

SERVICE MANUAL

4120QDC

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WHAT TO DO WHEN

CONDITION	CAUSE	HOW TO FIX	REFERENCE
<p>1. SKIPPING STITCHES</p>	<p>1. NEEDLE IS NOT INSERTED PROPERLY.</p> <p>2. NEEDLE IS BENT OR WORN.</p> <p>3. INCORRECTLY THREADED.</p> <p>4. NEEDLE OR THREAD ARE INAPPROPRIATE FOR THE FABRIC BEING SEWN.</p> <p>5. SEWING ON STRETCH FABRIC.</p> <p>6. INAPPROPRIATE NEEDLE BAR HEIGHT.</p> <p>7. INAPPROPRIATE NEEDLE TO HOOK TIMING.</p> <p>8. INAPPROPRIATE NEEDLE TO HOOK CLEARANCE.</p>	<p>INSERT THE NEEDLE PROPERLY.</p> <p>CHANGE THE NEEDLE.</p> <p>RETHREAD.</p> <p>USE THE RECOMMENDED SEWING NEEDLE AND THREAD.</p> <p>USE A HA X #11 BLUE TIP NEEDLE.</p> <p>SEE MECHANICAL ADJUSTMENT "NEEDLE BAR HEIGHT".</p> <p>SEE MECHANICAL ADJUSTMENT "ADJUSTMENT OF HOOK TIMING".</p> <p>SEE MECHANICAL ADJUSTMENT "CLEARANCE BETWEEN NEEDLE AND TIP OF THE ROTARY HOOK".</p>	<p>P. 12</p> <p>P. 11</p> <p>P. 13</p>
<p>2. FABRIC NOT MOVING</p>	<p>1. INCORRECT FEED DOG HEIGHT.</p> <p>2. FEED DOG IS IN DOWN POSITION.</p> <p>3. THREAD ON BOTTOM SIDE OF FABRIC IS JAMMED UP.</p> <p>4. FEED DOG TEETH ARE WORN.</p>	<p>ADJUST THE PRESSER BAR LEVEL TO MAKE THE PRESSURE STRONGER. SEE MECHANICAL ADJUSTMENT "FEED DOG HEIGHT".</p> <p>RAISE THE FEED DOG.</p> <p>MAKE SURE TO BRING BOTH NEEDLE AND BOBBIN THREADS UNDER THE FOOT WHEN START SEWING.</p> <p>CHANGE THE FEED DOG.</p>	<p>P. 14</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. TOP 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 TOP TENSION CORRECTLY.</p> <p>USE APPROPRIATE NEEDLE FOR FABRIC AND THREAD IN USE.</p> <p>CHANGE THE NEEDLE.</p> <p>REPAIR THE HOLE OR REPLACE THE NEEDLE PLATE.</p>	
4. BREAKING BOBBIN THREAD.	<ol style="list-style-type: none"> 1. BOBBIN HOLDER IS INCORRECTLY THREADED. 2. TOO MUCH THREAD IS WOUND ON THE BOBBIN. 3. LINT IS STUCK INSIDE THE BOBBIN HOLDER. 4. THREAD QUALITY IS TOO LOW. 5. THREAD IS JAMMING AROUND THE BOBBIN HOLDER. 	<p>SET THE BOBBIN THREAD CORRECTLY.</p> <p>ADJUST THE POSITION OF BOBBIN WINDER STOPPER.</p> <p>CLEAN THE BOBBIN HOLDER.</p> <p>CHANGE TO A HIGH QUALITY SEWING THREAD.</p> <p>CLEAR OUT THE JAMMING THREAD.</p>	
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 HOOK. 4. 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 TIP OF THE ROTARY HOOK".</p> <p>GUIDE THE FABRIC GENTLY WHILE SEWING.</p>	<p>P. 10</p> <p>P. 13</p>

CONDITION	CAUSE	HOW TO FIX	REFERENCE
6. NOISY OPERATION	<ol style="list-style-type: none"> 1. BACKLASH BETWEEN HOOK GEAR AND LOWER SHAFT GEAR IS TOO GREAT. 2. LOWER SHAFT GEAR IS LOOSE. 3. INAPPROPRIATE BELT TENSION. 4. NOT ENOUGH OIL. 5. UPPER SHAFT GEAR IS LOOSE. 	<p>ELIMINATE THE BACKLASH.</p> <p>ELIMINATE THE LOOSENESS.</p> <p>SEE PART REMOVAL AND REPLACEMENT "DRIVING MOTOR (DC MOTOR)".</p> <p>OIL ALL MOVING PARTS.</p> <p>ELIMINATE THE LOOSENESS.</p>	P. 24
7. DEFORMATION PATTERN	<ol style="list-style-type: none"> 1. INAPPROPRIATE FEED BALANCE. 2. TOP TENSION IS TOO STRONG. 	<p>ADJUST THE FEED BALANCING SCREW.</p> <p>SEE MECHANICAL ADJUSTMENT "TOP TENSION".</p>	P. 15

CHANGING EXTERNAL PARTS

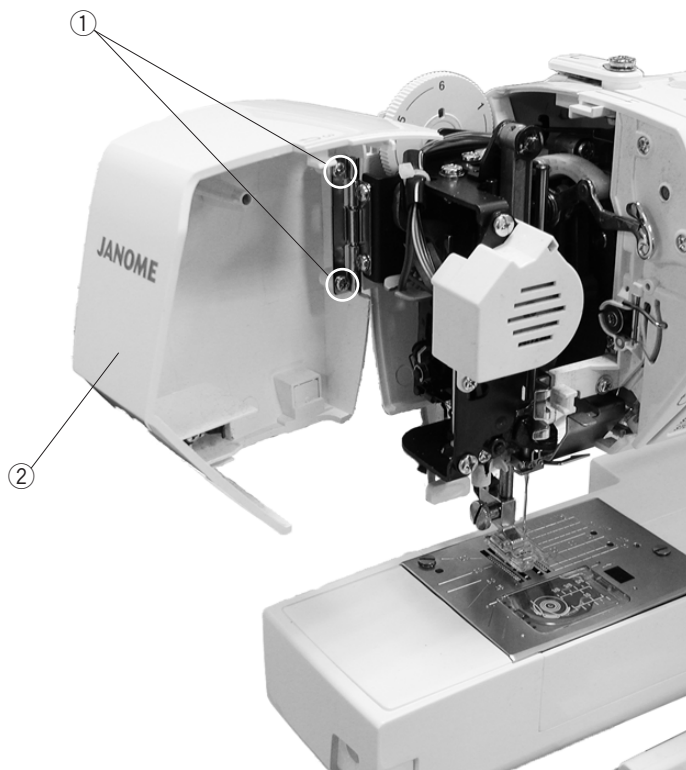
FACE COVER

TO REMOVE:

1. LOOSEN THE SETSCREW ① AND LIFT THE FACE COVER TO DISENGAGE THE RIB ON THE INSIDE.
REMOVE THE FACE COVER ②.

TO ATTACH:

2. FOLLOW THE ABOVE PROCEDURES IN REVERSE.



CHANGING EXTERNAL PARTS

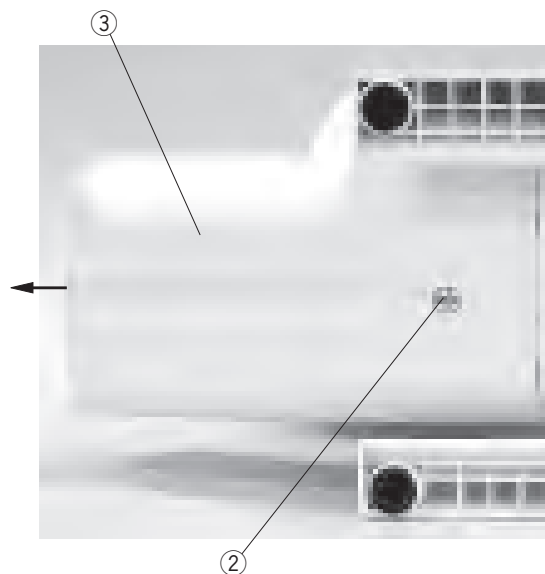
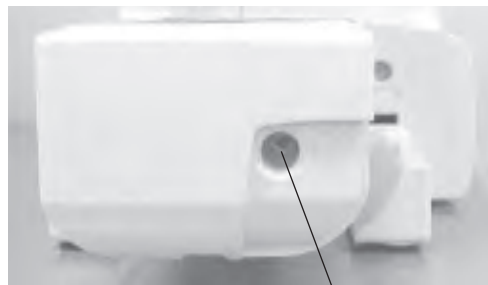
FREE-ARM COVER

TO REMOVE:

1. LOOSEN THE SETSCREW ① AND ②. MOVE THE FREE-ARM COVER ③ TO THE LEFT. REMOVE THE FREE-ARM COVER.

TO ATTACH:

FOLLOW THE ABOVE PROCEDURES IN REVERSE.



CHANGING EXTERNAL PARTS

FRONT COVER (1)

TO REMOVE:

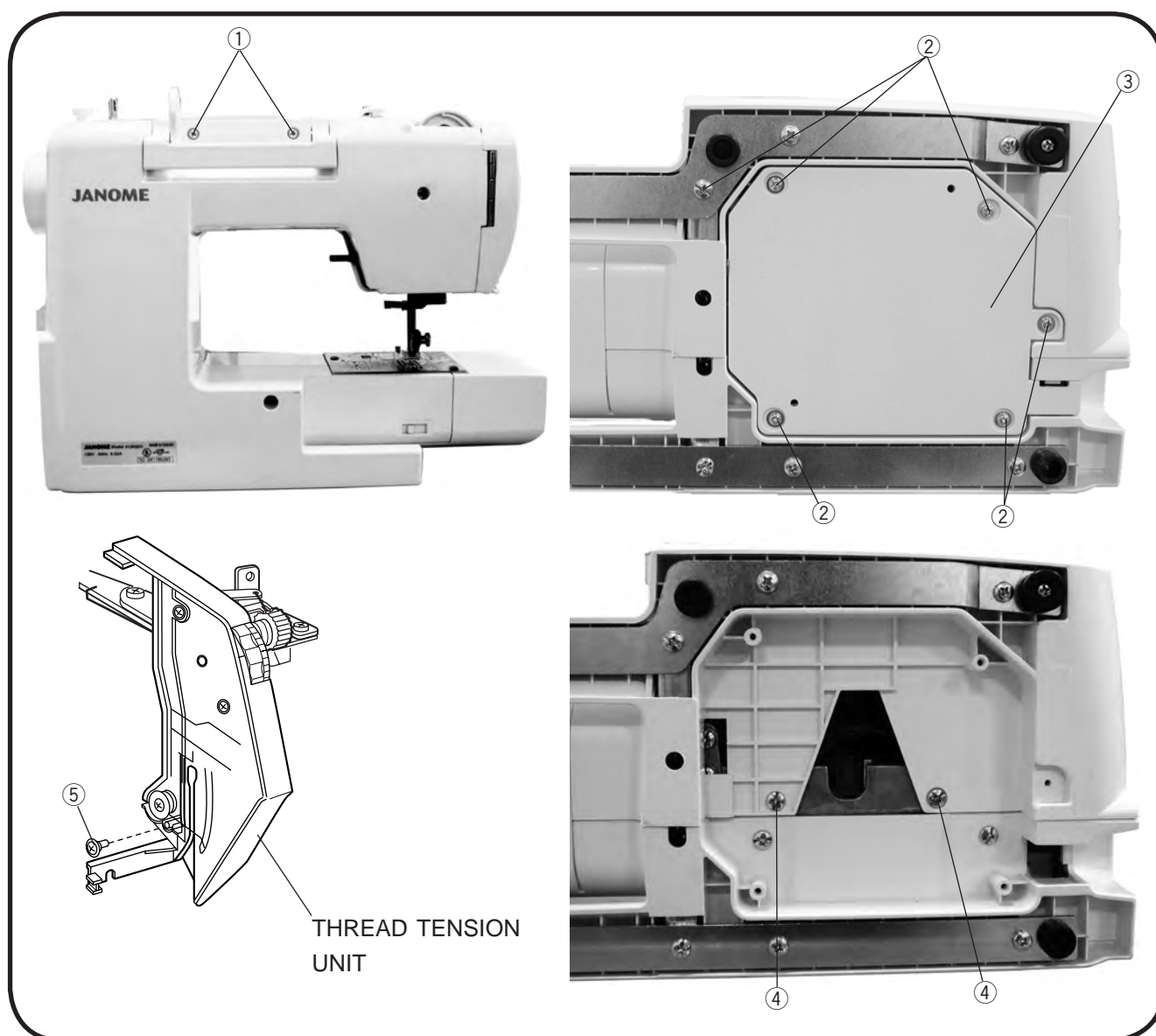
1. REMOVE THE FACE COVER AND FREE-ARM COVER (SEE PAGE 8 AND 9).
2. REMOVE THE SETSCREWS (A) ① (2 PCS.).
3. REMOVE THE SETSCREWS (B) ② (6 PCS.), BACK COVER ③.
4. REMOVE THE SETSCREWS (C) ④ (2 PCS.).
5. LOOSEN THE SETSCREW ⑤.
6. DISCONNECT ALL THE CONNECTORS FROM THE CIRCUIT BOARD A.

