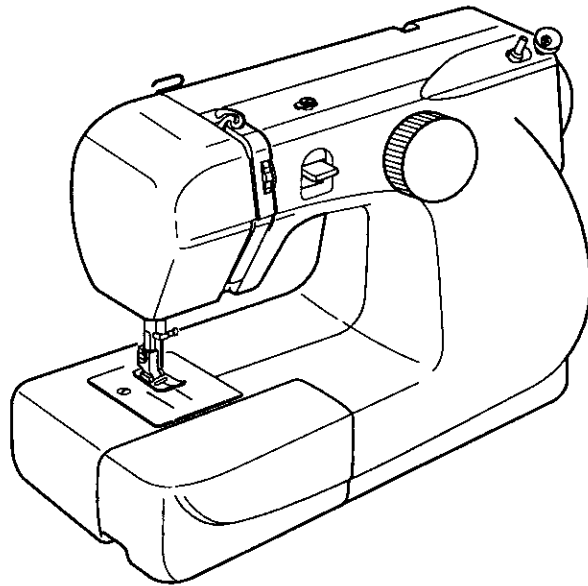


SERVICE MANUAL



SEWING MACHINE MODEL

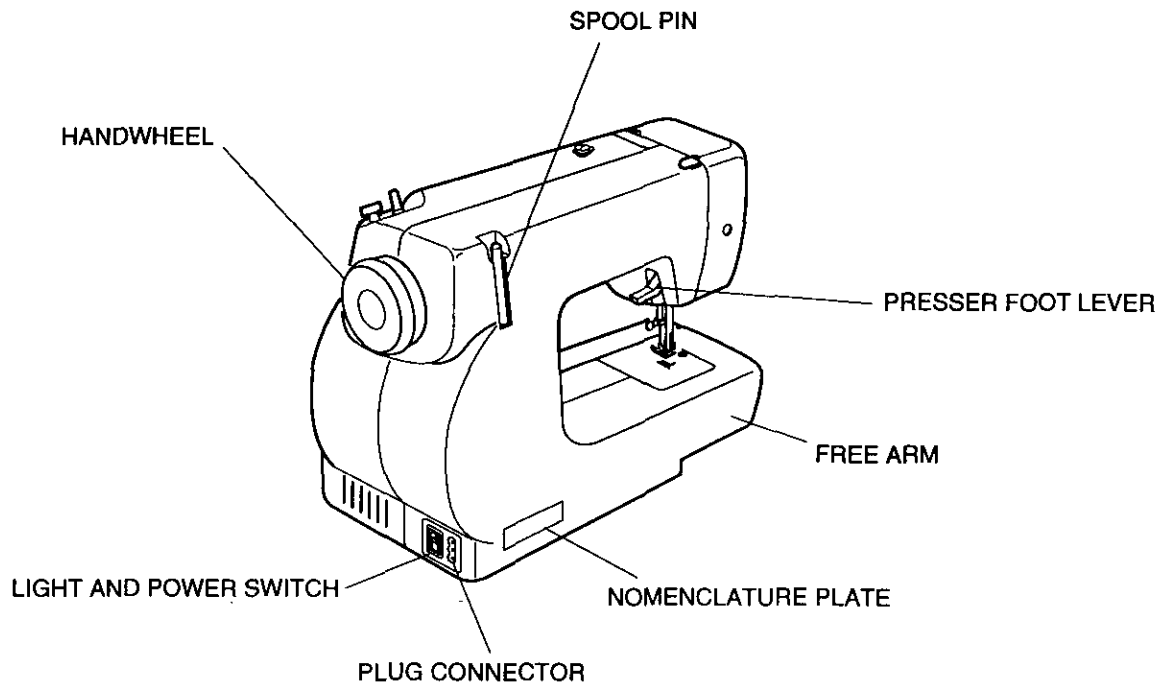
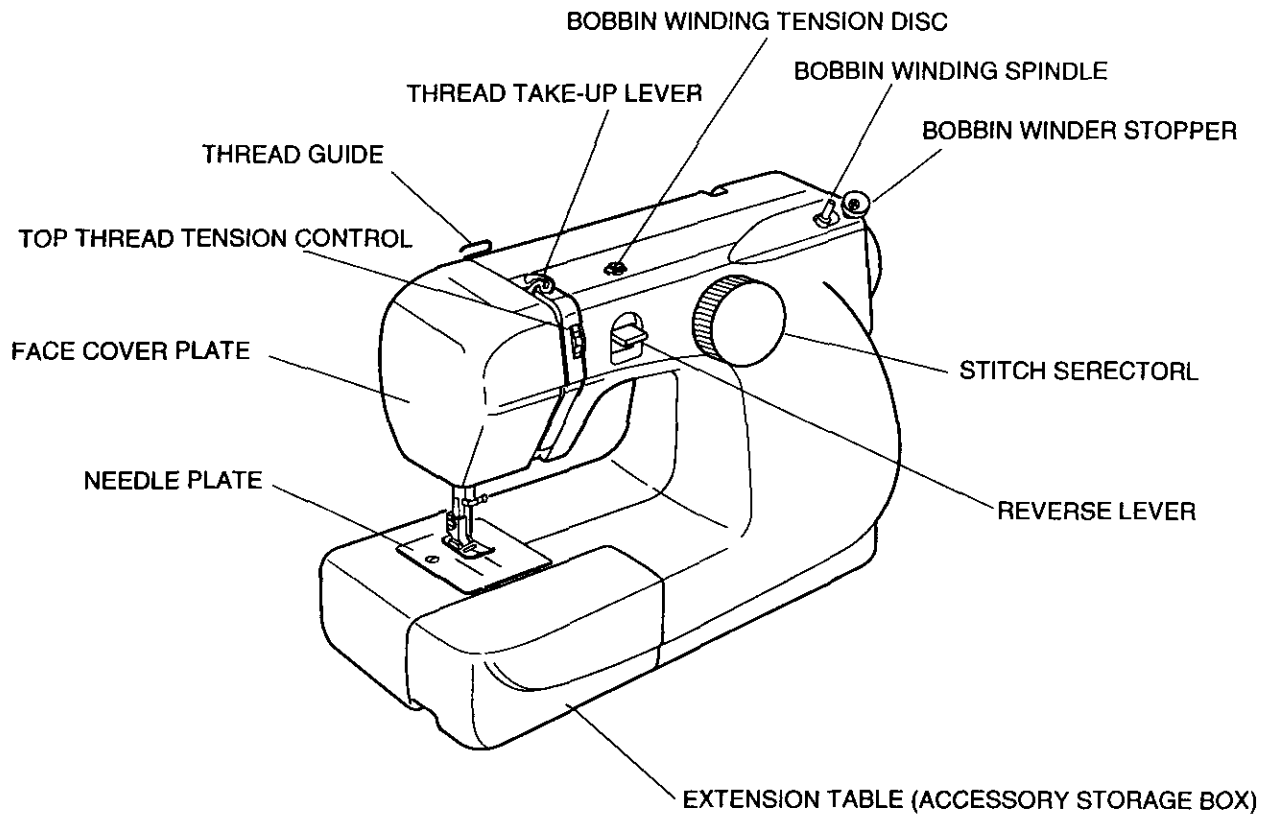
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CONTENTS

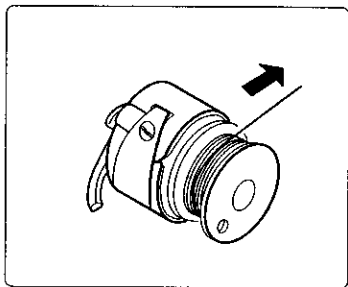
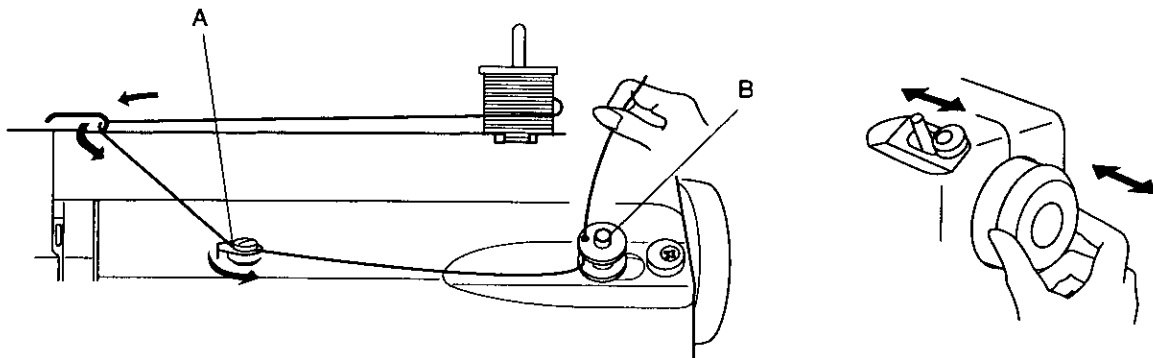
LOCATE AND IDENTIFY THE PARTS	1
WIND THE BOBBIN	2
PREPARE YOUR TOP THREAD	3
WHAT TO DO WHEN	4-6
SERVICE ACCESS	
FACE COVER	7
REAR COVER	8
FRONT COVER.....	9
MECHANICAL ADJUSTMENT	
TOP TENSION.....	10
BOBBIN TENSION	11
PRESSER BAR HEIGHT AND ALIGNMENT	12
NEEDLE SWING	13
NEEDLE DROP	14
CLEARANCE BETWEEN NEEDLE AND HOOK (NO.1) ...	15
CLEARANCE BETWEEN NEEDLE AND HOOK (NO.2) ...	16
FEED DOG HEIGHT	17
NEEDLE BAR HEIGHT	18
NEEDLE TIMING TO SHUTTLE.....	19
BUTTONHOLE FEED BALANCE	20
ADJUSTMENT OF RIGHT HAND LINE TACK WIDTH AND	
CAM FOLLOWER RELEASE AMOUNT	21
MOTOR BELT TENSION	22
WIRING	23
OILING	24
SPECIAL TOOLS REQUIRED	25

LOCATE AND IDENTIFY THE PARTS

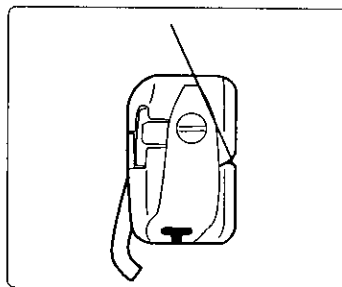


WIND THE BOBBIN

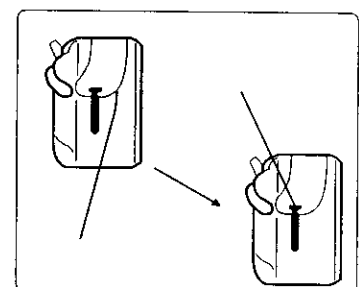
1. PULL THE HANDWHEEL OUT.
2. DRAW THREAD FROM THE SPOOL. GUIDE THE THREAD AROUND THE THREAD GUIDE. THREAD THROUGH THE BOBBIN WINDER TENSION DISK "A" AND THE HOLE IN THE BOBBIN FROM THE INSIDE TO THE OUTSIDE.
3. PLACE BOBBIN ONTO BOBBIN WINDING SPINDLE "B" WITH END OF THREAD COMING FROM THE TOP OF THE BOBBIN. PUSH BOBBIN WINDING SPINDLE TO THE RIGHT UNTIL IT CLICKS.
4. HOLDING THE END OF THREAD, START MACHINE. WHEN BOBBIN IS SLIGHTLY FILLED, SNIP OFF THE END OF THREAD.
5. WIND THREAD UNTIL BOBBIN STOPS. REMOVE BOBBIN.
6. PUSH THE HANDWHEEL TO THE LEFT.



