

SERVICE MANUAL

MODEL MC4900QC

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WHAT TO DO WHEN

CONDITION	CAUSE	HOW TO FIX	REFERENCE
1. SKIPPING STITCHES	1. NEEDLE IS NOT INSERTED PROPERLY.	INSERT THE NEEDLE PROPERLY.	P. 13 P. 12 P. 14
	2. NEEDLE IS BENT OR WORN.	CHANGE THE NEEDLE.	
	3. INCORRECTLY THREADED.	RETHREAD.	
	4. NEEDLE OR THREAD ARE INAPPROPRIATE FOR FABRIC BEING SEWN.	USE THE RECOMMENDED SEWING NEEDLE AND THREAD.	
	5. SEWING ON STRETCH FABRIC.	USE A #11 BLUE TIP NEEDLE.	
	6. PRESSER FOOT PRESSURE IS TOO WEAK.	ADJUST THE PRESSER BAR LEVEL TO MAKE THE PRESSURE STRONGER.	
	7. INAPPROPRIATE NEEDLE BAR HEIGHT.	SEE MECHANICAL ADJUSTMENT "NEEDLE BAR HEIGHT".	
	8. INAPPPROPRIATE NEEDLE TO HOOK TIMING.	SEE MECHANICAL ADJUSTMENT "NEEDLE TO HOOK TIMING".	
	9. INAPPROPRIATE NEEDLE TO HOOK CLEARANCE.	SEE MECHANICAL ADJUSTMENT "CLEARANCE BETWEEN NEEDLE AND HOOK".	
2. FABRIC NOT MOVING	1. PRESSER FOOT PRESSURE IS TOO WEAK.	ADJUST THE PRESSER BAR LEVEL TO MAKE THE PRESSURE STRONGER.	P. 16
	2. INCORRECT FEED DOG HEIGHT.	SEE MECHANICAL ADJUSTMENT "FEED DOG HEIGHT".	
	3. FEED DOG IS IN DOWN POSITION.	RAISE THE FEED DOG.	
	4. THREAD ON BOTTOM SIDE OF FABRIC IS JAMMED UP.	MAKE SURE TO BRING BOTH NEEDLE AND BOBBIN. THREAD UNDER THE FOOT WHEN STARTING SEWING.	
	5. FEED DOG TEETH ARE WORN.	CHANGE THE FEED DOG.	

CONDITION	CAUSE	HOW TO FIX	REFERENCE
3. BREAKING UPPER THREAD	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.	START WITH MEDIUM SPEED. USE THE PROPER THREAD PATH. REPLACE WITH A NEW NEEDLE. ADJUST NEEDLE THREAD TENSION CORRECTLY. USE APPROPRIATE NEEDLE FOR FABRIC AND THREAD IN USE. CHANGE THE NEEDLE. REPAIR THE HOLE OR REPLACE THE NEEDLE PLATE.	P. 18
4. BREAKING BOBBIN THREAD	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.	THREAD BOBBIN CORRECTLY. ADJUST THE POSITION OF STOPPER. CLEAN THE SHUTTLE. CHANGE TO A HIGH QUALITY SEWING THREAD. CLEAR OUT THE JAMMING THREAD.	
5. NEEDLE BREAKS	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.	SEE MECHANICAL ADJUSTMENT "NEEDLE POSITION". CHANGE THE NEEDLE. SEE MECHANICAL ADJUSTMENT "CLEARANCE BETWEEN NEEDLE AND HOOK". SEE MECHANICAL ADJUSTMENT "ZIGZAG SYNCHRONIZATION". GUIDE THE FABRIC GENTLY WHILE SEWING.	P. 11 P. 14 P. 17

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. 15
	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. 37
7. DEFORMATION PATTERN	1. INAPPROPRIATE FEED BALANCE.	SEE MECHANICAL ADJUSTMENT "STRETCH STITCH FEED BALANCE".	P. 19
	2. INAPPROPRIATE ZIGZAG SYNCHRONIZATION.	SEE MECHANICAL ADJUSTMENT "ZIGZAG SYNCHRONIZATION".	P. 17
	3. UPPER THREAD TENSION IS TOO STRONG.	SEE MECHANICAL ADJUSTMENT "NEEDLE THREAD TENSION".	P. 18

SERVICE ACCESS (1)

FACE COVER (UNIT)

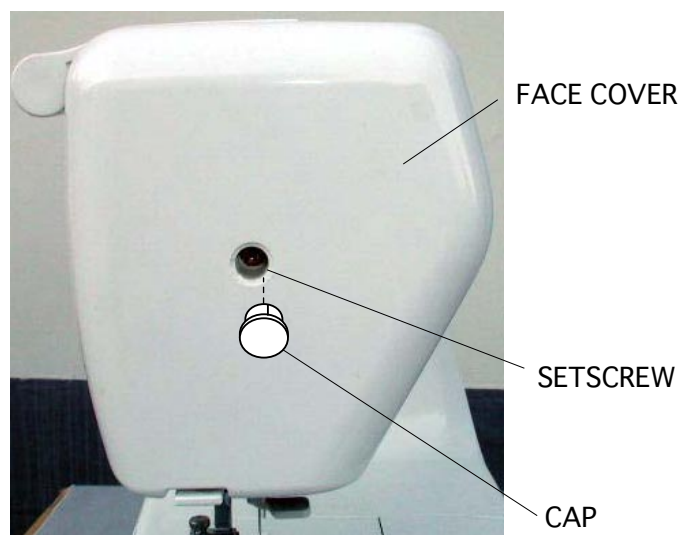
TO REMOVE:

REMOVE THE CAP AND SETSCREW.

REMOVE THE FACE COVER

TO ATTACH:

FOLLOW THE PROCEDURE ABOVE IN REVERSE.



SERVICE ACCESS (2)

TOP COVER (UNIT)

TO REMOVE:

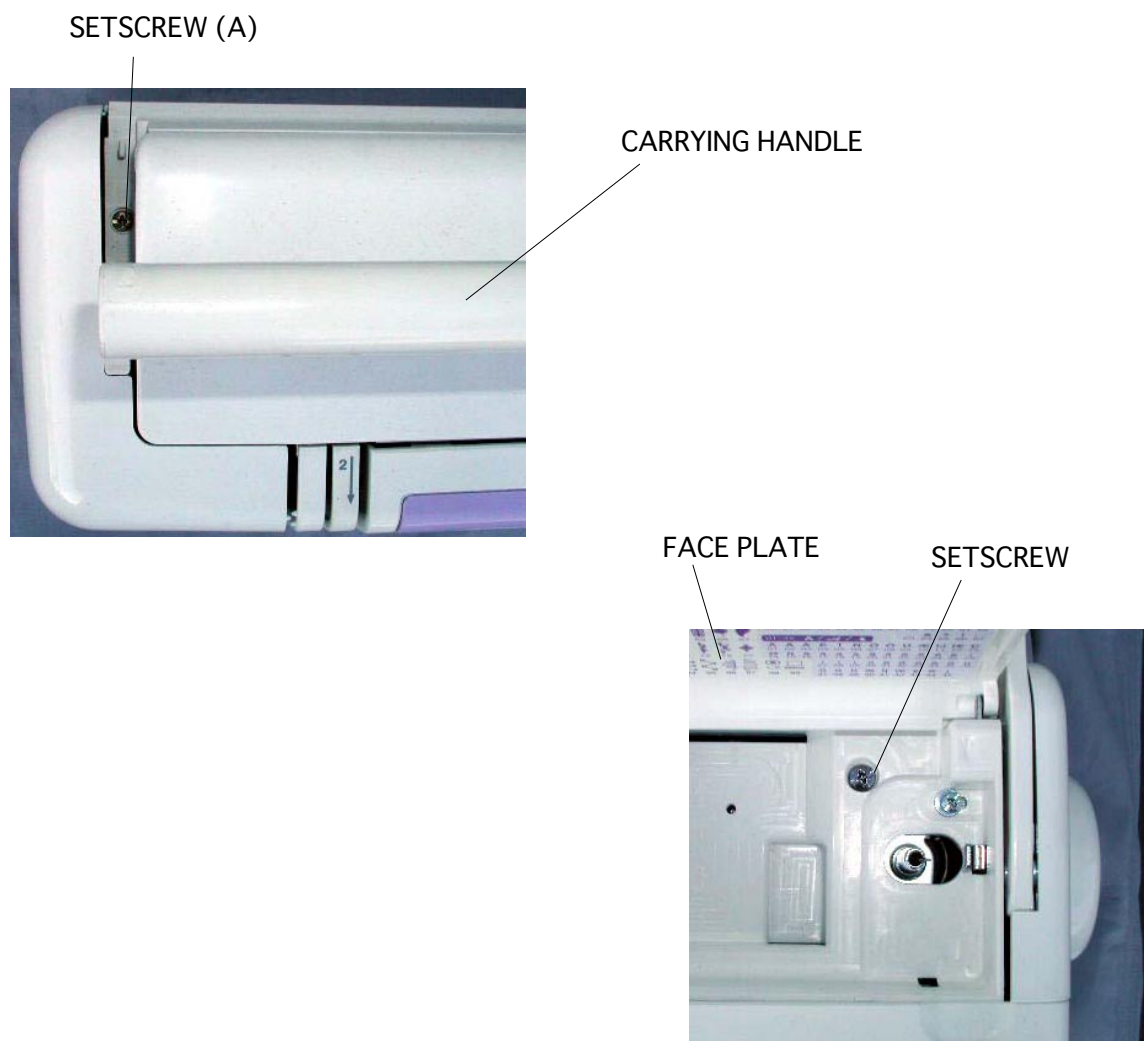
RAISE THE CARRYING HANDLE AND THE SETSCREW (A).

OPEN THE TOP COVER AND REMOVE THE SETSCREW (B).

LIFT UP THE TOP COVER AND REMOVE IT FROM THE REAR SIDE.

TO ATTACH:

FOLLOW THE PROCEDURE ABOVE IN REVERSE.



SERVICE ACCESS (3)

REPLACING THE BELT COVER

TO REMOVE:

1. RAISE THE CARRYING HANDLE AND LOOSEN THE SCREW (A).
2. LOOSEN THE SCREW (B) AND THE BELT COVER.

TO ATTACH:

FOLLOW THE PROCEDURE IN REVERSE.

SETSCREW (A)



CARRYING
HANDLE



SETSCREW (B)

SERVICE ACCESS (4)

REPLACING THE BED COVER (UNIT)

TO REMOVE:

PUSH THE DROP FEED DOG LEVER TO THE LEFT. REMOVE THE SETSCREWS (A), THEN REMOVE THE BED COVER (UNIT).

TO ATTACH:

PUSH THE DROP FEED DOG LEVER TO THE LEFT. ATTACH THE BED COVER (UNIT) AND TIGHTEN THE SETSCREWS (A).

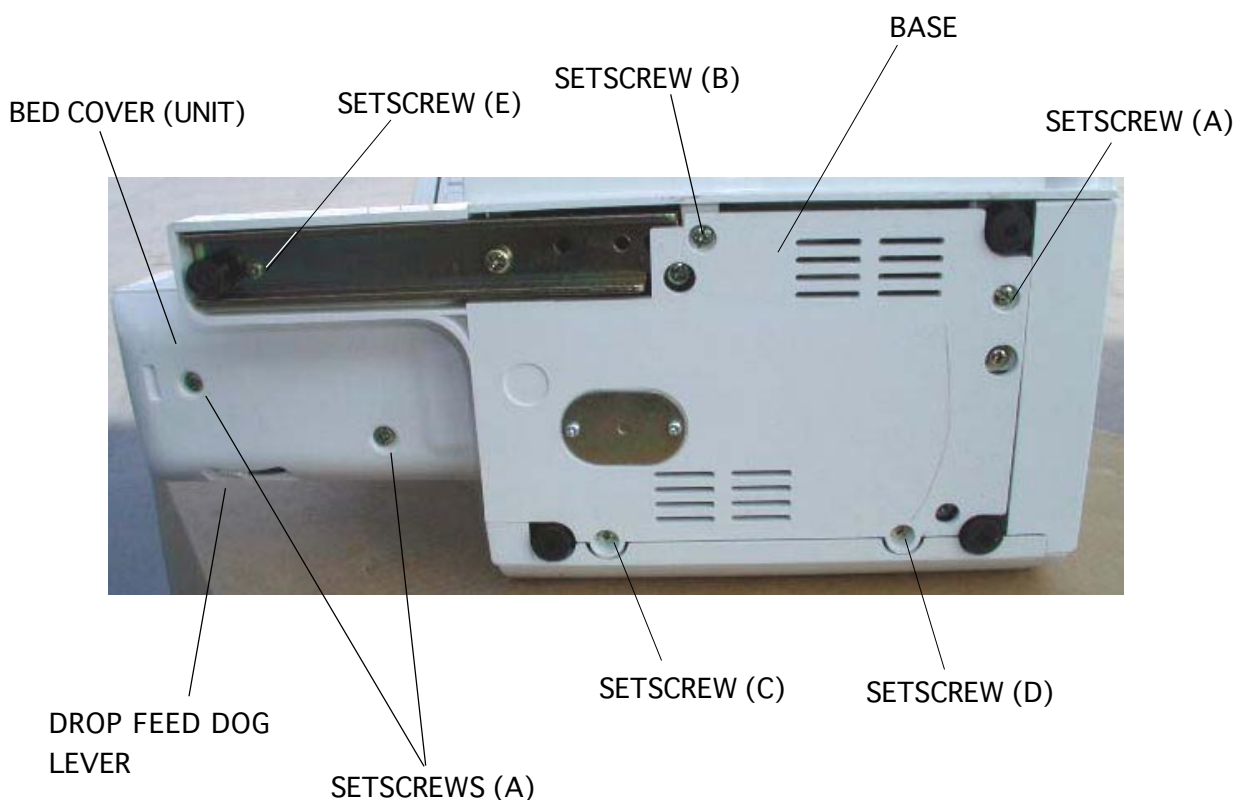
REPLACING THE BASE

TO REMOVE:

REMOVE THE SETSCREWS (A), (B), (C), (D) AND (E).
REMOVE THE BASE.

TO ATTACH:

FOLLOW THE PROCEDURE IN REVERSE.



SERVICE ACCESS (5)

REPLACING THE FRONT COVER (UNIT)

TO REMOVE:

REMOVE THE FACE COVER (UNIT), TOP COVER (UNIT) AND BELT COVER. (SEE PAGE 7, 8)
LOOSEN THE SETSCREWS (A), (B) AND (C). THEN REMOVE THE FRONT COVER (UNIT). DISCONNECT THE CONNECTOR FOR PRINTED CIRCUIT BOARD-F AND FLEXIBLE FLAT CABLE FROM THE PRINTED BOARD-A.

NOTE:

NEVER PULL ON CORD WHEN DISCONNECT THE CABLES FROM THE CIRCUIT BOARD.

TO ATTACH:

FOLLOW THE PROCEDURE IN REVERSE.

