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TO CHANGE THE TOP COVER & FACE PLATE

<Top cover>

To remove:

1. Open the face cover (A).
2. Remove set screws (C) and (D).
3. Move the top cover (E) to the right so that the latch (F) and projections (K) will be come off the top cover supporting plate (G & J), then lift the top cover (E) off.

To attach:

4. Insert the projections (K) of the top cover to the top cover supporter plate (G) and move the top cover to the left, push down the top cover to fit to the latches.
5. Tighten set screw (C and D).

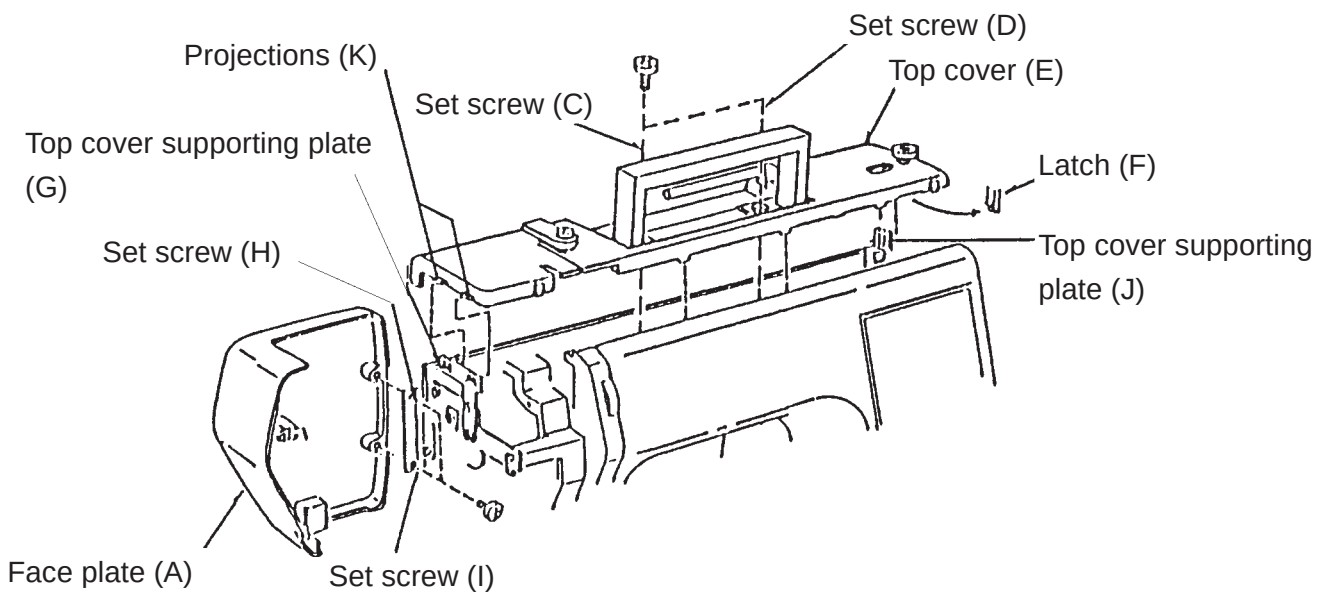
<Face plate>

To remove:

1. Remove Set screws (H) and (I).
2. Take the face cover off.

To attach:

3. Attach the face plate with set screws (H) and (I).



TO CHANGE THE BELT COVER

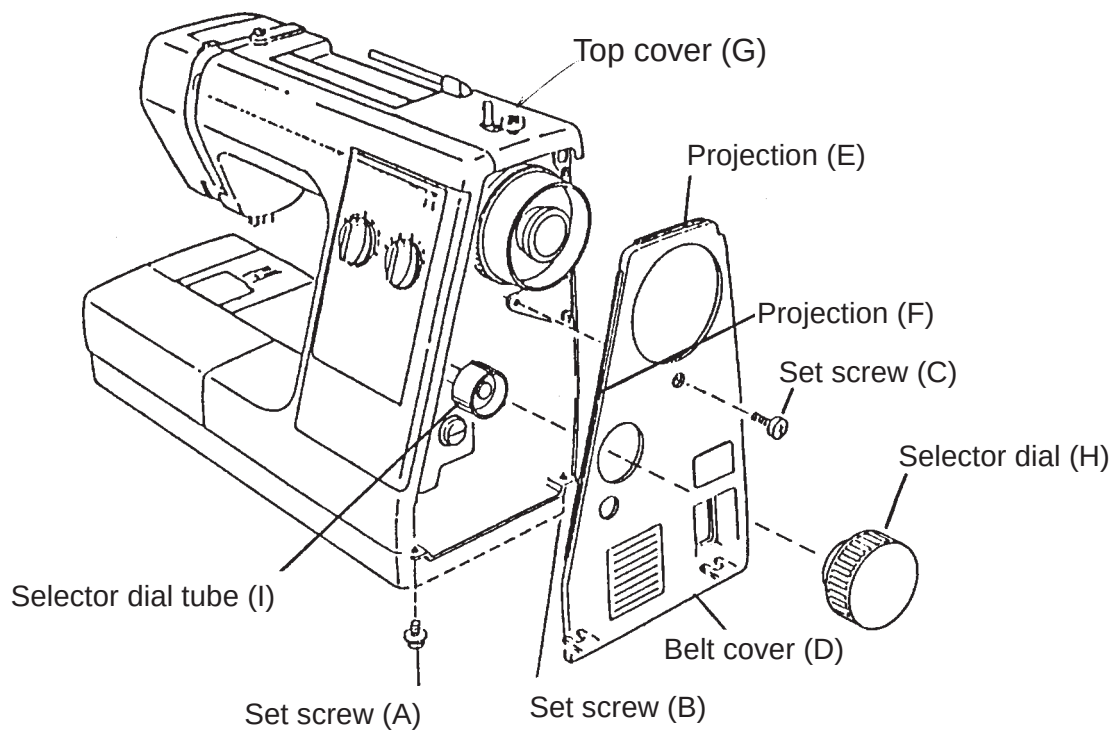
To remove:

1. Pull out the selector dial (H).
2. Loosen set screws (A & B) and remove the set screw (C), then take the belt cover (D) off with sliding the ribs to the right or down.

To attach:

3. Attach the belt cover while inserting the projections (E & F) of belt cover to the front cover and top cover (G).
4. Tighten the set screws (A, B & C).
5. Insert the selector dial (H) into the selector dial tube (I).

NOTE: After attach the belt cover (D), check if the clearance between belt cover and balance wheel is even.



TO CHANGE THE BASE AND BED COVER

<BASE PLATE>

To remove:

1. Remove set screws (A, B & C).
2. Remove the base plate (F).

To attach:

3. Attach the base plate with set screws (A, B, C, D & E).

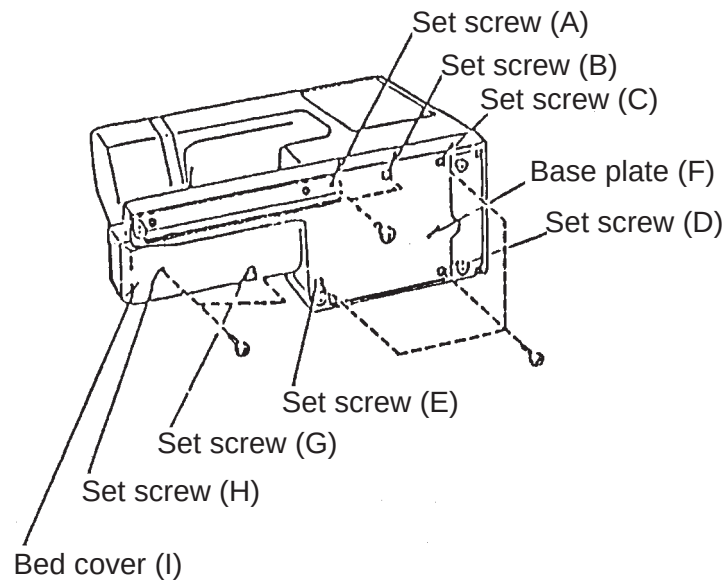
<BED COVER>

To remove:

