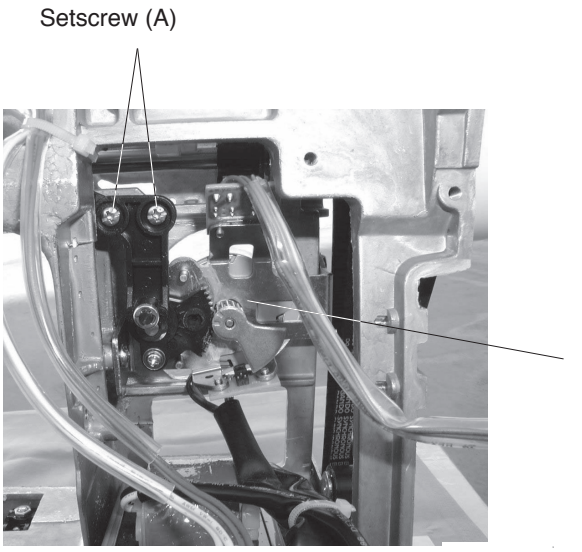
1. Remove the front and rear cover (see pages 7 and 8).
2. Remove the two setscrews (A).
3. Remove the two setscrews (B) and remove the zigzag width motor.

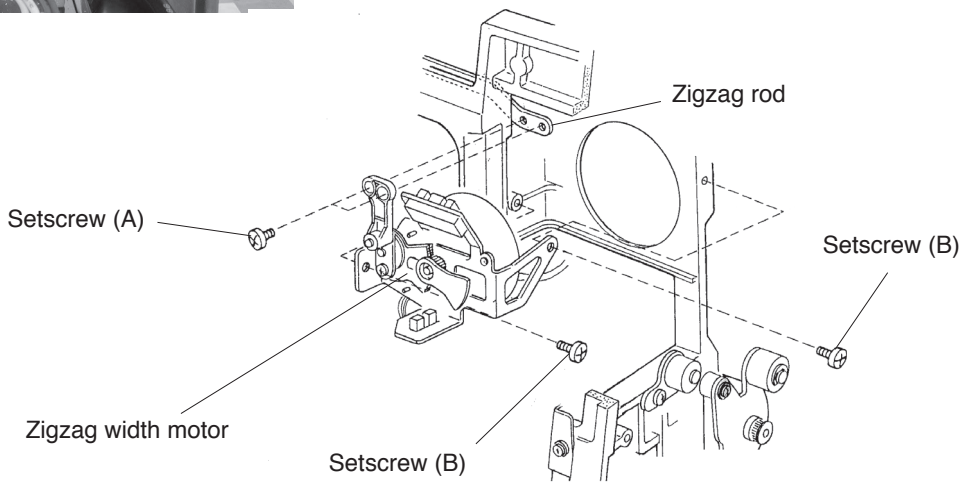
TO ATTACH:

4. To attach the zigzag width motor, follow the above procedure in reverse.

NOTE

1. The setscrew of zigzag rod should be tightened to 5 to 7 kg of torque.
2. Check to ensure that the upper shaft sensor attached on the zigzag width motor does not interfere with the upper shaft shield plate.
3. Adjust the needle drop position (see page 10).





REPLACING THE FEED STITCH MOTOR

REPLACING THE FEED MOTOR

TO REMOVE:

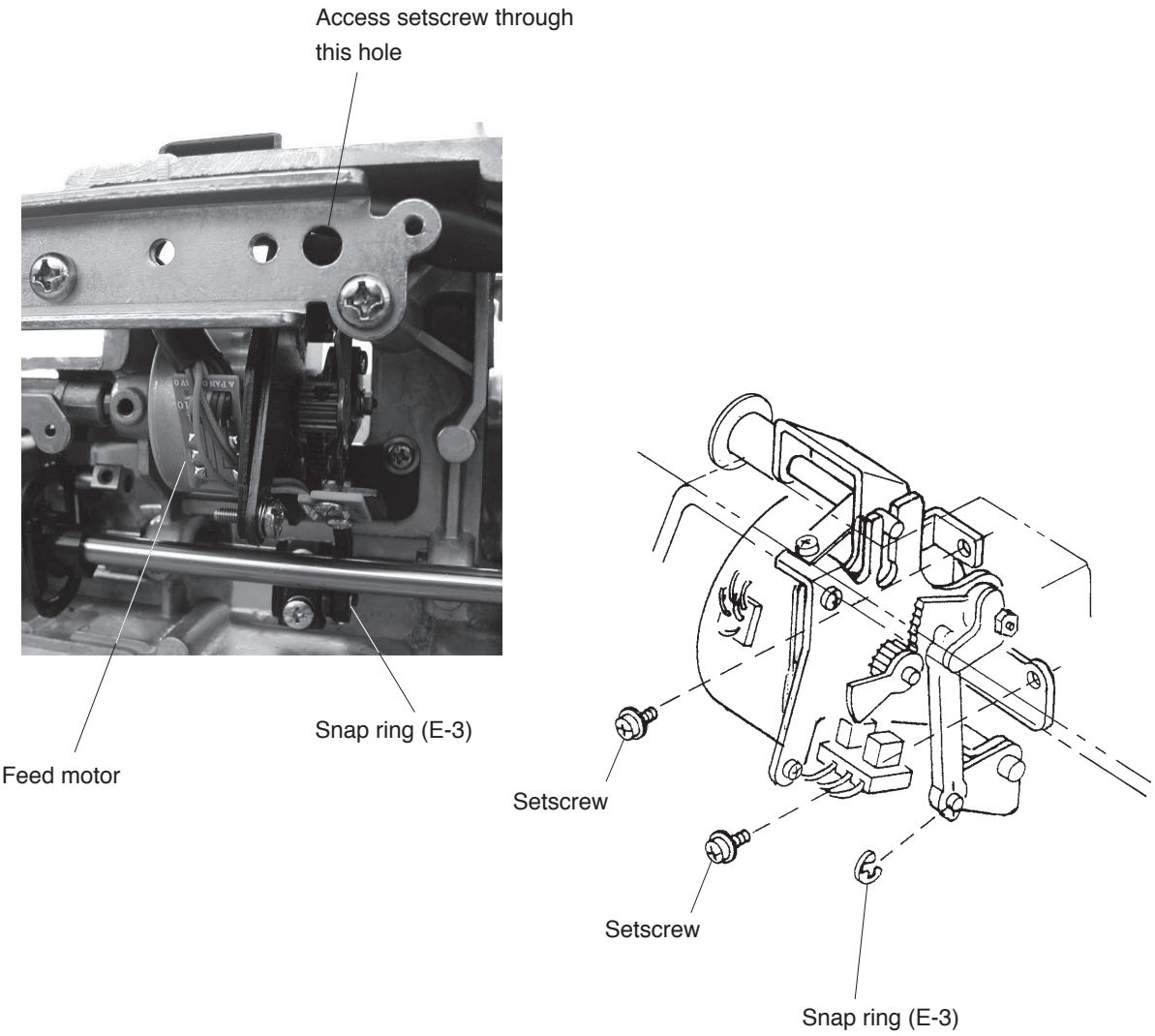
1. Remove the front cover and rear cover (see pages 7and 8).
2. Remove the snap ring (E-3).
3. Remove the two setscrews and the feed motor.

TO ATTACH:

4. To attach the feed motor, follow the above procedure in reverse.

NOTE

Adjust the stretch stitch feed balance (see page 19).



ADJUSTING BUTTONHOLE LEVER POSITION

TO ADJUST THE BUTTONHOLE LEVER GUIDE:

1. Set the machine in buttonhole sensor adjusting mode.
   (See below. The LED should display "H" or "L".)
2. Remove the face cover and loosen setscrew (A).
3. Lower the buttonhole lever. Loosen the setscrew and position the buttonhole lever guide so the LED displays "L". Tighten setscrew (A).

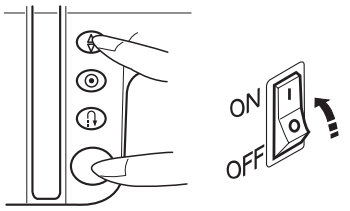
TO ADJUST THE BUTTONHOLE SENSOR POSITION:

4. Attach the buttonhole foot (R).
5. Lower the buttonhole lever to its lowest position, and insert a 1.6 mm clearance gauge.
6. Turn the adjusting screw to the left until the LED display changes from "L" to "H".
7. Next, turn the adjusting screw to the right until the LED display changes from "H" to "L".
8. Check the LED. When the clearance of the buttonhole foot is 1.4 mm, the LED displays "H"; when the clearance is 1.8 mm, the LED displays "L".
9. Turn off the power switch, and attach the face cover.

