

SERVICING MANUAL



Memory Craft 4800

CONTENTS

WIRING DIAGRAM	1
GENERAL TROUBLE SHOOTING PROCEDURE	2
WHAT TO DO WHEN	3-5
ELECTRONIC QUICK CHECK	6-8
SERVICE ACCESS	
FACE COVER UNIT	9
TOP COVER UNIT	9
BELT COVER	10
BASE PLATE	11
BED COVER	11
FRONT COVER	12
REAR COVER	13
MECHANICAL ADJUSTMENT	
NEEDLE POSITION	14
NEEDLE BAR HEIGHT	15
NEEDLE TO HOOT TIMING	16
CLEARANCE BETWEEN NEEDLE AND HOOK	17
BACKLASH (LOWER SHAFT GEAR)	18
FEED DOG HEIGHT	19
ZIGZAG SYNCHRONIZATION	20
STRETCH STITCH FEED BALANCE	21
NEEDLE THREAD TENSION	22
BUTTONHOLE LEVER	23
PRESSER BAR HEIGHT AND ALIGNMENT	24
PART REMOVAL AND REPLACEMENT	
THREADER PLATE	25
C-BOARD AND FUSE	26
TRANSFORMER	27
RECEPTACLE	28
A-BOARD	29
K-BOARD	30
F-BOARD	30
DRIVING MOTOR (DC MOTOR)	31
BUTTONHOLE SENSOR	32
UPPER SHAFT SENSOR	33
ZIGZAG STEPPING MOTOR	34
FEED STEPPING MOTOR	35

WIRING DIAGRAM

NAME OF ELECTRONIC PARTS AND WIRING

EACH CONNECTOR SHOULD BE CONNECTED AS FOLLOWS;

A: THREAD TENSION SWITCH

B: BUTTONHOLE SENSOR

C: UPPER SHAFT SENSOR

D: SEWING LIGHT

E: C-BOARD

F: FEED STEPPING MOTOR

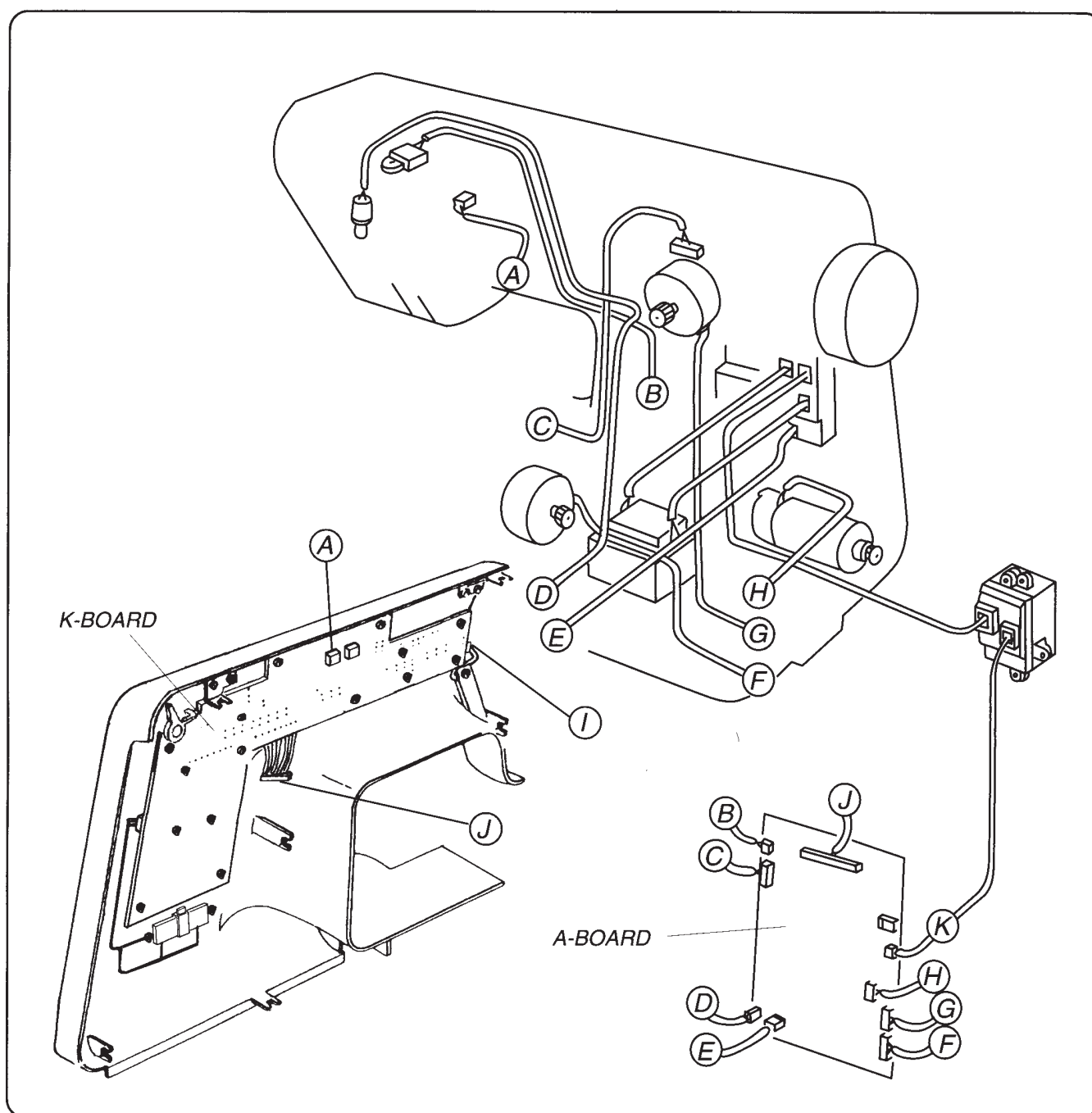
G: ZIGZAG STEPPING MOTOR

H: DC MOTOR

I: F-BOARD

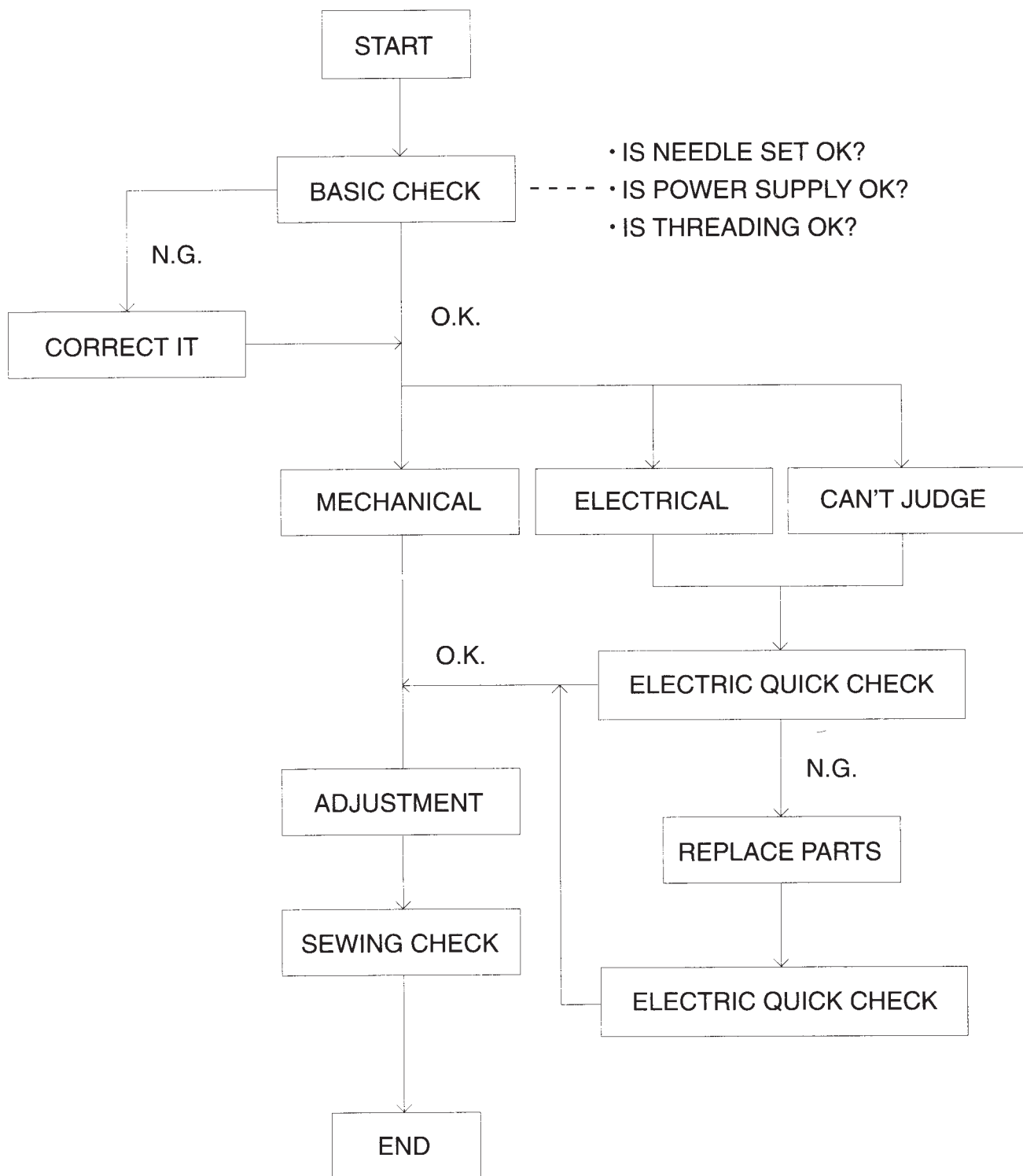
J: K-BOARD

K: RECEPTACLE (SECONDARY)



GENERAL TROUBLE SHOOTING PROCEDURE

(MACHINE DOESN'T WORK WELL)



WHAT TO DO WHEN

CONDITION	CAUSE	HOW TO FIX	REFERENCE
1. SKIPPING STITCHES	1. NEEDLE IS NOT INSERTED PROPERLY.	INSERT THE NEEDLE PROPERLY.	
	2. NEEDLE IS BENT OR WORN.	CHANGE THE NEEDLE.	
	3. INCORRECTLY THREADED	RETHREAD.	
	4. NEEDLE OR THREAD ARE INAPPROPRIATE FOR FABRIC BEING SEWN.	USE THE RECOMMENDED SEWING NEEDLE AND THREAD.	
	5. SEWING ON STRETCH FABRIC	USE A #11 BLUE TIP NEEDLE.	
	6. 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".	P. 15
	8. INAPPROPRIATE NEEDLE TO HOOK TIMING	SEE MECHANICAL ADJUSTMENT "NEEDLE TO HOOK TIMING".	P. 16
	9. INAPPROPRIATE NEEDLE TO HOOK CLEARANCE	SEE MECHANICAL ADJUSTMENT "CLEARANCE BETWEEN NEEDLE AND HOOK".	P. 17
2. FABRIC NOT MOVING	1. PRESSER FOOT PRESSURE IS TOO WEAK.	ADJUST THE PRESSER BAR LEVEL TO MAKE THE PRESSURE STRONGER.	
	2. INCORRECT FEED DOG HEIGHT	SEE MECHANICAL ADJUSTMENT "FEED DOG HEIGHT".	P. 19
	3. FEED DOG IS IN DOWN POSITION.	RAISE THE FEED DOG LEVEL.	
	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. 22
4. BREAKING BOBBIN THREAD	1. INCORRECTLY THREADED BOBBIN. 2. TOO MUCH THREAD IS 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 THE STOPPER. CLEAN THE HOOK. 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 HOOK. 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. 14 P. 17 P. 20

CONDITION	CAUSE	HOW TO FIX	REFERENCE
6. NOISY OPERATION	1. BACKLASH BETWEEN HOOK GEAR AND LOWER SHAFT GEAR IS TOO GREAT.	SEE MECHANICAL ADJUSTMENT "BACKLASH (LOWER SHAFT GEAR)".	P. 18
	2. LOWER SHAFT GEAR IS LOOSE.	ELIMINATE THE LOOSENESS.	
	3. INAPPROPRIATE BELT TENSION	SEE PART REMOVAL AND REPLACEMENT "DRIVING MOTOR (DC MOTOR)".	P. 31
	4. NOT ENOUGH OIL	OIL ALL MOVING PARTS.	
7. DEFORMATION OF PATTERN	1. INAPPROPRIATE FEED BALANCE	SEE MECHANICAL ADJUSTMENT "STRETCH STITCH FEED BALANCE".	P. 21
	2. INAPPROPRIATE ZIGZAG SYNCHRONIZATION	SEE MECHANICAL ADJUSTMENT "ZIGZAG SYNCHRONIZATION".	P. 20
	3. UPPER THREAD TENSION IS TOO STRONG.	SEE MECHANICAL ADJUSTMENT "NEEDLE THREAD TENSION".	P. 22

ELECTRONIC QUICK CHECK

IMPORTANT:

1. TURN ON THE SWITCH, IF THE FOLLOWING PROBLEMS OCCUR, REPLACE THE PARTS STEP-BY-STEP.

- THE MACHINE DOESN'T WORK WHEN YOU TURN ON THE SWICH:
 - ①CHECK EACH CONNECTOR
 - ②REPLACE THE RECEPTACLE
 - ③REPLACE A BOARD
 - ④REPLACE C BOARD
 - ⑤REPLACE THE TRANSFORMER
 - ⑥REPLACE THE FUSE
- THE MACHINE'S LIGHT DOESN'T TURN ON: ①REPLACE THE LANP
- LCD DOES NOT SHOW ANYTHING: ②REPLACE A BOARD
- SEWS THE SAME SPOT CONTINUOUSLY: ①REPLACE K BOARD
- SEWS THE SAME SPOT CONTINUOUSLY: ②REPLACE A BOARD
- SEWS THE SAME SPOT CONTINUOUSLY: ③REPLACE THE ZIGZAG STEPPING MOTOR

IMPORTANT:

- THIS QUICK CHECK MUST BE PERFORMED IN THE SEQUENCE SHOWN. FOLLOW EACH STEP CAREFULLY, DO NOT SKIP ANY PROCEDURE

PREPARATION:

- TURN OFF THE POWER SWICH.
- MAKE SURE THE BOBBIN WINDING SPINDLE IS IN THE LEFT POSITION FOR NORMAL SEWING.
- RAISE THE FEED DOG.
- SET THE SPEED CONTROL LEVER AT LEFT SIDE.
- REMOVE THE PRESSER FOOT AND RAISE THE PRESSER BAR.
- NEEDLE BAR IS SET AT HIGHEST POSITION.
- CONNECT THE FOOT CONTROLLER.

FOR ALL STEPS:

AFTER EACH TEST, WHEN CORRECT CONDITION OCCURS, PRESS "MEMORY" KEY TO PROCEED TO THE NEXT STEP.

AFTER EACH TEST, IF IN CORRECT CONDITION OCCURS, PRESS "CLEAR" KEY TO PROCEED TO THE NEXT STEP.

NOTE:

IF THE MACHINE IS IN INCORRECT CONDITION AT STEPS 01,02 REPLACE THE BOARDS F, K, A AND RESTART THE TESTING.