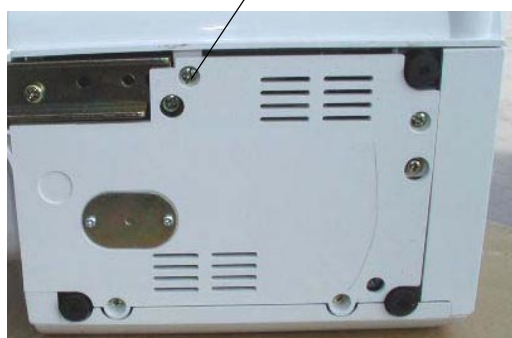


SETSCREW (C)

SETSCREW (A)



SETSCREW (B)



SETSCREW (B)

FLEXIBLE FLAT CABLE

FRONT COVER

SETSCREW (A)

CONNECTOR FOR
PRINTED CIRCUIT
BOARD F

SETSCREW (C)

SERVICE ACCESS (6)

REPLACING THE REAR COVER

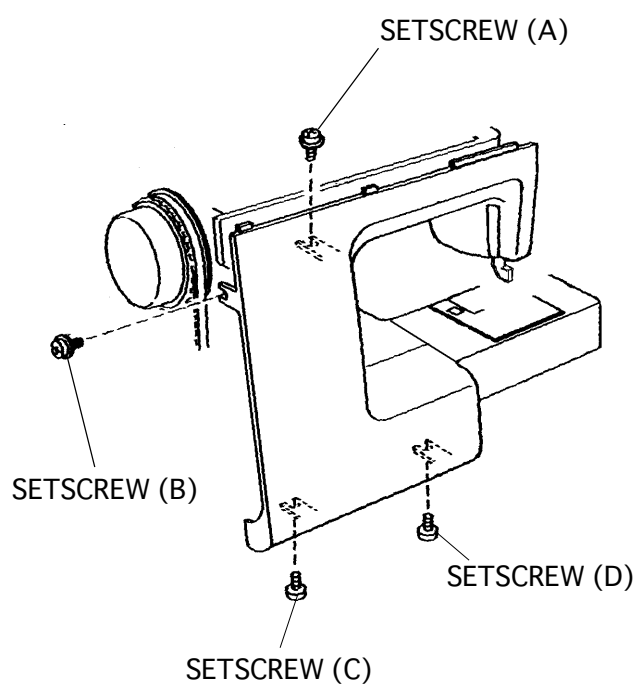
TO REMOVE:

REMOVE THE FACE COVER (UNIT), TOP COVER (UNIT) AND BELT COVER. (SEE PAGE 9, 10)

LOOSEN THE SETSCREWS (A), (B), (C) AND (D). REMOVE THE SETSCREW (E) AND LOWER THE PRESSER FOOT LIFTER. REMOVE THE REAR COVER FROM THE PRESSER LIFTER SECTION FIRST.

TO ATTACH:

FOLLOW THE PROCEDURE ABOVE IN REVERSE..

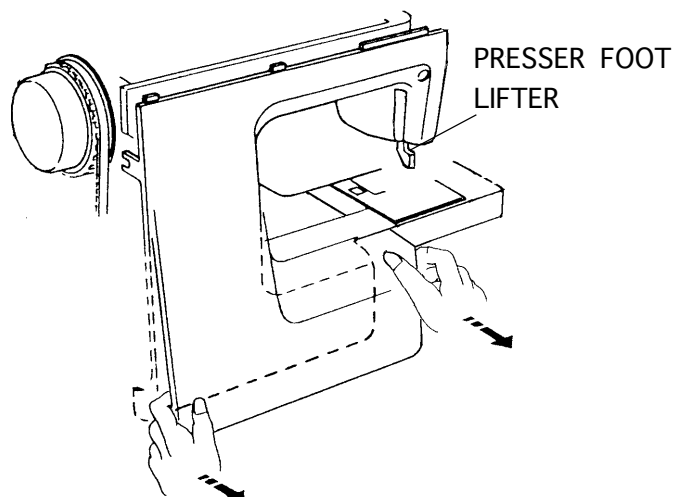


SETSCREW (E)



SETSCREW (D)

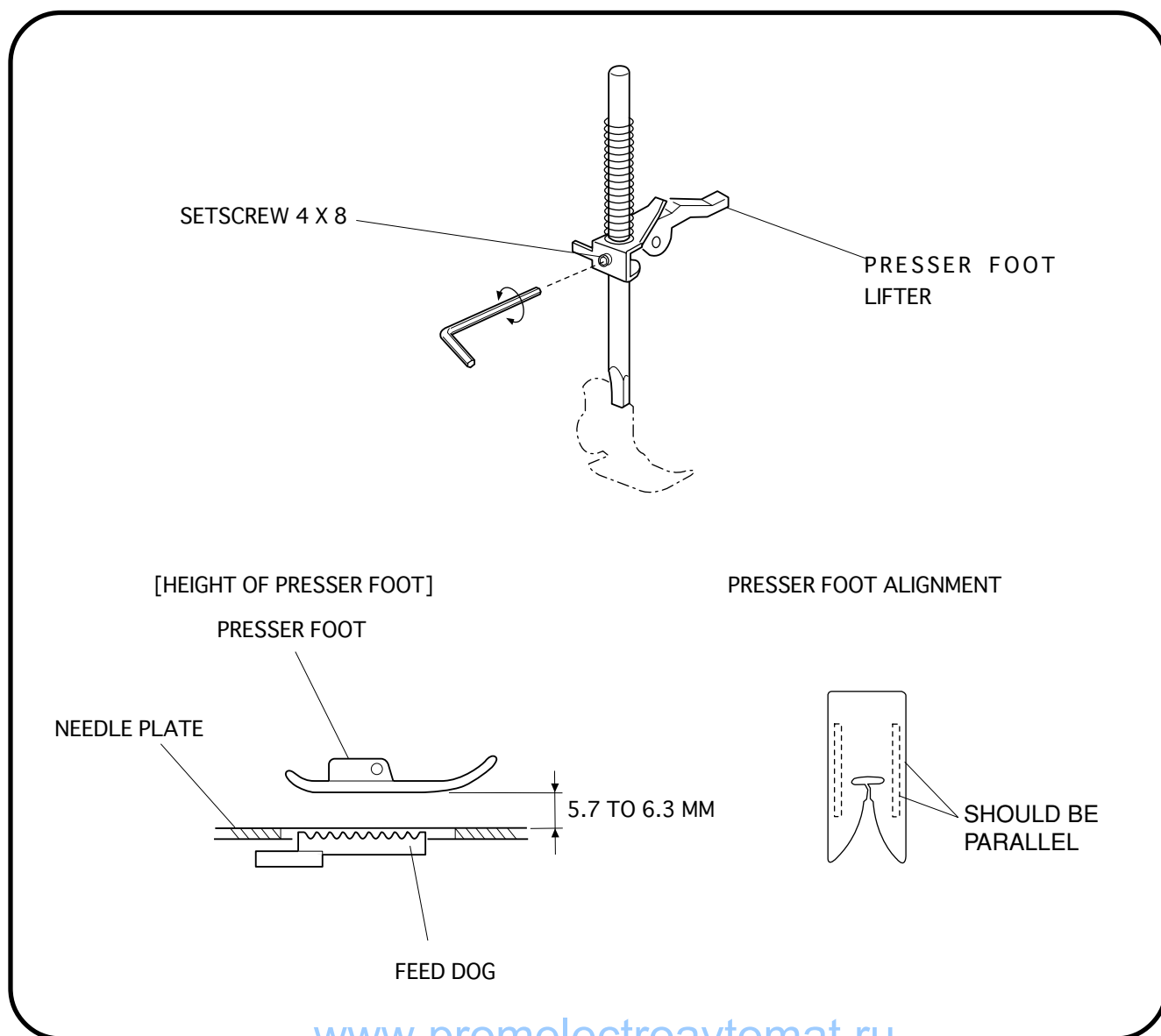
SETSCREW (C)



ADJUSTING PRESSER FOOT HEIGHT AND ALIGNMENT

WHEN THE PRESSER FOOT IS RAISED, THE CLEARANCE BETWEEN THE PRESSER FOOT AND THE NEEDLE PLATE SHOULD BE 5.7 TO 6.3 MM.

1. REMOVE THE FACE COVER AND RAISE THE PRESSER FOOT.
LOOSEN THE SETSCREW TO ADJUST PRESSER FOOT HEIGHT (6.0 MM) AND PRESSER FOOT ALIGNMENT.
2. TIGHTEN THE SETSCREW FIRMLY.
3. ATTACH THE FACE COVER.



NEEDLE DROP POSITION ALIGNMENT

SELECT THE STITCH PATTERN "  "; THE STANDARD NEEDLE DROP POSITION SHOULD BE AT THE CENTER OF THE NEEDLE PLATE HOLE.

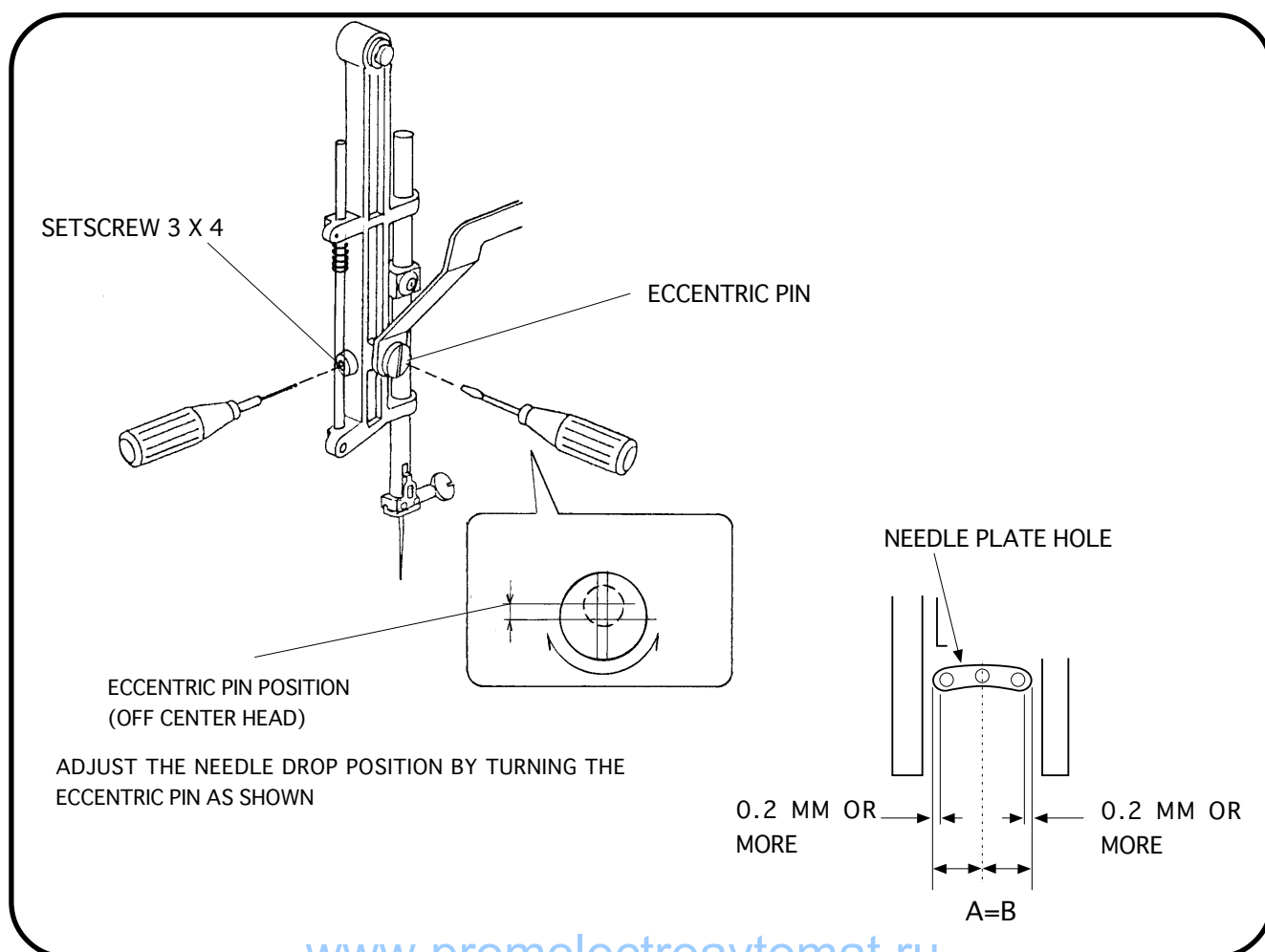
WHEN THE NEEDLE SWINGS IN MAXIMUM ZIGZAG WIDTH "  ", THE CLEARANCE BETWEEN BOTH ENDS OF THE NEEDLE HOLE IN THE NEEDLE PLATE AND THE NEEDLE SHOULD BE 0.2 MM OR MORE. IF NOT, ADJUST AS FOLLOWS.

ADJUSTMENT PROCEDURE:

1. TURN ON THE POWER SWITCH, SELECT THE STRAIGHT STITCH PATTERN "  " 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:

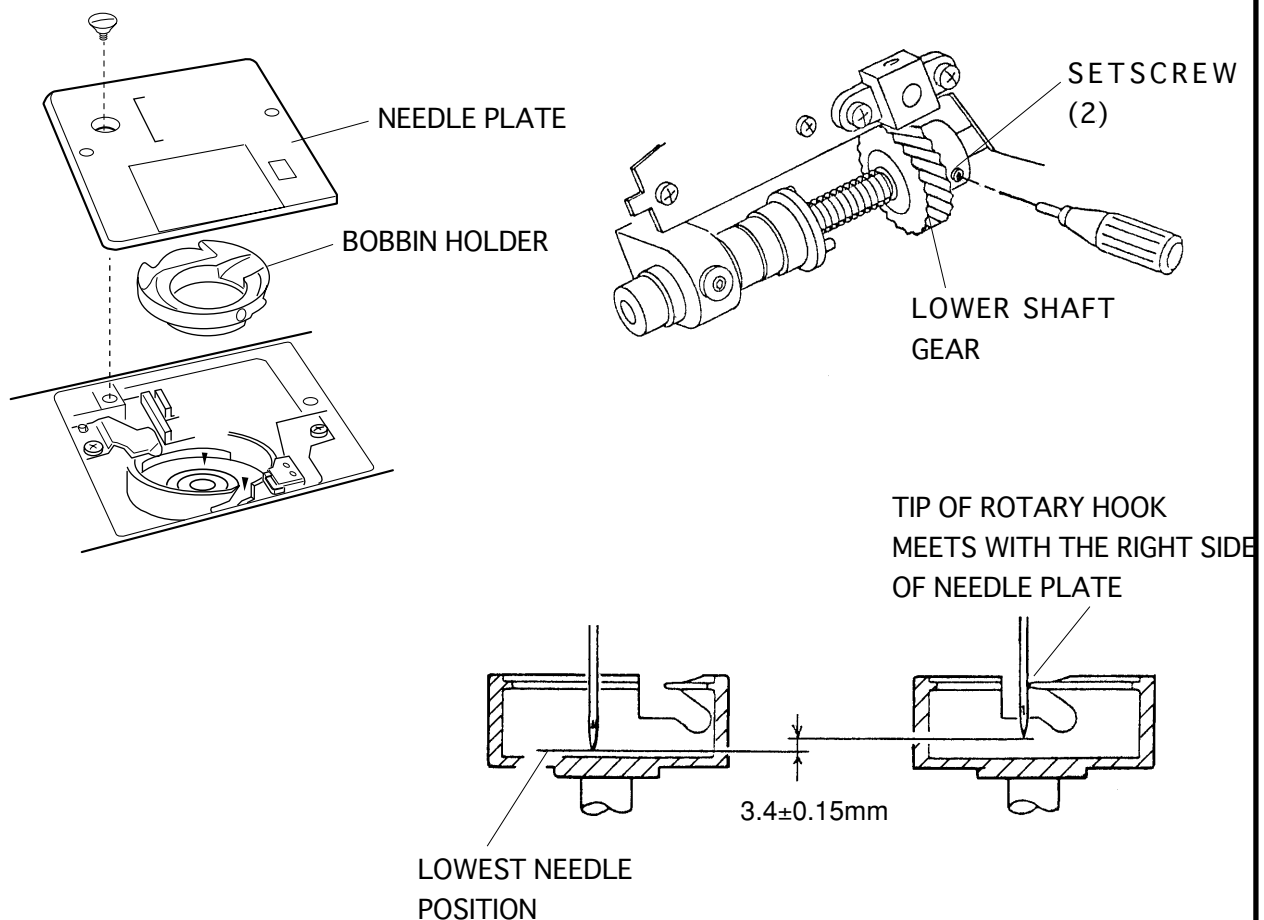
MAKE SURE THE ECCENTRIC PIN IS POSITIONED WITH ITS OFF-CENTER HEAD FACING DOWNWARD. WHEN YOU HAVE FINISHED ADJUSTING THE NEEDLE DROP POSITION, TIGHTEN THE SETSCREW AND ATTACH THE FACE COVER.