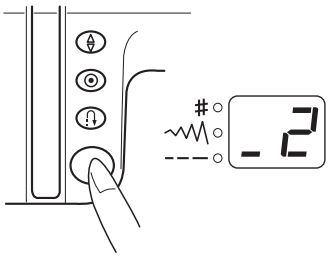
NOTE

If there is any lint in the buttonhole sensor slit, clean out with a swab.

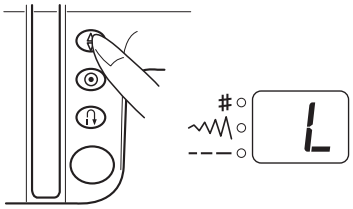
TO ENTER ADJUSTING MODE:



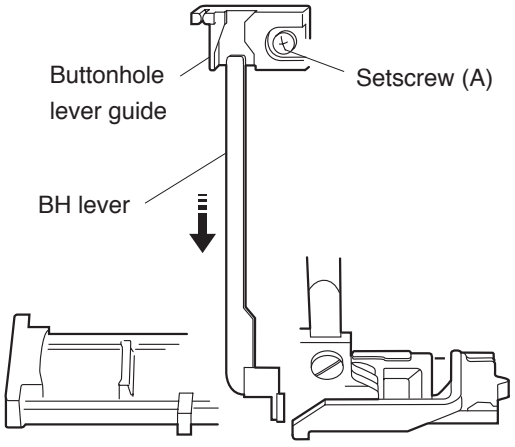
1. Turn the power on while pressing the needle up/down button and reverse button simultaneoudly. (Hold both buttons down until the LED displays the adjusting mode.)

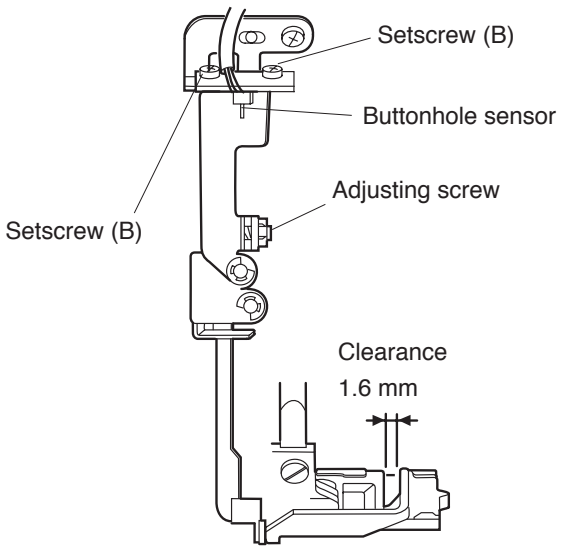


2. Press the reverse button to select "2".



3. Press the needle up/down button.





ADJUSTING THE BOBBIN WINDER SWITCH

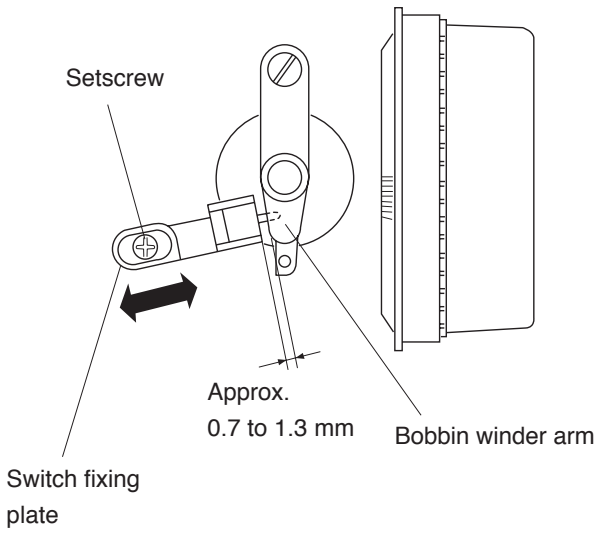
TO ADJUST THE BOBBIN WINDING SWITCH

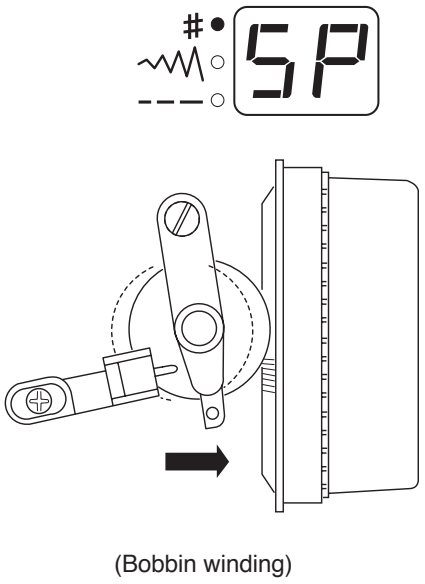
1. Remove the front cover (see page 7).
2. Set the bobbin winder arm in the sewing position and loosen the setscrew.
   Adjust the clearance between the bobbin winder arm and the switch fixing plate to 0.7 to 1.3 mm.
3. Tighten the setscrew.
4. Attach the front cover.

TO CONFIRM:

Turn the power switch on.

The LED displays "SP" when the bobbin winder spindle is set the bobbin winding position, and "01" when the bobbin winder is returned to the sewing position.





(Bobbin winding)

OILING

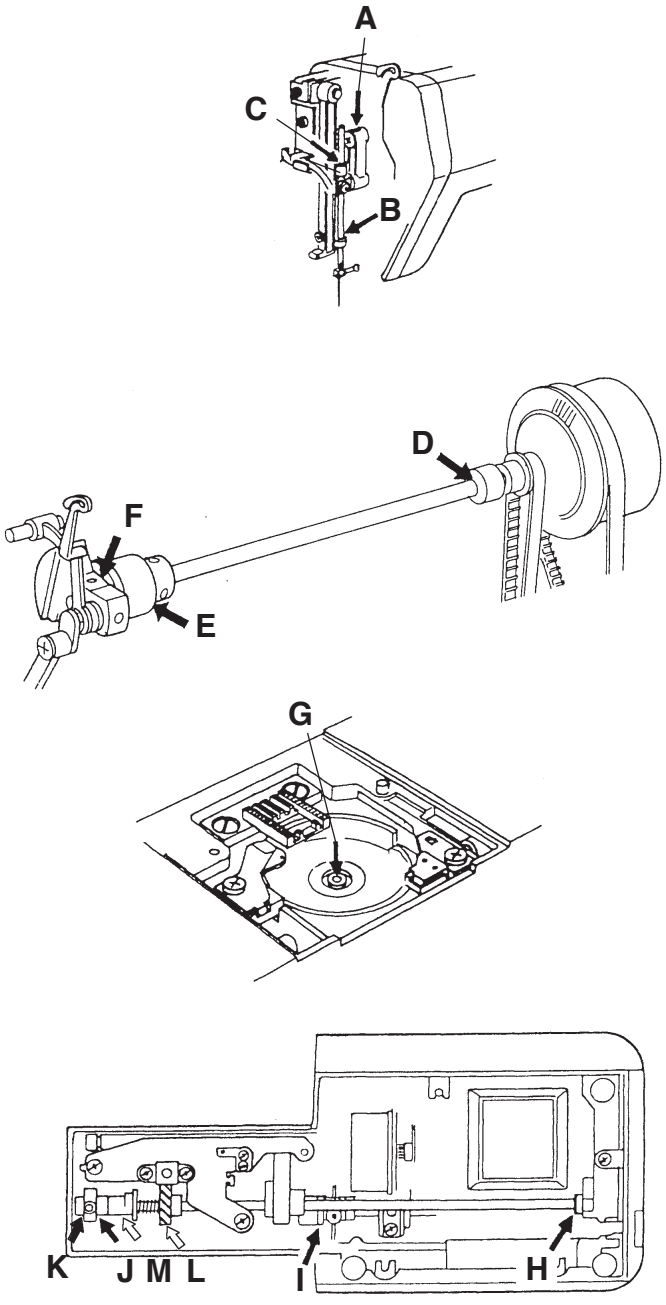
Factory lubricated parts will provide years of household sewing without routine oiling, but you should still check for possible lubrication needs whenever servicing machines.

