

SERVICING MANUAL

Model ME4014

CONTENTS

WHAT TO DO WHEN	i-ii
I. REMOVAL AND ATTACHMENT OF EXTERNAL PARTS	1 –7
• Face Plate	1
• Top Cover	2
• Belt Cover	3
• Bed Cover	4
• Base	5
• Rear Cover	6
• Front Cover	7
II. ADJUSTMENT PART / REPLACEMENT	8-21
ADJUSTMENT OF PRESSER BAR DIRECTION AND HEIGHT	8
ADJUSTMENT OF TIMING OF LATERAL NEEDLE SWING	9
ADJUSTMENT OF NEEDLE DROP POSITION IN NEEDLE PLATE HOLE	10
ADJUSTMENT OF CLEARANCE BETWEEN NEEDLE AND ROTARY HOOK	11
ADJUSTMENT OF BACKLASH BETWEEN HOOK DRIVE SHAFT GEAR AND LOWER SHAFTGEAR	12
ADJUSTMENT OF NEEDLE BAR HEIGHT	13
ADJUSTMENT OF HOOK TIMING	14
ADJUSTMENT OF FEED DOG HEIGHT	15
ADJUSTMENT OF STRETCH STITCH FEED BALANCE	16
ADJUSTMENT OF ZERO FEEDING	17
ADJUSTMENT OF BUTTONHOLE FEED BALANCE	18
ADJUSTMENT OF NEEDLE THREAD TENSION	19
MACHINE SOCKET WIRING DIAGRAM	20
MECHANICAL ADJUSTMENT	21

WHAT TO DO WHEN

Condition	Cause	How to Fix
1. Skipping stitches	1. Needle is not inserted properly. 2. Needle is bent or worn. 3. Incorrectly threaded. 4. Needle or thread is inappropriate for fabric being sewn. 5. Sewing on stretch fabric. 6. Pressure of presser foot is too weak. 7. Inappropriate needle bar height. 8. Inappropriate needle to hook timing. 9. Inappropriate needle to hook clearance.	Insert the needle properly. Change the needle. Rethread. Use the recommended sewing needle and thread. Use a #11 blue tip needle. Operate the pressure lever to intensity the pressure. See "ADJUSTMENT OF NEEDLE BAR HEIGHT" (page 13). See "ADJUSTMENT OF HOOK TIMING" (page 14). See "ADJUSTMENT OF CLEARANCE BETWEEN NEEDLE AND ROTARY HOOK" (page 11).
2. Fabric not moving	1. Pressure of presser foot is too weak. 2. Incorrect F.D. height 3. Feed dog is put down. 4. Thread on bottom side of fabric is jammed up. 5. Feed dog teeth are worn.	Set the pressure lever to the proper position. See "ADJUSTMENT OF FEED DOG HEIGHT" (page 15). Operate the drop lever to put up the feed dog. Make sure to bring both needle thread and bobbin thread under the presser foot when starting sewing. Change the feed dog.
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 and thread. 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 the upper thread tension correctly. Use appropriate needle for fabric and thread in use. Change the needle. Remove the needle plate and repair the needle hole to eliminate wear and burrs.

Condition	Cause	How to Fix
4. Breaking bobbin thread	1. Incorrectly threaded bobbin holder. 2. Too much thread is around the bobbin. 3. Lint is stuck inside the bobbin holder. 4. Thread quality is too low. 5. Thread is jamming around the bobbin.	Thread the bobbin holder correctly. Adjust the position of the bobbin winder stopper. Clean the hook race. 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 race. 4. Fabric moves while needle is piercing it, or needle zigzags while in fabric. 5. Fabric is being pulled too strongly while sewing.	See "ADJUSTMENT OF NEEDLE DROP POSITION IN NEEDLE PLATE HOLE" (page 10). Change the needle. See "ADJUSTMENT OF CLEARANCE BETWEEN NEEDLE AND ROTARY HOOK" (page 11). See "ADJUSTMENT OF TIMING OF LATERAL NEEDLE SWING" (page 9). Guide the fabric gently while sewing.
6. Noisy operation	1. Backlash between the hook drive shaft gear and lower shaft gear is too great. 2. Lower shaft gear is loose. 3. Inappropriate motor belt tension. 4. Not enough oil. 5. Upper shaft gear is loose.	See "ADJUSTMENT OF BACKLASH BETWEEN HOOK DRIVE SHAFT GEAR AND LOWER SHAFT GEAR" (page 12). Eliminate the looseness. Adjust the motor belt tension. Oil all moving parts. Eliminate the looseness.
7. Deformation pattern	1. Inappropriate feed balance. 2. Inappropriate adjustment of timing of lateral needle swing. 3. Upper thread tension is too strong.	See "ADJUSTMENT OF STRETCH STITCH FEED BALANCE" (page 16). See "ADJUSTMENT OF TIMING OF LATERAL NEEDLE SWING" (page 9). Adjust the upper thread tension correctly.
8. Buttonhole stitching	1. The length of sewed buttonhole is inappropriate. 2. The stop function of buttonhole stitching is ineffective. 3. Stitch density is irregular.	Adjust the length. Correct the stop function. See "ADJUSTMENT OF BUTTONHOLE FEED BALANCE" (page 18).

REMOVAL AND ATTACHMENT OF EXTERNAL PARTS (1/7)

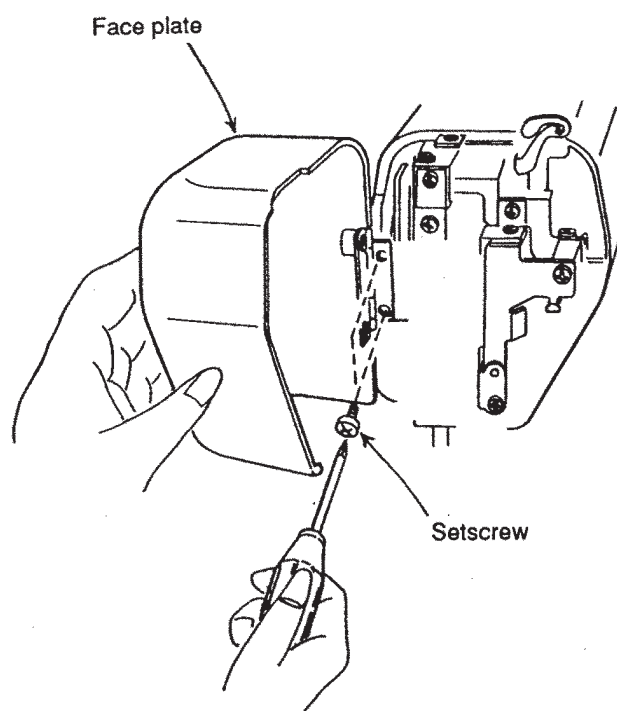
■ Face Plate

< To Remove >

- (1) Remove the two setscrews, and detach the face plate.

< To Attach >

- (2) Temporarily tighten the two setscrews to attach the face plate.
- (3) Close the face plate, and level it with the rear cover, top cover, and thread tension dial, and then completely tighten the two setscrews.



REMOVAL AND ATTACHMENT OF EXTERNAL PARTS (2/7)

■ Top Cover

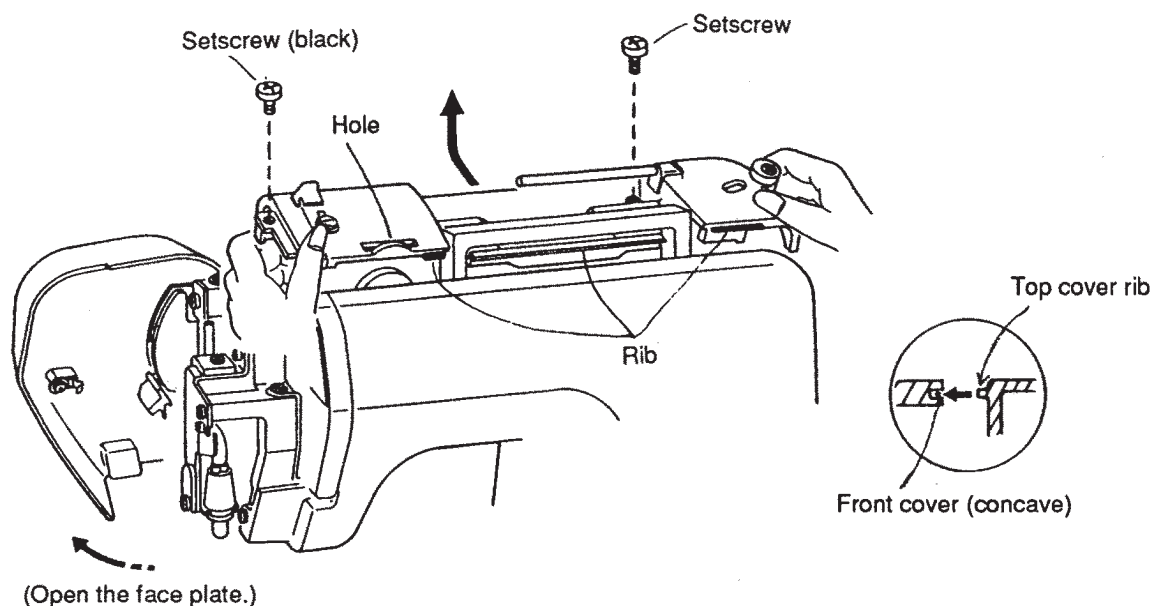
< To Remove >

- (1) Remove the two setscrews.
- (2) Raise the carrying handle, and pull out the top cover and thread tension dial from the front cover in the arrow direction.