ADJUSTING HOOK TIMING

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

- 1 TURN ON THE POWER SWITCH TO DISPLAY THE STITCH PATTERN "  ". ADJUST THE STITCH WIDTH TO O.O. TURN OFF THE POWER SWITCH.
- 2 REMOVE THE NEEDLE PLATE AND BOBBIN HOLDER (B).
REMOVE THE BED COVER (SEE PAGE 7).
- 3 LOWER THE NEEDLE BAR AT ITS LOWEST POSITION BY TURNING THE HANDWHEEL TOWARD YOU.
- 4 LOOSEN THE SCREWS OF LOWER SHAFT GEAR.
- 5 RAISE THE NEEDLE BAR FURTHER 3.4 MM FROM THE LOWEST POSITION.
- 6 TURN THE LOWER SHAFT GEAR UNTIL THE TIP OF ROTARY HOOK MEETS WITH THE RIGHT SIDE OF THE NEEDLE. TIGHTEN SCREWS (2 PIECES) OF THE LOWER SHAFT GEAR.
- 6 ATTACH THE BED COVER, BOBBIN HOLDER AND NEEDLE PLATE.

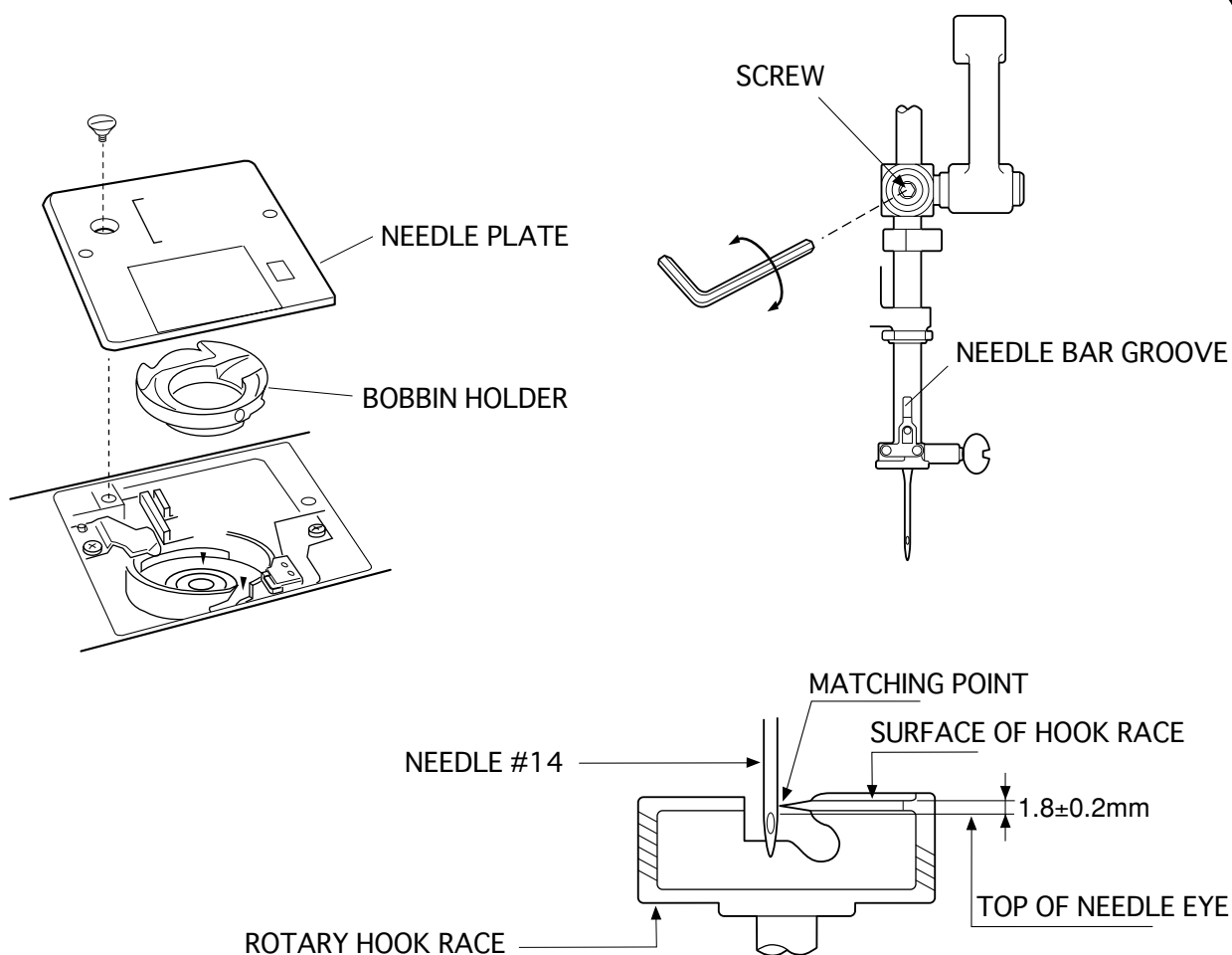


ADJUSTING NEEDLE BAR HEIGHT

THE STANDARD DISTANCE BETWEEN THE UPPER EDGE OF THE NEEDLE EYE AND THE TIP OF THE ROTARY HOOK SHOULD BE IN THE RANGE OF 1.6 TO 2.0 MM WHEN THE ROTARY HOOK MEETS THE RIGHT SIDE OF THE NEEDLE IN ASCENDING TRAVEL OF NEEDLE FROM ITS LOWEST POSITION.

NOTE: ENSURE THAT THE NEEDLE TO HOOK TIMING IS CORRECTLY ADJUSTED BEFORE ADJUSTING THE NEEDLE BAR HEIGHT.

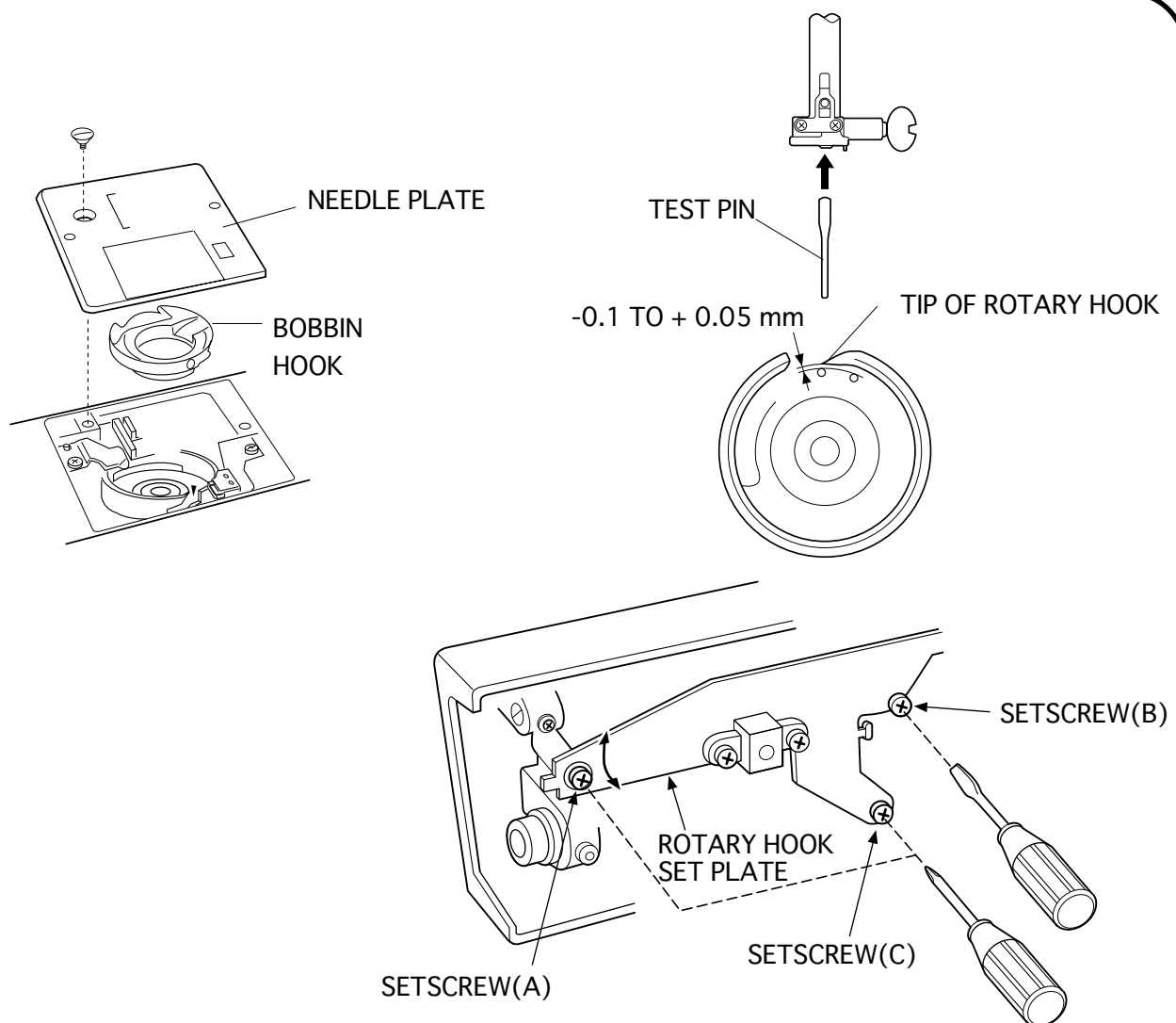
1. TURN ON THE POWER SWITCH AND SELECT THE STITCH PATTERN "  " ADJUST THE NEEDLE DROP POSITION TO 0.0 (LEFT MOST POSITION), THEN TURN OFF THE POWER SWITCH.
2. REMOVE THE NEEDLE PLATE AND BOBBIN HOLDER.
3. ALIGN THE TIP OF ROTARY HOOK WITH THE RIGHT SIDE OF THE NEEDLE IN ASCENDING TRAVEL OF NEEDLE FROM ITS LOWEST POSITION BY TURNING THE HANDWHEEL TOWARD YOU.
4. REMOVE THE FACE PLATE AND LOOSEN THE SETSCREW.
5. MOVE THE NEEDLE BAR UP AND DOWN TO ADJUST THE NEEDLE BAR HEIGHT.
6. MAKE SURE THAT THE NEEDLE BAR GROOVE IS IN FRONT OF YOU AND TIGHTEN THE SCREW.
7. ATTACH THE BOBBIN HOLDER, NEEDLE PLATE AND FACE PLATE.



ADJUSTING CLEARANCE BETWEEN NEEDLE AND HOOK

**THE CLEARANCE BETWEEN NEEDLE AND ROTARY HOOK SHOULD BE
-0.10 TO +0.05 MM.**

1. TURN THE POWER SWITCH ON. SELECT THE ZIGZAG STITCH () AND SET THE ZIGZAG WIDTH AT MAXIMUM.
2. REMOVE THE NEEDLE PLATE AND BOBBIN HOLDER. ATTACH THE TEST PIN.
3. REMOVE THE BED COVER. (SEE PAGE 7) LOOSEN THE SETSCREWS (A), (B) AND SLIGHTLY LOOSEN THE SET SCREW (C).
4. TURN THE HANDWHEEL TOWARD YOU TO BRING THE TIP OF THE HOOK BEHIND THE TEST PIN AND ADJUST THE CLEARANCE BETWEEN THE TEST PIN AND THE TIP OF ROTARY HOOK TO -0.10 TO +0.05 BY MOVING THE ROTARY HOOK SET PLATE UP OR DOWN.
5. TIGHTEN THE SCREW (A), (B), (C) FIRMLY.
6. CHECK THE ROTARY HOOK DRIVER GEAR AND THE LOWER SHAFT GEAR BACKLASH. IF GEARS MESH OR ENGAGE TIGHTLY OR LOOSELY, ADJUST BACKLASH BETWEEN HOOK DRIVE AND LOWER SHAFT GEAR".
7. REATTACH THE BED COVER, NEEDLE PLATE AND BOBBIN HOLDER. REPLACE THE TEST PIN WITH THE REGULAR NEEDLE.



ADJUSTING BACKLASH BETWEEN HOOK DRIVE GEAR AND LOWER SHAFT GEAR

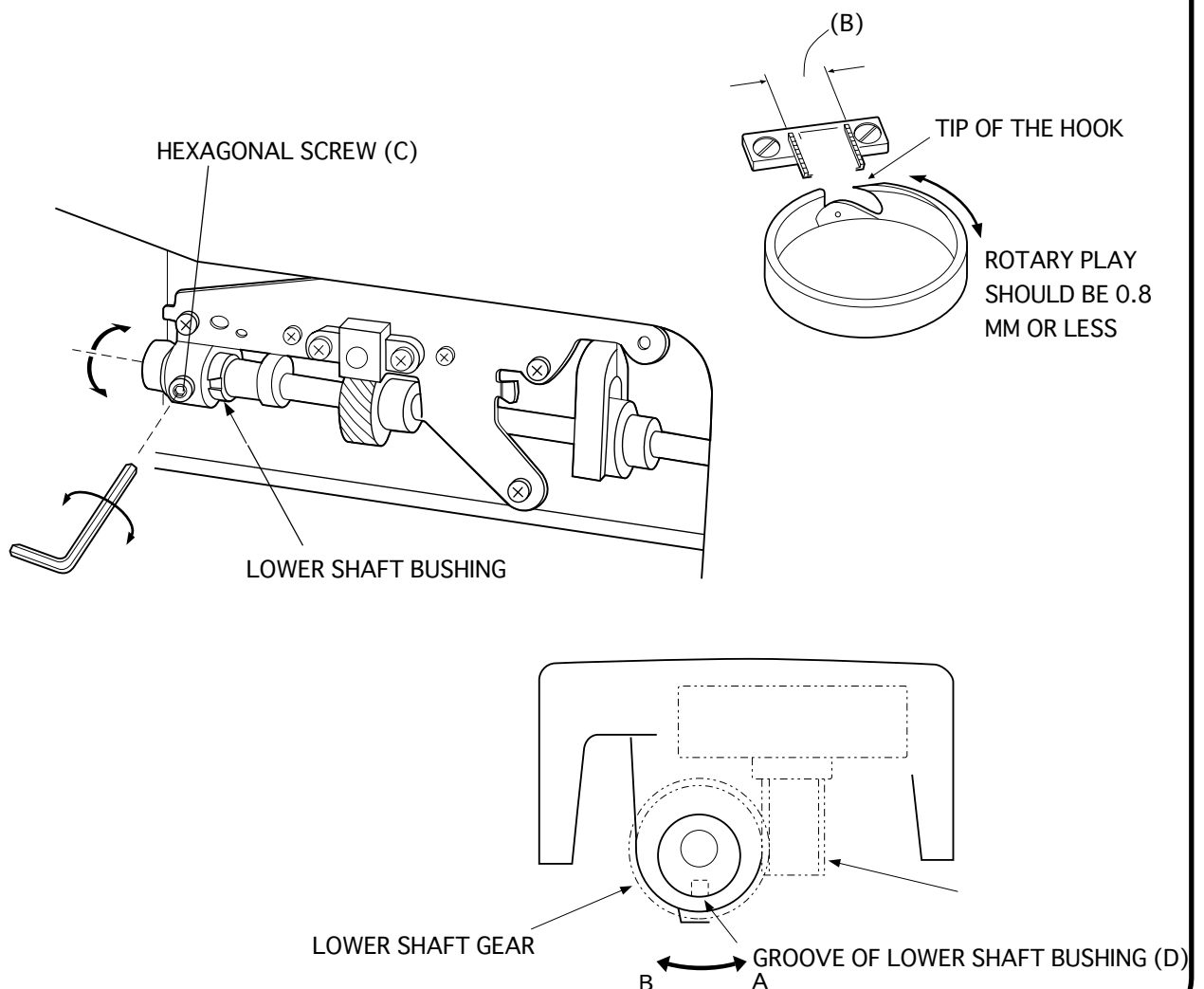
ROTARY PLAY OF GEARS SHOULD BE 0.8 MM OR LESS WHEN THE TIP OF THE ROTARY HOOK IS WITHIN THE WIDTH OF THE FEED DOG AS SHOWN BELOW.