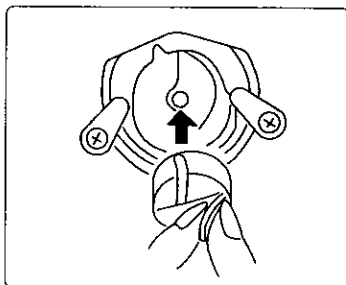
- 1 PLACE BOBBIN IN BOBBIN CASE MAKING SURE THREAD FEEDS CLOCKWISE AND IS COMING FROM BOBBIN AS SHOWN.



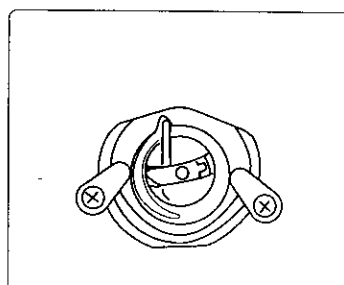
- 2 PULL THREAD THROUGH SLOT OF CASE AS SHOWN.



- 3 PULL THREAD UNDER TENSION SPRING AND THROUGH THE OPENING AS SHOWN ABOVE.



- 4 HOLDING LATCH OPEN, POSITION CASE INTO SHUTTLE AND RELEASE LATCH.



- 5 CASE SHOULD LOCK INTO PLACE WHEN LATCH IS RELEASED.

PREPARE YOUR TOP THREAD

FOR THREADING THE MACHINE, FOLLOW THE NUMBERS IN ORDER AS SHOWN ON THE ILLUSTRATION.

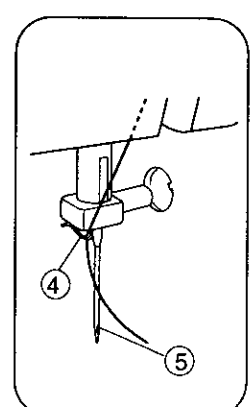
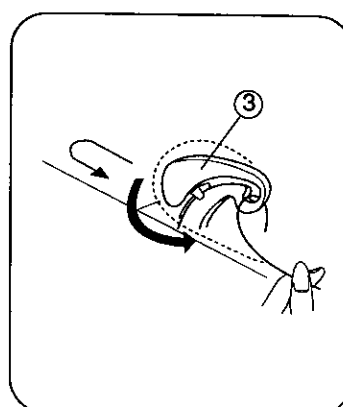
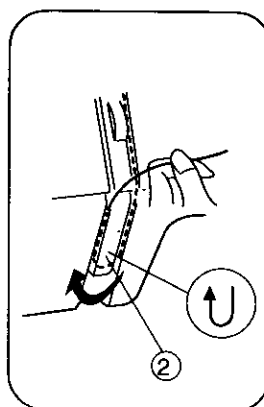
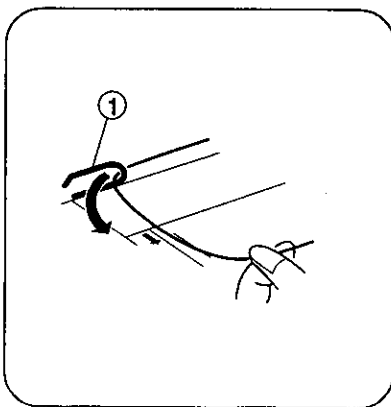
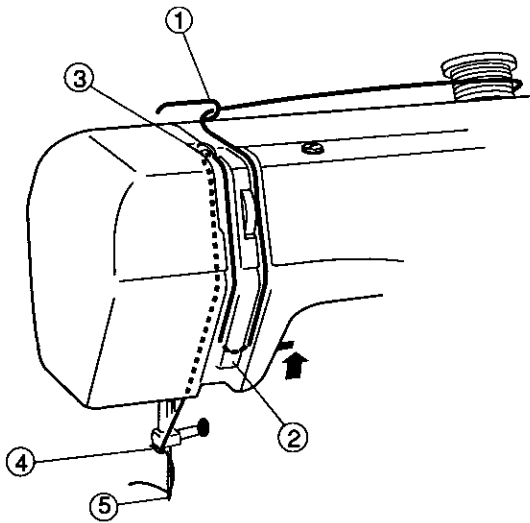
DOTTED LINES SHOW THE PLACES WHERE THE THREAD LOOPS AND THEN IS PULLED TIGHT.

RAISE THE PRESSER FOOT LEVER.

PLACE A SPOOL ON THE SPOOL PIN, WITH THREAD COMING OFF AS SHOWN.

1. DRAW THREAD THROUGH THE THREAD GUIDE.
2. HOLDING THREAD TAUT WITH RIGHT HAND, DRAW THREAD DOWN INTO THE TENSION AREA AND THEN AROUND THE CHECK SPRING HOLDER.
3. FIRMLY DRAW THREAD UP AND THROUGH THE TAKE-UP LEVER FROM RIGHT TO LEFT.
4. DRAW THREAD DOWN AGAIN AND SLIP IT INTO THE NEEDLE BAR THREAD GUIDE.
5. TREAD NEEDLE FROM FRONT TO BACK.

NOTE: YOU MAY WANT TO CUT THE END OF THREAD WITH SHARP SCISSORS FOR EASIER NEEDLE THREADING.



WHAT TO DO WHEN

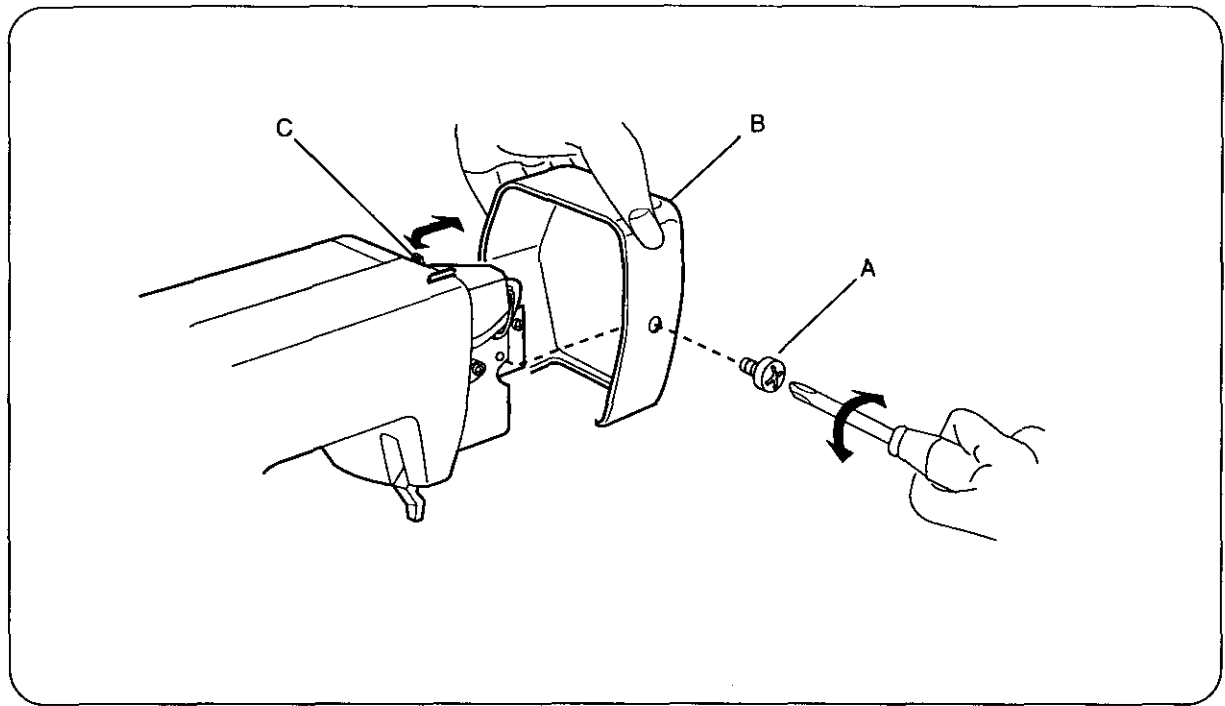
CONDITION	CAUSE	HOW TO FIX	REFERENCE
1. SKIPPING STITCHES	1. NEEDLE IS NOT INSERTED PROPERLY.	INSERT THE NEEDLE PROPERLY.	
	2. NEEDLE IS BENT OR WORN.	CHANGE THE NEEDLE.	
	3. INCORRECTLY THREADED	RETHREAD.	
	4. NEEDLE OR THREAD ARE INAPPROPRIATE FOR FABRIC BEING SEWN.	USE THE RECOMMENDED SEWING NEEDLE AND THREAD.	
	5. SEWING ON STRETCH FABRIC	USE A #11 BLUE TIP NEEDLE.	
	6. INAPPROPRIATE NEEDLE BAR HEIGHT	SEE MECHANICAL ADJUSTMENT "NEEDLE BAR HEIGHT."	P.18
	7. INAPPROPRIATE NEEDLE TO HOOK TIMING	SEE MECHANICAL ADJUSTMENT "NEEDLE TIMING TO SHUTTLE."	P.19
	8. INAPPROPRIATE NEEDLE TO HOOK CLEARANCE	SEE MECHANICAL ADJUSTMENT "CLEARANCE BETWEEN NEEDLE AND HOOK."	P.15,16
2. FABRIC NOT MOVING	1. INCORRECT FEED DOG HEIGHT	SEE MECHANICAL ADJUSTMENT "FEED DOG HEIGHT."	P.17
	2. THREAD ON BOTTOM SIDE OF FABRIC IS JAMMED UP.	MAKE SURE TO BRING BOTH NEEDLE AND BOBBIN THREADS UNDER THE FOOT WHEN STARTING SEWING.	
	3. FEED DOG TEETH ARE WORN.	CHANGE THE FEED DOG.	