< To Attach >

- (3) Put the hole in the thread tension dial, and the ribs in the front cover (concave).
- (4) Tighten the two setscrews.

Note: After attaching the top cover, make sure that there is no interference with the thread tension dial.



REMOVAL AND ATTACHMENT OF EXTERNAL PARTS (3/7)

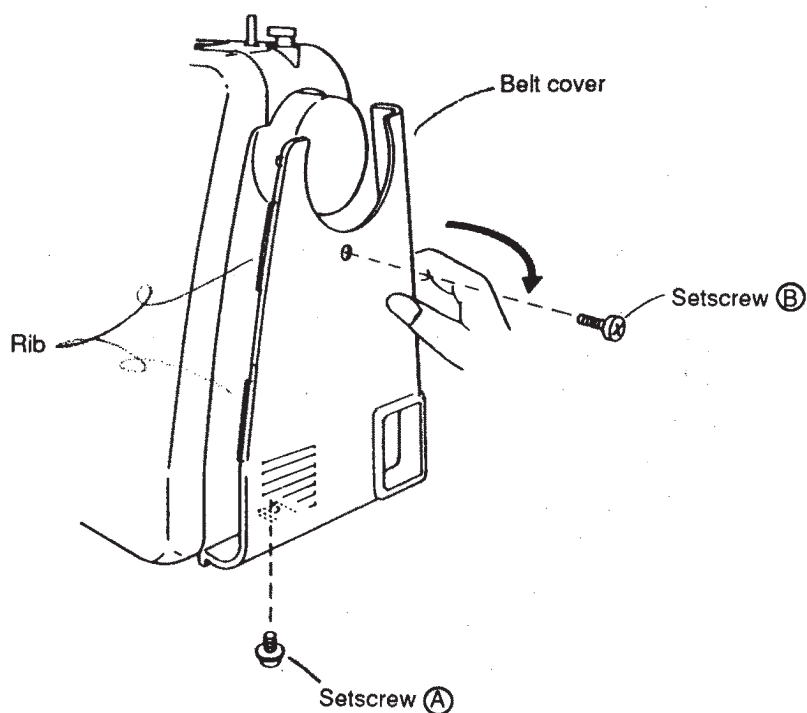
■ Belt Cover

< To Remove >

- (1) Loosen the setscrew (A) and remove the setscrew (B), and then detach the belt cover.
(To detach the belt cover, turn it in the direction of the arrow, and remove the rib.)

< To Attach >

- (3) To attach the belt cover, reverse the above-mentioned removing procedure.



REMOVAL AND ATTACHMENT OF EXTERNAL PARTS (4/7)

■ Bed Cover

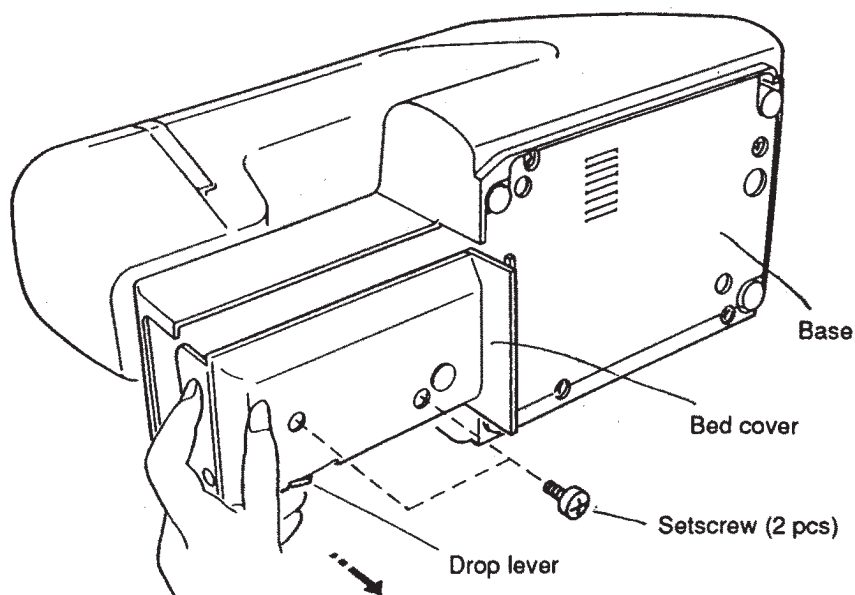
< To Remove >

- (1) Remove the base. (See page 5).
- (2) Remove the two setscrews and detach the bed cover.

< To Attach >

- (3) Move the drop lever to the left and tighten the two setscrews to attach the bed cover.
- (4) Attach the base.

Note: After attaching the bed cover, turn the balance wheel and confirm that the feed dog moves up and down.



REMOVAL AND ATTACHMENT OF EXTERNAL PARTS (5/7)

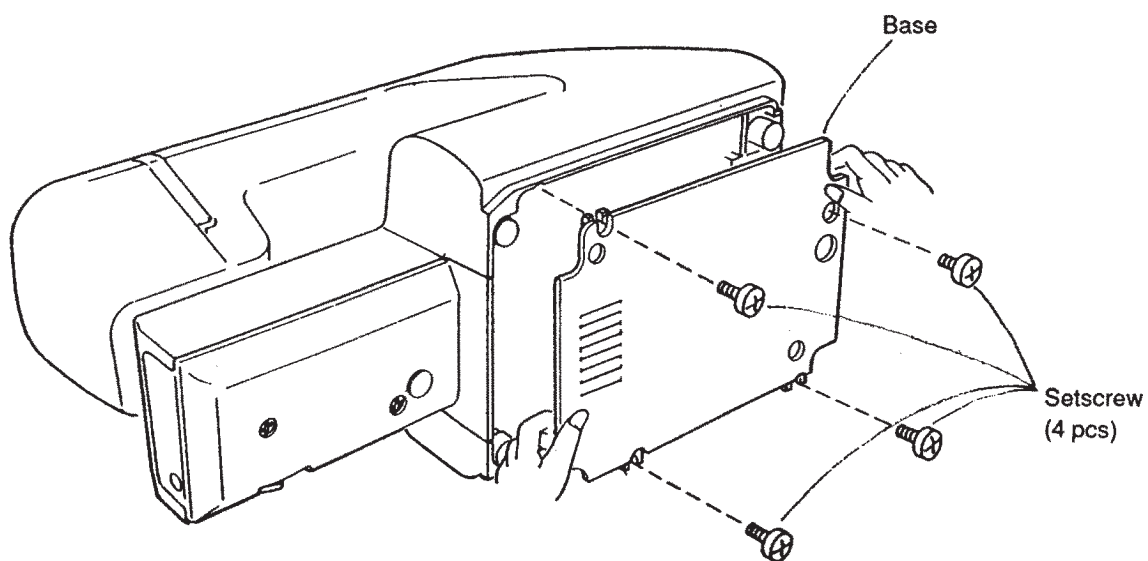
■ Base

< To Remove >

(1) Remove the four setscrews, and detach the base.

< To Attach >

(2) Attach the base with the four setscrews.



REMOVAL AND ATTACHMENT OF EXTERNAL PARTS (6/7)

■ Rear Cover

< To Remove >

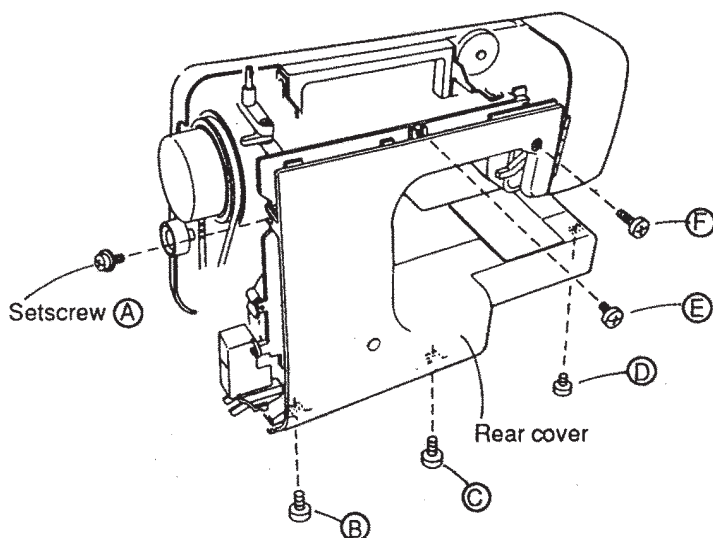
- (1) Remove the top cover, belt cover, and bed cover. (See pages 2, 3, and 4)
- (2) Loosen the setscrew (A), and remove the setscrews (B) to (F), and then detach the rear cover.