TO CHECK

1. TURN THE POWER SWITCH OFF. REMOVE THE NEEDLE PLATE AND BOBBIN HOLDER. REMOVE THE BED COVER.
 2. TURN THE HANDWHEEL SLOWLY TOWARD YOU UNTIL THE TIP OF THE HOOK (A) IS BETWEEN WIDTH (B) OF FEED DOG.
 3. SWAY THE HOOK RACE CLOCKWISE AND COUNTERCLOCKWISE BY FINGER. CHECK THE PLAY. IT SHOULD BE 0.8 MM OR LESS.
- *IF THERE IS MORE THAN 0.8 MM PLAY, ADJUST AS FOLLOWS.

ADJUSTMENT PROCEDURE:

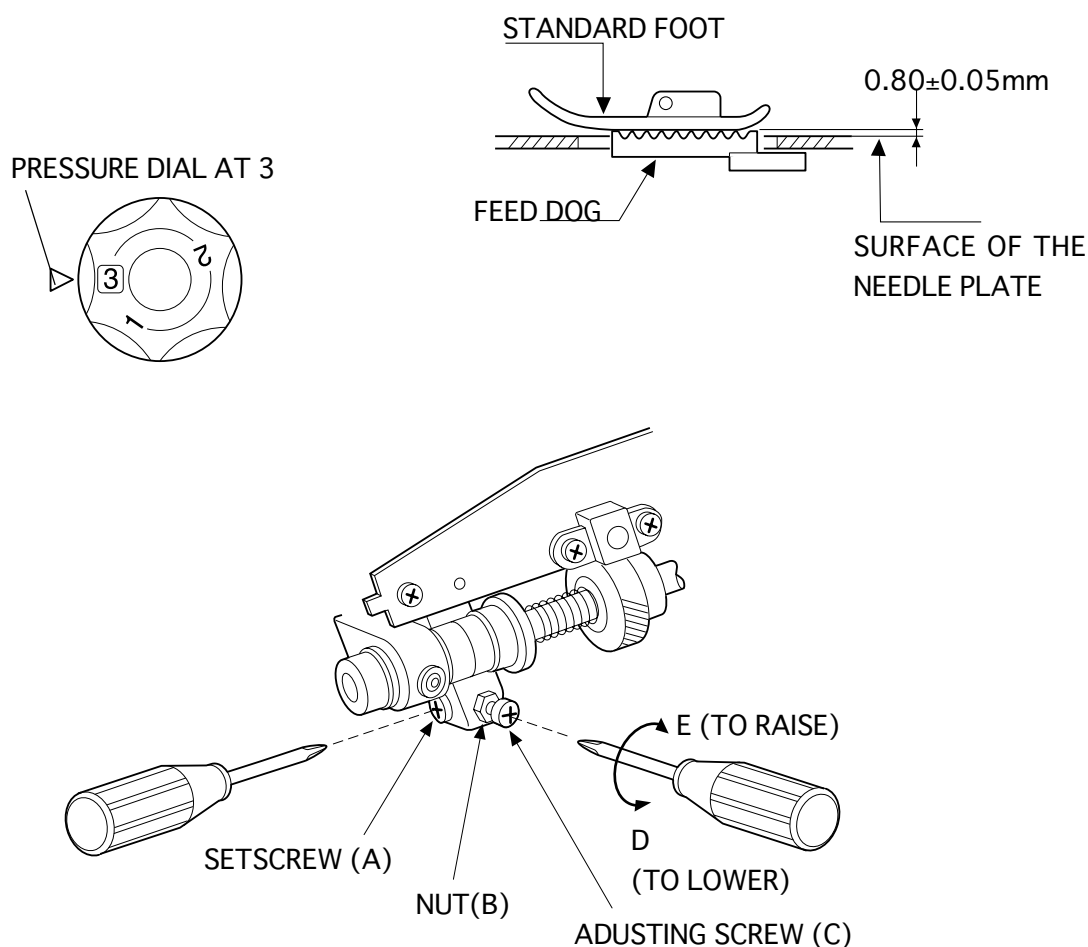
1. REMOVE THE BED COVER AND LOOSEN THE HEXAGONAL SCREW (C).
2. TURN THE LOWER SHAFT BUSHING (D) (ECCENTRIC), IN THE DIRECTION "E" WHEN THE PLAY AT SHUTTLE HOOK TIP IS TOO SMALL.
3. TURN THE LOWER SHAFT BUSHING (D) (ECCENTRIC), INTO THE DIRECTION "F" WHEN THE PLAY AT THE HOOK TIP IS TOO LARGE.
4. TIGHTEN HEXAGONAL SCREW (C) SECURELY AFTER ADJUSTMENT.



FEED DOG HEIGHT ADJUSTMENT

WHEN THE PRESSER FOOT IS LOWERED WITH THE PRESSURE DIAL SET AT "3", THE HIGHEST POSITION OF THE FEED DOG SHOULD BE 0.75 TO 0.85 MM ABOVE THE SURFACE OF THE NEEDLE PLATE.

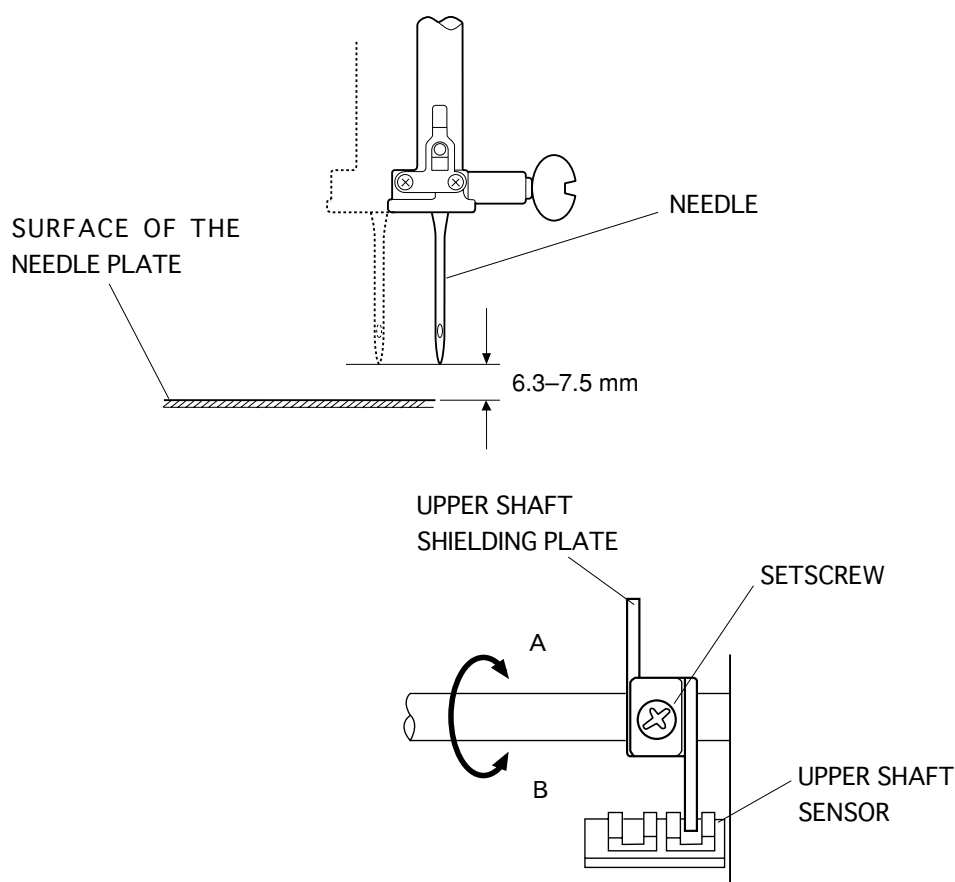
1. SET THE PRESSURE DIAL AT "3" AND LOWER THE PRESSER FOOT THEN TURN ON THE POWER SWITCH.
2. TURN THE HANDWHEEL TOWARD YOU UNTIL THE FEED DOG COMES TO ITS HIGHEST POSITION.
3. REMOVE THE BED COVER (SEE PAGE 7)
4. LOOSEN SETSCREW (A) AND NUT.
5. TURN THE ADJUSTING SCREW (C) IN THE DIRECTION OF "E" TO RAISE THE FEED OR TURN THE ADJUSTING SCREW (C) IN THE DIRECTION OF "D" TO LOWER THE FEED DOG, SO THAT THE FEED DOG HIGHEST IS 0.8 MM ABOVE THE TOP SURFACE OF THE NEEDLE PLATE.
6. TIGHTEN THE NUT AND SET SCREW(A).
7. ATTACH THE BED COVER.



ZIGZAG SYNCHRONIZATION

DURING LATERAL MOVEMENT OF THE NEEDLE IN ZIGZAG SEWING, THE NEEDLE SHOULD START TO SWING 6.3 TO 7.5 MM ABOVE THE NEEDLE PLATE.

1. REMOVE THE COVER.
2. TURN ON THE POWER SWITCH AND SET THE PATTERN SELECTOR DIAL AT MAXIMUM ZIGZAG WIDTH.
3. TURN THE HANDWHEEL TOWARD YOU AND STOP TURNING WHEN THE NEEDLE STARTS ITS SIDEWARD MOVEMENT AND LOOSEN SETSCREW.
4. IF THE NEEDLE HEIGHT IS HIGHER THAN 7.5 MM, TURN THE UPERSHAFT SHIELDING PLATE IN THE DIRECTION OF "A" IF THE NEEDLE HEIGHT IS LOWER THAN 6.3 MM, TURN THE UPPER SHAFT SHIELDING PLATE IN THE DIRECTION OF "B".
5. MAKE SURE THE UPPER SHAFT SHIELDING PLATE IS NOT TOUCHING THE UPPER SHAFT SENSOR AND TIGHTEN SETSCREW.
6. TURN THE HANDWHEEL TOWARD YOU TO CONFIRM THE NEEDLE MOVEMENT, AFTER THE CONFIRMATION, REATTACH THE TOP COVER AND FACE COVER.



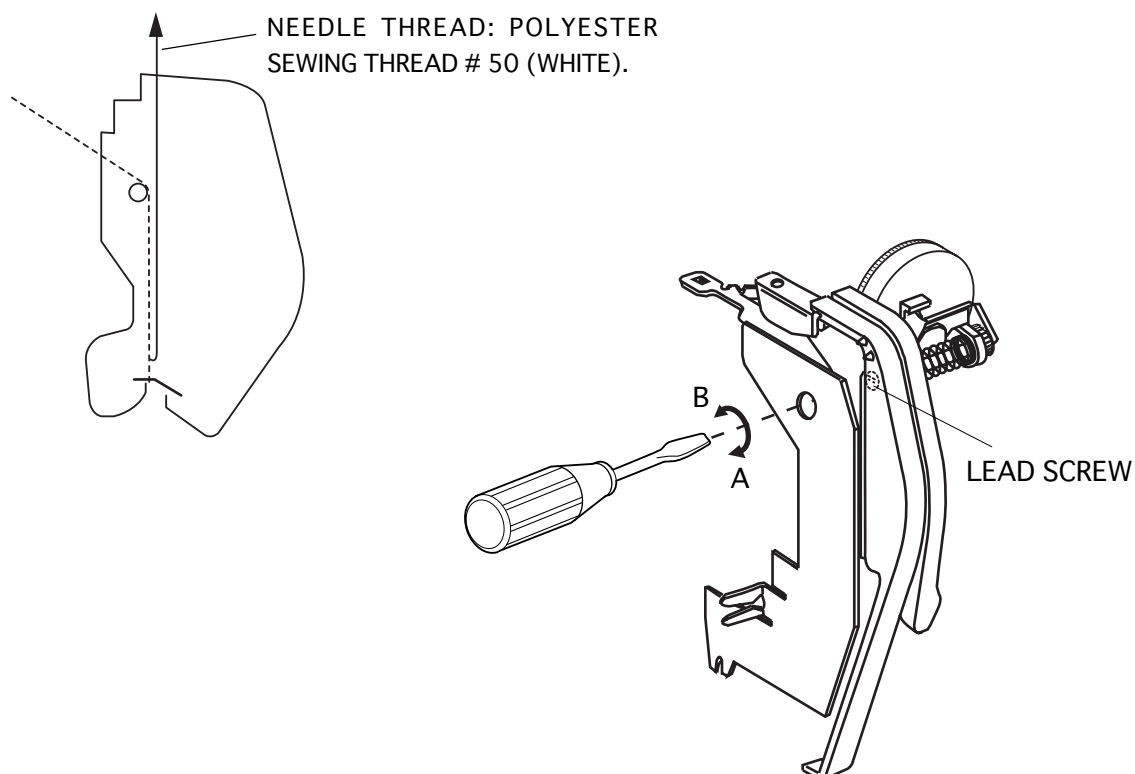
NEEDLE THREAD TENSION

WHEN THE POLYESTER SEWING THREAD #50 (WHITE) IS PASSED THROUGH AND PULLED UP AS IN FIG. 1, THE THREAD TENSION SHOULD BE 75 TO 90 GRAMS (THE THREAD PULLING SPEED: APROX. 110 MM/SEC) WITH THE THREAD TENSION DIAL SET AT "AUTO). IF THE TENSION IS OUT OF THE STANDARD RANGE, ADJUST IT AS FOLLOWS.

ADJUSTMENT PROLEDURE:

1. SET THE THREAD TENSION AT "AUTO".
2. REMOVE THE FACE COVER (SEE PAGE 9).
3. TURN THE LEAD SCREW TO ADJUST THE NEEDLE THREAD TENSION.
IF THE THREAD TENSION IS TOO TIGHT, TURN THE LEAD SCREW IN THE DIRECTION OF "A".
IF THE THREAD TENSION IS TOO LOOSE, TURN THE LEAD SCREW IN THE DIRECTION OF "B".
4. CHECK THE THREAD TENSION AGAIN AND REATTACH THE FACE COVER.

PULL THE THREAD AT A SPEED OF 110 MM/SEC, IN THE DIRECTION OF THE ARROW.

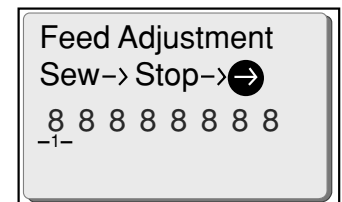
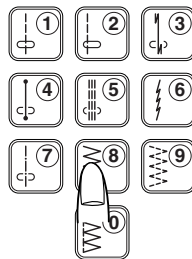
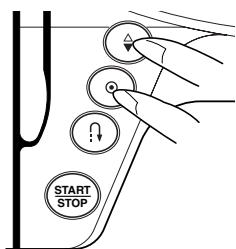


STRETCH STITCH FEED BALANCE

WHEN A STRETCH PATTERN IS SEWN WITH THE FEED BALANCING DIAL SET AT THE STANDARD MARK, THE PATTERN SHOULD BE AS INDICATED WITH THE "O".