OIL:

Use good quality sewing machine oil at the points (A, B, C, D, E, F, G, H, I, J & K) indicated by the black arrows.

GREASE:

Use white grease such as molycote em-40m at the points (L&M) indicated by the white arrows.



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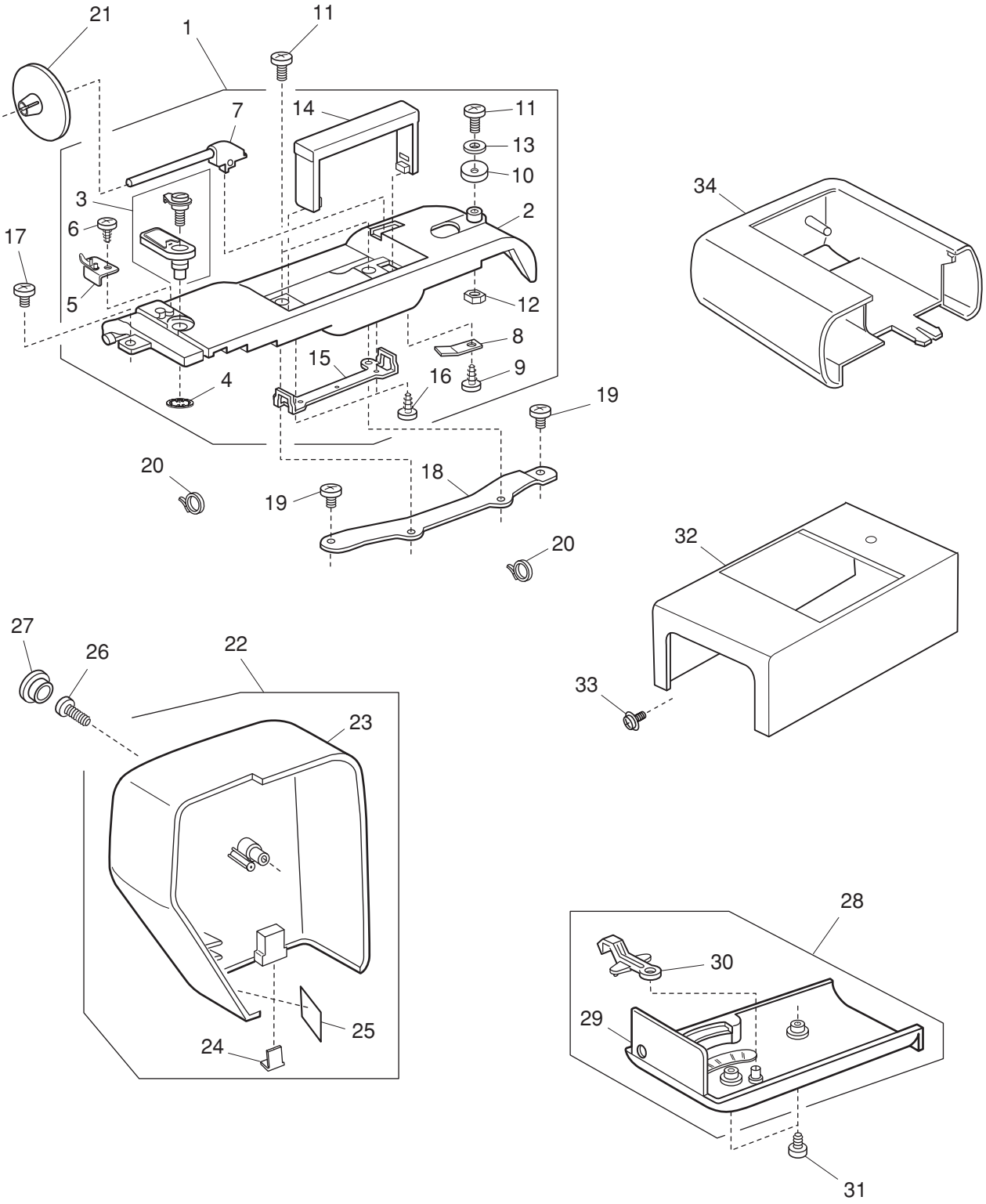
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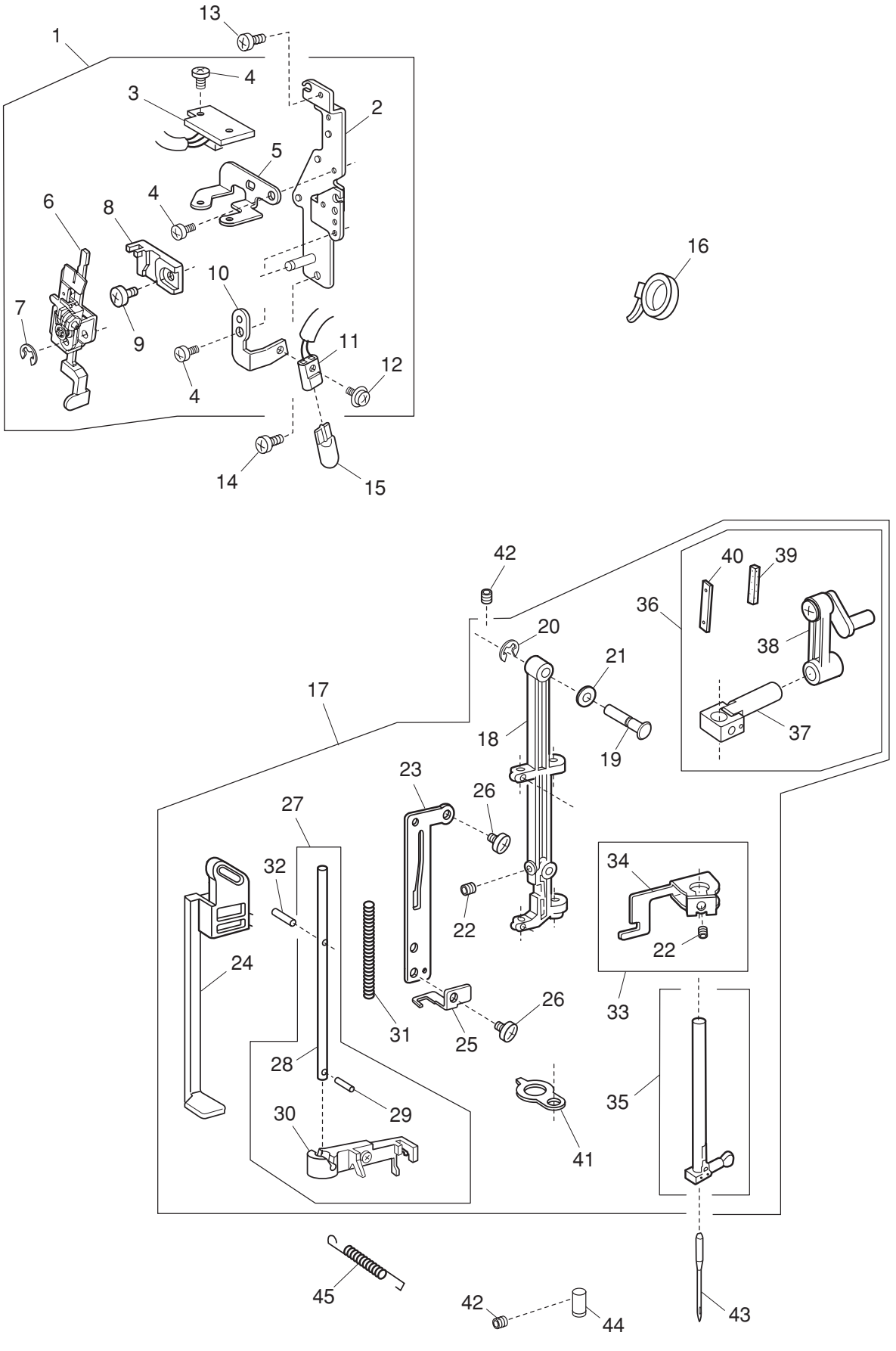
PARTS LIST

