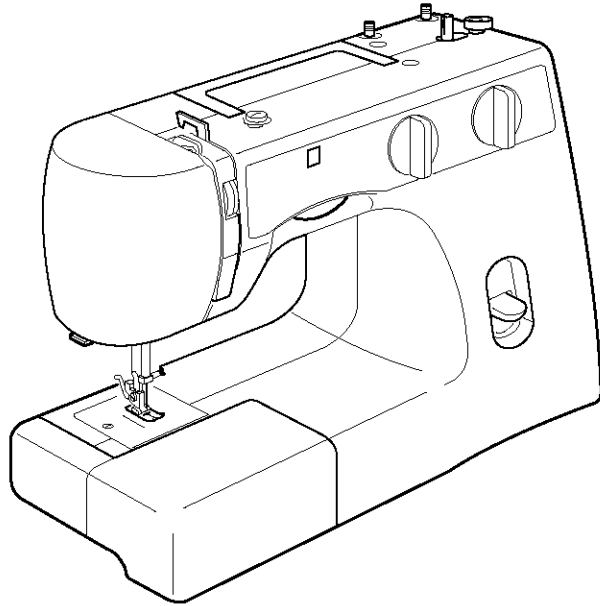


# ***SERVICE MANUAL***

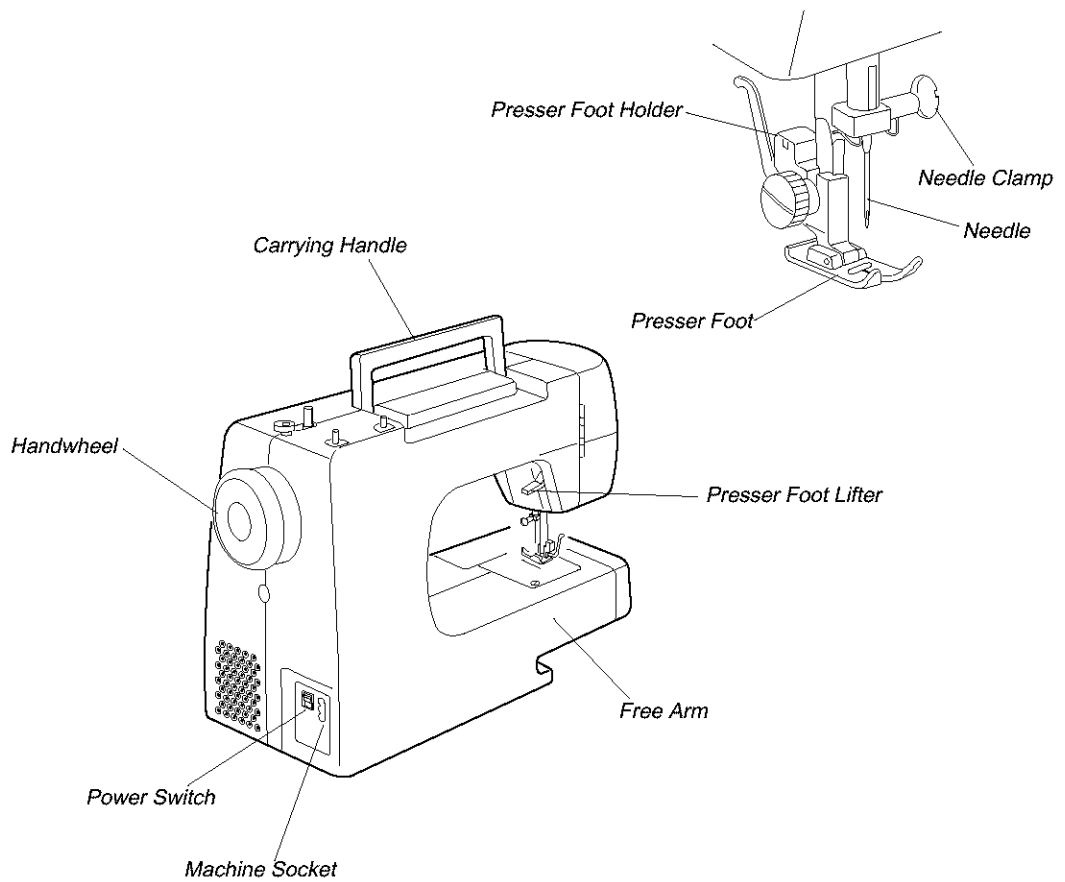
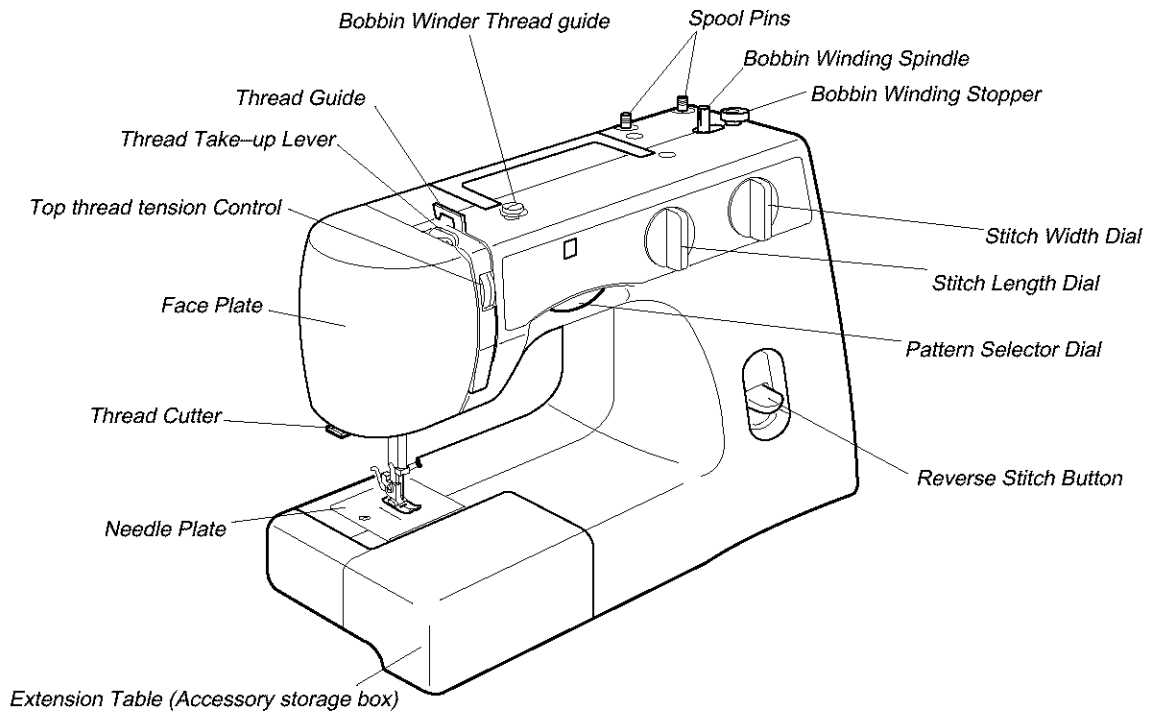


**SEWING MACHINE MODEL  
385. 15208400  
OCTOBER, 2003**

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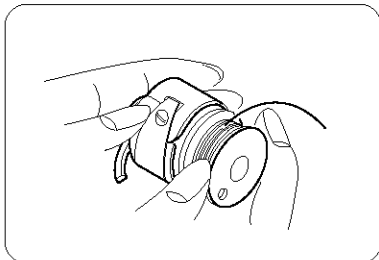
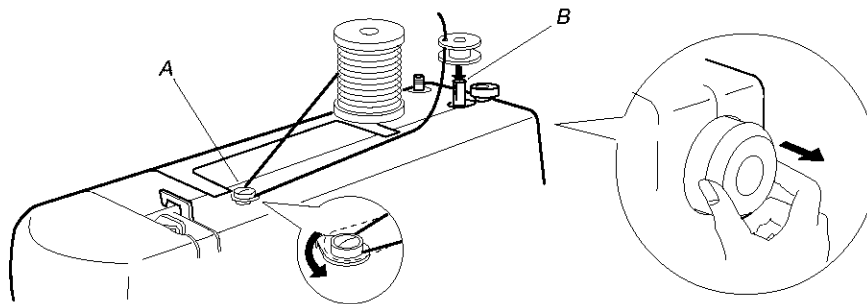
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# LOCATE AND IDENTIFY THE PARTS

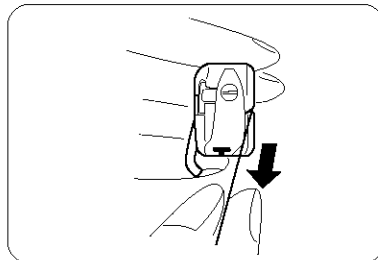


## WIND THE BOBBIN

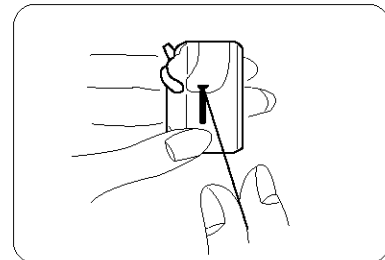
1. PULL THE HANDWHEEL OUT.
2. DRAW THREAD FROM SPOOL THROUGH BOBBIN WINDING TENSION DISCS (A).
3. PULL END OF THREAD THROUGH BOBBIN AS SHOWN.  
PLACE BOBBIN ONTO BOBBIN WINDING SPINDLE (B) WITH END OF THREAD COMING FROM THE TOP OF THE BOBBIN.  
PUSH BOBBIN WINDING SPINDLE TO THE RIGHT UNTIL IT CLICKS.
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.



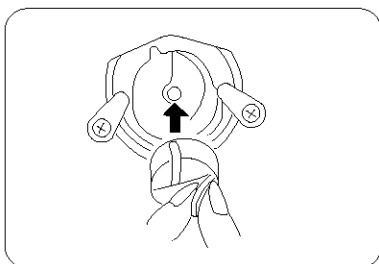
- 1 Place bobbin in bobbin case making sure thread feeds clockwise and is coming from bobbin as shown.



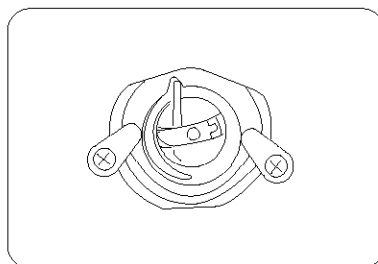
- 2 Pull thread through slot of case as shown.