ELECTRONIC QUICK CHECK

STEP	TEST	CORRECT CONDITION	INCORRECT CONDITION & CORRECTION
01 LCD, LED	WHILE PRESSING THE REVERSE STITCH BUTTON AND AUTO-LOCK BUTTON TOGETHER, TURN ON THE MAIN SWITCH AND PRESS "1" ON THE TEN KEY PAD WITHIN 2.5 SECONDS OTHERWISE THE MACHINE SETTING WILL RETURN TO THE NORMAL SETTINGS.	LCD SHOWS [SPECIAL MODE]. - LCD SHOWS [SELF CHECK START] AND BEEPING SIGNAL WILL SOUND. 6 LED FLASH SIMULTANEOUSLY ON AND OFF.	(COULD NOT GET TEST MODE) - REPLACE THE FOLLOWING PARTE AND RECHECK IN THE SEQUENCE SHOWN. - BOARD (F) - BOARD (K) - BOARD (A) - BOARD (L)
02 KEY TEST	PRESS THE FOLLOWING BUTTONS IN THE SEQUENCE SHOWN. - REVERSE - AUTO-LOCK - UP/DOWN - MODE - TWIN NEEDLE - EDITING - ZIGZAG WIDTH "-" - ZIGZAG WIDTH "+" - STITCH LENGTH "-" - STITCH LENGTH "+" - MESSAGE - TURN-OVER MEMORY - ELONGATION - STOCK/CALL - TEN KEY "1" TO "9" - MEMORY - TEN KEY "0" - CLEAR	- BEEPING SIGNAL WILL SOUND AND LCD SHOWS [KEY]. - EVERY TIME THE KEY IS PRESED THE BEEPING SIGNAL WILL SOUND. - WHEN THE MACHINE IS CORRECT AND THE LAST BUTTON IS PRRESSED, THE TEST MOVES ON TO THE NEXT STEP, 03.	(NOT WORKING CORRECTLY) - REPLACE THE FOLLOWING PARTS AND RECHECK IN THE SEQUENCE SHOWN. - BOARD (F) - BOARD (K) - BOARD (A)
03 AUTOMATIC BUTTONHOLE SENSOR TEST	- REPLACE THE PRESSER FOOT WITH THE AUTOMATIC BUTTONHOLE FOOT - LOWER THE BUTTONHOLE LEVER. - WITH THE PRESSER FOOT RAISED, MANUALLY MOVE THE AUTOMATIC BUTTONHOLE FOOT TO FRONT AND BACK.	- THE BEEPING SIGNAL WILL SOUND AND LCD SHOWS (BH SENSOR L). - SHIELD THE BUTTONHOLE SENSOR, [BH SENSOR H], BY SLIDING THE BH FOOT TO THE FRONT. - ACTIVATE THE BUTTONHOLE SENSOR, [BH SENSOR L] BY SLIDING THE BH FOOT TO THE BACK.	(NOT WORKING CORRECTLY) - REPLACE THE FOLLOWING PARTS AND RECHECK IN THE SEQUENCE SHOWN. - REPLACE BUTTONHOLE - BOARD (K) - BOARD (A)
04 BOBBIN WINDER SWITCH TEST	MOVE TH BOBBIN WINDER SPINDLE TO THE RIGHT AND THEN RETURN IT TO THE LEFT.	- THE BEEPING SIGNAL WILL SOUND. - THE LCD INDICATES [SPOOL] AND THE BEEPING SIGNAL WILL SOUND AGAIN.	(NOT WORKING CORRECTLY) - REPLACE THE FOLLOWING PARTS. - BOARD (K) - BOARD (A)
05 THREAD TENSION DIAL SWITCH TEST	TUEN THE THREAD TENSION DIAL.	- THE BEEPING SIGNAL WILL SOUND AND LCD SHOWS [THREAD TENSION]. - WHEN THE THREAD TENSION DIAL IS SET AT AUTO, THE THREAD TENSION DIAL FLASHES. - WHEN THE THREAD TENSION IS SET WITHOUT AUTO, THE THREAD TENSION DIAL WILL NOT FLASH.	(NOT WORKING CORRECTLY) - REPLACE THE FOLLOWING PARTS AND RECHECK IN THE SEQUENCE SHOWN. - BOARD (K) - BOARD (A) - BOARD (L)

STEP	TEST	CORRECT CONDITION	INCORRECT CONDITION & CORRECTION
06 UPPER SHAFT POSITIONING SENSOR TEST	MANUALLY TURN THE HANDWHEEL TOWARD YOU TO MOVE THE NEEDLE BAR TO ITS HIGHEST POSITION AND LOWEST POSITION.	- THE BEEPING SIGNAL WILL SOUND AND LCD SHOWS (PH SENSOR L, H). - HIGHEST POSITION, LCD SHOWS (PH SENSOR L, H). - MIDDLE POSITION, LCD SHOWS (PH SENSOR H, H). - LOWEST POSITION, LCD SHOWS (PH SENSOR H).	(NOT WORKING CORRECTLY) REPLACE THE FOLLOWING PARTS AND RECHECK IN THE SEQUENCE SHOWN. 1. UPPER SHAFT POSITIONING SENSOR 2. BOARD (A)
07 STEPPING MOTOR (ZIGZAG)	MANUALLY TURN THE HANDWHEEL TOWARD YOU TO MOVE THE NEEDLE BAR TO ITS LOWEST POSITION AND PRESS THE REVERSE STITCH BUTTON.	- THE BEEPING SIGNAL WILL SOUND AND LCD SHOWS [ZIGZAG MOTOR]. - THE ZIGZAG STEPPING MOTOR WILL MOVE THE NEEDLE, LEAVING IT IN THE CENTER POSITION.	(NOT WORKING CORRECTLY) REPLACE THE FOLLOWING PARTS AND RECHECK IN THE SEQUENCE SHOWN. 1. STEPPING MOTOR 2. BOARD (A)
08 STEPPING MOTOR (FEED)	TURN THE HANDWHEEL TOWARD YOU TO MOVE THE NEEDLE BAR TO ITS LOWEST POSITION AND PRESS THE REVERSE STITCH BUTTON.	- THE BEEPING SIGNAL WILL SOUND AND LCD SHOWS (FEED MOTOR). - THE FEED STEPPING MOTOR WILL MOVE THE FEED, LEAVING IT IN THE [0] FEED POSITION.	(NOT WORKING CORRECTLY) REPLACE THE FOLLOWING PARTS AND RECHECK IN THE SEQUENCE SHOWN. 1. STEPPING MOTOR (FEED) 2. BOARD (A)
09 CONTROLLER	DEPRESS THE FOOT CONTROL COMPLETELY, THEN RELEASE IT.	- THE BEEPING SIGNAL WILL SOUND AND LCD SHOWS (CONTROLLER). - THE BEEPING SIGNAL WILL SOUND AFTER RELEASING THE FOOT CONTROLLER.	(NOT WORKING CORRECTLY) REPLACE THE FOLLOWING PARTS AND RECHECK IN THE SEQUENCE SHOWN. 1. FOOT CONTROLLER 2. RECEPTACLE 3. BOARD (A)
10 SPEED SETTING SLIDE VOLUME TEST	MOVE THE SPEED SLIDE VOLUME LEVER FROM LEFT END TO RIGHT END, THEN RETURN IT TO THE LEFT POSITION.	- THE BEEPING SIGNAL WILL SOUND AND LCD SHOWS [VOLUME]. - THE BEEPING SIGNAL APPEARS AT THE LEFT OR RIGHT SETTING POSITIONS.	(NOT WORKING CORRECTLY) REPLACE THE FOLLOWING PARTS AND RECHECK IN THE SEQUENCE SHOWN. 1. BOARD (K) 2. BOARD (A)
11 DRIVING MOTOR TEST	PRESS REVERSE STITCH BUTTON.	- THE BEEPING SIGNAL WILL SOUND AND LCD SHOWS [DC MOTOR]. - THE MOTOR RUNS SLOWLY AND CHANGES TO HIGH SPEED, THE MOTOR WILL STOP RUNNING WITH THE NEEDLE IN ITS HIGHEST POSITION.	(NOT STOPPING IN THE HIGHEST POSITION OR RUNNING AT UNEVEN SPEED.) REPLACE THE FOLLOWING PARTS AND RECHECK EVENNESS OF SPEED. 1. DRIVING MOTOR 2. BOARD UNIT (A) FOR DEFECTS OTHER THAN THE ABOVE: 1. BOARD (C) 2. TRANSFORMER

TEST RESULTS:

AFTER ALL TESTS HAVE BEEN COMPLETED, [SELF-CHECK END] IS SHOWN ON THE LCD.

IF THE RESULTS IS CORRECT CONDITION.....[SELF-CHECK OK!] IS SHOWN ON THE LCD.

IF THE RESULTS IS INCORRECT CONDITION....."ERROR (EXAM)". "A" MEANS BOARD UNIT (A).

• EACH LETTER OF THE ALPHABET HAS THE FOLLOWING MEANINGS:

A: PRINTED CIRCUIT BOARD B: BUTTONHOLE SENSOR C: FOOT CONTROLLER

D: DRIVE MOTOR K: PRINTED CIRCUIT BOARD L: LAMP

P: UPPER SHAFT SENSOR R: RECEPTACLE X: STEPPING MOTOR (ZIGZAG)

Y: STEPPING MOTOR (FEED)

SERVICE ACCESS

FACE COVER UNIT

TO REMOVE:

1. REMOVE THE TWO SETSCREWS, AND REMOVE THE FACE PLATE COVER.

TO ATTACH:

2. REPLACE THE FACE COVER BY SLIGHTLY TIGHTENING THE TWO SETSCREWS.
3. CLOSE THE FACE COVER, CAREFULLY ALIGNING IT WITH THE ARM. THEN TIGHTEN THE SCREWS SECURELY.

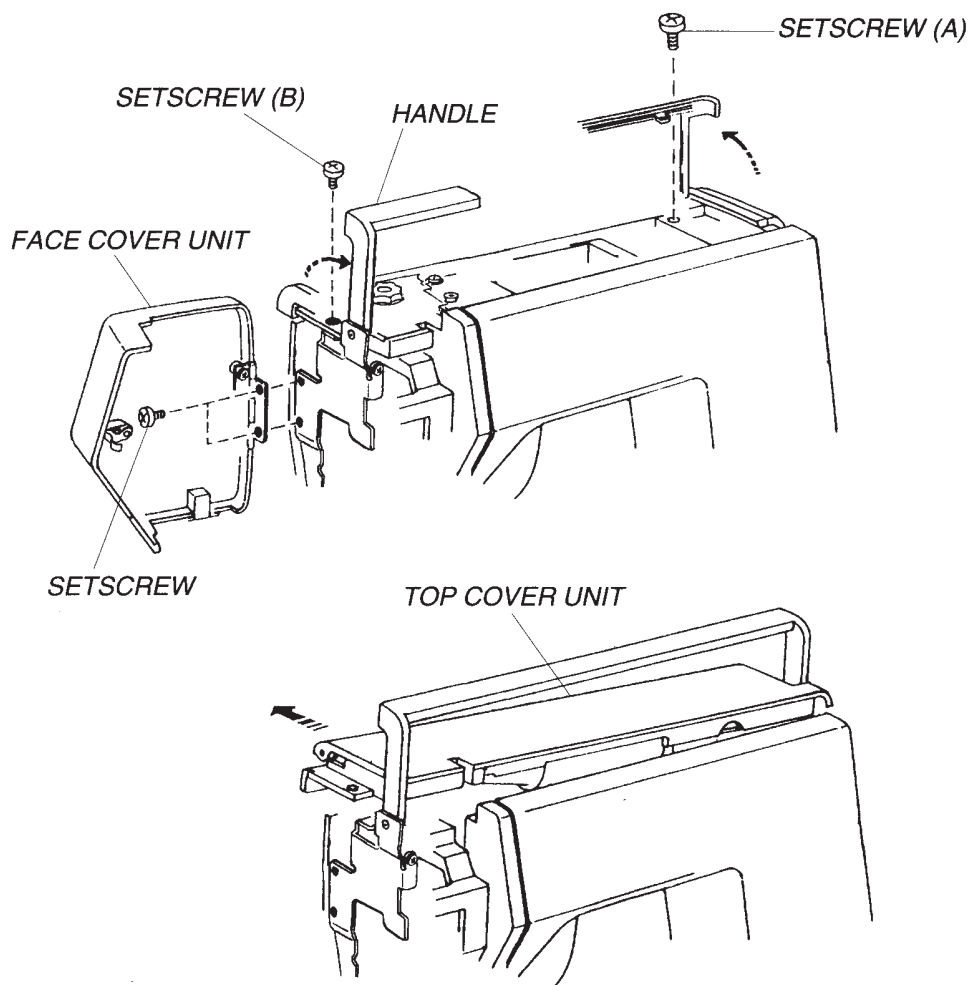
TOP COVER UNIT

TO REMOVE:

1. REMOVE THE SETSCREW (A) AND RAISE THE HANDLE, AND THEN REMOVE THE SETSCREW (B).
2. CLOSE THE TOP COVER AND RAISE THE HANDLE, AND THEN PULL OUT THE TOP COVER UNIT IN THE DIRECTION OF THE ARROW.

TO ATTACH:

3. RAISE THE HANDLE, AND INSERT THE TOP COVER UNIT FROM THE REAR SIDE.
4. ATTACH THE TOP COVER UNIT BY TIGHTENING THE SETSCREW (A) AND THE SETSCREW (B).



SERVICE ACCESS

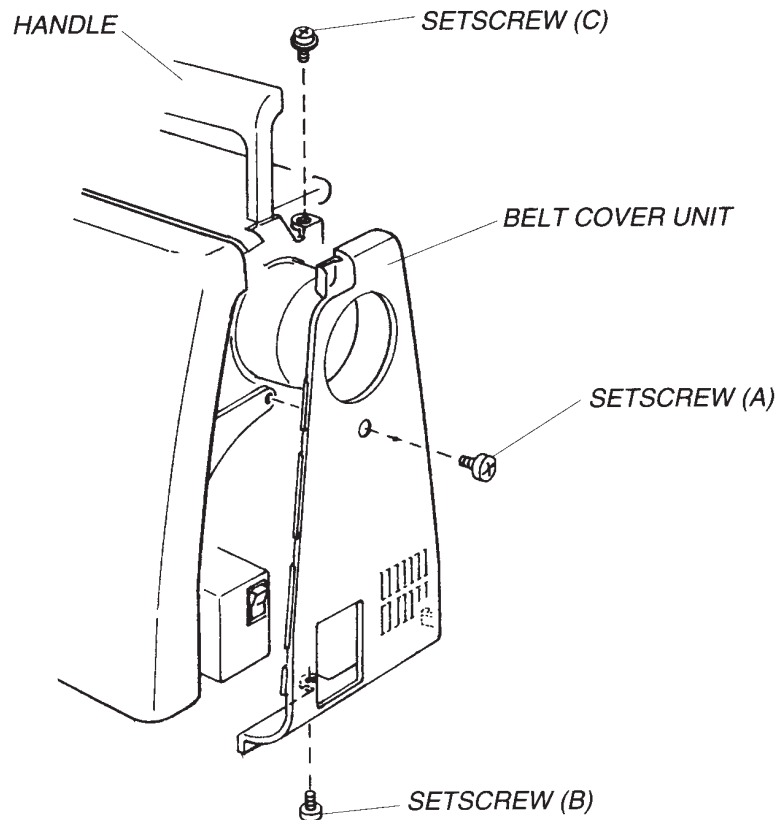
BELT COVER

TO REMOVE:

1. REMOVE THE SETSCREWS (A), (B) LOOSEN SCREW SET (C) OF THE CARRYING HANDLE, THEN REMOVE THE BELT COVER.

TO ATTACH:

2. ATTACH THE BELT COVER UNIT WITH THE 3 SETSCREWS.



SERVICE ACCESS

BASE PLATE

TO REMOVE:

1. REMOVE THE SETSCREW (A) AND 4 SETSCREWS (B).
2. REMOVE THE BASE PLATE (C).

TO ATTACH:

3. FOLLOW THE ABOVE PROCEDURE IN REVERSE.

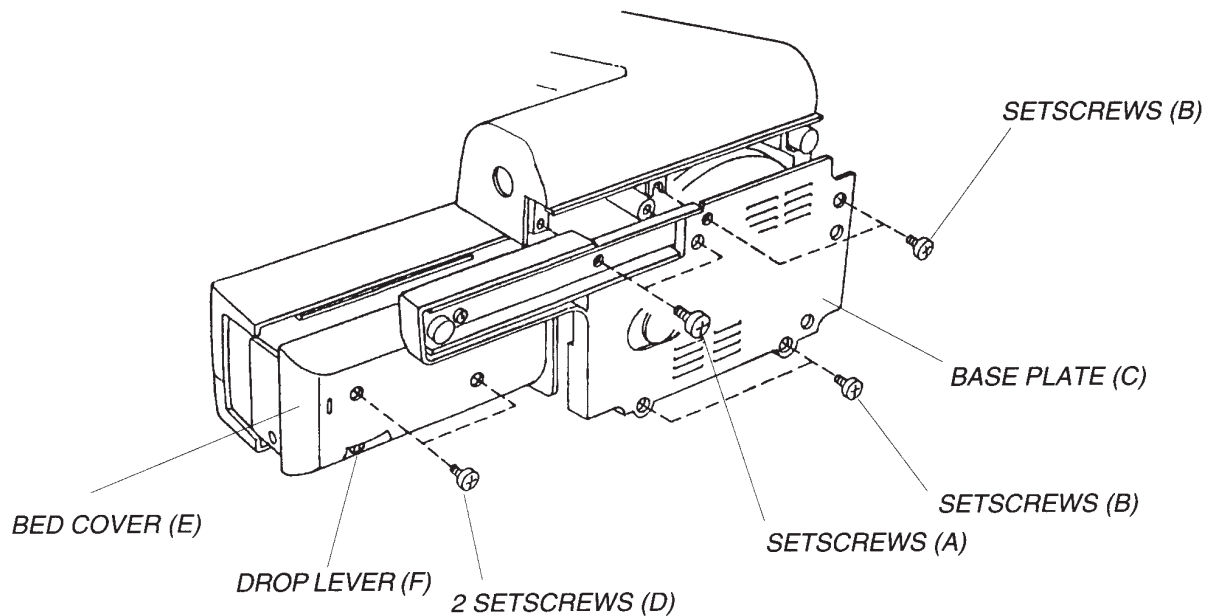
BED COVER

TO REMOVE:

