

SERVICE MANUAL
PARTS LIST

MODEL : 8077

CONTENTS

WHAT TO DO WHEN	1 - 3
SERVICE ACCESS (1) FACE CONER, TOP COVER	4
SERVICE ACCESS (2) BASE, BED COVER	5
SERVICE ACCESS (3) BELT COVER	6
SERVICE ACCESS (4) FRONT COVER	7
SERVICE ACCESS (5) REAR COVER	8
PRESSER BAR HEIGHT AND ALIGNMENT	9
NEEDLE DROP POSITION	10
NEEDLE BAR HEIGHT	11
NEEDLE TO SHUTTLE TIMING	12
NEEDLE CLEARANCE TO SHUTTLE	13
BACKLASH (BETWEEN LOWER SHAFT GEAR AND SHUTTLE HOOK GEAR)	14
FEED DOG HEIGHT	15
ZIGZAG SYNCHRONIZATION	16
NEEDLE THREAD TENSION	17
STRETCH STITCH FEED BALANCE	18
REPLACEMENT AND ADJUSTMENT OF THE NEEDLE THREADER PLATE	19
CONNECTOR DIAGRAM	20
SELF DIAGNOSTIC TESTS	21
SELF DIAGNOSTIC SHEET	22 - 25
REPLACING PRINTED CIRCUIT BOARD "A"	26
REPLACING SLIDE VOLUME AND PRINTED CIRCUIT BOARD "F"	27
REPLACING DS MOTOR AND ADJUSTING MOTOR BELT TENSION	28
REPLACING THE FUSES	29
REPLACING THE MACHINE SOCKET	30
REPLACING THE TRANSFORMERE	31
REPLACING THE ZIGZAG WIDTH MOTOR.....	32
REPLACING THE FEED MOTOR	33
ADJUSTING BUTTONHOLE LEVER POSITION	34
ADJUSTING THE BOBBIN WINDER SWITCH	35
OILING	36
PARTS LIST	37 - 54

WHAT TO DO WHEN

CONDITION	CAUSE	HOW TO FIX	REFERENCE
<p>1. Skipping stitches</p>	<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 fabric being sewn. 5. Sewing on stretch fabric. 6. Presser foot pressure is too weak. 7. Inappropriate needle bar height. 8. Inappropriate needle to shuttle timing. 9. Inappropriate needle to shuttle 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 #11 blue tip needle.</p> <p>Adjust the presser bar level to make the pressure stronger.</p> <p>See mechanical adjustment "Needle bar height".</p> <p>See mechanical adjustment "Needle to shuttle timing".</p> <p>See mechanical adjustment "Clearance between needle and hook".</p>	<p>p. 11</p> <p>p. 12</p> <p>p. 13</p>
<p>2. Fabric not moving</p>	<ol style="list-style-type: none"> 1. Presser foot pressure is too weak. 2. Incorrect f.d. Height. 3. f.d. Is in down position. 4. Thread on bottom side of fabric is jammed up. 5. Feed dog teeth are worn. 	<p>Adjust the presser bar level to make the pressure stronger.</p> <p>See mechanical adjustment "feed dog height".</p> <p>Raise the f.d. Level.</p> <p>Make sure to bring both needle and bobbin thread under the foot when starting sewing.</p> <p>Change the feed dog.</p>	<p>p. 15</p>

CONDITION	CAUSE	HOW TO FIX	REFERENCE
3. Breaking upper thread	<ol style="list-style-type: none"> 1. Initial sewing speed is too fast. 2. Thread path is incorrect. 3. Needle is bent or dull. 4. Upper thread tension is too strong. 5. Needle size is inappropriate for fabric. 6. Needle eye is worn. 7. Needle hole in needle plate is worn or burred. 	<p>Start with medium speed.</p> <p>Use the proper thread path.</p> <p>Replace with a new needle.</p> <p>Adjust needle thread 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>	p. 17
4. Breaking bobbin thread	<ol style="list-style-type: none"> 1. Incorrectly threaded bobbin. 2. Too much thread is around on the bobbin. 3. Lint is stuck inside the bobbin holder. 4. Thread quality is too low. 5. Thread is jamming around the bobbin. 	<p>Thread bobbin correctly.</p> <p>Adjust the position of stopper.</p> <p>Clean the shuttle.</p> <p>Change to a high quality sewing thread.</p> <p>Clear out the jamming thread.</p>	
5. 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 shuttle. 4. The fabric moves while the needle is piercing it, or the needle zigzags while in fabric. 5. Fabric is being pulled too strongly while sewing. 	<p>See mechanical adjustment “needle drop position”.</p> <p>Change the needle.</p> <p>See mechanical adjustment “Clearance between needle and hook”.</p> <p>See mechanical adjustment “Zigzag synchronization”.</p> <p>Guide the fabric gently while sewing.</p>	<p>p. 10</p> <p>p. 13</p> <p>p. 16</p>

CONDITION	CAUSE	HOW TO FIX	REFERENCE
6. Noisy operation	1. Backlash between shuttle hook gear and lower shaft gear is too great.	See mechanical adjustment "Backlash (lower shaft gear)".	p. 14
	2. Lower shaft gear is loose.	Eliminate the looseness.	
	3. Inappropriate belt tension.	See part removal and replacement "driving motor (DC motor)".	p. 28
	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. 18
	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. 17

SERVICE ACCESS (1)

FACE COVER

TO REMOVE:

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

TO INSTALL:

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

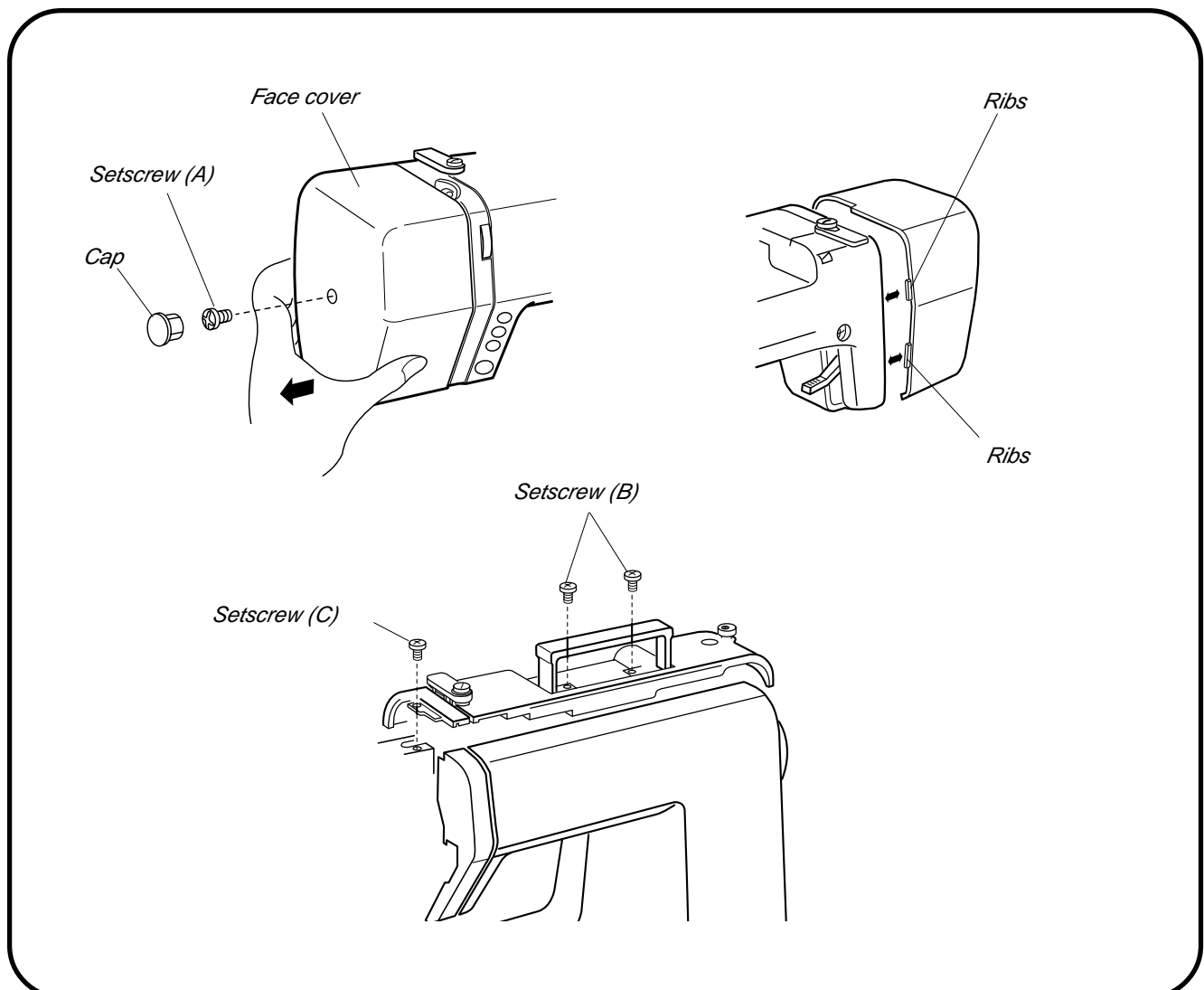
TOP COVER

TO REMOVE:

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

TO INSTALL:

3. Follow the above procedure in reverse.



SERVICE ACCESS (2)

BASE

TO REMOVE:

1. Remove the 4 setscrew (A) and the 2 setscrew (B), remove the base.

TO INSTALL:

2. Place the part C (concave part in the illustration) between the base and the arm leg.
Install the base with the 4 setscrews (A) and the 2 setscrews.

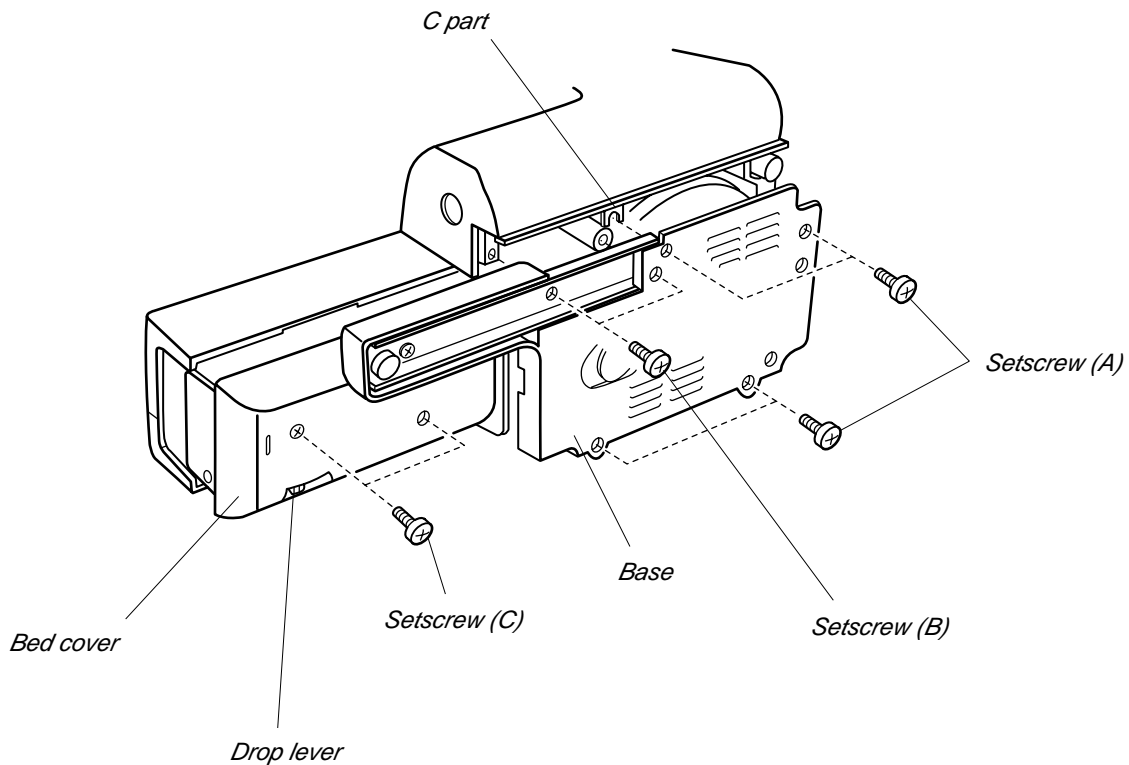
BED COVER

TO REMOVE:

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

TO INSTALL:

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



SERVICE ACCESS (3)

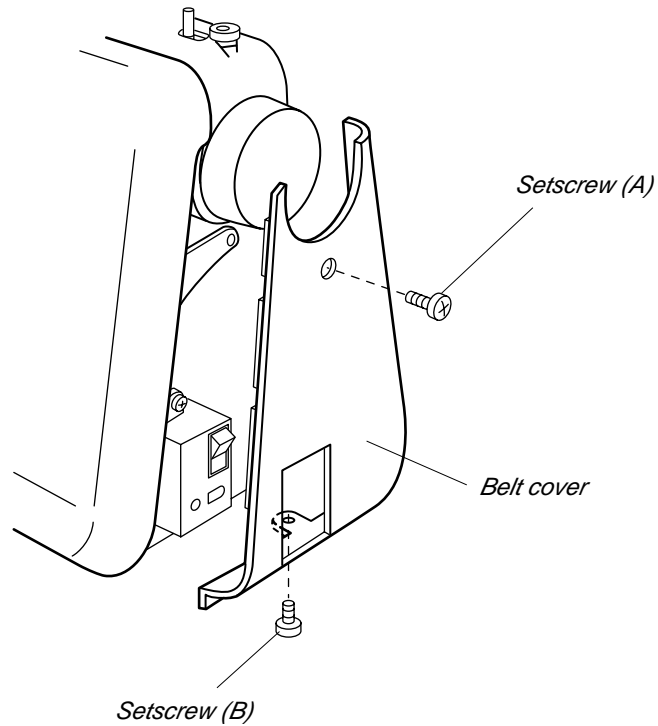
BELT COVER

TO REMOVE:

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

TO INSTALL:

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



SERVICE ACCESS (4)

FRONT COVER

TO REMOVE:

1. Remove the top cover and belt cover (see pages 4 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:

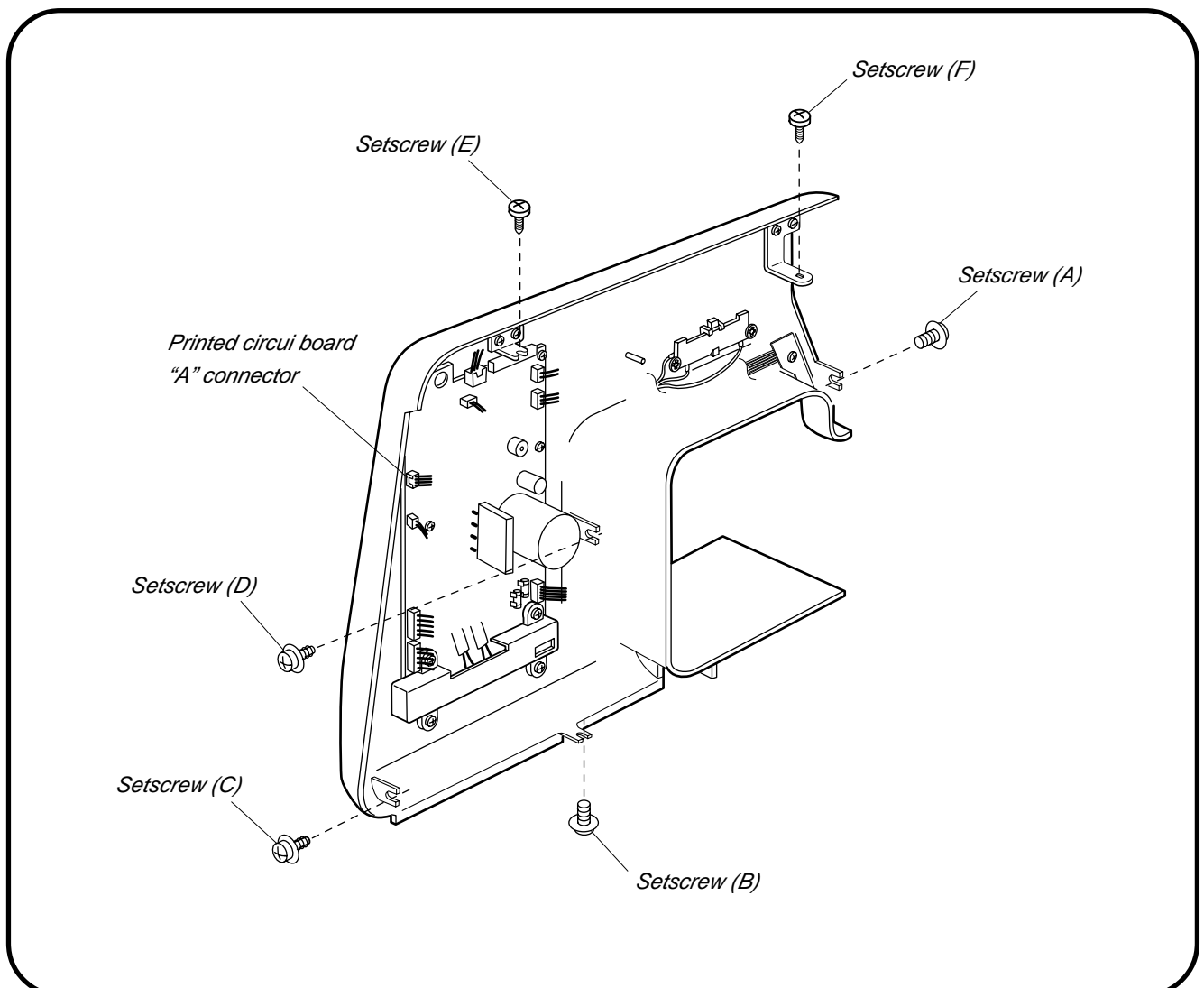
Grasp the connector directly with your fingers and pull. Do not pull on the lead wire, as this may damage the contact sleeve inside the connector.