- 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

THE NUMBERED STEPS BELOW FOLLOW THE NUMBERS ON THE ILLUSTRATIONS. DOTTED LINES SHOW PLACES WHERE LOOPS AND THEN IS PULLED TIGHT.

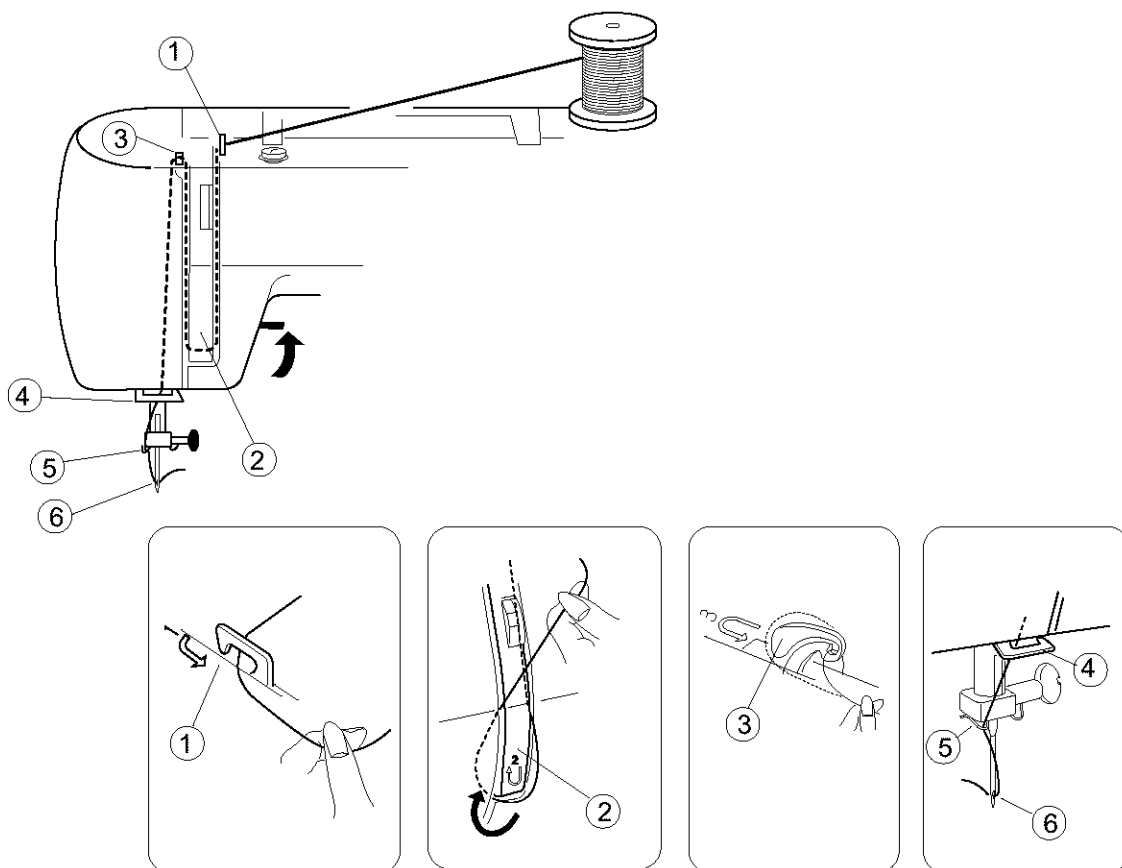
RAISE THE TAKE-UP LEVER TO ITS HIGHEST POSITION BY TURNING THE HANDWHEEL TOWARD YOU.

RAISE THE PRESSER FOOT LEVER.

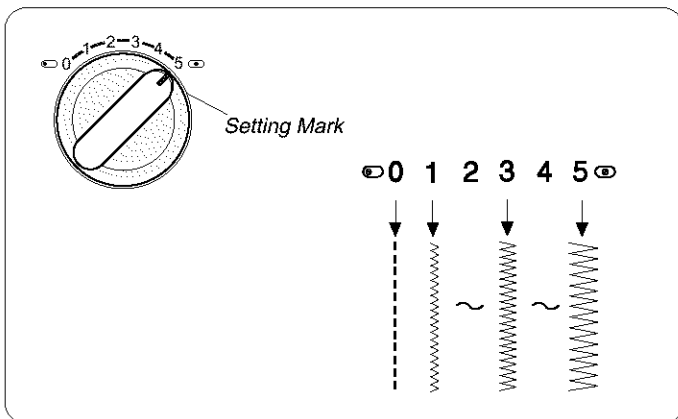
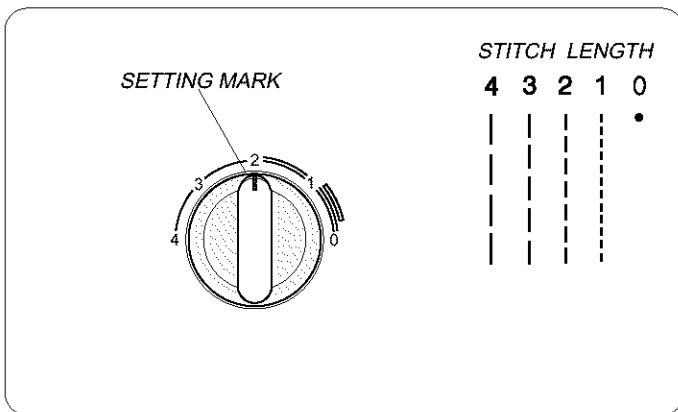
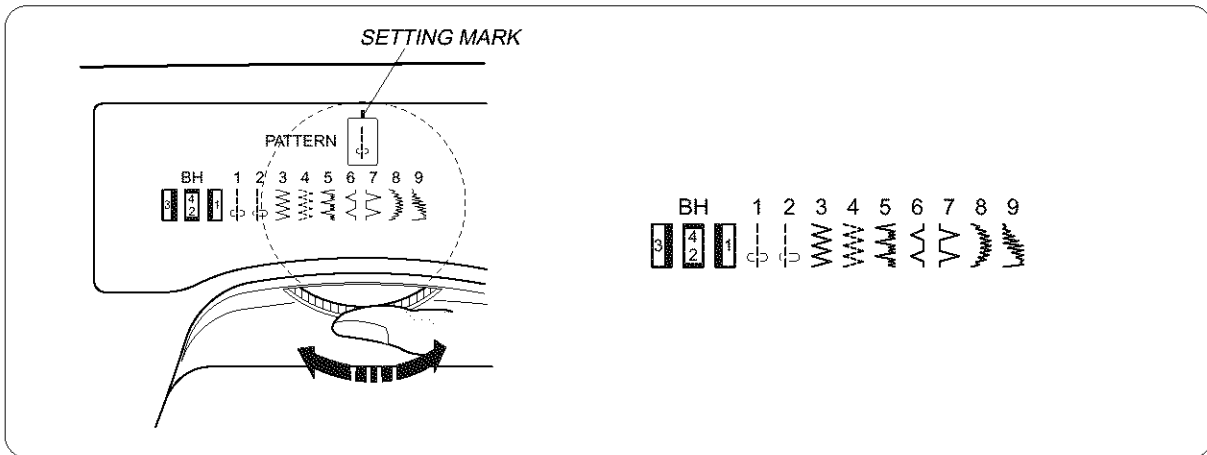
PLACE SPOOL ON PIN WITH THREAD COMING FROM THE BACK OF THE SPOOL.

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 THE THREAD DOWN AND SLIP IT INTO THE LOWER THREAD GUIDE.
5. DRAW THREAD DOWN AGAIN AND SLIP IT INTO THE NEEDLE BAR THREAD GUIDE.
6. TREAD NEEDLE FROM FRONT TO BACK.

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



# STITCH SELECTOR / STITCH LENGTH/ STITCH WIDTH CONTROLS



## 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.19      |
|                      | 7. INAPPROPRIATE NEEDLE TO HOOK TIMING                       | SEE MECHANICAL ADJUSTMENT "NEEDLE TIMING TO SHUTTLE".                                 | P.20      |
|                      | 8. INAPPROPRIATE NEEDLE TO HOOK CLEARANCE                    | SEE MECHANICAL ADJUSTMENT "CLEARANCE BETWEEN NEEDLE AND HOOK".                        | P.16,17   |
| 2. FABRIC NOT MOVING | 1. INCORRECT F.D. HEIGHT                                     | SEE MECHANICAL ADJUSTMENT "FEED DOG HEIGHT".  | P.18      |
|                      | 2. THREAD ON BOTTOM SIDE OF FABRIC IS JAMMED UP.             | MAKE SURE TO BRING BOTH NEEDLE AND BOBBIN THREAD UNDER THE FOOT WHEN STARTING SEWING. |           |
|                      | 3. FEED DOG TEETH ARE WORN.                                  | CHANGE THE FEED DOG.  |           |