1. REMOVE THE 2 SETSCREWS (D).
2. REMOVE THE BED COVER (E).

TO ATTACH:

3. MOVE THE DROP LEVER (F) TO THE LEFT POSITION AND REATTACHED THE BED COVER WITH THE 2 SETSCREWS (D).



SERVICE ACCESS

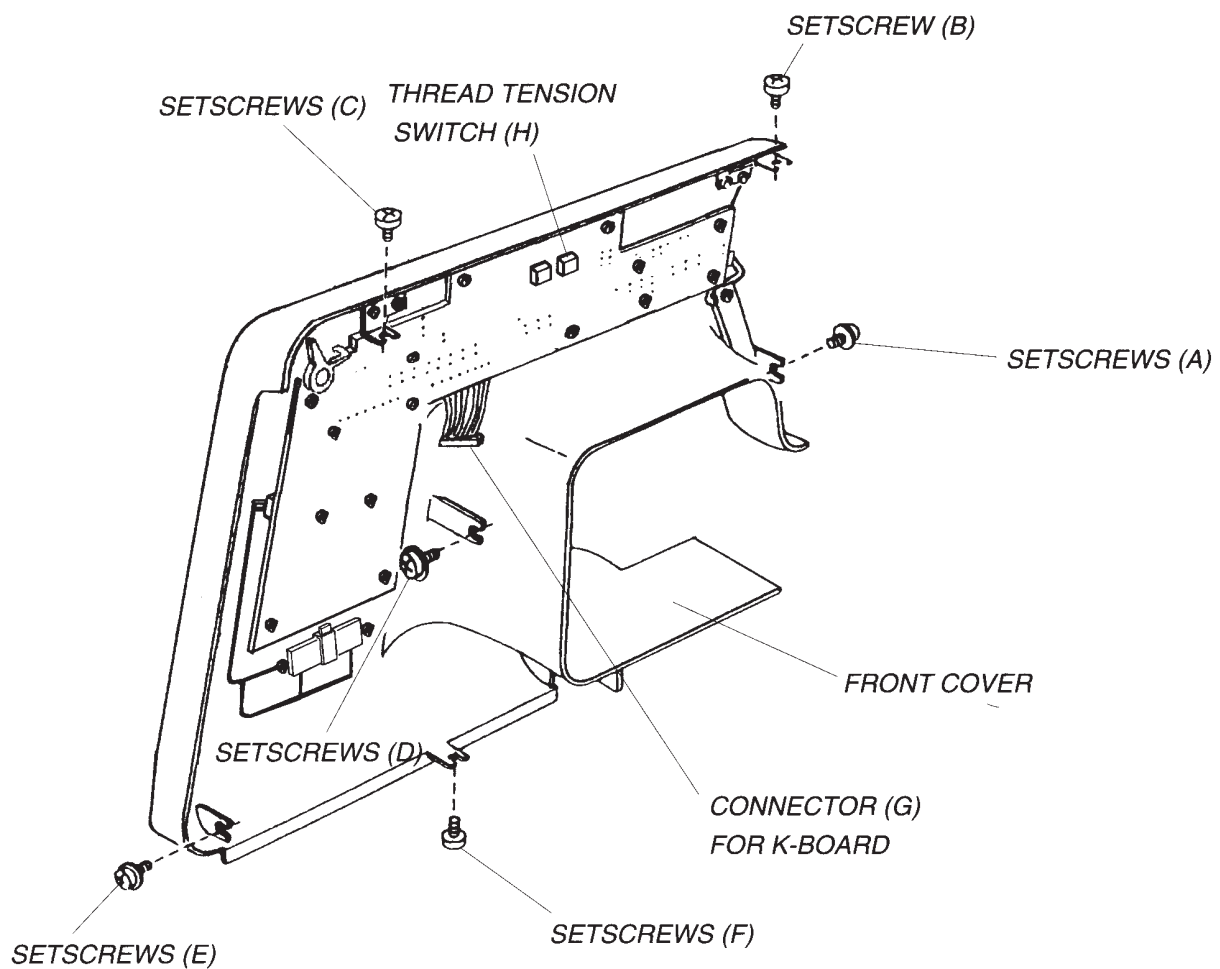
FRONT COVER

TO REMOVE:

1. REMOVE THE FACE COVER, TOP COVER, BELT COVER AND BED COVER.
2. REMOVE THE SETSCREW (A) AND LOOSEN THE SETSCREWS (B), (C), (D), (E) AND (F).
3. PULL OUT CONNECTOR (G) AND THREAD TENSION SWITCH (H) AND REMOVE THE FRONT COVER.

TO ATTACH:

4. FOLLOW THE ABOVE PROCEDURE IN REVERSE.



SERVICE ACCESS

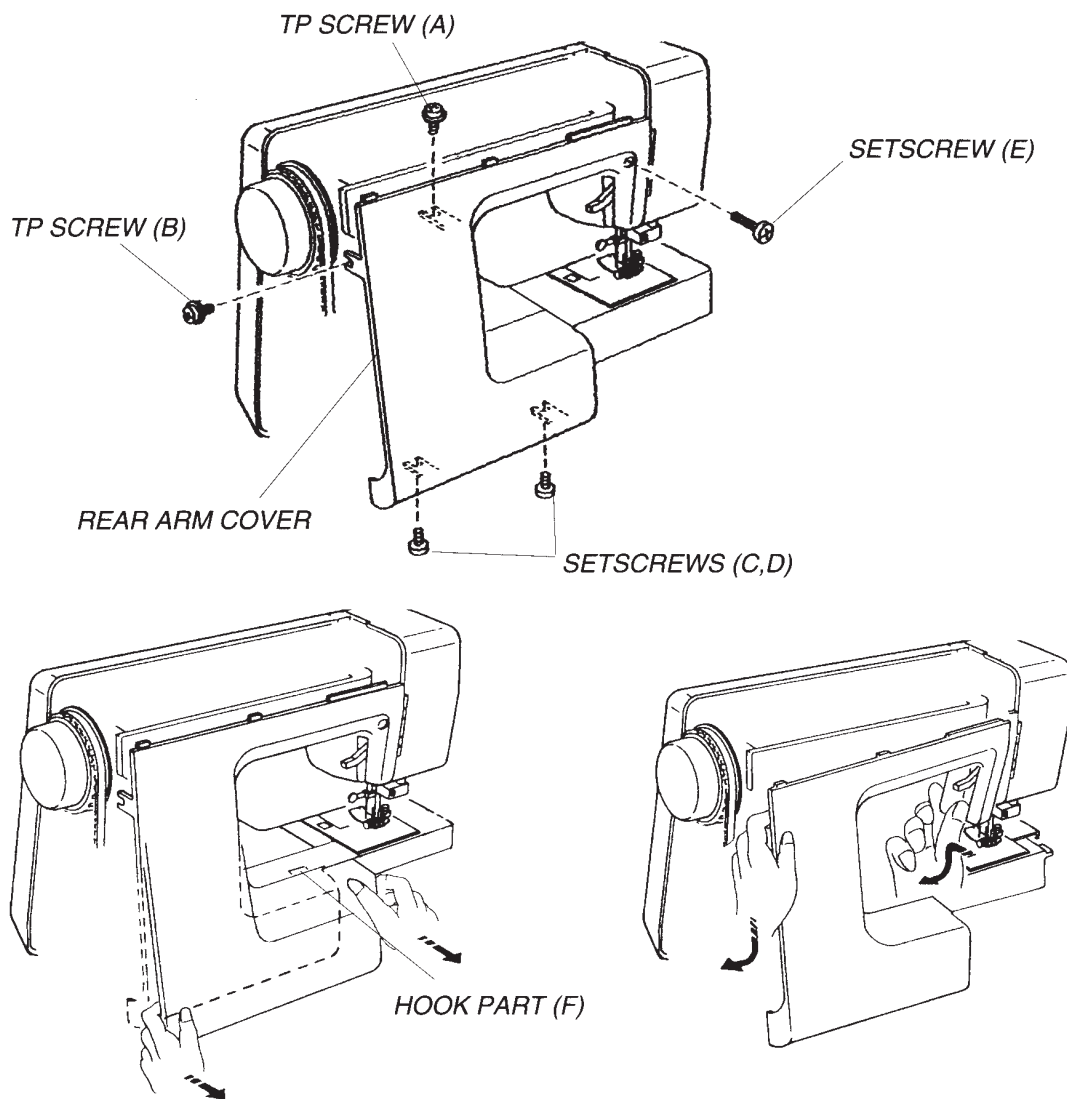
REAR COVER

TO REMOVE:

1. REMOVE THE FACE COVER, TOP COVER, BELT COVER AND BED COVER.
(SEE PAGES 9, 10 AND 11)
2. LOOSEN THE SETSCREWS A, B, C, D AND REMOVE THE SETSCREW.
3. RAISE THE PRESSER FOOT LEVER AND PULL AWAY THE REAR COVER FROM THE FREE ARM. TWIST AND REMOVE THE REAR COVER PART FROM THE PRESSER BAR LIFTER LEVER.

TO ATTACH:

4. FOLLOW THE ABOVE PROCEDURE IN REVERSE.



MECHANICAL ADJUSTMENT

NEEDLE POSITION

WHEN THE STRAIGHT STITCH PATTERN IS SELECTED, THE NEEDLE SHOULD BE POSITIONED AT THE CENTER OF THE NEEDLE PLATE HOLE.

WHEN THE ZIGZAG STITCH PATTERN IS SELECTED, THE CLEARANCE BETWEEN THE NEEDLE PLATE HOLE SHOULD BE EQUAL AT THE LEFT AND THE RIGHT NEEDLE DROP POSITIONS.

IF NOT, ADJUST THE PRESSER BAR SO THAT THE PRESSER FOOT IS PARALLEL WITH THE FEED DOG SLITS ON THE NEEDLE PLATE.

AFTER THIS ADJUSTMENT, RECHECK THE CENTER NEEDLE POSITION.

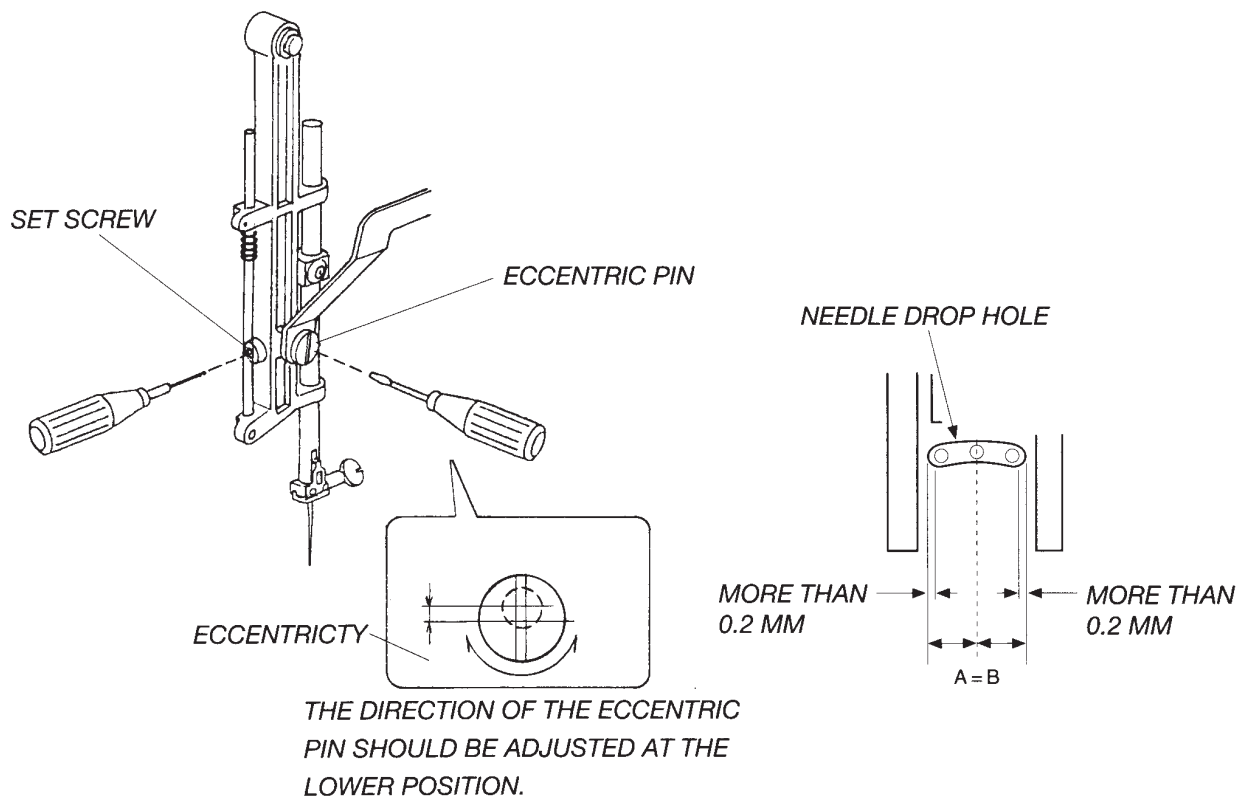
THE CLEARANCE BETWEEN THE NEEDLE AND THE NEEDLE PLATE HOLE SHOULD BE MORE THAN 0.2 MM.

ADJUSTMENT PROCEDURE:

1. REMOVE THE FACE COVER, (SEE PAGE 9).
2. TURN THE POWER SWITCH ON AND SELECT THE STRAIGHT STITCH AND MAXIMUM ZIGZAG WIDTH TO CHECK THE NEEDLE DROP POSITION.
3. IF THE NEEDLE DROP POSITION IS SLIGHTLY OUT OF STANDARD, ADJUST THE NEEDLE DROP POSITION BY TURNING THE ECCENTRIC PIN.

NOTE: THE DIRECTION OF THE ECCENTRIC PIN SHOULD BE SET AT LOWER SIDE AS SHOWN.

4. AFTER THE ADJUSTMENT OF THE NEEDLE DROP POSITION, TIGHTEN THE SCREW.
5. ATTACH THE FACE COVER.



MECHANICAL ADJUSTMENT

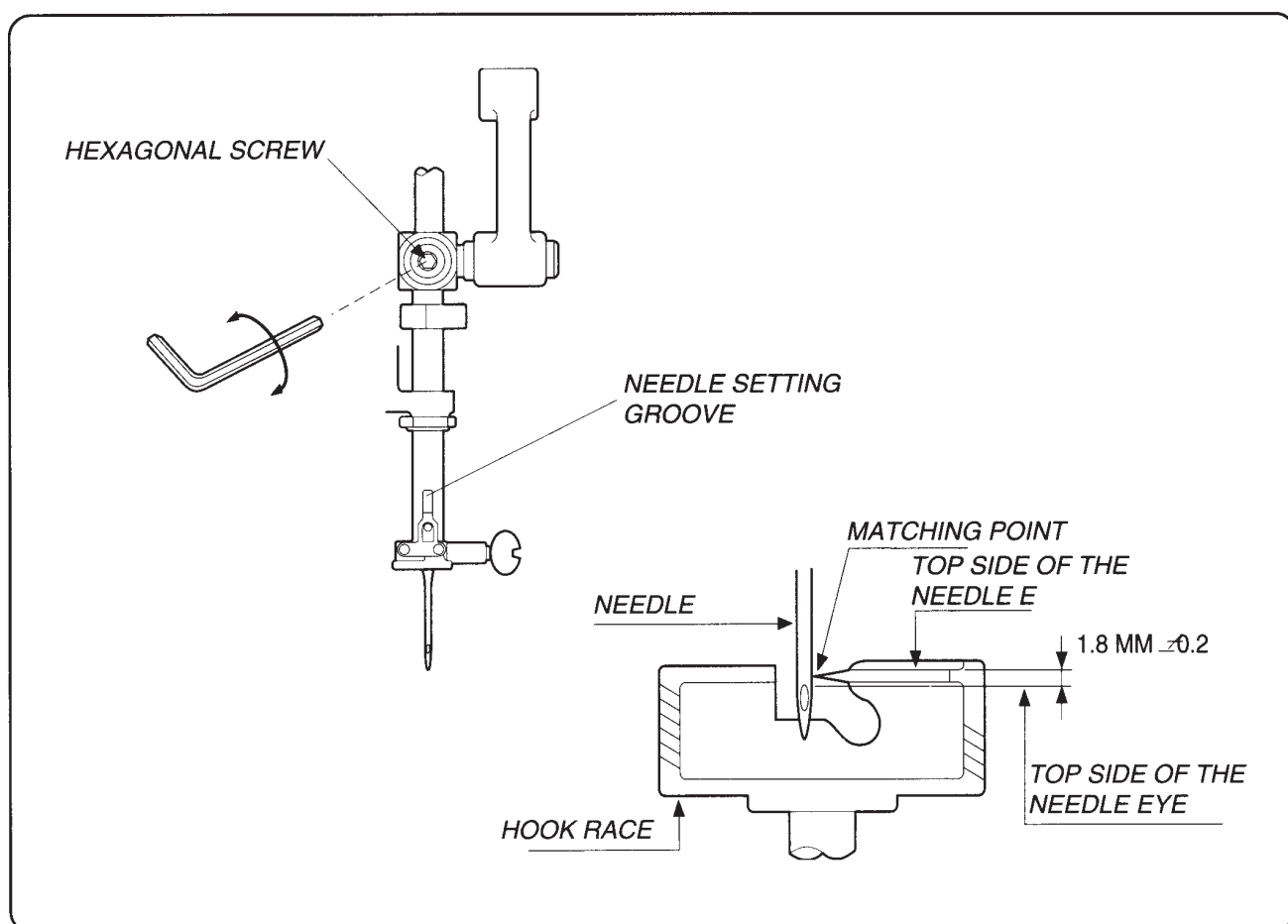
NEEDLE BAR HEIGHT

FOR THE NEEDLE BAR HEIGHT ADJUSTMENT, SET THE PATTERN SELECTOR DIAL AT STRAIGHT STITCH WITH THE LEFT NEEDLE POSITION.