TO INSTALL:

4. To install 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 (5)

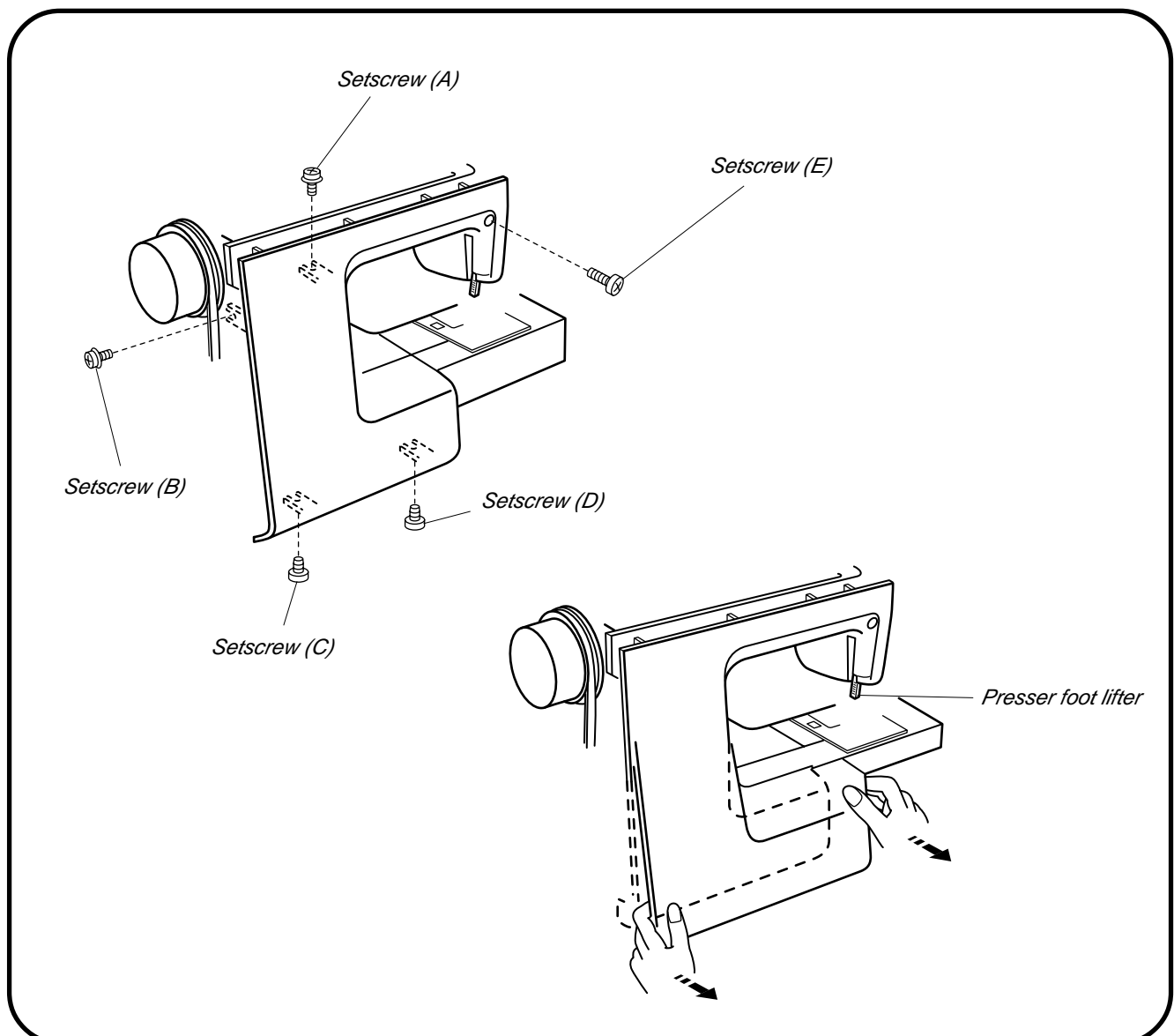
REAR COVER

TO REMOVE:

1. Remove the top cover and belt cover (see pages 4 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 INSTALL:

3. Follow the above procedure in reverse.

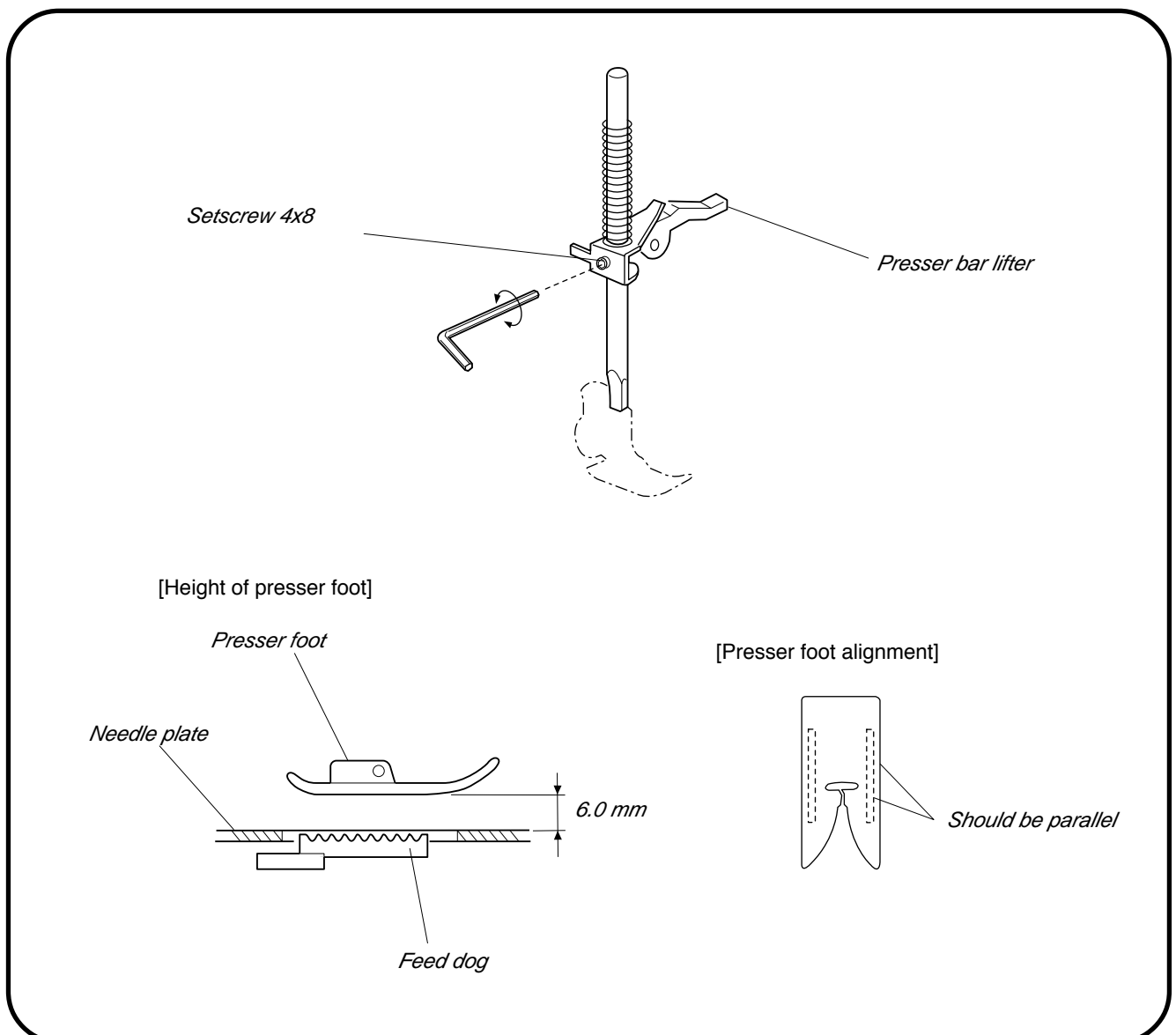


MECHANICAL ADJUSTMENT

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 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. Install the face cover.



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.

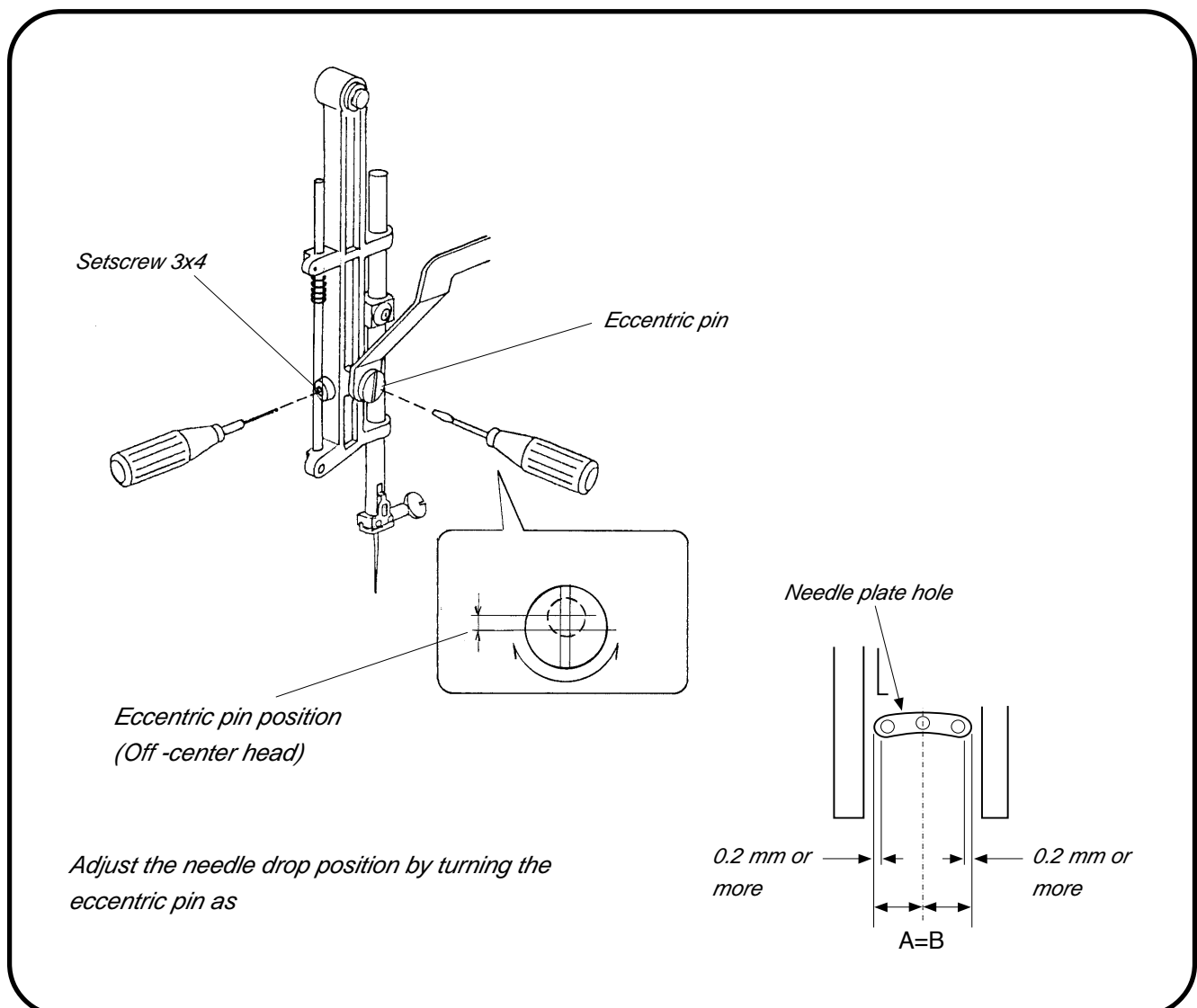
ADJUSTMENT PROCEDURE:

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 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 install the face cover.

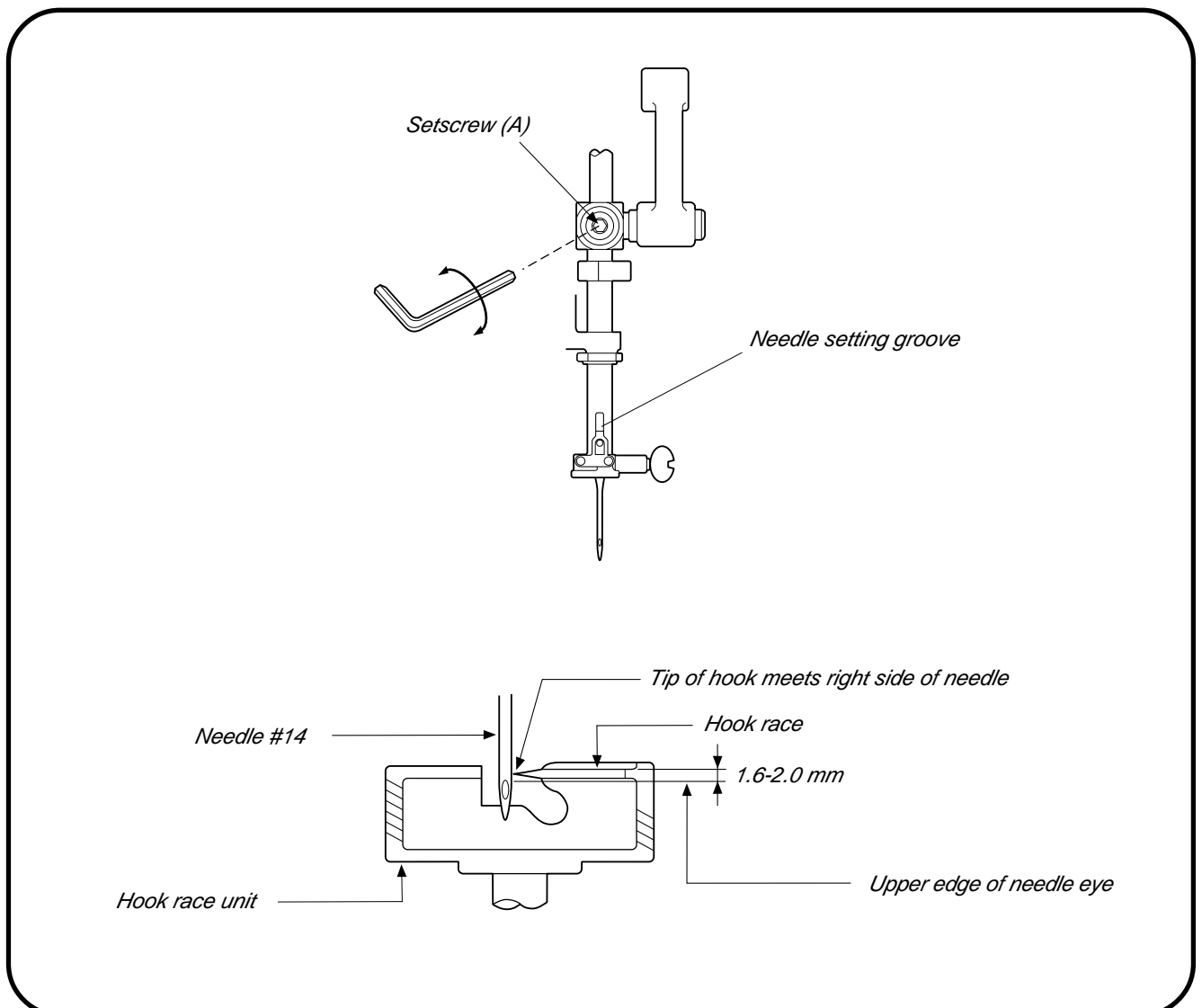


MECHANICAL ADJUSTMENT

NEEDLE BAR HEIGHT

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

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. Insert the bobbin holder, then attach the needle plate.

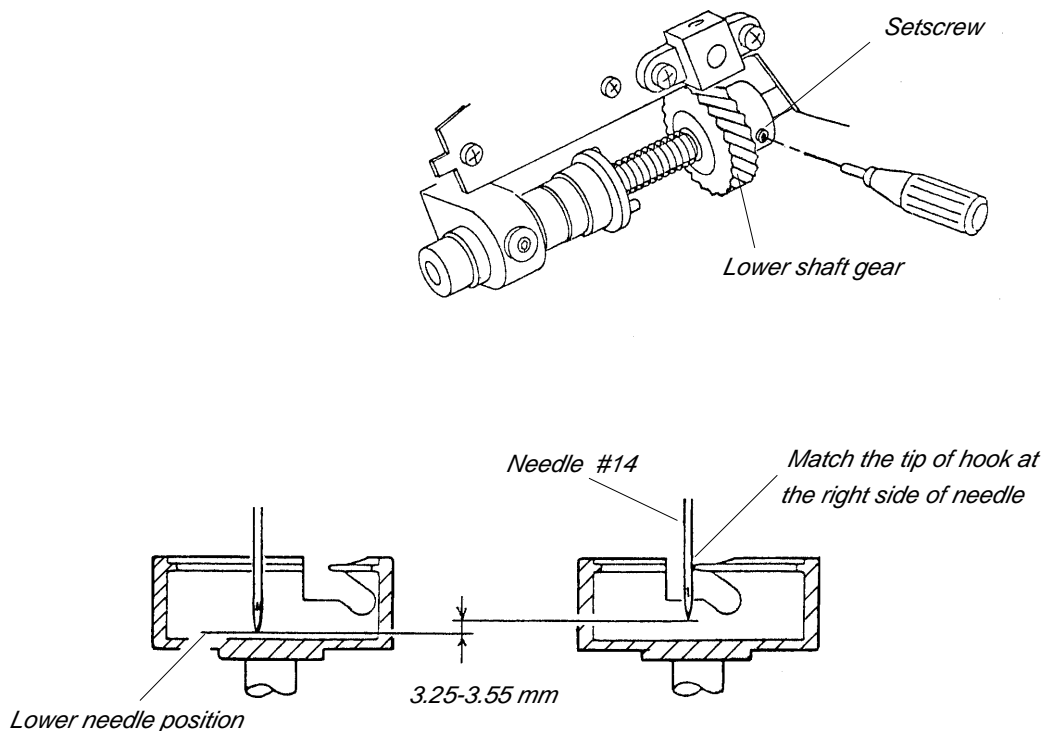


MECHANICAL ADJUSTMENT

NEEDLE TO SHUTTLE 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 - 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.
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 - 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

NEEDLE CLEARANCE TO SHUTTLE

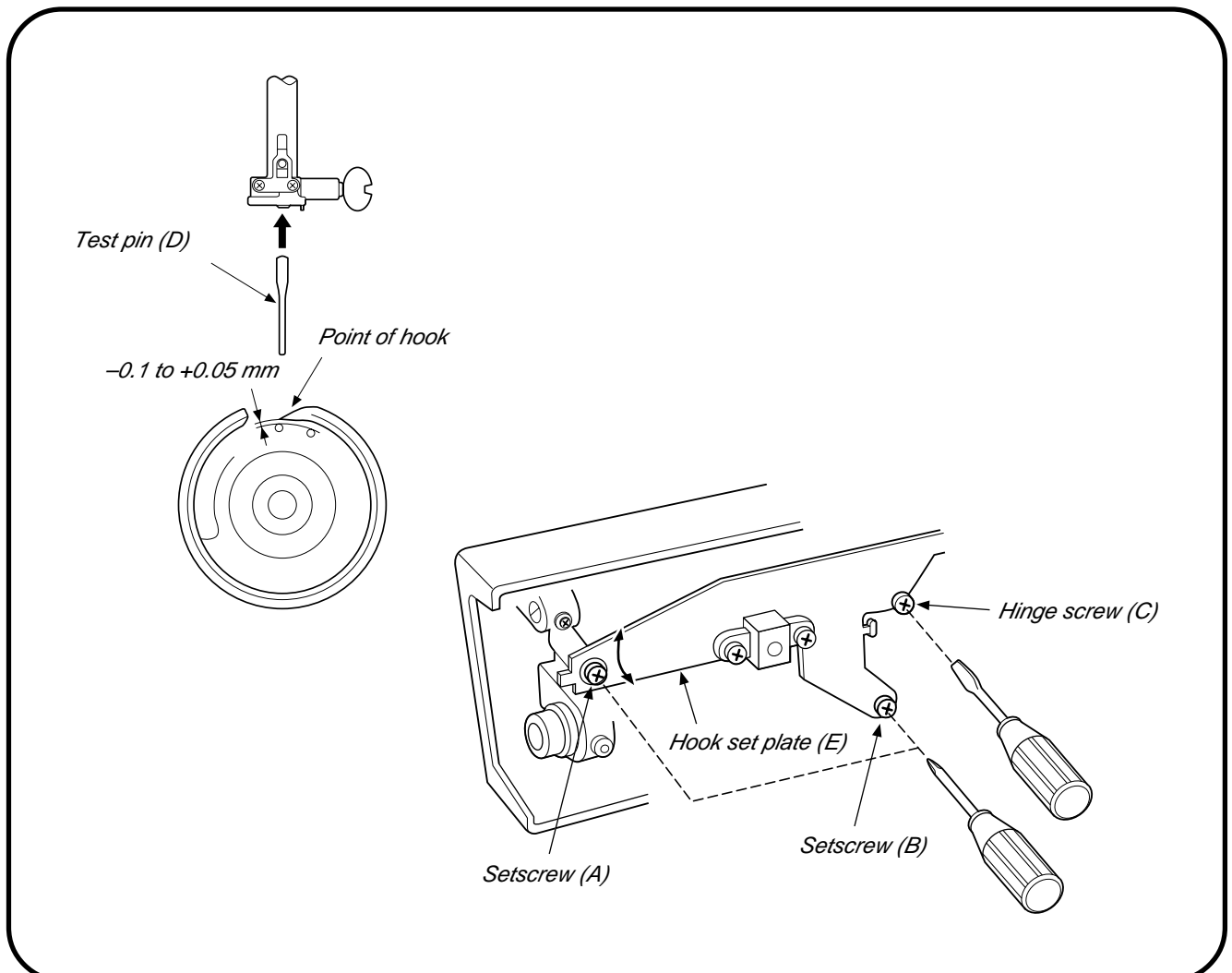
The clearance between the needle and the tip of hook should be -0.1 to $+0.05$ mm.