KEY NO.	PARTS NO.	DESCRIPTION
1	828603803	Top cover (unit)
2	828008A01	Top cover
3	650503702	Thread guide (unit)
4	000014409	Snap ring CS-8
5	827503005	Top cover thread guide (unit)
6	000162001	Setscrew 2.6x5 (B)
7	505067005	Spool pin
8	822018003	Spool pin spring
9	000107318	Setscrew 3x8 (B)
10	735016307	Bobbin winder stopper
11	000103107	Setscrew 4x14
12	000061205	Nut 4-3-7
13	000071013	Washer 4
14	827014004	Handle
15	827015005	Set plate
16	000161206	Setscrew 3x10 (B)
17	810220003	Setscrew
18	827016017	Top cover set plate
19	000081005	Setscrew 4x8
20	000053008	Cord binder
21	822020503	Spool holder (large)
22	843649233	Face plate (unit)
23	843138A03	Face plate
24	840602006	Thread cutter (unit)
25	827099003	Face plate sticker
26	000101817	Setscrew 4x16
27	653006101	Cap
28	827602108	Bed cover (unit)
29	827004104	Bed cover
30	753005000	Drop lever
31	000101703	Setscrew 4x12
32	659001001	Free arm cover
33	000115205	Setscrew TP 4x6
34	843140000	Extension table

PARTS LIST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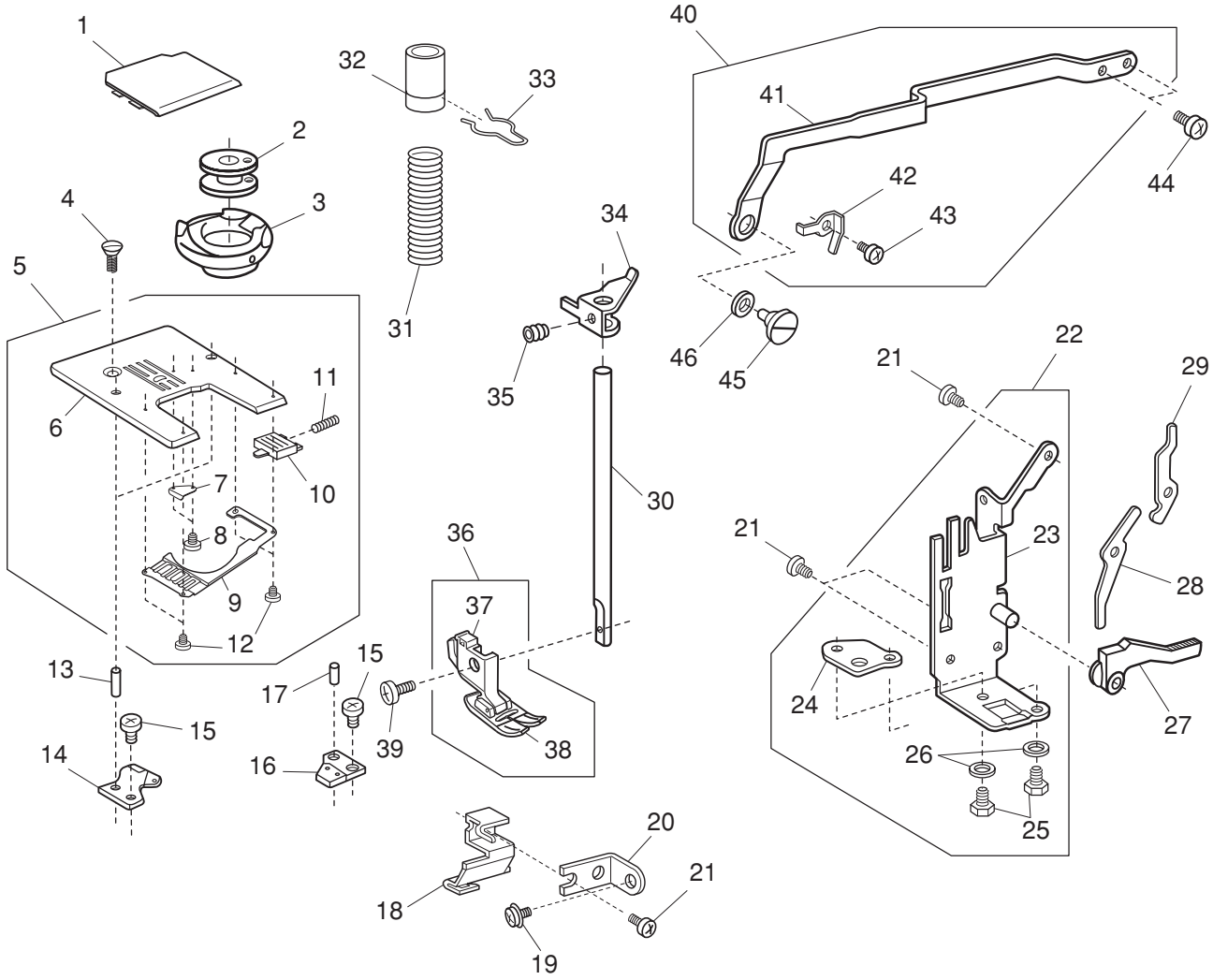
PARTS LIST

KEY NO.	PARTS NO.	DESCRIPTION
1	843604018	Front base plate (unit)
2	843008005	Front base plate
3	843502004	Printed circuit board E1 (unit)
4	000101105	Setscrew 3x4
5	843009006	BH lever supporter plate
6	843673008	BH lever (unit)
7	000002105	Snap ring E-3
8	830057021	BH lever guide
9	000103808	Setscrew 3x5
10	843007004	Lamp set plate
11	843508206	Lamp socket (unit)
12	000115308	Setscrew TP 2x8
13	000081005	Setscrew 4x8
14	000081119	Setscrew 4x6
15	000026002	Wedge base lamp 12V 5W
16	000053101	Cord binder
17	840647302	Needle bar supporter (unit)
18	827026010	Needle bar supporter
19	730022002	Needle bar supporter pin
20	000002507	Snap ring E-4
21	673022002	Washer
22	000111902	Hexagonal socket screw 3x4
23	840033000	Thread guide plate
24	840034001	Needle threader lever
25	840037004	Needle threader lever set plate
26	000078319	Setscrew 3x6
27	840646002	Needle threader bar (unit)
28	840036003	Needle threader bar
29	000003508	Spring pin 2x8
30	755643002	Threader plate (unit)
31	840035002	Needle threader spring
32	000125105	Guide pin E-2x6-CH
33	807607008	Threader position set plate (unit)
34	807018006	Threader position set plate
35	653503103	Needle bar (unit)
36	843652103	Needle bar connecting stud (unit)
37	301504104	Needle bar connecting stud
38	843543007	Needle bar crank pin (unit)
39	650040005	Felt
40	650041006	Felt holder spring
41	829027006	Supporter guide plate
42	000111201	Hexagonal socket screw 4x4
43	102408089	Needle
44	827083004	Supporter guide plate pin
45	756063005	Supporter spring