NOTE:

DO NOT DISCONNECT THE CONNECTORS BY PULLING ON CORD.
TO DISCONNECT, GRASP THE CONNECTOR, NOT THE CORD.

TO ATTACH:

7. FOLLOW THE ABOVE PROCEDURES IN REVERSE.



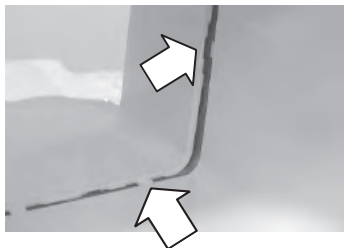
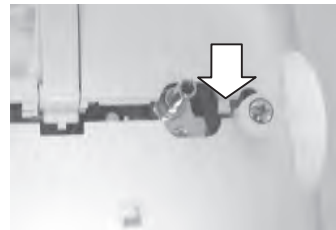
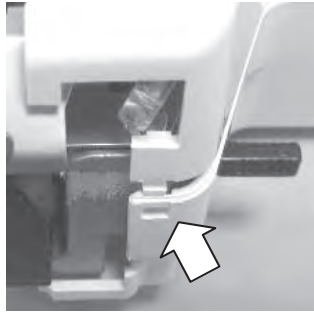
CHANGING EXTERNAL PARTS

FRONT COVER (2)

1. DISENGAGE THE FRONT COVER AND REAR COVER HOOKS.
2. REMOVE THE FRONT COVER.

TO ATTACH:

FOLLOW THE ABOVE PROCEDURES IN REVERSE.



CHANGING EXTERNAL PARTS

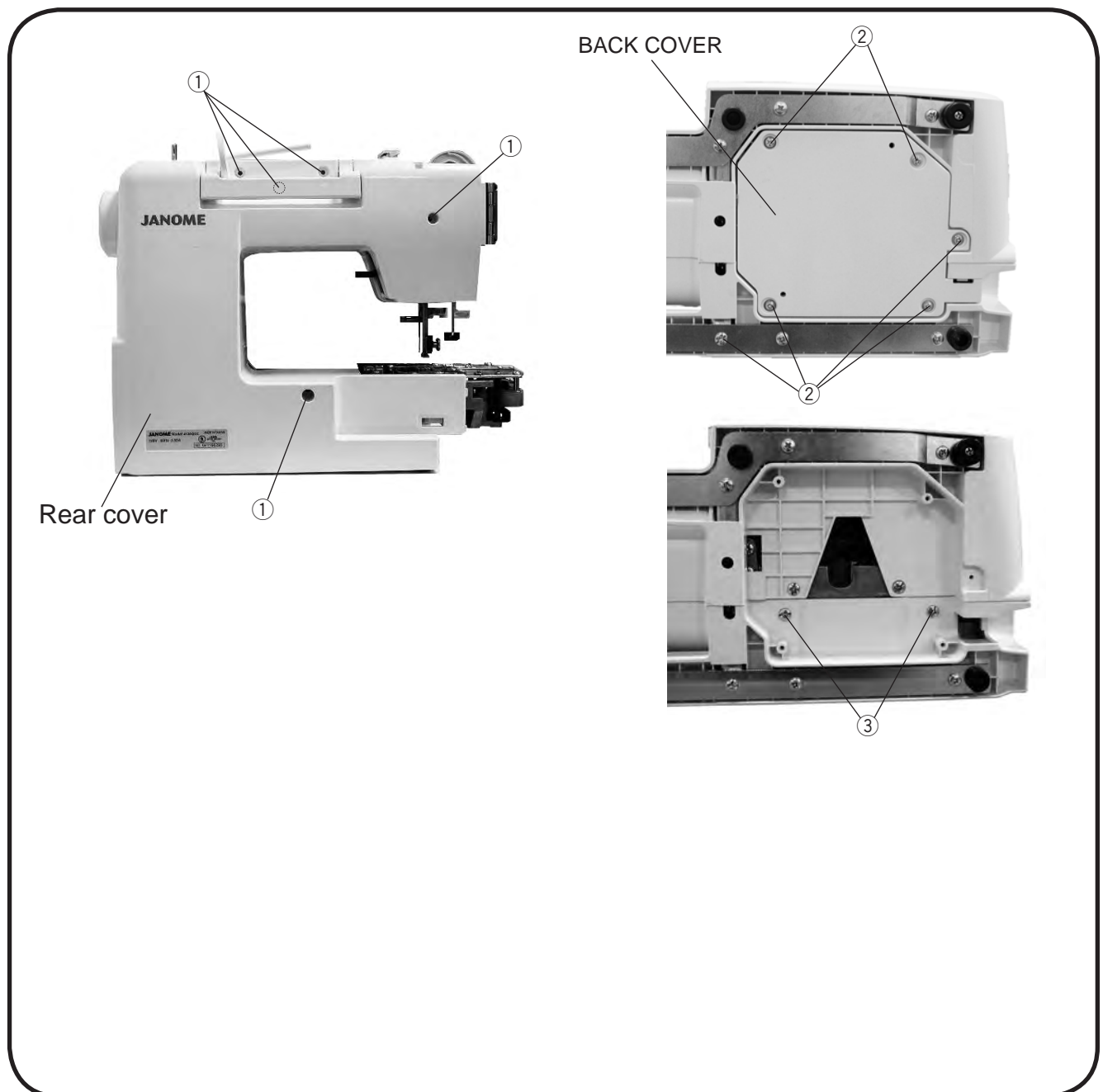
REAR COVER

TO REMOVE:

1. REMOVE THE FACE COVER AND FREE-ARM COVER (SEE PAGE 4 AND 5).
2. REMOVE THE SETSCREWS (A) ① (5 PCS.).
3. REMOVE THE SETSCREWS (B) ② (6 PCS.) AND BACK COVER.
4. REMOVE THE SETSCREWS (C) ③ (2 PCS.). REMOVE THE REAR COVER.

TO ATTACH:

5. FOLLOW THE ABOVE PROCEDURES IN REVERSE.



MECHANICAL ADJUSTMENT

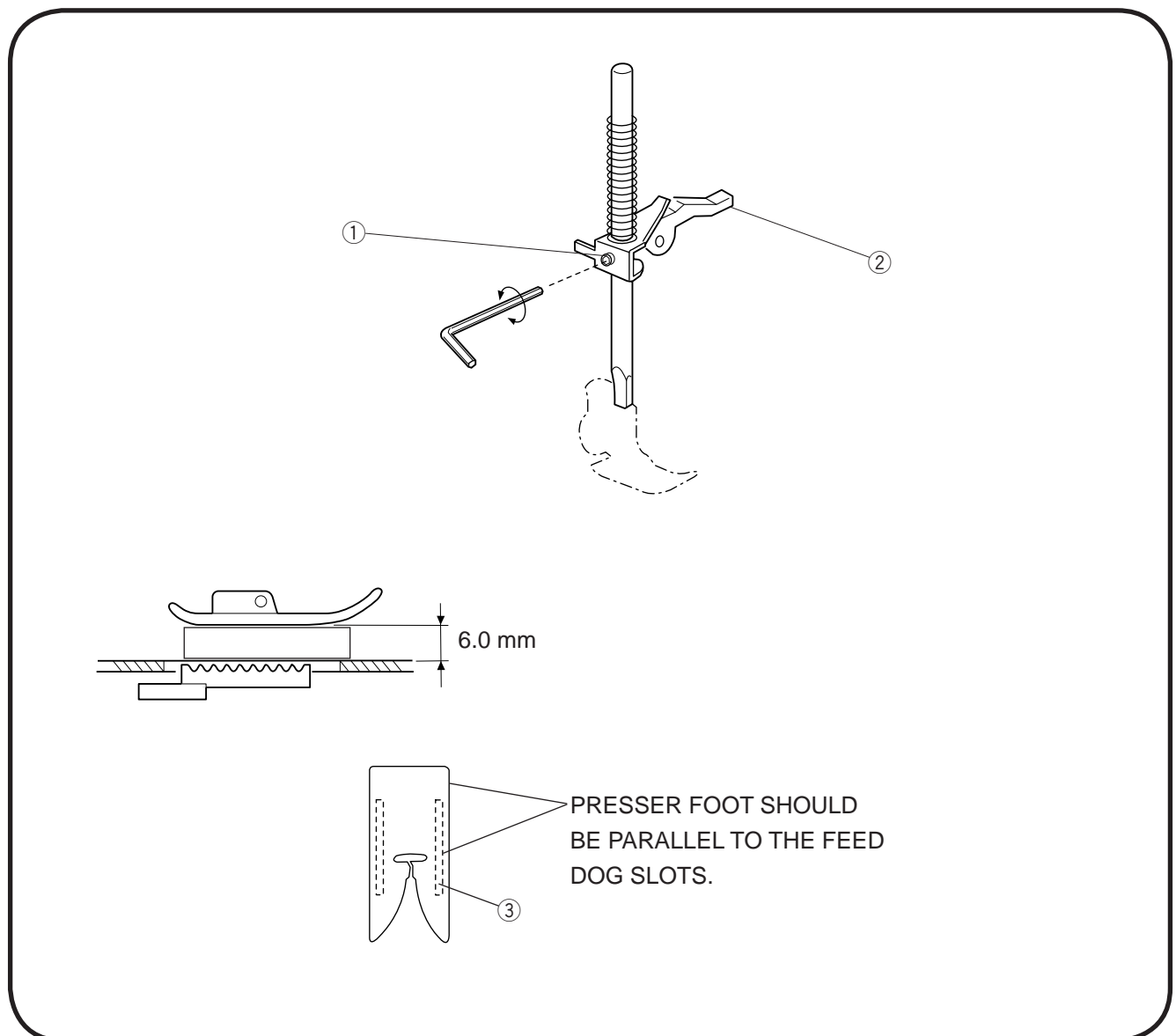
PRESSER BAR HEIGHT

THE DISTANCE BETWEEN THE BOTTOM OF THE PRESSER FOOT IN UP POSITION AND THE NEEDLE PLATE SHOULD BE 6.0 MM.