The rear cover detaching procedure is as follows;

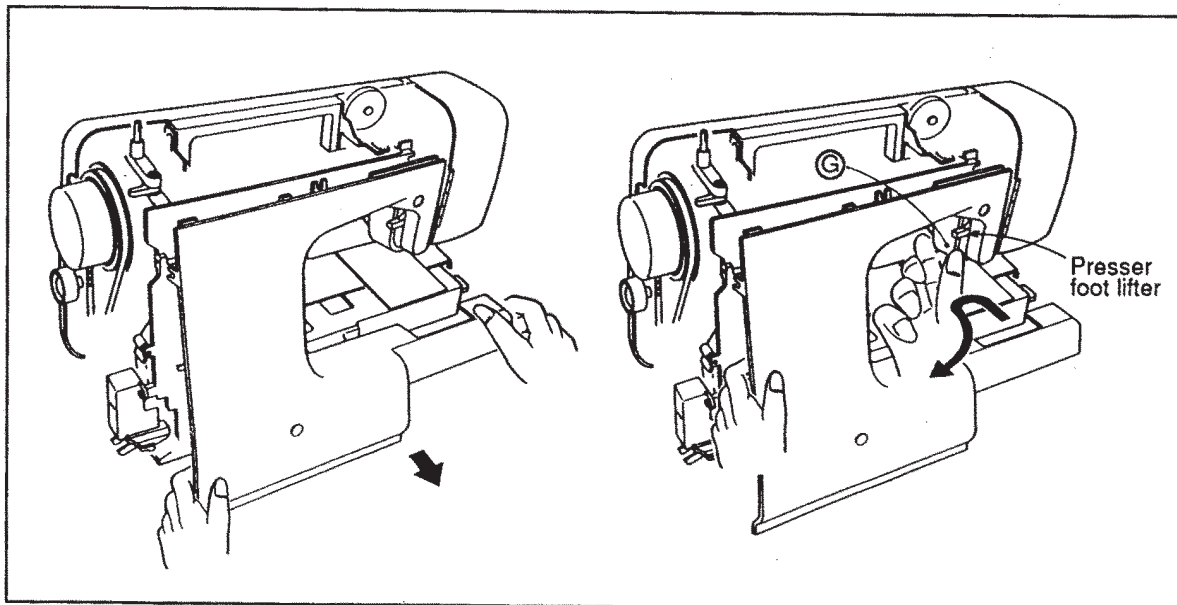
- 1) Pull out the lower side of the rear cover.
- 2) While pushing the part (G) in the figure below backward, shift it to the left, and pull out the presser foot lifter, and then detach the rear cover.

< To Attach >

- (3) To attach the rear cover, reverse the above-mentioned removing procedure.



— Detaching Procedure —



REMOVAL AND ATTACHMENT OF EXTERNAL PARTS (7/7)

■ Front Cover

< To Remove >

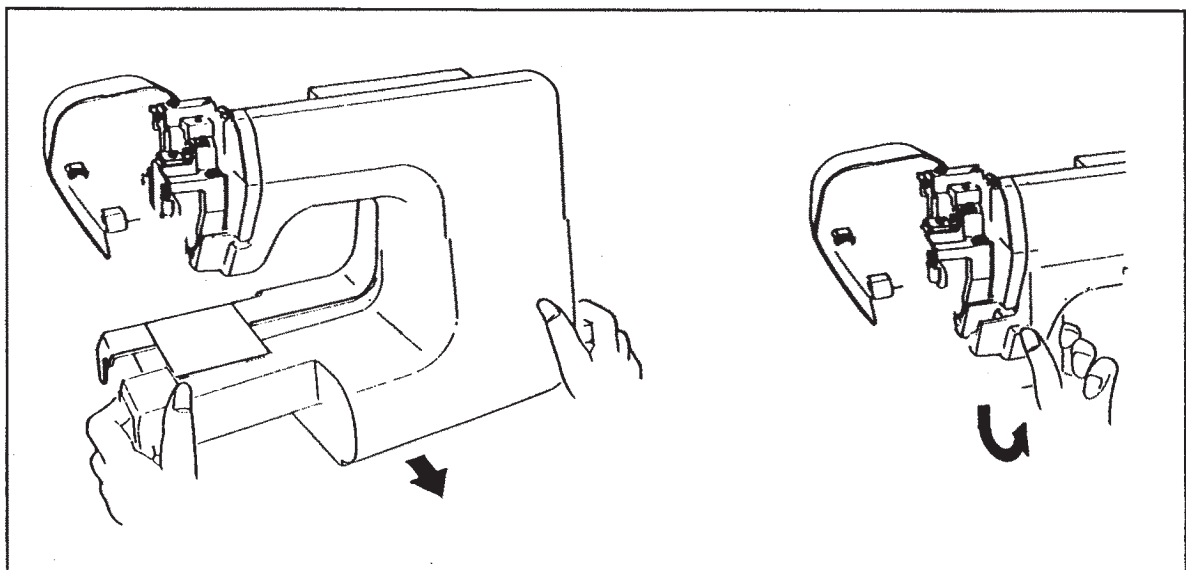
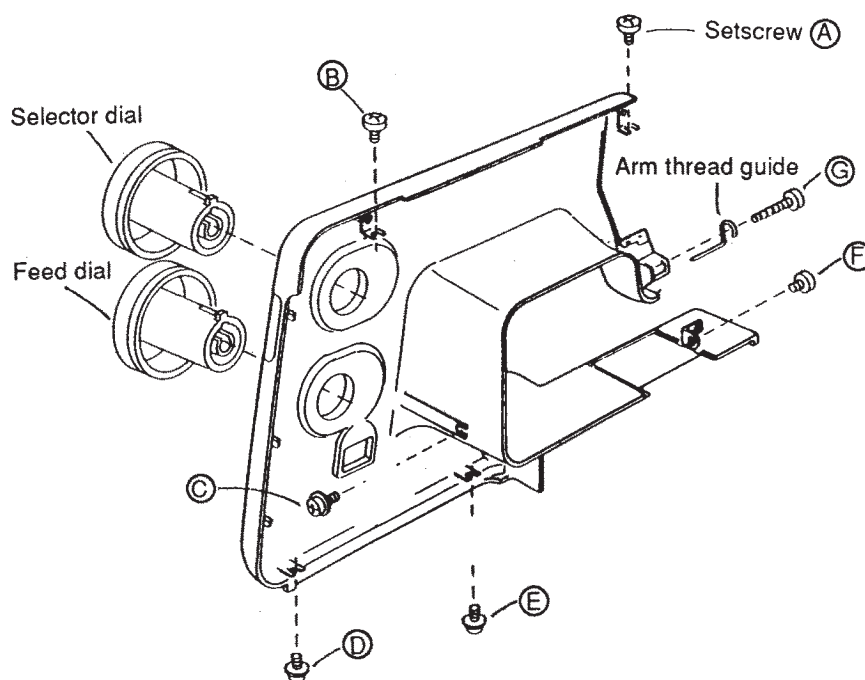
- (1) Detach the top cover, belt cover, and bed cover. (See pages 2, 3 and 4)
- (2) Pull out the selector dial and feed dial.
- (3) Loosen the setscrews (A) to (E), and remove the setscrews (F) and (G).

The removing procedure is as follows;

- 1) Pull out the lower side of the front cover.
- 2) Separate the lower side of the thread guide cover, and detach the thread guide cover.