PARTS LIST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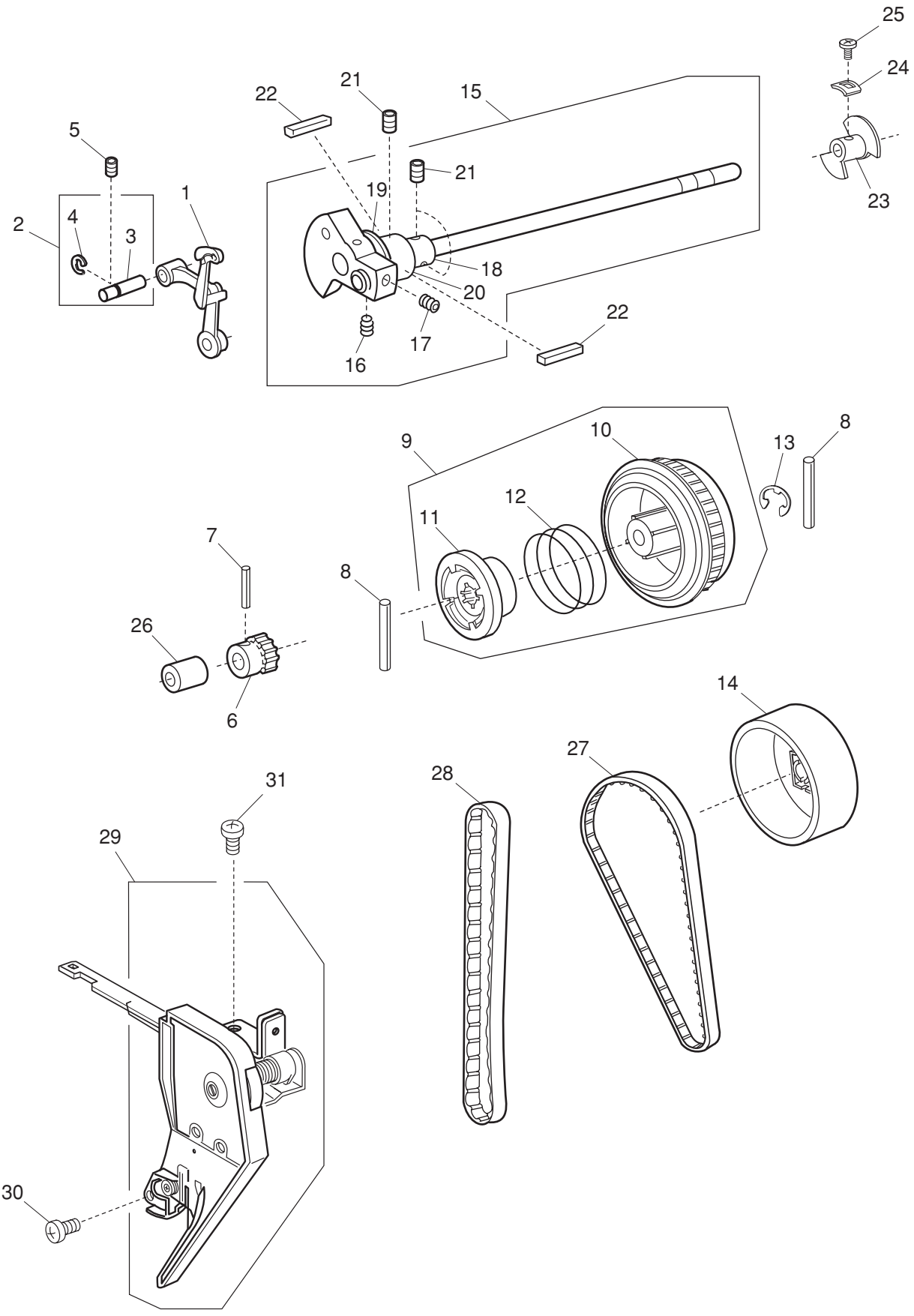
PARTS LIST

KEY NO.	PARTS NO.	DESCRIPTION
1	750036012	Hook cover plate
2	102261103	Bobbin
3	627569106	Bobbin holder (unit)
4	681009101	Needle plate setscrew
5	756604509	Needle plate (unit)
6	756008105	Needle plate
7	654078004	Rotation stopper
8	820373003	Setscrew 2x3
9	751374007	Hook cover plate holder
10	825016000	Hook cover plate holder release button
11	825017001	Hook cover plate holder spring
12	820374004	Setscrew 2x2.3
13	000122504	Guide pin D-3x10CH
14	827011001	Bobbin holder stopper
15	810220003	Setscrew
16	627567001	Bobbin holder stopper (unit)
17	000122700	Guide pin D-2.5x6-LC
18	827036002	Arm thread guide
19	000115205	Setscrew TP 4x6
20	827037003	Front cover set plate
21	000081005	Setscrew 4x8
22	827608403	Presser base plate (unit)
23	827020047	Presser base plate
24	827082003	Foot regulating plate
25	000066303	Hexagonal bolt 4x6
26	000070908	Washer 4
27	735029004	Presser foot lifter
28	827022005	Tension release lever (1)
29	827023006	Tension release lever (2)
30	827021004	Presser bar
31	730026006	Presser bar spring
32	802021007	Bushing
33	802022008	Snap retainer
34	735028003	Presser bar supporter
35	000111500	Hexagonal socket screw 4x8
36	660509008	Presser foot (unit)
37	660806008	Presser foot holder (unit)
38	832523007	Zigzag foot (unit)
39	660106001	Setscrew
40	827622012	Zigzag rod (unit)
41	827055018	Zigzag rod
42	827088009	Zigzag rod spring
43	820373003	Setscrew 2x3
44	000078319	Setscrew 3x6
45	678084007	Eccentric pin
46	653037008	Washer

PARTS LIST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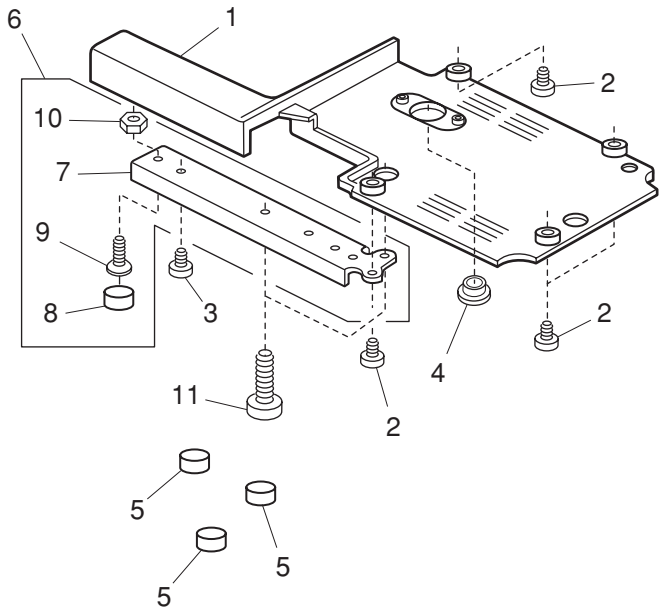
PARTS LIST

KEY NO.	PARTS NO.	DESCRIPTION
1	820511108	Thread take-up lever (unit)
2	650626001	Thread take-up lever pin (unit)
3	650062003	Thread take-up lever pin
4	000001702	Snap ring E-6
5	000111201	Hexagonal socket screw 4x4
6	756017004	Upper shaft gear
7	000020501	Spring pin 3x22
8	000024206	Spring pin 3x30
9	844634009	Belt wheel (unit)
10	844050016	Belt wheel
11	502064003	Clutch ring
12	502065004	Clutch spring
13	000030205	Snap ring E-8
14	844077156	Handwheel
15	843643101	Upper shaft (unit)
16	000111706	Hexagonal socket screw 5x8
17	000110901	Hexagonal socket screw 5x4
18	829042007	Upper shaft bushing (front)
19	000038605	Washer
20	639095000	Upper shaft ring
21	000111304	Hexagonal socket screw 5x5
22	731384008	Felt
23	830095010	Upper shaft shielding plate
24	820102009	Washer
25	000081005	Setscrew 4x8
26	673062004	Upper shaft bushing (rear)
27	653139012	Timing belt
28	650071005	Timing belt
29	843540071	Thread tension (unit)
30	000101703	Setscrew 4x12
31	000101404	Setscrew 4x6