1. REMOVE THE FACE PLATE AND NEEDLE.
 2. LOWER THE FEED DOG BELOW THE NEEDLE PLATE. PLACE A BLOCK 6 MM THICK UNDER THE PRESSER FOOT AND LOWER THE PRESSER FOOT LIFTER ②.
 3. LOOSEN THE SETSCREW ①. RAISE THE PRESSER FOOT LIFTER AND TIGHTEN THE SETSCREW ① FIRMLY.
- ATTACH THE NEEDLE AND FACE PLATE.

NOTE:

MAKE SURE THAT THE PRESSER FOOT SHOULD BE PARALLEL TO THE FEED DOG SLOTS ③ IN THE NEEDLE PLATE.



MECHANICAL ADJUSTMENT

NEEDLE DROP POSITION

SET THE STITCH PATTERN TO “ $\frac{1}{2}$ ”. THE STANDARD NEEDLE DROP POSITION SHOULD BE AT CENTER OF THE NEEDLE PLATE HOLE ①. SELECT ZIGZAG STITCH “ $\frac{3}{4}$ ”, AND SET THE STITCH WIDTH AT “5.0”. THE CLEARANCE BETWEEN THE NEEDLE AND THE EDGE OF THE NEEDLE HOLE SHOULD BE AT LEAST 0.2 MM ON EITHER SIDE. IF NOT, ADJUST AS FOLLOWS:

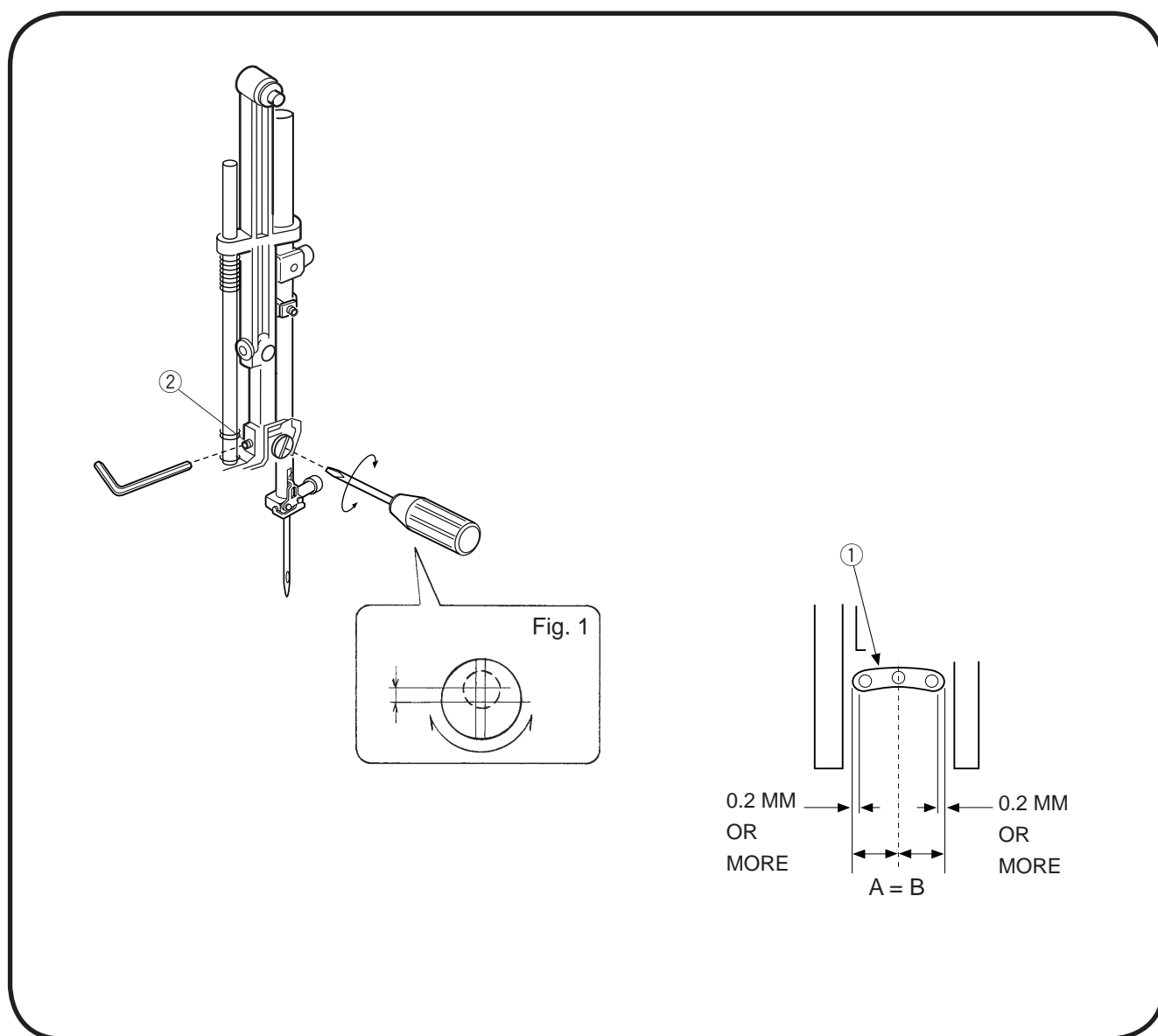
1. TURN THE POWER SWITCH OFF. REMOVE THE FACE COVER. (SEE PAGE 4.)
2. LOOSEN THE HEXAGONAL SOCKET SCREW 3 X 4 ②. ADJUST THE NEEDLE DROP POSITION BY TURNING THE ECCENTRIC PIN.

THE DIRECTION OF ECCENTRIC PIN SHOULD BE AS SHOWN IN FIG. 1.

3. ATTACH THE FACE COVER.


NOTE:


CHECK THE HOOK TIMING AFTER THIS ADJUSTMENT.

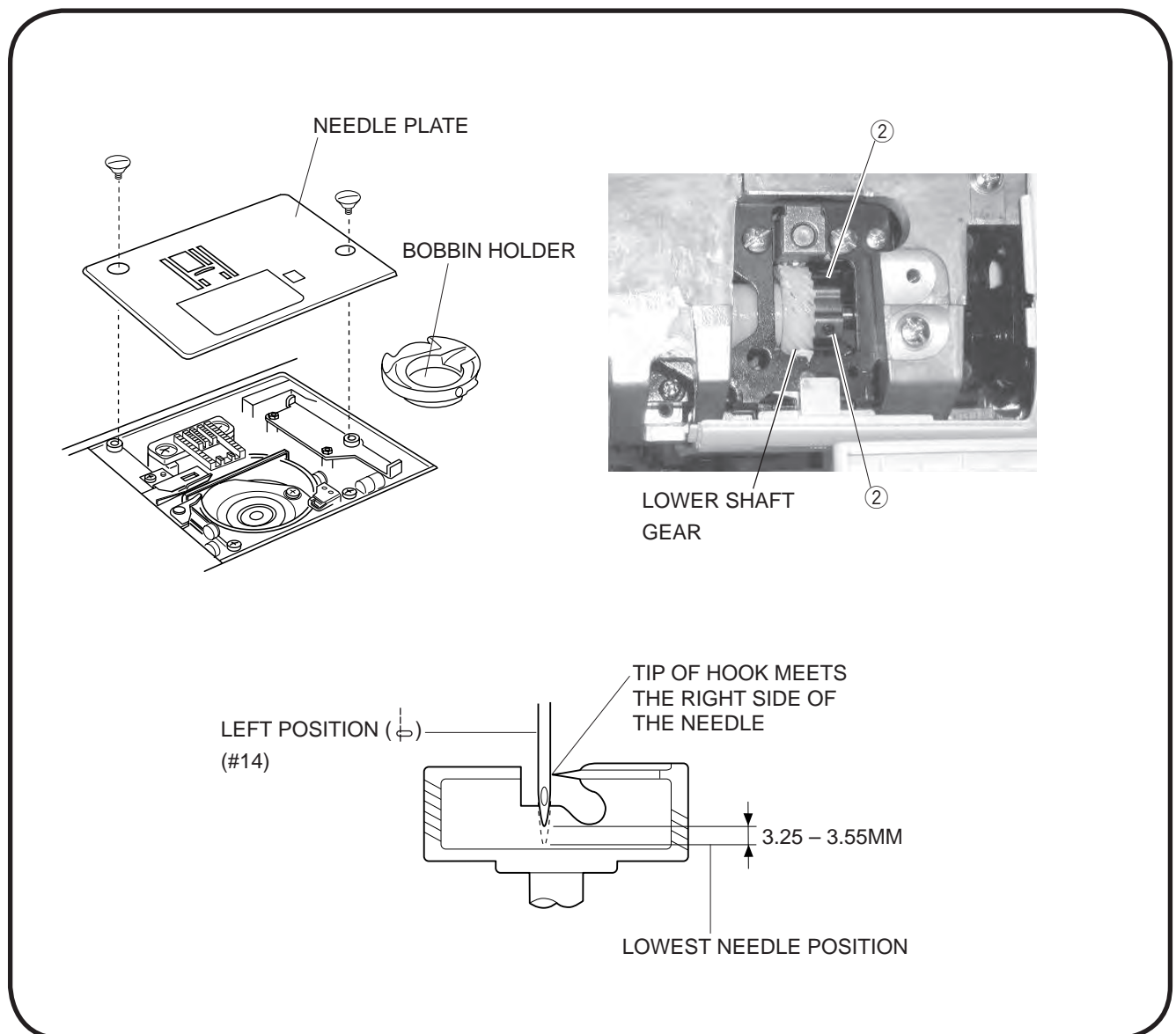


MECHANICAL ADJUSTMENT

ADJUSTMENT OF HOOK TIMING

THE AMOUNT OF ASCENDING TRAVEL OF THE NEEDLE BAR FROM ITS LOWEST POSITION TO THE POSITION () WHERE THE TIP OF THE ROTARY HOOK EXACTLY MEETS THE RIGHT SIDE OF THE NEEDLE SHOULD BE 3.25 TO 3.55 MM.

1. REMOVE THE NEEDLE PLATE AND BOBBIN HOLDER.
2. TURN THE POWER SWITCH ON.
3. SELECT THE PATTERN  (LEFT POSITION), SET THE ZIGZAG WIDTH AT 0.
4. REMOVE THE FREE-ARM COVER.
- TURN THE HANDWHEEL TOWARD YOU TO LOWER THE NEEDLE AT ITS LOWEST POSITION.
5. LOOSEN THE HEXAGONAL SOCKET SCREW ② (2 PCS.).
6. MOVE THE NEEDLE BAR 3.4 MM FROM THE LOWEST POSITION.
7. TURN THE LOWER SHAFT GEAR UNTIL THE TIP OF HOOK MEETS THE RIGHT SIDE OF THE NEEDLE WHILE HOLDING THE HANDWHEEL.
8. TIGHTEN THE HEXAGONAL SOCKET SCREW ② (2 PCS.).
9. ATTACH THE FREE-ARM COVER, BOBBIN HOLDER AND NEEDLE PLATE.