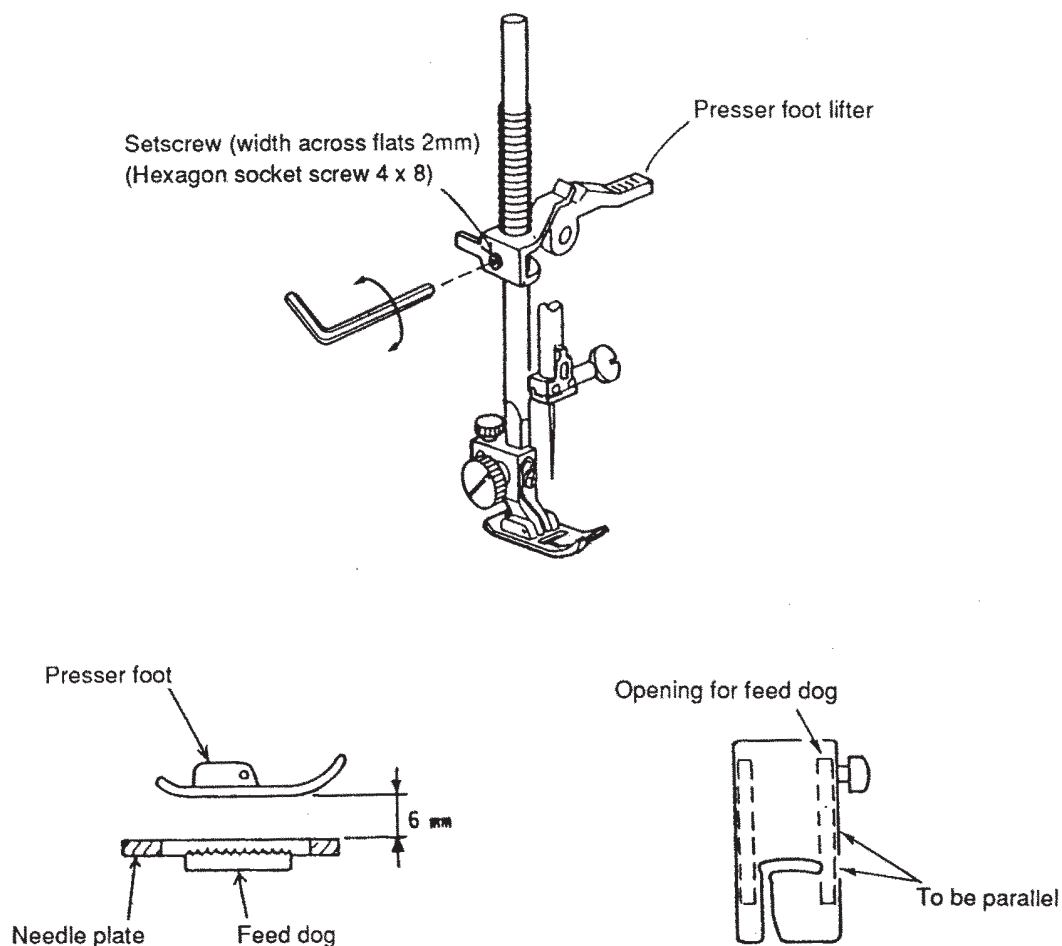
< To Attach >

- (4) To attach the front panel, reverse the above-mentioned removing procedure.



ADJUSTMENT OF PRESSER BAR DIRECTION AND HEIGHT

- The clearance between the presser foot and needle plate should be 6.0mm as a standard value, when the presser foot lifter is raised.
 - As a rule, the presser bar should be attached so that the side face of the presser foot is parallel with the openings for the feed dog in the needle plate when the presser foot lifter is lowered.
- (1) Open the face plate, and raise the presser foot lifter. Loose the setscrew, and set the height of the presser bar to 6.0mm, and then adjust the direction of the presser bar.
 - (2) Tighten the setscrew completely.



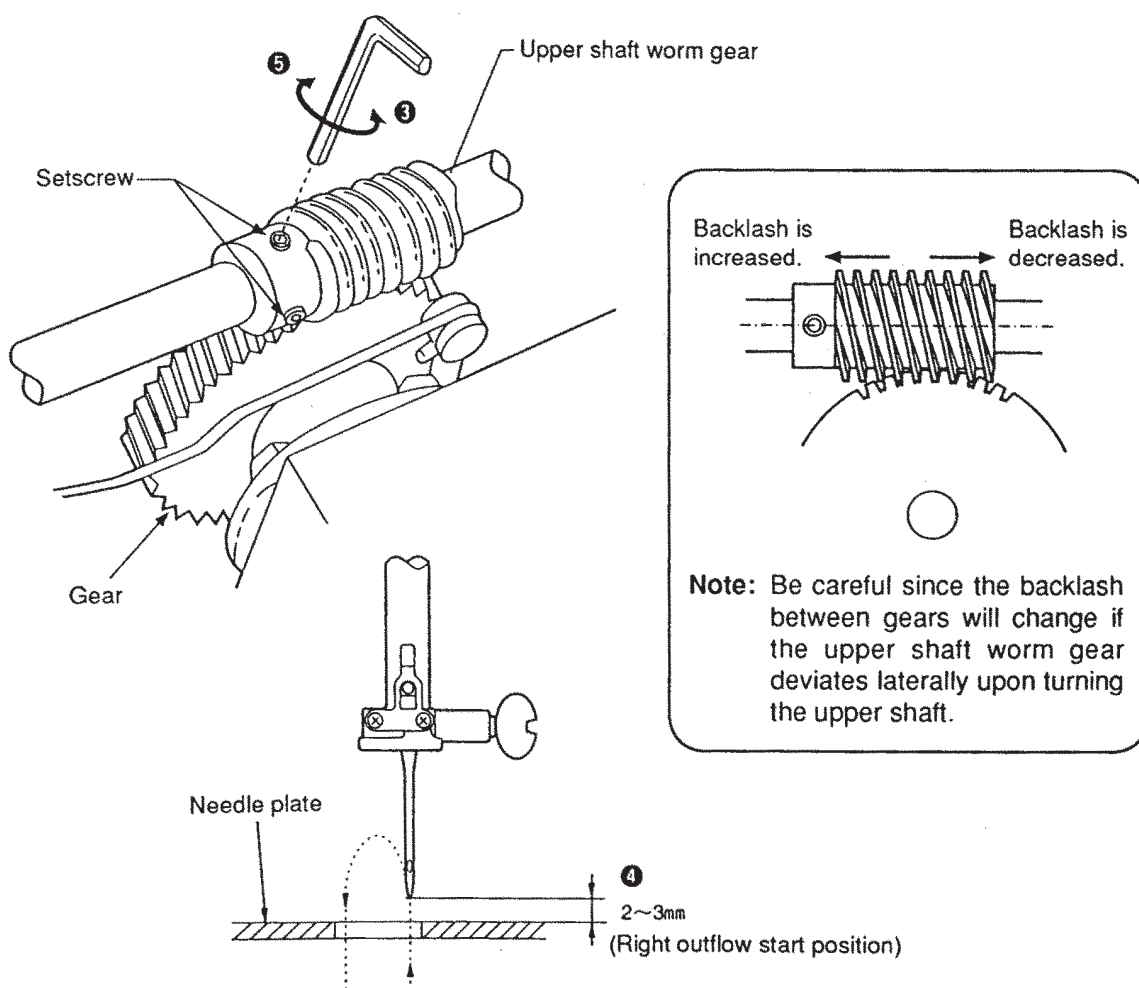
ADJUSTMENT OF TIMING OF LATERAL NEEDLE SWING

- If the needle bar begins to move sidewise in zigzag stitching before the needle is separated from the fabric, or it remains moving sidewise while the needle is in the fabric, then make adjustment in the procedure given below.

As a rule, the needle should start swinging from a position 2 to 3mm above the top surface of the needle plate, and it should not swing in the fabric.

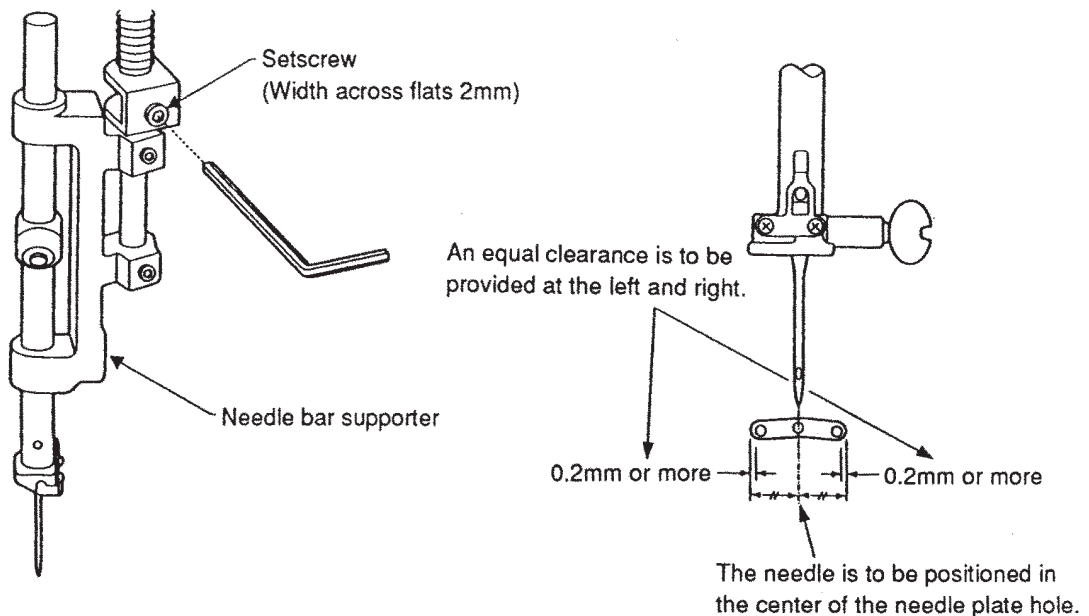
- (1) Remove the top cover. (See "REMOVAL AND ATTACHMENT OF EXTERNAL PARTS" on page 2.)
- (2) Select the maximum zigzag width.
- (3) Loosen the two setscrews.
- (4) While holding the upper shaft worm gear in place, turn the balance wheel to make adjustment so that the lateral needle swing starts from a position 2 to 3mm above the top surface of the needle plate in right outflow.
- (5) Tighten the two setscrews.
- (6) Attach the top cover.