PARTS LIST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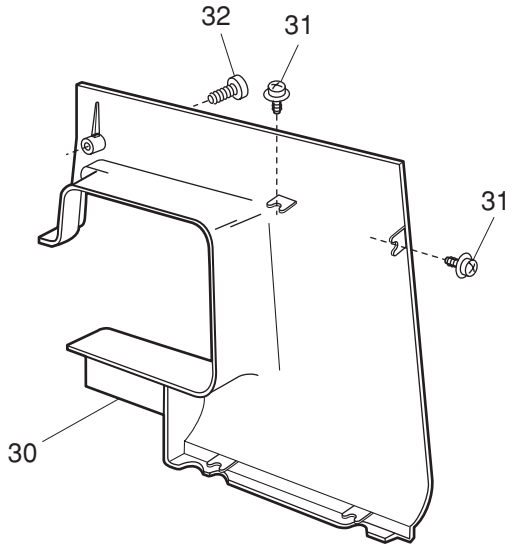
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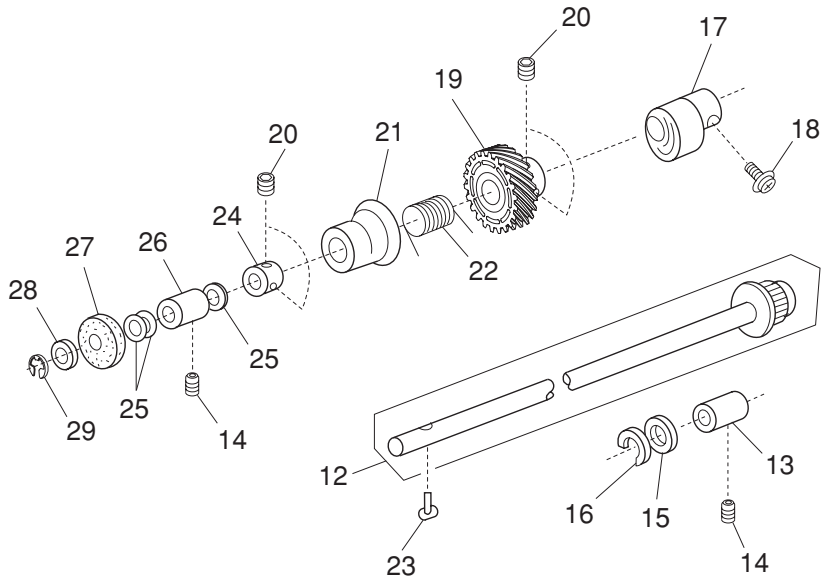
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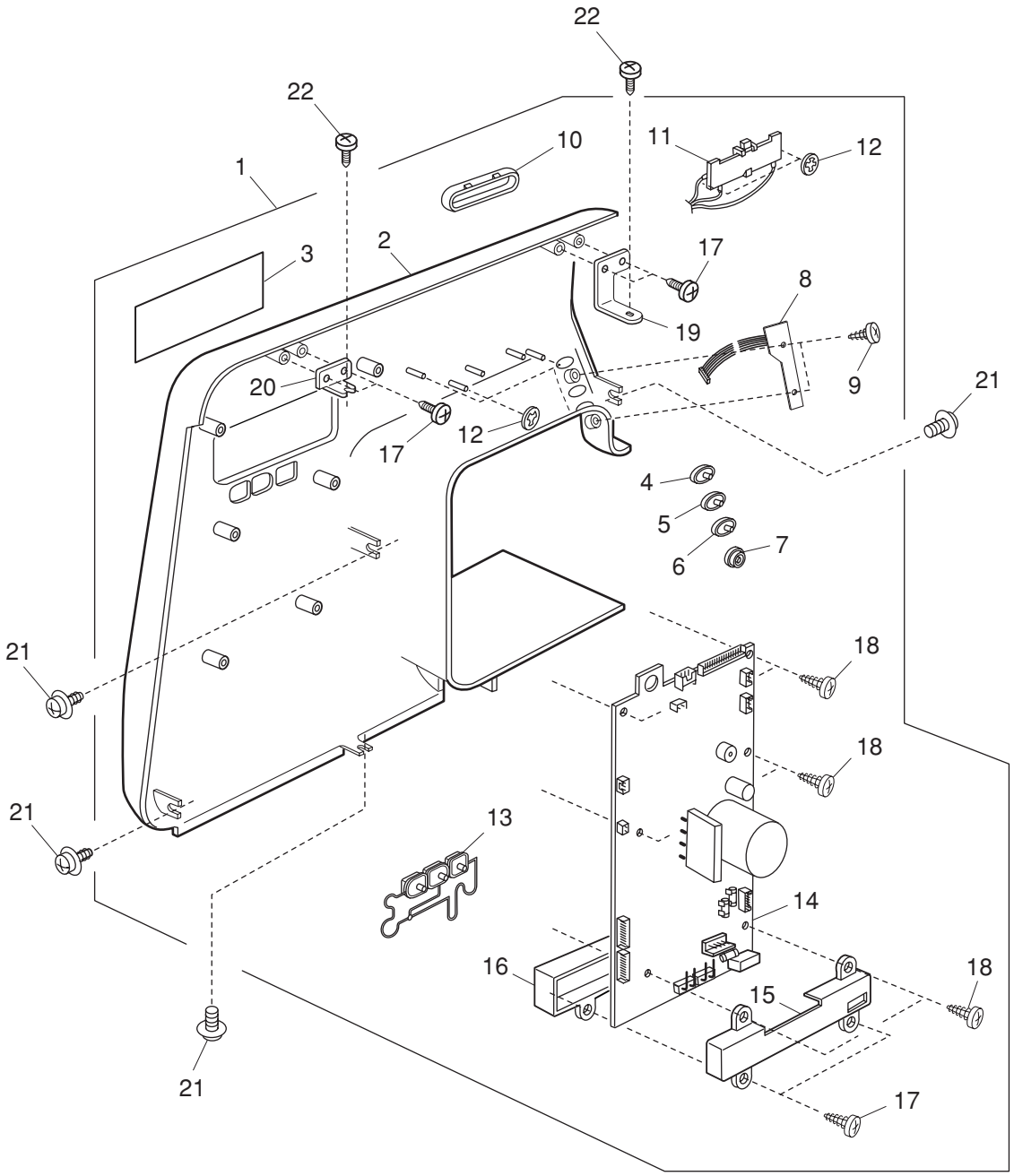
PARTS LIST

KEY NO.	PARTS NO.	DESCRIPTION
1	827003000	Base plate
2	000103509	Setscrew 4x10
3	000120203	Setscrew 3x8 (B)
4	626045407	Cap
5	647009002	Bed rubber base
6	827601107	Arm leg (unit)
7	827002102	Arm leg
8	735002001	Rubber base
9	000192000	Setscrew 5x16
10	000061412	Nut 5-3-8
11	000066808	Setscrew 6x14
12	751612206	Lower shaft (unit)
13	650079003	Lower shaft bushing (rear)
14	000111304	Hexagonal socket screw 5x5
15	822070003	Felt (1)
16	822112008	Felt holder (1)
17	751148000	Feed cam
18	000115009	Setscrew TP 3x8
19	808137005	Lower shaft gear
20	000111201	Hexagonal socket screw 4x4
21	753183025	Feed lifting cam
22	686035008	Feed lifting cam spring
23	820161006	Feed lifting pin
24	820166001	Ring
25	000038502	Washer
26	650078002	Lower shaft bushing (front)
27	735143005	Felt
28	858177002	Lower shaft washer
29	000002806	Snap ring E-6
30	842001418	Rear cover
31	000115205	Setscrew TP 4x6
32	000104119	Setscrew 4x20