CONDITION	CAUSE	HOW TO FIX	REFERENCE
3. BREAKING UPPER THREAD	<ol style="list-style-type: none"> 1. INITIAL SEWING SPEED IS TOO FAST. 2. THREAD PATH IS INCORRECT. 3. NEEDLE IS BENT OR DULL. 4. UPPER THREAD TENSION IS TOO STRONG. 5. NEEDLE SIZE IS INAPPROPRIATE FOR FABRIC. 6. NEEDLE EYE IS WORN. 7. NEEDLE HOLE IN NEEDLE PLATE IS WORN OR BURRED. 	<p>START WITH MEDIUM SPEED.</p> <p>USE THE PROPER THREAD PATH.</p> <p>REPLACE WITH A NEW NEEDLE.</p> <p>ADJUST UPPER THREAD TENSION CORRECTLY.</p> <p>USE APPROPRIATE NEEDLE AND THREAD FOR FABRIC IN USE.</p> <p>CHANGE THE NEEDLE.</p> <p>REPAIR THE HOLE OR REPLACE THE NEEDLE PLATE.</p>	P.10
4. BREAKING BOBBIN THREAD	<ol style="list-style-type: none"> 1. INCORRECTLY THREADED BOBBIN CASE. 2. TOO MUCH THREAD IS WOUND ON THE BOBBIN. 3. LINT IS STUCK INSIDE THE HOOK RACE. 4. THREAD QUALITY IS TOO LOW. 5. THREAD IS JAMMING AROUND THE BOBBIN. 6. BOBBIN THREAD TENSION IS TOO STRONG. 	<p>THREAD BOBBIN CASE CORRECTLY.</p> <p>ADJUST THE POSITION OF STOPPER.</p> <p>CLEAN THE HOOK RACE.</p> <p>CHANGE TO A HIGH QUALITY SEWING THREAD.</p> <p>CLEAR OUT THE JAMMING THREAD.</p> <p>ADJUST BOBBIN THREAD TENSION CORRECTLY.</p>	P.11
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 RACE. 4. THE FABRIC MOVES WHILE THE NEEDLE IS PIERCING IT, OR THE NEEDLE ZIGZAGS WHILE IN FABRIC. 5. FABRIC IS BEING PULLED TOO STRONGLY WHILE SEWING. 	<p>SEE MECHANICAL ADJUSTMENT "NEEDLE DROP."</p> <p>CHANGE THE NEEDLE.</p> <p>SEE MECHANICAL ADJUSTMENT "CLEARANCE BETWEEN NEEDLE AND HOOK".</p> <p>SEE MECHANICAL ADJUSTMENT "NEEDLE SWING".</p> <p>GUIDE THE FABRIC GENTLY WHILE SEWING.</p>	<p>P.14</p> <p>P.15, 16</p> <p>P.13</p>

CONDITION	CAUSE	HOW TO FIX	REFERENCE
6. NOISY OPERATION	1. BACKLASH BETWEEN SHUTTLE HOOK GEAR AND LOWER SHAFT GEAR IS TOO GREAT.	SEE MECHANICAL ADJUSTMENT "CLEARANCE BETWEEN NEEDLE AND HOOK (NO.2)".	P.16
	2. LOWER SHAFT GEAR IS LOOSE.	ELIMINATE THE LOOSENESS.	
	3. INAPPROPRIATE BELT TENSION.	SEE MECHANICAL ADJUSTMENT "MOTOR BELT TENSION".	P.22
	4. UPPER SHAFT GEAR IS LOOSE.	ELIMINATE THE LOOSENESS.	
	5. NOT ENOUGH OIL.	OIL ALL MOVING PARTS.	
7. DEFORMATION PATTERN	1. INAPPROPRIATE ZIGZAG SYNCHRONIZATION.	SEE MECHANICAL ADJUSTMENT "NEEDLE SWING".	P.13
	2. INAPPROPRIATE DISENGAGEMENT OF CAM FOLLOWER.	SEE MECHANICAL ADJUSTM "DISENGAGEMENT OF CAM	P.21
	3. UPPER THREAD TENSION IS TOO STRONG.	ADJUST UPPER THREAD TENSION CORRECTLY.	P.10

SERVICE ACCESS

FACE COVER



TO REMOVE

1. REMOVE SCREW "A".
2. TAKE THE FACE COVER "B" OFF.

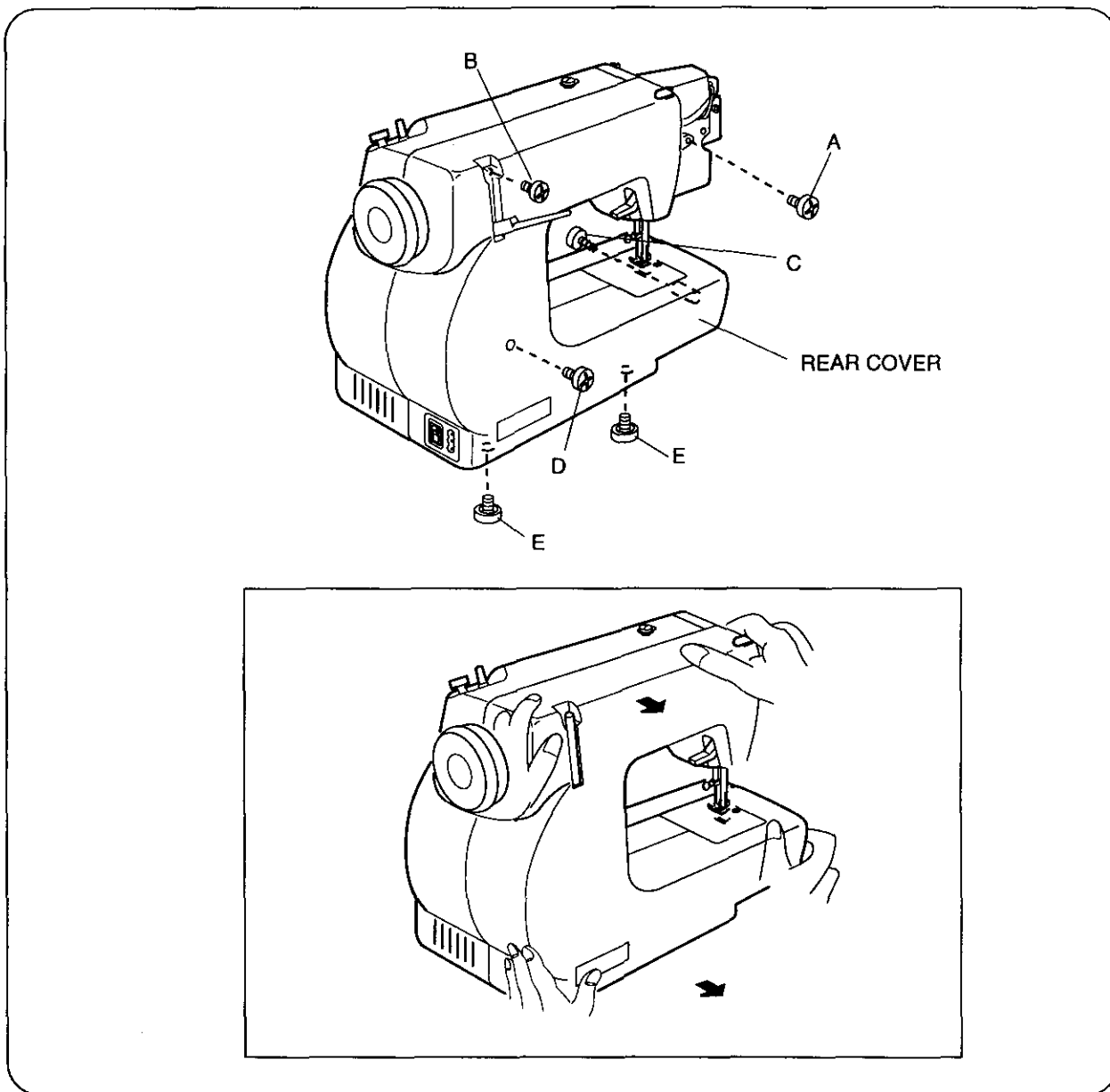
NOTE: WHEN REMOVING THE FACE COVER, PULL IT UP AND UNHOOK FROM THE HOOK "C".

TO ATTACH

FOLLOW THE ABOVE PROCEDURE IN REVERSE.

SERVICE ACCESS

REAR COVER



TO REMOVE

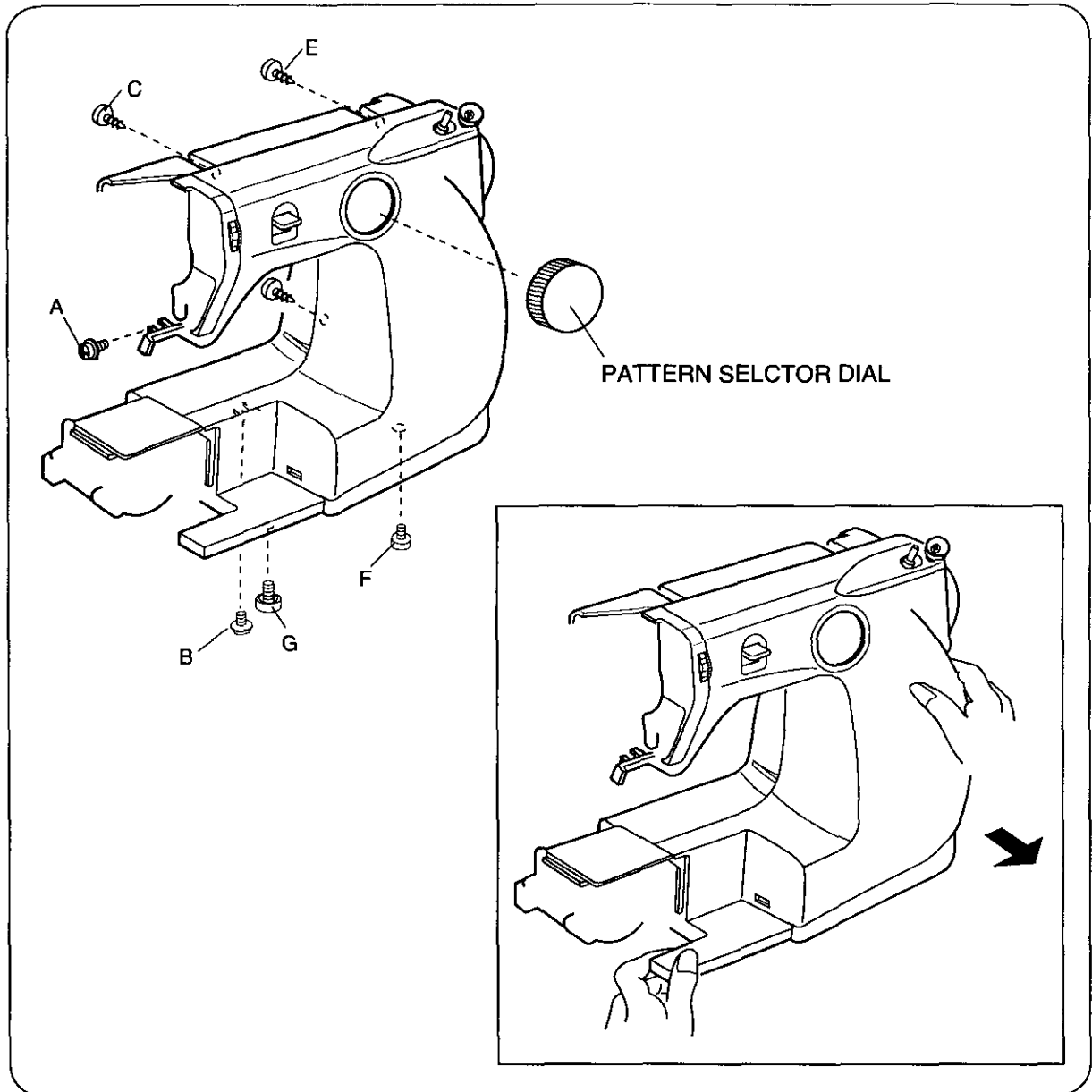
1. REMOVE THE FACE COVER (SEE PAGE 7).
2. REMOVE THE SCREWS "A", "B", "C", "D", AND RUBBER CUSHION "E" (2 PCs.), AND THEN REMOVE THE REAR COVER.