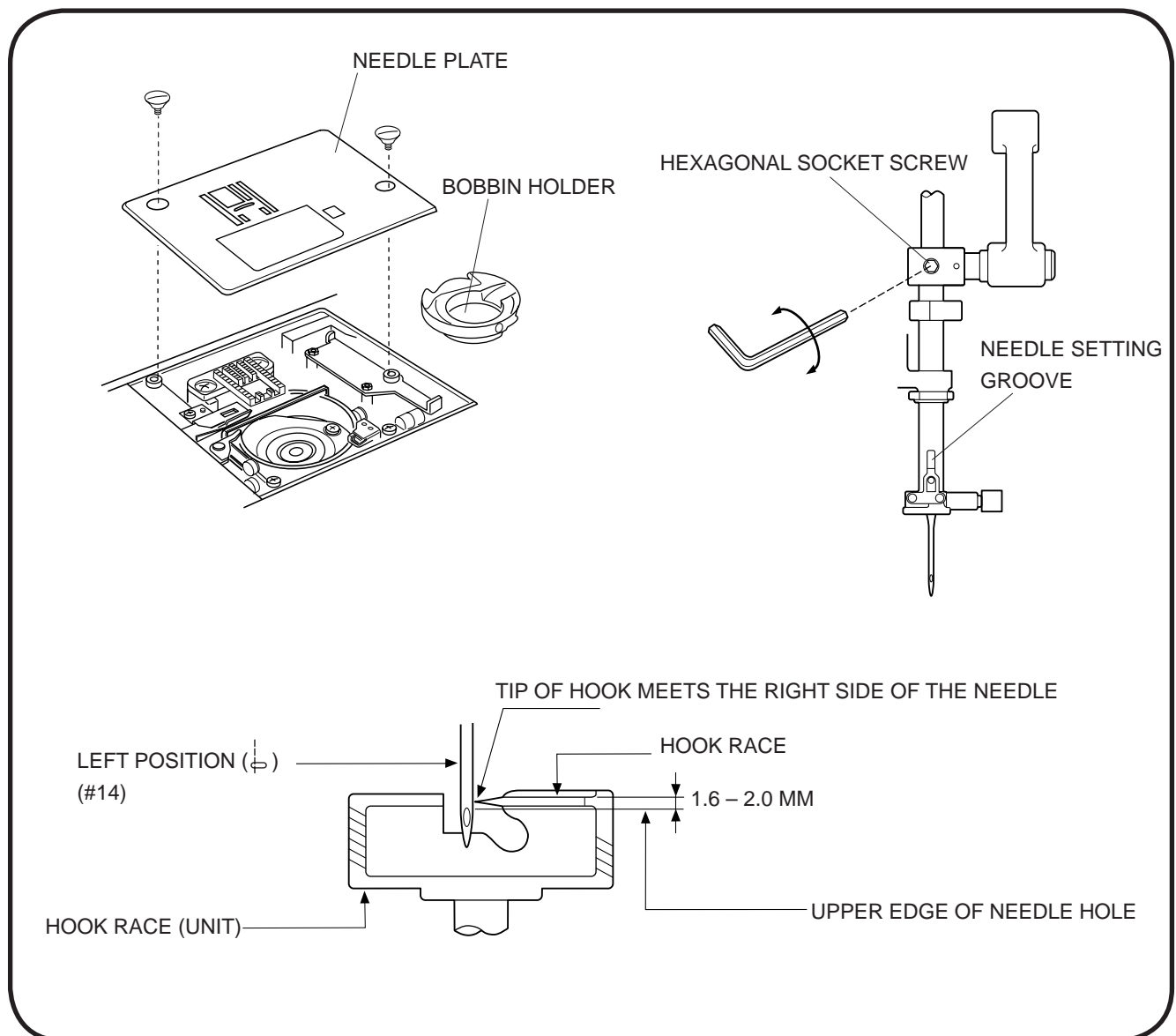


MECHANICAL ADJUSTMENT

ADJUSTMENT OF NEEDLE BAR HEIGHT

BEFORE PROCEEDING WITH THIS ADJUSTMENT, CHECK THE HOOK TIMING (REFER TO PAGE 11). THE DISTANCE BETWEEN THE UPPER EDGE OF THE NEEDLE EYE AND THE TIP OF THE HOOK SHOULD BE IN THE RANGE OF 1.6 TO 2.0 MM WHEN THE TIP OF THE HOOK TIMING MEETS RIGHT SIDE OF THE NEEDLE IN THE LEFT NEEDLE POSITION (⌒) AS THE NEEDLE ASCENDS FROM ITS LOWEST POSITION.

1. REMOVE THE NEEDLE PLATE, BOBBIN HOLDER AND FACE PLATE.
2. TURN THE POWER SWITCH ON.
3. SELECT THE PATTERN ⌒ (LEFT POSITION). SET THE ZIGZAG WIDTH AT 0.
4. TURN THE HANDWHEEL TOWARD YOU UNTIL THE TIP OF HOOK MEETS THE RIGHT SIDE OF THE NEEDLE.
5. LOOSEN THE HEXAGONAL SOCKET SCREW ①.
6. MOVE THE NEEDLE BAR TO ADJUST THE NEEDLE BAR HEIGHT, AND TIGHTEN THE HEXAGONAL SOCKET SCREW ①.
BE CAREFUL NOT TO TURN THE NEEDLE BAR.
7. ATTACH THE BOBBIN HOLDER, NEEDLE PLATE AND FACE COVER.



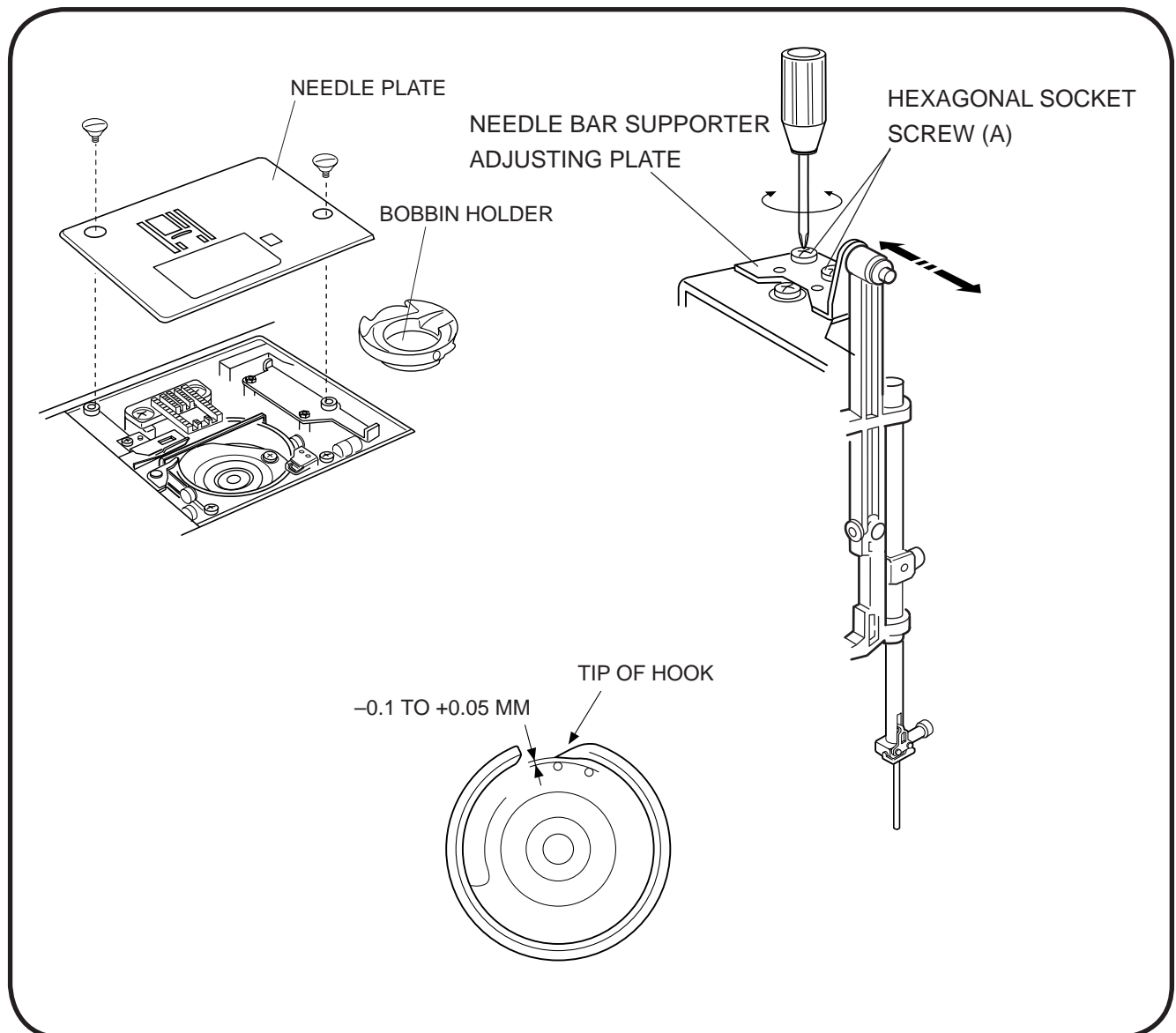
MECHANICAL ADJUSTMENT

CLEARANCE BETWEEN NEEDLE AND TIP OF THE ROTARY HOOK

* THE CLEARANCE BETWEEN THE NEEDLE AND THE POINT OF HOOK SHOULD BE -0.1 TO $+0.05$ MM.

ADJUSTMENT PROCEDURE:

1. REMOVE THE NEEDLE PLATE AND BOBBIN HOLDER. ATTACH THE MASTER NEEDLE. TURN THE POWER SWITCH ON AND SET THE ZIGZAG WIDTH AT MAXIMUM.
2. REMOVE THE FACE COVER.
3. LOOSEN THE SETSCREW A (2 PCS.).
4. TURN THE HANDWHEEL TOWARD YOU. ADJUST THE CLEARANCE BETWEEN THE NEEDLE AND THE TIP OF THE ROTARY HOOK, BY MOVING THE HOOK BASE PLATE UP OR DOWN, TO WITHIN -0.1 TO $+0.05$ MM AT THE LEFT AND RIGHT NEEDLE POSITION.
5. TIGHTEN THE SETSCREW A (2 PCS.).
6. ATTACH THE FACE COVER. REMOVE THE MASTER NEEDLE. ATTACH THE BOBBIN HOLDER AND NEEDLE PATE.
7. CHECK THE CLEARANCE BETWEEN THE NEEDLE AND THE EDGE OF THE NEEDLE HOLE IN THE NEEDLE PLATE (SEE PAGE 10).