PREPARATION:

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

ADJUSTMENT PROCEDURE:

1. Loosen the screws (A), (B), (C), then slightly tighten the hinge screw (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 -0.1 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 master needle.



MECHANICAL ADJUSTMENT

BACKLASH (BETWEEN LOWER SHAFT GEAR AND SHUTTLE HOOK GEAR)

Jog the hook race back and forth to check rotary play.

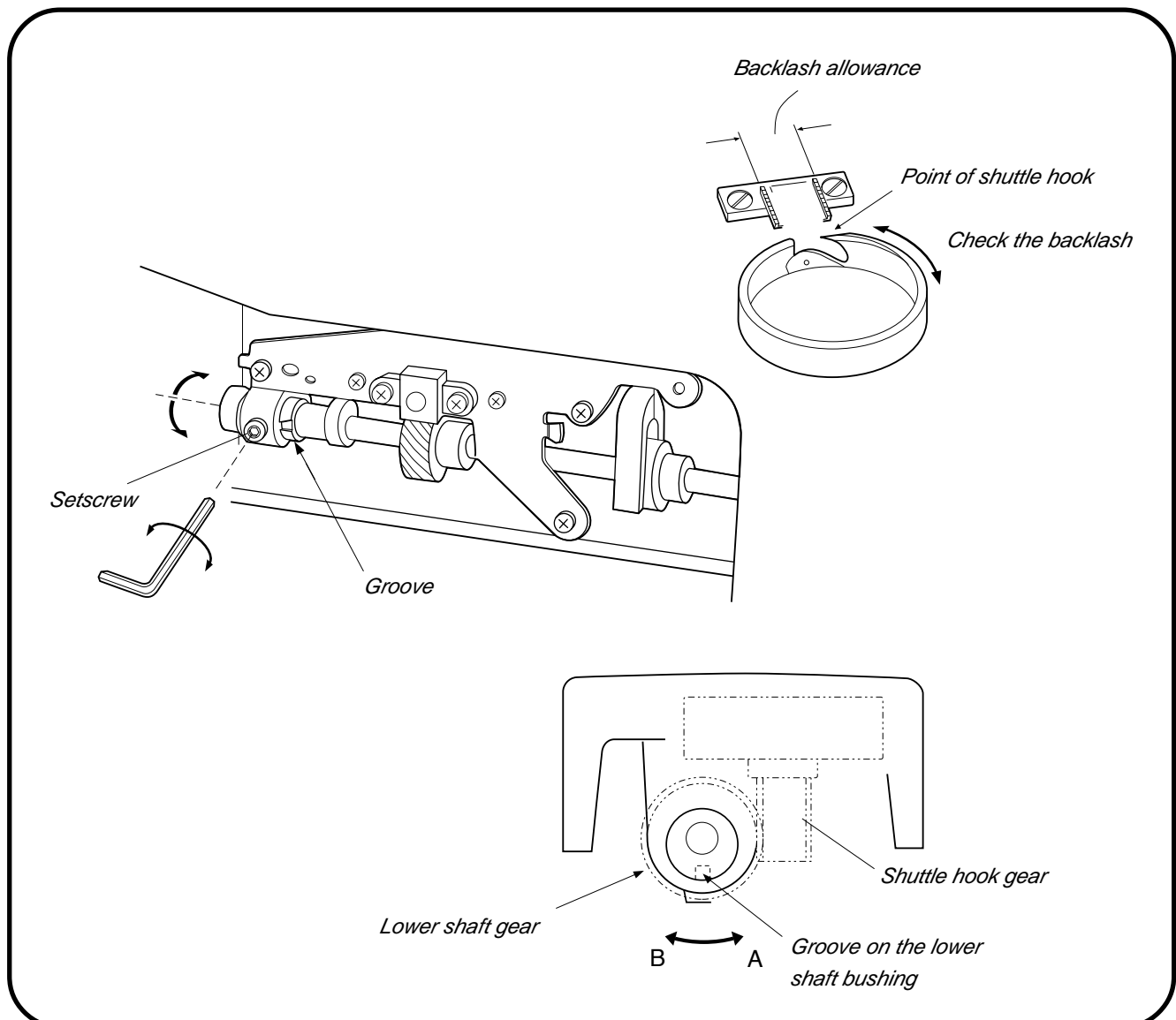
The standard play should be 0.8 mm (0.03") or less when the hook point is within the feed dog width. If play excess 0.8 mm, adjust as follows.

ADJUSTMENT:

1. Remove the bed cover (see page 5).
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 install the bed cover.

NOTE:

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

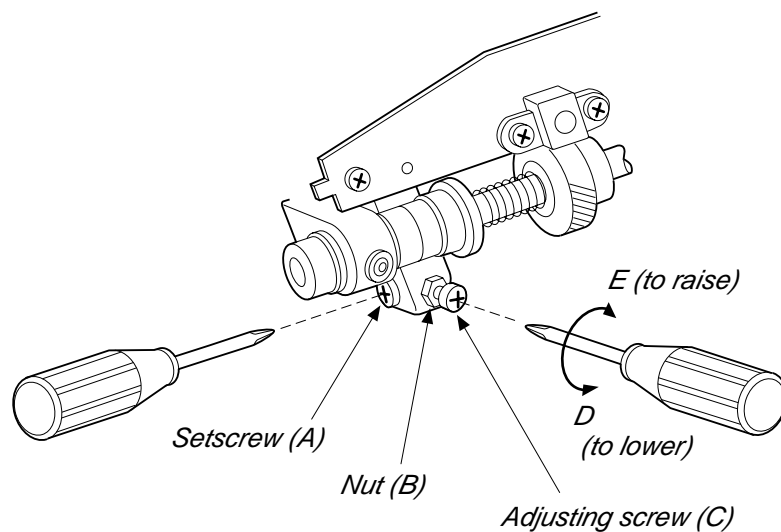
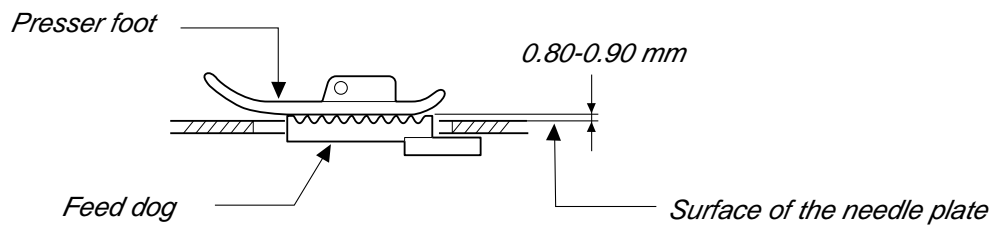


MECHANICAL ADJUSTMENT

FEED DOG HEIGHT

The highest position of the feed dog should be between 0.8 to 0.9 mm from the surface of the needle plate when the pressure dial is set at "3" and the presser foot is raised.

1. Set the pressure dial at "3" and lower the presser foot.
2. Turn on the power switch.
3. Remove the bed cover.
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).

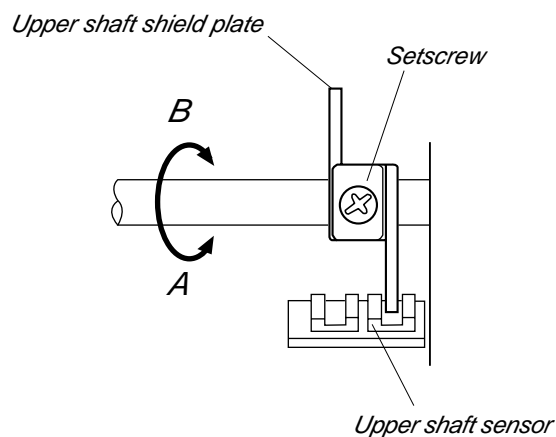
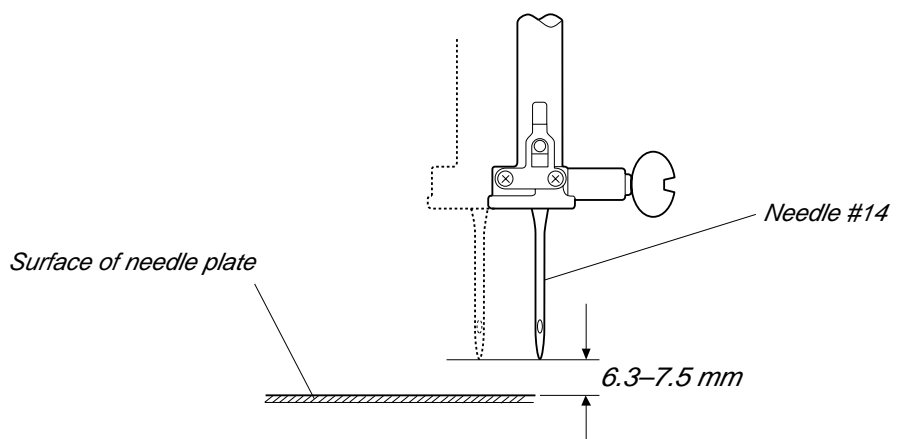


MECHANICAL ADJUSTMENT

ZIGZAG SYNCHRONIZATION

The needle should start swing between 6.3 to 7.5 mm above the surface of the needle plate when the machine is set for zigzag stitching.

1. Remove the front cover (refer to 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 7.5 mm.
 - * B. If the swing point is lower than 6.3 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

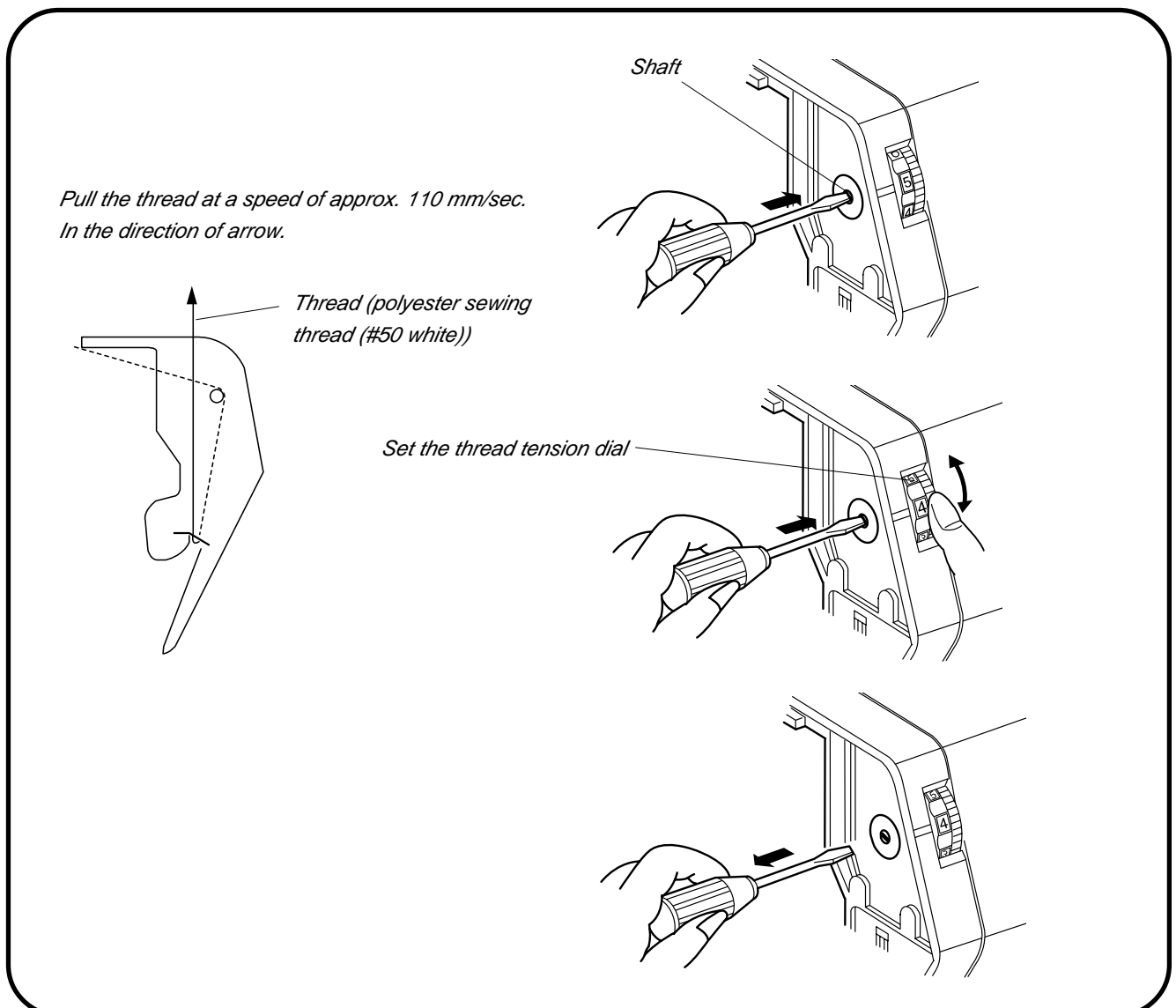
NEEDLE THREAD TENSION

The standard tension should be 75 to 90 grams when the tension dial is set at "A" (auto), measured with a #50 white polyester thread being pulled at approximately 110 mm/sec.

If the tension is outside the standard range, adjust as follows:

ADJUSTMENT:

1. Set the thread tension dial to "A" and check the thread tension.
2. Remove the face cover (see page 4).
3. If the tension is outside the standard range, turn the dial to find a position where the correct tension is obtained.
4. Insert a screwdriver into the slit on the shaft and push it until the tension dial is disengaged from the shaft.
5. While holding the shaft in place with the screwdriver, turn the dial back to position "A" and engage it with the shaft.
6. Remove the screwdriver.
7. Check the thread tension to confirm that it is correct, then install the face cover.



MECHANICAL ADJUSTMENT

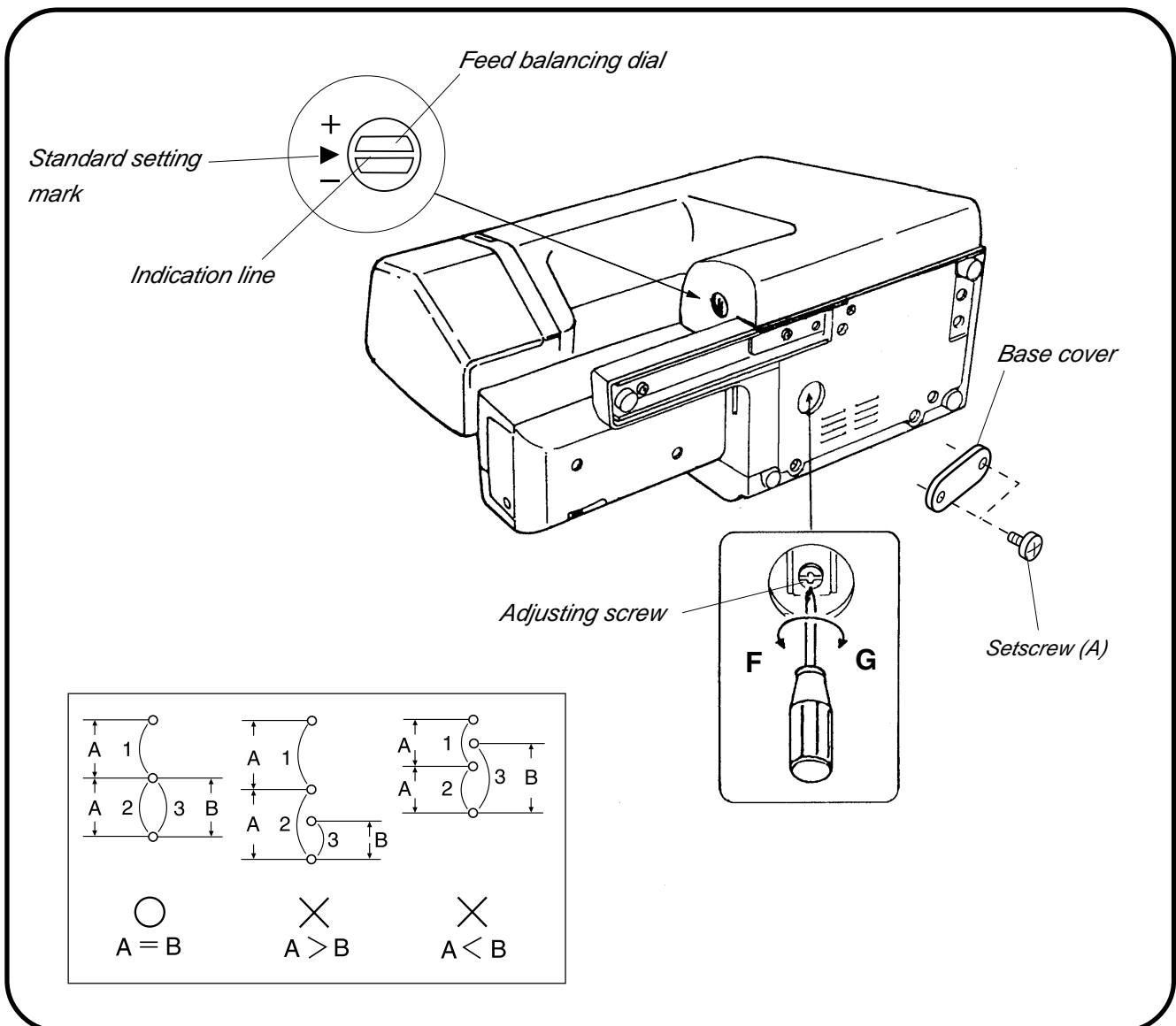
STRETCH STITCH FEED BALANCE

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 setscrew (A) and base cover.
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:

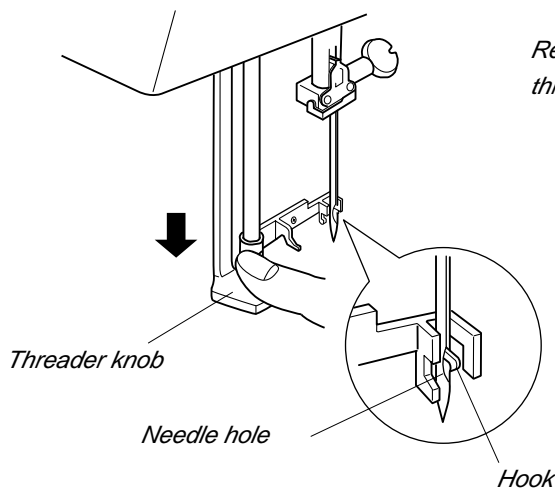
TO CHANGE THE THREADER PLATE:

TO REMOVE:

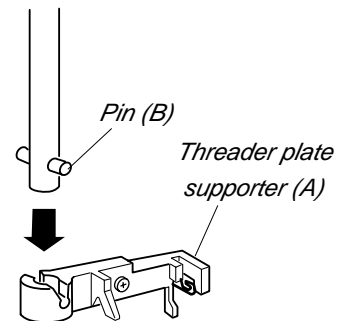
1. Push down the needle threader knob and pull the needle threader plate (A) down to remove it (see FIG 1).
2. To install the needle threader plate, line the groove up with the pin (B) and push it up to snap fit.