TO ATTACH

FOLLOW THE ABOVE PROCEDURE IN REVERSE.

SERVICE ACCESS

FRONT COVER



TO REMOVE

1. REMOVE THE FACE COVER AND REAR COVER (SEE PAGES 7, 8.)
2. PULL OUT THE PATTERN SELECTOR DIAL.
3. LOOSEN THE SCREWS "A", "B" AND REMOVE THE SCREWS "C", "D", "E", "F" AND THE RUBBER CUSHION "G", THEN REMOVE THE FRONT COVER.
4. INSERT THE PATTERN SELECTOR DIAL.

TO ATTACH

FOLLOW THE ABOVE PROCEDURE IN REVERSE.

MECHANICAL ADJUSTMENT

TOP TENSION

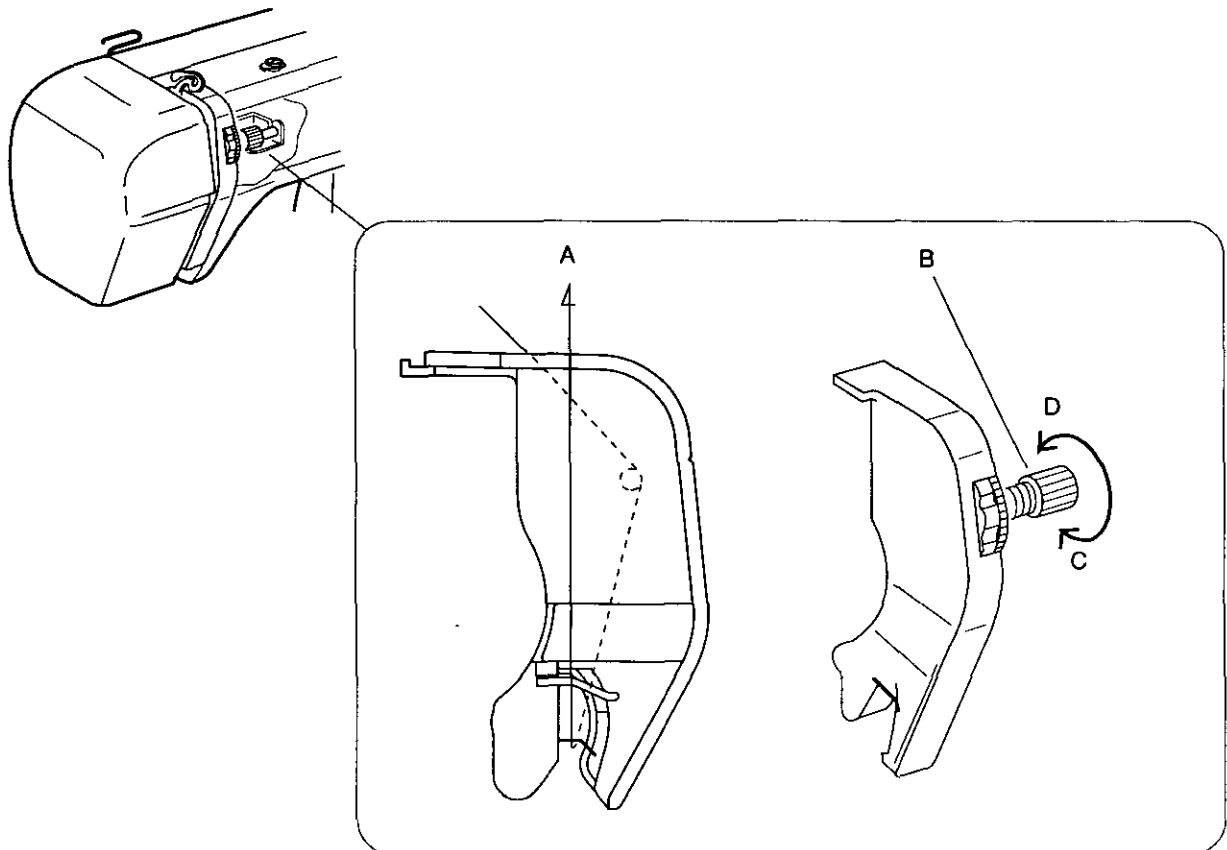
TO CHECK:

THE STANDARD UPPER THREAD TENSION SHOULD BE 65 - 95g WHEN PULLING THE THREAD (COTTON THREAD #50) IN THE DIRECTION OF "A" WITH SETTING THE TENSION DIAL AT "3". (MAKE SURE THE FOOT SHOULD BE LOWERED.)

IF THE TENSION IS OUT OF THE STANDARD RANGE, ADJUST IT AS FOLLOWS:

ADJUSTMENT PROCEDURE:

1. REMOVE THE FRONT COVER UNIT (SEE PAGE 9).
2. TURN THE ADJUSTING NUT "B" IN THE DIRECTION OF "C" WHEN THE UPPER THREAD TENSION IS TOO TIGHT.
TURN THE ADJUSTING NUT "B" IN THE DIRECTION OF "D" WHEN THE UPPER THREAD TENSION IS TOO LOOSE.
3. ATTACH THE FRONT PANEL COVER UNIT.



MECHANICAL ADJUSTMENT

BOBBIN TENSION

TO CHECK:

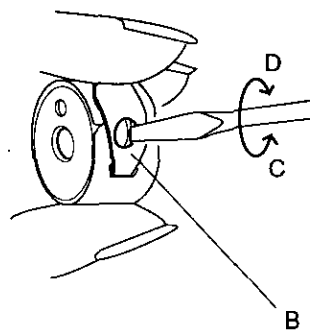
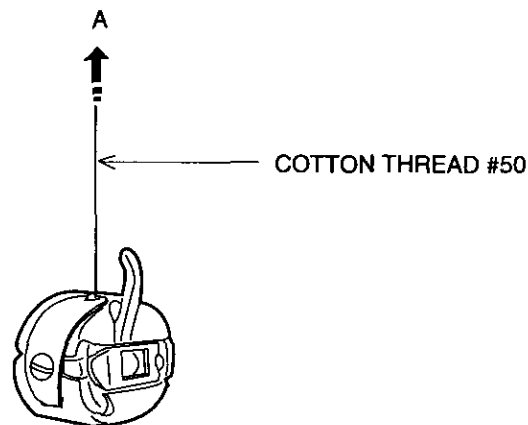
SET THE BOBBIN IN THE BOBBIN CASE AND PASS THE THREAD (COTTON #50) THROUGH THE TENSION SPRING.

THE BOBBIN THREAD TENSION SHOULD BE 45 - 55g WHEN PULLING THE THREAD IN THE DIRECTION OF "A".

IF THE TENSION IS OUT OF THE RANGE, ADJUST IT AS FOLLOWS:

ADJUSTMENT PROCEDURE:

1. TURN THE ADJUSTING SCREW "B" IN THE DIRECTION OF "C" WHEN THE BOBBIN THREAD TENSION IS TOO TIGHT.
2. TURN THE ADJUSTING SCREW "B" IN THE DIRECTION OF "D" WHEN THE BOBBIN THREAD TENSION IS TOO LOOSE.



MECHANICAL ADJUSTMENT

PRESSER BAR HEIGHT AND ALIGNMENT

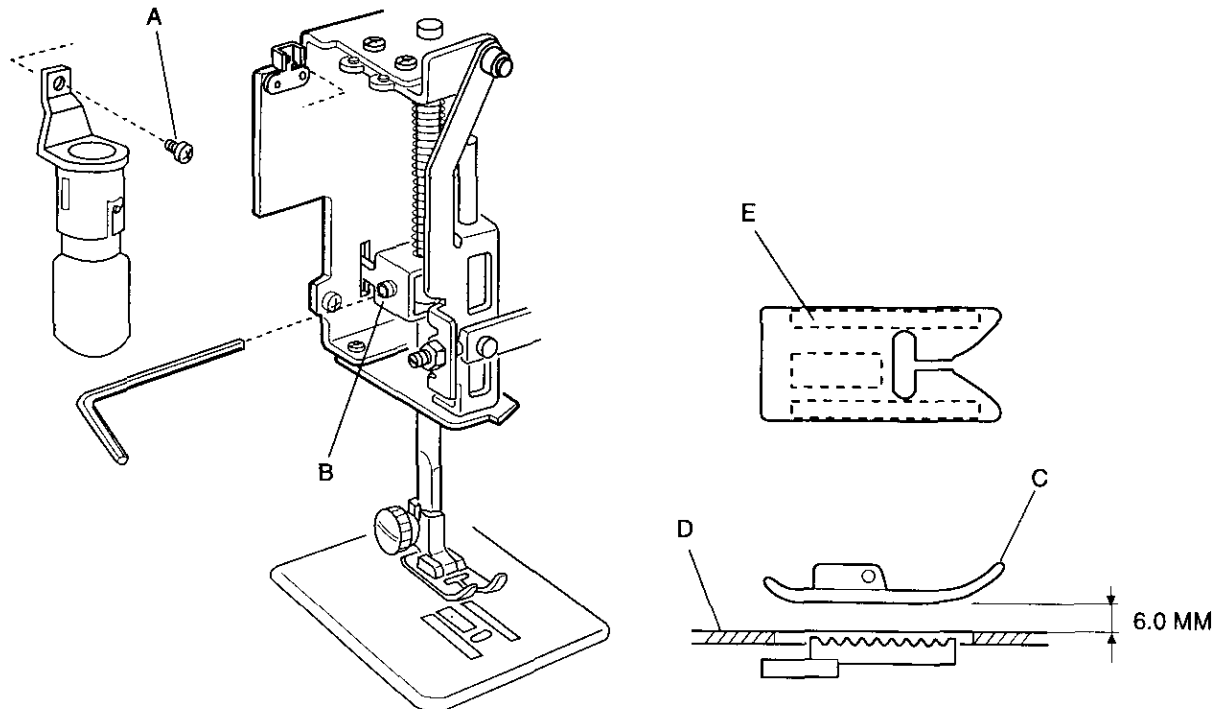
TO CHECK:

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

ADJUSTMENT PROCEDURE:

1. REMOVE THE FACE COVER (SEE PAGE 7).
2. REMOVE THE SCREW "A" AND TAKE THE LAMP SOCKET OFF.
3. RAISE THE PRESSER FOOT LEVER AND LOOSEN THE SCREW "B" ON THE PRESSER BAR HOLDER.
ADJUST THE DISTANCE BETWEEN THE PRESSER FOOT "C" AND THE NEEDLE PLATE "D" TO 6.0MM (0.24").
4. TIGHTEN THE SCREW "B" SECURELY.
5. TIGHTEN THE SCREW "A" TO SECURE THE LAMP SOCKET.
6. ATTACH THE FACE PLATE.