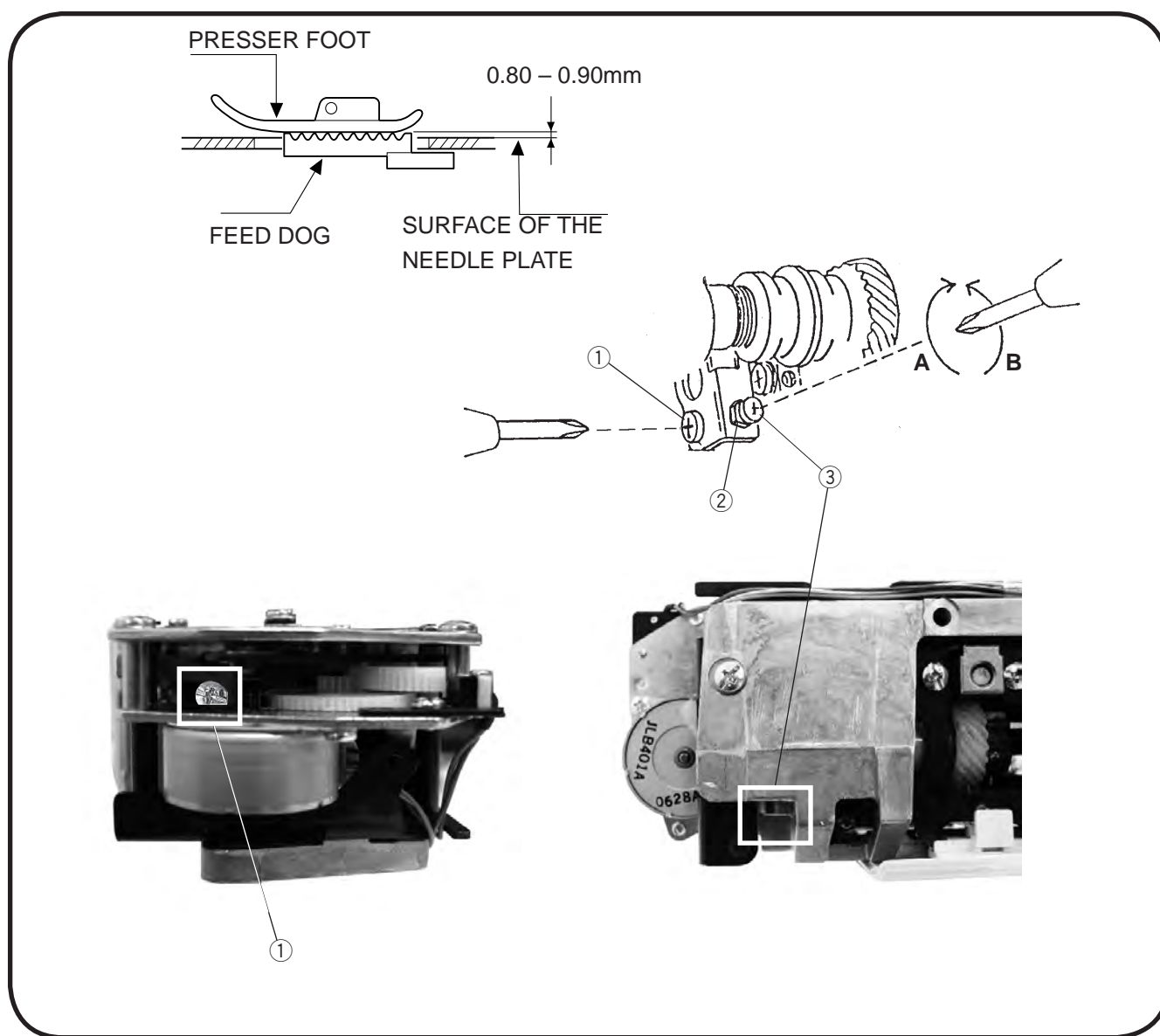


MECHANICAL ADJUSTMENT

FEED DOG HEIGHT

THE HIGHEST POSITION OF THE FEED DOG SHOULD BE BETWEEN 0.80 AND 0.90 MM FROM THE SURFACE OF THE NEEDLE PLATE.

1. LOWER THE PRESSER FOOT AND TURN THE POWER SWITCH ON.
2. TURN THE HANDWHEEL TOWARD YOU TO SET THE FEED DOG AT THE HIGHEST POSITION.
3. REMOVE THE FREE-ARM COVER.
4. LOOSEN THE SETSCREW ① AND NUT ②.
5. ADJUST THE FEED DOG HEIGHT BY TURNING THE ADJUSTING SCREW ③. THE HIGHEST POSITION OF THE FEED DOG SHOULD BE BETWEEN 0.80 AND 0.90 FROM THE SURFACE OF THE NEEDLE PLATE.
6. TIGHTEN THE NUT ② AND SETSCREW ①.
7. ATTACH THE FREE-ARM COVER.



MECHANICAL ADJUSTMENT

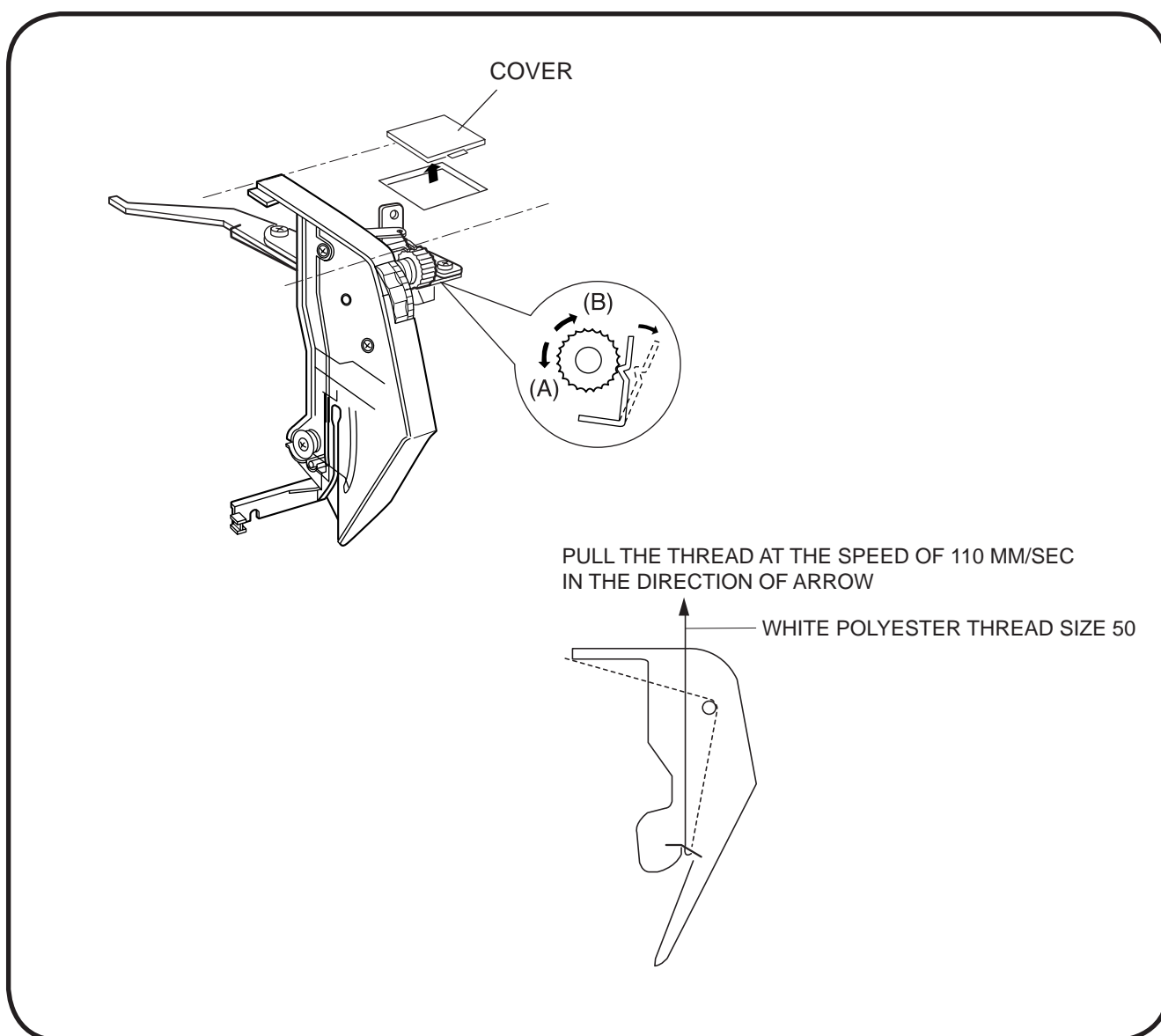
TOP TENSION

THE TOP TENSION SHOULD BE BETWEEN 65 AND 80G WHEN PULLING THE THREAD UP IN THE DIRECTION OF ARROW.

* USE POLYESTER SEWING THREAD #50 (WHITE).

* IF IT IS NOT WITHIN THE ABOVE LIMIT, ADJUST AS FOLLOWS.

1. SET THE TENSION DIAL "4".
2. REMOVE THE COVER.
3. LOWER THE PRESSER FOOT.
 - IF THE TOP TENSION IS TOO LOOSE, TURN THE LEAD SCREW IN THE DIRECTION (A).
 - IF THE TOP TENSION IS TOO TIGHT, TURN THE LEAD SCREW IN THE DIRECTION (B).
4. CHECK THE TOP TENSION AND ATTACH THE COVER.



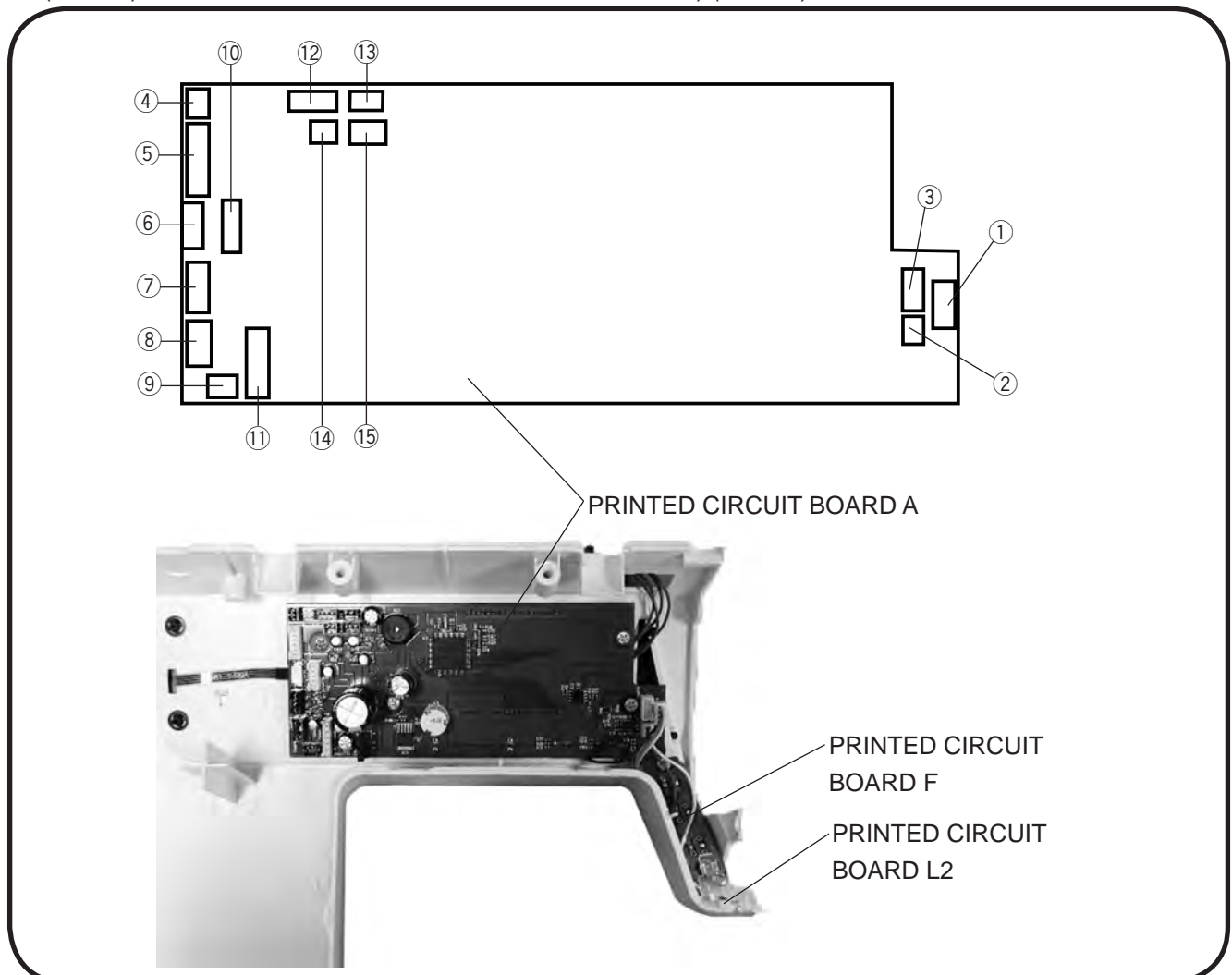
REPLACING THE ELECTRONIC COMPONENTS

CIRCUIT BOARD-A CONNECTION

NOTE:

DO NOT DISCONNECT THE CONNECTORS BY PULLING ON CORD.
TO DISCONNECT, GRASP THE CONNECTOR, NOT THE CORD.