TO ADJUST THE THREADER PLATE POSITION:

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

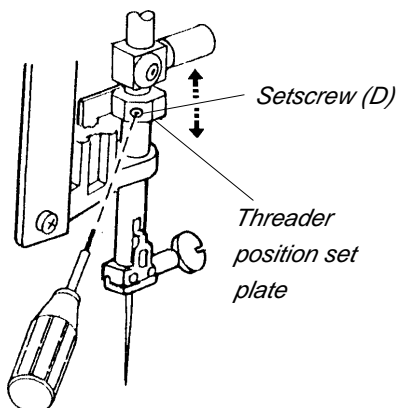


Replacing the needle threader cover (with the threader plate attached) FIG. 1



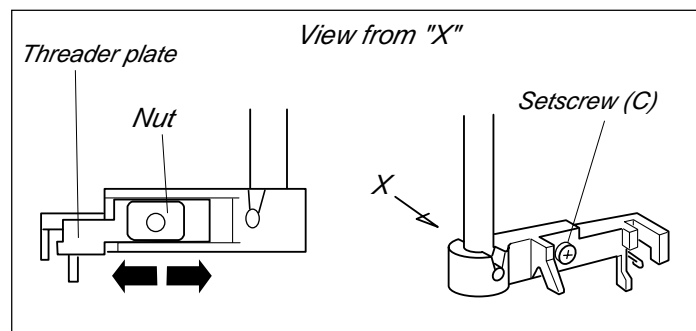
Vertical adjustment

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.

NOTE:

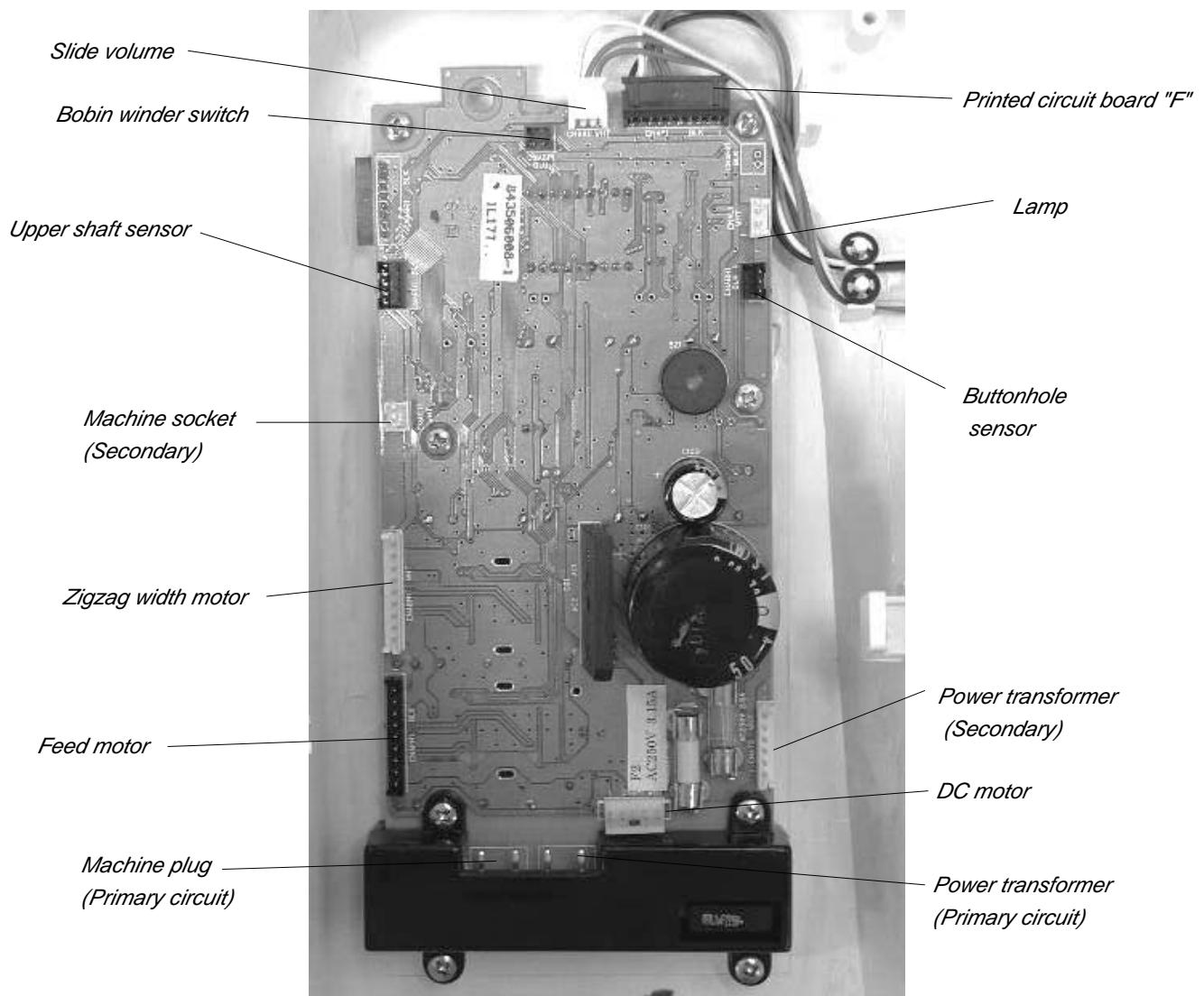
TO DISCONNECT THE CONNECTORS:

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.

NOTE:

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.
- * Connect the foot controller to the machine.

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 recommended actions in the order they are shown.

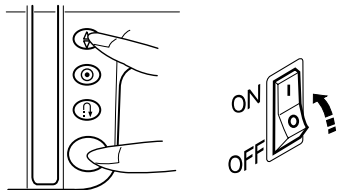
- * The machine does not respond when the power switch is turned on.
 1. Check each connector connection.
 2. Replace the machine socket.
 3. Replace the printed circuit board "A".
 4. Replace the machine socket.
 5. Replace the power transformer.
- * The sewing machine light does not light up.
 1. Replace the lamp.
 2. Replace printed circuit board "A".
- * The display shows "E1" to "E9",
 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.

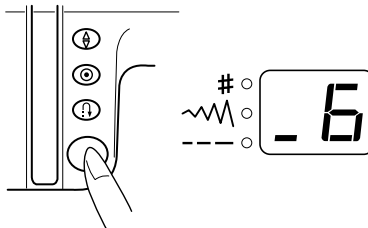
NO.1

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



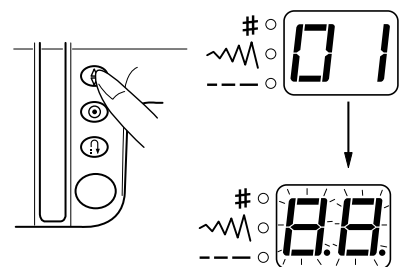
NO.2

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

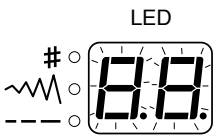
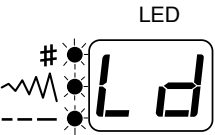
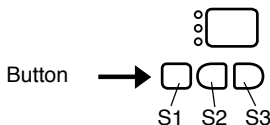
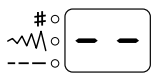
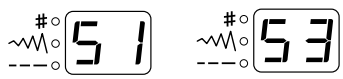

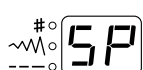


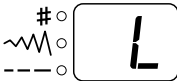



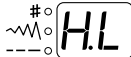
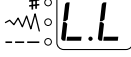
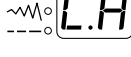

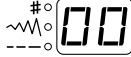
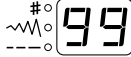


NO.3


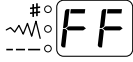
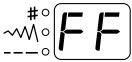
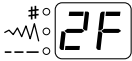
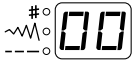
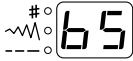
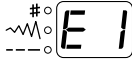
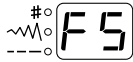
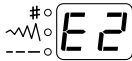
Press the needle up/down button.

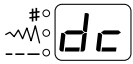
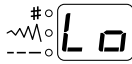


SELF DIAGNOSTIC SHEET

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. 	* 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 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 "11".  (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 the 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 "LH".  * When the needle is at the lowest position, led displays "LH".  * When the needle is halfway, led displays "LL".  * When the needle is at the lowest position, 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 motor. 2. Replace board "A".

STEP	OPERATION	CORECT 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, the led displays "10" for one second. Depress the foot controller down all the way and release.	 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 the needle up/down button, the 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 display is different from that shown to the left.  If led displays "E1", 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	CORECT CONDITION	DEFECTIVE CONDITION
<p>12) DC motor</p>	<p>Press needle up/down button, led indicates "12" for one swcond. * Press foot control.</p>	<p>* Led indicates "dc". * Machine runs at the speed set by the speed control lever.</p> <div style="text-align: center;">  </div> <p>Full left: 80 ~100 SPM Full right: 800 ~840 SPM</p>	<p>Machine does not run, led displays "Lo".</p> <div style="text-align: center;">  </div> <p>1. Replace DC motor. 2. Replace board "A".</p>

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 screws 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 the connector.
2. When disconnecting the machine socket and power transformer connectors, pull them while pushing them toward the a board to unlock them.

TO INSTALL:

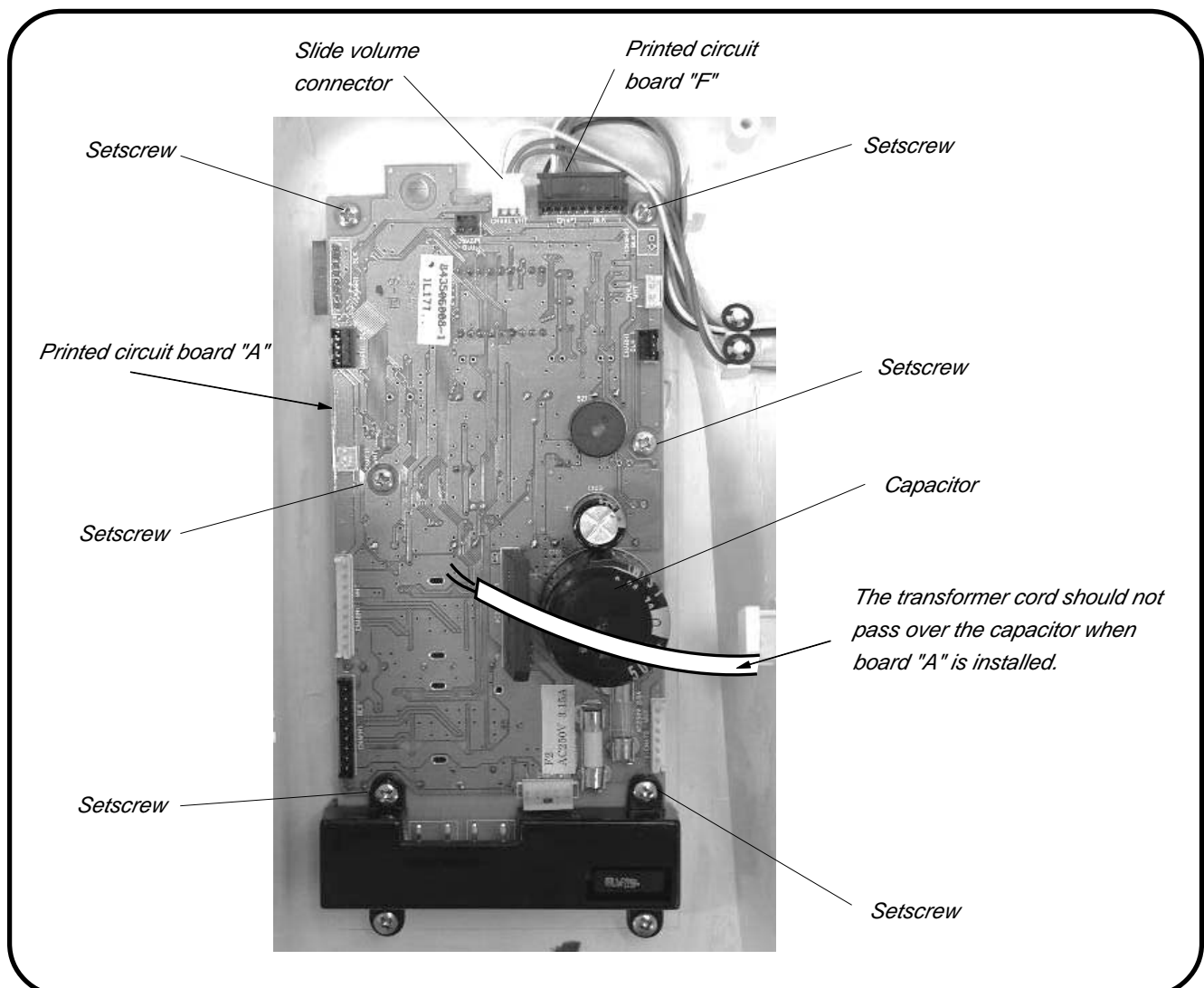
4. To install, follow the above procedure in reverse.

NOTE:

When installing board "A" in the machine.

The transformer wire should not pass over the capacitor when board "A" is installed.

If the cord is resting on the capacitor, it may interfere the pattern selector button after the front cover is installed.



REPLACING SLIDE VOLUME AND PRINTED CIRCUIT BOARD F

REPLACING THE SLIDE VOLUME

TO REMOVE:

1. Remove the front cover unit (see page 7).
2. Unplug the slide volume connector.
3. Remove the four cs ring (A) and remove the side volume.

TO INSTALL:

4. To install the slide volume, follow the above procedure in reverse.
 - * Secure the lead wire on the board using the cs rings, as shown.
 - * Check to ensure that the slide volume moves smoothly back and forth.

REPLACING PRINTED CIRCUIT BOARD "F"

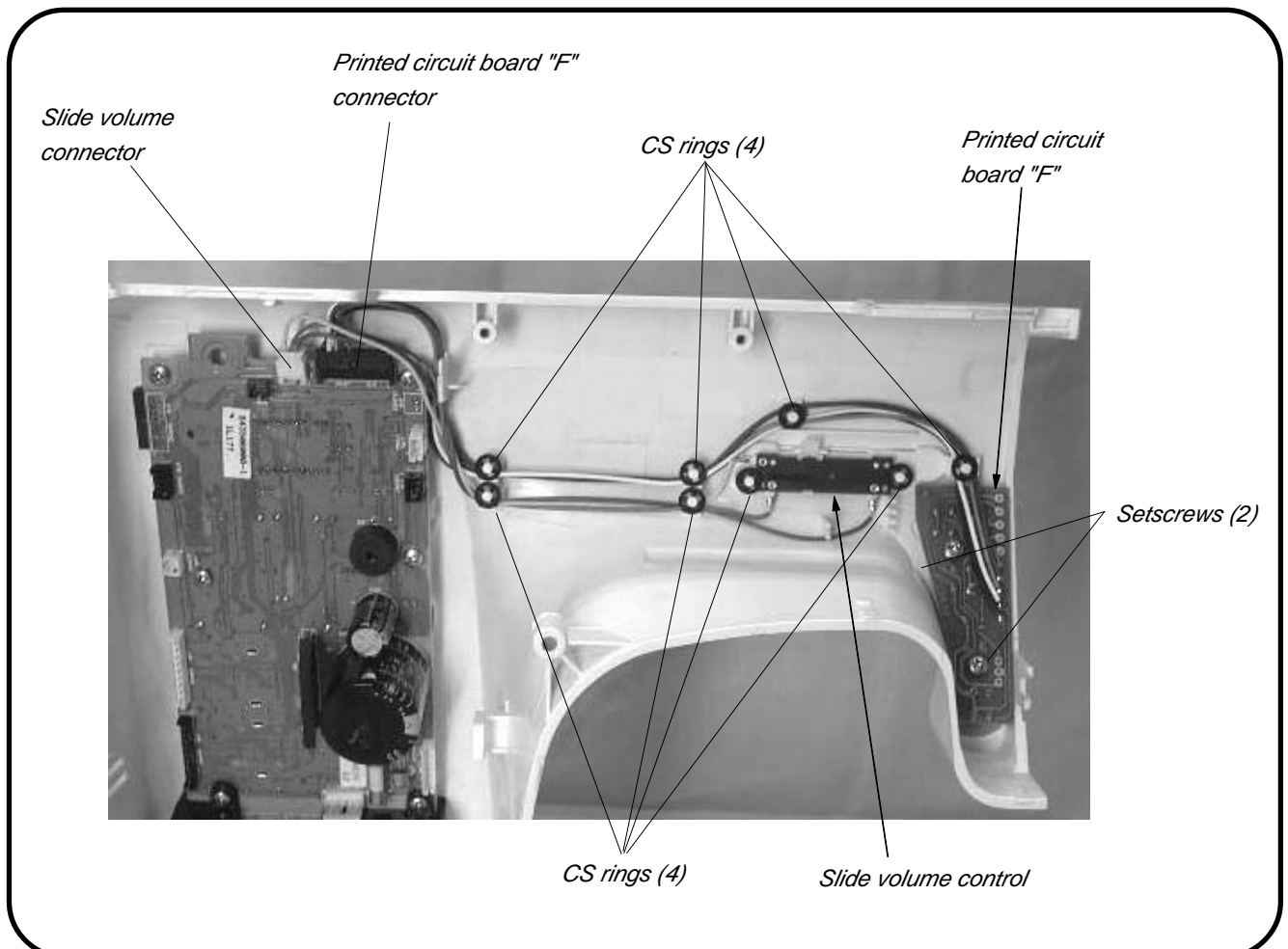
TO REMOVE:

5. Remove the front cover unit.
6. Unplug the printed circuit board "F" connector and remove the four cs rings.
7. Remove the two setscrews and remove the printed circuit board "F".