TURN THE HANDWHEEL TOWARD YOU TO RAISE THE NEEDLE FROM THE LOWEST POSITION UNTIL THE TIP OF THE HOOK MEETS THE RIGHT SIDE OF THE NEEDLE, AND THE DISTANCE BETWEEN THE TOPSIDE OF THE NEEDLE EYE AND THE TIP OF THE HOOK IS THE NEEDLE BAR HEIGHT ADJUSTMENT, THE STANDARD NEEDLE BAR HEIGHT IS 1.6 TO 2.0 MM

TO ADJUST:

1. REMOVE THE FACE COVER.
2. REMOVE THE NEEDLE PLATE AND BOBBIN HOLDER. TURN THE POWER SWITCH ON AND SET THE PATTERN SELECTOR DIAL AT STRAIGHT STITCH WITH THE LEFT NEEDLE POSITION.
3. TURN THE HANDWHEEL TOWARD YOU TO MATCH THE TIP OF THE HOOK TO THE RIGHT SIDE OF THE NEEDLE.
4. LOOSEN THE HEXAGONAL SCREW.
5. MOVE THE NEEDLE UP AND DOWN TO ADJUST THE NEEDLE BAR HEIGHT.
6. THE NEEDLE SETTING GROOVE SHOULD BE SET AT FRONT SIDE AND TIGHTEN THE HEXAGONAL SCREW.
7. RE ATTACH THE BOBBIN HOLDER AND NEEDLE PLATE.
8. RE ATTACH THE FACE COVER.



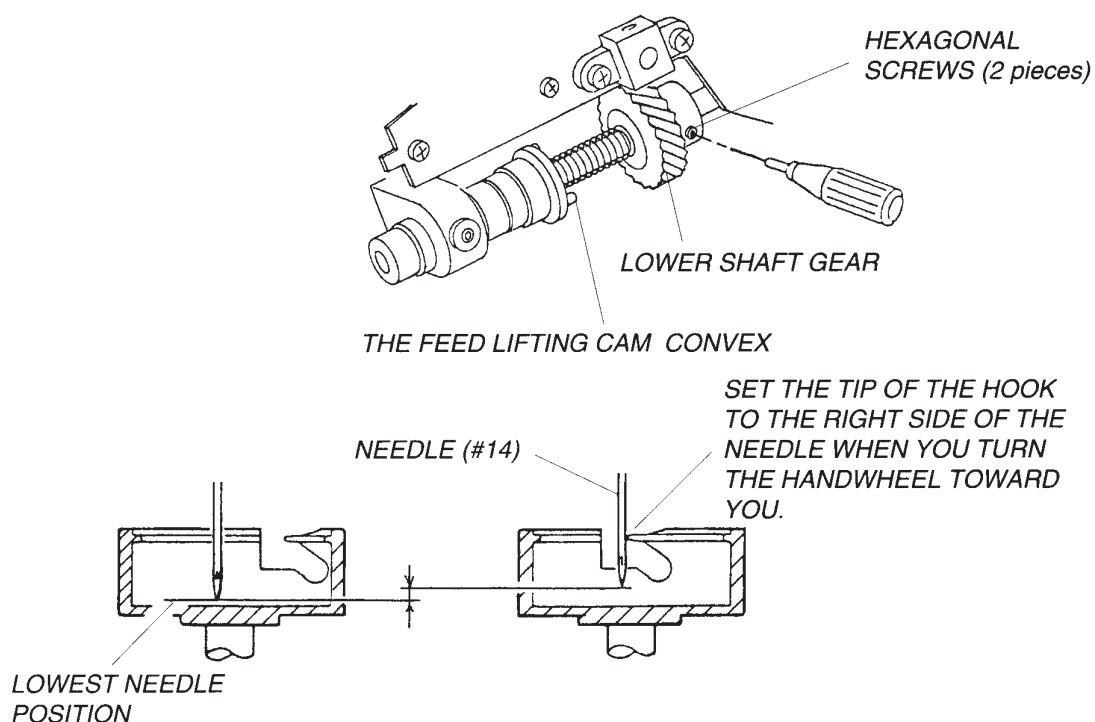
MECHANICAL ADJUSTMENT

NEEDLE TO HOOK TIMING

FOR THE NEEDLE TO HOOK TIMING, SET THE PATTERN SELECTOR DIAL AT STRAIGHT STITCH WITH THE LEFT NEEDLE POSITION, AND TURN THE HAND WHEEL TOWARD YOU TO SET THE LOWEST NEEDLE POSITION. TURN THE HANDWHEEL TOWARD YOU AGAIN AND THE DISTANCE BETWEEN THE LOWEST NEEDLE POSITION AND WHEN THE TIP OF THE ROTATING HOOK MEETS THE RIGHT SIDE OF THE NEEDLE IS 3.4 ± 0.15 MN.

1. REMOVE THE NEEDLE PLATE AND BOBBIN HOLDER, TURN THE POWER SWITCH ON AND SET THE PATTERN SELECTOR DIAL AT STRAIGHT STITCH WITH THE LEFT NEEDLE POSITION.
2. REMOVE THE BED COVER. (SEE PAGE 11)
3. TURN THE HANDWHEEL TOWARD YOU TO SET THE LOWEST NEEDLE POSITION.
4. LOOSEN THE LOWER SHAFT GEAR HEXAGONAL SCREWS (2SCREWS).
5. RAISE THE NEEDLE TO 3.4 ± 0.15 MN FROM THE LOWEST NEEDLE POSITION.
6. TURN THE LOWER SHAFT GEAR UNTIL IT MEETS THE TIP OF HOOK AT THE RIGHT SIDE OF THE NEEDLE AND TIGHETN THE LOWER SHAFT GEAR HEXAGONAL SCREWS.
7. RE ATTACH THE BED COVER, BOBBIN HOLDER AND NEEDLE PRATE.

NOTE: RECHEC TO, MAKE SURE THE NEEDLE TO HOOK TINING IS CORRECTLY ADJUSTED.



MECHANICAL ADJUSTMENT

CLEARANCE BETWEEN NEEDLE AND HOOK

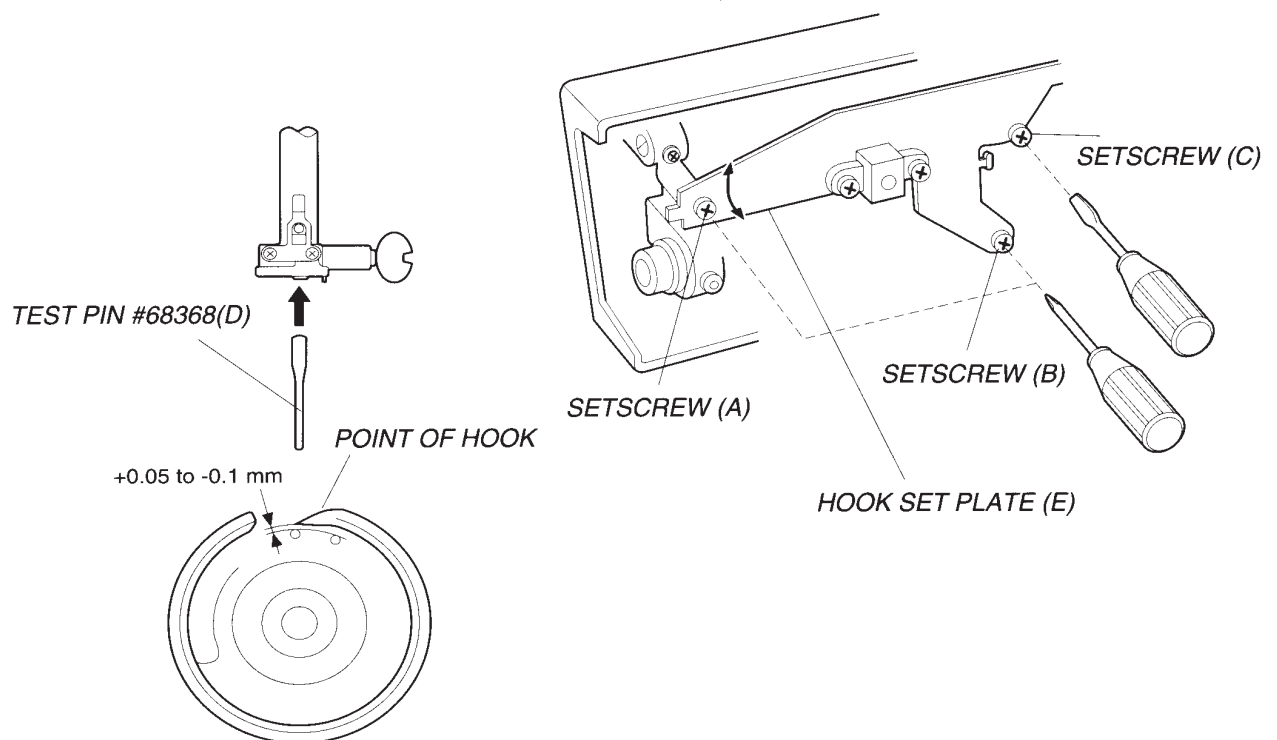
*THE CLEARANCE BETWEEN THE NEEDLE AND THE POINT OF HOOK SHOULD BE -0.1 TO +0.05 MM.

PREPARATION:

1. REMOVE THE NEEDLE PLATE, BOBBIN HOLDER, AND BED COVER, AND REPLACE THE NEEDLE WITH THE TEST PIN #68368 (D).
2. TURN THE POWER SWITCH ON, AND SELECT PATTERN ().

ADJUSTMENT PROCEDURE:

1. LOOSEN THE SET SCREWS (A), (B), (C), THEN SLIGHTLY TIGHTEN THE HINGE SCREW(C).
2. TURN THE HANDWHEEL WHEEL TOWARD YOU, AND ADJUST THE CLEARANCE BETWEEN THE TEST PIN #68368 (D) AND THE POINT OF THE HOOK IN THE LEFT AND RIGHT NEEDLE POSITION TO ± 0.1 TO ± 0.05 MM BY MOVING THE HOOK SET PLATE (E) UP OR DOWN.
3. TIGHTEN THE SET SCREWS (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 "BACKLASH OF (LOWER SHAFT GEAR PAGE18)".
5. RE ATTACH THE BED COVER BOBBIN HOLDER AND NEEDLE PLATE, AND REMOVE THE TEST PIN #68368(0).



MECHANICAL ADJUSTMENT

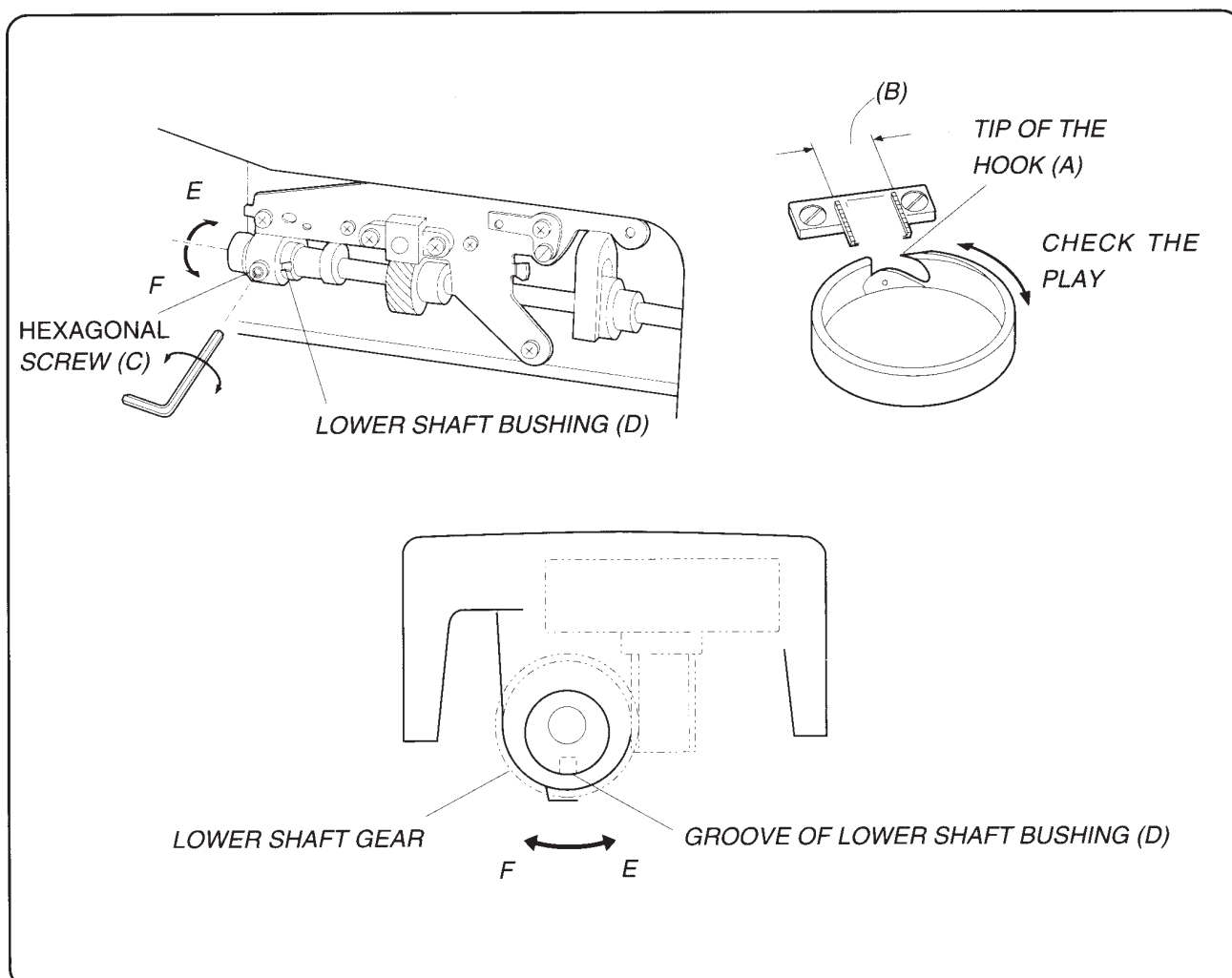
BACKLASH (LOWER SHAFT GEAR)

TO CHECK:

1. TURN THE POWER SWITCH OFF.
2. REMOVE THE NEEDLE PLATE AND BOBBIN HOLDER.
3. TURN THE HANDWHEEL SLOWLY TOWARD YOU UNTIL THE TIP OF THE HOOK (A) IS BETWEEN BOTH ENDS (B) OF FEED DOG.
4. ROTATE THE HOOK RACE CLOCKWISE AND COUNTERCLOCKWISE BY FINGER. CHECK THE PLAY. IT SHOULD BE WITHIN 0.8 MM.
*IF THERE IS MORE THAN 0.8 MM BACKLASH BETWEEN THE GEARS, 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), IN THE DIRECTION "F" WHEN THE PLAY AT THE HOOK TIP IS TOO LARGE.
4. TIGHTEN HEXAGONAL SCREW (C) SECURELY AFTER ADJUSTMENT.