1. Move the drop lever to the left, then remove set screws (G & H).
2. Remove the bed cover (I).

To attach:

3. Move the drop lever to the left, and attach the bed cover (I) with set screw (G & H).



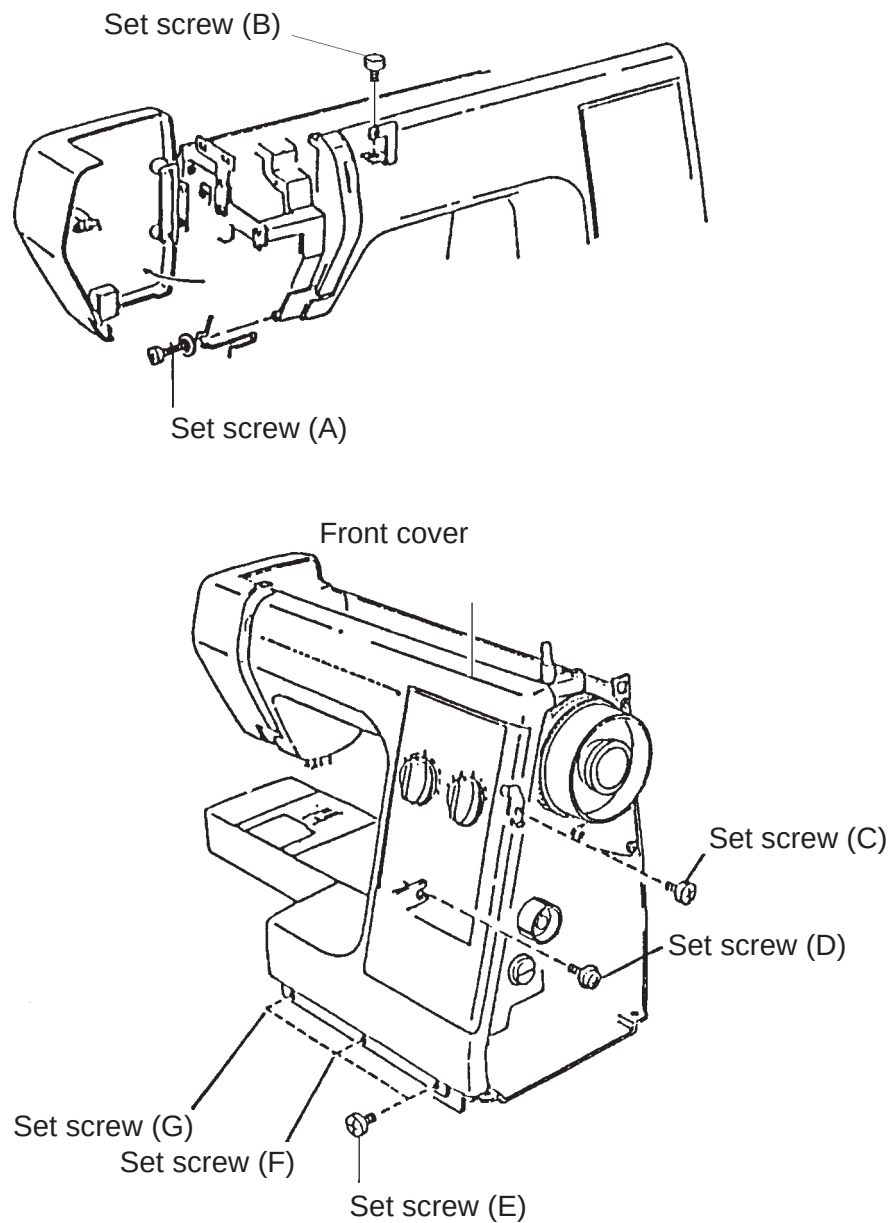
TO CHANGE THE FRONT COVER

To remove:

1. Set the stitch selector at “ $\wedge\wedge\wedge$ ” and pull out the selector dial.
2. Remove the top cover, the belt cover and the base plate (See pages 2, 3 & 4).
3. Open the face plate and remove set screw (A).
4. Remove set screws (B, C, D, E, F & G).
5. Remove the front cover.

To attach:

6. Attach the front cover with set screw (A, B, C & D).
7. Attach the top cover, the belt cover and the base
8. Insert the selector dial.

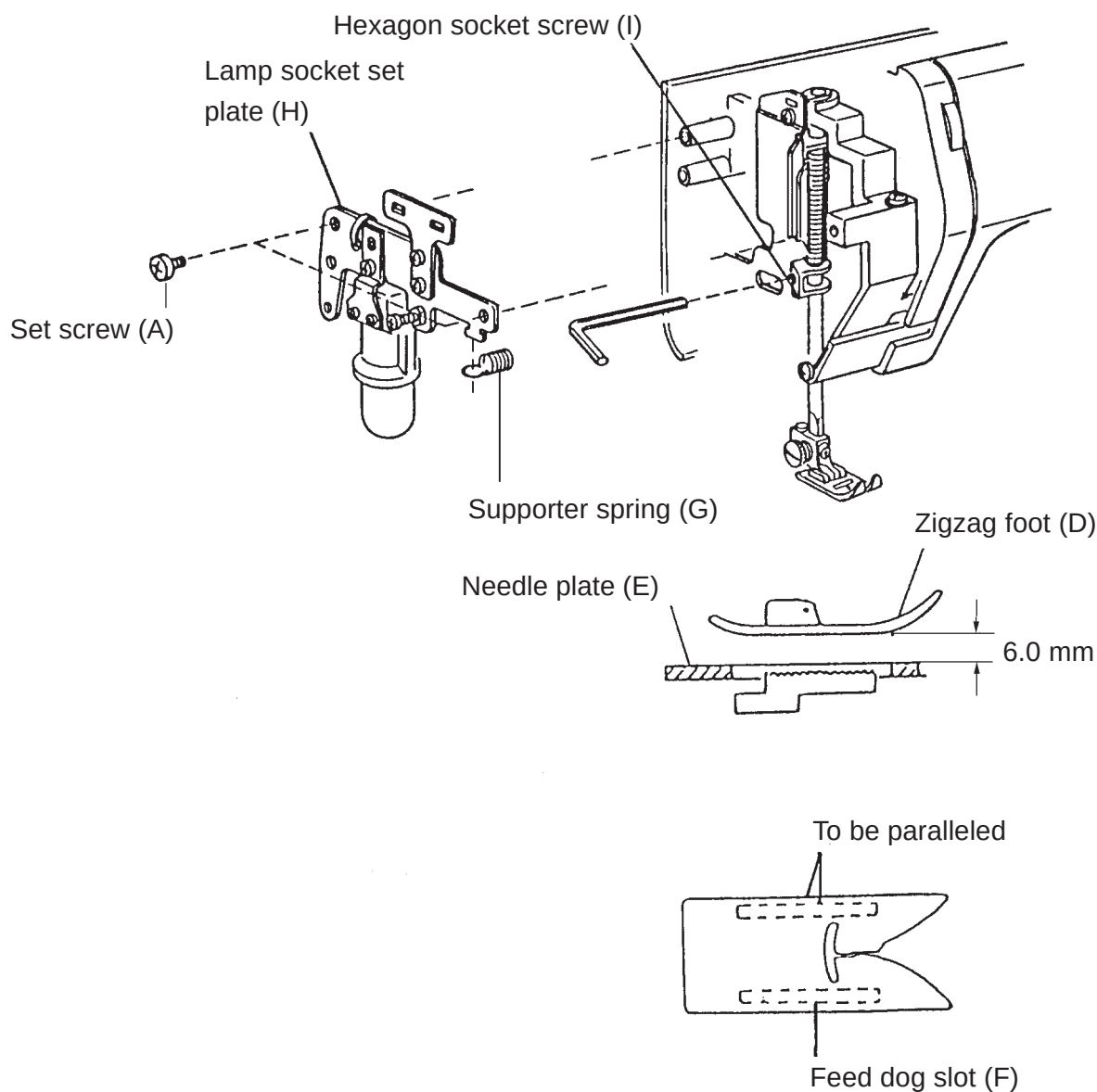


TO ADJUST THE PRESSER BAR HEIGHT AND ALIGNMENT

The presser bar height should be 6.0 mm between the bottom surface of the zigzag foot and needle plate when zigzag foot is lifted.