TO INSTALL:

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

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



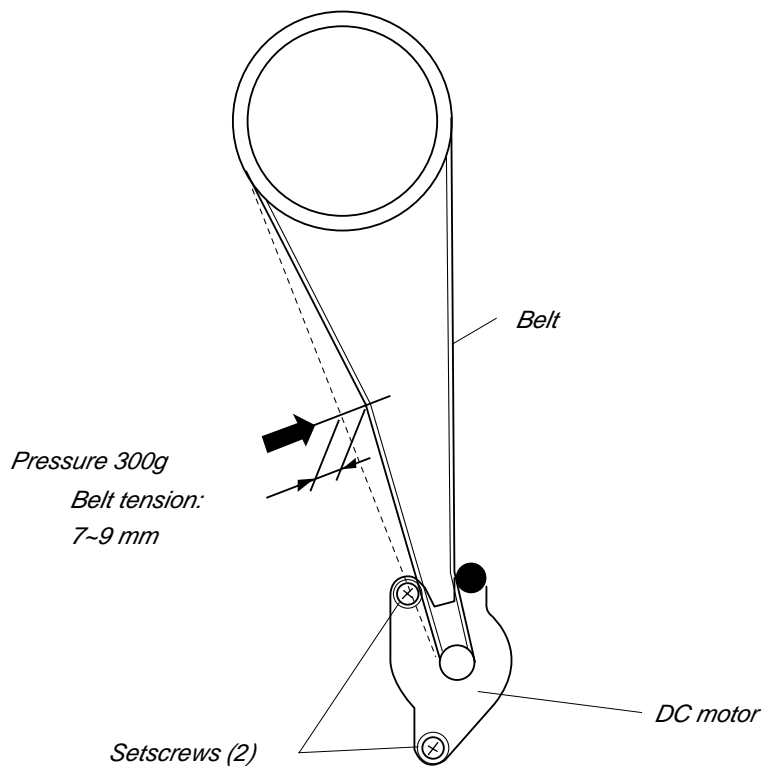
REPLACING DS MOTOR AND ADJUSTING MOTOR BELT TENSION

TO REMOVE:

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

TO INSTALL:

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



REPLACING THE FUSES

REPLACING THE FUSES

TO REMOVE:

1. Remove the front cover (see page 7).
2. Remove the four setscrews and lift off the cover on printed circuit board "A".
3. Remove the fuse. (Pry it out with a screwdriver).

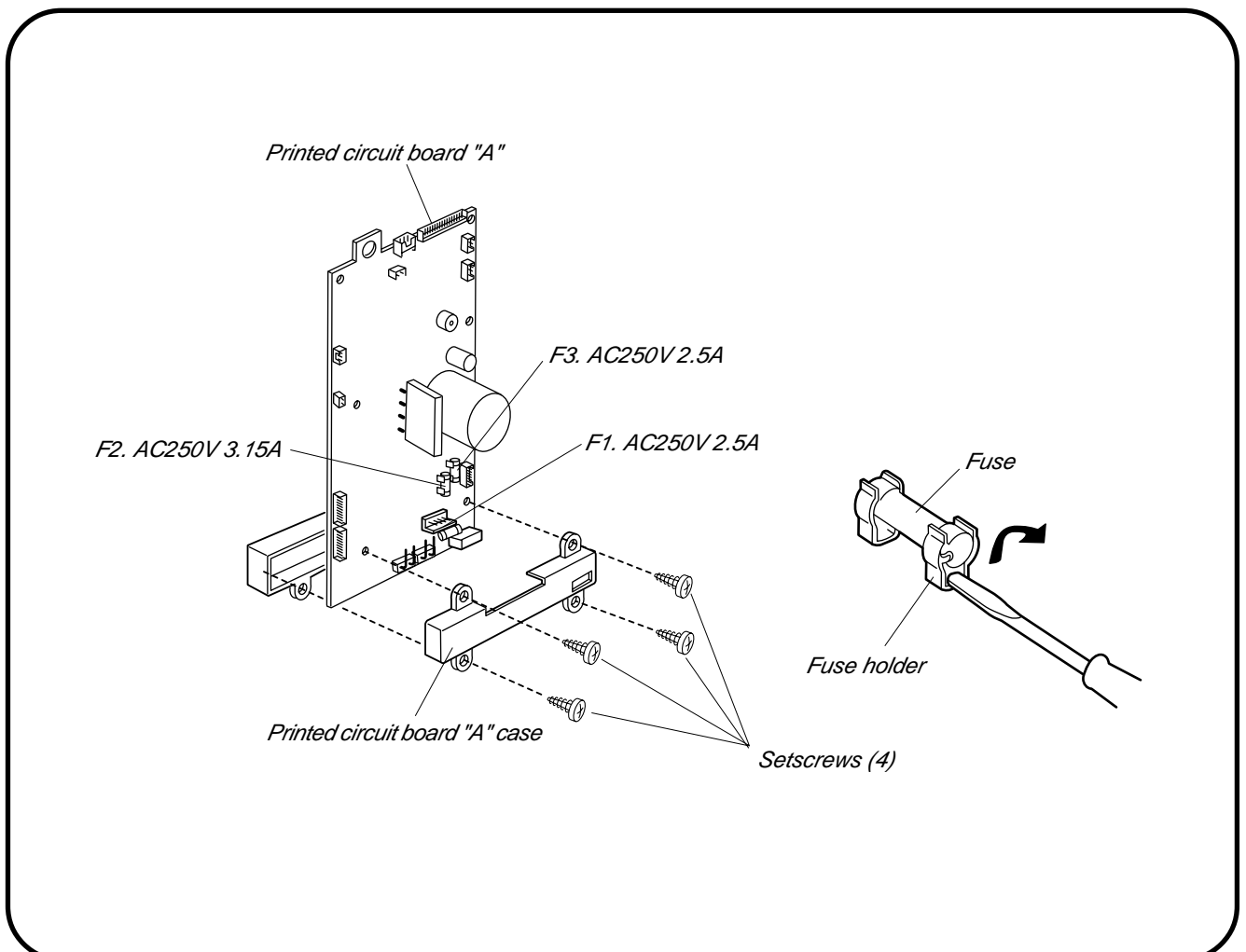
TO INSTALL:

4. Follow the above procedure in reverse.

FUSE NO.	PART NO.	TYPE/SPECIFICATION
F1, F3	000-144-605	TSD-2.5A-250V 5.2 X 20 MM 2.5 A TIME-LAG FUSE
F2	000-182-904	3.15A-250V 5.2 X20 MM 3.15A TIME-RUG FUSE

NOTE

1. Replace the printed circuit board "A" if you notice any browning, discoloration, or other abnormalities.
2. Only install fuses with the correct rating.
3. If the fuse is loose, bend the fuse clips inward to secure the fuse.



REPLACING MACHINE SOCKET (UNIT)

REPLACING THE MACHINE SOCKET

TO REMOVE:

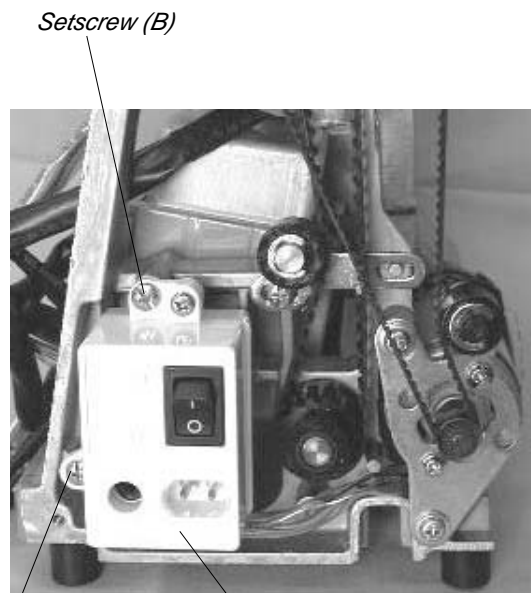
1. Remove the front and rear cover (see page 7 and 8).
2. Remove the two screws and remove the machine socket.

TO INSTALL:

3. To install 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.



Setscrew (B)

Machine socket

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 binder.

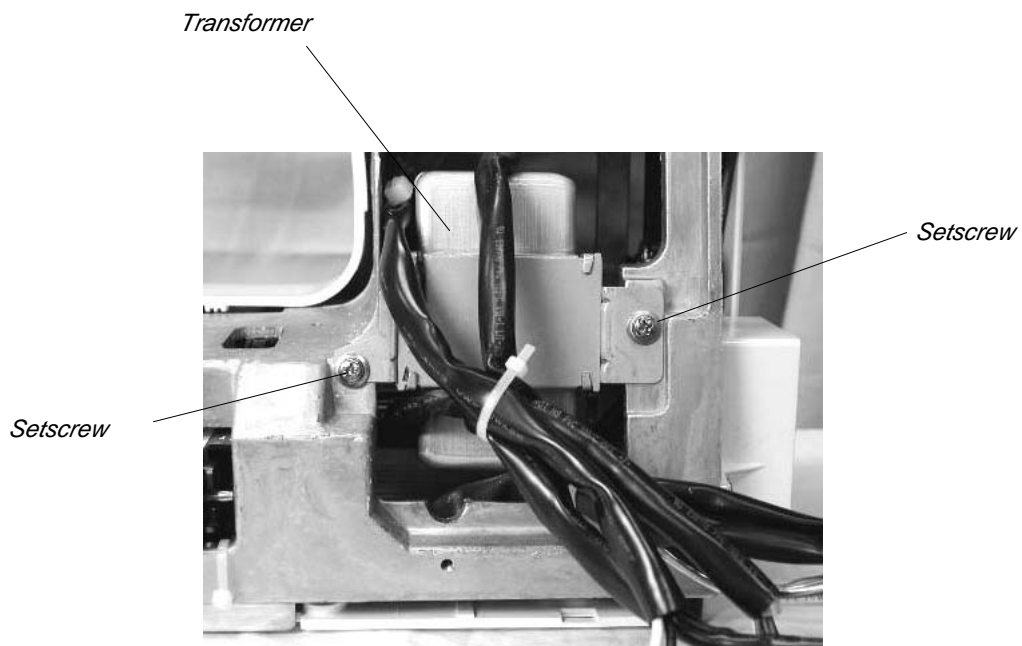
TO INSTALL:

3. To install 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:

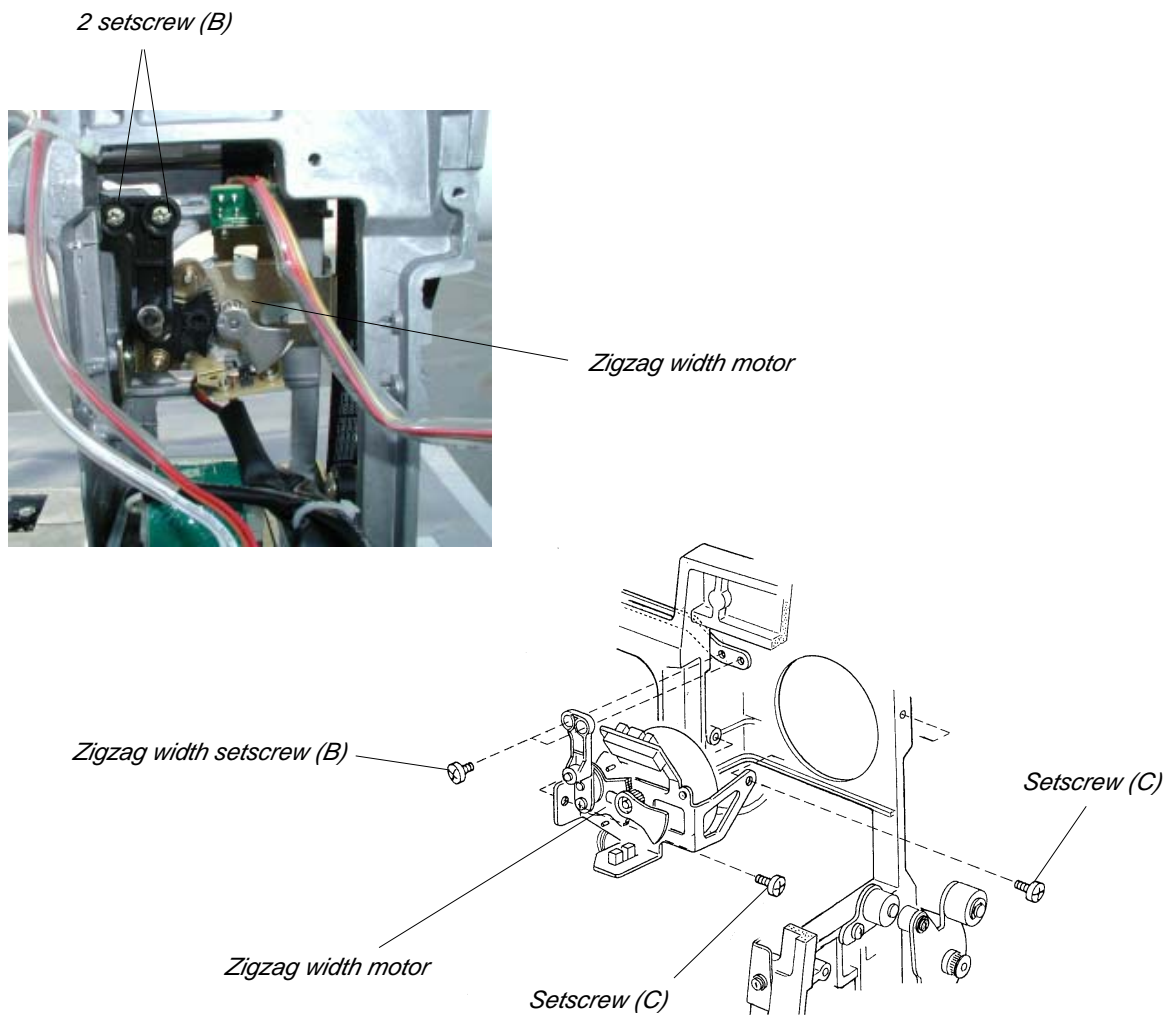
1. Remove the front and rear cover (see page 7 and 8).
2. Remove the two zigzag rod setscrews.
3. Remove the two setscrews and remove the zigzag width motor.

TO INSTALL:

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

NOTE

1. The setscrew of zigzag rod should be tightened to 5~7 kg of torque.
2. Check to ensure that the upper shaft sensor mounted on the zigzag width motor does not interfere with the upper shaft shield plate.
3. Adjust the needle drop position (see page 13).



REPLACING THE FEED STITCH MOTOR

REPLACING THE FEED MOTOR

TO REMOVE:

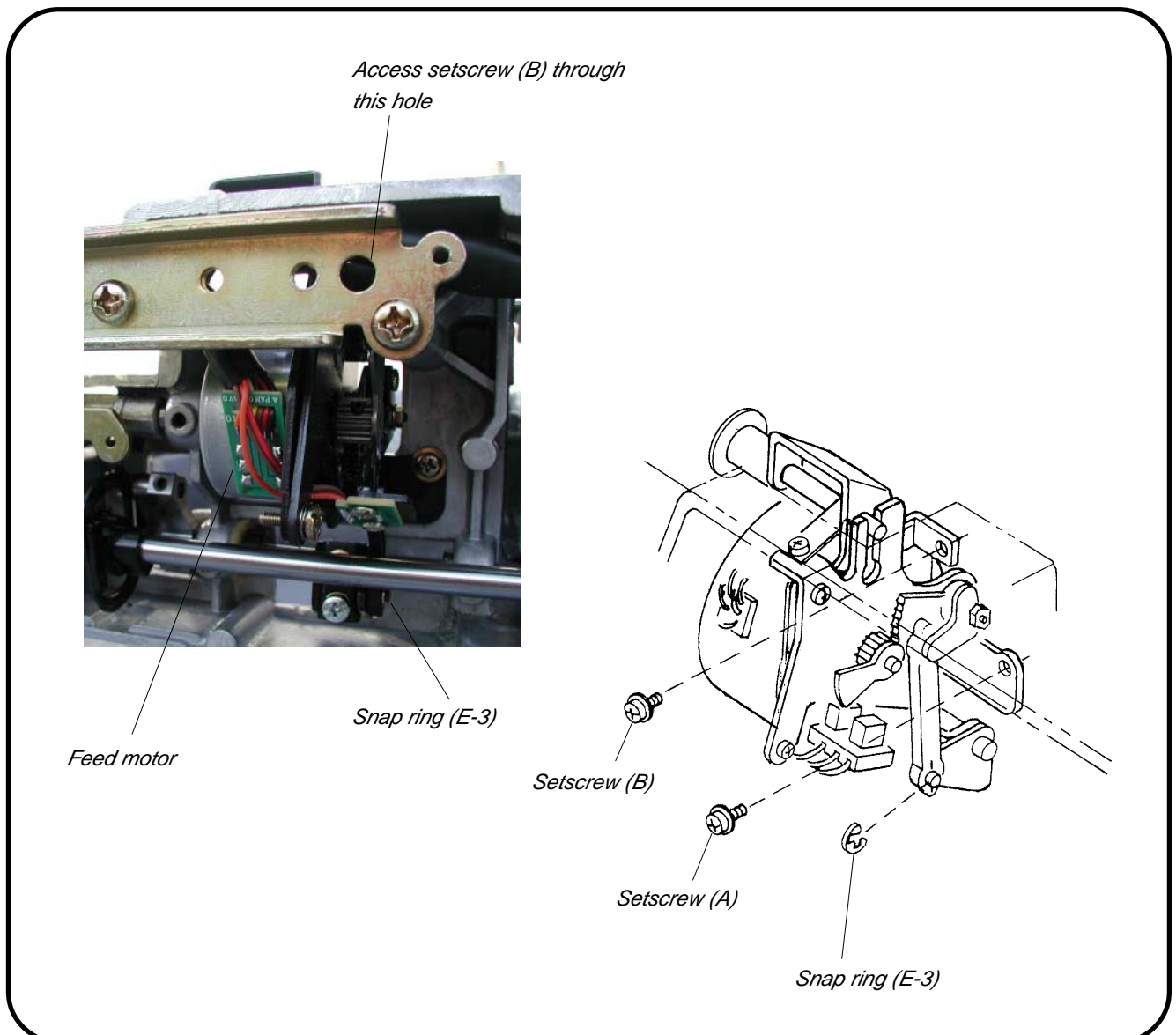
1. Remove the front cover and rear covers (see page 7 and 8).
2. Remove the snap ring (E-3).
3. Remove the two setscrews and remove the feed motor.