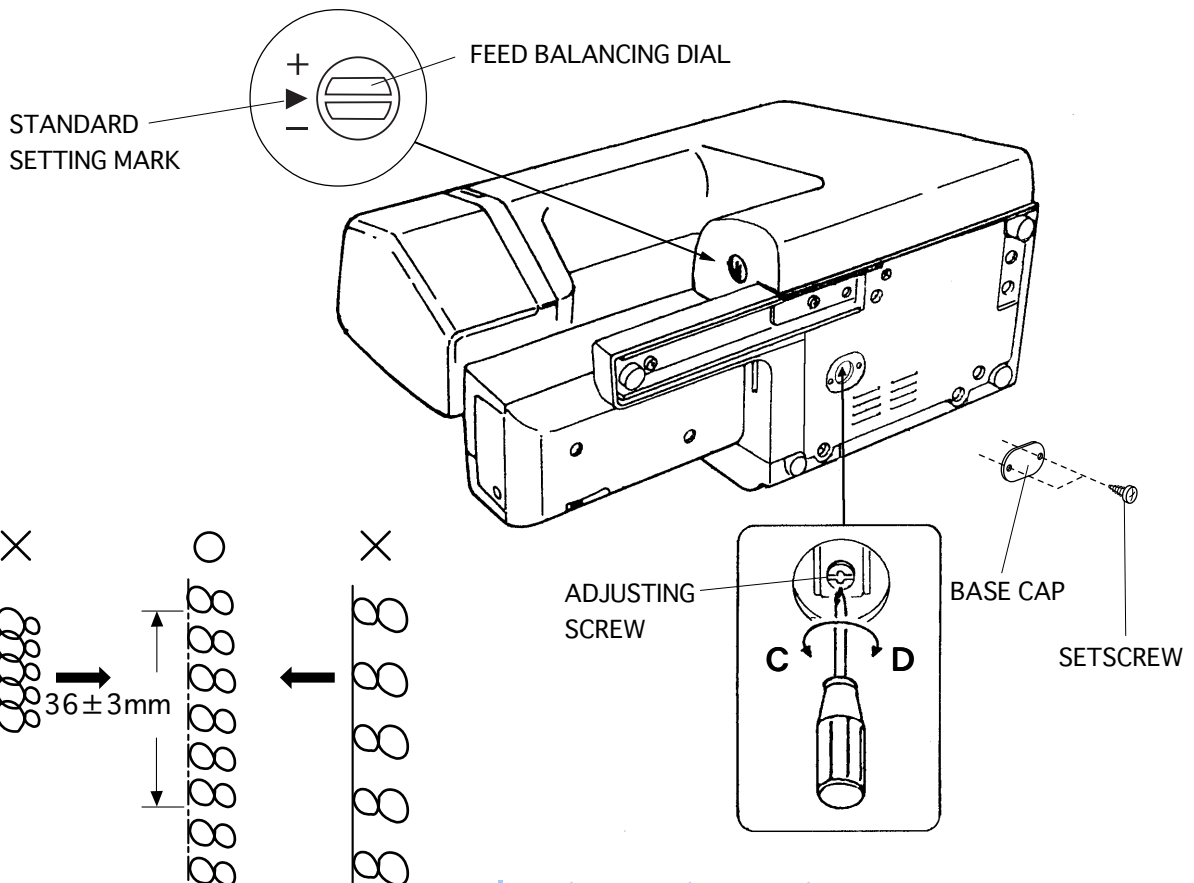
1. SET UP THE MACHINE IN ADJUSTING MODE (SEE BELOW).
2. SET THE FEED BALANCING DIAL AT THE STANDARD SETTING MARK (►).
3. CHECK THE SEWING RESULTS (THE STANDARD FIGURE LENGTH OF FIVE PIECES OF FIGURE 8 IS 33–39 MM).
4. REMOVE THE 2 SETSCREWS. THEN REMOVE THE BASE CAP.
5. IF THE LENGTH IS LONGER THAN 39 MM, TURN THE ADJUSTING SCREW IN THE DIRECTION OF (C).
6. IF THE LENGTH IS SHORTER THAN 33 MM, TURN THE ADJUSTING SCREW IN THE DIRECTION OF (D).
7. REATTACH THE BASE CAP AND TIGHTEN THE SETSCREWS.

TO ENTER THE ADJUSTING MODE



TURN THE POWER SWITCH ON WHILE PRESSING THE UP/DOWN NEEDLE POSITION BUTTON AND AUTO-LOCK STITCH BUTTON.

PRESS THE BUTTON 8.



REPLACEMENT AND ADJUSTMENT OF THE NEEDLE

THREADER PLATE

IF THE HOOK OF THE THREADER PLATE IS DAMAGED, CHANGE OR ADJUST THE PART AS FOLLOWS:

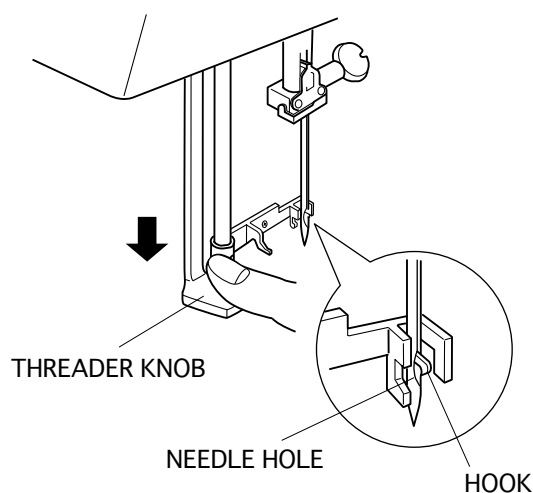
TO CHANGE THE THREADER PLATE:

TO CHANGE:

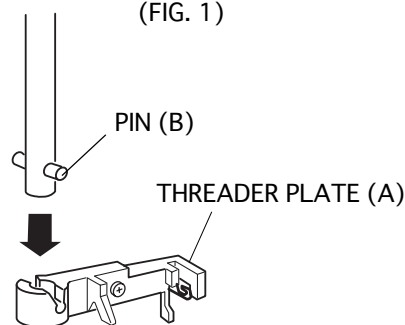
1. PUSH DOWN THE NEEDLE THREADER KNOB AND PULL THE NEEDLE THREADER PLATE (A) OUT TO REMOVE IT (SEE FIG. 1).
2. TO INSTALL THE NEEDLE THREADER PLATE, LINE THE GROOVE OF THE THREADER WITH THE PIN (B) AND PUSH THE PLATE UP TO SNAP FIT.

TO ADJUST THE THREADER PLATE POSITION:

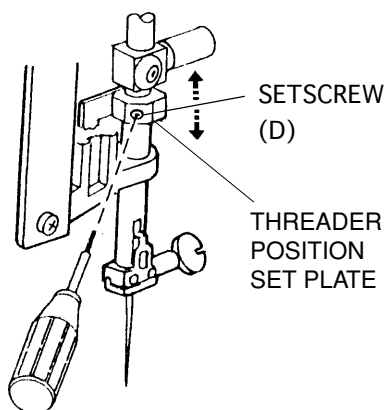
1. IF THE HOOK ON THE THREADER PLATE TOUCHES THE LEFT OR RIGHT SIDE OF THE NEEDLE EYE, LOOSEN SETSCREW (C) AND ADJUST THE HOOK POSITION BY MOVING THE THREADER PLATE (FIG. 2).
2. IF THE HOOK ON THE THREADER PLATE TOUCHES THE TOP OR BOTTOM SIDE OF THE NEEDLE EYE, LOOSEN SETSCREW (D) AND ADJUST THE HOOK POSITION BY MOVING THE THREADER POSITION SET PLATE (FIG. 3).



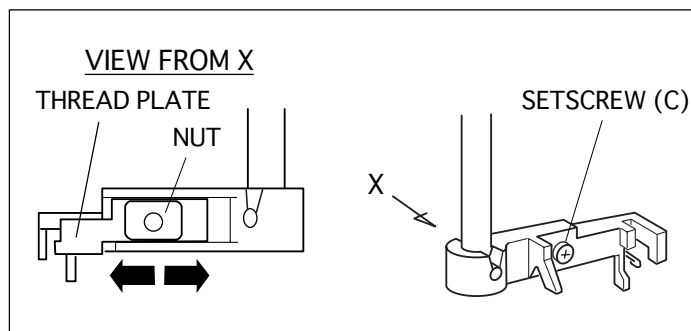
REPLACEMENT OF NEEDLE THREADER
(FIG. 1)



ADJUSTMENT VERTICAL DIRECTION (FIG. 3)



ADJUSTMENT IN HORIZONTAL DIRECTION



CONNECTOR DIAGRAM

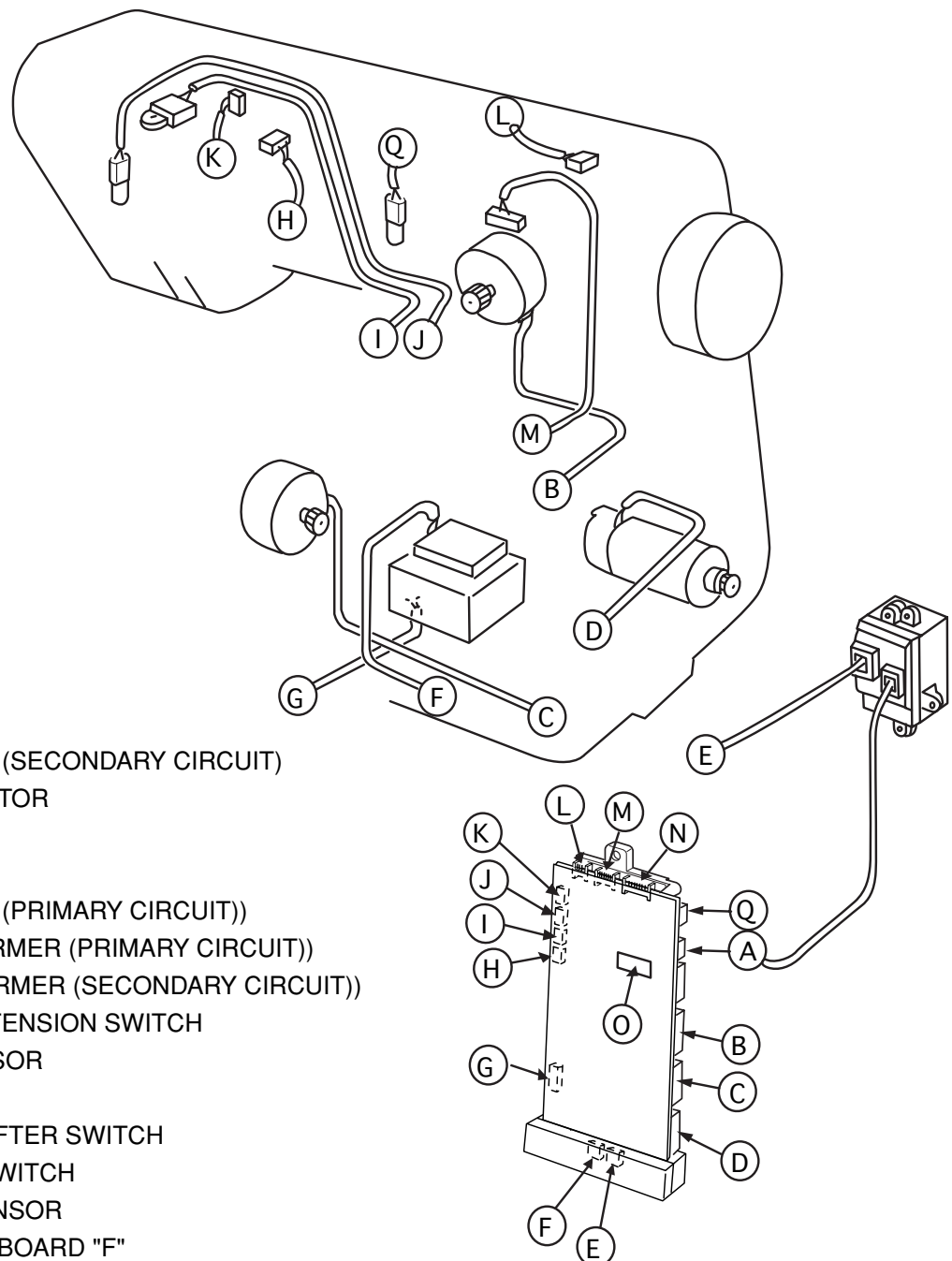
REFER TO THE DIAGRAM FOR LOCATING THE CONNECTOR POSTS ON THE CIRCUIT BOARD

TO DISCONNECT THE CONNECTORS:

1. GRASP THE CONNECTOR BODY WITH YOUR FINGERS AND PULL.
DO NOT PULL THE LEAD WIRE, IT MAY DAMAGE THE CONTACT SLEEVES INSIDE THE CONNECTOR.
2. WHEN DISCONNECTING THE MACHINE SOCKET AND POWER TRANSFORMER CONNECTORS, PULL THEM WHILE PUSHING THEM TOWARD THE PRINTED CIRCUIT BOARD TO UNLOCK THEM.

TO CONNECT THE CONNECTORS:

1. BE SURE TO CONNECT THE CONNECTORS WITH THE CONNECTOR POSTS OF THE SAME COLOR.
2. POSITION THE CONNECTOR CORRECTLY, THEN PUSH IT STRAIGHT DOWN UNTIL IT LOCKS IN PLACE.



- A: MACHINE SOCKET (SECONDARY CIRCUIT)
B: ZIGZAG WIDTH MOTOR
C: FEED MOTOR
D: DC MOTOR
E: MACHINE SOCKET (PRIMARY CIRCUIT)
F: POWER TRANSFORMER (PRIMARY CIRCUIT))
G: POWER TRANSFORMER (SECONDARY CIRCUIT))
H: NEEDLE THREAD TENSION SWITCH
I: BUTTONHOLE SENSOR
J: LAMP
K: PRESSER FOOT LIFTER SWITCH
L: BOBBIN WINDER SWITCH
M: UPPER SHAFT SENSOR
N: PRINTED CIRCUIT BOARD "F"
O: PRINTED CIRCUIT BOARD "K"
Q: ARM LAMP

SELF DIAGNOSTIC 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 POWER SUPPLY CORD.
5. REPLACE THE POWER TRANSFORMER.

- THE SEWING MACHINE LIGHT DOES NOT LIGHT UP.

1. REPLACE THE LAMP.
2. REPLACE PRINTED CIRCUIT BOARD "A".

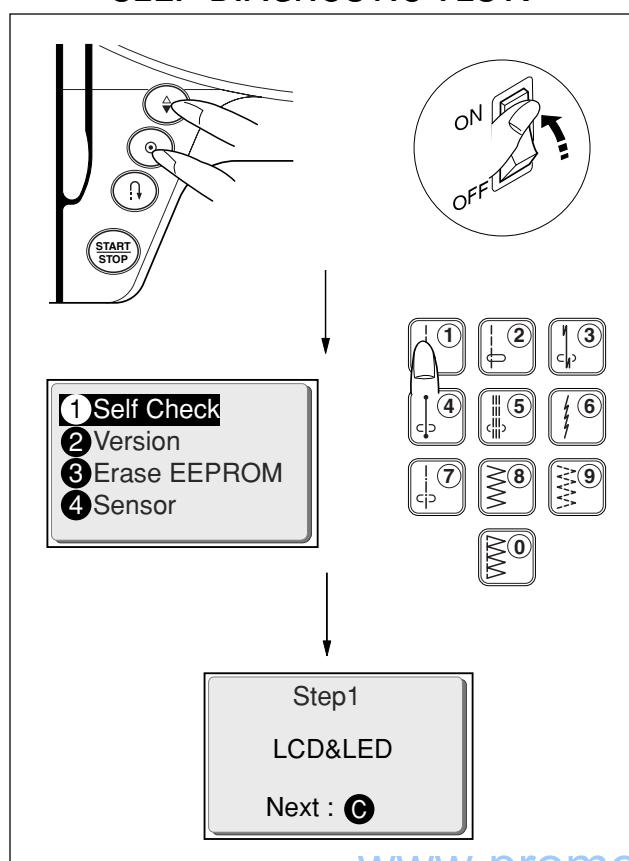
PREPARATION:

- TURN OFF THE POWER SWITCH.
- SHIFT THE BOBBIN WINDER SPINDLE TO THE LEFT.
- RAISE THE FEED DOG.
- SHIFT THE SLIDE VOLUME TO THE LEFT.
- REMOVE THE PRESSER FOOT AND RAISE THE PRESSER FOOT LIFTER.
- TURN THE HANDWHEEL TOWARD YOU TO RAISE THE NEEDLE TO ITS HIGHEST POSITION.