1. Remove the face plate (See page 2), then set the pressure adjuster dial at "3".
2. Remove the spring (G), then remove the lamp socket set plate (H) by removing set screws (A).
3. Raise the zigzag foot (D), then loosen the hexagon socket screw (I).
4. Adjust the distance between the zigzag foot (D) and needle plate (E) to 6.0 mm.
5. Tighten hexagon socket screw (I) securely.
6. Attach the lamp socket set plate with set screws (A).
7. Attach the face plate.

NOTE: When you tighten the hexagon socket screw (I), make sure that both side of the zigzag foot are parallel with the feed dog slots (F) on the needle plate (E).

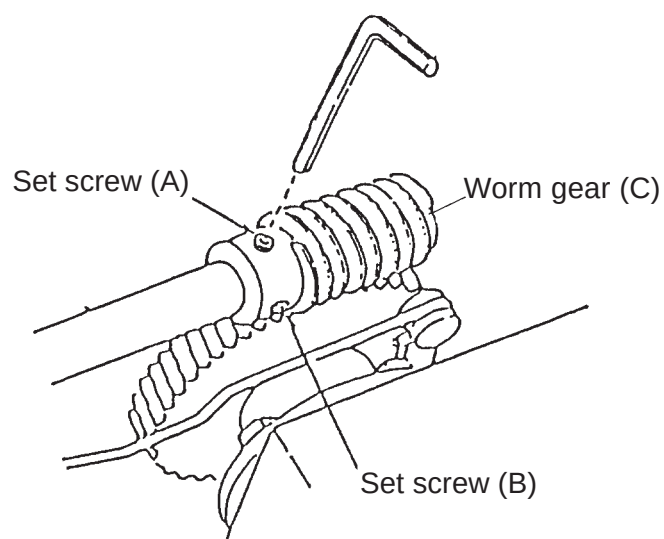
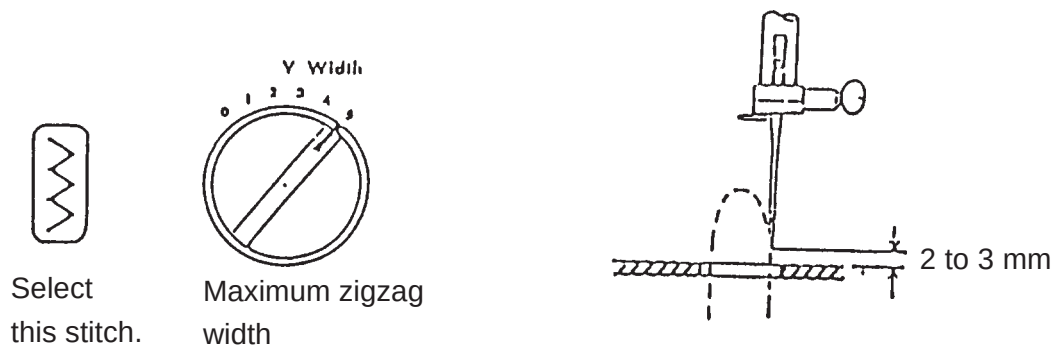


TO ADJUST THE NEEDLE SWING

If the timing of needle swing is not correctly adjusted, the needle will move sidewise while it is in the fabric.

The needle should start swing from 2-3 mm above the needle plate in its right outflow.

1. Remove the top cover (See page 2).
2. Set the stitch selector dial at maximum zigzag (stitch length dial at any position).
3. Loosen set screw (A & B) on the worm gear (C).
4. Hold the worm gear (C) to prevent its turning angle by turning the balance wheel slightly
5. Tighten the set screws (A & B) securely.
6. Attach the top cover.



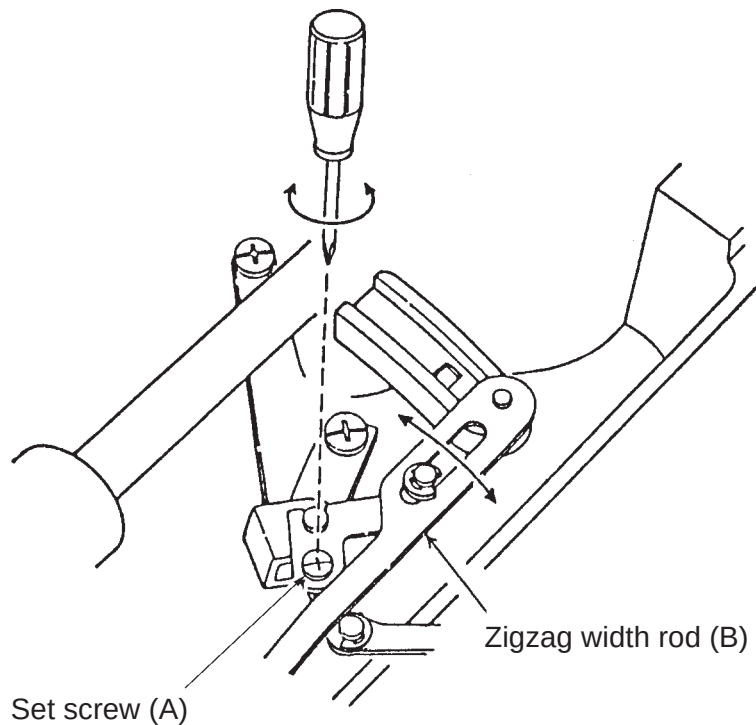
TO ADJUST THE STRAIGHT STITCHING

To check:

1. Set the stitch width dial at "0" and the stitch selector dial at "ΛΛΛ".
2. Turn the balance wheel by hand toward you.
3. The needle should not swing side to side at this setting.

To adjust:

4. Remove the top cover (See page 2).
5. Loosen set screw (A).
6. Move the zigzag width rod (B) until the needle ceases the zigzag movement when you turn the balance wheel toward you.
7. Tighten set screw (A) securely.



TO ADJUST THE DISTRIBUTION OF NEEDLE SWING

To check:

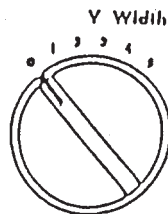
1. Set the stitch width dial at "0" and the stitch selector dial at "ΛΛΛΛ".
2. Raise the needle at its highest position.
3. Drop the feed dog.
4. Place the piece of paper on the needle plate and lower the presser foot.
5. Lower the needle to mark needle point (A) on a piece of paper by turning the balance wheel.
5. Raise the needle at its highest position.
6. Turn the stitch width dial at maximum.
7. Lower the needle to mark the needle point (B) and (C) on a piece of paper by turning balance wheel.
9. The distance between "A-B" and "A-C" should be equal.

To adjust:

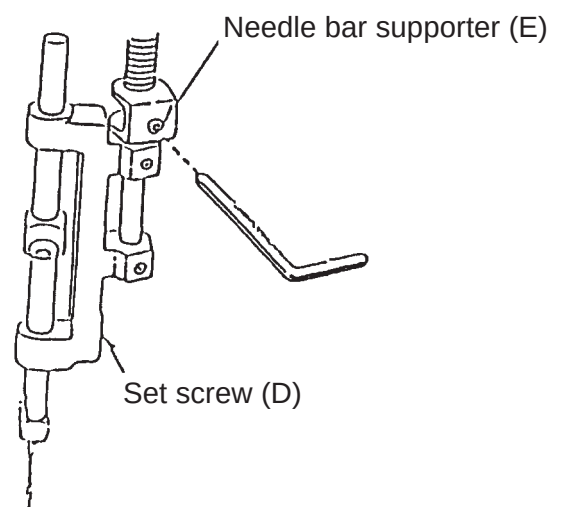
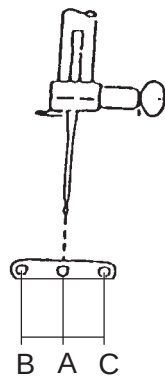
10. Open the face plate and loosen set screw (D).
11. Move the needle bar supporter (E) either direction until the distance between "A-B" and "A-C" becomes equal.