NOTE: WHEN YOU TIGHTEN THE SCREW "B", MAKE SURE THAT BOTH SIDES OF THE PRESSER FOOT ARE PARALLEL TO THE FEED DOG SLOTS "E" ON THE NEEDLE PLATE.



MECHANICAL ADJUSTMENT

NEEDLE SWING

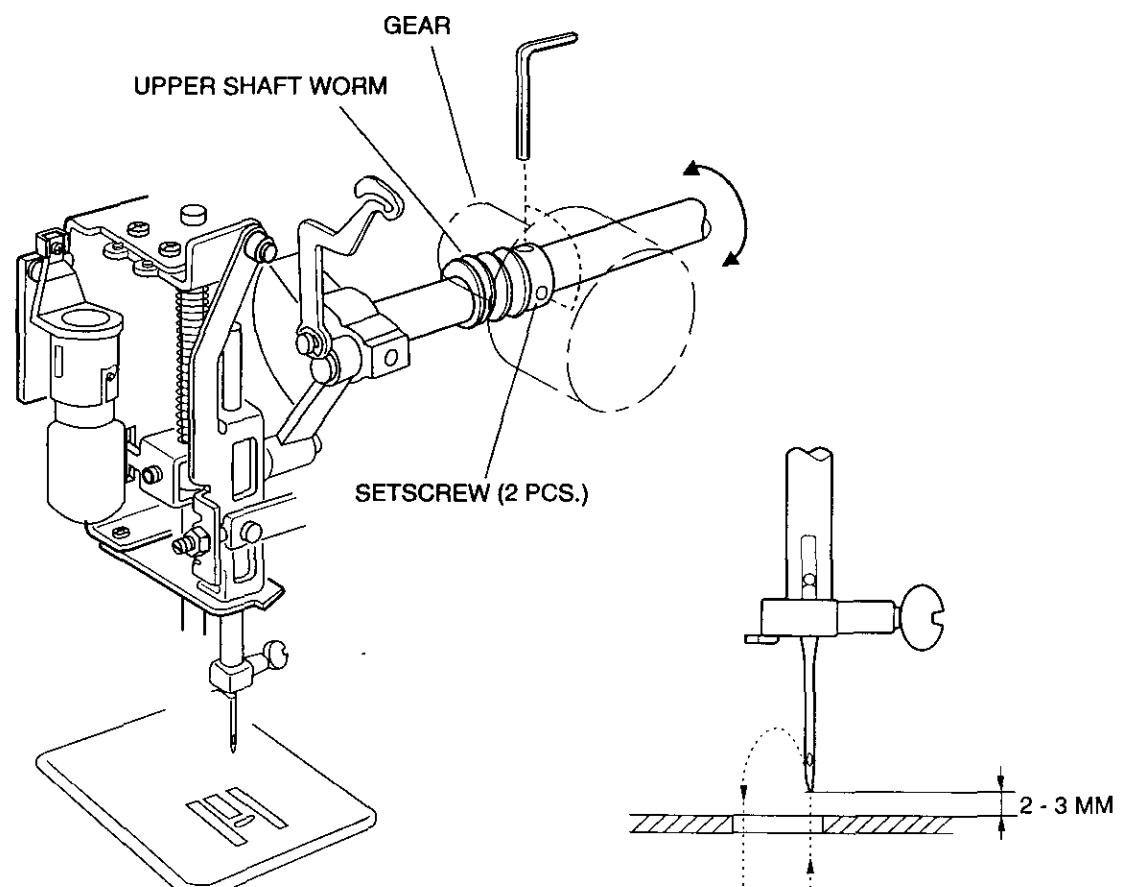
TO CHECK:

ADJUST THE NEEDLE SWING ACCORDING TO THE FOLLOWING PROCEDURE, IF THE NEEDLE BAR STARTS MOVING SIDWAYS WHILE THE NEEDLE IS IN THE FABRIC AT SEWING THE ZIGZAG PATTERN (WITH MAXIMUM ZIGZAG WIDTH).

ADJUSTMENT PROCEDURE:

1. SET THE PATTERN SELECTOR DIAL WITH MAXIMUM ZIGZAG WIDTH, AND REMOVE THE FRONT COVER (SEE PAGE 9).
2. LOOSEN TWO SETSCREWS.
3. ADJUST THE NEEDLE SWING BY TURNING THE HANDWHEEL, WHILE HOLDING THE WORM SO AS NOT TO ROTATE IT, UNTIL THE NEEDLE SWING STARTS AT 2 - 3 MM ABOVE THE NEEDLE PLATE AFTER THE NEEDLE HAS COME OUT OF THE RIGHT SIDE OF THE NEEDLE HOLE.
4. TIGHTEN TWO SETSCREWS.
5. MOUNT THE FRONT COVER.

NOTE: AFTER ADJUSTING THE NEEDLE SWING, CHECK THAT THE UPPER SHAFT WORM AND GEAR ROTATE SMOOTHLY WITHOUT ANY BACKLASH BETWEEN THEM.



MECHANICAL ADJUSTMENT

NEEDLE DROP

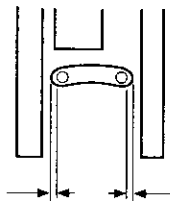
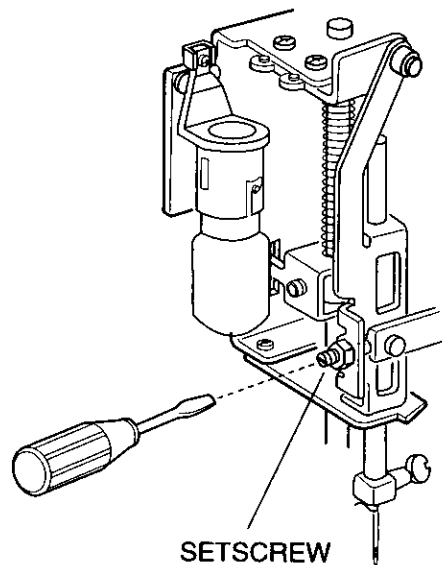
TO CHECK:

WHEN THE NEEDLE SWINGS IN MAXIMUM ZIGZAG WIDTH, THE DISTANCE BETWEEN THE BOTH ENDS OF NEEDLE HOLE IN THE NEEDLE PLATE AND THE NEEDLE DROP POSITIONS SHOULD BE EQUAL. IF NOT, MAKE AN ADJUSTMENT AS FOLLOWS:

ADJUSTMENT PROCEDURE:

1. REMOVE THE FACE COVER (SEE PAGE 7).
2. SET THE PATTERN SELECTOR DIAL AT MAXIMUM ZIGZAG WIDTH POSITION.
3. TURN THE SCREW TO ADJUST THE LEFT AND RIGHT NEEDLE DROP POSITIONS.
4. ATTACH THE FACE COVER.

NOTE: CHECK THE HOOK TIMING AFTER THIS ADJUSTMENT.



BOTH CLEARANCE SHOULD BE EQUAL

MECHANICAL ADJUSTMENT

CLEARANCE BETWEEN NEEDLE AND HOOK (NO.1)

TO CHECK:

THE CLEARANCE BETWEEN NEEDLE AND SHUTTLE HOOK SHOULD BE 0 – 0.15 MM.

IF NOT, MAKE AN ADJUSTMENT AS FOLLOWS:

ADJUSTMENT PROCEDURE:

1. REMOVE THE FACE COVER (SEE PAGE 7).
2. SET THE PATTERN SELECTOR DIAL AT MAXIMUM ZIGZAG WIDTH, AND TURN THE HANDWHEEL TOWARD YOU TO BRING THE NEEDLE AT LEFT NEEDLE POSITION.
3. LOOSEN 2 SCREWS, SLIDE THE NEEDLE BAR SUPPORTER ADJUSTING PLATE IN THE DIRECTION OF ARROW AS SHOWN BELOW, AND ADJUST THE CLEARANCE BETWEEN NEEDLE AND SHUTTLE HOOK TO 0 – 0.15 MM. TIGHTEN SCREWS.
- * IF THE CLEARANCE IS TOO LARGE (MORE THAN 0.15 MM), SLIDE THE NEEDLE BAR SUPPORTER ADJUSTING PLATE IN THE DIRECTION OF "B".
- * IF THE CLEARANCE IS TOO SMALL (LESS THAN 0 MM), SLIDE THE NEEDLE BAR SUPPORTER ADJUSTING PLATE IN THE DIRECTION OF "C".

NOTE: WHEN ADJUSTING THE CLEARANCE, BE SURE TO SLIDE THE NEEDLE BAR SUPPORTER ADJUSTING PLATE WHILE GUIDING THE TWO PROJECTIONS ALONG THE EDGE OF THE BASE PLATE.

NOTE: CLEARANCE BETWEEN NEEDLE AND NEEDLE PLATE IS 0.15 MM OR MORE AS SHOWN IN FIGURE "D". IF NOT, ADJUST THE CLEARANCE BETWEEN NEEDLE AND SHUTTLE HOOK BY USING METHOD OF ADJUSTMENT NO.2 IN PAGE 13. AFTER READJUSTMENT, CHECK IF THE CLEARANCE BETWEEN NEEDLE AND NEEDLE PLATE IS 0.15 MM OR MORE.