PARTS LIST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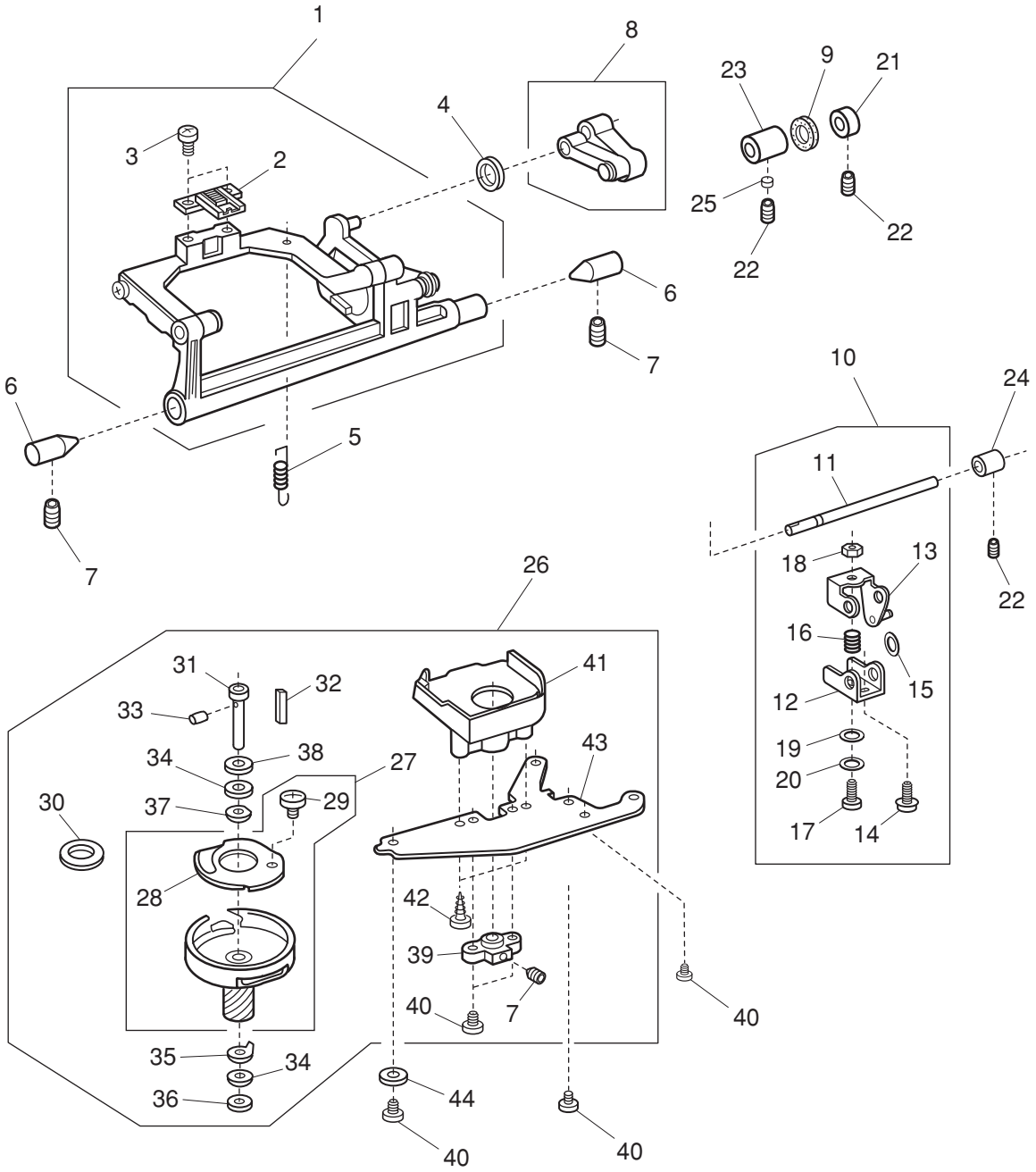
PARTS LIST

KEY NO.	PARTS NO.	DESCRIPTION
1	843641291	Front cover (unit)
2	843114463	Front cover
3	842059215	Indicator window
4	843026A01	Button (1)
5	843026A02	Button (1)
6	843026A03	Button (1)
7	842048A04	Start/Stop button
8	842512200	Printed circuit board F (unit)
9	000161103	Setscrew 3x6 (B)
10	841017001	Slide volume lever
11	653507211	Slide volume (unit)
12	000014306	Snap ring CS-3
13	843166A01	Button (2)
14	843401150	Printed circuit board A (unit)
15	843021107	Board A case
16	843020106	Board A case cover
17	000120203	Setscrew 3x8 (B)
18	000161206	Setscrew 3x10 (B)
19	842014001	Front cover set plate (front)
20	841019003	Front cover set plate (rear)
21	000115205	Setscrew TP 4x6
22	000101404	Setscrew 4x6

PARTS LIST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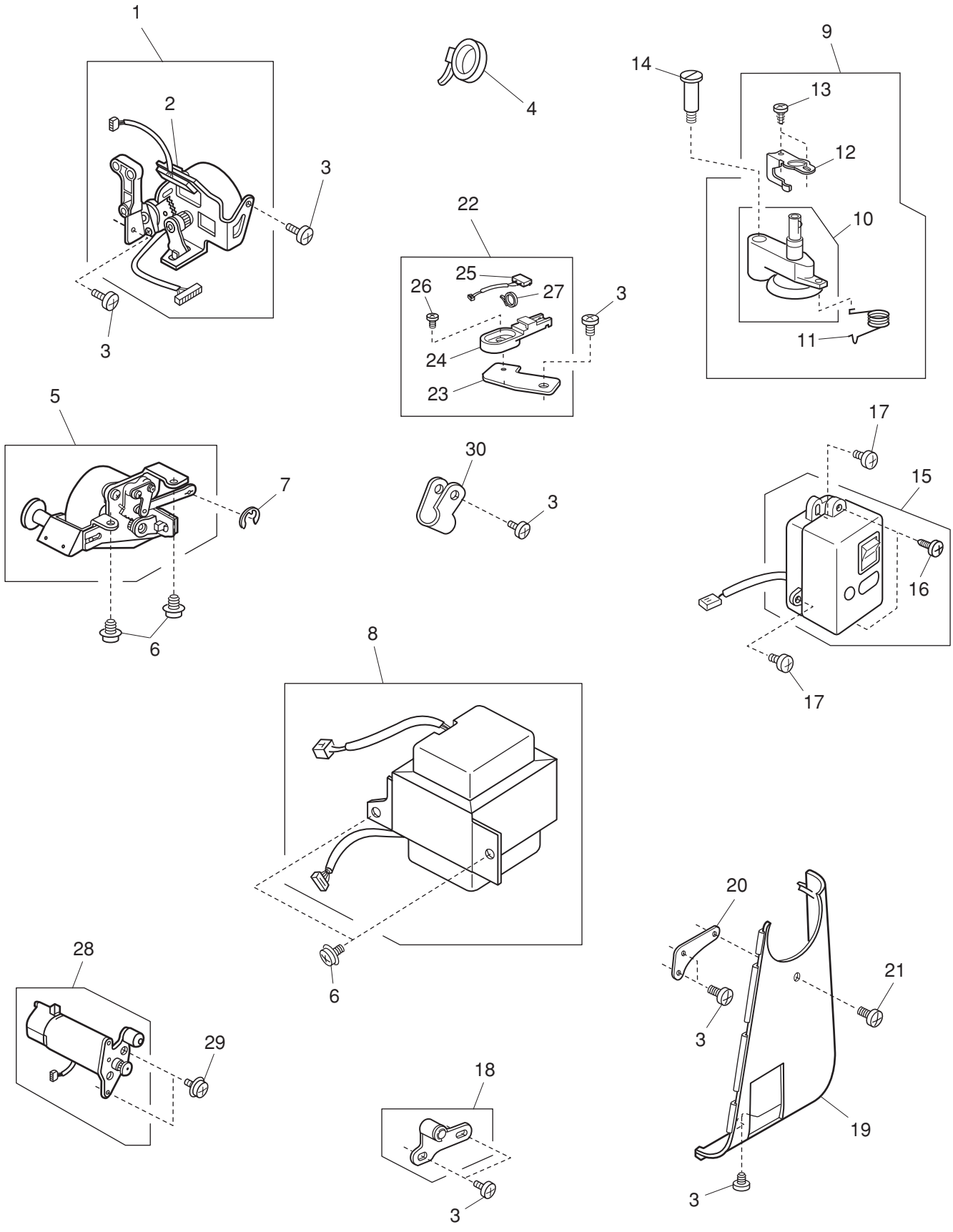
PARTS LIST

KEY NO.	PARTS NO.	DESCRIPTION
1	834527100	Feed rock shaft (unit)
2	840005003	Feed dog
3	000104005	Setscrew 3.5x8
4	000036603	Washer FT 50x0.5
5	650085002	Spring
6	738055008	Center pin
7	000111304	Hexagonal socket screw 5x5
8	650612004	Feed adjuster (unit)
9	823110009	Felt
10	840603007	Feed shaft (unit)
11	840006004	Feed shaft
12	827043105	Feed adjusting arm (1)
13	825261002	Feed adjusting arm (2)
14	000115906	Setscrew TP 3x12
15	810207004	Spring washer
16	589040002	Spring
17	827086007	Feed adjusting arm screw
18	000160102	Adjustable lock nut 4
19	000071013	Washer 4
20	000036407	Washer FT 50x0.25
21	820387000	Ring
22	000111201	Hexagonal socket screw 4x4
23	625144002	Feed shaft bushing (front)
24	650092002	Feed shaft bushing (rear)
25	650175000	Cushion
26	827614088	Shuttle race (unit)
27	660536004	Shuttle body (unit)
28	508137006	Hook bottom plate
29	820374004	Setscrew 2x2.3
30	627190010	Magnet
31	820123006	Shuttle race shaft
32	820124007	Oil string (1)
33	820125008	Oil string (2)
34	000038409	Washer
35	627192001	Washer
36	625102008	Washer
37	508139008	Magnet set plate
38	508118001	Washer
39	650094004	Shuttle race shaft base
40	000081005	Setscrew 4x8
41	827040009	Hook gear cover
42	000107204	Setscrew 3x12 (B)
43	823106002	Shuttle race set plate
44	000070506	Washer 4