Note: After adjustment of the timing of lateral needle swing, make sure that there is no backlash between the upper shaft worm gear and the gear, and smooth rotation is obtained.



ADJUSTMENT OF NEEDLE DROP POSITION IN NEEDLE PLATE HOLE

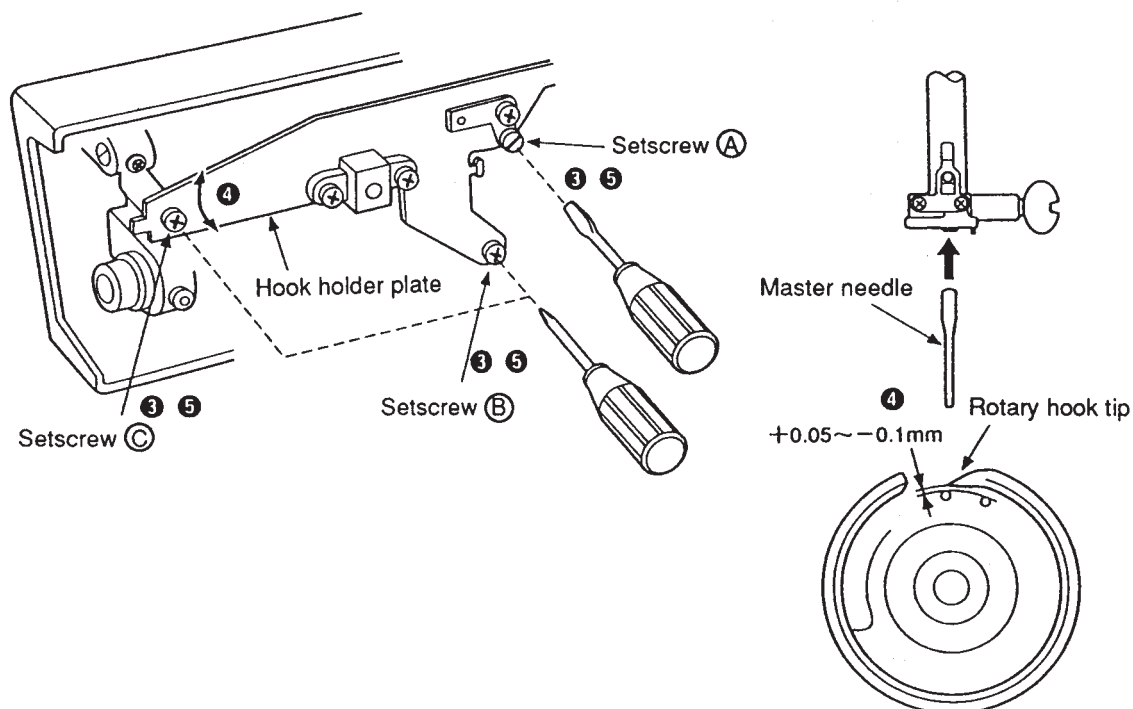
- As a rule, the needle should be positioned in the center of the needle plate hole when the pattern selector dial is set at "  " (straight stitch), and the clearance between the needle and the edge of the needle plate hole should be equal and be 0.2mm or more at the left and right needle drop positions when the pattern selector dial is set at "  " and the maximum zigzag width is selected.
 - Before adjusting the needle drop position, check the adjustment of needle drop position alignment in "  " pattern mode (page 22).
- (1) Set the pattern selector dial at "  " (straight stitch).
 - (2) Open the face plate and loosen the setscrew.
 - (3) Move the needle bar supporter to position the needle in the center of the needle plate hole.
 - (4) Tighten the setscrew.
 - (5) Set the pattern selector dial at "  " (maximum zigzag width).
 - (6) Turn the balance wheel and make sure that there is an equal clearance of 0.2mm or more between the needle and the edge of the needle plate hole at the left and right needle drop positions.



ADJUSTMENT OF CLEARANCE BETWEEN NEEDLE AND ROTARY HOOK

- The clearance between the needle and the rotary hook tip should be -0.10 to $+0.05\text{mm}$ as a standard value.

- (1) Remove the needle plate and bobbin holder, and attach the master needle, and then set the pattern selector dial at "Z" to select the maximum zigzag width.
- (2) Remove the bed cover (unit). (See "REMOVAL AND ATTACHMENT OF EXTERNAL PARTS" on page 4).
- (3) Loosen the setscrews (B) and (C), and temporarily tighten the setscrew (A).
- (4) Turn the balance wheel toward you, and adjust the portion near the setscrew (C) vertically until the clearance between the needle and the rotary hook tip is -0.1 to $+0.05\text{mm}$ at the right and left needle drop positions.
- (5) Completely tighten the setscrews (A), (B) and (C).
- (6) Check the backlash between the hook drive shaft gear and the lower shaft gear.
When the engagement is tight or the backlash is large, adjust the backlash in accordance with "ADJUSTMENT OF BACKLASH BETWEEN HOOK DRIVE SHAFT GEAR AND LOWER SHAFT GEAR" on page 12.
- (7) Attach the bed cover (unit).
- (8) Remove the master needle, and put in the bobbin holder, and then attach the needle plate.

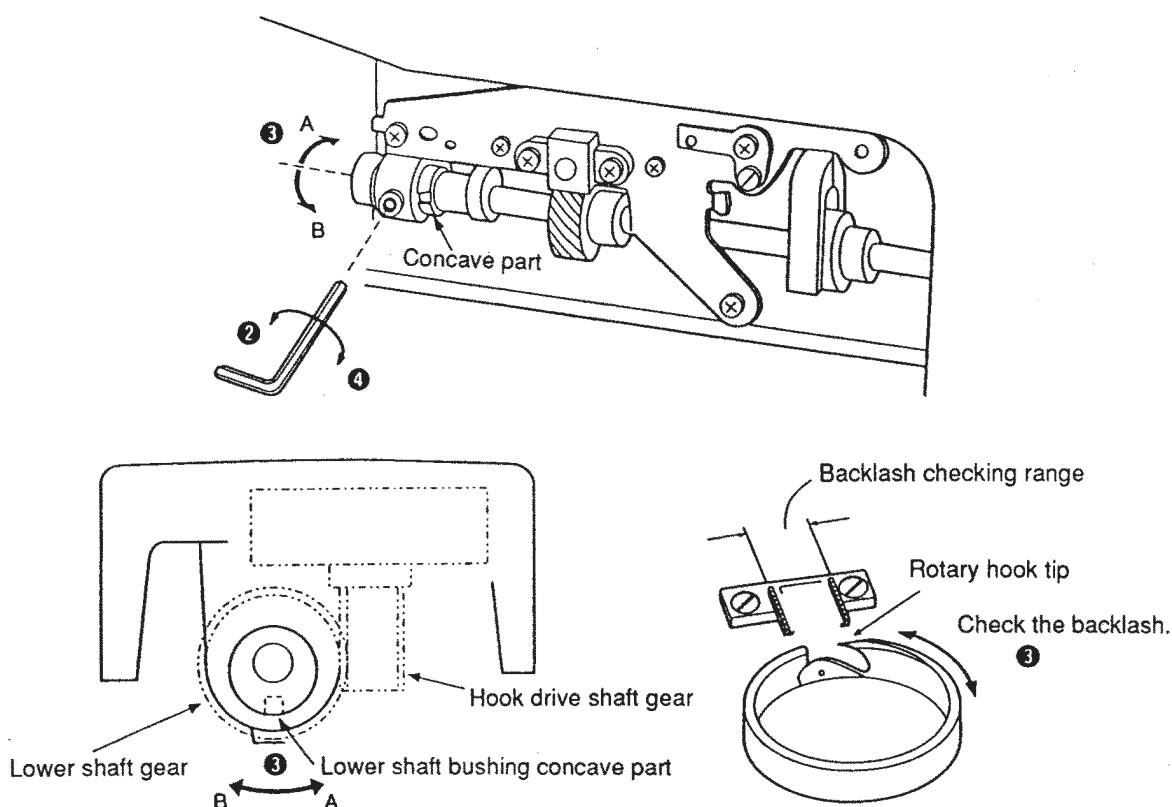


ADJUSTMENT OF BACKLASH BETWEEN HOOK DRIVE SHAFT GEAR AND LOWER SHAFT GEAR

- Engagement of the gears should be smooth and the backlash should be 0.8mm or less as a standard value when the rotary hook tip is within the width of the feed dog.

- (1) Remove the bed cover (unit). (See "REMOVAL AND ATTACHMENT OF EXTERNAL PARTS" on page 4.)
- (2) Loosen the setscrew.
- (3) If the backlash is too much, turn the lower shaft bushing concave part in the direction B.
If the backlash is not enough, turn the lower shaft bushing concave part in the direction A.
- (4) Tighten the setscrew, and attach the bed cover (unit).
(See "REMOVAL AND ATTACHMENT OF EXTERNAL PARTS" on page 4.)