Select this
stitch.



Stitch width
dial at "0"



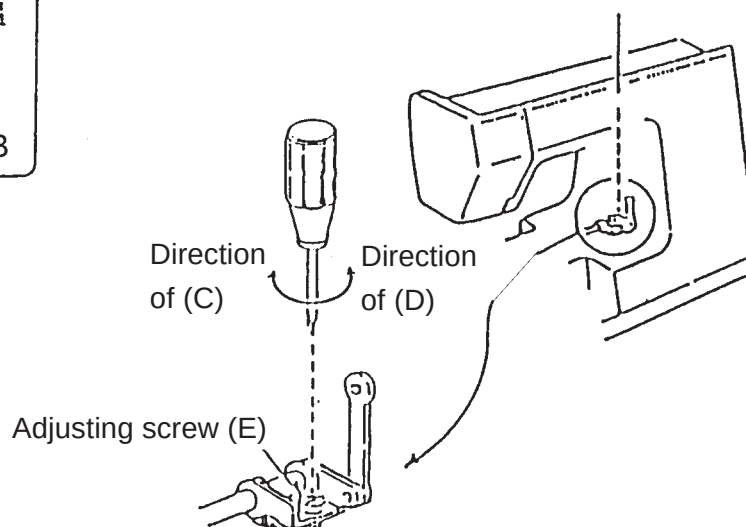
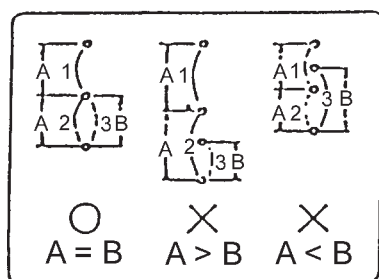
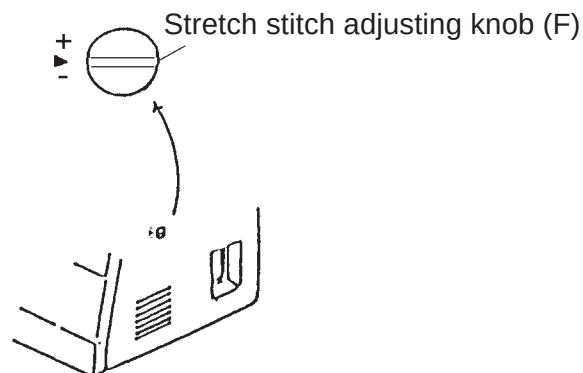
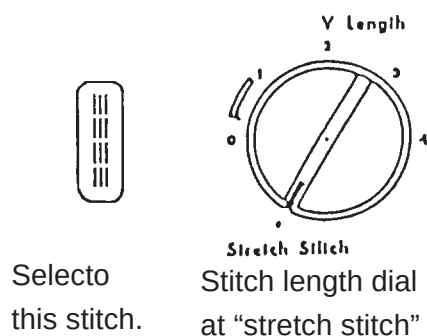
TO ADJUST THE STRETCH STITCH FEED BALANCE

To check:

1. Set the stitch selector at “ $\wedge\wedge\wedge$ ”, stitch length dial at stretch stitch, stretch stitch adjusting knob (F) at “ $\pm$ ”.
2. Drop the feed dog.
3. Place a piece of paper on the needle plate and lower the zigzag foot.
4. Turn the balance wheel by hand and mark holes in forward and reverse direction while turning the balance wheel toward you.

To adjust:

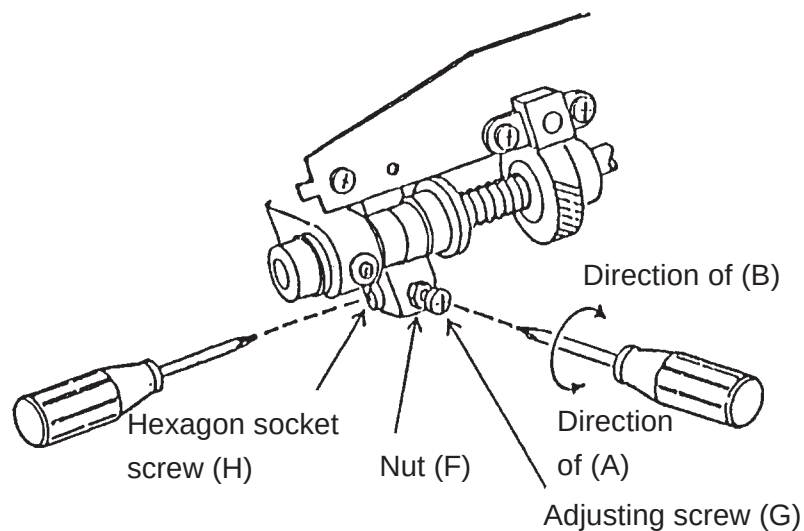
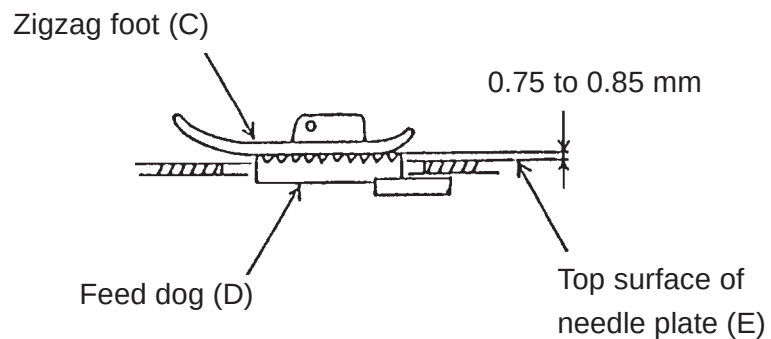
5. Remove the top cover.
6. Turn the adjusting screw (E) in the direction of:
 “C” when the reverse stitch length “B” is shorter than the forward stitch length “A”.
 “D” when the reverse stitch length “B” is shorter than the forward stitch length “A”.



TO ADJUST THE FEED DOG HEIGHT

When the zigzag foot (C) is lowered with the presser dial set at “3”, the highest position of the feed dog (D) should be 0.75 mm to 0.85 mm above the top surface of the needle plate (E).

1. Set the presser dial at “3”, and lower the zigzag foot (C).
2. Turn the balance wheel until the feed dog (D) comes to its highest position.
3. Removed the bed cover (See page 4).
4. Loosen the hexagon socket screw (H) and nut (F).
Turn the adjusting screw (G) so that the feed dog height is 0.75 mm to 0.85 mm above the top surface of the needle plate (E).
5. Tighten the nut (F).
6. Tighten the set screw (H) and attach the bed cover.