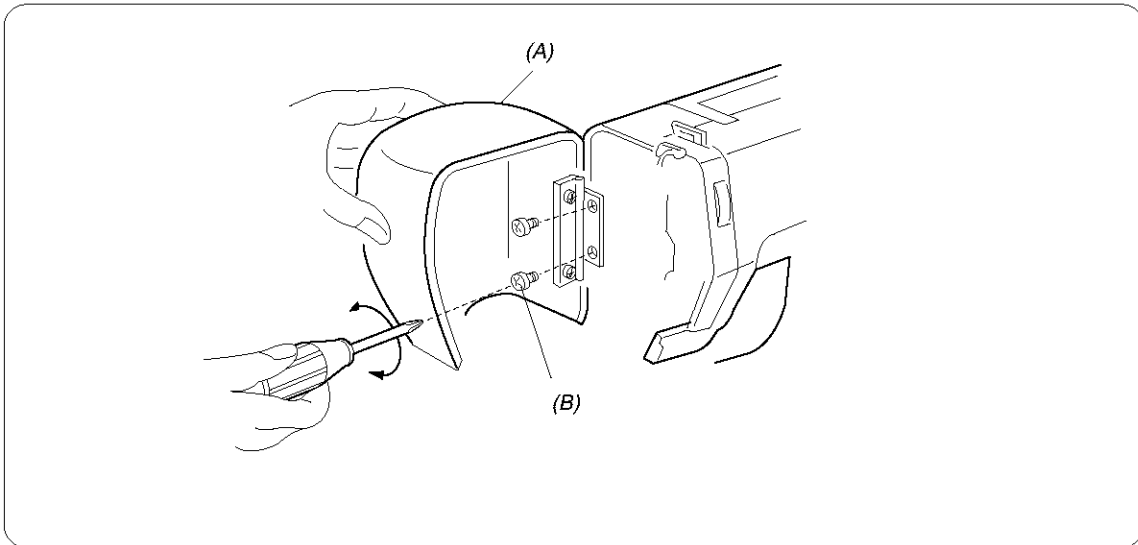
| CONDITION                 | CAUSE  | HOW TO FIX   | REFERENCE                               |
|---------------------------|--|--|---|
| 3. BREAKING UPPER THREAD  | <ol style="list-style-type: none"> <li>1. INITIAL SEWING SPEED IS TOO FAST.</li> <li>2. THREAD PATH IS INCORRECT.</li> <li>3. NEEDLE IS BENT OR DULL.</li> <li>4. UPPER THREAD TENSION IS TOO STRONG.</li> <li>5. NEEDLE SIZE IS INAPPROPRIATE FOR FABRIC.</li> <li>6. NEEDLE EYE IS WORN.</li> <li>7. NEEDLE HOLE IN NEEDLE PLATE IS WORN OR BURRED.</li> </ol> | <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.11                                    |
| 4. BREAKING BOBBIN THREAD | <ol style="list-style-type: none"> <li>1. INCORRECTLY THREADED BOBBIN CASE.</li> <li>2. TOO MUCH THREAD IS AROUND ON THE BOBBIN.</li> <li>3. LINT IS STUCK INSIDE THE BOBBIN HOLDER.</li> <li>4. THREAD QUALITY IS TOO LOW.</li> <li>5. THREAD IS JAMMING AROUND THE BOBBIN.</li> <li>6. BOBBIN THREAD TENSION IS TOO STRONG.</li> </ol>                         | <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.12                                    |
| 5. NEEDLE BREAKS          | <ol style="list-style-type: none"> <li>1. NEEDLE IS HITTING THE NEEDLE PLATE.</li> <li>2. NEEDLE IS BENT OR WORN.</li> <li>3. NEEDLE IS HITTING THE HOOK RACE.</li> <li>4. THE FABRIC MOVES WHILE THE NEEDLE IS PIERCING IT, OR THE NEEDLE ZIGZAGS WHILE IN FABRIC.</li> <li>5. FABRIC IS BEING PULLED TOO STRONGLY WHILE SEWING.</li> </ol>                     | <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.15</p> <p>P.16, 17</p> <p>P.14</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.17      |
|                        | 2. LOWER SHAFT GEAR IS LOOSE.  | ELIMINATE THE LOOSENESS.  |           |
|                        | 3. INAPPROPRIATE BELT TENSION.   | SEE MECHANICAL ADJUSTMENT "MOTOR BELT TENSION".                       | P.24      |
|                        | 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.14      |
|                        | 2. INAPPROPRIATE DISENGAGEMENT OF CAM FOLLOWER.                          | SEE MECHANICAL ADJUSTMENT "DISENGAGEMENT OF CAM FOLLOWER".            | P.23      |
|                        | 3. UPPER THREAD TENSION IS TOO STRONG.                                   | ADJUST UPPER THREAD TENSION CORRECTLY.                                | P.11      |

# SERVICE ACCESS

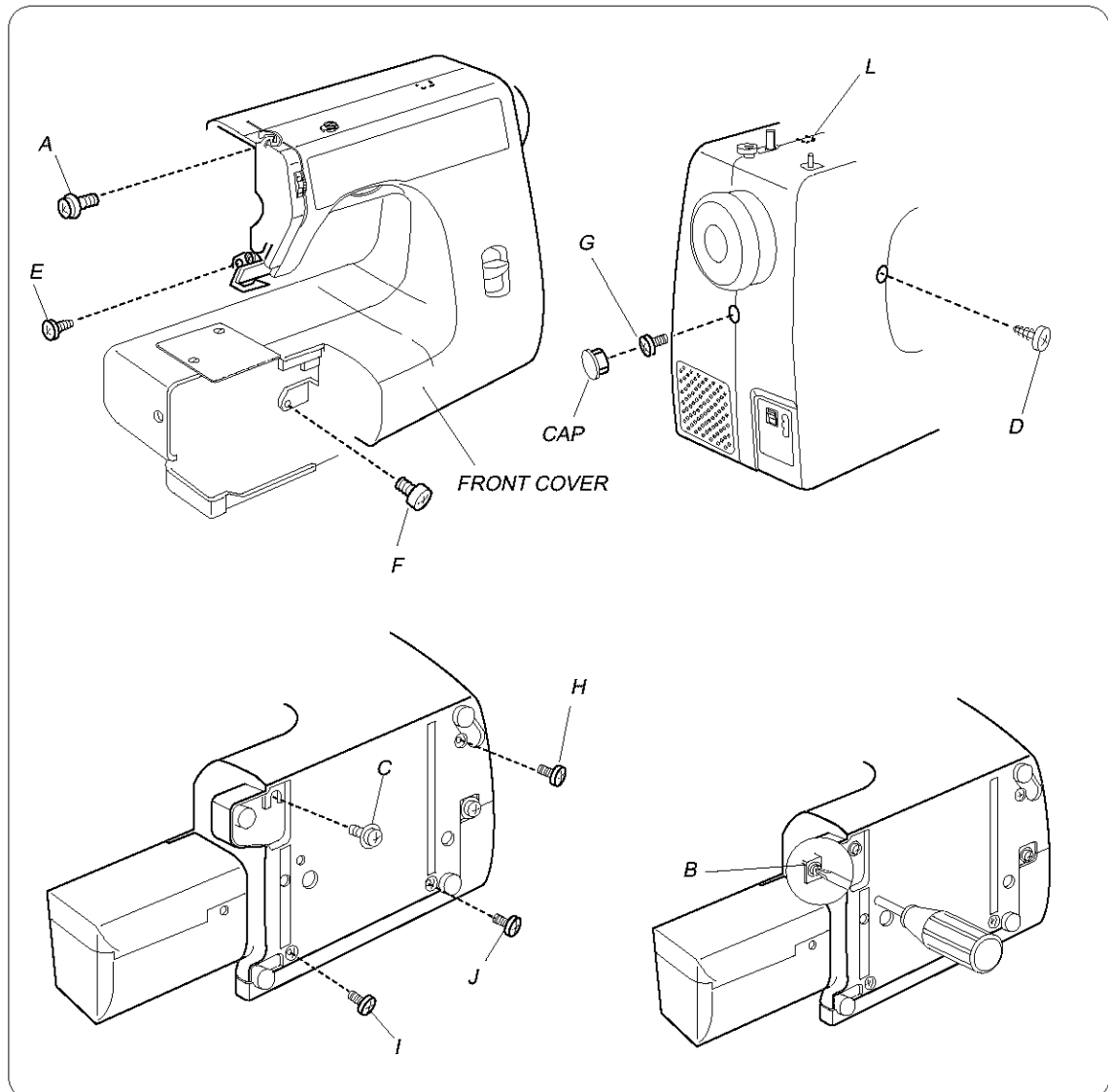
## FACE COVER



1. OPEN THE FACE COVER (A).
2. REMOVE THE SCREWS (B).
3. TAKE THE FACE COVER (A) OFF.

# SERVICE ACCESS

## FRONT COVER



### TO REMOVE

1. LOOSEN THE SET SCREWS (A), (B), AND (C), AND THEN, REMOVE THE FRONT COVER BY REMOVING THE SET SCREWS (D), (E), (F), (G), (H), (I) AND (J).

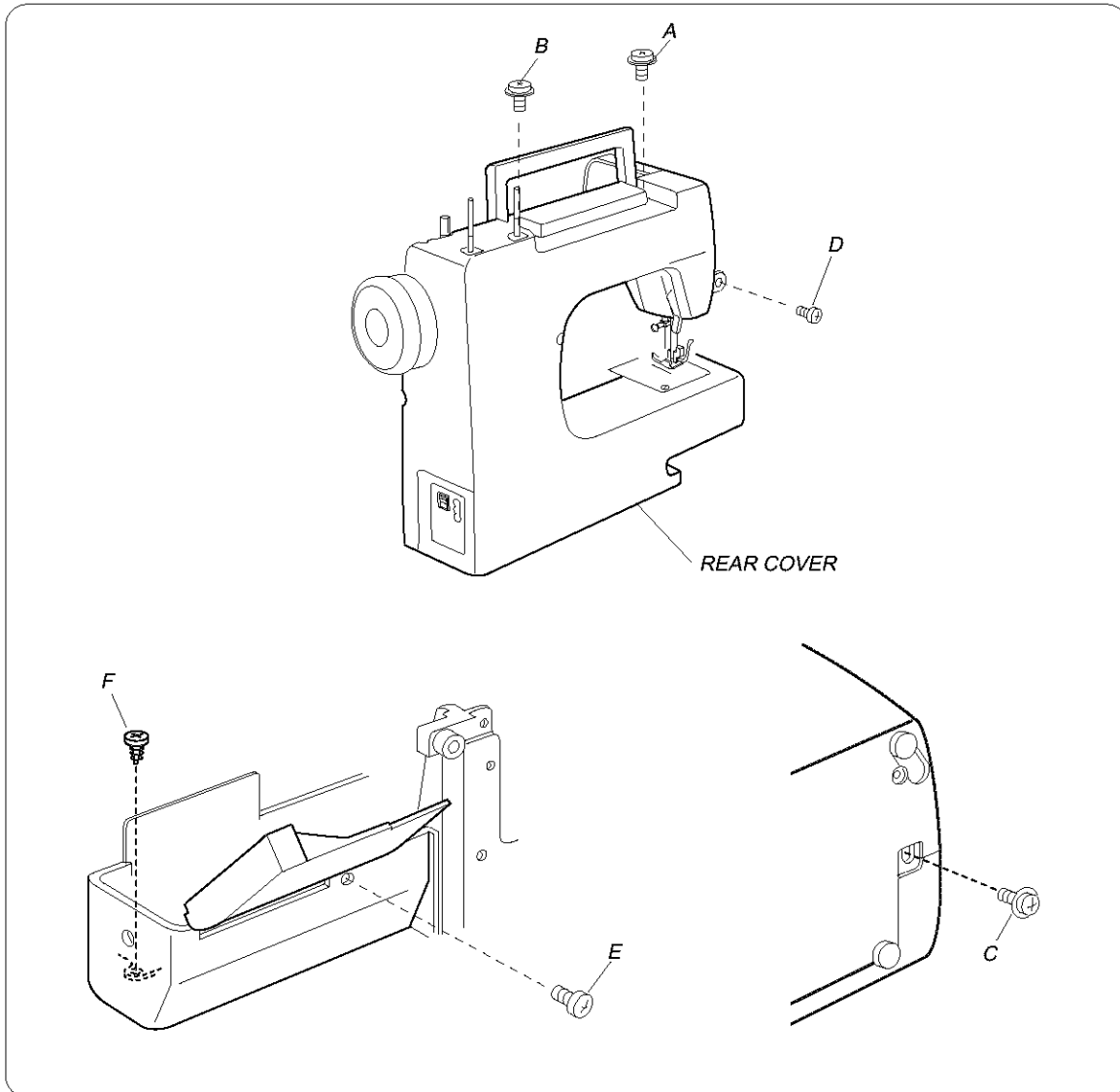
NOTE: UNHOOK THE TAB (L) FROM THE REAR COVER WHEN REMOVING THE FRONT COVER.