TO INSTALL:

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

NOTE

Adjust the stretch stitch patterns (see page 21).



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 "I".)
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 "I".
Tighten setscrew (A).

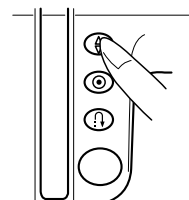
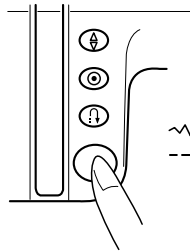
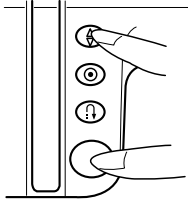
TO ADJUST THE BUTTONHOLE SENSOR POSITION:

4. Install 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 "I" to "H".
7. Next, turn the adjusting screw to the right until the led display changes from "H" to "I".
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 "I".
9. Turn off the power switch, and install the face cover.

NOTE

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

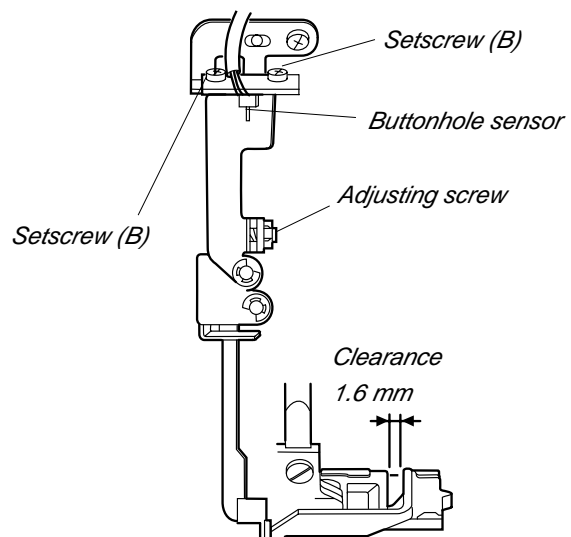
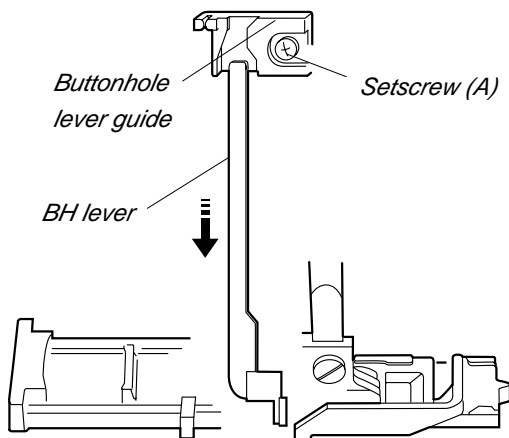
TO ENTER ADJUSTING MODE:



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

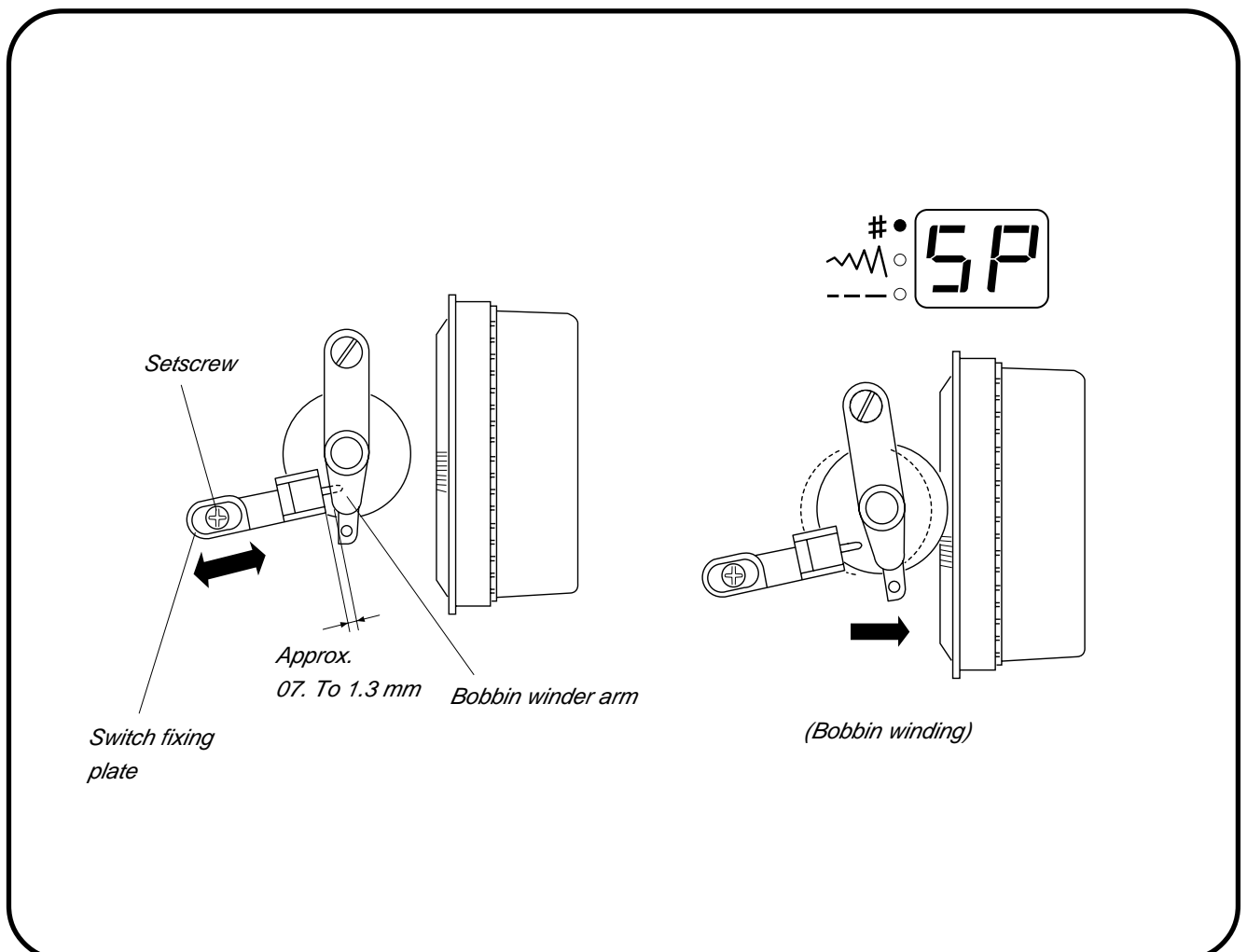
TO ADJUST THE BOBBIN WINDING SWITCH

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. Install 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.



OILING

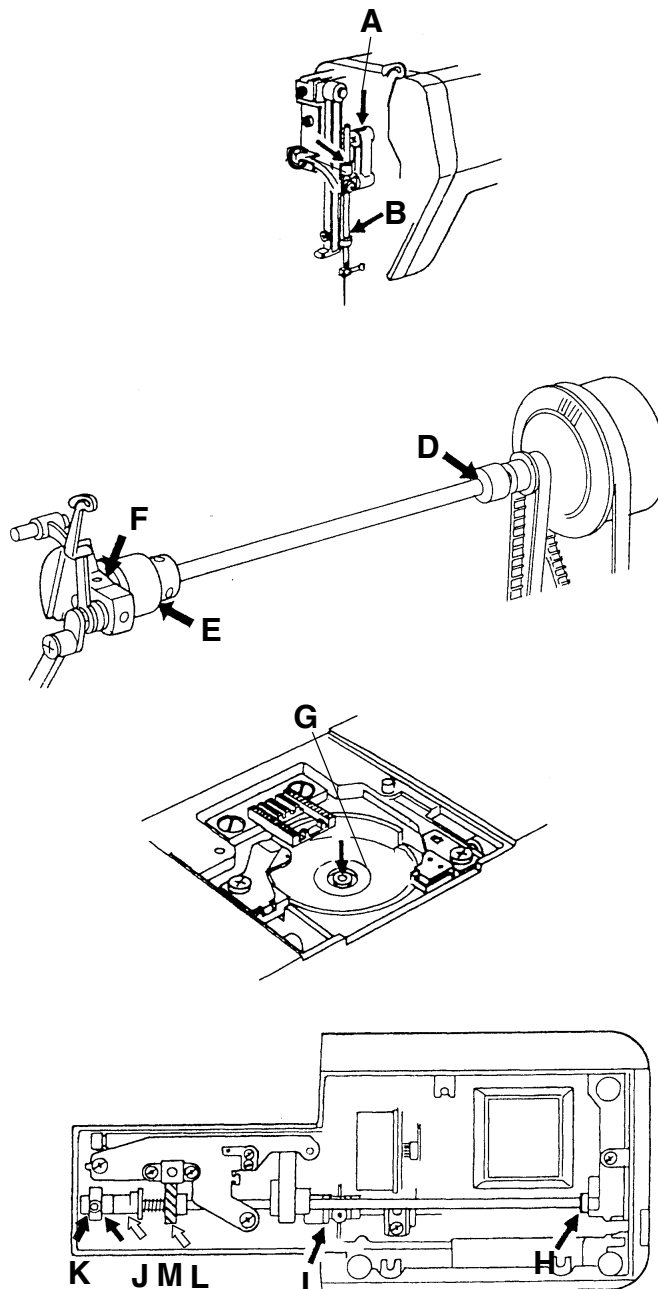
Factory lubricated parts will provide years of household sewing without routine oiling, but you should still check for possible lubrication needs whenever servicing machines.

OIL:

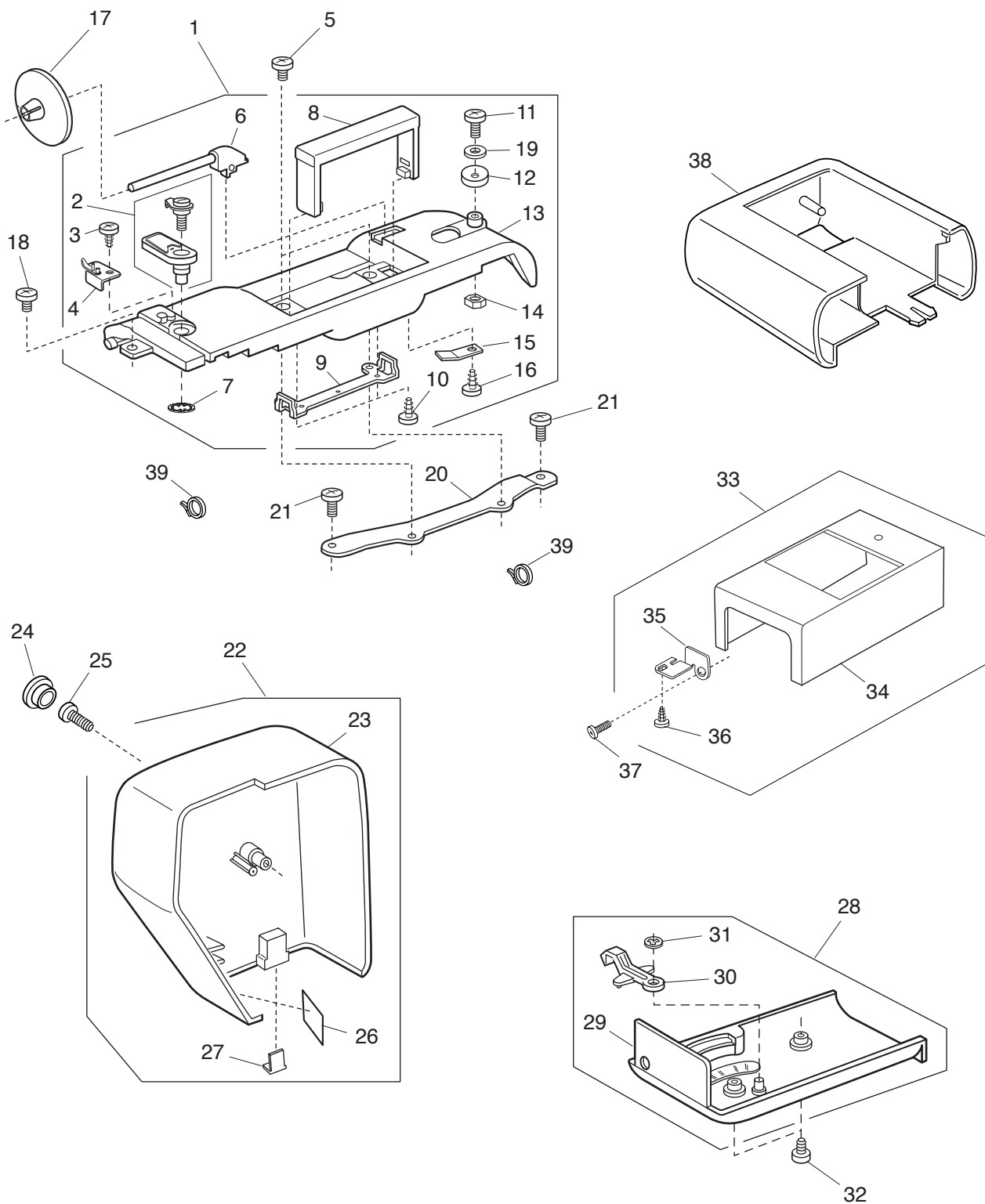
Use good quality sewing machine oil at the points (A, B, C, D, E, F, G, H, I, J & K) indicated by the black arrows.

GREASE:

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



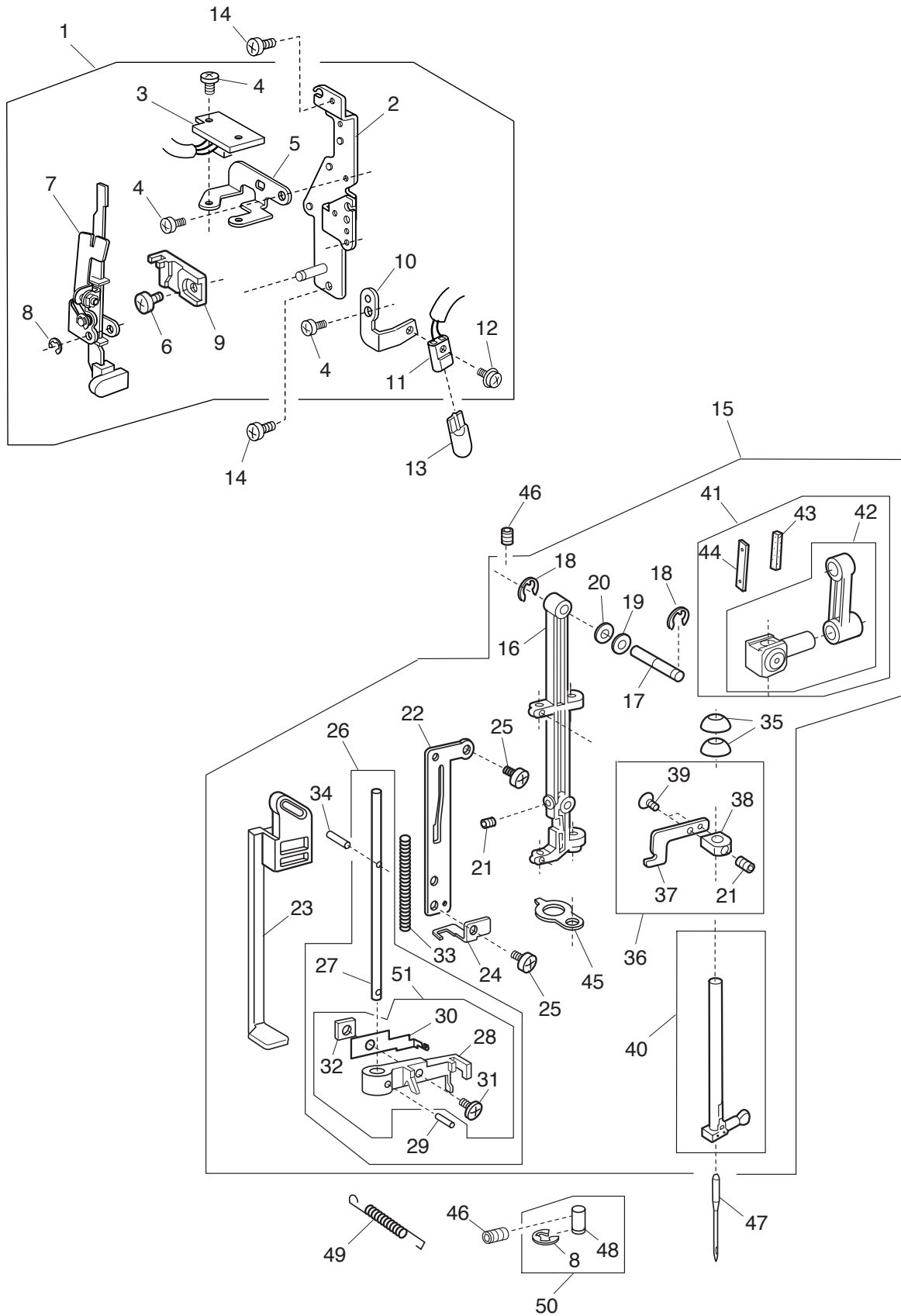
PARTS LIST



PARTS LIST

KEY NO.	PARTS NO.	DESCRIPTION
1	828603308	Top cover (unit)
2	650503702	Thread guide (unit)
3	000162001	Setscrew 2.6x5 (B)
4	827503005	Top cover thread guide (unit)
5	000103107	Setscrew 4x14
6	505067005	Spool pin
7	000014409	Snap ring CS-8
8	827014004	Handle
9	827015005	Set plate
10	000161206	Setscrew 3x10 (B)
11	000103107	Setscrew 4x14
12	735016307	Bobbin winder stopper
13	828008031	Top cover
14	000061205	Nut 4-3-7
15	822018003	Spool pin spring
16	000107318	Setscrew 3x8 (B)
17	822020503	Spool holder (large)
18	810220003	Setscrew
19	000071013	Washer
20	827016017	Top cover set plate
21	000081005	Setscrew 4x8
22	843649107	Face plate (unit)
23	843138108	Face plate
24	653006101	Cap
25	000101817	Setscrew 4x16
26	827099003	Face plate sticker
27	840602006	Thread cutter (unit)
28	827602108	Bed cover (unit)
29	827004104	Bed cover
30	753005000	Drop lever
31	000013903	Snap ring CS-5
32	000101703	Setscrew 4x12
33	659601007	Free arm cover (unit)
34	659001001	Free arm cover
35	756004008	Free arm cover set plate
36	000120203	Setscrew 3x8 (B)
37	000101404	Setscrew 4x6
38	843140000	Extension table
39	000053008	Cord binder