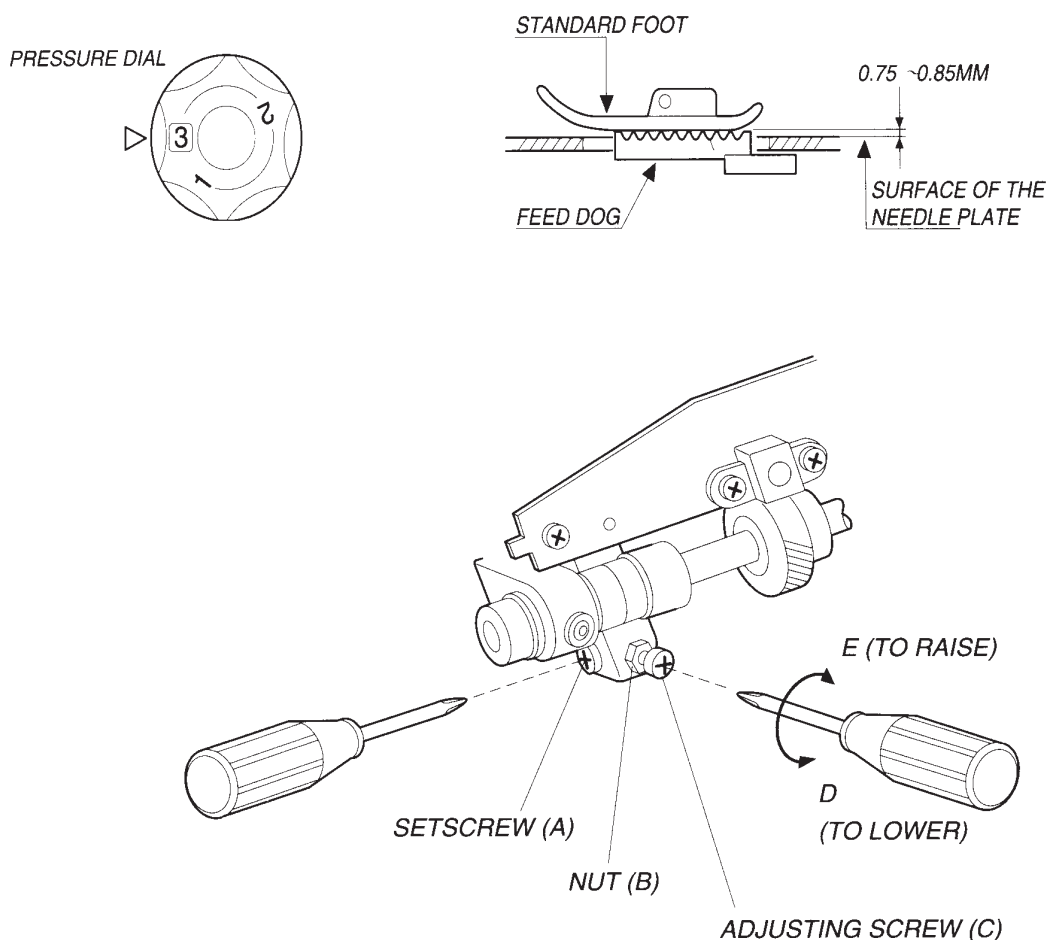


MECHANICAL ADJUSTMENT

FEED DOG HEIGHT

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 0.85MM ABOVE THE SURFACE OF THE NEEDLE PLATE.

1. SET THE PRESSURE DIAL AT "3" AND LOWER THE PRESSURER 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 11).
4. LOOSEN SET SCREW (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 FROM 0.75 TO 0.85 MM ABOVE THE TOP SURFACE OF THE NEEDLE PLATE.
6. TIGHTEN THE NUT AND TIGHTEN SET SCREW (A).
7. ATTACH THE BED COVER

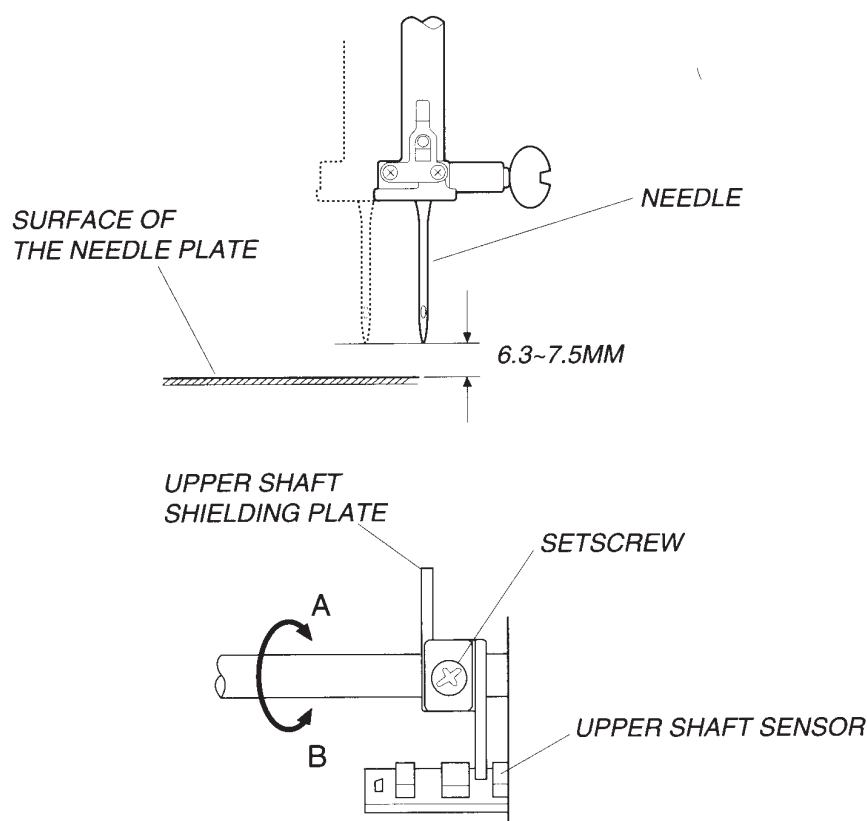


MECHANICAL ADJUSTMENT

ZIGZAG SYNCHRONIZATION

DURING LATERAL MOVEMENT OF THE NEEDLE FOR ZIGZAG SEWING, THE NEEDLE SHOULD SWING FROM LEFT TO RIGHT OR RIGHT TO LEFT APPROXIMATELY 6.3 TO 7.5 MM ABOVE THE NEEDLE PLATE.

1. REMOVE THE PRESSER FOOT, FACE COVER AND TOP COVER (SEE PAGE 9).
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 STARTS ITS SIDEWARD MOVEMENT ABOVE 7.5 MM, TURN THE UPPER SHAFT SHIELDING PLATE IN THE DIRECTION OF "A" IF THE NEEDLE STARTS ITS SIDEWARD MOVEMENT 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, RE-ATTACH THE TOP COVER AND FACE COVER.



MECHANICAL ADJUSTMENT

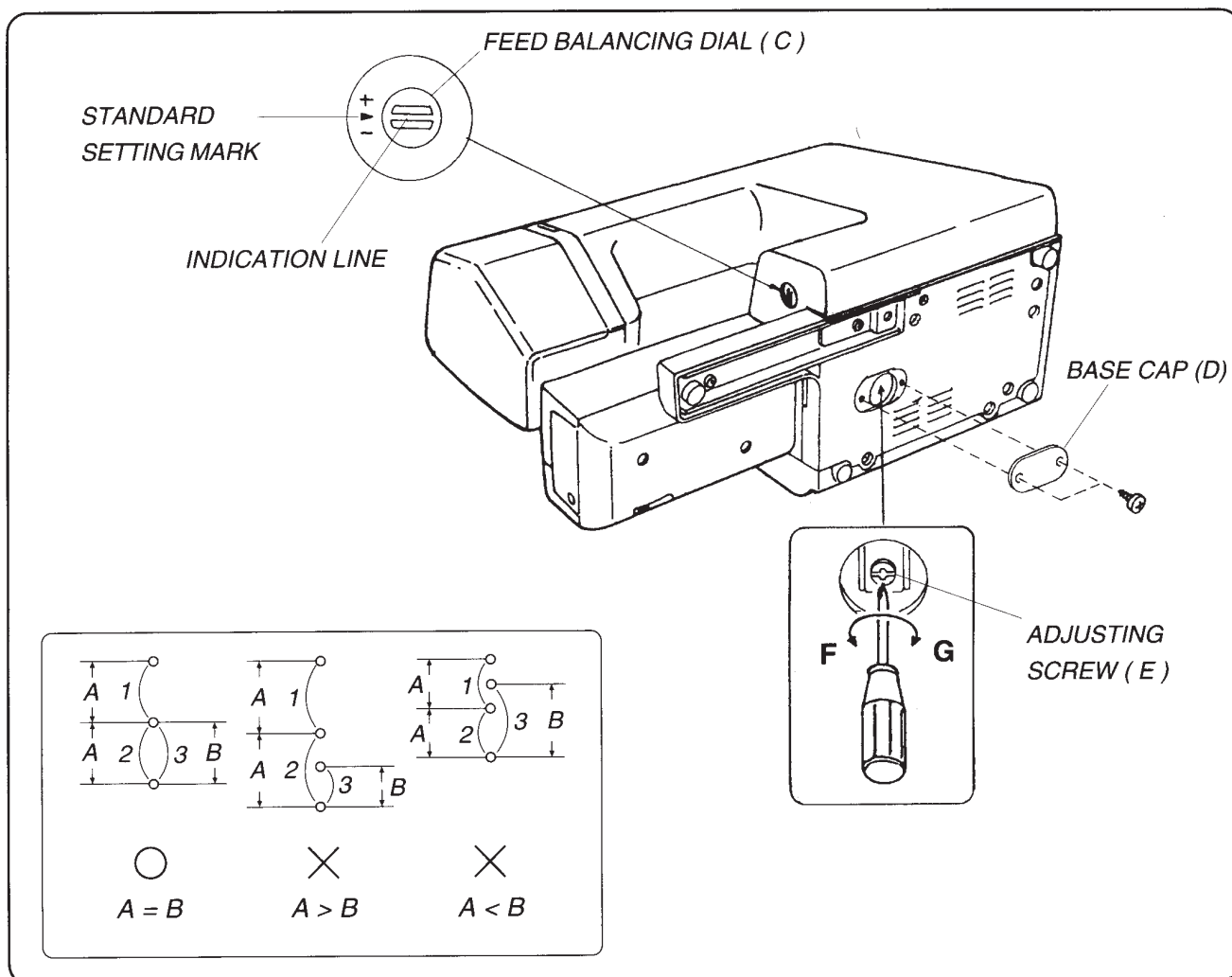
STRETCH STITCH FEED BALANCE

TO CHECK:

1. WHEN A STRECH PATTERN IS SEWN WITH THE FEED BALANCING DIAL (C) SET AT THE STANDARD SETTING MARK "▷", THE PATTERN SHOULD BE AS INDICATED WITH THE "○" MARK IN THE FOLLOWING FIGURE. IF NOT (IF THERE IS NO BALANCE BETWEEN FORWARD FEEDING AND BACKWARD FEEDING), THEN MAKE AN ADJUSTMENT AS FOLLOWS:

ADJUSTMENT PROCEDURE:

1. TURN THE POWER SWITCH ON, AND SELECT PATTERN ($\begin{smallmatrix} \text{|||} \\ \text{|||} \\ \text{|||} \end{smallmatrix}$).
2. SET THE SLIT OF THE FEED BALANCING DIAL (C) AT THE STANDARD SETTING MARK "▷" ON THE FRONT COVER.
3. PUT A PIECE OF PAPER BETWEEN THE FOOT AND FEED DOG AND LOWER THE PRESSER BAR LIFTER.
4. TURN THE HANDWHEEL, AND CHECK THE NEEDLE POSITION OF "A" AND "B".
5. REMOVE BASE CAP (D).
6. WHEN $A > B$, TURN THE ADJUSTING SCREW (E) IN THE DIRECTION OF "F". WHEN $A < B$, TURN THE ADJUSTING SCREW (E) IN THE DIRECTION OF "G".
7. REATTACH THE BASE CAP (D).



MECHANICAL ADJUSTMENT

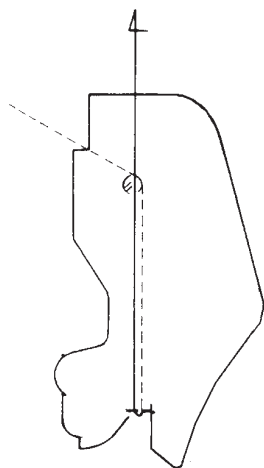
NEEDLE THREAD TENSION

WHEN THE POLYESTER SEWING THREAD #50 (HWITE) 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:

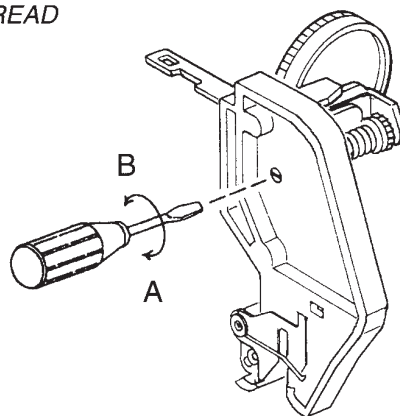
ADJUSTMENT PROLEDURE:

1. SET THE THREAD TENSION AT "AOTO"
2. REMOVE THE FACE COVER (SEE PAGE 9)
3. USE THE SCREWDRIVER AS SHOWN.
IF THE THREAD TENSION IS TOO STRONG, TURN THE LEAD SCREW IN THE DIRECTION OF "A".
IF THE THREAD TENSION IS TOO WEAK, TURN THE LEAD SCREW IN THE DIRECTION OF "B".
4. CHECKE 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.*



NEEDLE THREAD
POLYESTER
SEWING THREAD
#50 (WHITE)



MECHANICAL ADJUSTMENT

BUTTONHOLE LEVER

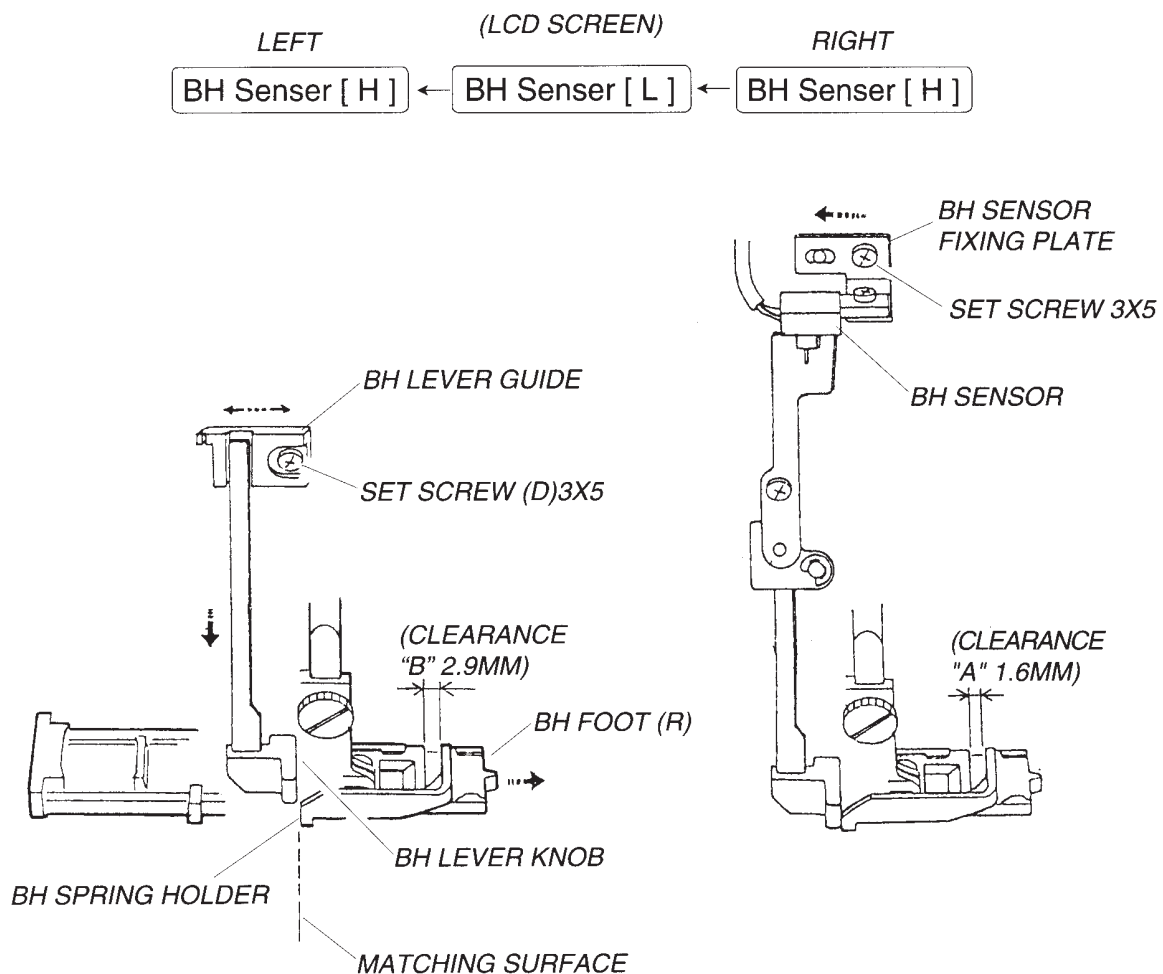
ADJUSTMENT OF THE BUTTONHOLE LEVER

IF THE STEPS DO NOT CHANGE OR THE ENDS OF STITCHES ARE NOT IN LINE WHILE BUTTONHOLE SEWING ADJUST AS FOLLOWS:

1. ATTACH THE BUTTONHOLE FOOT (R) AND LOWER THE BH FOOT.
2. OPEN (2.9 MM) CLEARANCE BETWEEN THE SLIDING PART OF THE BUTTONHOLE FOOT AND ITS END, AS SHOWN IN (CLEARANCE "B" 2.9 MM).
3. LOWER THE BUTTONHOLE LEVER, MOVE THE BUTTONHOLE LEVER GUIDE TO MATCH THE BUTTONHOLE LEVER KNOB AND THE EDGE OF THE BUTTONHOLE SPRING HOLDER, THEN TIGHTEN SETSCREW (D) AS SHOWN.