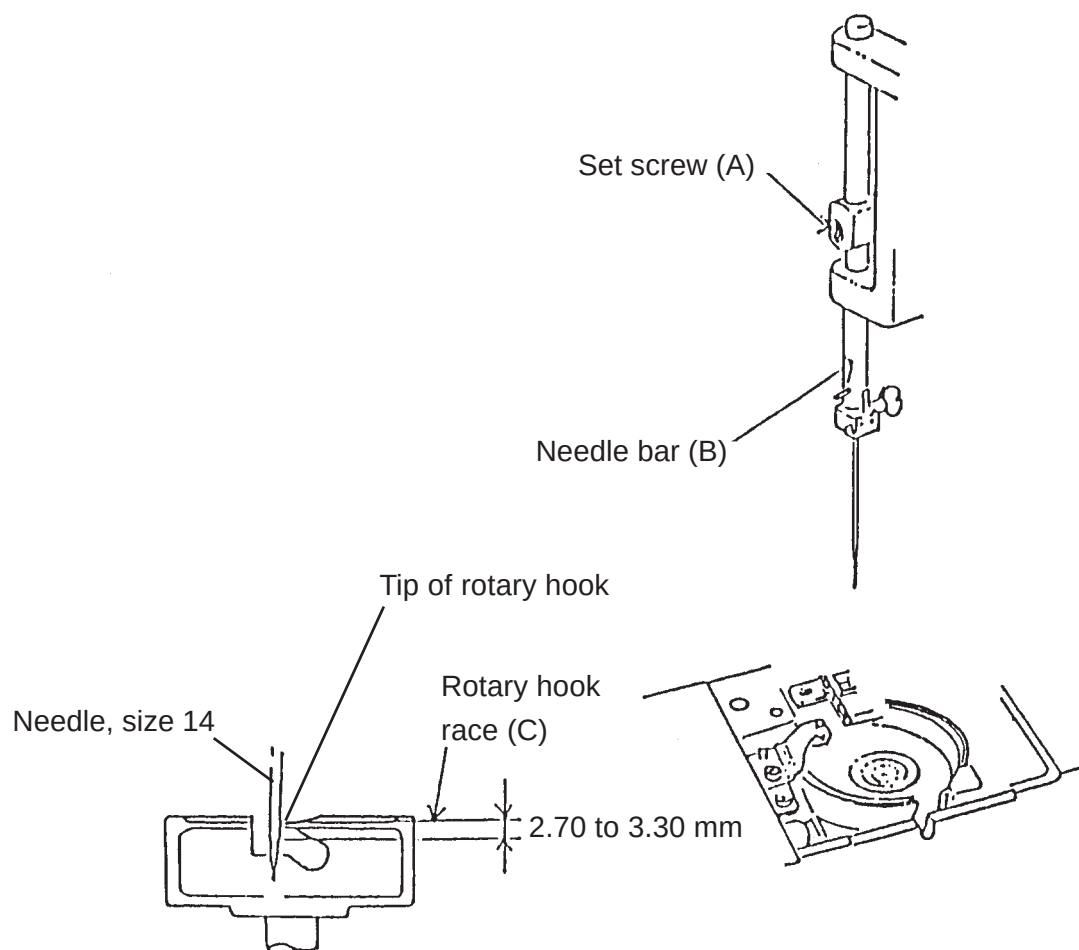


TO ADJUST THE NEEDLE BAR HEIGHT

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 stitch select dial at “ $\wedge\wedge\wedge$ ” and the maximum zigzag width, the distance between the upper edge of needle eye and the race (C) of rotary hook should be 2.70 mm to 3.30 mm.

1. Set the stitch selector dial at “ $\wedge\wedge\wedge$ ”, and select the maximum zigzag width.
2. Remove the needle plate and bobbin holder.
3. Turn the machine to the back, and open the face plate.
4. Turn the balance wheel toward you until the rotary hook tip exactly meets the right side of the needle at the right needle position.
5. Loosen the set screw (A).
6. Move the needle bar (B) to provide a distance of 2.7 mm to 3.3 mm.
7. Tighten the set screw (A).
8. Attach the bobbin holder and needle plate.

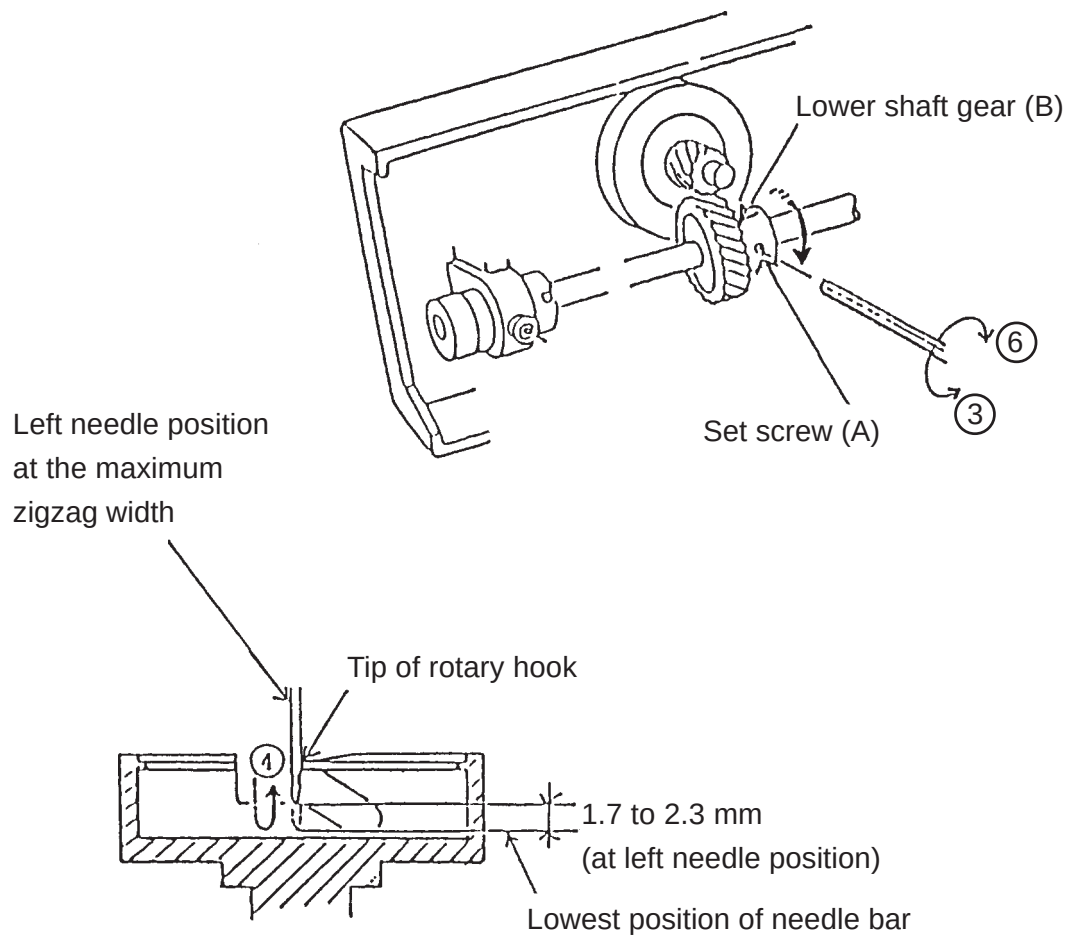
NOTE: When moving the needle bar in step (6), take care not to turn the needle bar.



TO ADJUST THE NEEDLE TIMING TO ROTARY HOOK

When the needle bar in the left needle position at the maximum zigzag width, the amount of ascending travel of the needle bar from its lower position (C) to the position where the tip of the hook exactly meets the right side of the needle should be 1.7 mm to 2.3 mm.

1. Remove the needle plate, bobbin holder and the bed cover.
2. Set the stitch selector dial at “ $\wedge\wedge\wedge$ ”, and select the maximum zigzag width.
3. Loosen the two set screws (A).
4. Turn the balance wheel toward you to move the needle bar 1.7 mm to 2.3 mm from its lowest position in the left needle position.
5. While holding the balance wheel by hand to prevent the needle bar from moving, turn the lower shaft gear (B) until the tip of the rotary hook exactly meets the right side of the needle.
6. Tighten the two set screws (A).
7. Attach the bed cover, bobbin holder and needle plate.