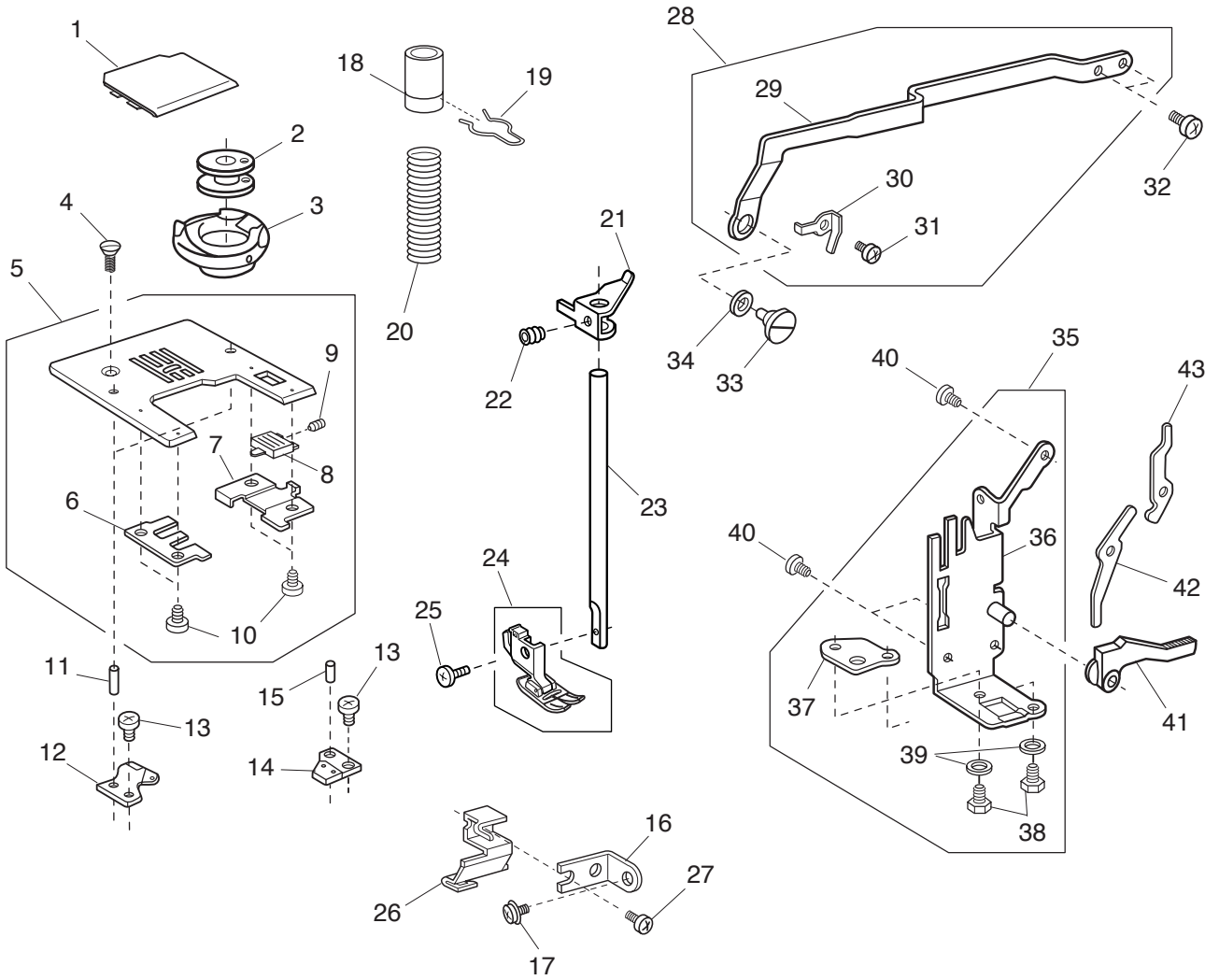
PARTS LIST



PARTS LIST

KEY NO.	PARTS NO.	DESCRIPTION
1	843604007	Front base plate (unit)
2	843008005	Front base plate
3	843502004	Printed circuit board E-1 (unit)
4	000101105	Setscrew 3x4
5	843009006	BH lever supporter plate
6	000103808	Setscrew 3x5
7	843625004	BH lever (unit)
8	000002105	Snap ring E-3
9	830057010	BH lever guide
10	843007004	Lamp set plate
11	843508000	Lamp socket (unit)
12	000115308	Setscrew TP 2x8
13	000026002	Wedge base lamp 12V 5W
14	000081005	Setscrew 4x8
15	840647003	Needle bar supporter (unit)
16	827026010	Needle bar supporter
17	730022002	Needle bar supporter pin
18	000002507	Snap ring E-4
19	000070609	Washer
20	673022002	Washer
21	000111902	Hexagonal socket screw 3x4
22	840033000	Thread guide plate
23	840034001	Needle threader lever
24	840037004	Needle threader lever set plate
25	000078319	Setscrew 3x6
26	840646002	Needle threader bar (unit)
27	840036003	Needle threader bar
28	755064003	Needle threader guard plate
29	000003508	Spring pin 2x8
30	755065004	Needle threader plate
31	755096004	Setscrew
32	755095003	Nut
33	840035002	Needle threader spring
34	000125105	Pin E-2 X6-CH
35	827098002	Washer
36	734625003	Threader position set plate (unit)
37	734101008	Threader position set plate
38	734102009	Threader position holder
39	000097602	Setscrew 2x4
40	653503103	Needle bar (unit)
41	653612003	Needle bar crank rod (unit)
42	653504001	Needle bar crank rod (unit)
43	650040005	Felt
44	650041006	Felt holder spring
45	829027006	Supporter guide plate
46	000111201	Hexagonal socket screw 4x4
47	102408089	Needle HA1-14
48	827083004	Supporter guide plate pin
49	756063005	Supporter spring
50	842625001	Supporter guide plate pin (unit)
51	755643002	Threader plate (unit)

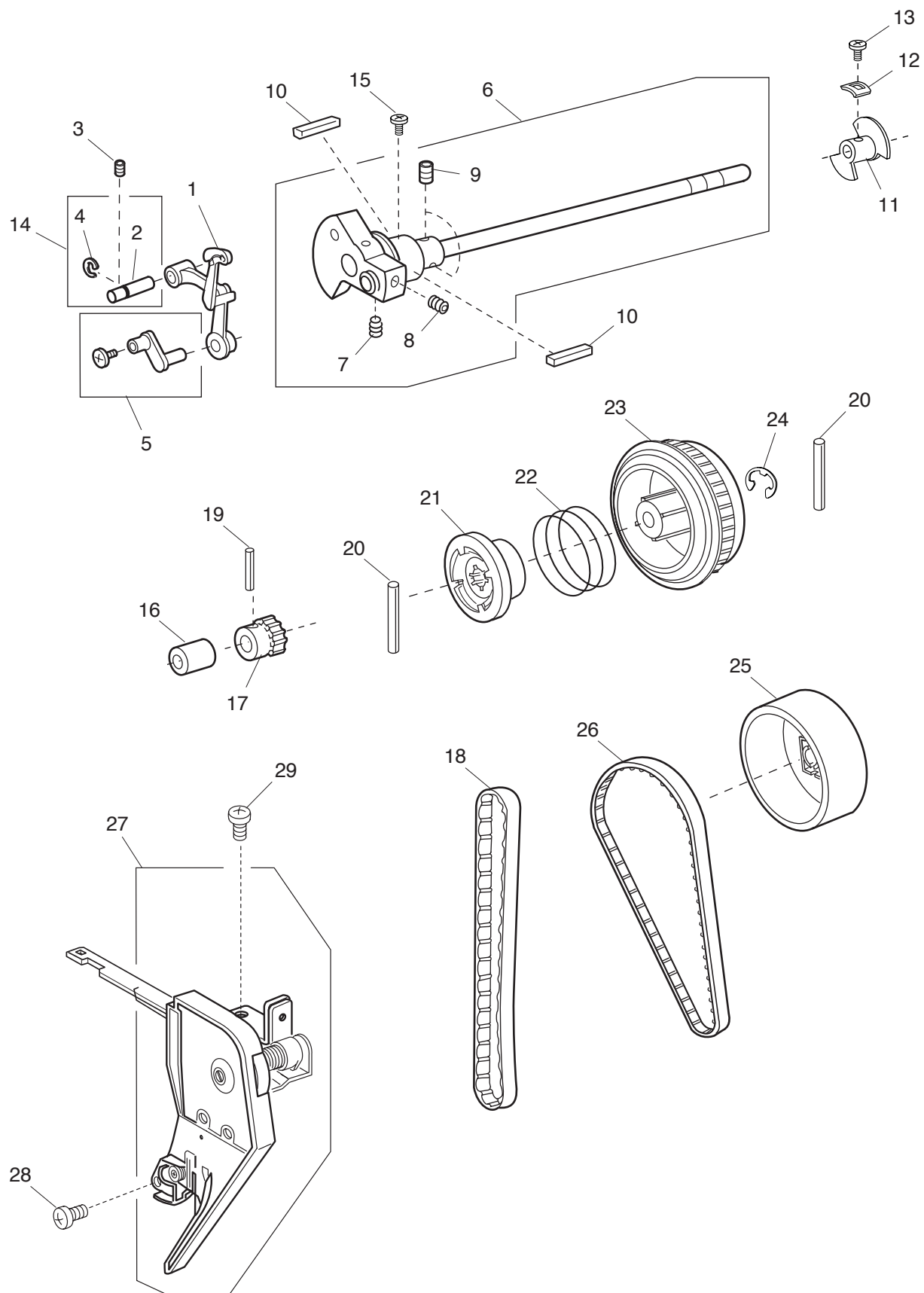
PARTS LIST



PARTS LIST

KEY NO.	PARTS NO.	DESCRIPTION
1	750036012	Hook cover plate
2	102261000	Bobbin
3	627569106	Bobbin holder (unit)
4	681009101	Needle plate set screw
5	756604107	Needle plate (unit)
6	752005007	Hook cover plate holder (left)
7	825015010	Hook cover plate holder (right)
8	825016000	Hook cover plate holder release button
9	825017001	Hook cover plate holder spring
10	820374004	Setscrew 2x2.3
11	000122504	Pin D3x10CH
12	827011001	Bobbin holder stopper
13	810220003	Setscrew
14	627567001	Bobbin holder stopper (unit)
15	000122700	Pin D2.5x6-LC
16	827037003	Front panel set plate
17	000115205	Setscrew 4x6
18	802021007	Bushing
19	802022008	Snap retainer
20	730026006	Presser bar spring
21	735028003	Presser bar supporter
22	000111500	Hexagonal socket screw 4x8
23	827021004	Presser bar
24	660509008	Zigzag foot (unit)
25	660106001	Setscrew
26	827036002	Arm thread guide
27	000081005	Setscrew 4x8
28	827622012	Zigzag rod (unit)
29	827055018	Zigzag rod
30	827088009	Zigzag rod spring
31	820373003	Setscrew 2x3
32	000078319	Setscrew 3x6
33	678084007	Eccentric pin
34	653037008	Washer
35	827608403	Presser base plate (unit)
36	827020047	Presser base plate
37	827082003	Foot regulating plate
38	000066303	Hexagona bolt 4x6
39	000070908	Washer 4
40	000081005	Setscrew 4x8
41	735029004	Presser foot lifter
42	827022005	Tension release lever (1)
43	827023006	Tension release lever (2)

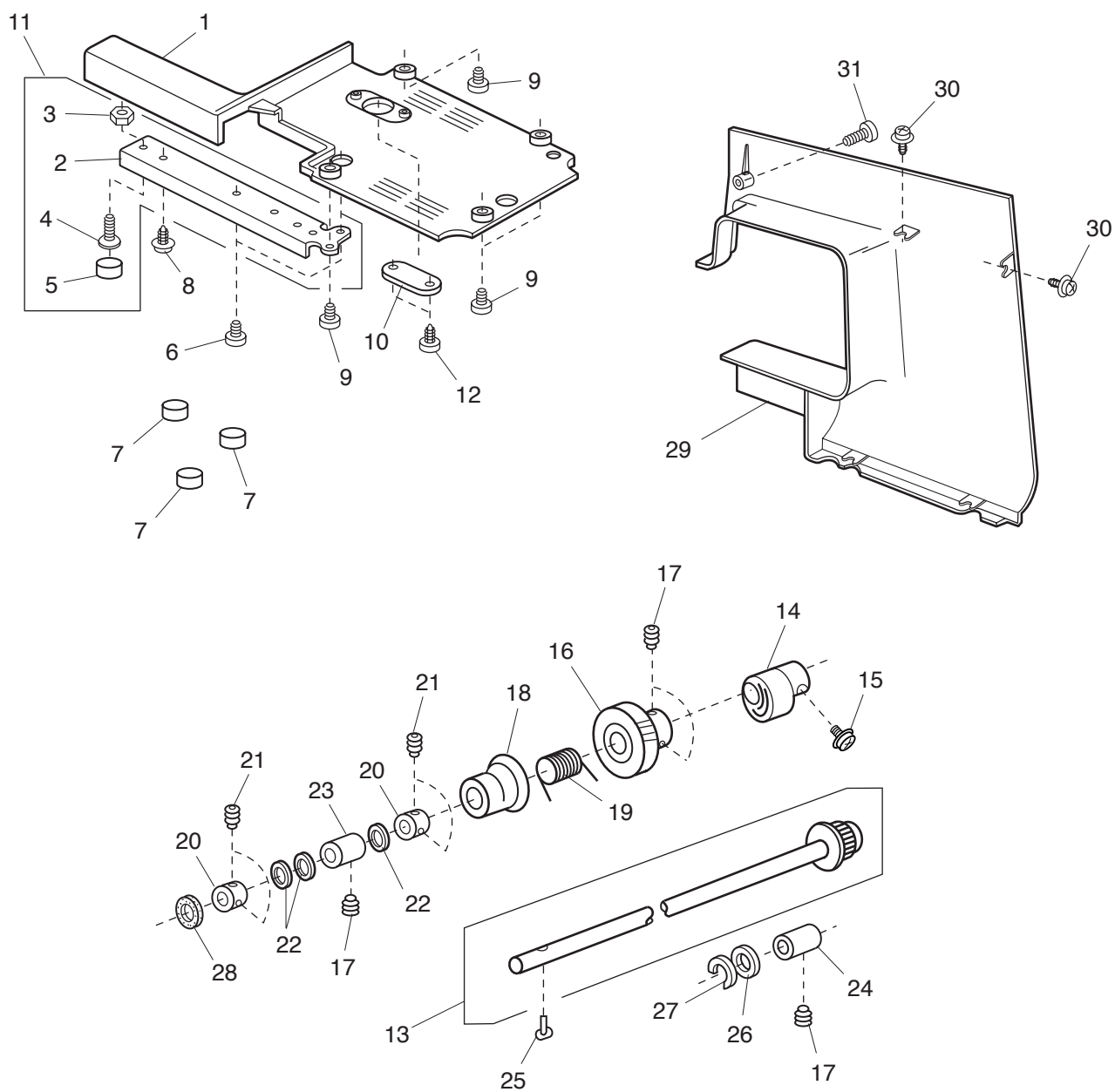
PARTS LIST



PARTS LIST

KEY NO.	PARTS NO.	DESCRIPTION
1	820511108	Thread take-up lever
2	650062003	Thread take-up lever pin
3	000111201	Hexagonal socket screw 4x4
4	000001702	Snap ring E-6
5	652512009	Needle bar crank pin (unit)
6	843643101	Upper shaft comp. (unit)
7	000111706	Hexagonal socket screw 5x8
8	000110901	Hexagonal socket screw 5x4
9	000111304	Hexagonal socket screw 5x5
10	731384008	Felt
11	830095010	Upper shaft shielding plate
12	820102009	Washer
13	000081005	Setscrew 4x8
14	650626001	Thread take-up lever pin (unit)
15	000172602	Setscrew 5x8
16	673062004	Upper shaft bushing (rear)
17	756017004	Upper shaft gear
18	650071005	Timing belt
19	000020501	Spring pin 3x22
20	000024206	Spring pin 3x30
21	502064003	Clutch ring
22	502065004	Clutch spring
23	844050016	Belt wheel
24	000030205	Snap ring E-8
25	844077008	Handwheel
26	653139012	Timing belt
27	843540004	Thread tension (unit)
28	000101703	Setscrew 4x12
29	000101404	Setscrew 4x6