ADJUSTMENT OF THE BUTTONHOLE SENSOR POSITION:

4. TO ENTER ADJUSTING MODE, TURN THE POWER SWITCH ON WHILE PRESSING THE REVERSE KEY. AND PRESS THE BH1 KEY WITHIN 2.5 SECONDS. THE LCD SCREEN SHOWS BH SENSOR [H] OR [L].
5. LOWER THE BUTTONHOLE LEVER AND OPEN A 1.6 MM CLEARANCE BETWEEN THE SLIDING PART OF THE BUTTONHOLE FOOT AND ITS END, AS SHOWN IN (CLEARANCE "A").
6. MOVE THE BUTTONHOLE SENSOR FROM RIGHT TO LEFT. TIGHTEN THE SET SCREW, AS THE LCD SCREEN CHANGES FROM "L" TO "H".
7. CHECK THE INDICATION ON THE LCD SCREEN WHEN THE CLEARANCE "A" IS;
1.4 MM: THE LCD SHOWS "H".
1.8 MM: THE LCD SHOWS "L".
8. SET THE BUTTONHOLE LEVER FREELY AND CHECK THE LCD AND SHOWS "L" ALWAYS WHEN THE LEVER IS MOVED GENTLY.



MECHANICAL ADJUSTMENT

PRESSER BAR HEIGHT AND ALIGNMENT

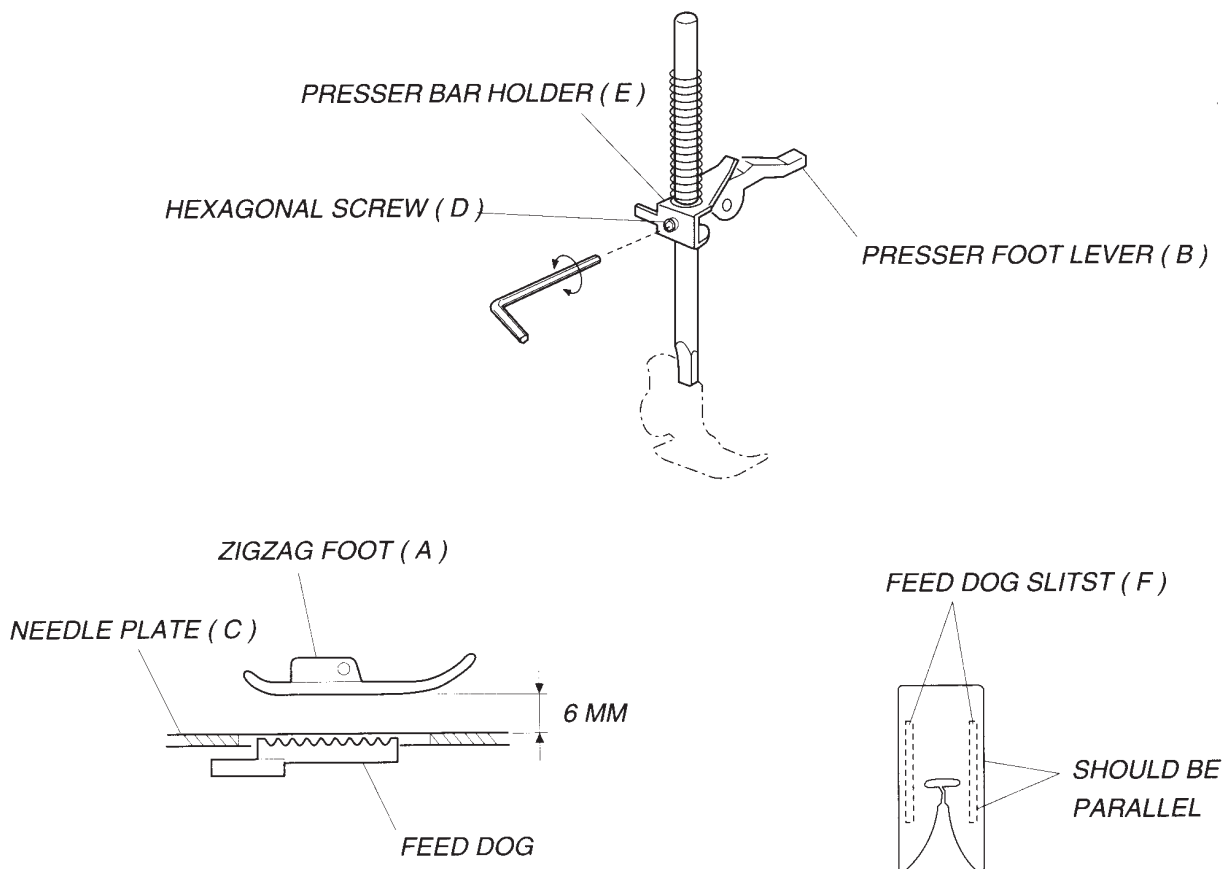
TO CHECK:

1. RAISE THE PRESSER FOOT LEVER (B).
2. THE DISTANCE BETWEEN THE ZIGZAG FOOT (A) AND THE NEEDLE PLATE (C) SHOULD BE 6.0 MM (0.24").

*IF THE HEIGHT IS GREATER OR LESS THAN 6MM (0.24"), ADJUST AS FOLLOWS.

ADJUSTMENT PROCEDURE:

1. REMOVE THE FACE COVER (SEE PAGE 9).
2. RAISE THE PRESSER FOOT LEVER (B) AND LOOSEN THE HEXAGONAL SCREW (D) ON THE PRESSER BAR HOLDER (E).
3. ADJUST THE DISTANCE BETWEEN THE ZIGZAG FOOT (A) AND THE NEEDLE PLATE (C) TO 6.0MM (0.24").
4. TIGHTEN THE HEXAGONAL SCREW (D) SECURELY.
NOTE: WHEN YOU TIGHTEN THE HEXAGONAL SCREW (D), MAKE SURE THAT BOTH SIDES OF THE ZIGZAG FOOT (A) ARE PARALLEL TO THE FEED DOG SLITS (F) ON THE NEEDLE PLATE.
5. REATTACH THE FACE COVER.



PART REMOVAL AND REPLACEMENT

THREADER PLATE

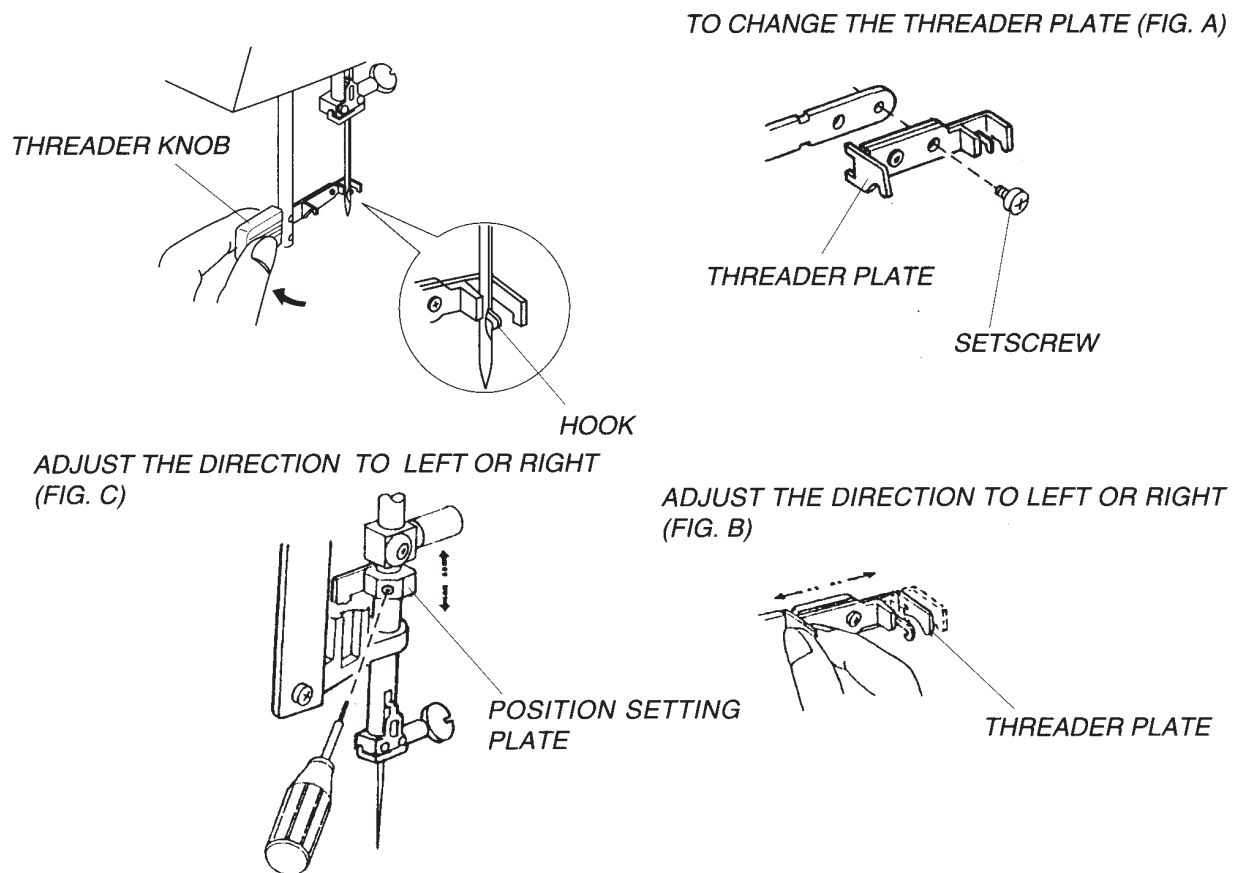
WHEN THE HOOK OF THE THREADER PLATE IS DAMAGED, CHANGE OR ADJUST THE PART AS FOLLOWS:

TO CHANGE THE THREADER PLATE:

1. RAISE THE NEEDLE TO ITS HIGHEST POSITION AND LOWER THE THREADER KNOB TO ITS LOWEST POSITION.
2. LOOSEN THE SETSCREW AND REMOVE THE THREADER PLATE (FIG. A).

TO CHANGE POSITION OF THE NEEDLE THREADER:

1. IF THE HOOK OF THE THREADER PLATE TOUCHES LEFT OR RIGHT SIDE, LOOSEN THE SET SCREW AND ADJUST THE HOOK POSITION (FIG. B).
2. IF THE HOOK OF THE THREADER PLATE TOUCHES THE TOP OR BOTTOM SIDE OF THE NEEDLE HOLE, LOOSEN THE HEXAGONAL SCREW AND ADJUST THE HOOK POSITION (FIG. C).



PART REMOVAL AND REPLACEMENT

C-BOARD AND FUSE

TO REMOVE:

1. REMOVE THE FRONT COVER (SEE PAGE 12).
2. TAKE OFF THE REAR COVER (SEE PAGE 13).
3. PULL OUT 4- CONNECTORS (D), (E), (F) AND (G).
4. REMOVE THE 3 SETSCREWS (A).
5. TAKE OFF THE C-BOARD CASE UNIT (B).

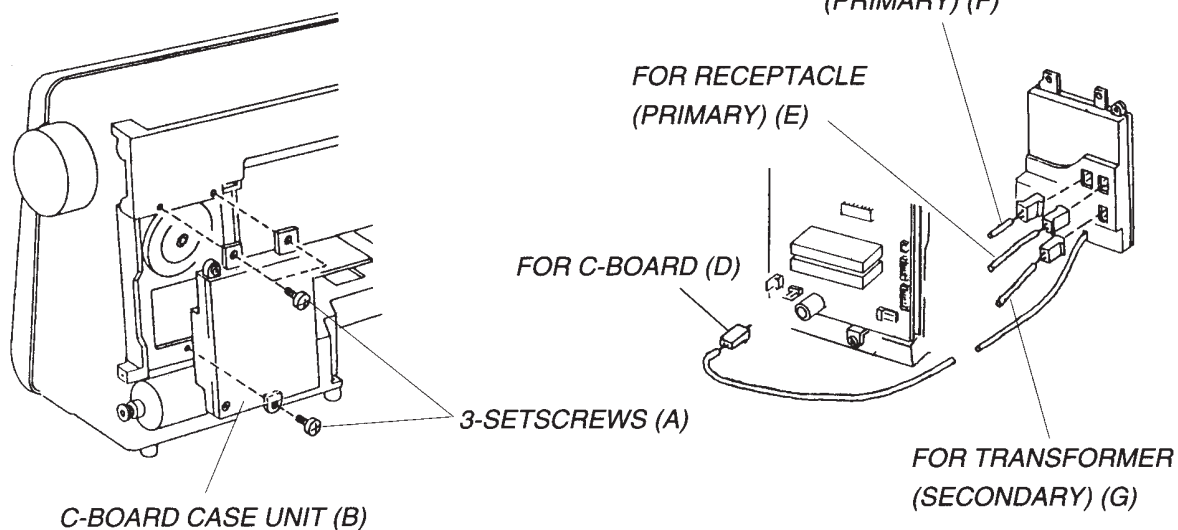
TO ATTACH:

1. FOLLOW THE ABOVE PROLEDURE IN REVERSE.

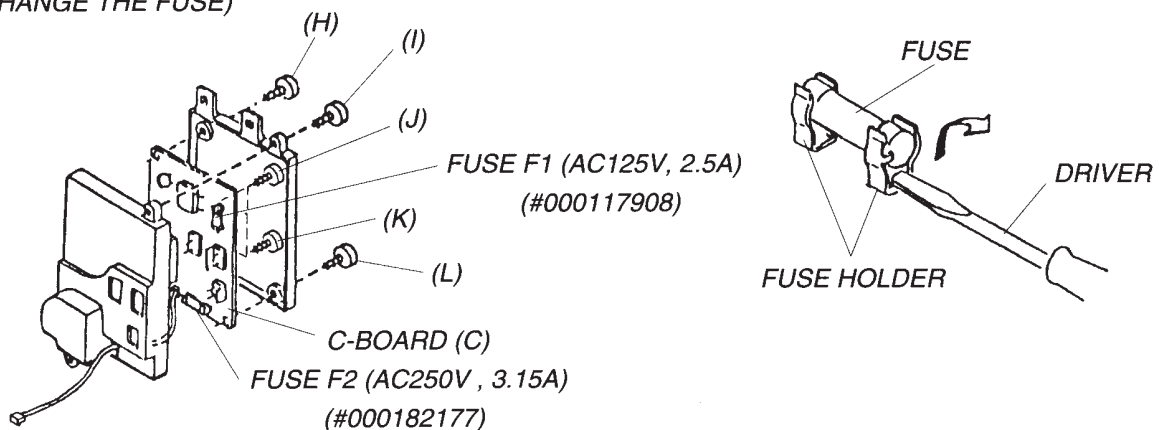
TO CHANGE THE FUSE:

1. AFTER REMOVING THE C-BOARD CASE UNIT (B), REMOVE 5 SCREWS (H), (I), (J), (K) AND (L) TO PULL OUT THE C-BOARD (C).
2. REPLACE THE FUSE IN THE FUSE HOLDER ON C-BOARD.
 - * IF FUSE F1 (125V-2.5A) IS BLOWN..... TRANSFORMER OR C-BOARD IS DAMAGED.
 - * IF FUSE F2 (250V-3.15A) IS BLOWN..... TOO MUCH POWER IS ON THE DC MOTOR WHEN THE UPPER SHAFT, LOWER SHAFT OR SHUTTLE RACE HAS HEAVY TORQUE.