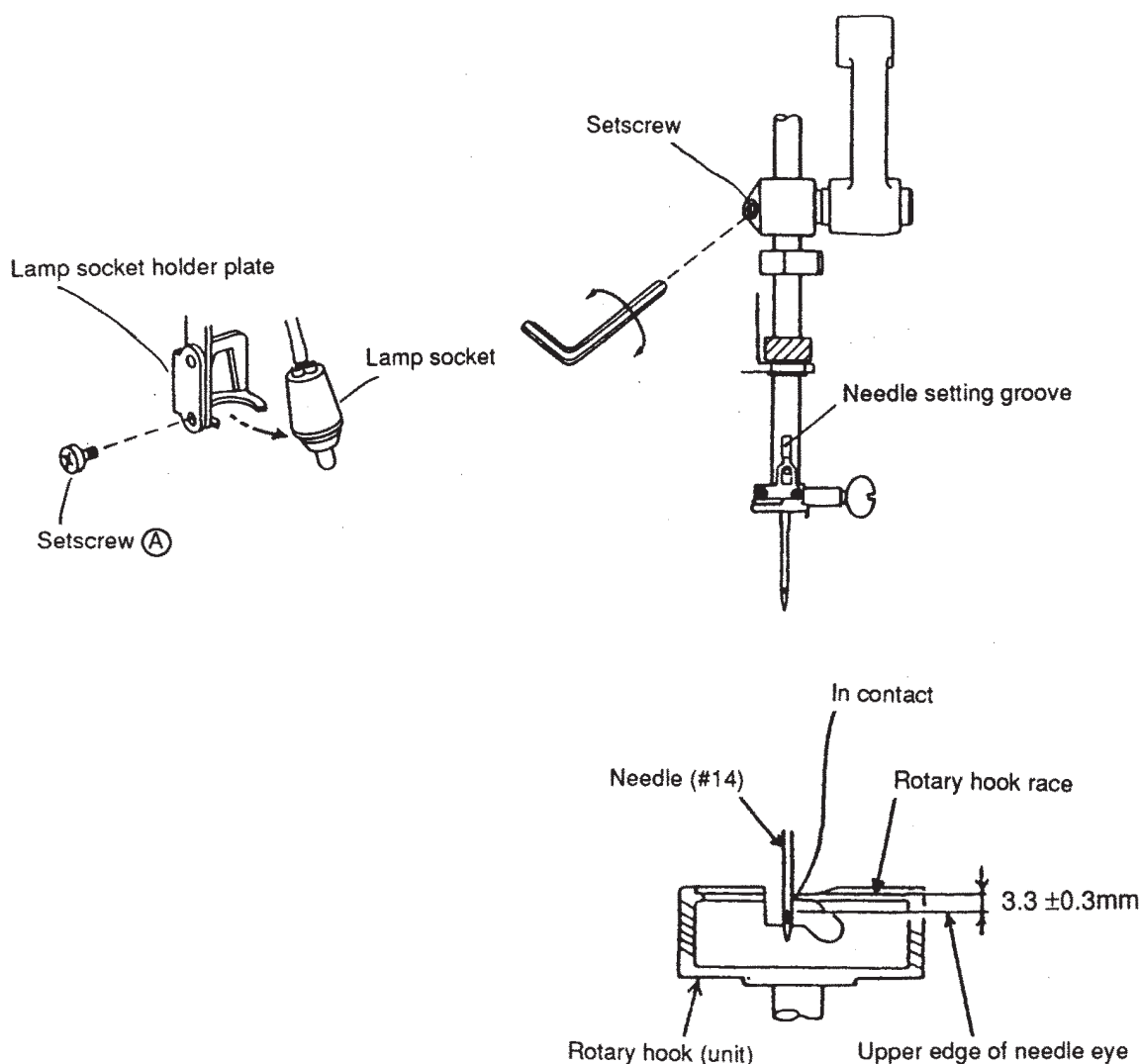
Note: After adjustment of the backlash, be sure to check and adjust the hook timing and feed dog height.



ADJUSTMENT OF NEEDLE BAR HEIGHT

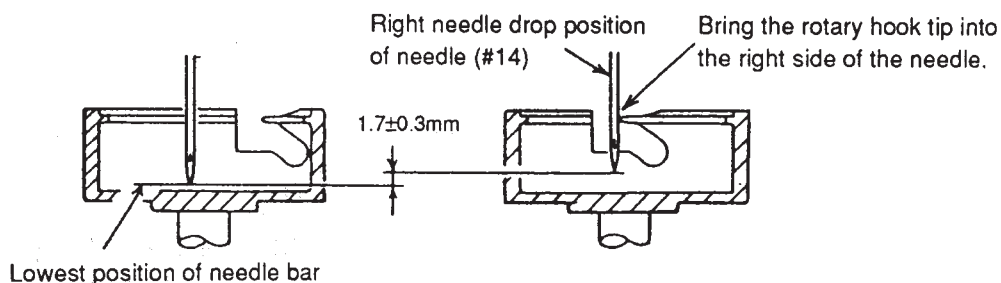
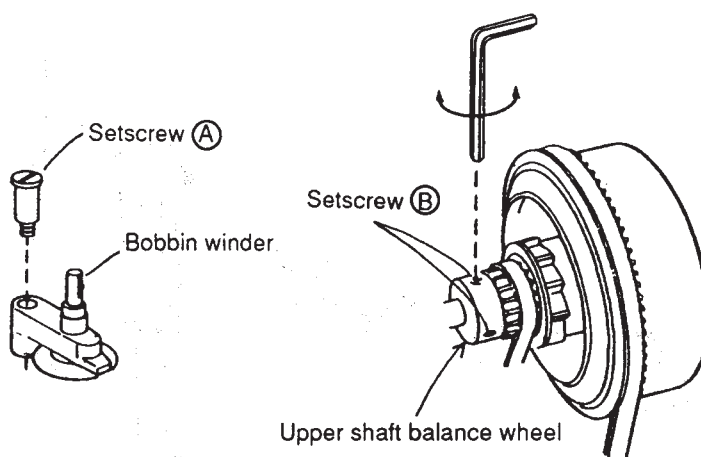
- When the tip of the rotary hook exactly meets the right side of the needle in ascending travel of the needle bar from its lowest position at the right needle drop position with the pattern selector dial set at " $\approx$ " (maximum zigzag width), the distance between the upper edge of the needle eye and the race of the rotary hook is called a needle bar height, which should be $3.3 \pm 0.3\text{mm}$ as a standard value.

- (1) Remove the needle plate and bobbin holder, and open the face plate, and then detach the lamp socket.
- (2) Remove the setscrew (A), and detach the lamp socket holder plate.
- (3) Set the pattern selector dial at " $\approx$ " (maximum zigzag width).
- (4) Turn the balance wheel toward you until the rotary hook tip exactly meets the right side of the needle at the right needle drop position.
- (5) Loosen the setscrew and move the needle bar to adjust the distance between the upper edge of needle eye and the race of rotary hook to $3.3 \pm 0.3\text{mm}$.
- (6) Tighten the setscrew with the needle setting groove facing the front.
- (7) Attach the lamp socket holder plate with the setscrew (A), and set the lamp socket.
- (8) Attach the bobbin holder and needle plate.