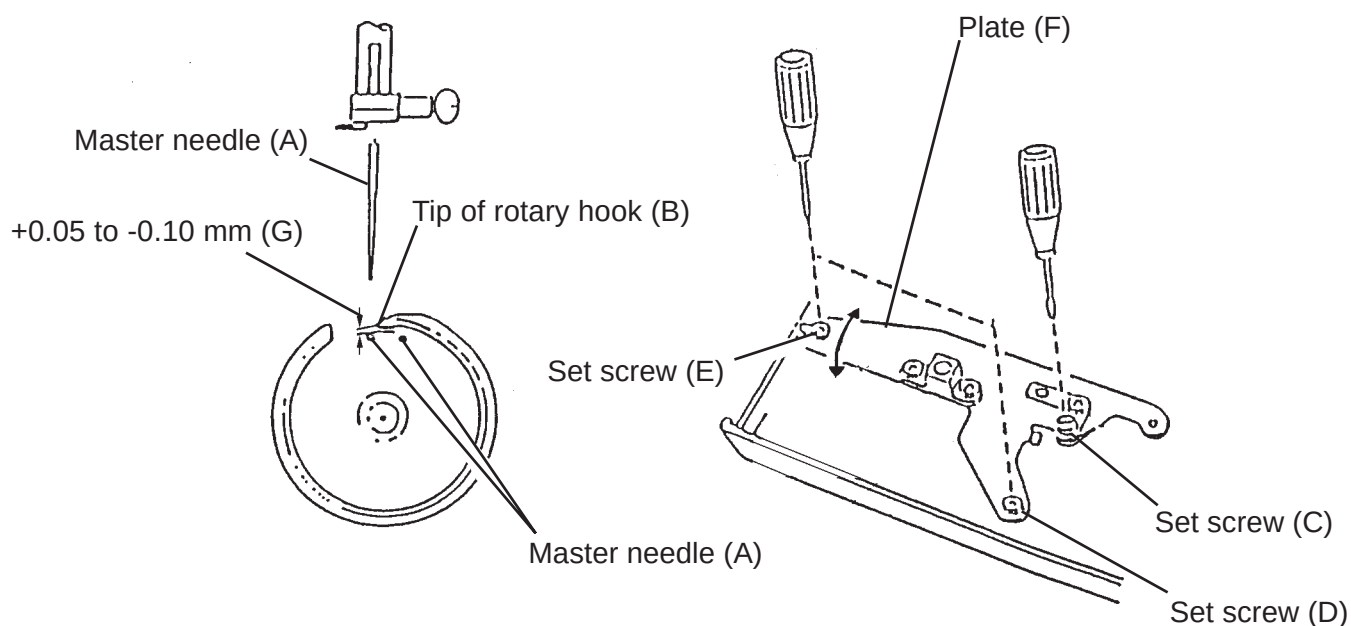
TO ADJUST THE NEEDLE CLEARANCE TO ROTARY HOOK

To check

1. Set the stitch selector dial at “ $\wedge\wedge\wedge$ ”.
2. Replace the needle with the master needle (A).
3. Turn the balance wheel slowly toward you by hand until the needle bar reaches its lowest position.
4. The clearance between the master needle (A) and the tip of the rotary hook (B) should be between +0.05 and -0.10mm (G).

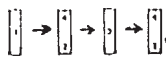
Adjustment

5. Remove the bed cover.
6. Loosen the set screws (C), (D) and (E).
7. Tighten the set screw (C) temporarily.
8. Move the plate (F) to either direction as shown by the arrow until the clearance between the master needle (A) and the tip of rotary hook (B) of the shuttle hook becomes between +0.05 mm and -0.10 mm.
9. Tighten the set screws (C), (D) and (E) firmly.



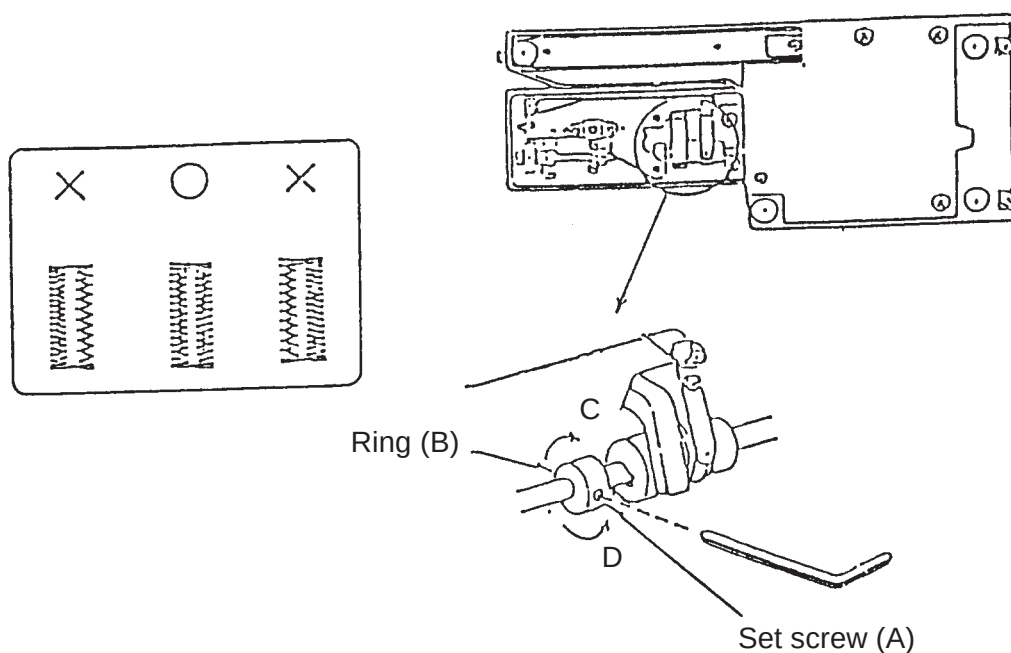
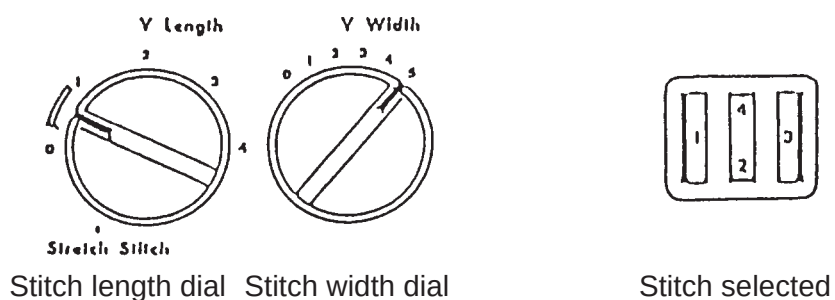
TO ADJUST THE BUTTONHOLE STITCH BALANCE

Check

1. Set the machine as follows:
 Stitch selector ----- 
 Stitch length dial ----- 
 Stitch width dial ----- 5
2. Attach the sliding buttonhole foot.
3. Sew buttonhole and check the stitch balance between the right side and left side of buttonhole.
4. The correct buttonhole stitch balance is same density at right side and left side of buttonhole.

Adjustment:

5. Remove the bed cover. (See page 4)
6. Loosen the set screw (A).
7. Turn the ring (B) in the direction of:
 (D) when the right side of buttonhole is coarse.
 (C) when the left side of buttonhole is coarse.
8. Tighten the set screw (A) firmly.