### TO ATTACH

2. FOLLOW THE ABOVE PROCEDURE IN REVERSE.

# SERVICE ACCESS

## REAR COVER



### TO REMOVE

1. REMOVE THE FACE COVER AND FRONT COVER. (SEE PAGE 8, 9)
2. LOOSEN THE SETSCREWS (A), (B) AND (C), AND REMOVE SETSCREWS (D), (E) AND (F).
3. PULL UP THE SPOOL PINS. REMOVE THE MACHINE SOCKET. REMOVE THE REAR COVER CLEARING THE PRESSER FOOT LIFTER FROM THE SLIT ON THE COVER.

### TO ATTACH

4. FOLLOW THE ABOVE PROCEDURE IN REVRSE.

# MECHANICAL ADJUSTMENT

## TOP TENSION

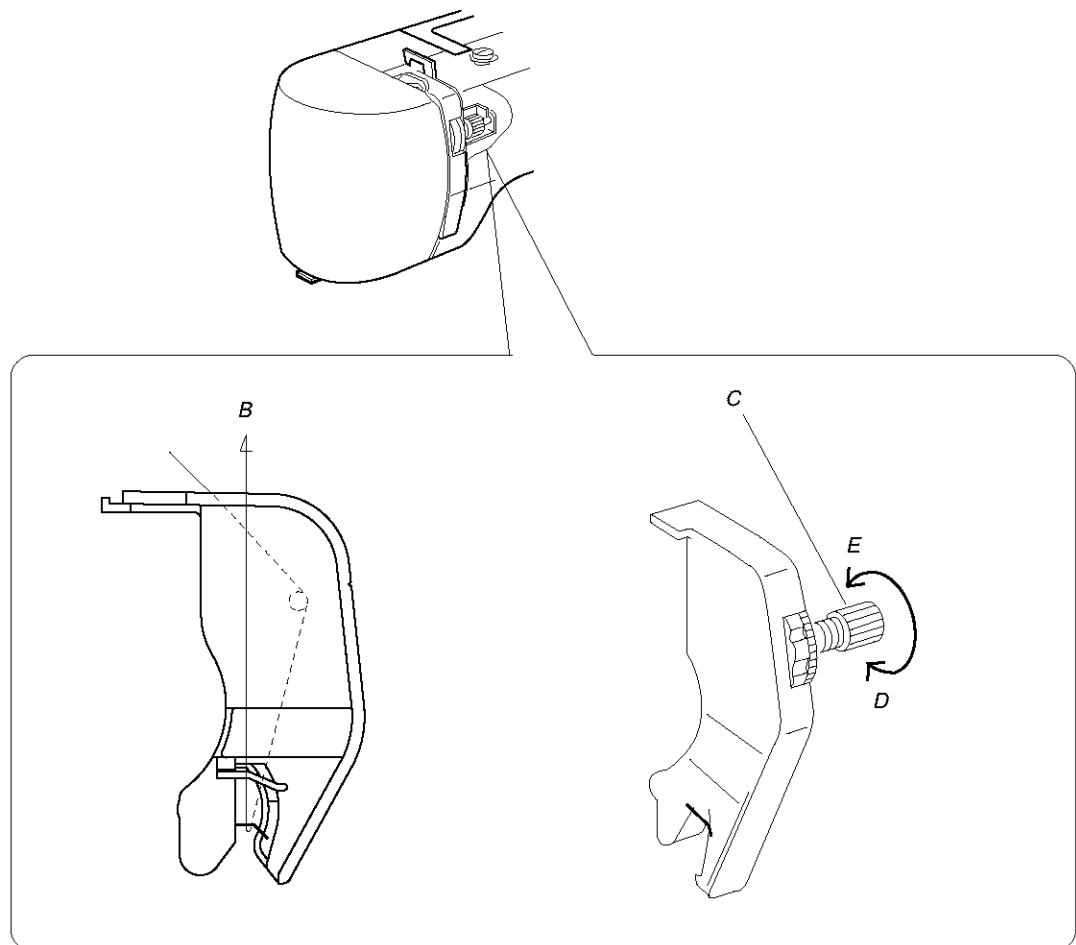
### TO CHECK:

THE STANDARD UPPER THREAD TENSION SHOULD BE 65 - 95g WHEN PULLING THE THREAD (COTTON THREAD #50) IN THE DIRECTION OF (B) 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 (C) IN THE DIRECTION OF (D) WHEN THE UPPER THREAD TENSION IS TOO TIGHT.  
TURN THE ADJUSTING NUT (C) IN THE DIRECTION OF (E) WHEN THE UPPER THREAD TENSION IS TOO LOOSE.
3. ATTACH THE FRONT COVER UNIT.



# MECHANICAL ADJUSTMENT

## BOBBIN TENSION

### TO CHECK:

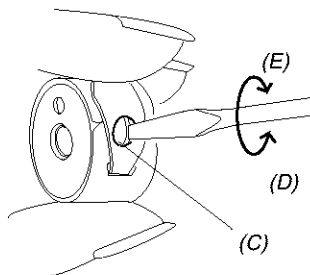
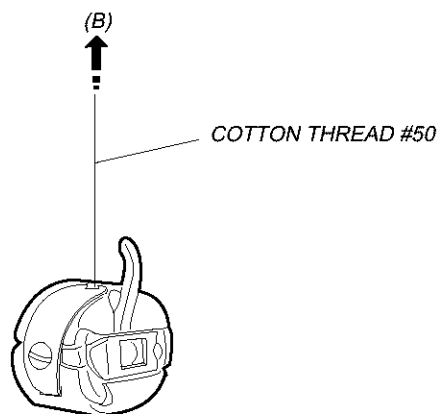
SET THE BOBBIN IN THE BOBBIN CASE AND PASS THE THREAD (COTTON #50) THROUGH THE TENSION SPRING.

THE BOBBIN THREAD TENSION SHOULD BE 45 - 55g WHEN PULLING THE THREAD IN THE DIRECTION OF (B).

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

### ADJUSTMENT PROCEDURE:

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



# MECHANICAL ADJUSTMENT

## PRESSER BAR HEIGHT AND ALIGNMENT

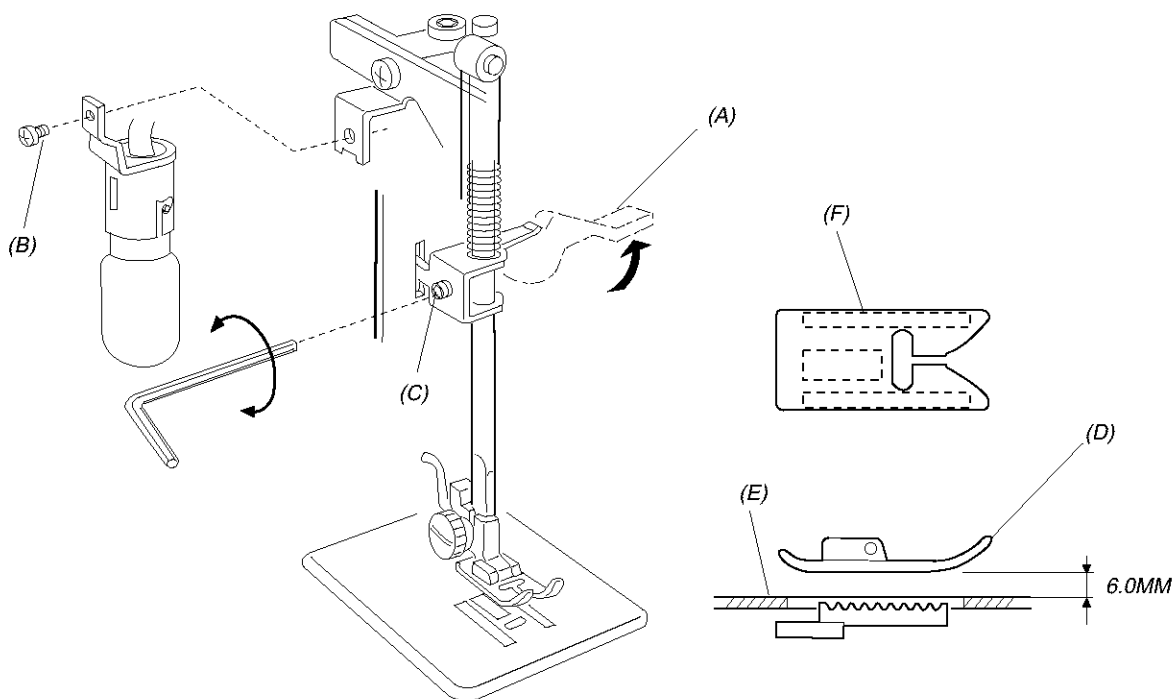
### TO CHECK:

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

### ADJUSTMENT PROCEDURE:

1. REMOVE THE SCREW (B) AND TAKE THE LAMP SOCKET OFF.
2. RAISE THE PRESSER FOOT LEVER AND LOOSEN THE SCREW (C) ON THE PRESSER BAR HOLDER.  
ADJUST THE DISTANCE BETWEEN THE PRESSER FOOT (D) AND THE NEEDLE PLATE (E) TO 6.0MM (0.24").
3. TIGHTEN THE SCREW (C) SECURELY.
4. TIGHTEN THE SCREW (B) TO SECURE THE LAMP SOCKET.