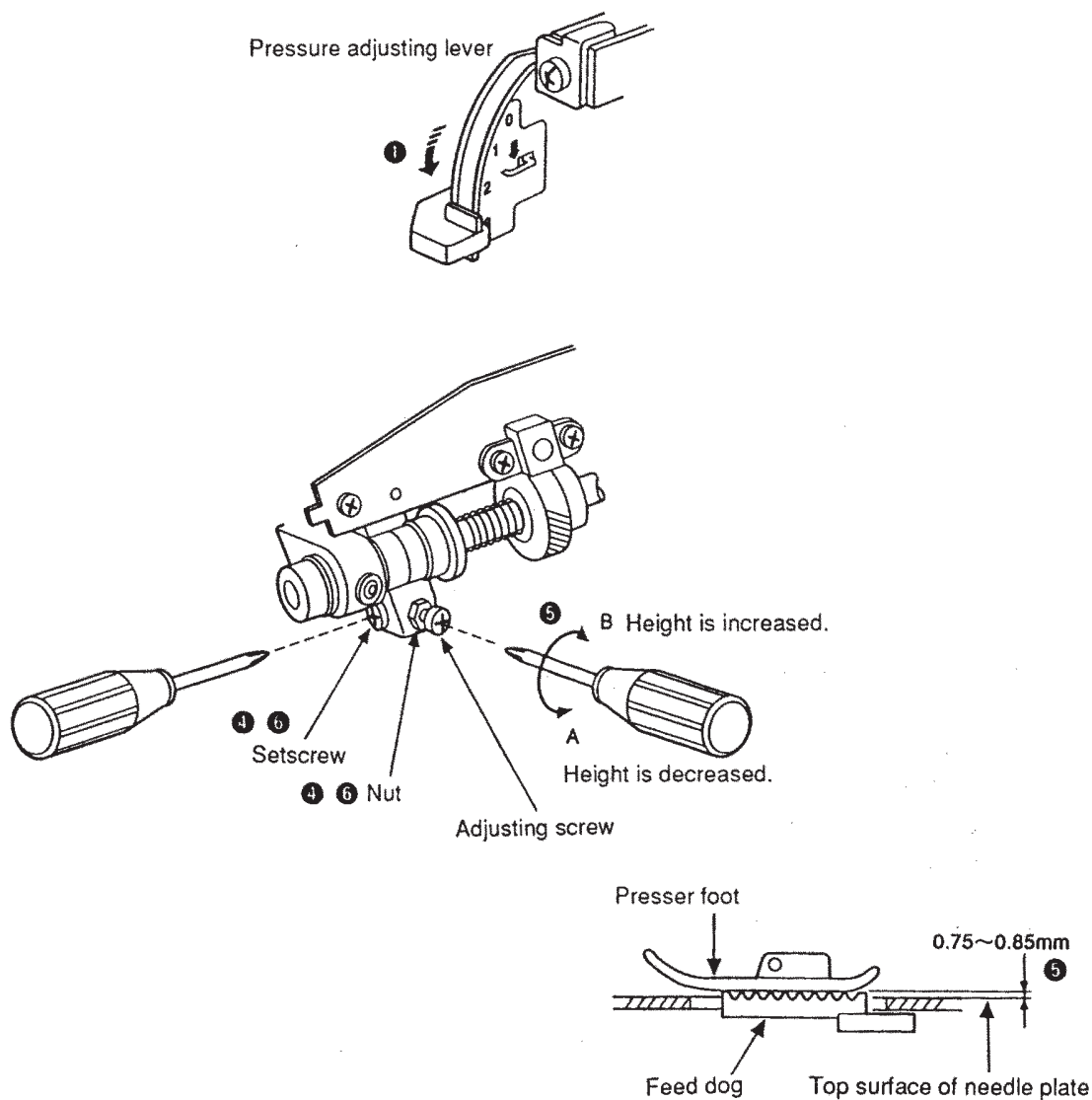
ADJUSTMENT OF HOOK TIMING

- With the needle bar swung to the right at the maximum zigzag width (at " $\approx$ " position), the amount of ascending travel of the needle bar from its lowest position to the position where the tip of the rotary hook exactly meets the right side of the needle is called a hook timing, which should be $1.7 \pm 0.3\text{mm}$ as a standard value.
 - Before the adjustment, be sure to check the needle bar height.
- (1) Remove the needle plate, bobbin holder and top cover. (See page 2)
 - (2) Set the pattern selector dial at " $\approx$ " (maximum zigzag width).
 - (3) Turn the balance wheel toward you until the needle bar is moved up $1.7 \pm 0.3\text{mm}$ from its lowest position with the needle swung to the right.
 - (4) Remove the setscrew (A) and detach the bobbin winder, and then loosen the two setscrews (B).
 - (5) While holding the upper shaft by hand to prevent it from moving, turn the upper shaft balance wheel toward you until the tip of the rotary hook exactly meets the right side of the needle.
 - (6) Tighten the two setscrews (B), and attach the bobbin winder with the setscrew (A).
 - (7) Attach the top cover, bobbin holder, and needle plate.



ADJUSTMENT OF FEED DOG HEIGHT

- When the presser foot is lowered with the pressure adjusting lever set at "3", the highest position of the feed dog should be 0.75 to 0.85mm above the top surface of the needle plate as a rule.
- (1) Set the pressure adjusting lever at "3", and lower the presser foot.
 - (2) Turn the balance wheel toward you until the feed dog comes to its highest position (feed 4.0).
 - (3) Detach the bed cover (unit). (See "REMOVAL AND ATTACHMENT OF EXTERNAL PARTS" on page 4.)
 - (4) Loosen the setscrew and nut.
 - (5) Turn the adjusting screw until the feed dog height is 0.75 to 0.85mm.
 - (6) Tighten the nut and setscrew.
 - (7) Attach the bed cover (unit).

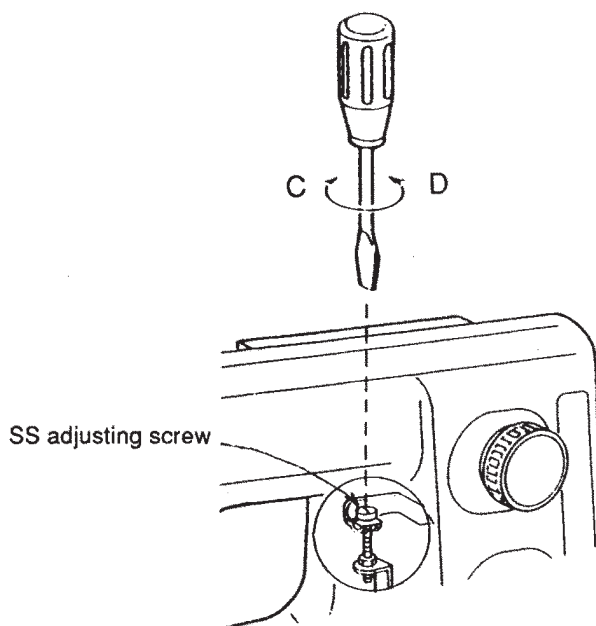
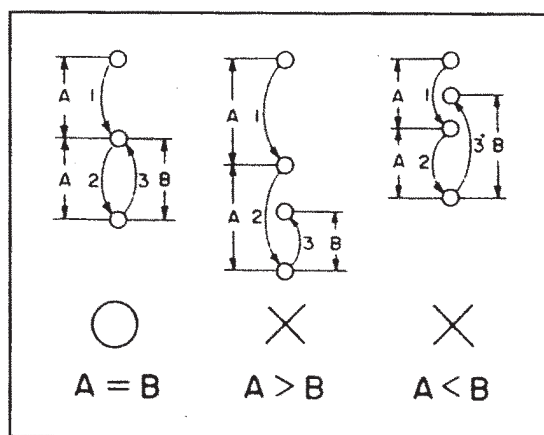


ADJUSTMENT OF STRETCH STITCH FEED BALANCE

- When a stretch stitch is sewed, the pattern should be formed as shown in the figure below. (Fig. 1)
If not (if there is no balance between forward feeding and backward feeding), then make adjustment in the following procedure.

- (1) Remove the top cover. (See page 2.)
- (2) Set the pattern selector dial at "  ", and set the feed dial at "S.S".
- (3) If $A > B$ as shown in Fig. 1, then turn the SS adjusting screw in the direction C.
If $A < B$ as shown in Fig. 1, then turn the SS adjusting screw in the direction D.
- (5) Attach the top cover.

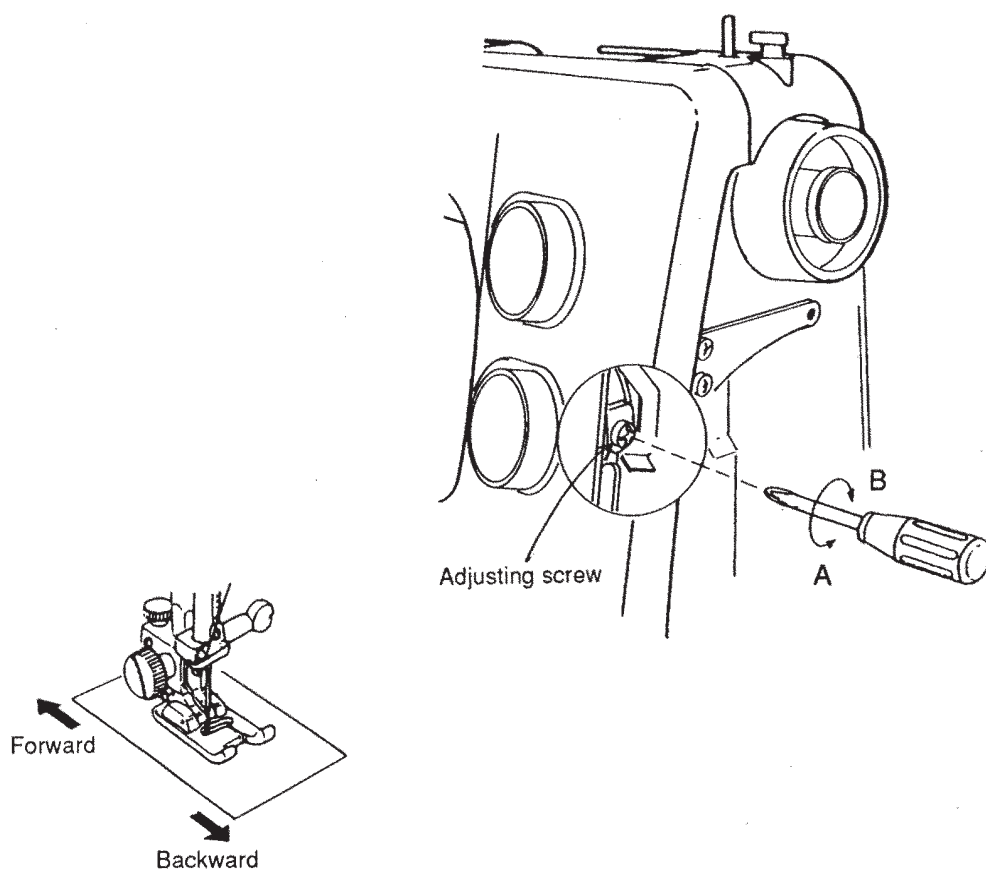
Fig. 1



ADJUSTMENT OF ZERO FEEDING

- If the material is fed with the pattern selector dial set at "lock stitch" ($\begin{smallmatrix} 4 \\ 2 \end{smallmatrix}$) during buttonhole sewing, then make adjustment in the following procedure.