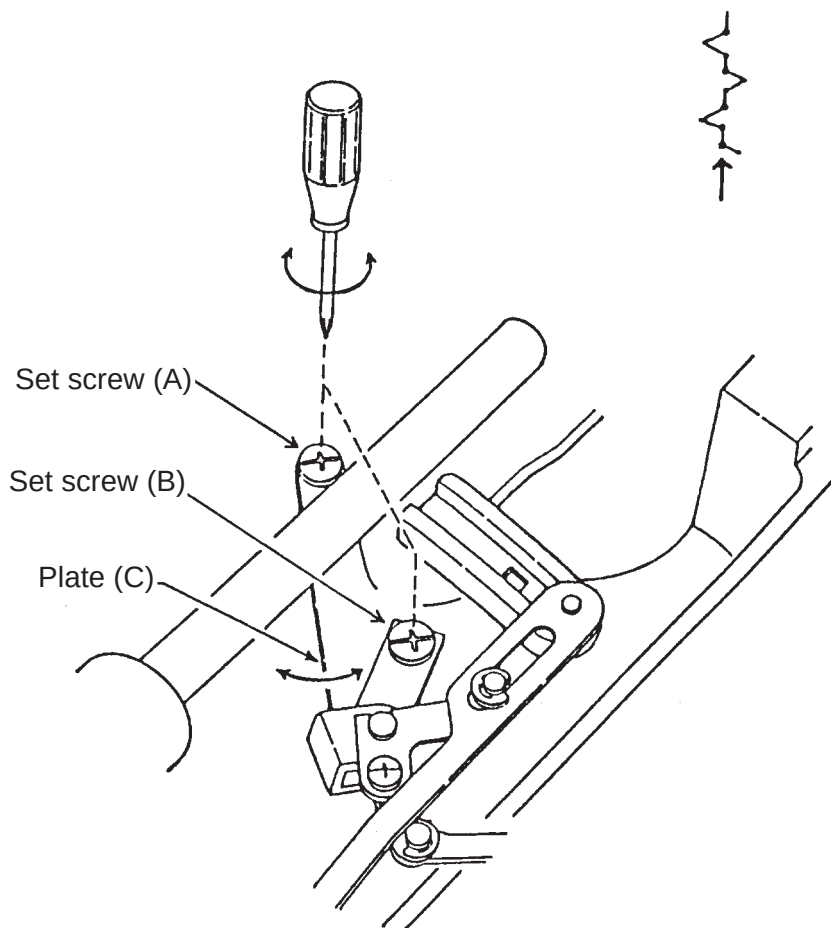
TO ADJUST THE NEEDLE POSITION

Check

1. Set the machine as follow:
Stitch selector ----- zigzag
Stitch width dial ----- 5
2. Turn the balance wheel toward you until the needle comes to center position.
3. The needle should not move when you turn the stitch width dial to "0".

Adjustment:

4. Remove the top cover (See page 2).
5. Turn the balance wheel toward you until the needle comes to center of the needle plate hole.
6. Loosen the set screws (A) and (B).
7. Tighten the set screw (A) slightly.
8. Move the plate (C) to either direction as shown by arrow until the needle stop moving, even if the dial is moved from maximum zigzag width to "0".



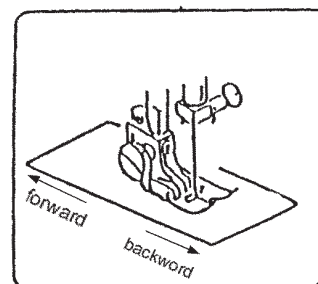
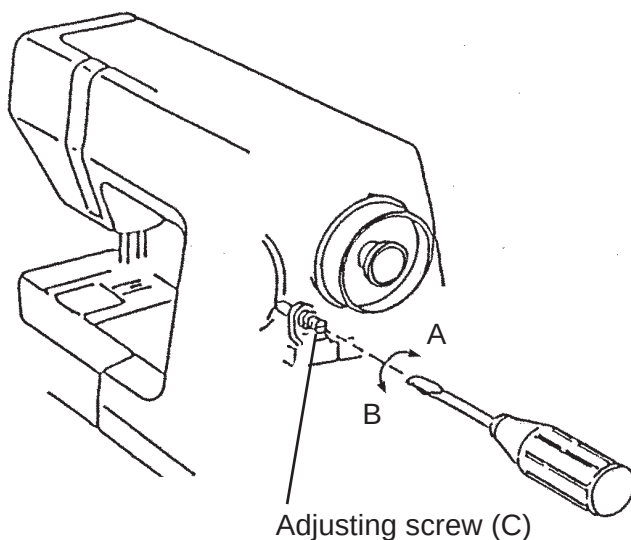
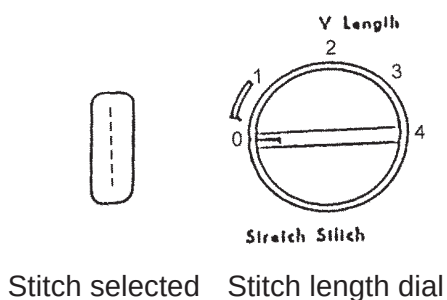
TO ADJUST THE ZERO FEEDING

Check

1. Set the machine as follow:
Stitch selector ----- “ - - - ”
Stitch length dial ----- 0
2. Put a piece of paper on the needle plate.
3. Check if the paper moves horizontally when you turn the balance wheel toward you.
4. The machine should not feed a piece of paper at this setting.

Adjustment:

5. Remove the belt cover (See page 3).
6. Set the stitch selector at “ - - - ” and the stitch length dial at “0”.
7. Put a piece of paper on the needle plate.
8. Turn the adjusting screw (C) in the direction of:
(A) when the paper moves forward.
(B) when the paper moves backward.



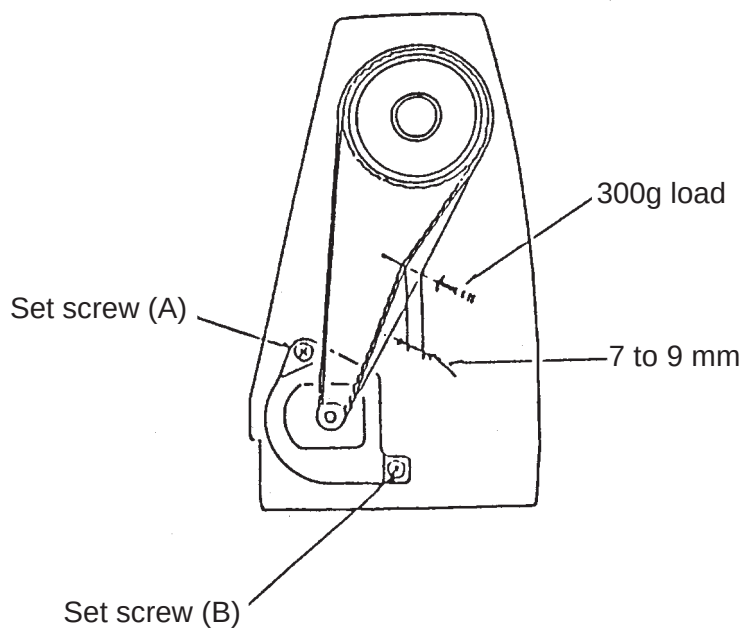
TO ADJUST THE MOTOR BELT TENSION

Check

1. Too tight or too loose motor belt tension may create belt noise.
Also too tight motor belt tension may 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 to 9 mm when pushing the motor belt by finger at about 300 gram load.

Adjustment:

3. Remove the belt cover (See page 3)
4. Loosen the set screws (A) and (B).
5. Move the motor up or down to adjust the deflection about 7 mm to 9 mm.
6. Tighten the set screws (A) and (B).

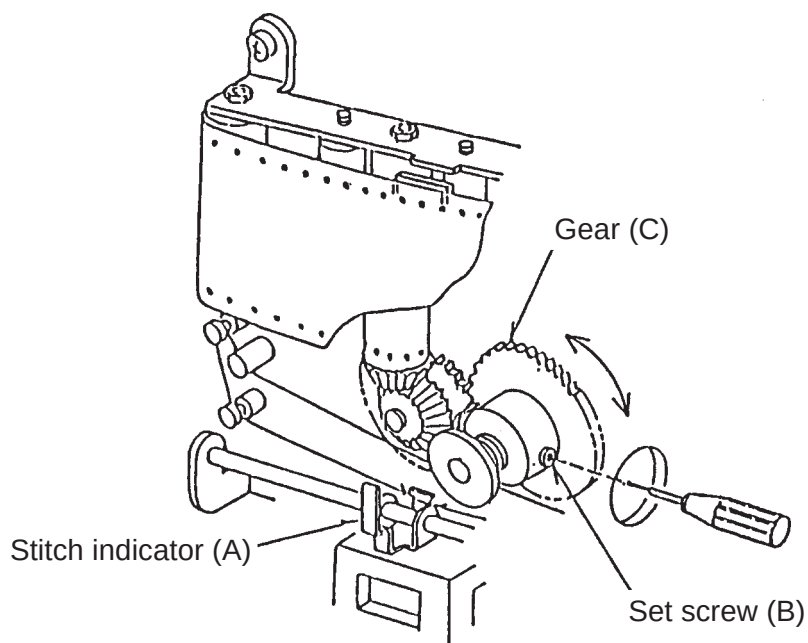


TO ADJUST THE POSITION OF THE STITCH INDICATOR

The stitch indicator (A) will point the selected stitch when a stitch is selected by turning the stitch selector dial. If the indicator deviates, make adjustment as follows:

Adjustment:

1. Remove the belt cover (See page 3).
2. Loosen the set screw (B).
3. Adjust the position of the stitch indicator by turning the gear (C) while holding screw (B) with a screwdriver.
4. Tighten the set screw (B).
5. Check the position of the guide tape after adjustment (See page 20).