NOTE:

- BE CAREFUL: THE SEWING MACHINE MAY START RUNNING BY 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.

SELF-DIAGNOSTIC TEST:



TURN THE POWER SWITCH ON WHILE PRESSING THE UP/DOWN NEEDLE POSITION BUTTON & AUTOLOCK BUTTON. THEN PRESS THE 01 BUTTON WITHIN 3 SECONDS TO ENTER THE SELF-DIAGNOSTIC MODE.

THE STANDARD MODE SHOWS UP IF YOU DO NOT PRESS THE 01 BUTTON WITHIN 3 SECONDS. TURN THE POWER SWITCH OFF AND START OVER AGAIN.

LCD & LED DIAGNOSTIC MODE

SELF DIAGNOSTIC TESTS

1. BUZZER, LCD AND LED



CORRECT RESULTS

- BEEP SOUNDS WHEN BUTTONS ARE PRESSED
- LCD AND LED BLINKS IN 1-SEC. INTERVALS.
- LAMP LIGHTS UP.

PRESS C BUTTON TO PROCEED TO THE NEXT STEP.

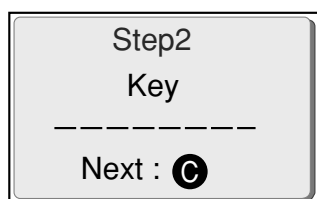
DEFECTIVE RESULTS:

- NO BEEP SOUND
- DOES NOT ENTER SELF-DIAGNOSTIC MODE.
- LCD AND LED DOES NOT BLINK.

REPLACE OR ADJUST:

- REPLACE THE BOARD A, K AND F.
- CHECK THE FLEXIBLE FLAT CABLE CONNECTION.

2. BUTTONS



CORRECT RESULTS

DISPLAY THE NAME OF BUTTON WHEN THE BUTTON IS PRESSED.

PRESS C BUTTON TO PROCEED TO THE NEXT STEP.

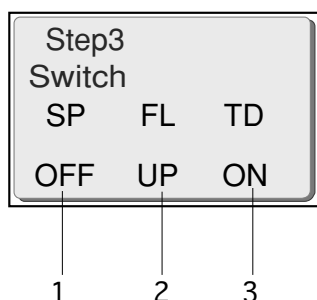
DEFECTIVE RESULTS:

- DOES NOT DISPLAY THE NAME OF BUTTON AND STILL SHOWS " _ _ _ _ _ ".

REPLACE OR ADJUST:

- REPLACE THE BOARD A, F AND K.

3. SWITCH



CORRECT RESULTS

1 SP (BOBBIN WINDER):

MOVE THE BOBBIN WINDER TO THE LEFT >>THE LCD SHOWS **OFF**
MOVE THE BOBIBN WINDER TO THE RIGHT >>THE LCD SHOWS **ON**

2 FL (FOOT LIFTER):

RAISE THE PRESSER FOOT LIFTER >>THE LCD SHOWS **UP**
LOWER THE PRESSER FOOT LIFTER >>THE LCD SHOWS **DOWN**

3 TD (TENSION DIAL):

SET THE THREAD TENSION DIAL TO "AUTO" >>THE LCD SHOWS **ON**
SET THE THREAD TENSION DIAL OTHER THAN "AUTO" >>THE LCD SHOWS **OFF**

PRESS C BUTTON TO PROCEED TO THE NEXT STEP.

DEFECTIVE RESULTS:

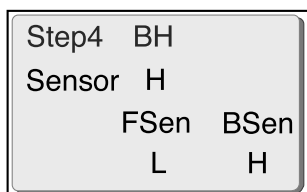
THE DISPLAY DOES NOT CHANGE OR THE DISPLAY SHOWS "OFF" OR "DOWN" WHEN IT IS SUPPOSED TO BE "ON" OR "UP".

REPLACE OR ADJUST:

- REPLACE OR ADJUST THE SENSORS FOR BOBBIN WINDER, FOOT LIFTER AND TENSION DIAL.
- REPLACE THE BOARD A.

SELF DIAGNOSTIC TESTS

4. BH SENSOR



	FSen	BSen
①	L	H
②	L	L
③	H	L
④	L	L
⑤	L	H
⑥	H	H

CORRECT RESULTS

(1) PULL DOWN THE BUTTONHOLE LEVER AS FAR AS IT WILL GO. WHEN THE BUTTONHOLE LEVER IS PULLED FORWARD, THE SCREEN DISPLAYS "H".

WHEN THE BUTTONHOLE LEVER IS FREE, THE SCREEN DISPLAYS "L".

WHEN THE BUTTONHOLE LEVER IS PUSHED, THE SCREEN DISPLAYS "H".

(2) TURN THE HANDWHEEL TOWARD YOU TO CHECK THE INDICATIONS. THE INDICATION CHANGES FROM ① TO ⑥.

PRESS  BUTTON TO PROCEED TO THE NEXT STEP.

CORRECT RESULTS

TURN THE HANDWHEEL CLOCKWISE BY HAND AND CHECK THE COUNTER VALUE ON THE DISPLAY. THE VALUE SHOULD BE BETWEEN 370 AND 376.

PRESS  BUTTON TO PROCEED TO THE NEXT STEP.

CORRECT RESULTS

WHEN THE SPEED CONTROL LEVER IS AT THE LEFT, THE SCREEN DISPLAYS A VALUE IN THE RANGE OF "000" TO "010" THE INDICATED VALUE INCREASES AS YOU MOVE THE SPEED CONTROL LEVER TO THE RIGHT, AND THE SCREEN DISPLAYS A VALUE IN THE RANGE OF "250" TO "255" WHEN THE LEVER REACHES THE RIGHT-MOST POSITION.

PRESS  BUTTON TO PROCEED TO THE NEXT STEP.

DEFECTIVE RESULTS:
THE DISPLAY DOES NOT CHANGE.

REPLACE OR ADJUST:

- REPLACE OR ADJUST THE BH SENSOR.
- ADJUST BH SENSOR POSITION.
- REPLACE THE BOARD A.

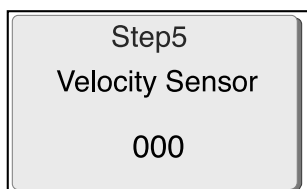
DEFECTIVE RESULTS:

THE DISPLAY DOES NOT CHANGE.
THE VALUE IS LOWER THAN 370.

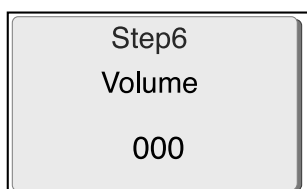
REPLACE OR ADJUST:

- CLEAN THE VELOCITY SENSOR UNIT OF THE DC MOTOR.
- REPLACE THE DC MOTOR.
- REPLACE THE BOARD A.

5. VELOCITY SENSOR



6. SLIDE VOLUME



DEFECTIVE RESULTS:

THE DISPLAY DOES NOT CHANGE.
THE INDICATED VALUE DECREASES WHEN YOU MOVE THE SPEED CONTROL LEVER TO THE RIGHT.

REPLACE OR ADJUST:

- REPLACE THE SLIDE VOLUME.
- REPLACE THE PRINTED BOARD A OR K.

SELF DIAGNOSTIC TESTS

7. FOOT CONTROL



CORRECT RESULT

WHEN THE FOOT CONTROL IS NOT DEPRESSED, SCREEN SHOULD DISPLAY A VALUE IN THE RANGE OF "000" TO "016".

WHEN THE FOOT CONTROL IS DEPRESSED FULLY, THE SCREEN SHOULD DISPLAY A VALUE IN THE RANGE OF "208" TO "250".

WHEN THE PLUG IS DISCONNECTED, THE SCREEN SHOULD DISPLAY A VALUE IN THE RANGE OF "251" TO "255".

PRESS  BUTTON TO PROCEED TO THE NEXT STEP.

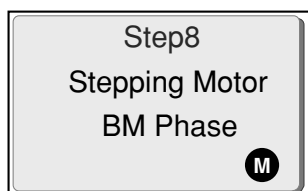
DEFECTIVE RESULTS:

THE VALUE DOES NOT CHANGE.
THE VALUE DECREASES WHEN THE FOOT CONTROL IS DEPRESSED.

REPLACE OR ADJUST:

- REPLACE THE FOOT CONTROL
- REPLACE THE MACHINE SOCKET
- REPLACE THE BOARD A

8. ZIGZAG WIDTH MOTOR



CORRECT RESULT

RAISE THE NEEDLE TO THE HIGHEST POSITION BY TURNING THE HANDWHEEL TOWARD YOU.

PRESS THE MEMORY BUTTON  TO SET ZIGZAG WIDTH MOTOR TO THE INITIAL POSITION. (NEEDLE CENTERED)

PRESS THE MEMORY BUTTON  WHEN THE NEEDLE IS LOWERED. THE FEED MOTOR IS INITIALIZED.

PRESS  BUTTON TO PROCEED TO THE NEXT STEP.

DEFECTIVE RESULTS:

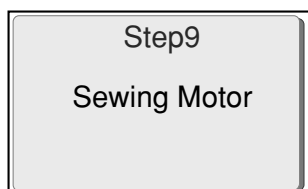
CANNOT SET THE ZIGZAG WIDTH MOTOR TO THE INITIAL POSITION, AND DISPLAYS:

- "E1 error"
- "E2 error"

REPLACE OR ADJUST:

- REPLACE THE GEAR COMPONENTS
- CHECK THE MOTOR SENSOR
- REPLACE THE MOTOR
- REPLACE THE BOARD A

9. DC MOTOR



CORRECT RESULT

LOWER THE PRESSER FOOT LIFTER. DEPRESS THE FOOT CONTROL TO RUN THE MACHINE.

WHEN THE SLIDE VOLUME IS LEFT, THE MACHINE WILL RUN AT THE SPEED OF "80 SPM" TO "100 SPM".
WHEN THE SLIDE VOLUME IS RIGHT, THE MACHINE WILL RUN AT THE SPEED OF "800 SPM" TO "840 SPM".

DEFECTIVE RESULTS:

THE MOTOR DOES NOT START, AND DISPLAYS "ERROR".

REPLACE OR ADJUST:

- ADJUST THE MOTOR BELT TENSION.
- REPLACE THE MOTOR
- REPLACE THE PRINTED BOARD A.

RESULTS

REPEAT THE DIAGNOSTIC TEST UNTIL THE PROBLEMS HAVE BEEN RESOLVED.
ALL OF THE TEST FINISHED, TURN OFF THE POWER SWITCH.

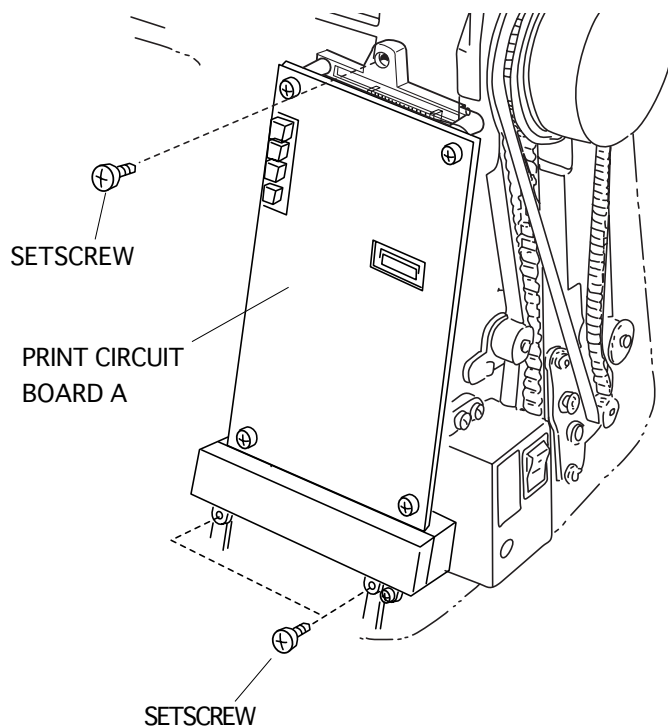
REPLACING PRINTED CIRCUIT BOARD "A"

TO REMOVE:

1. REMOVE THE FRONT COVER (SEE PAGE 8).
2. UNPLUG THE CONNECTORS FROM THE BOARD "A".
3. REMOVE THE 3 SCREWS AND REMOVE BOARD "A".

TO INSTALL:

1. TO INSTALL, FOLLOW THE ABOVE PROCEDURE IN REVERSE.



REPLACING PRINTED CIRCUIT BOARD "K" AND "F"

REPLACING PRINTED CIRCUIT BOARD "K"

TO REMOVE:

1. REMOVE THE FRONT COVER UNIT (SEE PAGE 8)
2. REMOVE THE SET SCREWS "A" AND THE PRINTED BOARD "K".

TO INSTALL:

3. TO INSTALL THE SLIDE VOLUME, FOLLOW THE PROCEDURE ABOVE IN REVERSE.
 - CHECK TO ENSURE THAT THE SLIDE VOLUME MOVES SMOOTHLY BACK AND FORTH.

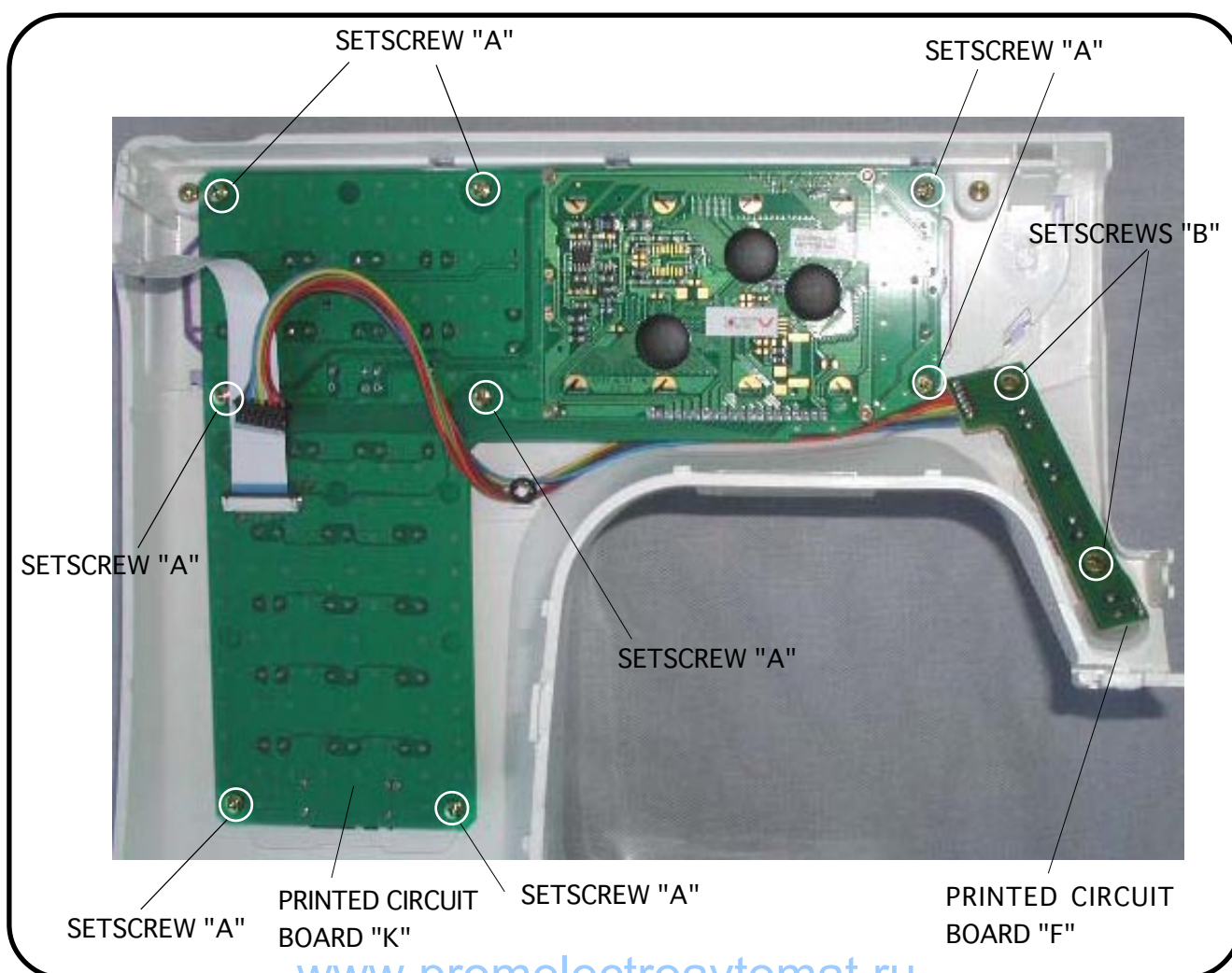
REPLACING PRINTED CIRCUIT BOARD "F"

TO REMOVE:

1. REMOVE THE FRONT COVER UNIT. REMOVE THE PRINTED BOARD "K".
2. REMOVE THE SETSCREWS (B). REMOVE THE PRINTED CIRCUIT BOARD "F".