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



# MECHANICAL ADJUSTMENT

## NEEDLE SWING

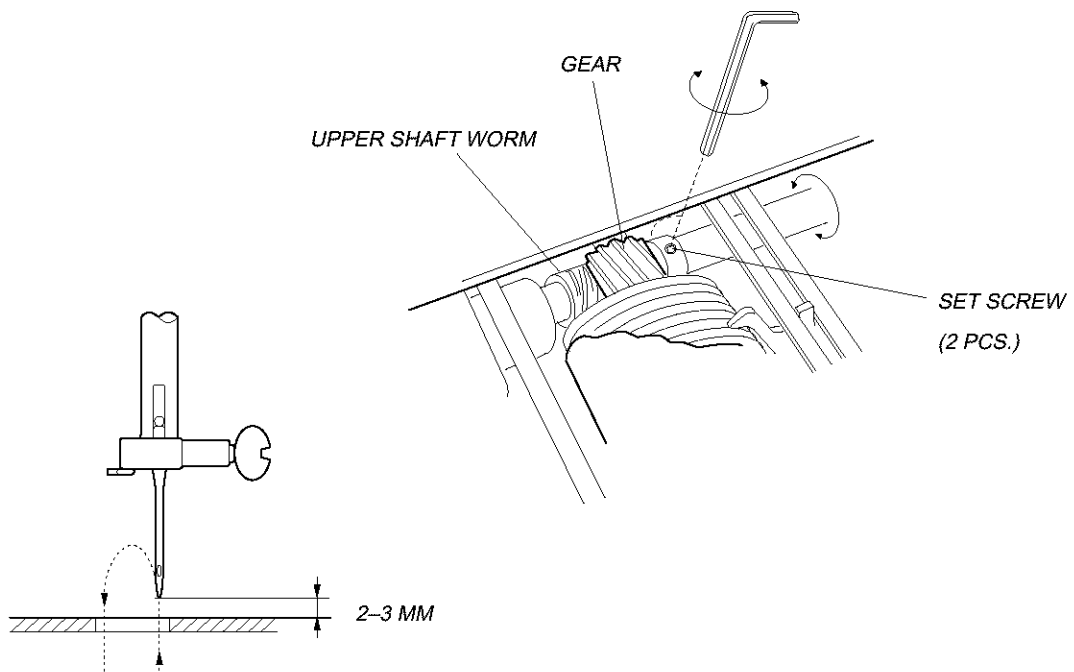
### TO CHECK:

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 SET SCREWS.
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 - 3MM ON THE NEEDLE PLATE AFTER THE NEEDLE HAS COME OUT OF THE RIGHT SIDE OF THE NEEDLE HOLE.
4. TIGHTEN TWO SET SCREWS.
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:

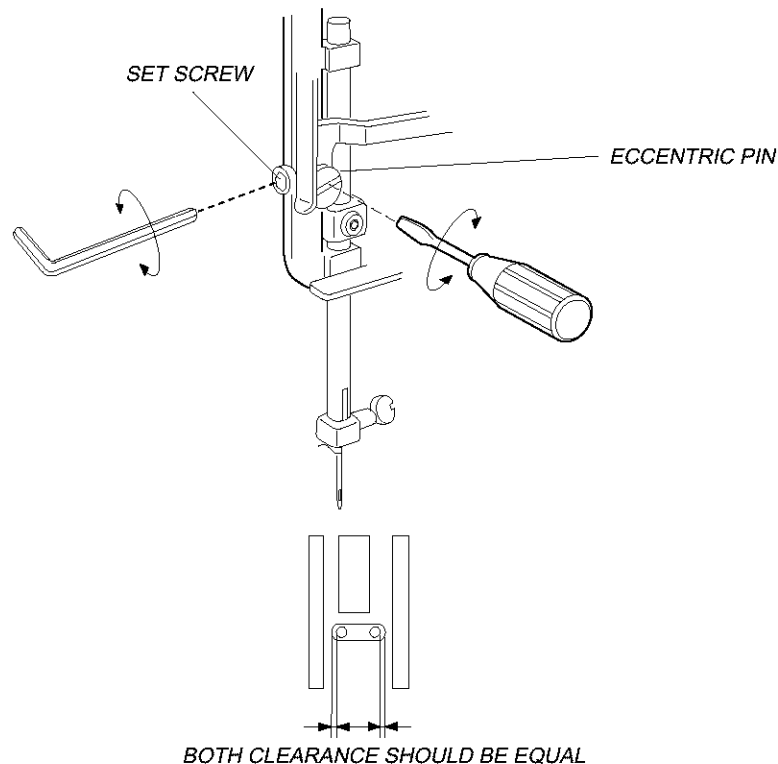
WHEN THE NEEDLE SWINGS IN MAXIMUM ZIGZAG WIDTH, THE DISTANCE BETWEEN THE BOTH ENDS OF NEEDLE HOLE ON THE NEEDLE PLATE AND THE NEEDLE DROP POSITIONS SHOULD BE EQUAL.

IF NOT, MAKE AN ADJUSTMENT AS FOLLOWS:

### ADJUSTMENT PROCEDURE:

1. OPEN THE FACE PLATE.
2. SET THE PATTERN SELECTOR DIAL AT MAXIMUM ZIGZAG WIDTH.
3. LOOSEN THE SET SCREW.
4. TURN THE ECCENTRIC PIN TO ADJUST THE NEEDLE DROP.
5. TIGHTEN THE SET SCREW.

NOTE: CHECK THE HOOK TIMING AFTER THIS ADJUSTMENT.



# MECHANICAL ADJUSTMENT

## CLEARANCE BETWEEN NEEDLE AND HOOK (NO.1)

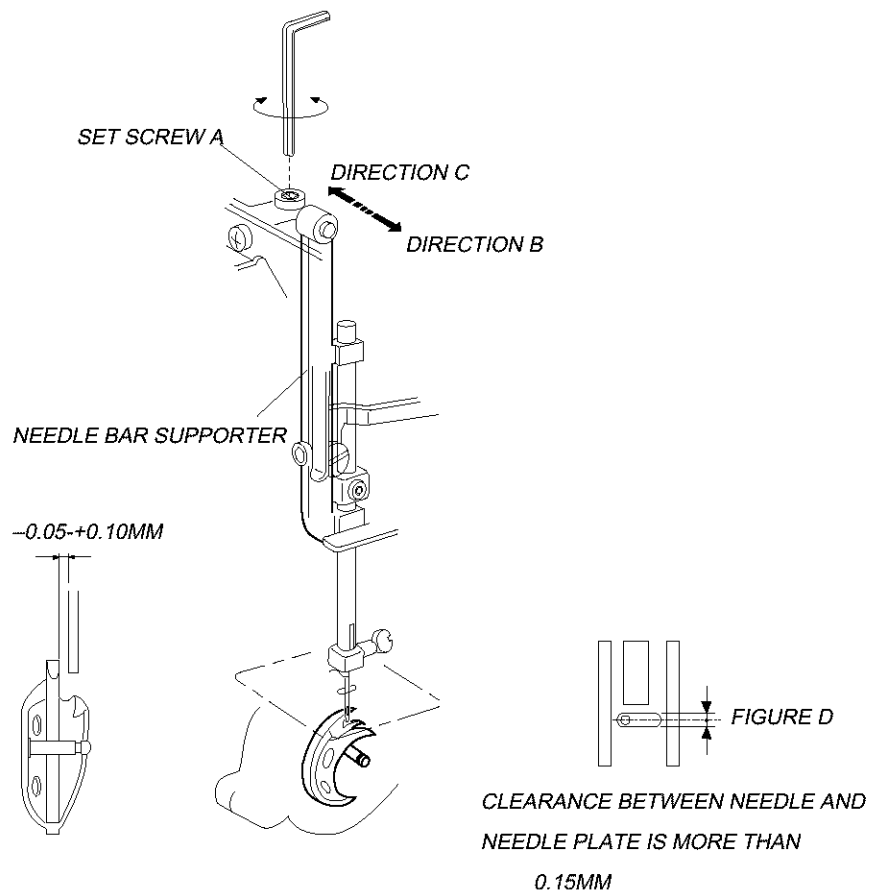
### TO CHECK:

THE CLEARANCE BETWEEN NEEDLE AND SHUTTLE RACE SHOULD BE  $-0.05$   $-+0.10$ MM.  
IF NOT, MAKE AN ADJUSTMENT AS FOLLOWS:

### ADJUSTMENT PROCEDURE:

1. OPEN THE FACE COVER.
2. SET THE PATTERN SELECT DIAL " C | D ", WIDTH SELECTOR DIAL AT " 0 "
3. LOOSEN SET SCREW (A), AND MOVE THE NEEDLE BAR SUPPORTER TO ARROWS TO GET CLEARANCE BETWEEN  $-0.05$  TO  $+0.10$ MM.
  - \* WHEN CLEARANCE IS TOO WIDE, MOVE THE NEEDLE BAR SUPPORTER TO DIRECTION (B).
  - \* WHEN CLEARANCE IS TOO NARROW, MOVE THE NEEDLE BAR SUPPORTER TO DIRECTION (C).

NOTE: AFTER THIS ADJUSTMENT, CHECK IF THE CLEARANCE BETWEEN NEEDLE AND NEEDLE PLATE IS MORE THAN 0.15MM AS SHOWN IN FIGURE (D).  
IF NOT, ADJUST THE CLEARANCE BETWEEN NEEDLE AND SHUTTLE RACE BY USING METHOD OF ADJUSTMENT NO.2 IN PAGE 13 AFTER READJUST THE CLEARANCE BETWEEN NEEDLE AND NEEDLE PLATE MORE THAN 0.15MM.



# MECHANICAL ADJUSTMENT

## CLEARANCE BETWEEN NEEDLE AND HOOK (NO.2)

### TO CHECK:

USE THIS ADJUSTMENT NO.2 WHEN ADJUSTMENT NO.1 CAN NOT BE USED.

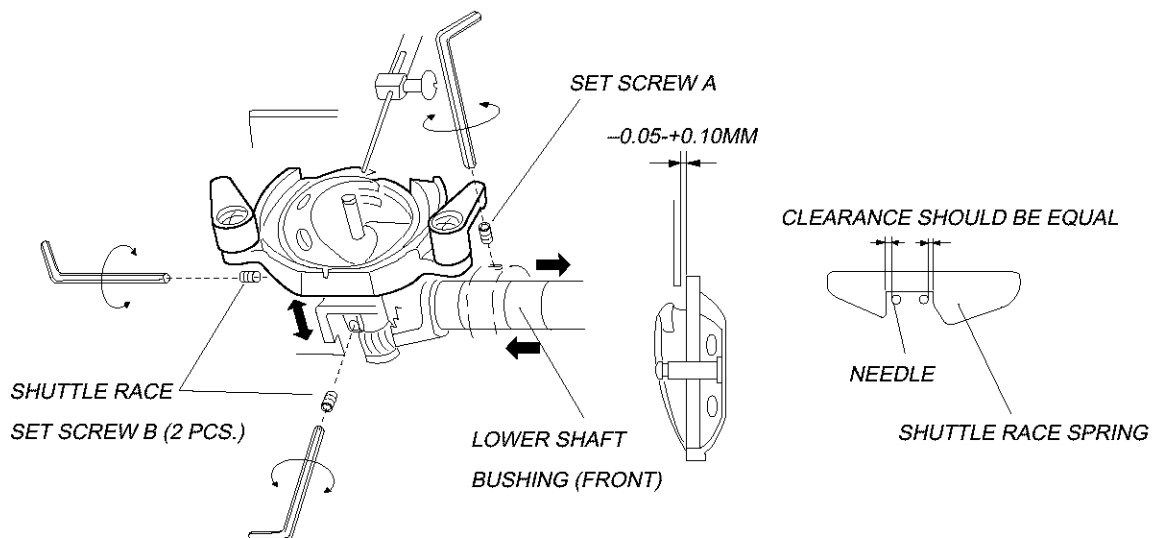
THE CLEARANCE BETWEEN NEEDLE AND SHUTTLE RACE SHOULD BE  $-0.05 - +0.10\text{mm}$ .