TO ADJUST THE POSITION OF THE GUIDE TAPE

When you select a stitch by turning the stitch selector dial, the information in the window will change automatically and show the suitable width, stitch length and foot to use. If not, adjust it as follows:

Adjustment:

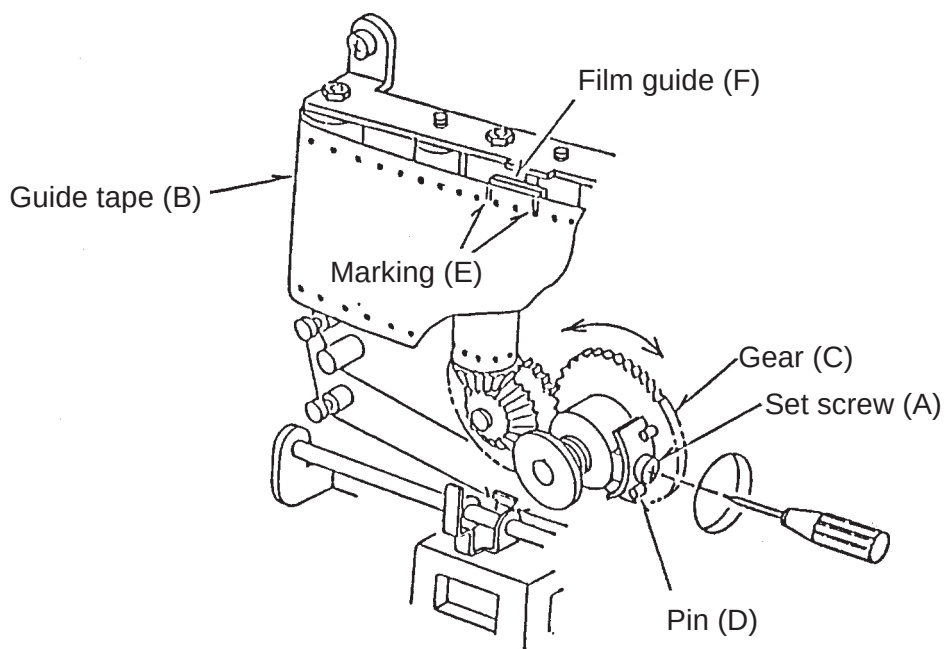
1. Remove the belt cover (See page 3).
2. Loosen the set screw (A).
3. Adjust the position of the guide tape (B) by turning the gear (C) in either direction.

NOTE: You may push the pin (D) with a screwdriver to turn the gear (C).

4. Tighten the set screw (A).

NOTE: If the position of the guide tape deviates too much, remove the front cover unit and make adjustment as follows:

- a. Remove the front cover unit (See page 5).
- b. Align the marking (E) on the guide tape (B).



TO ADJUST THE BUTTONHOLE FUNCTION

If any of the following functional troubles occur in buttonhole stitching, make adjustment in the procedure shown below:

Case 1. The buttonhole is extremely short or long.

Case 2. The buttonhole length is smaller or longer than the length set on the buttonhole foot (R).

<Adjustment in the Case 1>

1. Remove the belt cover (See page 3).
2. Loosen the set screw (A).
3. Make an adjustment so that the plate (C) touches the plate (D) while pushing the plate (B) lightly in the direction of (E). In this condition tighten the set screw (A).
4. Attach the belt cover.

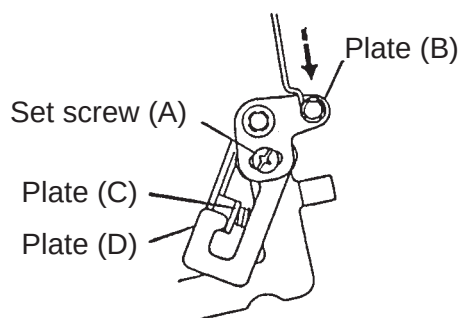
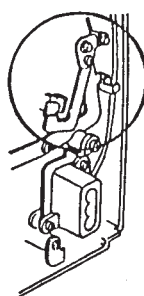
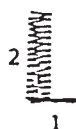
<Adjustment in the Case 2>

4. Fully lower the buttonhole lever (J).
5. Open the face plate, and loosen the set screw (F).
6. Make an adjustment so that the plate (H) touches the plate (G) when the buttonhole lever is at a right angle with the top surface of the needle plate (L) with the plate (G) brought into contact with the front base plate (I).

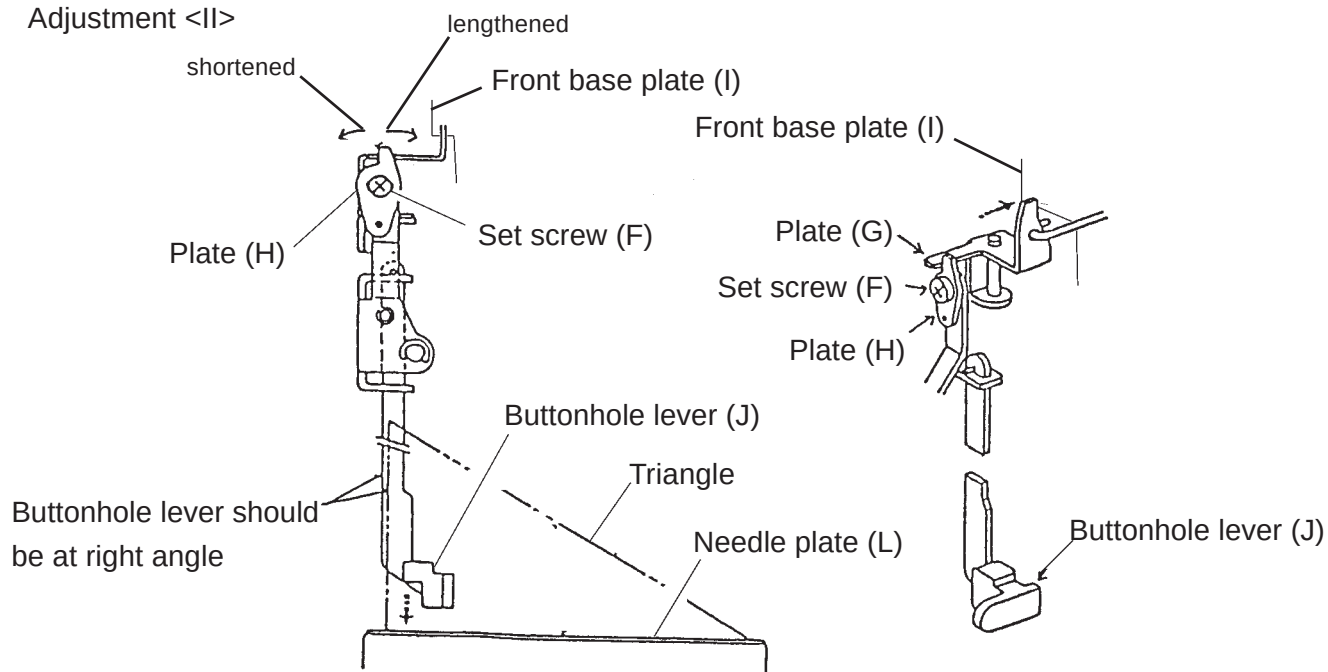
Adjustment <I>

Changeover to bartack stitching is too early.

Changeover to bartack stitching is not made.



Adjustment <II>



WIRING OF MACHINE SOCKET

L: from lamp socket
M: from motor