4. ATTACH THE FACE PLATE.

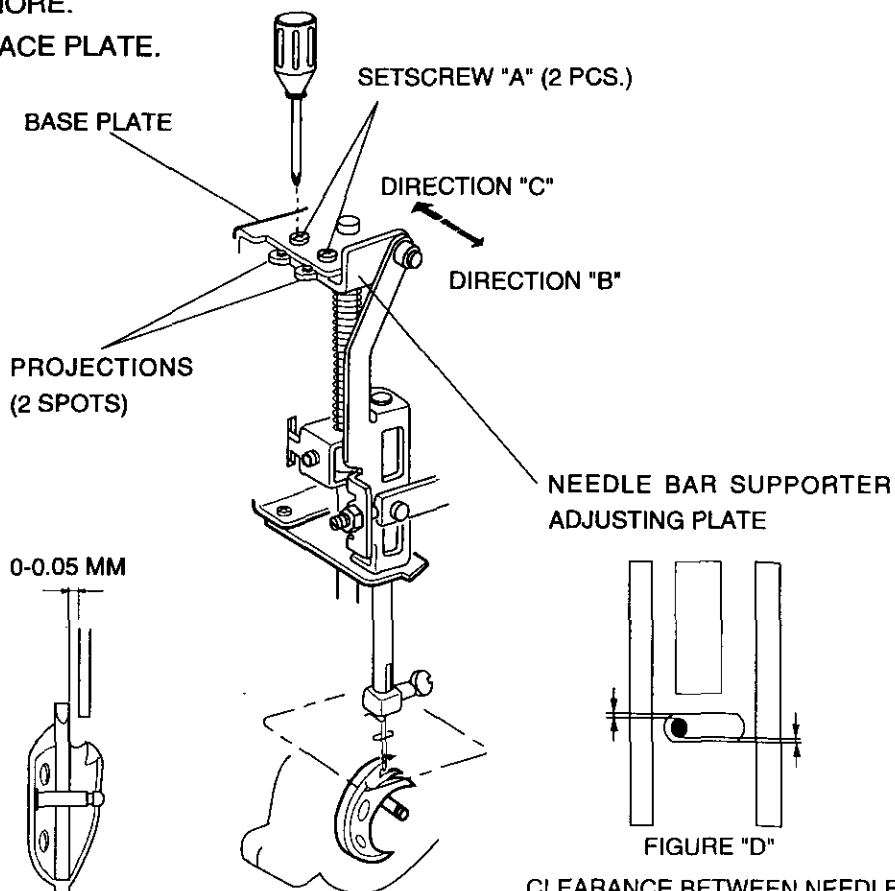


FIGURE "D"
CLEARANCE BETWEEN NEEDLE AND
NEEDLE PLATE IS 0.15 MM OR MORE.

MECHANICAL ADJUSTMENT

CLEARANCE BETWEEN NEEDLE AND HOOK (NO.2)

TO CHECK:

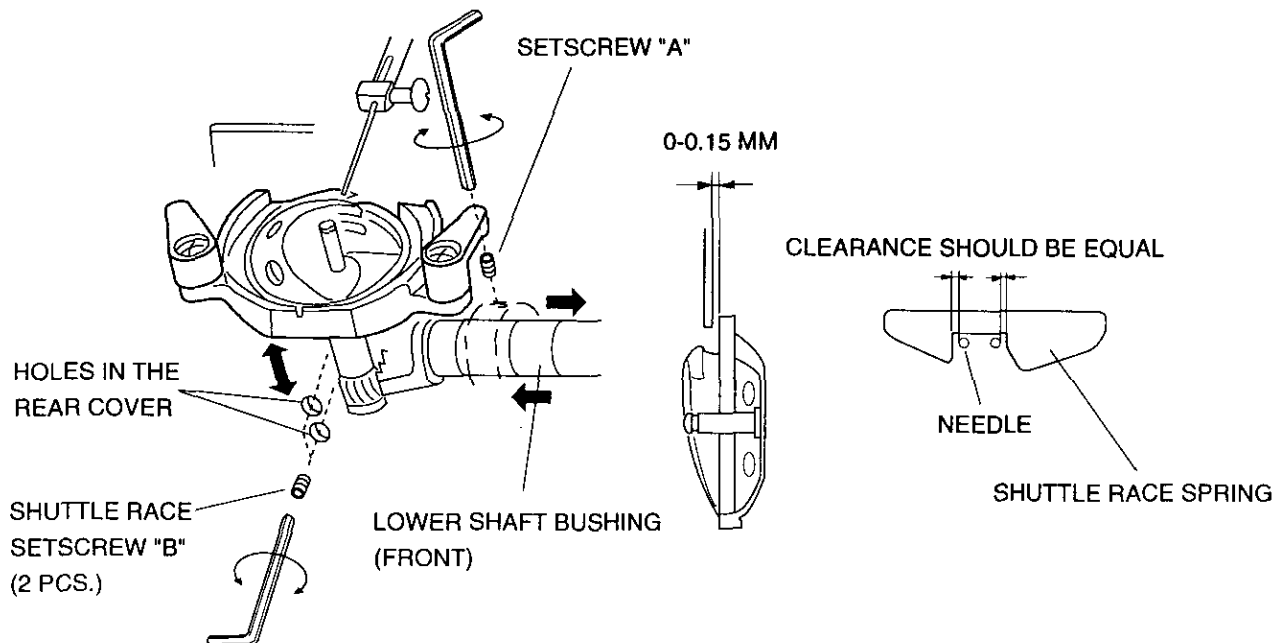
USE THIS ADJUSTMENT METHOD NO.2 IF THE CLEARANCE CANNOT BE ADJUSTED WITH THE METHOD NO.1.

THE CLEARANCE BETWEEN NEEDLE AND SHUTTLE HOOK SHOULD BE 0 – 0.15 MM.

ADJUSTMENT PROCEDURE:

1. SET THE PATTERN SELECTOR DIAL AT MAXIMUM ZIGZAG WIDTH, AND TURN THE HANDWHEEL TOWARD YOU TO BRING THE NEEDLE TO THE LEFT NEEDLE POSITION.
2. OPEN THE SHUTTLE COVER AND LOOSEN THE LOWER SHAFT BUSHING (FRONT) SETSCREW "A". THEN SLIDE THE LOWER SHAFT TO THE RIGHT SIDE SLIGHTLY (APPROXIMATELY 0.5 MM) NOT TO DISENGAGE THE GEARS, AND TIGHTEN THE SCREW TEMPORARY.
3. LOOSEN THE SCREWS "B" (2 PCS) THROUGH THE HOLES IN THE REAR COVER, AND SLIGHTLY MOVE THE SHUTTLE BODY UP OR DOWN TO ADJUST THE CLEARANCE BETWEEN NEEDLE AND SHUTTLE HOOK TO 0 – 0.15 MM, AND TIGHTEN THE SCREWS "B" TEMPORARY.
4. TURN THE HANDWHEEL TO CHECK THE CLEARANCE BETWEEN SHUTTLE RACE SPRING AND NEEDLE IN LEFT AND RIGHT POSITIONS. IF THE CLEARANCE IS NOT EQUAL, ADJUST IT BY TURNING THE SHUTTLE RACE BODY.
5. TIGHTEN THE SHUTTLE RACE SETSCREWS "B" (2 PCS).
6. LOOSEN THE SETSCREW ON LOWER SHAFT BUSHING AND SLIDE THE GEAR BACK TO THE ORIGINAL POSITION WHILE ADJUSTING THE BACKLASH.
7. TIGHTEN THE SCREW "A" FIRMLY.

NOTE: THE BACKLASH SHOULD BE 0.3 MM OR LESS AND LOWER SHAFT TURNS SMOOTHLY. AFTER THE ADJUSTMENT, CHECK THE HOOK TIMING.



MECHANICAL ADJUSTMENT

FEED DOG HEIGHT

MACHINE SETTING

1. STITCH SELECTOR: " 1 "
2. NEEDLE BAR: AT ITS HIGHEST POSITION.

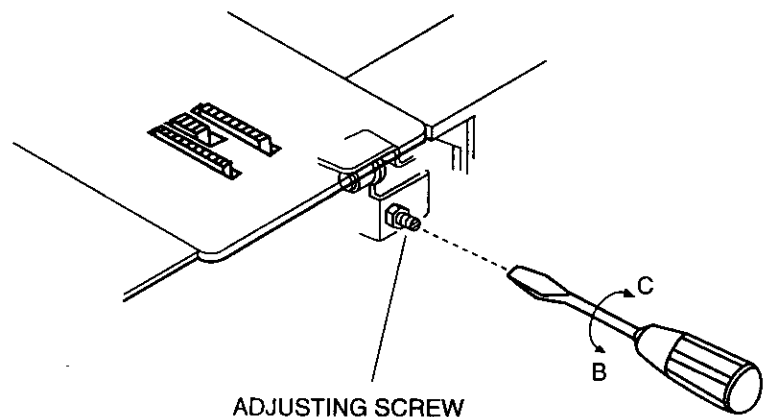
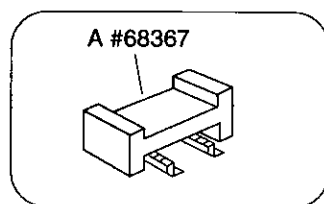
TO CHECK:

1. RAISE THE PRESSER FOOT.
2. PLACE THE FEED DOG HEIGHT GAUGE #68367 "A" ON THE NEEDLE PLATE.
3. TURN THE HANDWHEEL TOWARD YOU BY HAND AND CHECK THE FEED DOG HEIGHT. REFER TO CHART BELOW.

ADJUSTMENT PROCEDURE:

1. OPEN THE SHUTTLE COVER.
 2. ADJUST THE FEED DOG HEIGHT BY TURNING THE ADJUSTING SCREW.
- * WHEN THE FEED DOG HEIGHT IS HIGHER THAN THE STANDARD RANGE, TURNS THE ADJUSTING SCREW IN THE DIRECTION OF "B".
 - * WHEN THE FEED DOG HEIGHT IS LOWER THAN THE STANDARD RANGE, TURN THE ADJUSTING SCREW IN THE DIRECTION OF "C".

GAUGE		FEED DOG HEIGHT
FACE (A) 1.25 MM	FACE (B) (RED) 1.00 MM	
NOT MOVING	MOVING	CORRECT
NOT MOVING	NOT MOVING	LOW
MOVING	MOVING	HIGH



MECHANICAL ADJUSTMENT

NEEDLE BAR HEIGHT

MACHINE SETTING

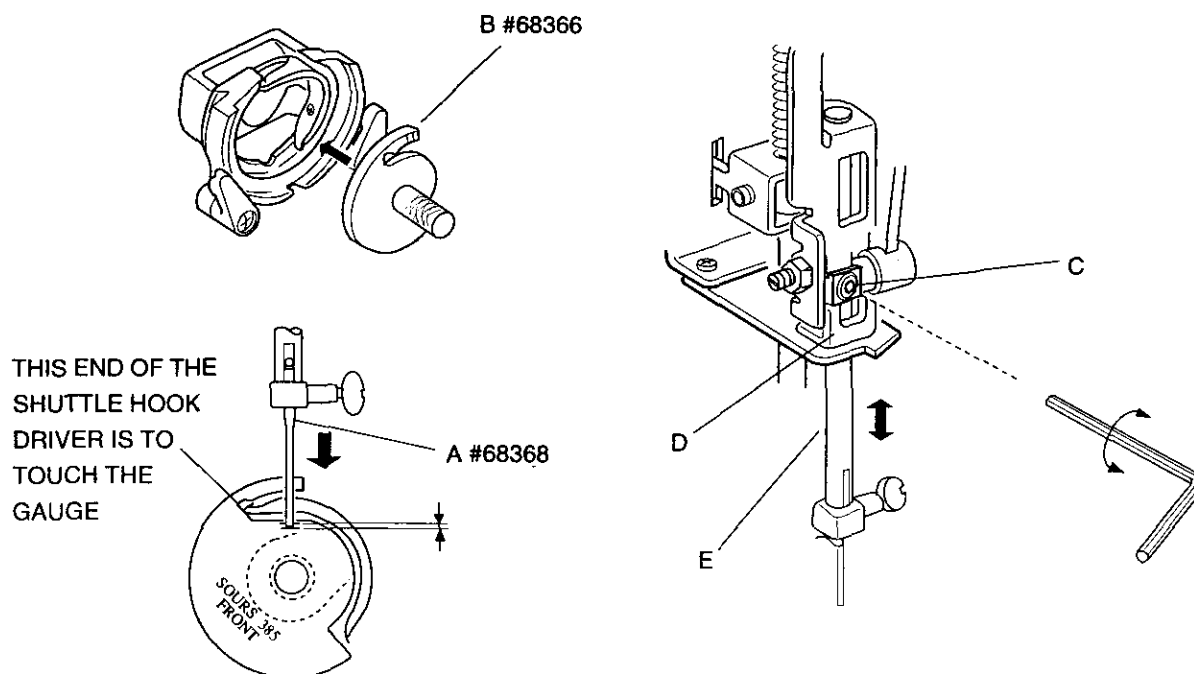
1. STITCH SELECTOR: "1".