### ADJUSTMENT PROCEDURE:

1. SET THE PATTERN SELECTOR DIAL AT "C | D", WIDTH SELECTOR DIAL AT "0".
2. REMOVE THE REAR COVER. (SEE PAGE 10.)
3. LOOSEN THE SCREW (A) ON LOWER SHAFT BUSHING AND SLIDE THE GEAR ABOUT 0.5MM TO THE RIGHT TO MAKE A SLACK BETWEEN GEARS.
4. LOWER THE NEEDLE AND LOOSEN THE TWO SHUTTLE RACE SET SCREWS (B). MOVE THE SHUTTLE RACE UNIT AXIALLY EITHER FORWARD OR BACKWARD TO ADJUST THE CLEARANCE BETWEEN THE NEEDLE AND THE SHUTTLE RACE IN THE RANGE OF  $-0.05 - +0.10\text{MM}$ .
5. SET THE PATTERN SELECT DIAL AT "  $\equiv$  ", TURN THE BALANCE WHEEL TO CHECK IF THE CLEARANCE BETWEEN THE NEEDLE AND INNER EDGES OF THE SHUTTLE RACE SPRING AT THE LEFT AND RIGHT NEEDLE DROPS ARE EQUAL. IF NOT, MAKE AN ADJUSTMENT BY TURNING THE SHUTTLE RACE UNIT.
6. TIGHTEN THE TWO SHUTTLE RACE SET SCREWS (B).
7. LOOSEN THE SET SCREW ON LOWER SHAFT BUSHING AND SLIDE THE GEAR BACK TO THE ORIGINAL POSITION WHILE ADJUSTING THE BACKLASH.
8. TIGHTEN THE SCREW (A) FIRMLY.
9. ATTACH THE REAR COVER.

NOTE: THE BACKLASH PLAY SHOULD BE LESS THAN 0.3MM AND LOWER SHAFT TURNS SMOOTHLY.

AFTER THE ADJUSTMENT, CHECK THE HOOK TIMING.



# MECHANICAL ADJUSTMENT

## FEED DOG HEIGHT

### MACHINE SETTING

1. STITCH LENGTH: SET AT 4.
2. NEEDLE BAR: AT ITS HIGHEST POSITION.

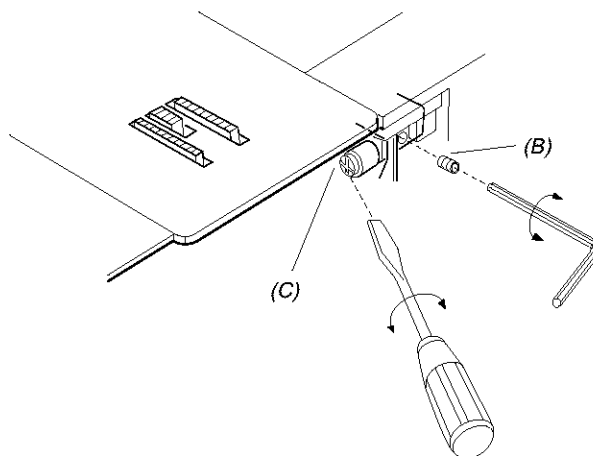
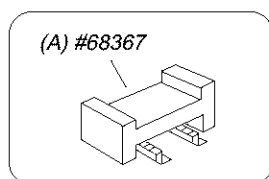
### TO CHECK:

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. LOOSEN THE SCREW (B) AND TURN THE ECCENTRIC PIN (C) IN EITHER DIRECTION TO ADJUST THE FEED DOG HEIGHT AS REQUIRED.
3. TIGHTEN THE SCREW (B) SECURELY.

| GAUGE              |                          | FEED DOG HEIGHT |
|--------------------|--------------------------|-----------------|
| FACE (A)<br>1.25MM | FACE (B) (RED)<br>1.00MM |                 |
| NOT MOVING         | MOVING                   | CORRECT         |
| NOT MOVING         | NOT MOVING               | LOW             |
| MOVING             | MOVING                   | HIGH            |



# MECHANICAL ADJUSTMENT

## NEEDLE BAR HEIGHT

### MACHINE SETTING

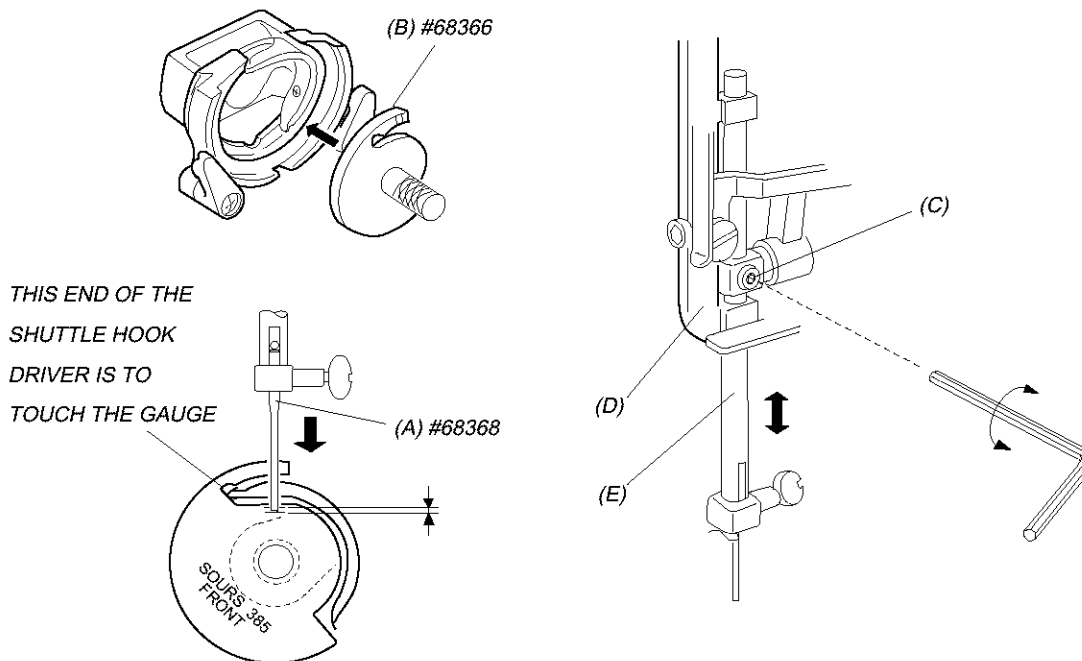
1. STITCH SELECTOR: "C | D".
2. WIDTH SELECTOR DIAL: SET AT 5

### 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. LOOSEN THE SCREW (C) OF THE NEEDLE BAR HOLDER (D).
2. 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).
3. TIGHTEN THE SCREW (C) SECURELY.



# MECHANICAL ADJUSTMENT

## NEEDLE TIMING TO SHUTTLE

### MACHINE SETTING

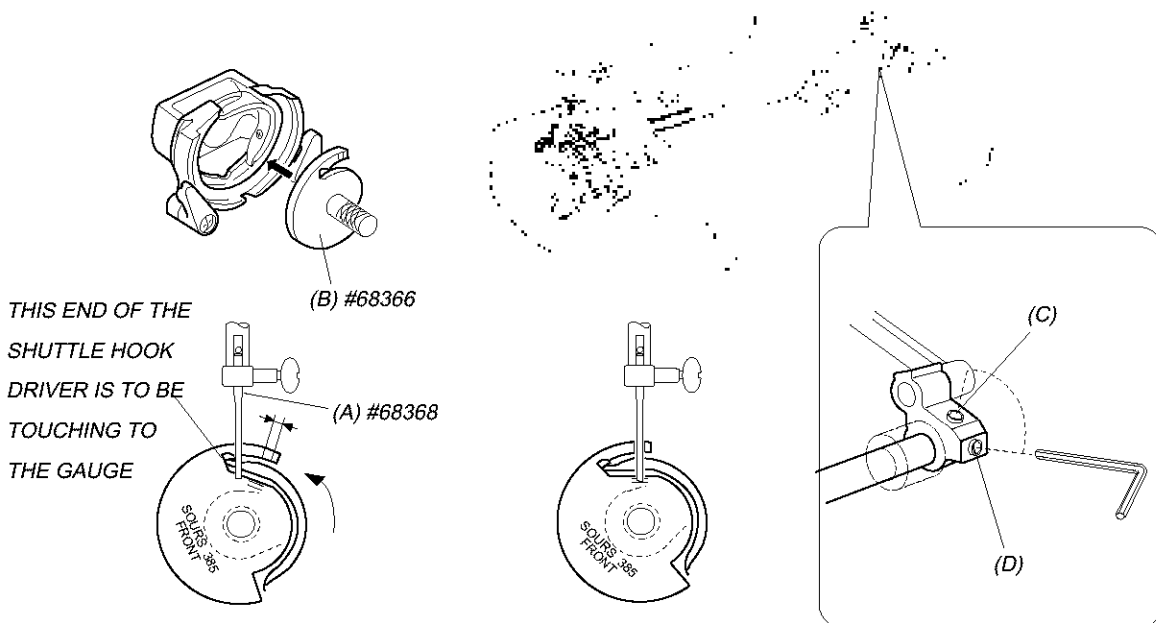
1. STITCH SELECTOR: "C | D".
2. WIDTH SELECTOR DIAL: SET AT 5

### 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 THE BELT COVER AND THE FRONT COVER.
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 FRONT COVER, THE BASE PLATE, AND THE BELT COVER.