TO INSTALL:

3. TO INSTALL THE PRINTED CIRCUIT BOARD "F", FOLLOW THE PROCEDURE ABOVE IN REVERSE.



REPLACING DC MOTOR AND ADJUSTING MOTOR BELT TENSION

TO REMOVE:

1. REMOVE THE BELT COVER (SEE PAGE 8).
2. DISCONNECT THE MOTOR CONNECTOR.
REMOVE THE TWO SETSCREWS, THEN REMOVE THE DC MOTOR AND BELT.

TO ATTACH:

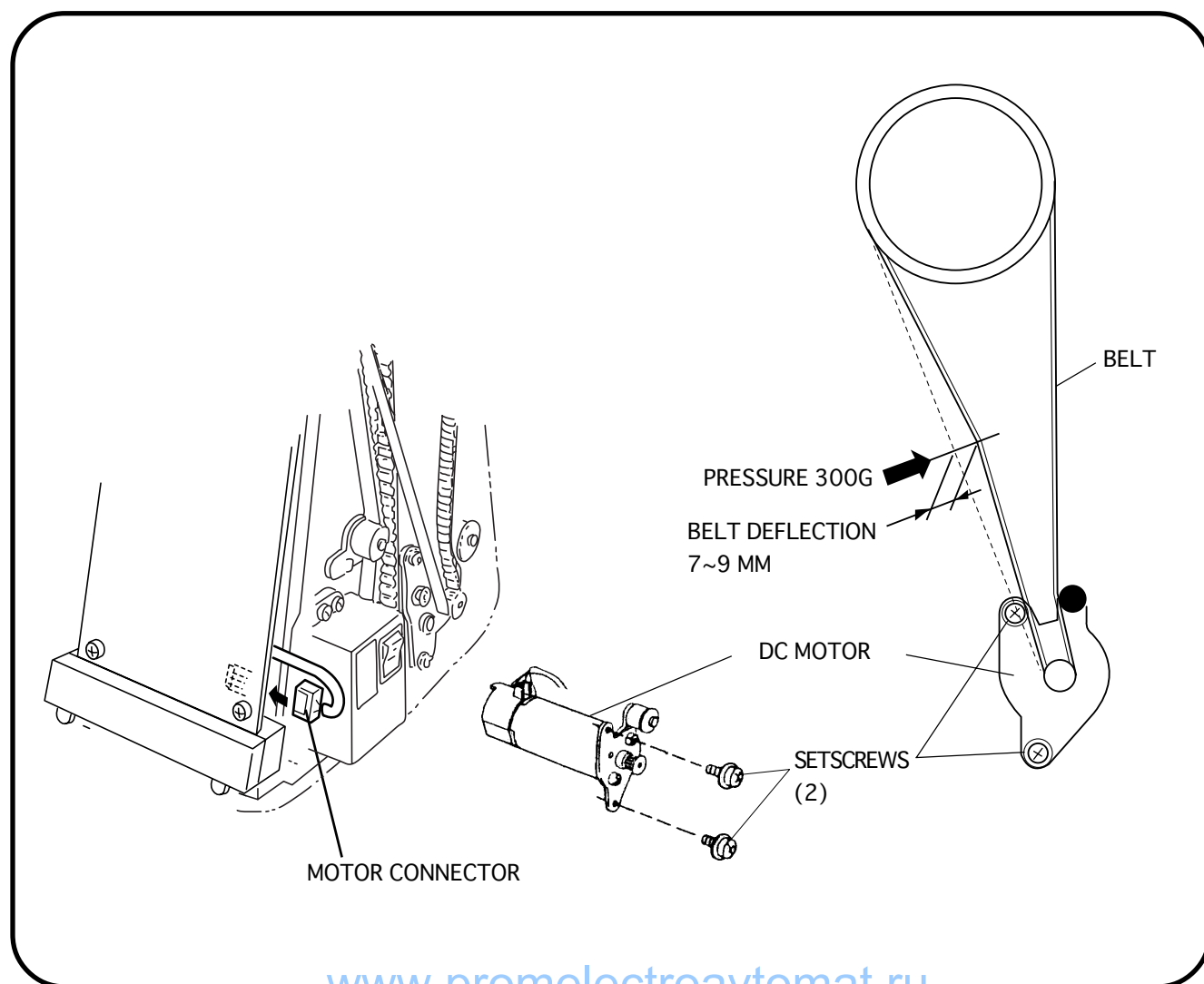
SET THE MOTOR IN MACHINE AND REPLACE SCREWS.

REPLACE THE MOTOR BELT.

WHEN APPLYING APPROXIMATELY 300 GRAMS PRESSURE IN THE MIDDLE OF THE BELT, IT SHOULD DEFLECT 7 TO 9 MM WHEN SET PROPERLY.

TIGHTEN THE SETSCREWS.

ATTACH THE BELT COVER.



REPLACING THE FUSES

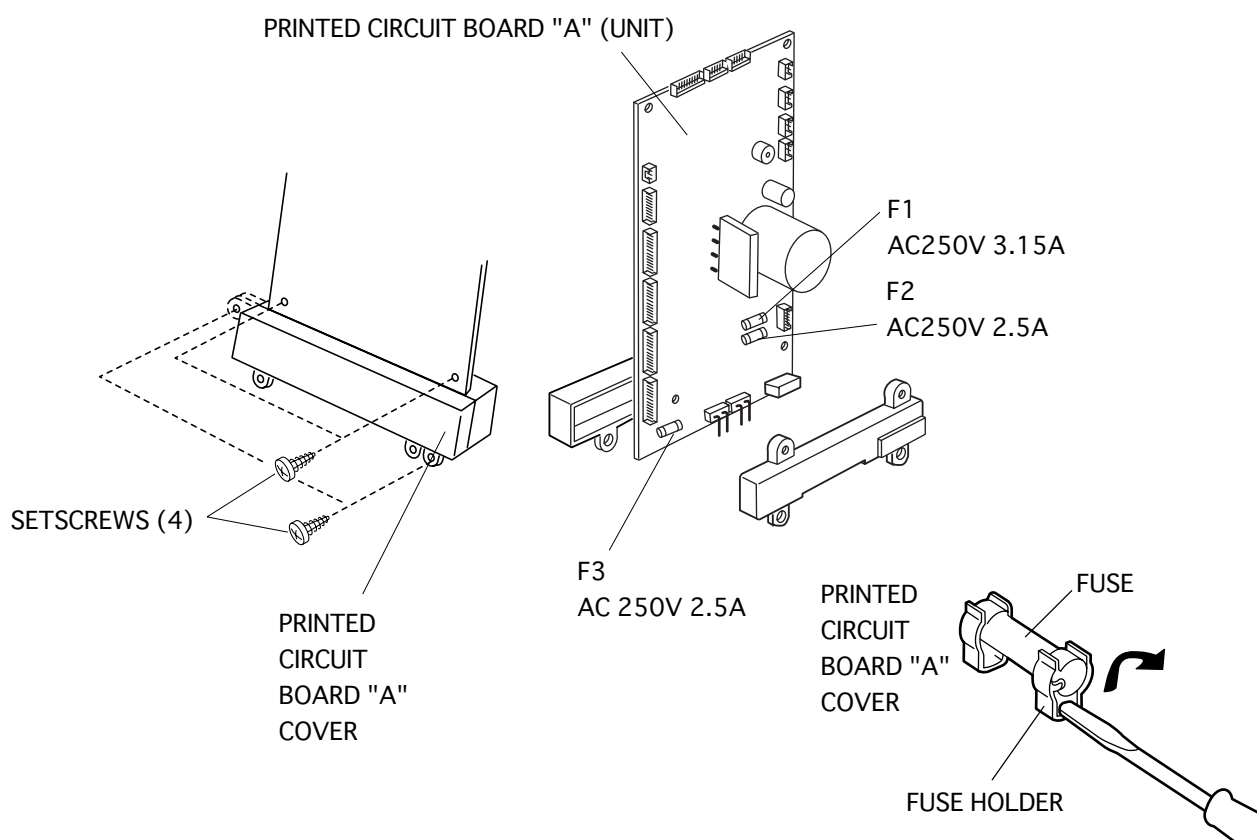
TO REMOVE:

1. REMOVE THE FRONT COVERS (SEE PAGE 8).
2. REMOVE THE PRINTED CIRCUIT BOARD "A". REMOVE THE FOUR SETSCREWS AND REMOVE THE COVER FROM THE PRINTED CIRCUIT BOARD "A".
3. REMOVE THE FUSE (PRY UP THE FUSE WITH A SCREWDRIVER).

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.
IF THE FUSE IS LOOSE, BEND THE FUSE CLIPS INWARD TO SECURE THE FUSE.

FUSE NO.	MANUFACTURE	DESCRIPTION
F2, F3	WALTER ELECTRONIC	TSD-2.5A-250V 5.2 x 20 mm 2.5A PART # 000144605
F1	WALTER ELECTRONIC	TSC-3.15A-250V 5.2 x 20 mm 3.15A PART # 000182904



REPLACING MACHINE SOCKET (UNIT)

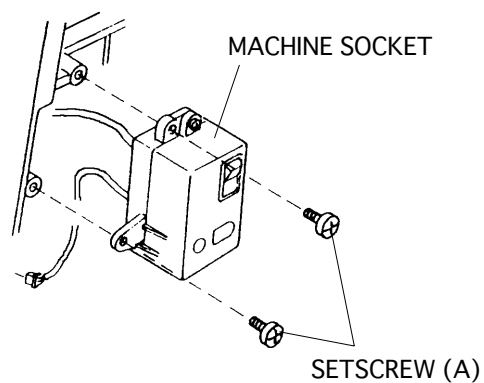
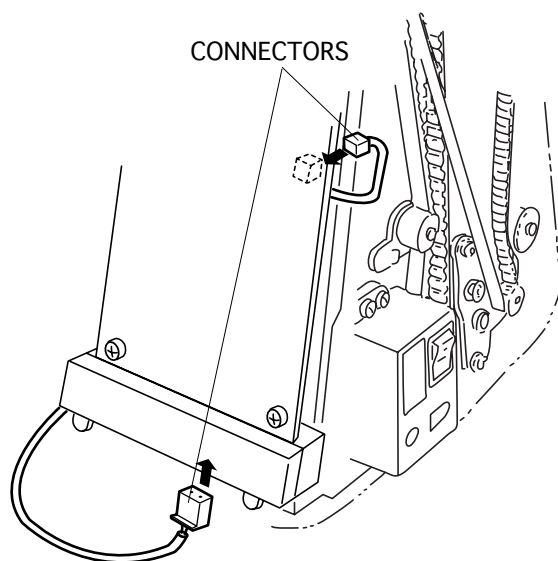
REPLACING THE MACHINE SOCKET

TO REMOVE:

1. REMOVE THE FRONT AND REAR COVERS (SEE PAGE 8).
2. REMOVE THE MACHINE SOCKET CONNECTOR FROM THE PRINTED CIRCUIT BOARD "A".
3. REMOVE THE TWO SET SCREWS AND REMOVE THE MACHINE SOCKET.

TO INSTALL:

1. TO INSTALL THE MACHINE SOCKET, FOLLOW THE ABOVE PROCEDURE IN REVERSE.



REPLACING THE TRANSFORMER

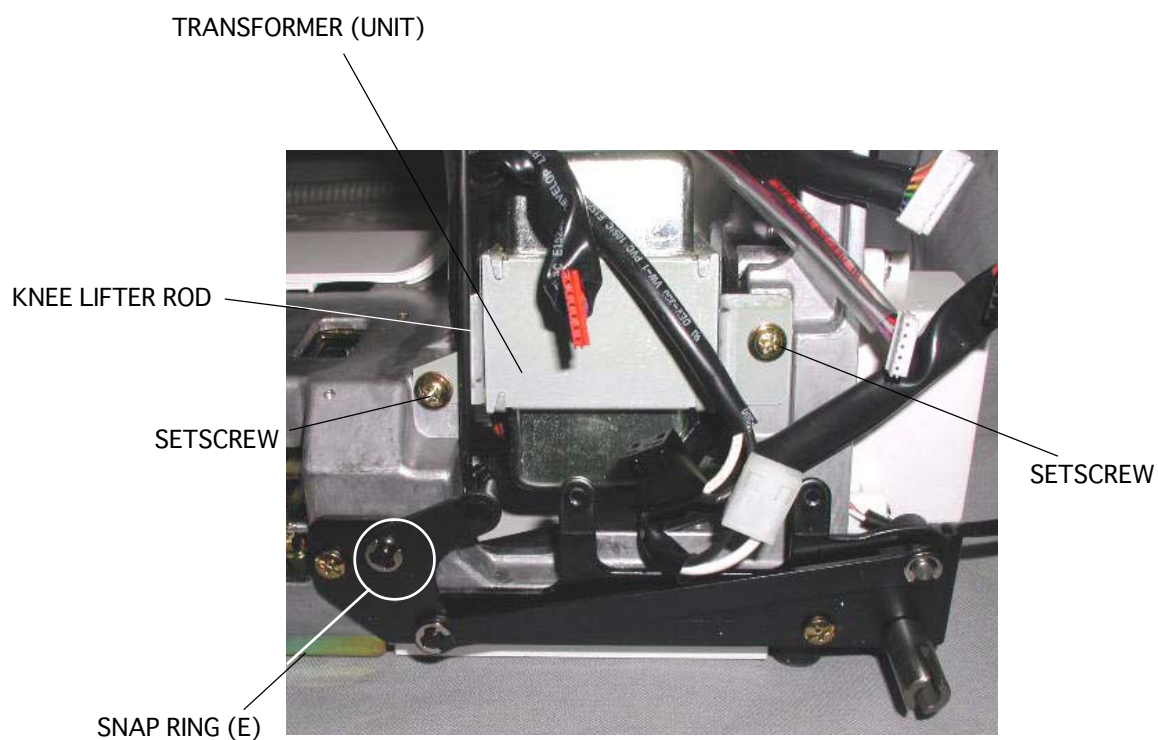
REPLACING THE TRANSFORMER (UNIT)

TO REMOVE:

1. REMOVE THE CIRCUIT BOARD "A". (SEE PAGE 8)
2. REMOVE THE SNAP RING (E). SLIDE THE KNEE LIFTER ROD.
3. REMOVE THE TWO SETSCREWS AND REMOVE THE TRANSFORMER (UNIT).

TO INSTALL:

TO INSTALL THE TRANSFORMER, FOLLOW THE ABOVE PROCEDURE IN REVERSE.



REPLACING THE ZIGZAG WIDTH MOTOR

REPLACING THE ZIGZAG WIDTH MOTOR

TO REMOVE:

1. REMOVE THE PRINTED CIRCUIT BOARD "A" (SEE PAGE 8).
2. REMOVE THE TWO SETSCREWS (A).
3. REMOVE THE TWO SETSCREWS (B) AND REMOVE THE ZIGZAG WIDTH MOTOR.