TO CHECK:

1. OPEN THE SHUTTLE COVER.
2. REPLACE THE NEEDLE WITH THE TEST PIN #68368 "A".
3. REMOVE THE SHUTTLE HOOK AND INSERT THE RADIAL TIMING GAUGE #68366 "B" ONTO THE SHUTTLE DRIVER.
4. TURN THE HANDWHEEL TOWARD YOU BY HAND UNTIL THE NEEDLE BAR REACHES ITS LOWEST POSITION.
5. THE TIP OF THE TEST PIN #68368 "A" SHOULD BE IN BETWEEN THE TWO HORIZONTAL LINES ENGRAVED ON THE RADIAL TIMING GAUGE #68366 "B".

ADJUSTMENT PROCEDURE:

1. REMOVE FRONT COVER (SEE PAGE 9).
2. LOOSEN THE SCREW "C" OF THE NEEDLE BAR HOLDER "D".
3. MOVE THE NEEDLE BAR "E" UP OR DOWN BY HAND UNTIL THE TIP OF THE TEST PIN #68368 "A" COMES IN BETWEEN THE TWO HORIZONTAL PARALLEL LINES ENGRAVE ON THE RADIAL TIMING GAUGE #68366 "B".
4. TIGHTEN THE SCREW "C" SECURELY.
5. ATTACH THE FRONT COVER.



MECHANICAL ADJUSTMENT

NEEDLE TIMING TO SHUTTLE

MACHINE SETTING

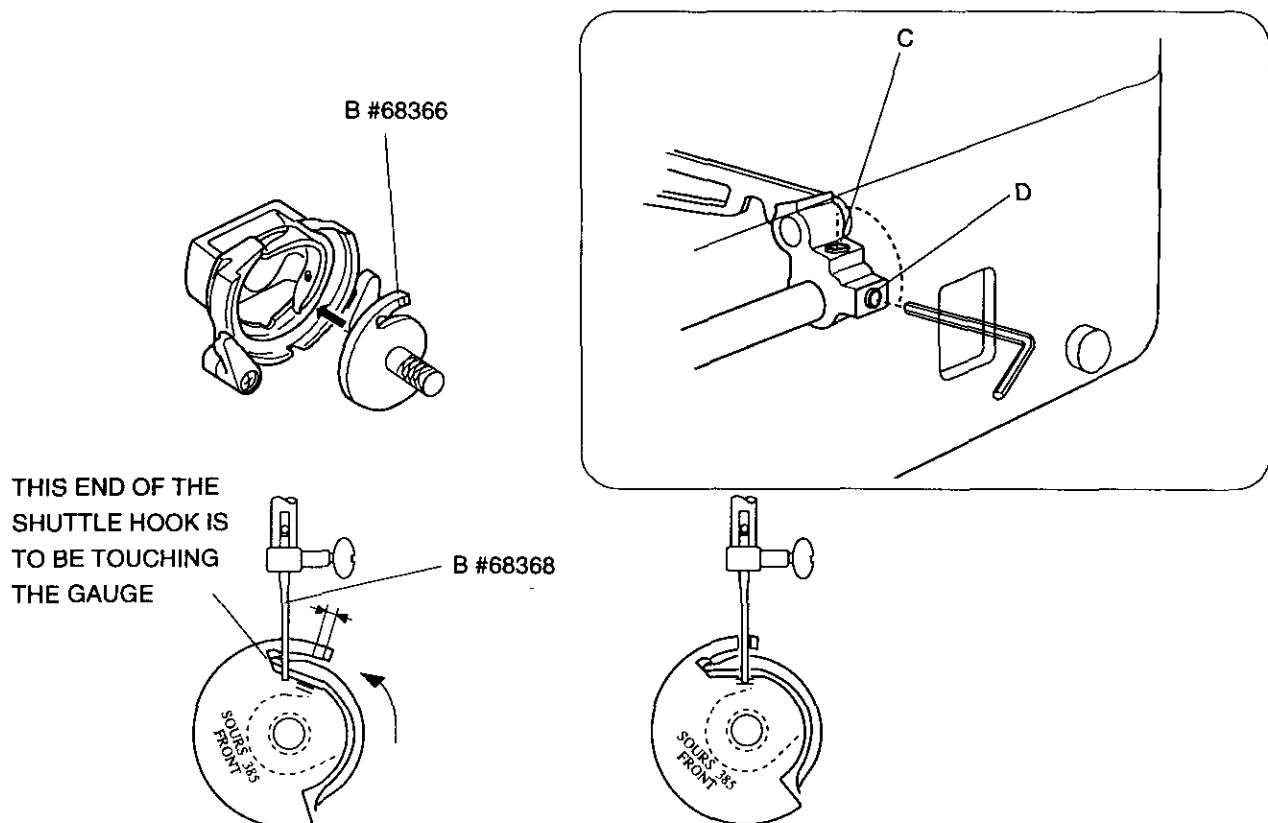
1. STITCH SELECTOR: "1".

TO CHECK:

1. OPEN THE SHUTTLE COVER.
2. REPLACE THE NEEDLE WITH THE TEST PIN #68368 "A".
3. REMOVE THE SHUTTLE HOOK AND INSERT THE RADIAL TIMING GAUGE #68366 "B" ONTO THE SHUTTLE DRIVER.
4. TURN THE HANDWHEEL TOWARD YOU BY HAND UNTIL THE NEEDLE BAR REACHES ITS LOWEST POSITION.
5. THE TIP OF THE TEST PIN #68368 "A" SHOULD BE IN BETWEEN THE TWO VERTICAL LINES ENGRAVED ON THE RADIAL TIMING GAUGE #68366 "B".

ADJUSTMENT PROCEDURE:

1. REMOVE REAR COVER (SEE PAGE 8).
2. LOOSEN THE SCREWS "C" AND "D".
3. ROTATE THE SHUTTLE DRIVER UNTIL THE TIP OF THE TEST PIN #68368 "A" COMES IN BETWEEN THE TWO VERTICAL LINES ENGRAVED ON THE RADIAL TIMING GAUGE #68366 "B".
4. TIGHTEN THE SCREWS "C" AND "D" SECURELY.
5. ATTACH THE REAR COVER.



MECHANICAL ADJUSTMENT

BUTTONHOLE FEED BALANCE

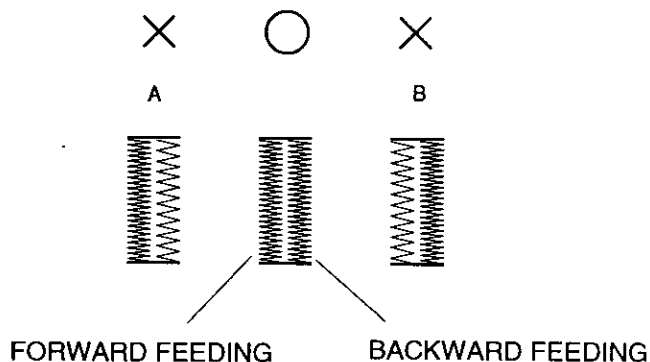
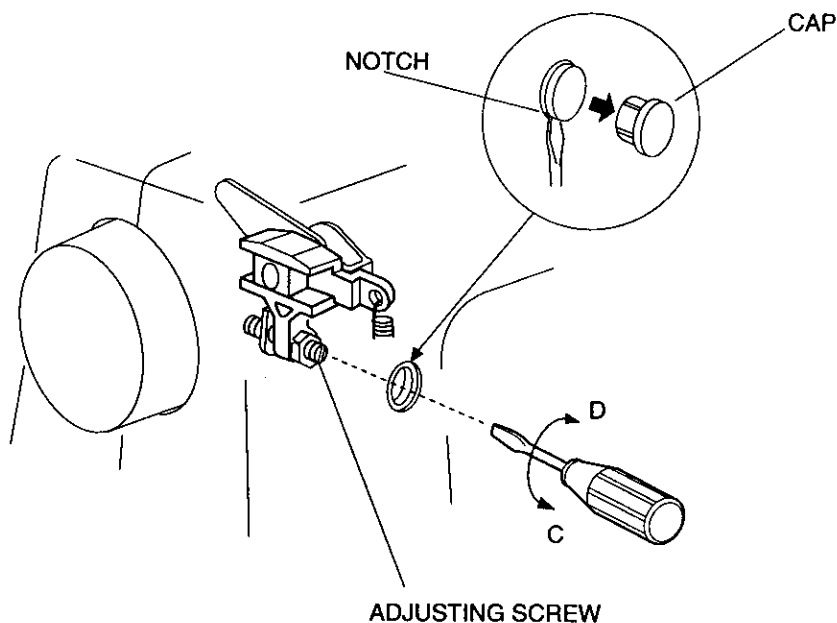
TO CHECK:

WHEN SEWING BUTTONHOLE, THE STITCHES ON EACH SIDE OF BUTTONHOLE SHOULD BE THE SAME STITCH DENSITY.

THE RANGE OF 9-11 STITCHES IN THE RIGHT SIDE ROW "BACKWARD FEEDING" AGAINST 10 STITCHES IN THE LEFT SIDE ROW "FORWARD FEEDING" IS CONSIDERED ACCEPTABLE.

ADJUSTMENT PROCEDURE:

1. CONFIRM THE STITCHES BY SEWING BUTTONHOLES, AND REMOVE THE CAP.
2. TURN THE ADJUSTING SCREW IN THE DIRECTION OF "C" IN CASE OF "A" (RIGHT STITCHES ARE ROUGH), OR IN THE DIRECTION OF "D" IN CASE OF "B" (LEFT STITCHES ARE ROUGH).
3. MOUNT THE CAP.



MECHANICAL ADJUSTMENT

ADJUSTMENT OF RIGHT HAND LINE TACK WIDTH AND CAM FOLLOWER RELEASE AMOUNT

- * THE WIDTH OF THE LEFT AND RIGHT SIDE LINE TACK OF BUTTONHOLE SHOULD BE EQUAL. IF THERE IS LARGE DIFFERENCE BETWEEN LEFT AND RIGHT LINE TACK WIDTH, THE CAM FOLLOWER MAY BE HINDERED WITH THE ZIGZAG CAM BLOCK WHEN YOU TURN THE PATTERN SELECTOR DIAL.