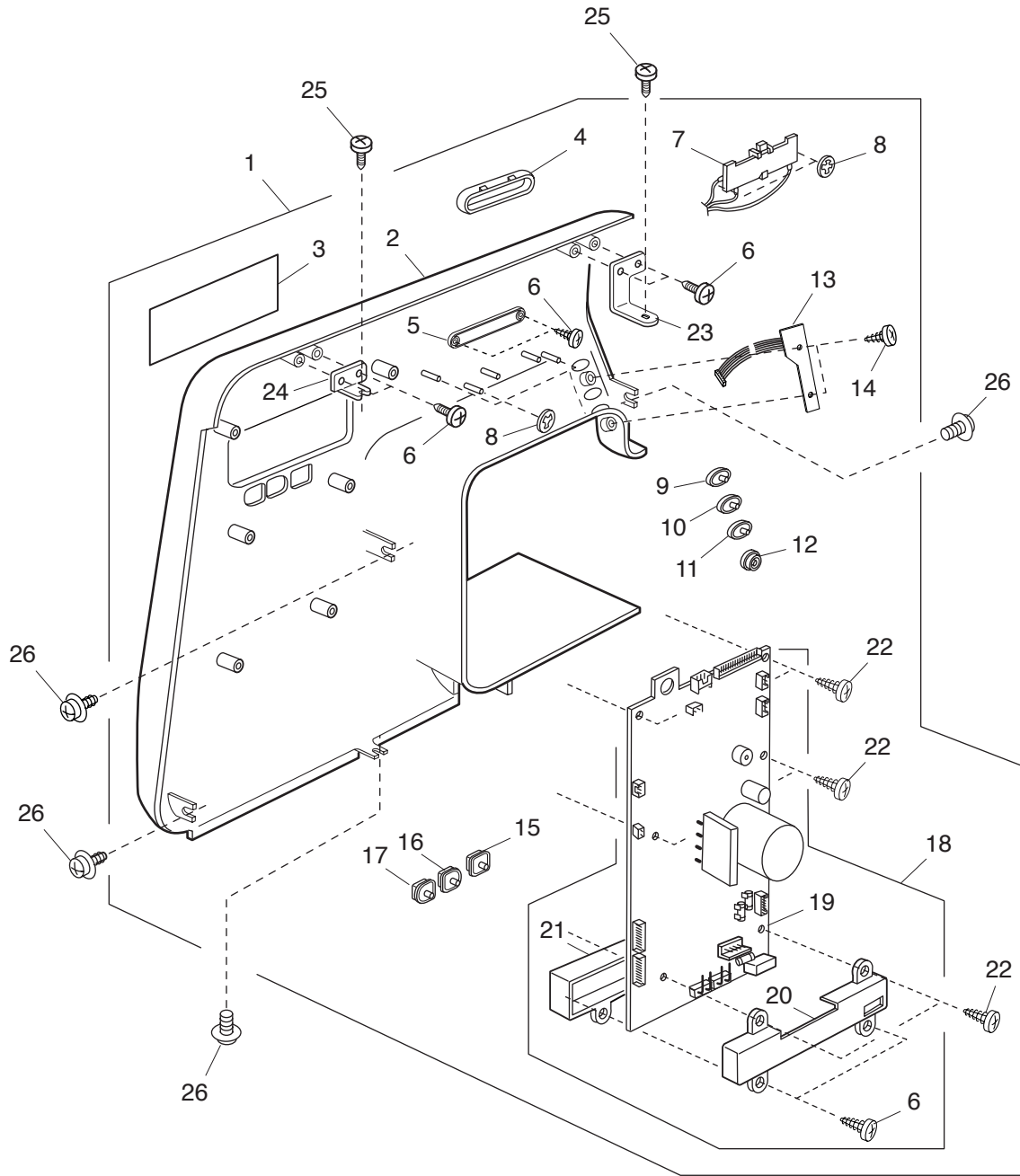
PARTS LIST



PARTS LIST

KEY NO.	PARTS NO.	DESCRIPTION
1	827003000	Base plate
2	827002009	Arm leg
3	000061412	Nut 5-3-8
4	000097901	Setscrew 5x18
5	735002001	Rubber base
6	000066808	Setscrew 6x14
7	647009002	Bed rubber base
8	000161206	Setscrew TP 3x10 (B)
9	000103509	Setscrew 4x10
10	824058001	Base cover
11	827601004	Arm leg (unit)
12	000107318	Setscrew 3x8 (B)
13	751612206	Lower shaft (unit)
14	751148000	Feed cam
15	000115009	Setscrew 3x8
16	650955002	Lower shaft gear
17	000111304	Hexagonal socket screw 5x5
18	753183025	Feed lifting cam
19	686035008	Feed lifting cam spring
20	820166001	Ring
21	000111201	Hexagonal socket screw 4x4
22	000038502	Washer
23	650078002	Lower shaft bushing (front)
24	650079003	Lower shaft bushing (rear)
25	820161006	Feed lifting pin
26	822070003	Felt
27	822112008	Felt holder (1)
28	735143005	Felt
29	842001418	Rear cover
30	000115205	Setscrew TP 4x6
31	000104119	Setscrew 4x20

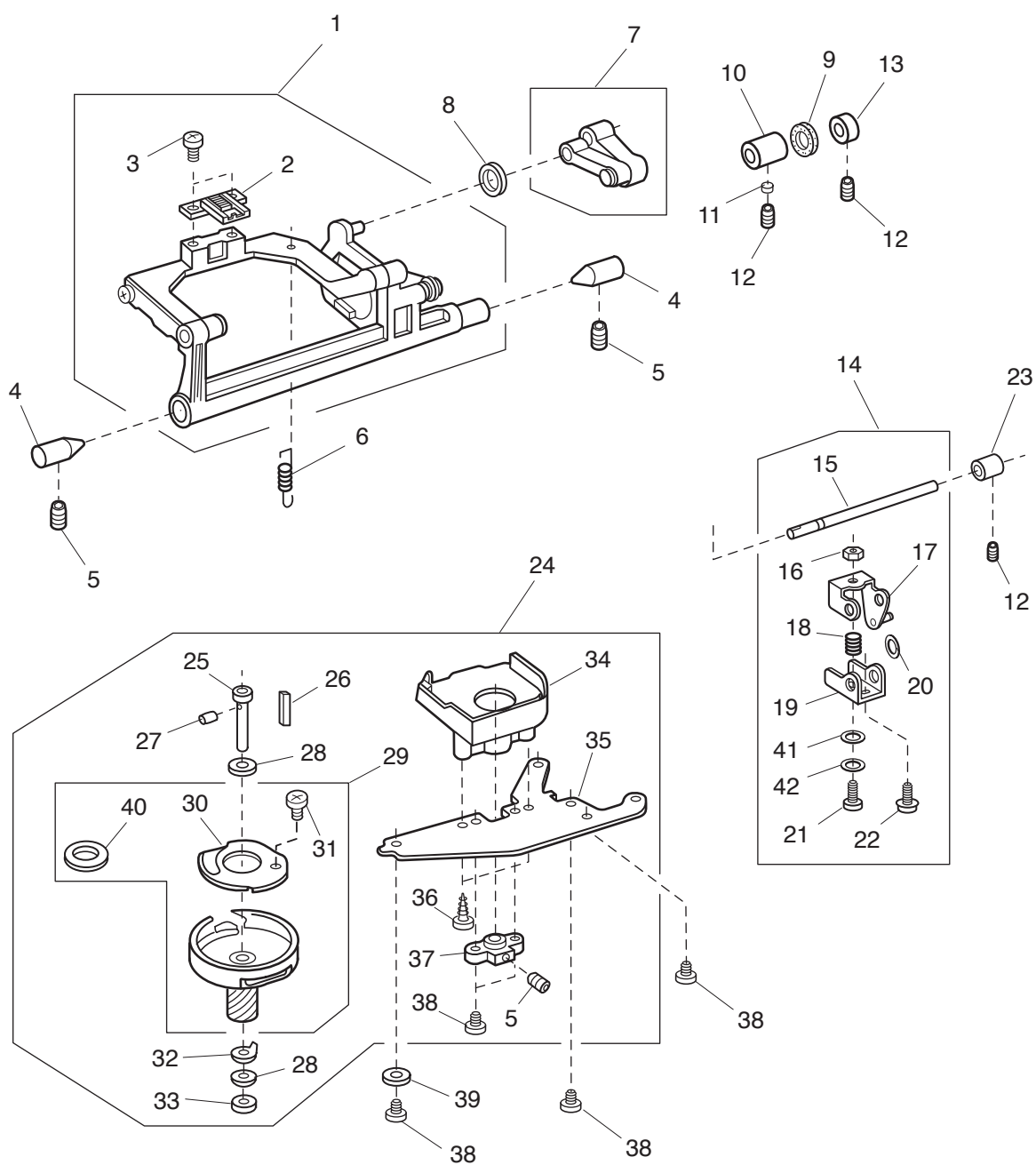
PARTS LIST



PARTS LIST

KEY NO.	PARTS NO.	DESCRIPTION
1	843641109	Front cover (unit)
2	843114119	Front cover
3	842059307	Indicator window
4	841017001	Slide volume lever
5	751273005	Slide volume knob
6	000120203	Setscrew 3x8 (B)
7	653507211	Slide volume (unit)
8	000014306	Snap ring CS-3
9	843026803	Button (1)
10	843026906	Button (1)
11	843026157	Button (1)
12	842048233	Start/Stop button
13	842512200	Printed circuit board F (unit)
14	000161103	Setscrew 3x6 (B)
15	842062200	Button (2)
16	842061302	Button
17	842061405	Button
18	843610408	Printed circuit board A (unit)
19	843527108	Printed circuit board A (unit)
20	843021107	Board A case
21	843020106	Board A case cover
22	000161206	Setscrew 3x10 (B)
23	842014001	Front cover set plate (front)
24	841019003	Front cover set plate (rear)
25	000101404	Setscrew 4x6
26	000115205	Setscrew TP 4x6

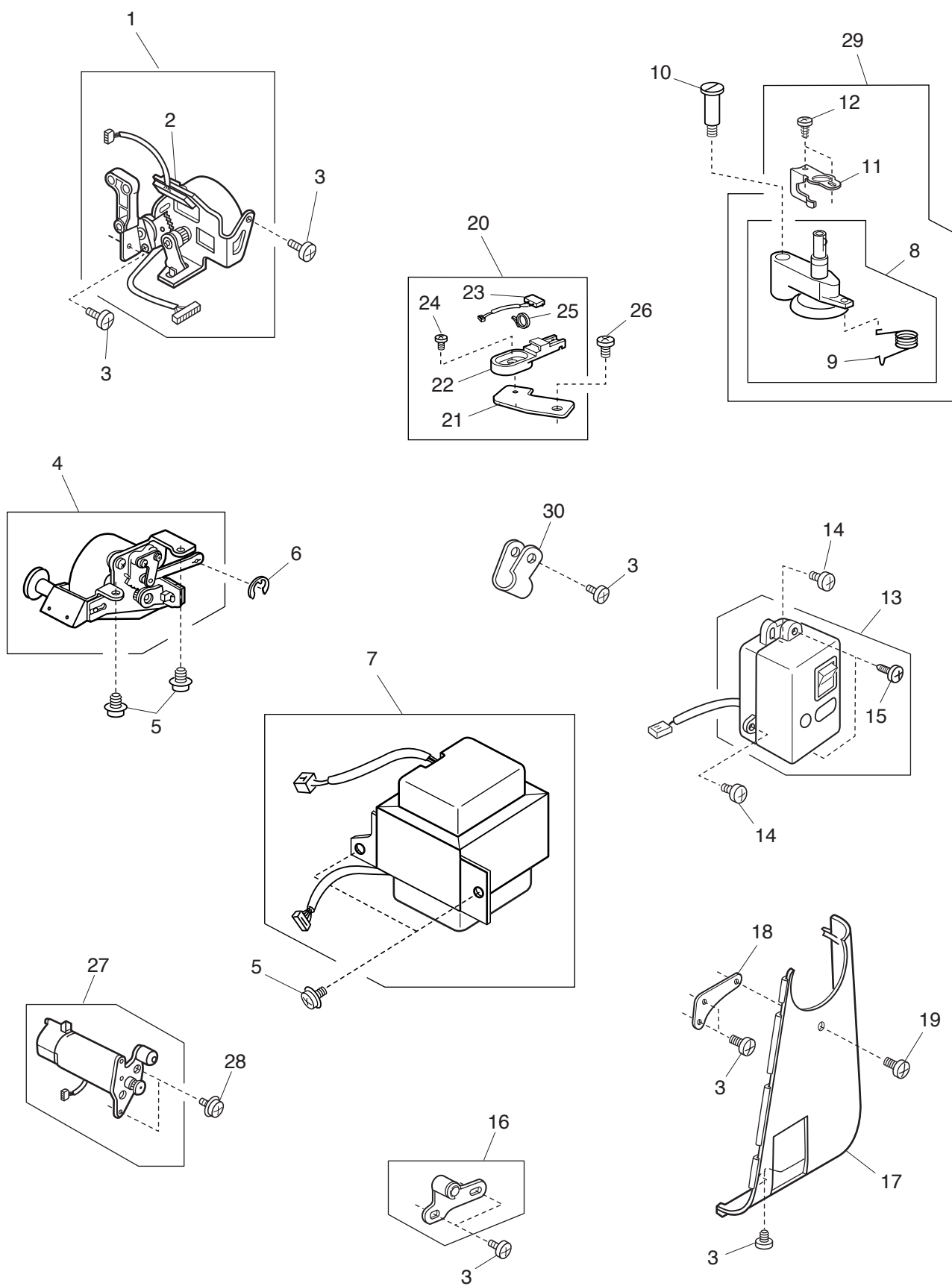
PARTS LIST



PARTS LIST

KEY NO.	PARTS NO.	DESCRIPTION
1	834527100	Feed rock shaft (unit)
2	840005003	Feed dog
3	000104005	Setscrew 3.5x8
4	738055008	Center pin
5	000111304	Hexagonal socket screw 5x5
6	650085002	Spring
7	650612004	Feed adjuster (unit)
8	000036603	Washer
9	823110009	Felt
10	625144002	Feed shaft bushing (front)
11	650175000	Screw base
12	000111201	Hexagonal socket screw 4x4
13	820387000	Ring
14	840603007	Feed shaft (unit)
15	840006004	Feed shaft
16	000160102	Adjustable nut 4
17	825261002	Feed adjusting arm (2)
18	589040002	Spring
19	827043105	Feed adjusting arm (1)
20	810207004	Spring washer
21	827086007	Feed adjusting arm screw
22	000115906	Setscrew (TP) 3x12
23	650092002	Feed shaft bushing (rear)
24	827614033	Shuttle race (unit)
25	820123006	Shuttle race shaft
26	820124007	Oil string (1)
27	820125008	Oil string (2)
28	000038409	Washer
29	650623008	Shuttle body (unit)
30	627191000	Hook bottom plate
31	820374004	Setscrew 2x2.3
32	627192001	Washer
33	625102008	Washer
34	827040009	Hook gear cover
35	823106002	Shuttle race set plate
36	000107204	Setscrew 3x12 (B)
37	650094004	Shuttle race shaft base
38	000081005	Setscrew 4x8
39	000070506	Washer
40	627190010	Magnet
41	000071013	Washer
42	000036407	Thrust washer FT 50

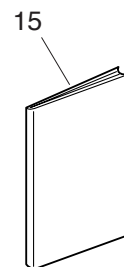
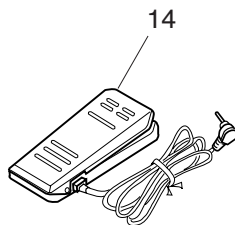
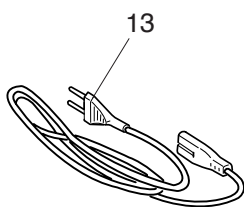
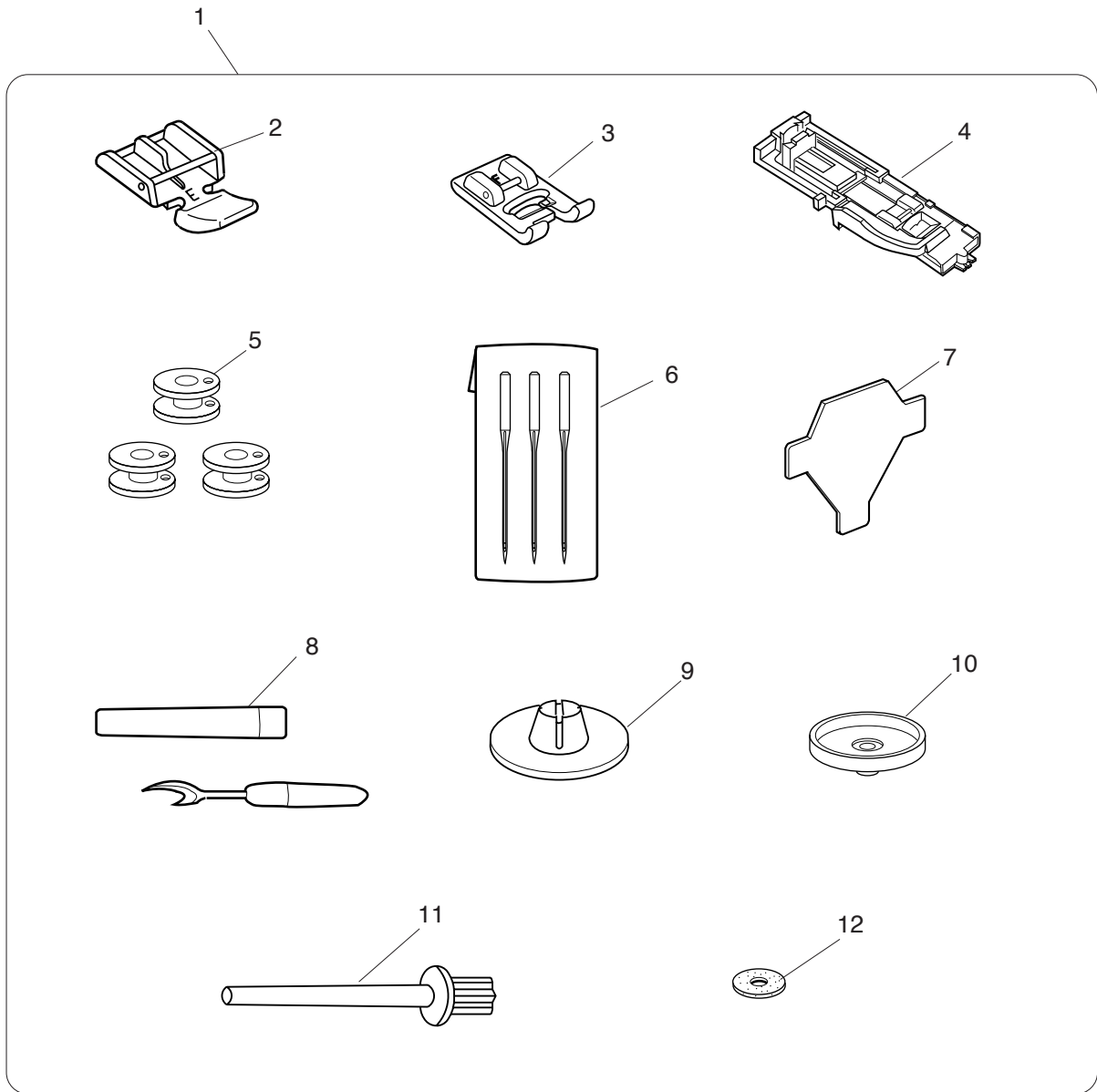
PARTS LIST



PARTS LIST

KEY NO.	PARTS NO.	DESCRIPTION
1	843608104	Stepping motor (unit)
2	843505007	Printed circuit board P (unit)
3	000081005	Setscrew 4x8
4	843606102	Feed motor (unit)
5	000115205	Setscrew TP 4x6
6	000002105	Snap ring E-3
7	843516001	Transformer (unit) (230V)
8	827506008	Bobbin winder (unit)
9	823119008	Bobbin winder arm spring
10	652093009	Setscrew
11	844075039	Clutch releasing arm
12	000120203	Setscrew 3x8 (B)
13	843519004	Machine socket (unit) (230V)
14	000103509	Setscrew 4x10
15	000121204	Setscrew 4x8 (B)
16	652611009	Idler (unit)
17	828064002	Belt cover
18	827085017	Belt cover set plate
19	000104119	Setscrew 4x20
20	842629005	Switch base plate (unit)
21	842066008	Switch base plate
22	827100008	Switch set plate
23	753507203	Buttonhole select switch
24	000103808	Setscrew 3x5
25	000053008	Cord binder
26	000101404	Setscrew 4x6
27	843645000	Motot (unit)
28	000115607	Setscrew TP 4x8
29	844628033	Bobbin winder (unit)
30	000188209	Nylon clip

PARTS LIST



PARTS LIST

KEY NO.	PARTS NO.	DESCRIPTION
1	843870109	Attachment (unit)
2	829801002	Zipper foot
3	822804118	Satin foot
4	753801004	Automatic buttonhole foot
5	102261000	Bobbin
6	639804000	Assorted needle set (unit)
7	653802002	Screwdriver
8	647808009	Seam ripper (unit)
9	822019509	Spool cap (small)
10	829803004	Spool stand
11	625031500	Spool pin (2)
12	102403109	Felt
13	830335004	Power supply cord
14	033570318	Foot control
15	843800669	Instruction book