# MECHANICAL ADJUSTMENT

## BUTTONHOLE FEED BALANCE

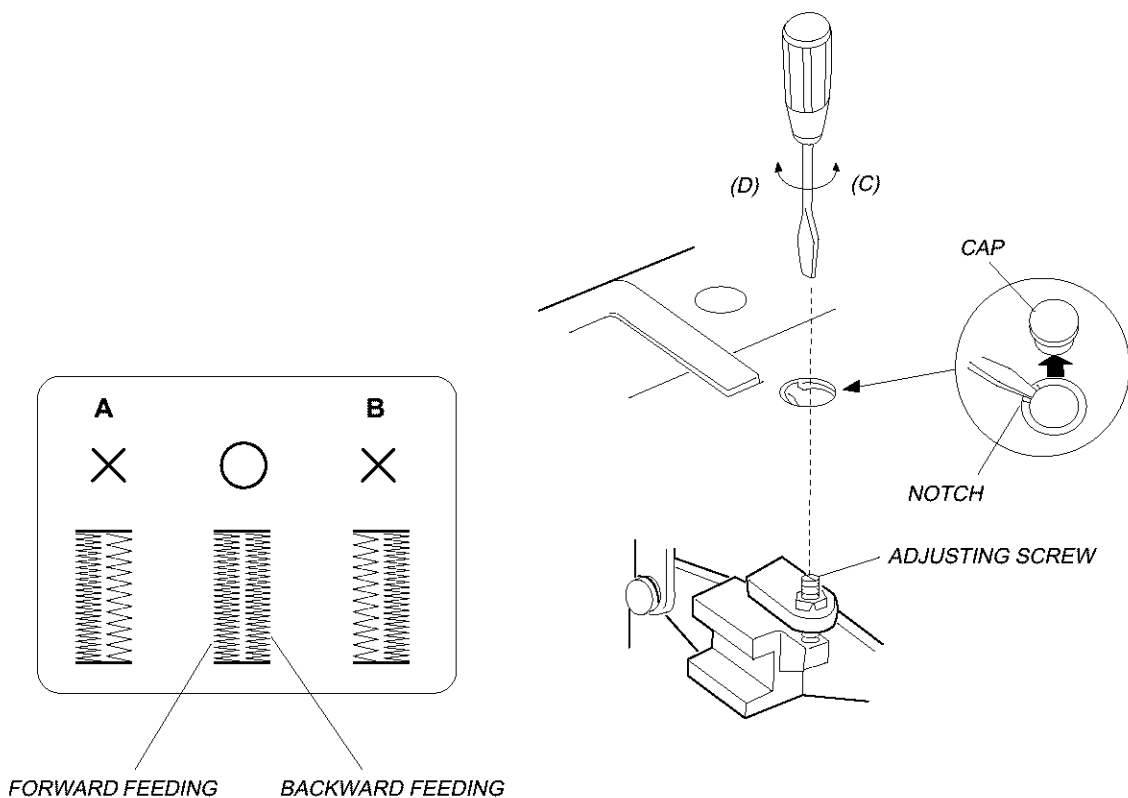
### TO CHECK:

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

THE RANGE OF 9-12 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

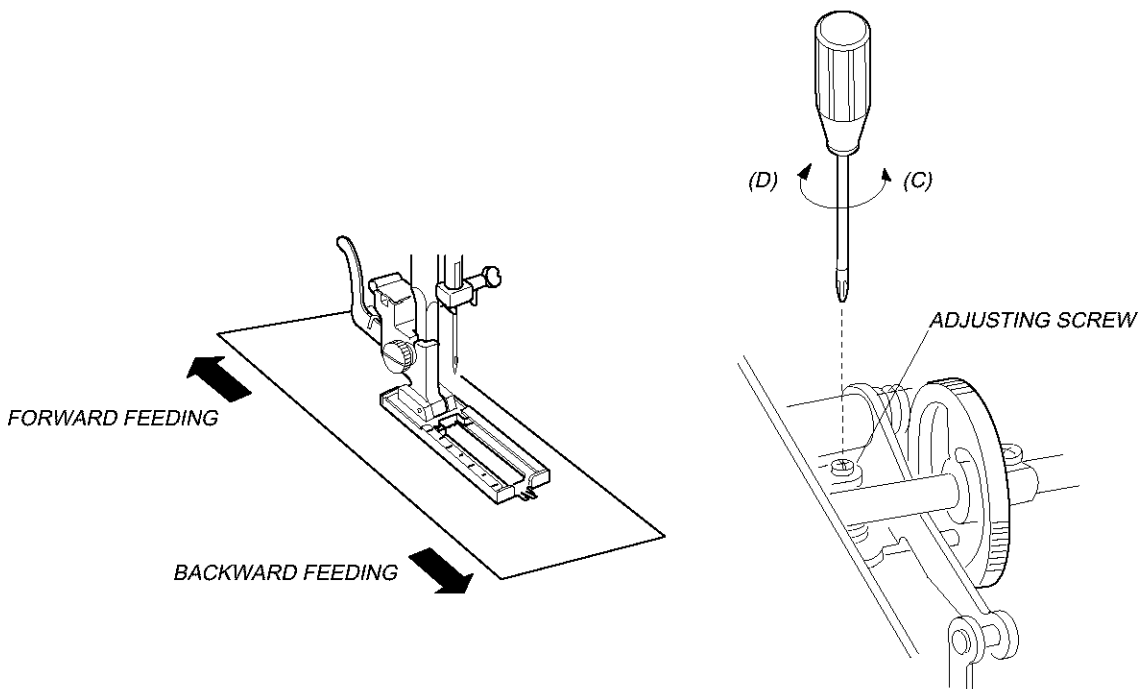
## BARTACK FEED OF BUTTONHOLE

### TO CHECK:

IF THE MATERIAL IS FEED FORWARD OR BACKWARD WHEN SEWING BARTACK ON BUTTONHOLE, MAKE AN ADJUSTMENT AS FOLLOWS:

### ADJUSTMENT PROCEDURE:

1. SET THE PATTERN SELECTOR CONTROL AT "  " AND THE STITCH LENGTH CONTROL AT "4".
2. REMOVE THE FRONT COVER. (SEE PAGE 9.)
3. PLACE A PIECE OF PAPER UNDER THE FOOT AND TURN THE HANDWHEEL. IF THE PAPER IS FEED FORWARD, TURN THE ADJUSTING SCREW IN THE DIRECTION OF (C). IF THE PAPER IS FEED BACKWARD, TURN THE ADJUSTING SCREW IN THE DIRECTION OF (D).
4. MOUNT THE FRONT COVER.





## MECHANICAL ADJUSTMENT

### DISENGAGEMENT OF CAM FOLLOWER

#### TO CHECK:

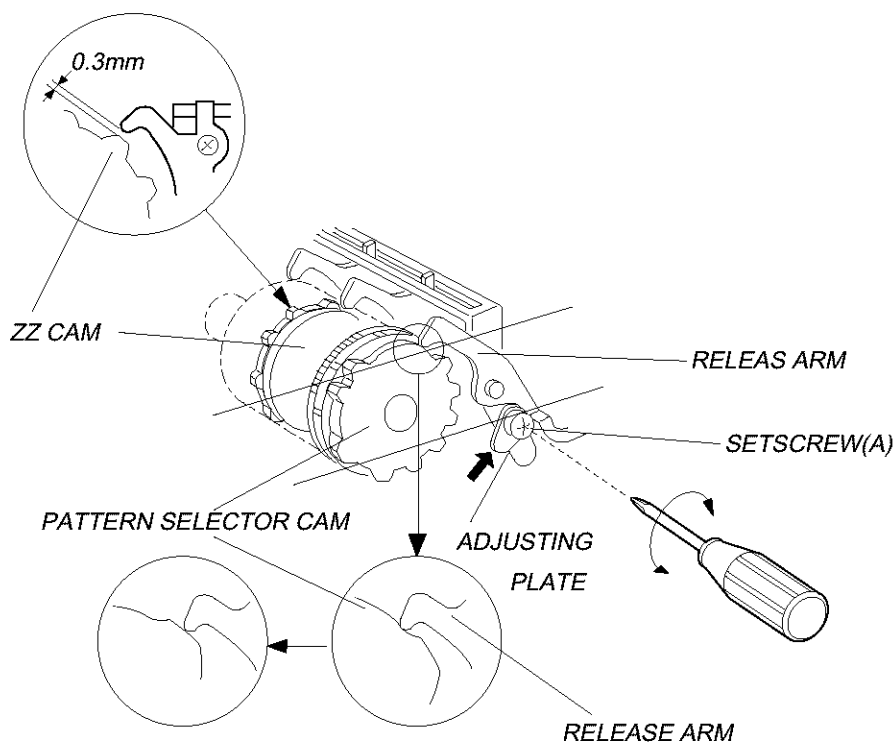
TOO NARROW CLEARANCE BETWEEN THE CAM FOLLOWER AND THE TOP CONVEX OF ZIGZAG CAM MAY OFTEN CAUSE DIFFICULTY IN TURNING OF THE PATTERN SELECTOR DIAL, OR CAN NOT CORRECT PATTERN.

#### ADJUSTMENT PROCEDURE:

1. SET THE PATTERN SELECTOR DIAL "C/D" AND SET THE STITCH WIDTH AT "5".
2. REMOVE THE FRONT COVER. (SEE PAGE 9.)
3. PUT THE CAM FOLLOWER TO THE ZIGZAG CAM (STRAIGHT CAM), AND ALSO PUT THE CAM FOLLOWER RELEASING ARM TO THE PATTERN SELECT CAM.
4. LOOSEN THE SETSCREW.
5. MOVE ADJUSTING PLATE IN THE DIRECTION OF ARROW UNTIL TO TOUCH TO THE RELEASING ARM AND TIGHTEN SETSCREW.

NOTE: AFTER THIS ADJUSTMENT, CHECK THAT THE CLEARANCE BETWEEN THE ZIGZAG CAM AND THE CAM FOLLOWER IS 0.3MM WHEN PUTTING THE CAM FOLLOWER RELEASING ARM ONTO POSITION (A) OF PATTERN SELECT CAM.