1. SEW A BUTTONHOLE AND CHECK THE DIFFERENCE IN BOTH LINE TACK WIDTHS.
2. REMOVE THE FRONT COVER (SEE PAGE 9).
3. ADJUST THE LINE TACK WIDTH BY TURNING THE ADJUSTING SCREW.

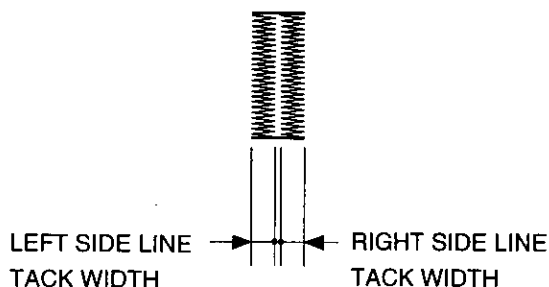
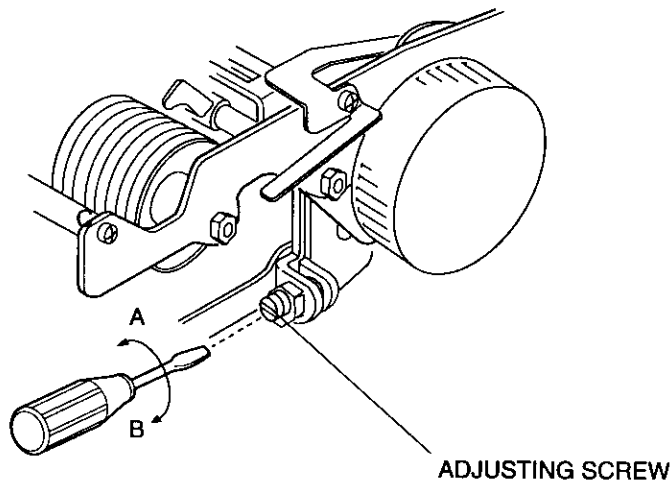
- * THE RIGHT SIDE OF THE LINE TACK IS FIXED SO THE ADJUSTMENT SHOULD BE DONE ON THE LEFT SIDE LINE TACK.

IF THE LEFT SIDE LINE TACK IS WIDER THAN THE RIGHT SIDE:

TURN THE ADJUSTING SCREW IN THE DIRECTION OF "A"

IF THE RIGHT SIDE LINE TACK IS NARROWER THAN THE LEFT SIDE:

TURN THE ADJUSTING SCREW IN THE DIRECTION OF "B".



MECHANICAL ADJUSTMENT

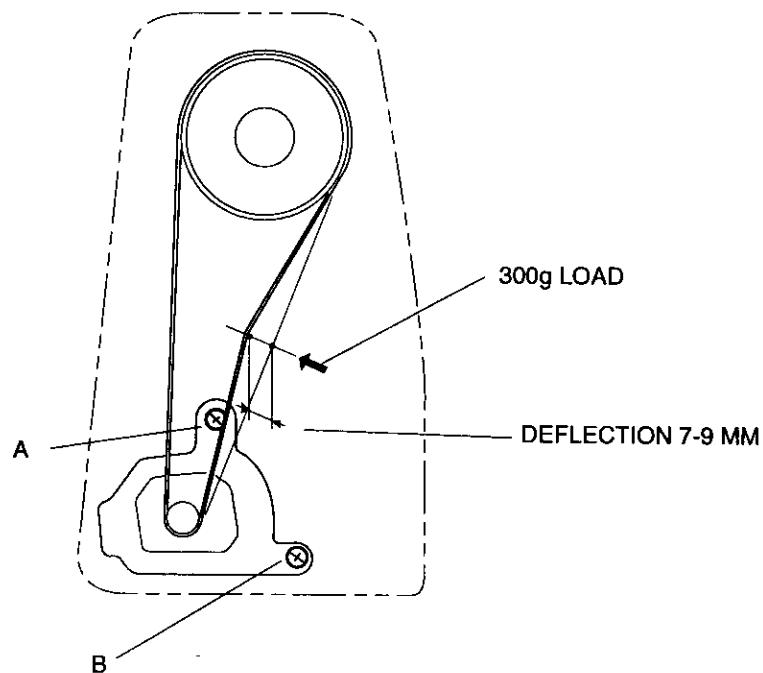
MOTOR BELT TENSION

TO CHECK:

1. TOO TIGHT OR TOO LOOSE MOTOR BELT TENSION MAY CREATE BELT NOISE AND ALSO TOO TIGHT MOTOR BELT TENSION CAN CAUSE THE MACHINE TO RUN SLOW AND WILL OVERLOAD THE MOTOR.
TOO LOOSE MOTOR BELT TENSION MAY CAUSE JUMPING OF THE BELT TEETH ON THE MOTOR PULLEY.
2. THE CORRECT MOTOR BELT TENSION IS THAT THE DEFLECTION OF MOTOR BELT IS ABOUT 7 MM (0.28") - 9 MM (0.36") WHEN PUSHING THE MOTOR BELT BY FINGER AT ABOUT 300 GRAMS LOAD.

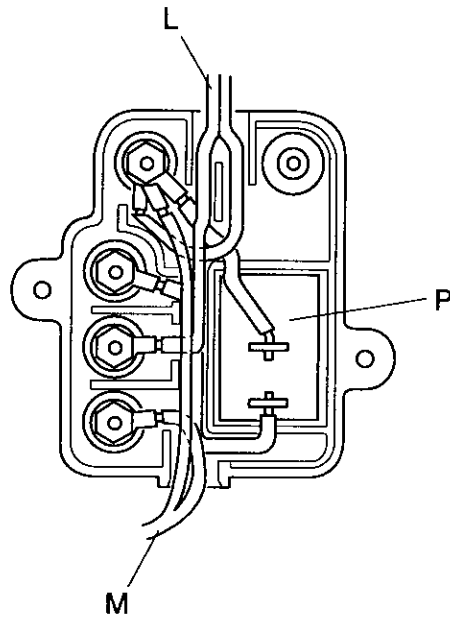
ADJUSTMENT PROCEDURE:

1. REMOVE THE FRONT COVER. (SEE PAGE 9.)
2. LOOSEN THE SCREWS "A" AND "B".
3. MOVE THE MOTOR UP OR DOWN TO ADJUST THE DEFLECTION ABOUT 7 MM (0.28") - 9 MM (0.36").
4. TIGHTEN THE SCREWS "A" AND "B".
5. ATTACH THE FRONT PANEL COVER UNIT.



WIRING

WIRING FOR MACHINE SOCKET UNIT



M : MOTOR

L : LAMP

P : POWER SWITCH

OILING

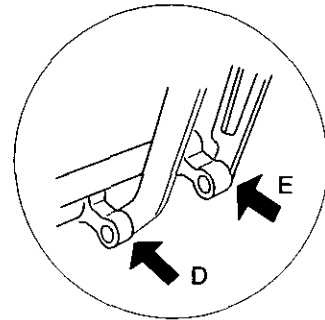
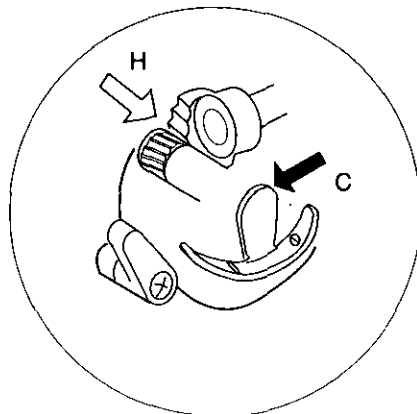
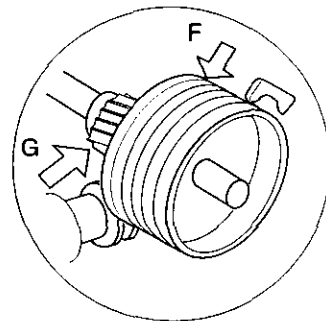
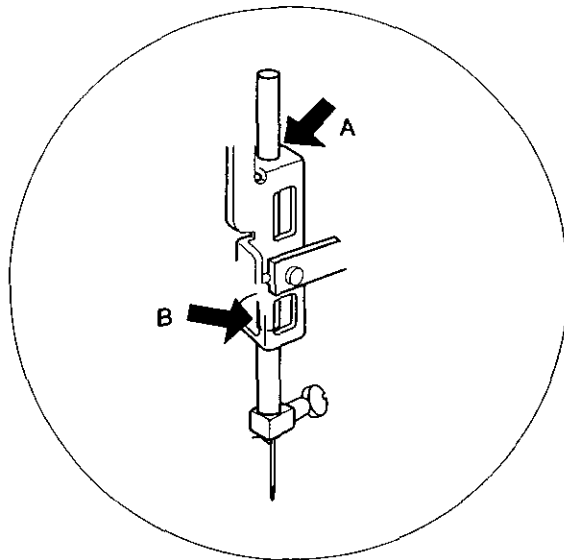
FACTORY LUBRICATED PARTS WILL PROVIDE YEARS OF HOUSEHOLD SEWING WITHOUT ROUTINE OILING, BUT CHECK FOR POSSIBLE LUBRICATION NEEDS WHENEVER SERVICING MACHINES.

OIL

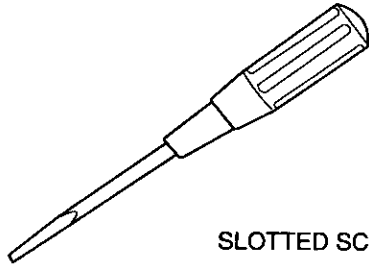
USE GOOD QUALITY SEWING MACHINE OIL AT THE POINTS "A", "B", "C", "D", "E" INDICATED BY BLACK ARROWS.

GREASE

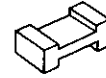
THE WHITE GREASE IS RECOMMENDED FOR USE ON ALL MODEL SEWING MACHINES. IT IS AN IMPROVED GREASE AND CAN BE USED ON METAL AND PLASTIC WHICH POINTS ARE INDICATED BY WHITE ARROWS "F", "G", "H".



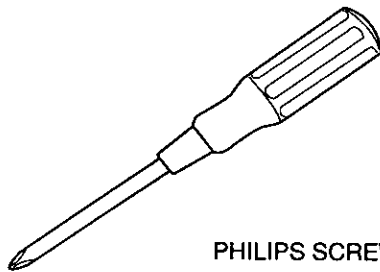
SPECIAL TOOLS REQUIRED



SLOTTED SCREW DRIVER



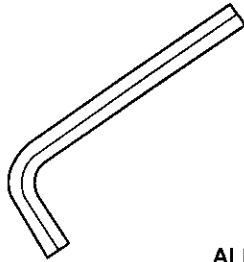
FEED DOG HEIGHT GAUGE
#68367



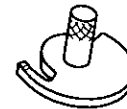
PHILIPS SCREW DRIVER



TEST PIN
#68368



ALIEN WRENCH



RADIAL TIMING GAUGE
#68366