(TO REMOVE C-BOARD CASE)



(TO CHANGE THE FUSE)



PART REMOVAL AND REPLACEMENT

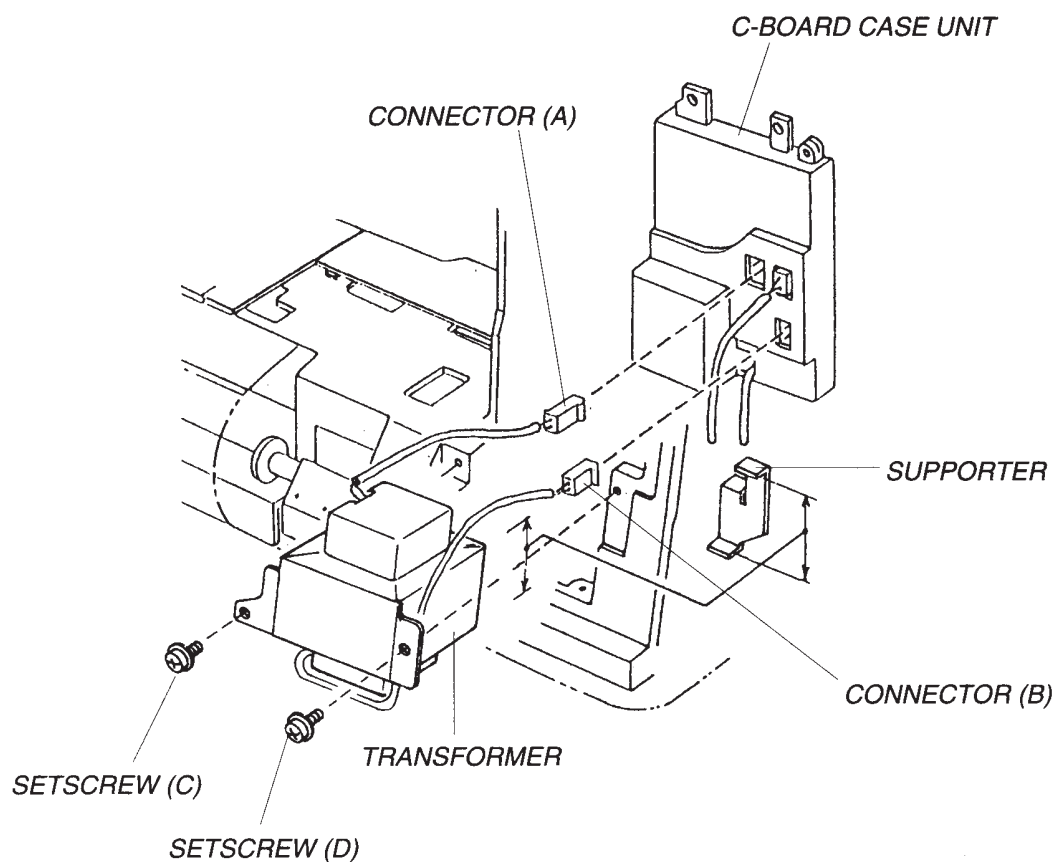
TRANSFORMER

TO REMOVE:

1. REMOVE THE FRONT COVER (SEE PAGE 12).
2. REMOVE THE A- BOARD (SEE PAGE 29).
3. REMOVE THE C-BOARD CASE UNIT (SEE PAGE 26).
4. DETACH CONNECTORS (A) AND (B).
5. REMOVE SETSCREWS (C) AND (D).
6. TAKE OFF THE TRANSFORMER.

TO ATTACH:

1. SET THE REAR SIDE OF THE TRANSFORMER ON THE SUPPORTER.
2. TIGHTEN SETSCREWS (C) AND (D).
3. RECONNECT CONNECTORS (A) AND (B).
4. REPLACE C-BOARD CASE UNIT, A-BOARD UNIT AND THE FRONT COVER.



PART REMOVAL AND REPLACEMENT

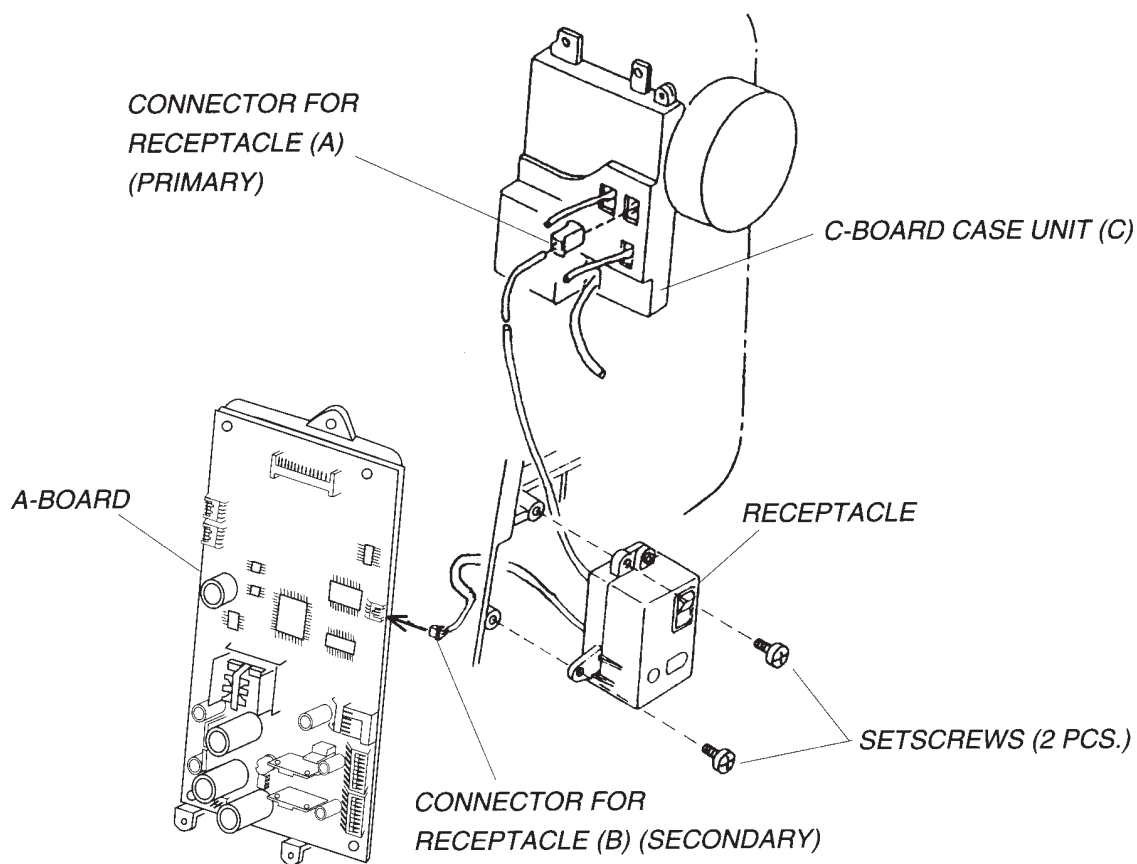
RECEPTACLE

TO REMOVE:

1. REMOVE THE FRONT COVER AND THE REAR COVER (SEE PAGES 12 AND 13).
2. REMOVE THE C-BOARD CASE UNIT (C) (SEE PAGE 26).
 - * MOVE IT SO THAT THE CONNECTORS CAN BE PULLED OUT.
3. PULL OUT CONNECTORS (A) AND (B).
4. REMOVE THE 2 SETSCREWS.

TO ATTACH:

1. FOLLOW THE ABOVE PROCEDURE IN REVERSE.

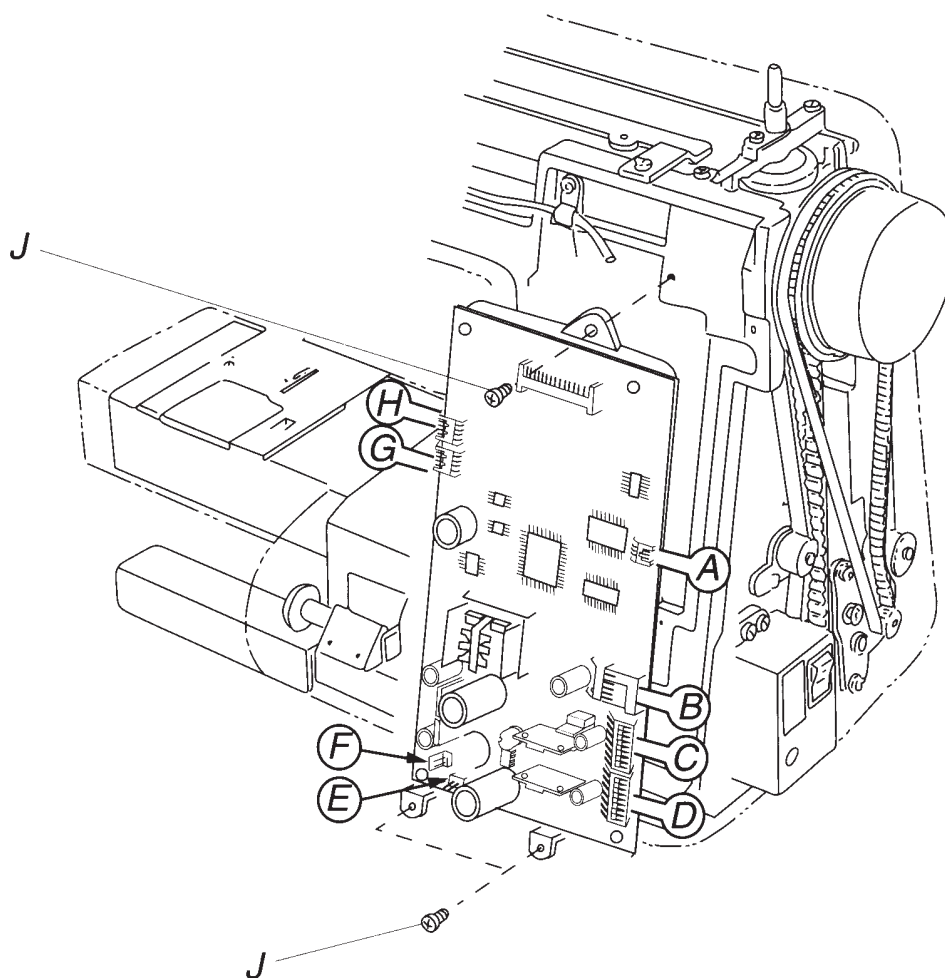


PART REMOVAL AND REPLACEMENT

A-BOARD

TO REMOVE:

1. REMOVE THE FRONT COVER (SEE PAGE 12).
2. PULL OUT THE 8 CONNECTORS (A), (B), (C), (D), (E), (F), (G) AND (H).
3. REMOVE THE 3 SETSCREWS (J).
4. TAKE OFF THE A-BOARD.
5. TO INSTALL A NEW A-BOARD, FOLLOW THE ABOVE PROCEDURE IN REVERSE.



PART REMOVAL AND REPLACEMENT

K-BOARD

TO REMOVE:

1. REMOVE THE FRONT COVER (SEE PAGE 12)
2. PULL OUT THE F-BOARD CONNECTOR.
3. REMOVE THE 13 SETSCREWS AND TAKE OFF K-BOARD.

TO ATTACH:

4. FOLLOW THE ABOVE PROCEDURE IN REVERSE.

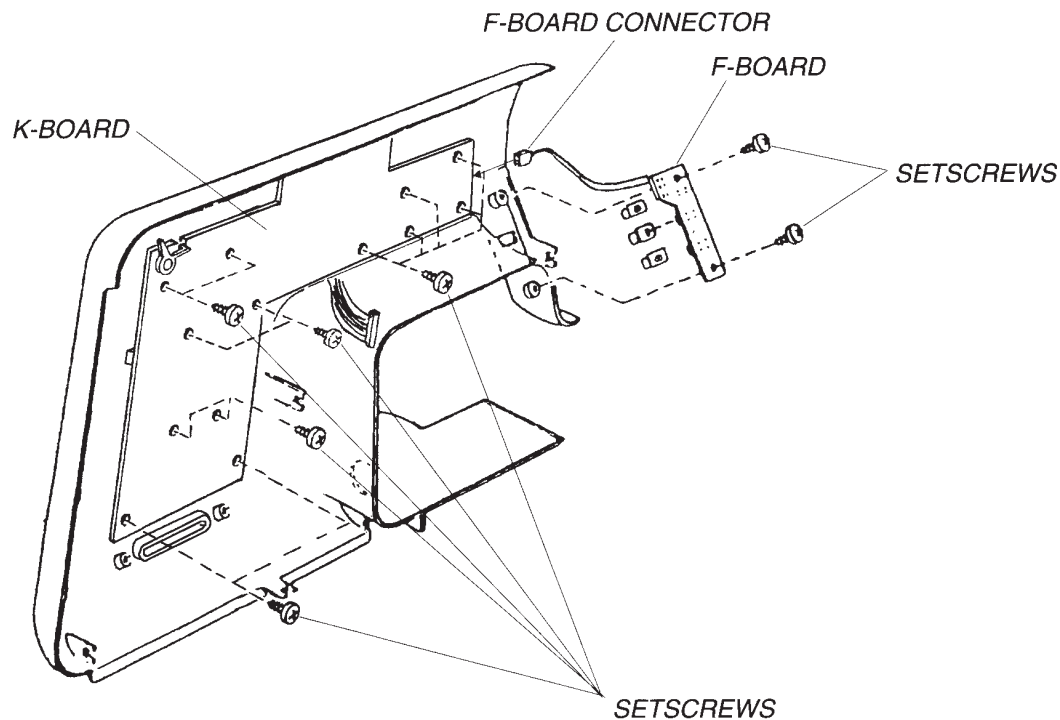
F-BOARD

TO REMOVE:

1. REMOVE THE FRONT COVER (SEE PAGE 12)
2. PULL OUT THE F-BOARD CONNECTOR.
3. REMOVE THE FRONT COVER (SEE PAGE 12)
4. REMOVE THE F-BOARD

TO ATTACH:

1. FOLLOW THE ABOVE PROCEDURE IN REVERSE.



PART REMOVAL AND REPLACEMENT

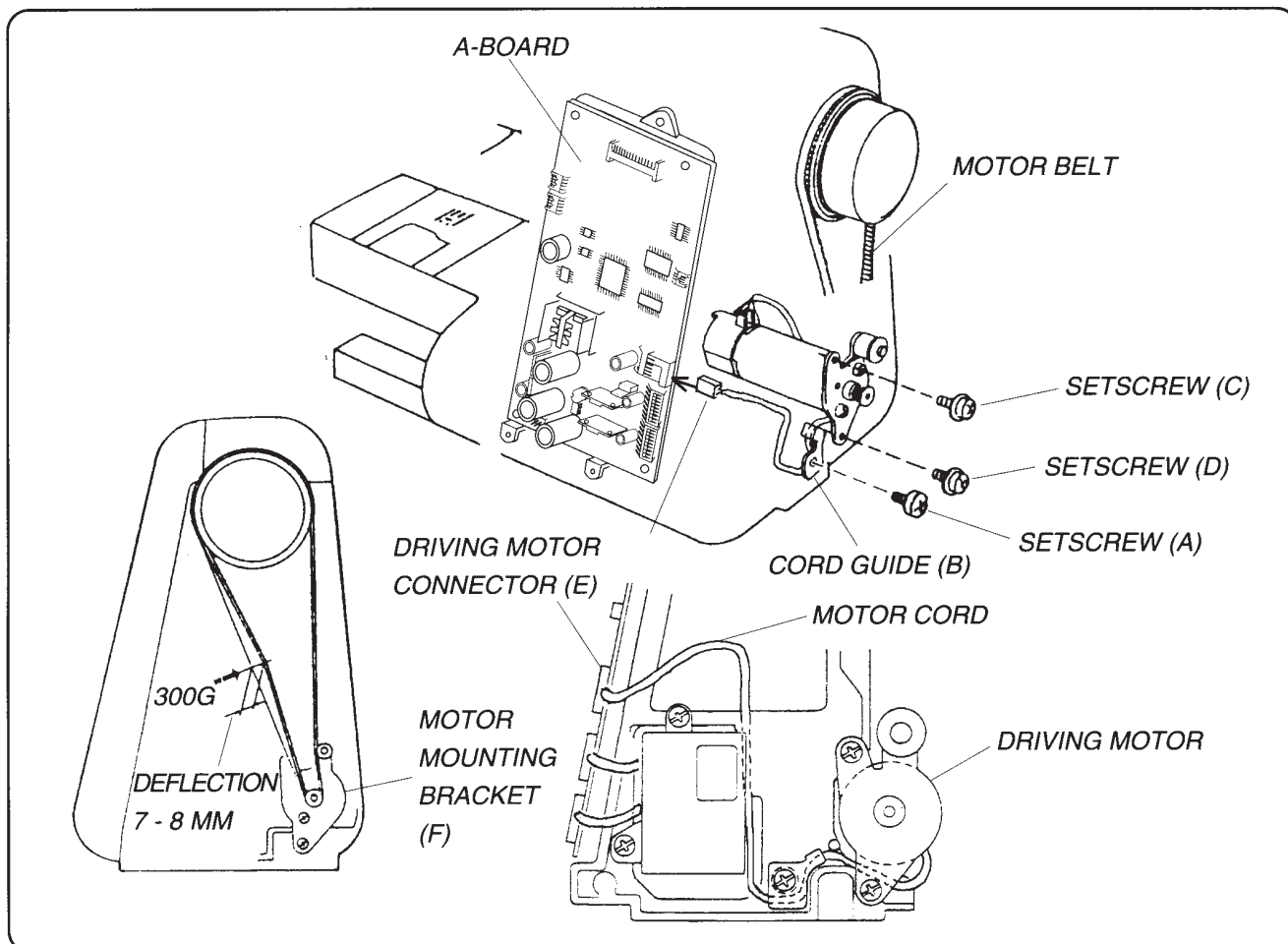
DRIVING MOTOR (DC MOTOR)

TO REMOVE:

1. REMOVE THE FRONT COVER (SEE PAGE 12).
* MOVE THE FRONT COVER SO THAT YOU CAN PULL OUT THE DRIVING MOTOR CONNECTOR (E).
2. REMOVE THE RECEPTACLE (SEE PAGE 28).
3. REMOVE THE BELT.
4. REMOVE THE SETSCREW (A) AND REMOVE THE CORD GUIDE (B).
5. PULL OUT THE DRIVING MOTOR CONNECTOR (E) FROM THE A-BOARD.
6. REMOVE THE SETSCREWS (C) AND (D).
7. TAKE OFF THE DRIVING MOTOR.