- (1) Set the pattern selector dial at " $\begin{smallmatrix} 4 \\ 2 \end{smallmatrix}$ ", and set the feed dial at "4".
- (2) Remove the belt cover. (See page 3.)
- (3) Put a piece of paper under the presser foot, and turn the balance wheel to check the direction of the paper movement.
 - If the paper is fed forward, turn the adjusting screw in the direction A.
 - If the paper is fed backward, turn the adjusting screw in the direction B.
- (4) Attach the belt cover.

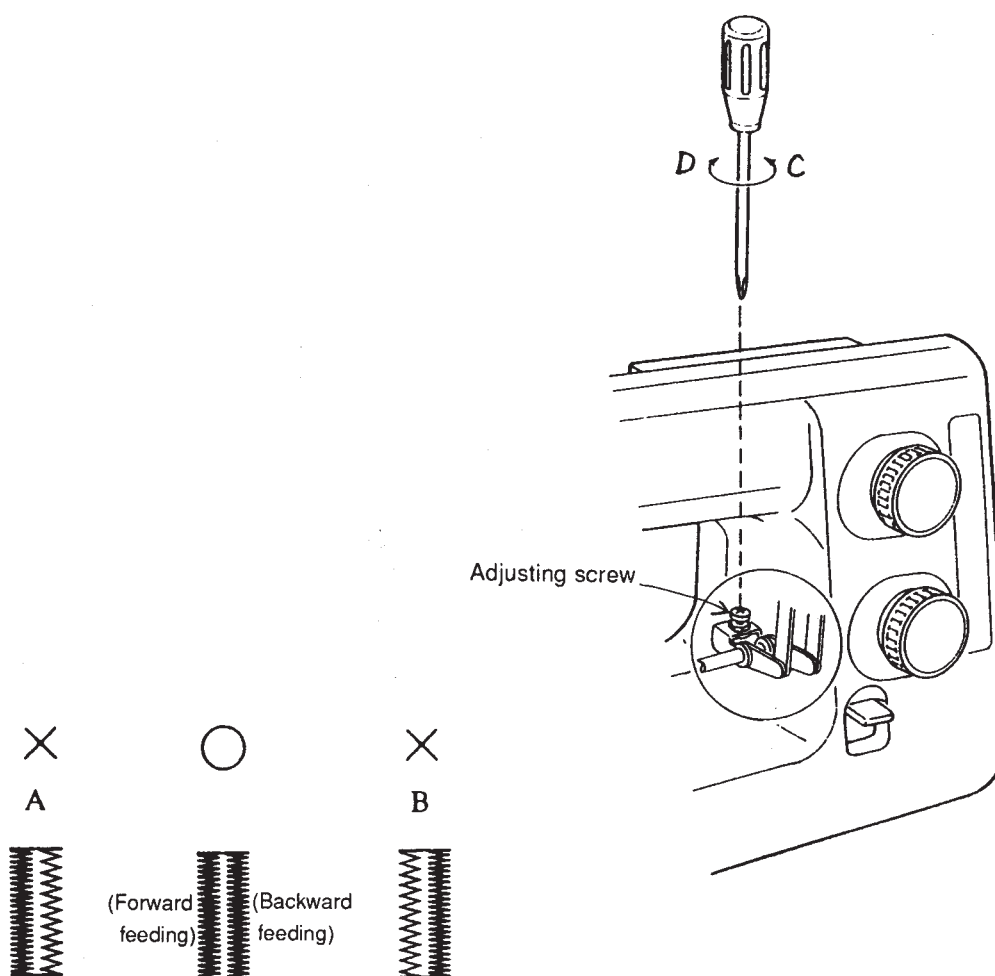


ADJUSTMENT OF BUTTONHOLE FEED BALANCE

- If there is a difference in stitch density between the right and left rows of a buttonhole, then make adjustment in the procedure given below.

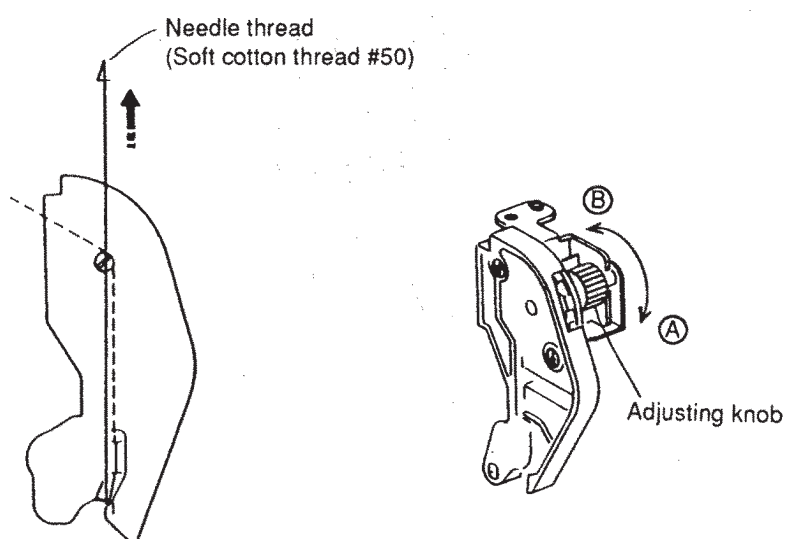
(As a rule, the right row (backward) should have 9 to 12 stitches as compared with 10 stitches on the left row (forward).)

- (1) Sew a buttonhole and check the stitch density, and then remove the top cover. (See page 2)
- (2) If the left row is denser than the right row (A), then turn the adjusting screw in the direction C.
If the right row is denser than the left row (B), then turn the adjusting screw in the direction D.
- (3) Attach the top cover.



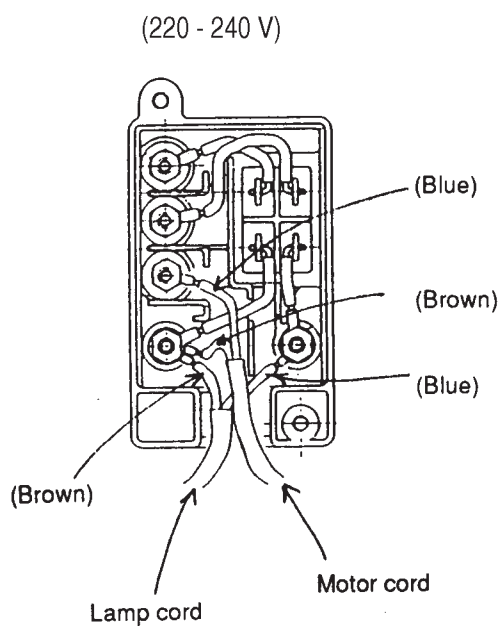
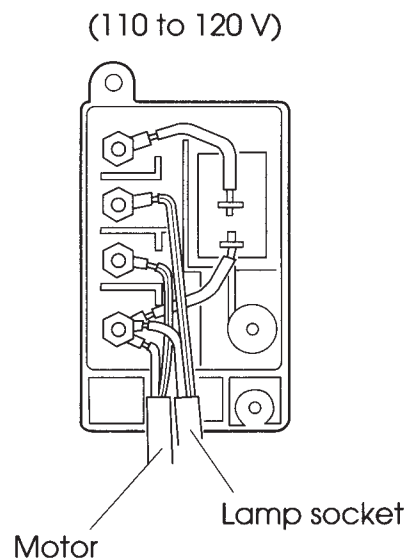
ADJUSTMENT OF NEEDLE THREAD TENSION

- When the soft cotton thread #50 is passed and pulled up in the direction shown in the figure below, the needle thread tension should be 65 to 95g as a standard value with the thread tension dial set at "3".
- (1) Remove the front cover. (See page 7.)
 - (2) When the thread tension is larger, turn the adjusting knob in the direction A.
 - (3) When the thread tension is smaller, turn the adjusting knob in the direction B.
 - (4) Attach the front panel.



MACHINE SOCKET WIRING DIAGRAM

- Make wiring to the machine socket as shown in the figure below.



MECHANICAL ADJUSTMENT

■ Motor Belt Tension

< Correct Setting >

If there is a deflection of about 7 to 9mm on the belt by pressing it lightly as shown in the drawing, the tension on the belt is correct.

< To Adjust >

- (1) Remove the belt cover. (See page 3.)
- (2) Loosen the motor bracket setscrews (2 pcs.) and adjust the tension on the belt. Then, tighten the setscrews firmly.
- (3) Attach the belt cover.