- | | | |
|------------------------------------|---|--|
| ① PRINTED CIRCUIT BOARD F (WHITE) | ⑥ TOUCH PANEL (WHITE) | ⑭ MICRO SWITCH (PRESSER FOOT LIFETER SENSOR) (GREEN) |
| ② PRINTED CIRCUIT BOARD L2 (WHITE) | ⑦ FEED MOTOR (WHITE) | ⑮ PRINTED CIRCUIT BOARD E1 (BH SENSOR) (RED) |
| ③ PROGRAM (BLACK) | ⑧ PRINTED CIRCUIT BOARD P (BLACK) | |
| ④ BOBBIN WINDING SWITCH (BLUE) | ⑨ SWITCHING REGULATOR (BLACK) | |
| ⑤ THREAD CUTTER MOTOR (WHITE) | ⑩ POWER SWITCH (WHITE) | |
| | ⑪ DC MOTOR (WHITE) | |
| | ⑫ STITCH WIDTH MOTOR (GREEN) | |
| | ⑬ SOLENOID (THREAD TENSION RELEASE CONTROL) (BLACK) | |



SELF-DIAGNOSTIC TEST

PREPARATION:

1. TURN THE POWER SWITCH OFF.
2. MOVE THE BOBBIN WINDER SPINDLE TO THE LEFT.
3. RAISE THE FEED DOG.
4. SET THE SPEED CONTROL LEVER TO THE LEFT.
5. REMOVE THE PRESSER FOOT AND RAISE THE PRESSER FOOT LIFTER.
6. TURN THE HAND WHEEL TOWARD YOU TO RAISE THE NEEDLE TO ITS HIGHEST POSITION.

NOTES:

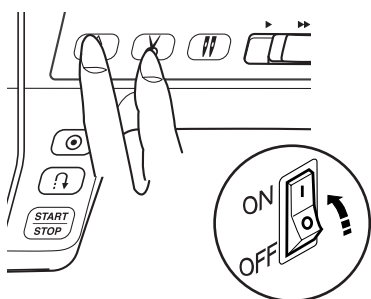
- BE CAREFUL: THE SEWING MACHINE MAY START RUNNING IN ITS OWN WHILE IN TEST MODE.
- TURN OFF THE POWER SWITCH BEFORE REPLACING ANY PARTS.
- REPEAT THE DIAGNOSTIC TEST UNTIL THE PROBLEM HAS BEEN RESOLVED.
- YOU CAN SKIP STEPS IN THE DIAGNOSTIC PROCEDURE AND GO DIRECTLY TO THE TEST YOU WANT TO PERFORM.
(ENTER SELF-DIAGNOSTIC MODE, THEN SELECT THE STEP NUMBER OF THE DIAGNOSTIC TEST YOU REQUIRE BY PRESSING THE REVERSE STITCH BUTTON)

TO BEGIN:

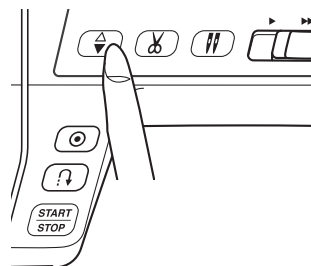
TURN ON THE SWITCH. IF ANY OF THE FOLLOWING PROBLEMS OCCUR, TAKE THE RECOMMENDED ACTIONS IN THE ORDER THEY ARE SHOWN.

1. THE MACHINE DOES NOT RESPOND WHEN THE POWER SWITCH IS TURNED ON:
 - CHECK EACH CONNECTOR CONNECTION
 - REPLACE THE MACHINE SOCKET
 - REPLACE THE SWITCHING REGULATOR
 - REPLACE THE A-BOARD
2. THE SEWING MACHINE LAMP DOES NOT LIGHT UP:
 - REPLACE THE LIGHT BULB
 - REPLACE THE A-BOARD

TO ENTER SELF-DIAGNOSTIC MODE:


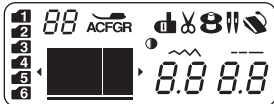
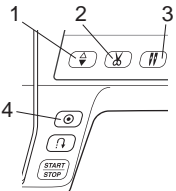

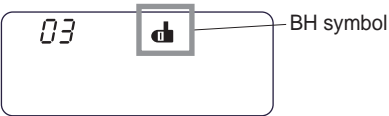
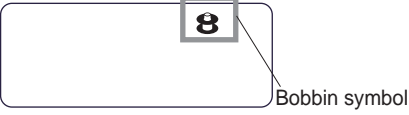


TURN THE POWER SWITCH ON WHILE SIMULTANEOUSLY PRESSING NEEDLE UP/DOWN BUTTON AND THREAD CUTTER BUTTON.

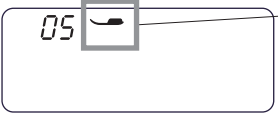
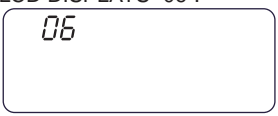






PRESS THE NEEDLE UP/DOWN BUTTON WITHIN THE 1.5 SECONDS TO ENTER THE SELF-DIAGNOSTIC MODE. THE LCD WILL INDICATE "----".






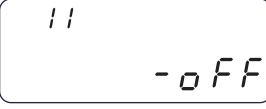
SELF-DIAGNOSTIC TEST

STEP AND ITEMS TO CHECK	PROCEDURE	CORRECT CONDITION	DEFECTIVE CONDITION
01) FUNCTION OF LCD, BUZZER AND LAMP	<p>TURN ON THE POWER SWITCH WHILE SIMULTANEOUSLY PRESSING THE NEEDLE UP/DOWN BUTTON AND THREAD CUTTER BUTTON.</p> <p>PRESS THE NEEDLE UP/DOWN BUTTON WITHIN THE 1.5 SECONDS TO ENTER THE SELF-DIAGNOSTIC MODE.</p> <p>PRESS "1" BUTTON.</p> <p>IF THE RESULT IS CORRECT CONDITION, PRESS THE START/STOP BUTTON TO PROCEED THE NEXT STEP.</p> <p>IF THE RESULT IS DEFECTIVE CONDITION, PRESS THE REVERSE STITCH BUTTON TO PROCEED THE NEXT STEP.</p>	<p>SEWING LAMP AND LCD BACKLIGHT LIT. LCD DISPLAYS "----".</p>  <p>BUZZER SOUNDS. LCD DISPLAYS SYMBOLS AND NUMBERS AND BLINKS.</p> 	<p>SEWING LAMP DOES NOT LIT. LCD BACKLIGHT DOES NOT LIT. LCD DOES NOT DISPLAY. BUZZER DOES NOT SOUND. LCD DOES NOT TURNED ON. LCD DOES NOT DISPLAY ANY SYMBOLS OR NOT IN ORDER.</p> <p>-REMEDY- REPLACE THE CIRCUIT BOARD A. REPLACE THE MACHINE LAMP. REPLACE THE TOUCH PANEL. REPLACE THE CIRCUIT BOARD F2.</p>
02) BUTTON	 <p>PRESS BUTTONS 1- 4.</p> <p>IF THE RESULT IS CORRECT CONDITION, PRESS THE START/STOP BUTTON TO PROCEED THE NEXT STEP.</p> <p>IF THE RESULT IS DEFECTIVE CONDITION, PRESS THE REVERSE STITCH BUTTON TO PROCEED THE NEXT STEP.</p>	<p>LCD DISPLAYS "02".</p> <p>BUZZER SOUNDS WHEN BUTTON IS PRESSED. BUTTON NUMBER IS DISPLAYED WHEN THE BUTTON IS PRESSED.</p>  <p>LCD DISPLAYS "S1" WHEN BUTTON 1 IS PRESSED. LCD DISPLAYS "S2" WHEN BUTTON 2 IS PRESSED. LCD DISPLAYS "S3" WHEN BUTTON 3 IS PRESSED. LCD DISPLAYS "F1" WHEN BUTTON 4 IS PRESSED.</p>	<p>BUZZER DOES NOT SOUND. LCD DOES NOT DISPLAY THE NUMBER CORRECTLY.</p> <p>-REMEDY- REPLACE THE CIRCUIT BOARD A. REPLACE THE CIRCUIT BOARD F2.</p>
03) BUTTONHOLE SENSOR	<p>LOWER THE BUTTONHOLE LEVER. MOVE THE BUTTONHOLE LEVER BACK AND FORTH.</p> <p>IF THE RESULT IS CORRECT CONDITION, PRESS THE START/STOP BUTTON TO PROCEED THE NEXT STEP.</p> <p>IF THE RESULT IS DEFECTIVE CONDITION, PRESS THE REVERSE STITCH BUTTON TO PROCEED THE NEXT STEP.</p>	<p>LCD DISPLAYS "03".</p> <p>WHEN THE BUTTONHOLE LEVER IS PULLED, BUZZER SOUNDS AND LCD DISPLAYS BH SYMBOL.</p>  <p>WHEN THE BUTTONHOLE LEVER IS PUSHED, BUZZER SOUNDS AND LCD DISPLAYS BH SYMBOL.</p>	<p>BUZZER DOES NOT SOUND. BH SYMBOL DOES NOT APPEAR.</p> <p>-REMEDY- ADJUST THE BH LEVER SENSOR POSITION. REPLACE THE BH LEVER SENSOR. REPLACE THE CIRCUIT BOARD A.</p>
04) BOBBIN WINDER SWITCH	<p>MOVE THE BOBBIN WINDER SPINDLE TO THE RIGHT.</p> <p>RETURN IT TO THE LEFT.</p> <p>IF THE RESULT IS CORRECT CONDITION, PRESS THE START/STOP BUTTON TO PROCEED THE NEXT STEP.</p> <p>IF THE RESULT IS DEFECTIVE CONDITION, PRESS THE REVERSE STITCH BUTTON TO PROCEED THE NEXT STEP.</p>	<p>LCD DISPLAYS "04".</p> <p>WHEN THE BOBBIN WINDER SPINDLE IS MOVED TO THE RIGHT, BUZZER SOUNDS AND LCD DISPLAYS THE BOBBIN SYMBOL.</p> <p>WHEN THE BOBBIN WINDER SPINDLE IS MOVED TO THE LEFT, BUZZER SOUNDS AND LCD DISPLAYS "04".</p> 	<p>BUZZER DOES NOT SOUND. BOBBIN SYMBOL IS NOT DISPLAYED.</p> <p>-REMEDY- ADJUST THE BOBBIN WINDER SWITCH POSITION. REPLACE THE BOBBIN WINDER SWITCH. REPLACE THE CIRCUIT BOARD A.</p>