TO ATTACH:

1. SET THE MOTOR IN THE MACHINE AND REPLACE SCREWS (C) AND (D).
2. SNAP THE MOTOR CONNECTOR INTO THE A-BOARD.
3. ATTACH CORD GUIDE (B) USING THE SETSCREW (A).
4. REPLACE THE MOTOR BELT.
5. MOVE THE MOTOR MOUNTING BRACKET (F) BY APPLYING APPROXIMATELY 300 GRAMS PRESSURE IN THE MIDDLE OF THE BELT, IT SHOULD DEFLECT 7 TO 9 MM WHEN SET PROPERLY.
6. TIGHTEN THE SETSCREWS (C) AND (D).
7. REPLACE THE RECEPTACLE AND REATTACH THE FRONT COVER.



PART REMOVAL AND REPLACEMENT

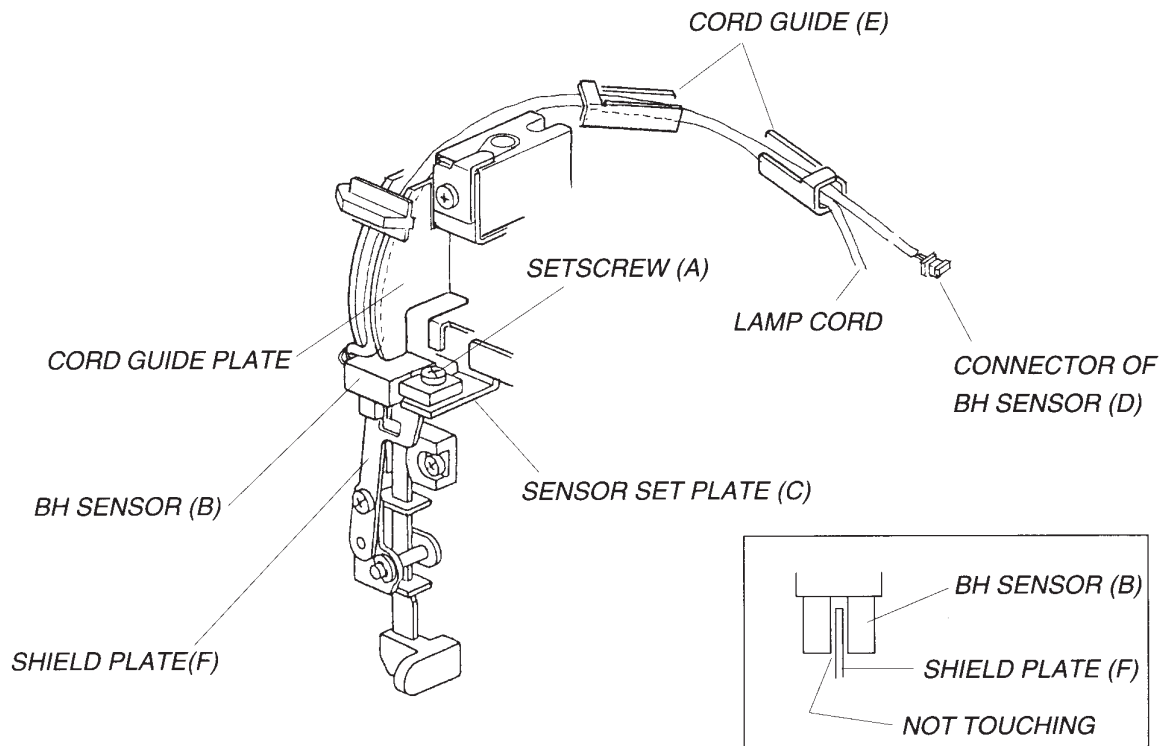
BUTTONHOLE SENSOR

TO REMOVE:

1. REMOVE THE FRONT COVER (SEE PAGE 12).
*MOVE IT SO THAT THE CONNECTORS CAN BE PULLED OUT.
2. REMOVE THE SETSCREW (A), THEN REMOVE THE BUTTONHOLE SENSOR (B) FROM THE SENSOR SET PLATE (C).
3. PULL OUT THE CONNECTOR OF BUTTONHOLE SENSOR UNIT (D) FROM THE K-BOARD.
4. PULL OUT THE CORD OF BUTTONHOLE SENSOR UNIT FROM THE CORD GUIDE (E), THEN REMOVE THE BUTTONHOLE SENSOR UNIT.

TO ATTACH:

1. ATTACH THE BUTTONHOLE SENSOR (B) WITH THE SETSCREW (A). PULL THE SENSOR FORWARD SO THAT IT TOUCHES THE SET PLATE (C).
*MAKE SURE IT DOESN'T TOUCH THE BUTTONHOLE SHIELD PLATE (F).
(SEE ILLUSTRATION.)
2. PASS THE CORD AS ILLUSTRATED, AND REATTACH THE FRONT COVER.
*AFTER REPLACING THE BUTTONHOLE SENSOR, SEW A FEW BUTTONHOLES.
IF SOMETHING IS ABNORMAL, ADJUST THE "BUTTONHOLE LEVER" (SEE PAGE 23).



PART REMOVAL AND REPLACEMENT

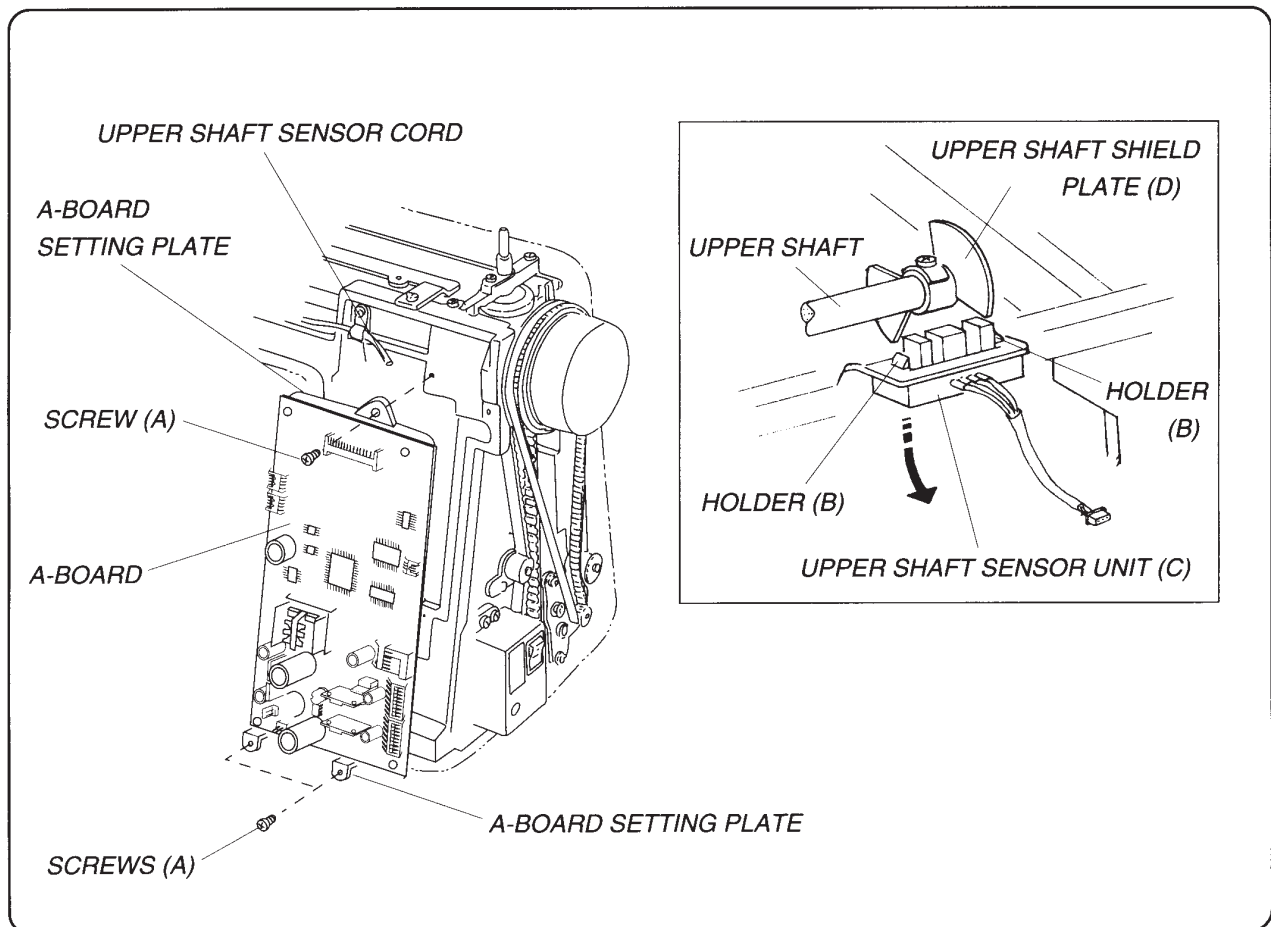
UPPER SHAFT SENSOR

TO REMOVE:

1. REMOVE THE FRONT COVER (SEE PAGE 12).
2. PULL OUT THE 8 CONNECTORS FROM THE A-BOARD (SEE PAGE 29).
3. REMOVE THE 3 SETSCREWS (A) AND A-BOARD SETTING PLATE.
4. PUSH THE HOLDERS (B) AND REMOVE THE UPPER SHAFT SENSOR UNIT (C).

TO ATTACH:

1. ATTACH THE NEW UPPER SHAFT SENSOR UNIT INTO THE SETTING PLATE.
*AFTER REPLACING THE UPPER SHAFT SENSOR UNIT, MAKE SURE IT DOESN'T TOUCH THE UPPER SHAFT SHIELD PLATE (D).
2. REPLACE A-BOARD SETTING PLATE, A-BOARD, AND TIGHTEN THE 3 SETSCREWS (A) SECURELY.
3. ATTACH THE 8 CONNECTORS TO A-BOARD.
4. REATTACH THE FRONT COVER.



PART REMOVAL AND REPLACEMENT

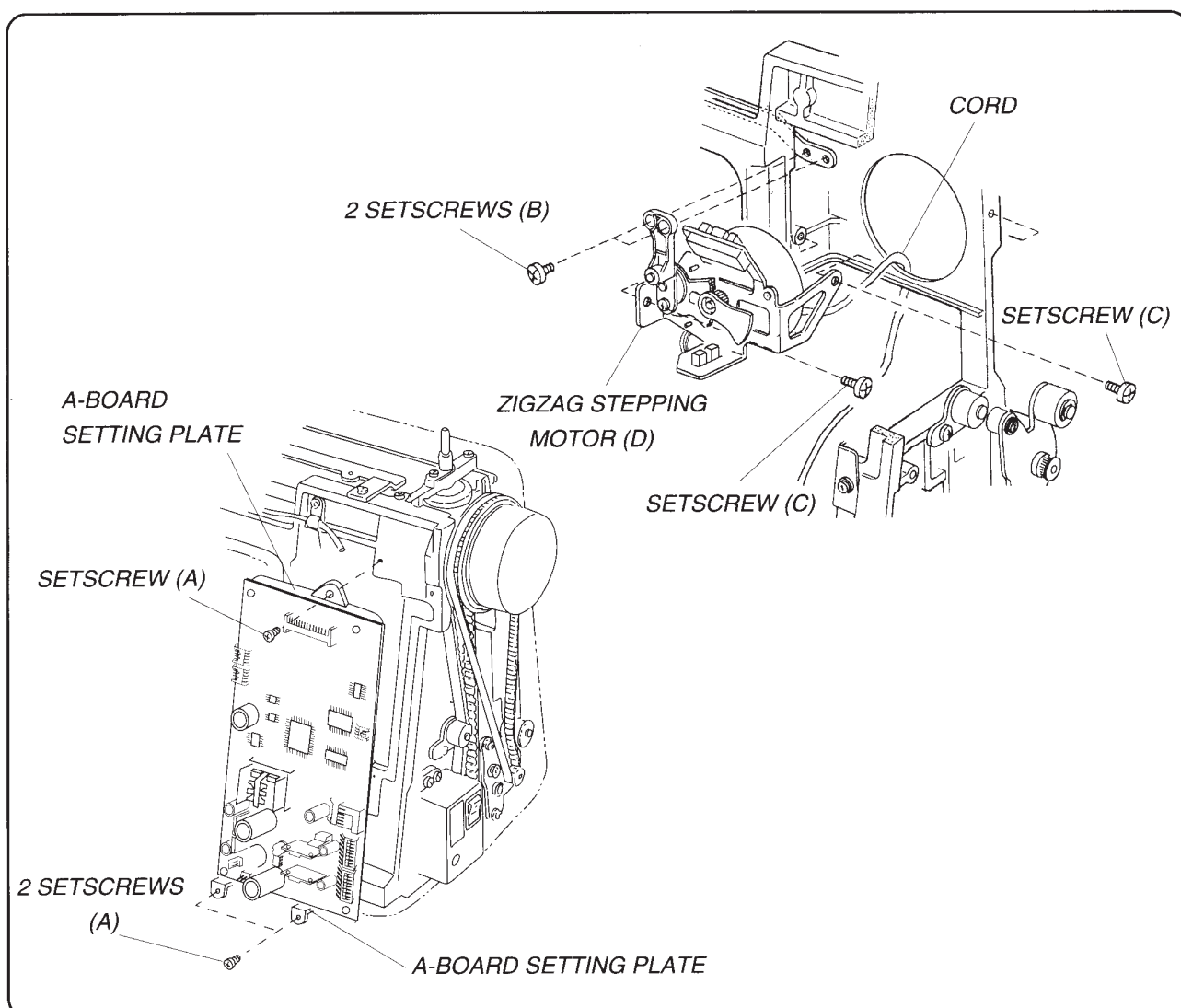
ZIGZAG STEPPING MOTOR

TO REMOVE:

1. REMOVE THE C-BOARD CASE UNIT AND RECEPTACLE UNIT (SEE PAGES 26 AND 28).
2. REMOVE THE 3 SETSCREWS (A) AND A-BOARD SETTING PLATE.
3. REMOVE THE 2 SETSCREWS (B), 2 SETSCREWS (C) AND REMOVE THE MOTOR (D).

TO ATTACH:

1. FOLLOW THE ABOVE PROLEDURE IN REVERSE.



PART REMOVAL AND REPLACEMENT

FEED STEPPING MOTOR

TO REMOVE:

1. REMOVE THE FRONT COVER, AND REAR COVER (SEE PAGES 12 AND 13).
2. REMOVE THE RECEPTACLE UNIT(SEE PAGE 28).
3. PULL OUT THE FEED STEPPING MOTOR CONNECTOR FROM A-BOARD.
4. REMOVE THE E-RING (B), AND 2 SETSCREWS (A).
5. SLIDE THE FEED ROD (D) OFF THE FEED ARM PIN (F) AND REMOVE THE MOTOR (C).

TO ATTACH:

1. SLIDE THE FEED ROD (D) ONTO THE FEED ARM PIN (F).
AND THEN ATTACH THE FEED STEPPING MOTOR BY TIGHTNING THE 2 SETSCREWS (A).
(TIGHTEN THE 2 SETSCREWS AT THE SPOT WHERE THE FEED ARM MOVES SMOOTHLY.)
2. ATTACH THE E-RING (B).
3. CONNECT THE FEED STEPPING MOTOR CONNECTOR TO A-BOARD.
4. REATTACH THE RECEPTACLE UNIT, REAR COVER AND FRONT COVER.
*AFTER ATTACHING THE MOTOR, ADJUST THE "STRETCH STITCH FEED BALANCE"
(SEE PAGE 21).