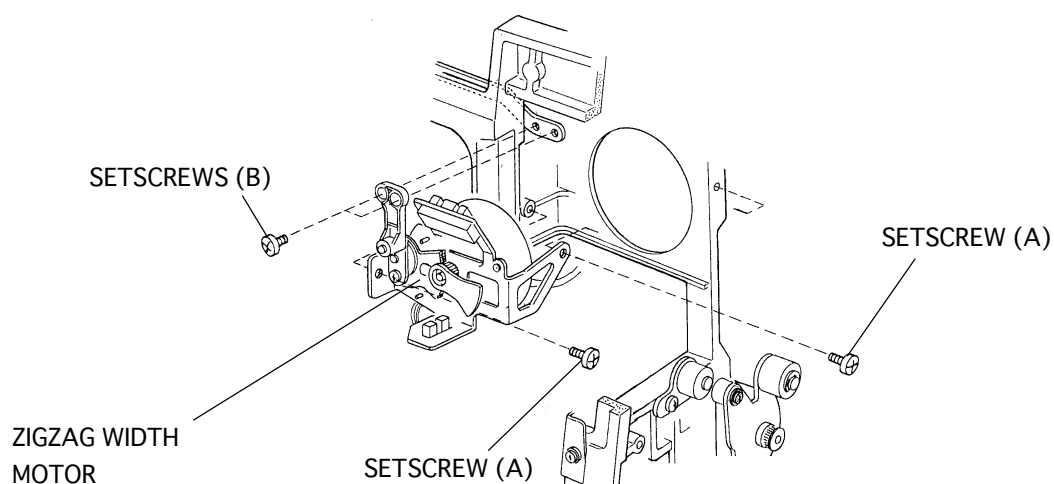
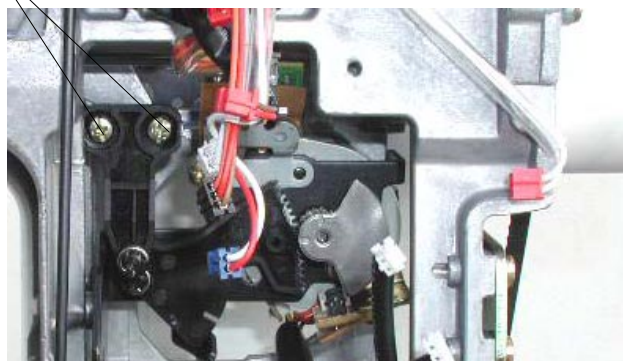
TO INSTALL:

4. TO INSTALL THE ZIGZAG WIDTH MOTOR, FOLLOW THE ABOVE PROCEDURE IN REVERSE.

NOTE:

1. THE SETSCREWS (A) SHOULD BE TIGHTENED AT 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 11).

SETSCREWS (B)



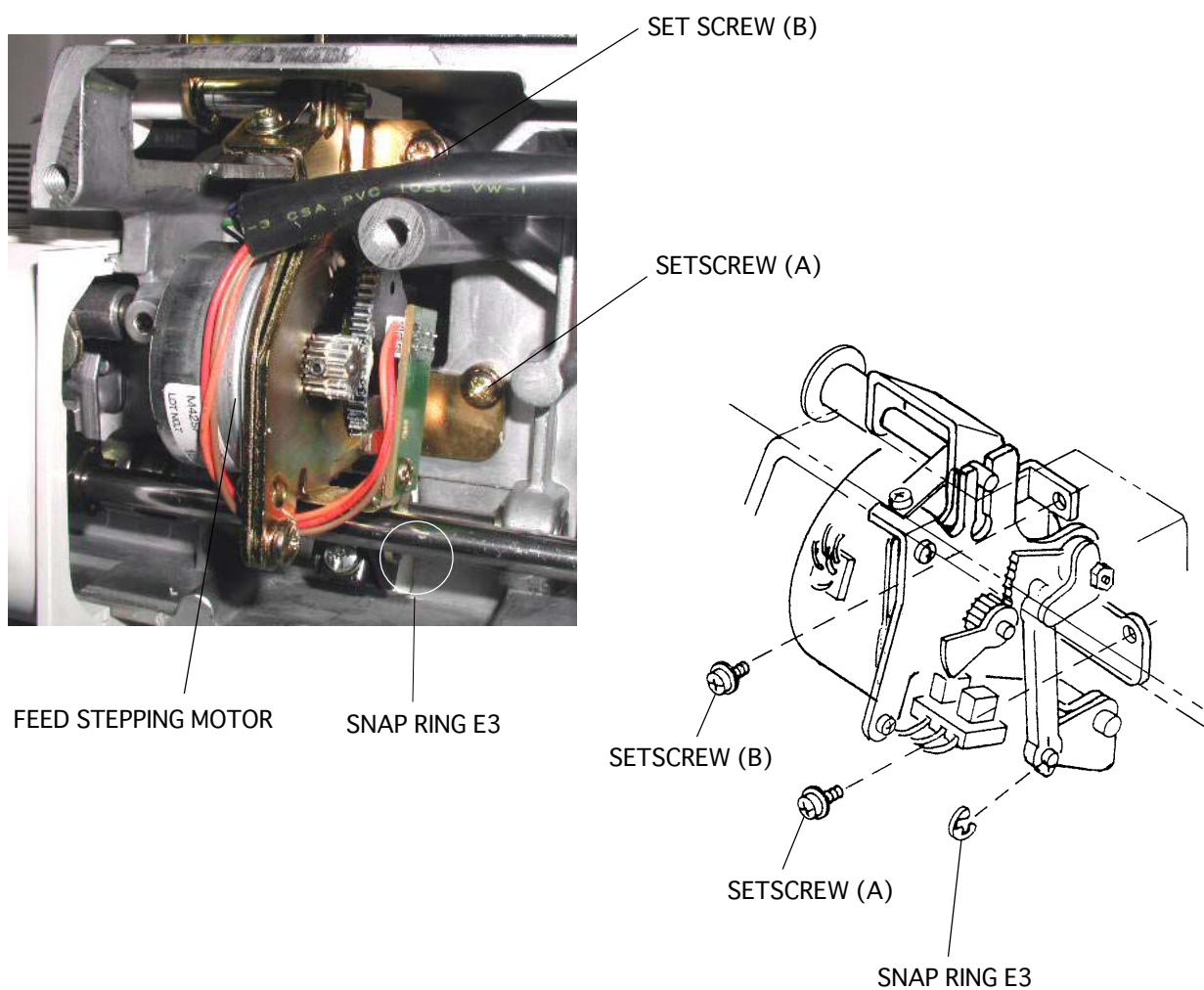
REPLACING FEED STEPPING MOTOR

TO REMOVE:

1. REMOVE THE BELT COVER AND BASE.
2. REMOVE THE SNAP RING (E).
3. REMOVE THE SETSCREWS (A), (B). REMOVE THE FEED STEPPING MOTOR.

TO ATTACH:

FOLLOW THE ABOVE PROCEDURE IN REVERSE.



ADJUSTING BUTTONHOLE LEVER POSITION

TO ADJUST THE BUTTONHOLE LEVER GUIDE:

1. SET THE MACHINE IN BUTTONHOLE SENSOR ADJUSTING MODE.
(SEE BELOW. THE SCREEN SHOULD DISPLAY "H" OR "L".)
2. REMOVE THE FACE COVER AND LOOSEN SETSCREW(A).
3. LOWER THE BUTTONHOLE LEVER. POSITION THE BUTTONHOLE LEVER GUIDE SO THE SCREEN DISPLAYS "L". TIGHTEN SETSCREW (A).

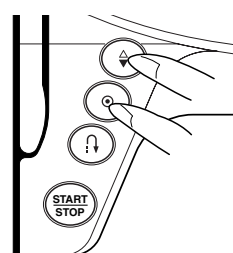
TO ADJUST THE BUTTONHOLE SENSOR POSITION:

4. INSTALL THE BUTTONHOLE FOOT (R).
5. LOWER THE BUTTONHOLE LEVER TO ITS LOWEST POSITION, AND INSERT A 1.6 MM THICKNESS GAUGE.
6. TURN THE ADJUSTING SCREW TO THE LEFT UNTIL THE SCREEN DISPLAY CHANGES FROM "L" TO "H".
7. THEN, TURN THE ADJUSTING SCREW TO THE RIGHT UNTIL THE SCREEN DISPLAY CHANGES FROM "H" TO "L".
8. CHECK IF THE LCD SCREEN SHOWS "H" WHEN THE CLEARANCE OF THE BUTTONHOLE FOOT IS 1.4 MM AND "L" WHEN THE CLEARANCE IS 1.8 MM.
9. TURN OFF THE POWER SWITCH.
10. INSTALL THE FACE COVER.

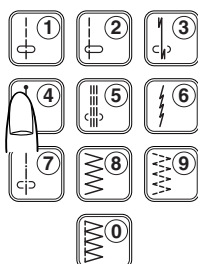
NOTE

IF THERE IS ANY LINT IN THE BUTTONHOLE SENSOR SLIT, CLEAN OUT WITH A SWAB.

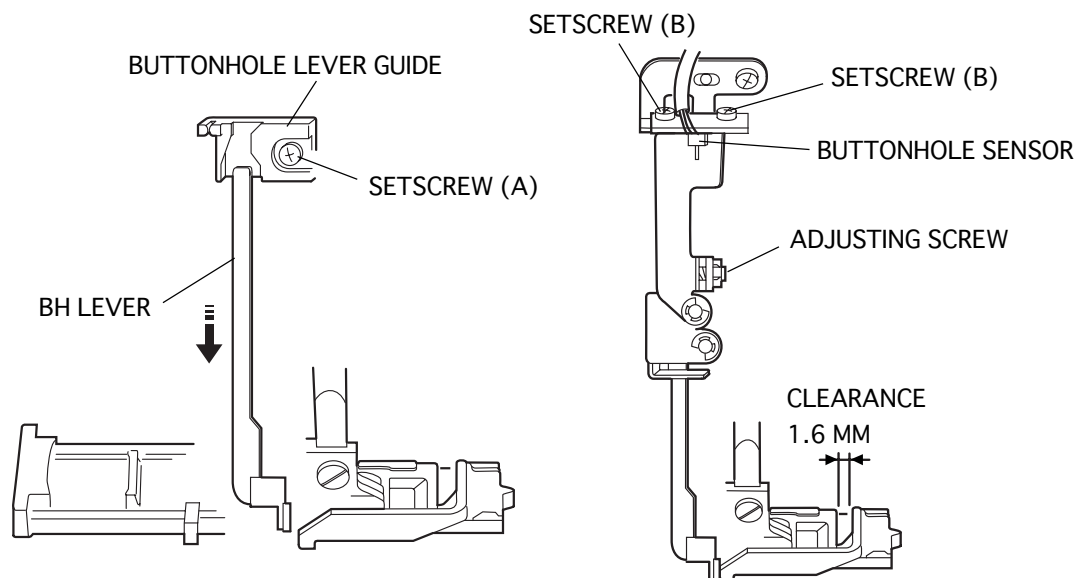
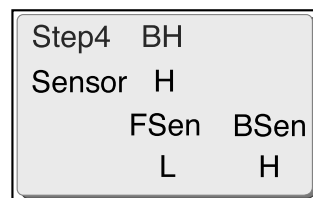
TO ENTER ADJUSTING MODE



1. TURN THE POWER ON WHILE PRESSING THE NEEDLE UP/DOWN BUTTON AND AUTO-LOCK BUTTON.



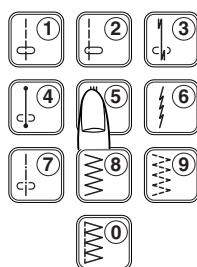
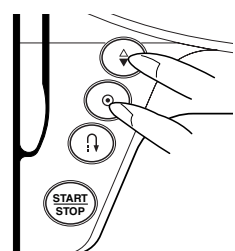
2. PRESS THE BUTTON "4".



ADJUSTING THE BOBBIN WINDING SWITCH

1. ENTER ADJUSTING MODE.
2. REMOVE THE TOP COVER (SEE PAGE 5).
3. LOOSEN THE SETSCREWS TO ADJUST THE POSITION OF THE SWITCH FIXING PLATE.
THE SP SHOULD SHOW "ON" WHEN THE BOBBIN WINDER SPINDLE IS SET TO THE BOBBIN WINDING POSITION, AND/OR "OFF" WHEN THE BOBBIN WINDER SPINDLE IS RETURNED TO THE SEWING POSITION.
4. TIGHTEN THE SETSCREW.
5. ATTACH THE TOP COVER.

TO ENTER ADJUSTING MODE



Step3 Switch		
SP	FL	TD
OFF	UP	ON

TURN THE POWER SWITCH ON WHILE PRESSING THE UP/DOWN NEEDLE POSITION BUTTON AND AUTO-LOCK STITCH BUTTON

PRESS THE BUTTON 5.

BOBBIN WINDING SHAFT

SETSCREWS

SWITCH FIXING PLATE

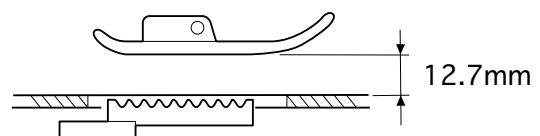
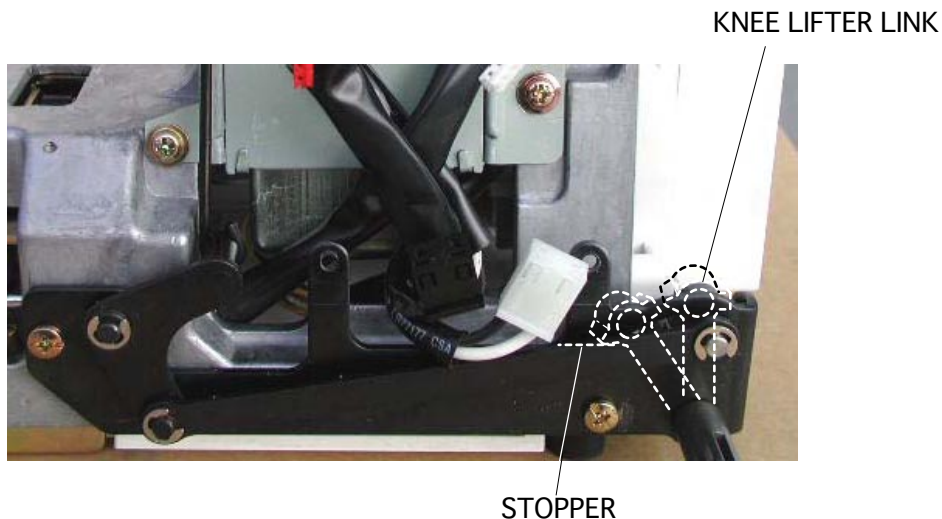
(BOBBIN WINDING OFF)
(SEWING POSITIONA)

(BOBBIN WINDING ON)
BOBBIN WINDING POSITION

ADJUSTING KNEE LIFTER HEIGHT

WHEN THE KNEE LIFTER LINK IS TOUCHED TO THE STOPPER, THE CLEARANCE BETWEEN THE NEEDLE PLATE AND THE FOOT SHOULD BE 12.7 MM.

1. REMOVE THE REAR COVER. (SEE PAGE 9)
2. LOOSEN THE SETSCREWS AND MOVE THE KNEE LIFTER LINK TO THE RIGHT WHEN THE CLEARANCE BETWEEN THE NEEDLE PLATE AND THE FOOT IS BIGGER THAN 12.7 MM.
LOOSEN THE SET SCREWS AND MOVE THE KNEE LIFTER LINK TO THE LEFT WHEN THE CLEARANCE IS SMALLER THAN 12.7 MM.
3. ATTACH THE REAR COVER.



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, N & M) INDICATED BY THE WHITE ARROWS.