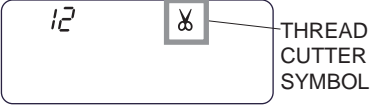
SELF-DIAGNOSTIC TEST

STEP AND ITEMS TO CHECK	PROCEDURE	CORRECT CONDITION	DEFECTIVE CONDITION
<p>05) PRESSER FOOT LIFTER SWITCH</p>	<p>MOVE THE PRESSER FOOT LIFTER UP AND DOWN.</p> <p>IF THE RESULT IS CORRECT CONDITION, PRESS THE START/STOP BUTTON TO PROCEED THE NEXT STEP.</p> <p>IF THE RESULT IS DEFECTIVE CONDITION, PRESS THE REVERSE STITCH BUTTON TO PROCEED THE NEXT STEP.</p>	<p>LCD DISPLAYS "05".</p> <p>WHEN THE PRESSER FOOT LIFER IS LOWERED, BUZZER SOUNDS AND LCD DISPLAYS PRESSER FOOT SYMBOL.</p>  <p>Presser foot symbol</p> <p>WHEN THE BUTTONHOLE LEVER IS RAISED, BUZZER SOUNDS AND THE PRESSER FOOT SYMBOL DISAPPEARS.</p>	<p>BUZZER DOES NOT SOUND. PRESSER FOOT SYMBOL DOES NOT APPEAR.</p> <p>-REMEDY- ADJUST THE PRESSER FOOT LIFTER SWITCH POSITION. REPLACE THE PRESSER FOOT LIFTER SWITCH. REPLACE THE CIRCUIT BOARD A.</p>
<p>06) UPPER SHAFT POSITIONING SENSOR</p>	<p>TURN THE HANDWHEEL TOWARD YOU.</p> <p>LOWER THE NEEDLE BAR FROM ITS HIGHEST TO ITS LOWEST POSITION.</p> <p>RAISE THE NEEDLE BAR FROM ITS LOWEST POSITION TO ITS HIGHEST POSITION.</p> <p>IF THE RESULT IS CORRECT CONDITION, PRESS THE START/STOP BUTTON TO PROCEED THE NEXT STEP.</p> <p>IF THE RESULT IS DEFECTIVE CONDITION, PRESS THE REVERSE STITCH BUTTON TO PROCEED THE NEXT STEP.</p>	<p>LCD DISPLAYS "06".</p>  <p>TURN THE HANDWHEEL.</p> <p>LCD DISPLAYS STITCH WIDTH SYMBOL WHEN THE NEEDLE BAR IS AT ZIGZAG PHASE.</p>  <p>STITCH WIDTH SYMBOL</p> <p>LCD DISPLAYS STITCH LENGTH SYMBOL WHEN THE NEEDLE BAR IS AT FEED PHASE.</p>  <p>STITCH LENGTH SYMBOL</p>	<p>BUZZER DOES NOT SOUND. STITCH WIDTH OR LENGTH SYMBOL DOES NOT APPEAR.</p> <p>-REMEDY- REPLACE THE CIRCUIT BOARD A. REPLACE THE CIRCUIT BOARD P.</p>
<p>07) ZIGZAG MOTOR (STEP MOTOR) AND FEED MOTOR</p>	<p>TURN THE HANDWHEEL TOWARD YOU.</p> <p>LOWER THE NEEDLE BAR ITS HIGHEST TO POSITION (ZIGZAG PHASE) .</p> <p>PRESS THE NEEDLE UP/DOWN BUTTON.</p> <p>RAISE THE NEEDLE BAR FROM ITS LOWEST POSITION TO ITS HIGHEST POSITION (FEED PHASE). PRESS THE NEEDLE UP/DOWN BUTTON.</p> <p>IF THE RESULT IS CORRECT CONDITION, PRESS THE START/STOP BUTTON TO PROCEED THE NEXT STEP.</p> <p>IF THE RESULT IS DEFECTIVE CONDITION, PRESS THE REVERSE STITCH BUTTON TO PROCEED THE NEXT STEP.</p>	<p>LCD DISPLAYS "07".</p>  <p>STITCH WIDTH SYMBOL</p> <p>PRESS THE NEEDLE UP/DOWN BUTTON WHEN LCD DISPLAYS STITCH WIDTH SYMBOL.</p> <p>THE ZIGZAG MOTOR WILL BE INITIALIZED AND GET ITS DEFAULT POSITION.</p>  <p>STITCH LENGTH SYMBOL</p> <p>PRESS THE NEEDLE UP/DOWN BUTTON WHEN LCD DISPLAYS STITCH LENGTH SYMBOL.</p> <p>THE FEED MOTOR WILL BE INITIALIZED AND GET ITS DEFAULT POSITION.</p>	<p>ZIGZAG MOTOR DOES NOT GET DEFAULT POSITION. BUZZER DOES NOT SOUND.</p> <p>-REMEDY- REPLACE THE ZIGZAG MOTOR. REPLACE THE CIRCUIT BOARD A.</p> <p>FEED MOTOR DOES NOT GET DEFAULT POSITION. BUZZER DOES NOT SOUND.</p> <p>-REMEDY- REPLACE THE FEED MOTOR. REPLACE THE CIRCUIT BOARD A.</p>

SELF-DIAGNOSTIC TEST

STEP AND ITEMS TO CHECK	PROCEDURE	CORRECT CONDITION	DEFECTIVE CONDITION
08) FOOT CONTROL	ATTACH THE FOOT CONTROL TO THE MACHINE. DEPRESS THE FOOT CONTROL AS FAR AS IT GOES, THEN RELEASE IT. IF THE RESULT IS CORRECT CONDITION, PRESS THE START/STOP BUTTON TO PROCEED THE NEXT STEP. IF THE RESULT IS DEFECTIVE CONDITION, PRESS THE REVERSE STITCH BUTTON TO PROCEED THE NEXT STEP.	LCD DISPLAYS "08".  THE FOOT CONTROL SYMBOL APPEARS WHEN THE FOOT CONTROL IS ATTACHED.  -FOOT CONTROL SYMBOL BUZZER SOUNDS WHEN THE FOOT CONTROL IS DEEPLY DEPRESSED. BUZZER SOUNDS WHEN THE FOOT CONTROL IS RELEASED.	THE FOOT CONTROL SYMBOL DOES NOT APPEAR. BUZZER DOES NOT SOUND. -REMEDY- REPLACE THE FOOT CONTROL. REPLACE THE MACHINE SOCKET (FOOT CONTROL SOCKET). REPLACE THE CIRCUIT BOARD A.
09) SLIDE VOLUME	SHIFT THE SLIDE VOLUME FROM LEFT TO RIGHT, THEN RETURN TO THE LEFT. IF THE RESULT IS CORRECT CONDITION, PRESS THE START/STOP BUTTON TO PROCEED THE NEXT STEP. IF THE RESULT IS DEFECTIVE CONDITION, PRESS THE REVERSE STITCH BUTTON TO PROCEED THE NEXT STEP.	LCD DISPLAYS "09".  BUZZER SOUNDS AT RIGHTMOST OR LEFTMOST POSITION.	BUZZER DOES NOT SOUND. -REMEDY- REPLACE THE CIRCUIT BOARD A.
10) DC MOTOR	PRESS THE NEEDLE UP/DOWN BUTTON. IF THE RESULT IS CORRECT CONDITION, PRESS THE START/STOP BUTTON TO PROCEED THE NEXT STEP. IF THE RESULT IS DEFECTIVE CONDITION, PRESS THE REVERSE STITCH BUTTON TO PROCEED THE NEXT STEP.	LCD DISPLAYS "10".  MACHINE RUNS SLOW, THEN FAST, AND THE NEEDLE BAR STOPS AT ITS HIGHEST POSITION.	THE MACHINE MOTOR DOES NOT START. THE MOTOR STOPS IMMEDIATELY. THE MOTOR RUNS UNSTABLE. -REMEDY- REPLACE THE DC MOTOR. REPLACE THE CIRCUIT BOARD A.
11) THREAD TENSION RELEASE SOLENOID	LOWER THE PRESSER FOOT. PRESS THE NEEDLE UP/DOWN BUTTON. IF THE RESULT IS CORRECT CONDITION, PRESS THE START/STOP BUTTON TO PROCEED THE NEXT STEP. IF THE RESULT IS DEFECTIVE CONDITION, PRESS THE REVERSE STITCH BUTTON TO PROCEED THE NEXT STEP.	LCD DISPLAYS "11" AND "-oFF". PRESS THE NEEDLE UP/DOWN BUTTON TO SWITCH THE SOLENOID ON OR OFF. [ON] BUZZER SOUNDS AND THE THE THREAD TENSION DISK OPENS, AND LCD DISPLAYS "--on" WHILE THE THREAD TENSION DISK OPENS. (THE THREAD TENISON DISK WILL BE CLOSED AUTOMATICALLY 5 SECONDS AFTER THE THREAD TENSION RELEASE.)  [OFF] BUZZER SOUNDS AND THE THREAD TENSION DISK CLOSSES, AND LCD DISPLAYS "-oFF". 	THE THREAD TENSION DISK DOES NOT OPEN. -REMEDY- REPLACE THE SOLENOID. REPLACE THE CIRCUIT BOARD A.

SELF-DIAGNOSTIC TEST

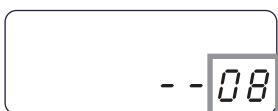
STEP AND ITEMS TO CHECK	PROCEDURE	CORRECT CONDITION	DEFECTIVE CONDITION
<p>12) THREAD CUTTER MOTOR, THREAD CUTTER SOLENOID</p>	<p>TURN THE HANDWHEEL TOWARD YOU TO RAISE THE NEEDLE BAR AT ITS HIGHEST POSITION. PRESS THE NEEDLE UP/DOWN BUTTON.</p> <p>IF THE RESULT IS CORRECT CONDITION, PRESS THE START/STOP BUTTON TO PROCEED THE NEXT STEP.</p> <p>IF THE RESULT IS DEFECTIVE CONDITION, PRESS THE REVERSE STITCH BUTTON TO PROCEED THE NEXT STEP.</p>	<p>LCD DISPLAYS "12".</p> <p>THE THREAD CUTTER SYMBOL WILL BLINK, AND THREAD CUTTER MOTOR WILL BE INITIALIZED.</p>  <p>The diagram shows a rectangular LCD display area. On the left side, the number '12' is displayed. On the right side, there is a small square icon containing a thread cutter symbol (two crossed lines forming a circle). A line points from the text 'THREAD CUTTER SYMBOL' to this icon.</p>	<p>THREAD CUTTER MOTOR DOES NOT WORK.</p> <p>THE THREAD CUTTER SYMBOL DOES NOT APPEAR WHEN THREAD CUTTER IS AT ITS INITIALIZED POSITION.</p> <p>THREAD CUTTER POSITION IS NOT INITIALIZED AND CAUTION BUZZER SOUNDS.</p> <p>-REMEDY-</p> <p>REPLACE THE THREAD CUTTER MOTOR.</p> <p>REPLACE THE THREAD CUTTER INITIALIZE SWITCH.</p> <p>REPLACE THE PRINTED CIRCUIT BOARD A.</p>

SELF-DIAGNOSTIC TEST

BUZZER SOUNDS AFTER FEW SECONDS WHEN THE SELF-DIAGNOSTIC TEST HAS BEEN FINISHED. THE TEST RESULT HAS BEEN DETERMINED.



CORRECT:
BUZZER SOUNDS AND LCD DISPLAYS "00"

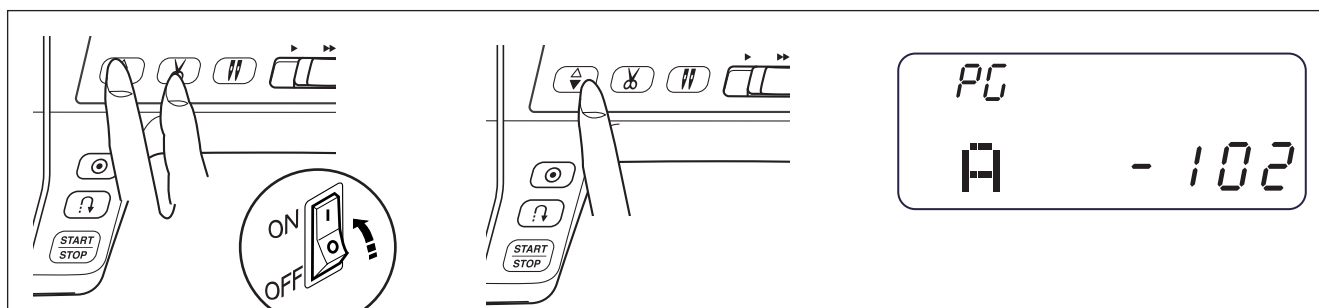


THE DEFECTIVE PART NUMBER.
SEE PAGE 23-25 "STEPS AND ITEMS" SECTION.