PARTS LIST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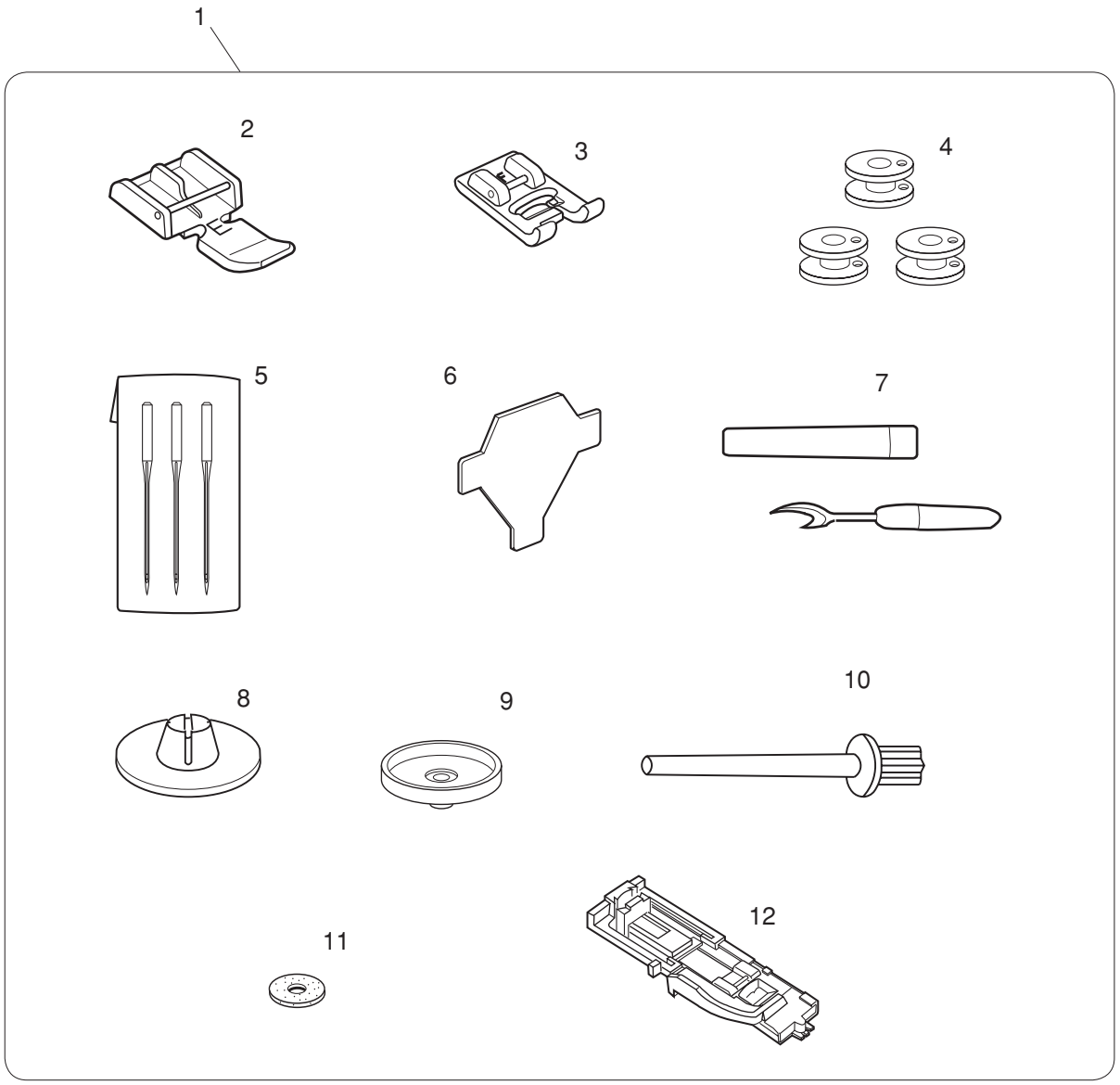
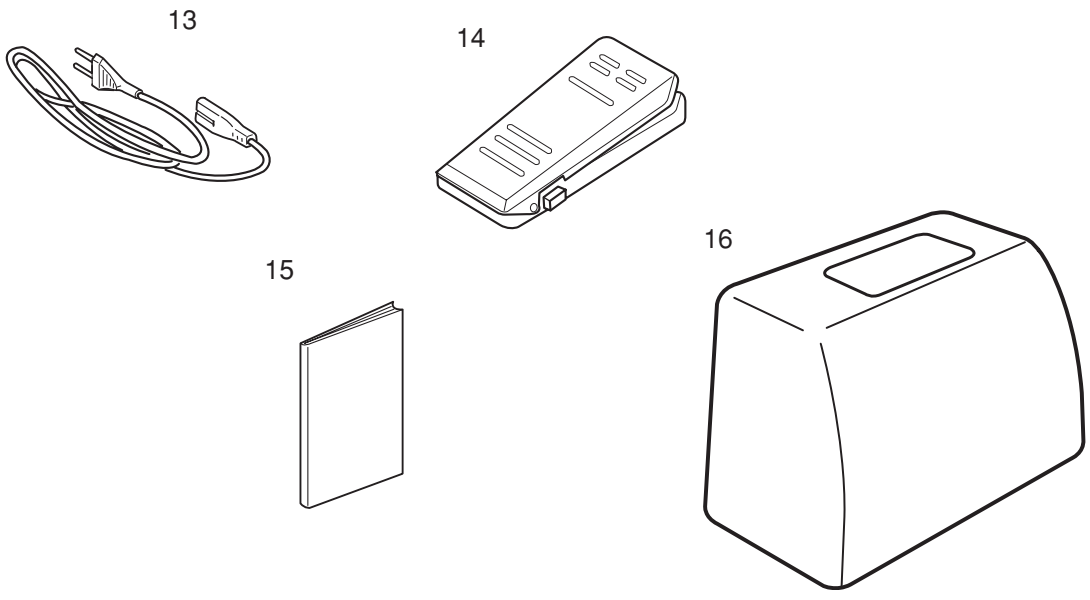
PARTS LIST

KEY NO.	PARTS NO.	DESCRIPTION
1	843608001	Stepping motor (unit)
2	843505007	Printed circuit board P (unit)
3	000081005	Setscrew 4x8
4	000053101	Cord binder
5	843606102	Feed motor (unit)
6	000115205	Setscrew TP 4x6
7	000002105	Snap ring E-3
8	843516001	Transformer (unit)
9	844628033	Bobbin winder (unit)
10	652506000	Bobbin winder
11	823119008	Bobbin winder arm spring
12	844075039	Clutch releasing arm
13	000120203	Setscrew 3x8 (B)
14	652093009	Setscrew
15	843519004	Machine socket (unit)
16	000121204	Setscrew 4x8 (B)
17	000103509	Setscrew 4x10
18	652611009	Idler (unit)
19	828064002	Belt cover
20	827085017	Belt cover set plate
21	000104119	Setscrew 4x20
22	842629005	Switch base plate (unit)
23	842066008	Switch base plate
24	827100008	Switch set plate
25	753507203	Buttonhole select switch
26	000103808	Setscrew 3x5
27	000053008	Cord binder
28	843615001	DC motor (unit)
29	000115700	Setscrew TP 4x10
30	000188209	Nylon clip

PARTS LIST





PARTS LIST

KEY NO.	PARTS NO.	DESCRIPTION
1	843870109	Accessory set
2	808852003	Zipper foot
3	822804118	Satin foot
4	102261103	Bobbin
5	639804000	Needle set
6	653802002	Screwdriver
7	647808009	Seam ripper (unit)
8	822019509	Spool cap (small)
9	829803004	Spool stand
10	625031500	Spool pin (2)
11	102403109	Felt
12	753801004	Automatic buttonhole foot
13	830335004	Power supply cord
14	033570330	Foot control
15	843800670	Instruction book
16	479701118	Cover