6. ATTACH THE FRONT COVER.



# MECHANICAL ADJUSTMENT

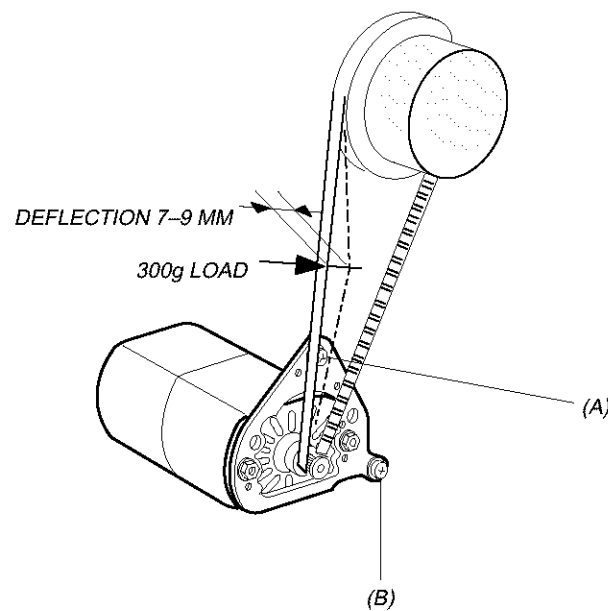
## MOTOR BELT TENSION

### TO CHECK:

1. IF THE MOTOR BELT TENSION IS TOO TIGHT OR TOO LOOSE, IT CAN CAUSE A BELT NOISE: IF THE TENSION IS TOO TIGHT, IT CAN CAUSE THE MACHINE TO RUN SLOWLY AND THE MOTOR TO OVERLOAD; IF THE TENSION IS TOO LOOSE; IT CAN CAUSE THE BELT TEETH ON THE MOTOR PULLEY TO JUMP.
2. THE CORRECT MOTOR BELT TENSION IS WHEN THE DEFLECTION OF MOTOR BELT IS ABOUT 7MM (0.28") - 9MM (0.36"). (WHEN PUSHING THE MOTOR BELT BY FINGER WITH A 300 GRAM LOAD.)

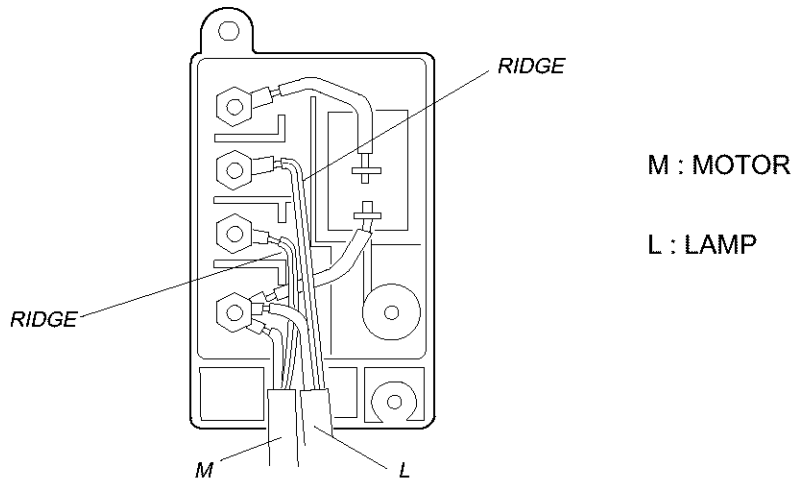
### ADJUSTMENT PROCEDURE:

1. REMOVE THE REAR COVER. (SEE PAGE 10)
2. LOOSEN THE SCREWS (A) AND (B).
3. MOVE THE MOTOR UP OR DOWN TO ADJUST THE DEFLECTION ABOUT 7MM (0.28") - 9MM (0.36").
4. TIGHTEN THE SCREWS (A) AND (B).

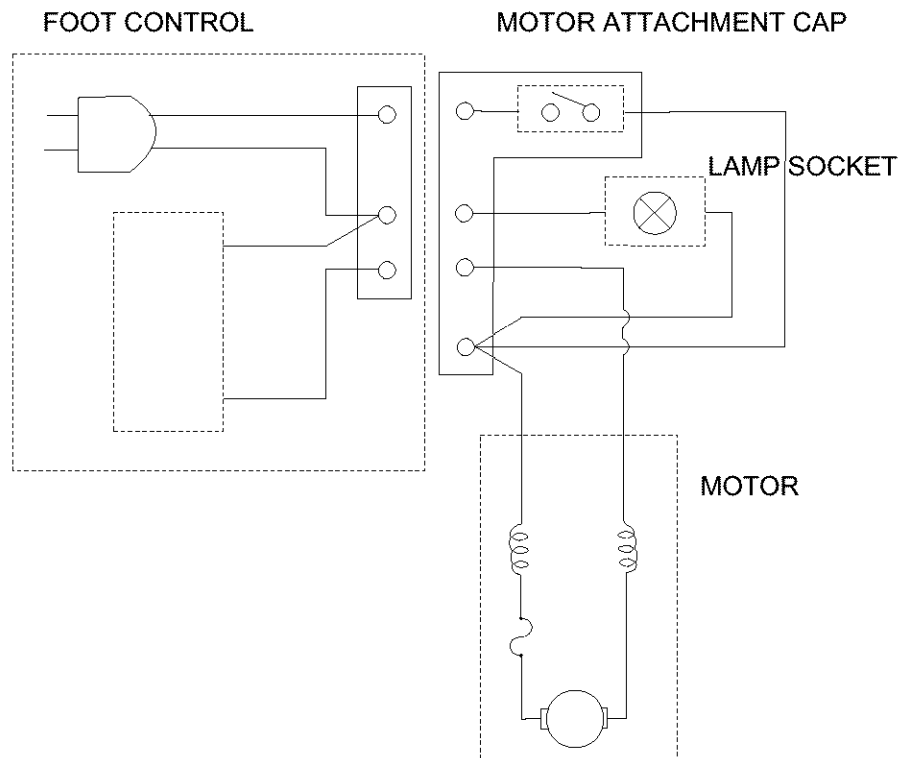


# WIRING

## 1. WIRING FOR MACHINE SOCKET UNIT



## 2. WIRING DIAGRAM



# OILING

FACTORY LUBRICATED PARTS WILL PROVIDE YEARS OF HOUSEHOLD SEWING WITHOUT ROUTINE OILING. HOWEVER, WHENEVER THE MACHINE IS BEING SERVICED, CHECK TO SEE IF ANY PARTS NEED TO BE LUBRICATED.

## OIL

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

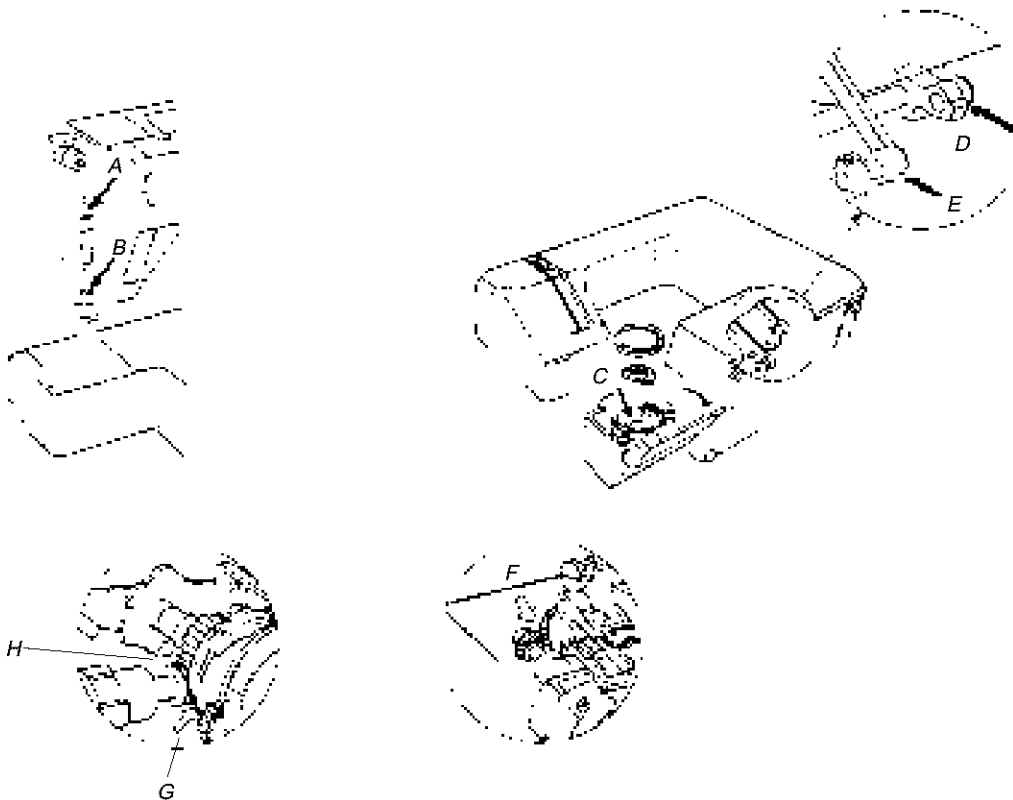
## GREASE

WHITE GREASE IS RECOMMENDED FOR USE ON GEARS AND CAM SURFACES. IT IS AN IMPROVED GREASE, AND IT CAN BE USED ON THE METAL AND PLASTIC PARTS WHICH POINTS ARE INDICATED BY THE WHITE ARROWS (F,G, & H).

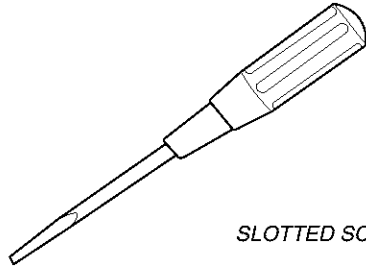
### HOW TO ORDER

| <u>PARTS NO.</u> | <u>DESCRIPTION</u>                 | <u>PRICE</u> |
|------------------|------------------------------------|--------------|
| EM / 40M         | SEWING MACHINE OIL<br>WHITE GREASE |              |

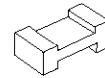
ORDER THROUGH YOUR RPDC IN THE USUAL MANNER; DIVISION 20, SOURCE 158.



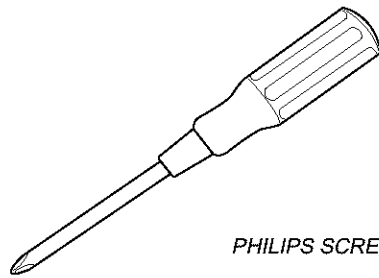
# SPECIAL TOOLS REQUIRED



*SLOTTED SCREW DRIVER*



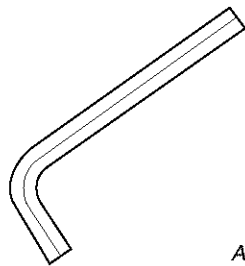
*FEED DOG HEIGHT GAUGE  
#68367*



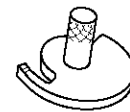
*PHILIPS SCREW DRIVER*



*TEST PIN  
#68368*



*ALIEN WRENCH*



*RADIAL TIMING GAUGE  
#68366*