DEFECTIVE:
CAUTION BUZZER SOUNDS AND LCD DISPLAYS THE DEFECTIVE PART NUMBER. REFER TO PAGE 19-21 AND FIX THE DEFECTIVE PART.

TURN THE POWER SWITCH OFF WHEN THE SELF-DIAGNOSTIC TEST IS FINISHED.

TO DISPLAY THE VERSION OF THE PROGRAM



TURN THE POWER SWITCH ON WHILE SIMULTANEOUSLY PRESSING NEEDLE UP/DOWN BUTTON AND THREAD CUTTER BUTTON.

PRESS THE NEEDLE UP/DOWN BUTTON WITHIN THE 1.5 SECONDS TO ENTER THE SELF-DIAGNOSTIC MODE. THE LCD WILL INDICATE "----".

PRESS THE TOUCH PANEL "3" TO DISPLAY THE VERSION OF THE PROGRAM.

REPLACING THE ELECTRONIC COMPONENTS

CIRCUIT BOARD-A (1)

TO REMOVE:

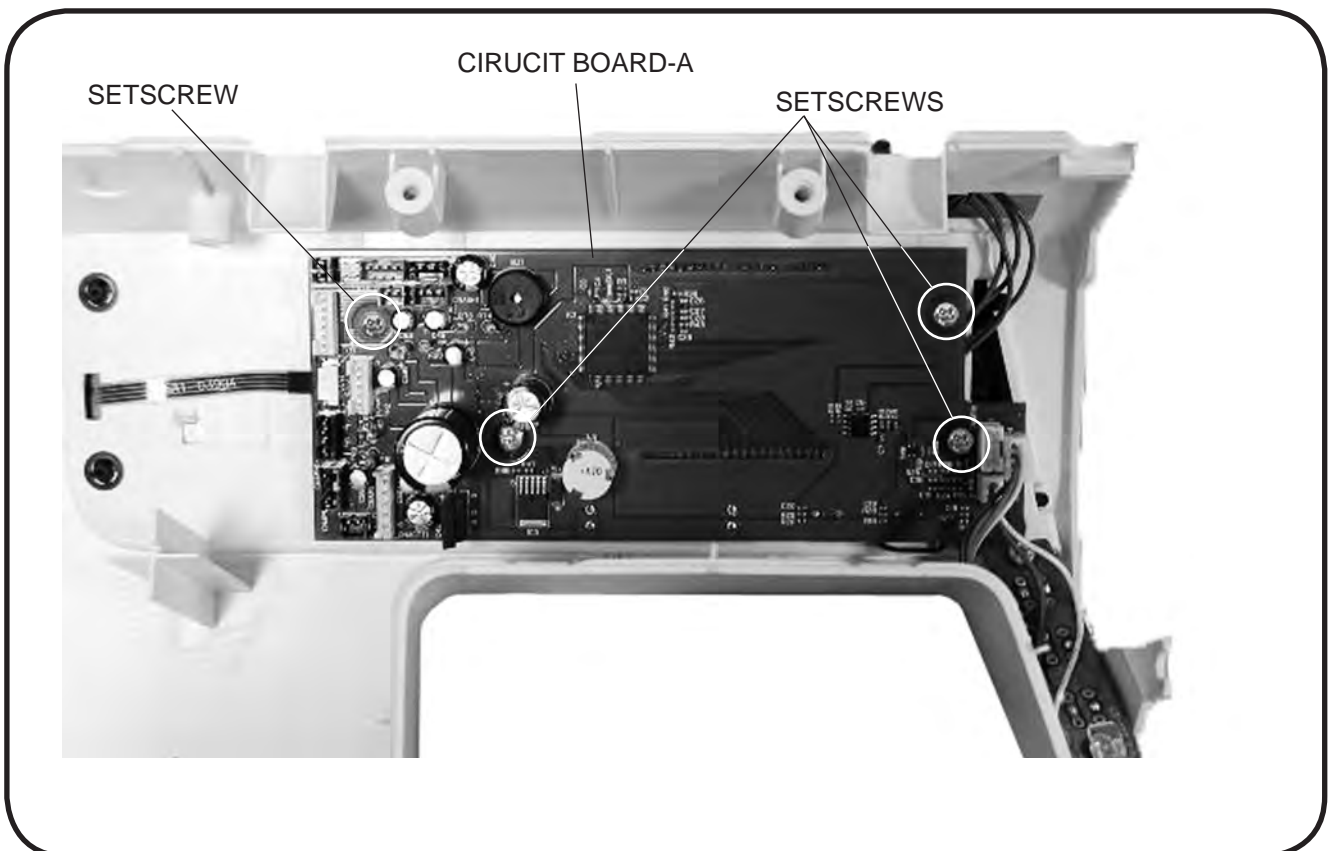
1. REMOVE THE FRONT COVER. (SEE PAGES 6 – 7)
2. PULL OUT CONNECTORS FROM THE CIRCUIT BOARD-A.
3. REMOVE THE SCREWS (4PCS.) AND THE CIRCUIT BOARD-A.

TO ATTACH:

1. FOLLOW THE ABOVE PROCEDURES IN REVERSE.

NOTE:

DO NOT DISCONNECT THE CONNECTORS BY PULLING ON CORD.
TO DISCONNECT, GRASP THE CONNECTOR, NOT THE CORD.



REPLACING THE ELECTRONIC COMPONENTS

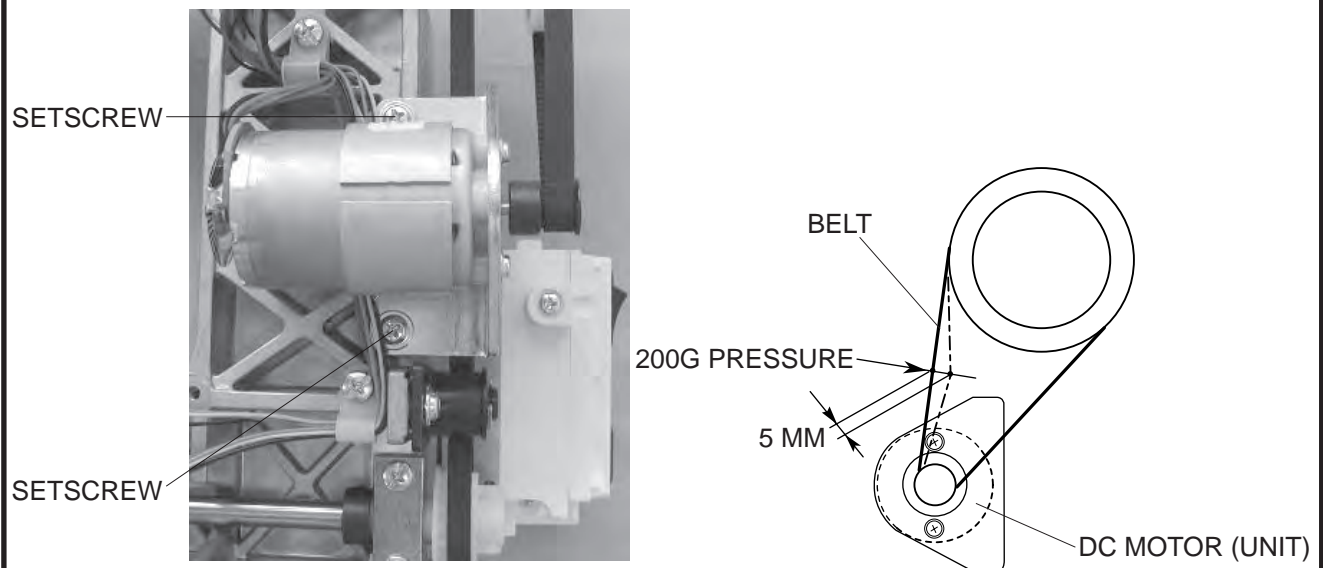
DRIVING MOTOR

TO REMOVE:

1. REMOVE THE FRONT COVER.
2. REMOVE THE SETSCREWS (2PCS.) AND THE DRIVING MOTOR AND THE BELT.

TO ATTACH:

1. INSTALL THE DRIVING MOTOR AND THE MOTOR BELT. TIGHTEN THEM WITH SETSCREWS (2PCS.) LIGHTLY.
2. MOVE THE MOTOR UP OR DOWN TO ADJUST THE MOTOR BELT TENSION. THE BELT SHOULD DEFLECT 5 MM WHEN APPLYING 200 GRAMS OF LOAD TO THE MIDDLE OF THE BELT. TIGHTEN THE SETSCREWS (2PCS.) FIRMLY.
3. ATTACH THE REAR COVER AND THE FRONT COVER.



REPLACING THE ELECTRONIC COMPONENTS

SWITCHING REGULATOR UNIT

TO REMOVE:

1. REMOVE THE FRONT COVER AND THE REAR COVER.
2. REMOVE THE SETSCREWS A (3 PCS.) AND THE SWITCHING REGULATOR.
3. REMOVE THE SETSCREWS B (4 PCS.).

TO ATTACH:

4. FOLLOW THE ABOVE PROCEDURES IN REVERSE.

SWITCHING
REGULATOR

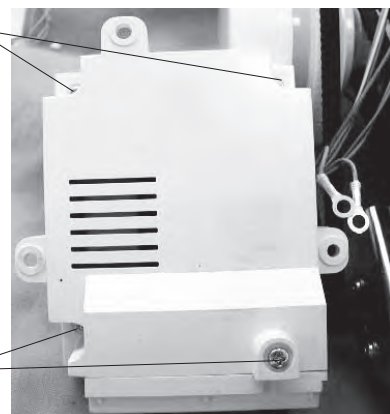
SETSCREW A

SETSCREW A

SETSCREW B



SETSCREW A



SETSCREW B

MECHANICAL ADJUSTMENT

ADJUSTING BUTTONHOLE LEVER POSITION

TO ADJUST THE BUTTONHOLE LEVER GUIDE:

1. ENTER THE DIAGNOSTIC TEST OF BUTTONHOLE SENSOR MODE. (SEE PAGE 18 AND 19. THE LCD SHOULD DISPLAY 03 AND BH SYMBOL.)
2. REMOVE THE FACE COVER (SEE PAGE 4) AND LOOSEN THE SETSCREW ①.
3. MOVE THE BUTTONHOLE LEVER GUIDE SO THE BH SYMBOL DISAPPEAR WHEN THE BUTTON HOLE LEVER ④ IS LOWERED.
TIGHTEN THE SETSCREW.

TO ADJUST THE BUTTONHOLE SENSOR POSITION.

4. ATTACH THE BUTTOHOLE FOOT (R) ③.
5. LOWER THE BUTTONHOLE LEVER ④ TO ITS LOWEST POSITION AND OPEN A 1.6 MM GAP BETWEEN THE SLIDER AND THE BUTTONHOLE FOOT.
6. TURN THE ADJUSTING SCREW ⑤ TO THE LEFT UNTIL THE LCD DISPLAY BH SYMBOL.
7. NEXT, TURN THE ADJUSTING SCREW TO THE RIGHT UNTIL THE BH SYMBOL DISAPPEARS.
8. TURN OFF THE POWER SWITCH.
9. ATTACH THE FACE COVER.

NOTE: IF THERE IS ANY LINT OR DUST IN THE BUTTONHOLE SENSOR SLIT, LOOSEN THE 2 SCREWS ⑥ AND CLEAN IT OUT WITH A SWAB.

