

SERVICING MANUAL

Models 380 & 381

CONTENTS

To remove

Top cover	1
Belt cover	1
Bed cover	2
Base	2

To adjust

Straight stitch	3
Lateral needle swing	4
Needle drop in needle plate hole	5
Presser bar height and direction	6
Clearance between needle and hook	7
Needle bar height	8
Hook timing	9
Lower shaft thrust play	10
Feed lifting cam position	11
Feed dog height	12
Stretch stitch feed balance	13
Bar-tack feed of buttonhole	14
Buttonhole feed balance	15
disengagement clearance of cam follower	16

TO REMOVE AND TO REPLACE COVERING PARTS

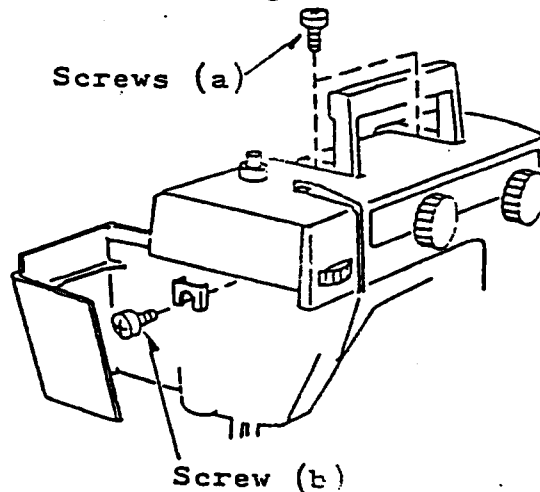
i) TOP COVER (UNIT)

TO REMOVE :

1. Raise carrying handle and loosen 2 pcs. of screws (a).
2. Open face plate and loosen screw (b).
3. Lift top cover (unit) right above.

TO REPLACE :

1. Raise carrying handle.
2. Tighten screws (a) and (b), while taking care not to make discrepancy and/or interference against the machine frame or another parts.



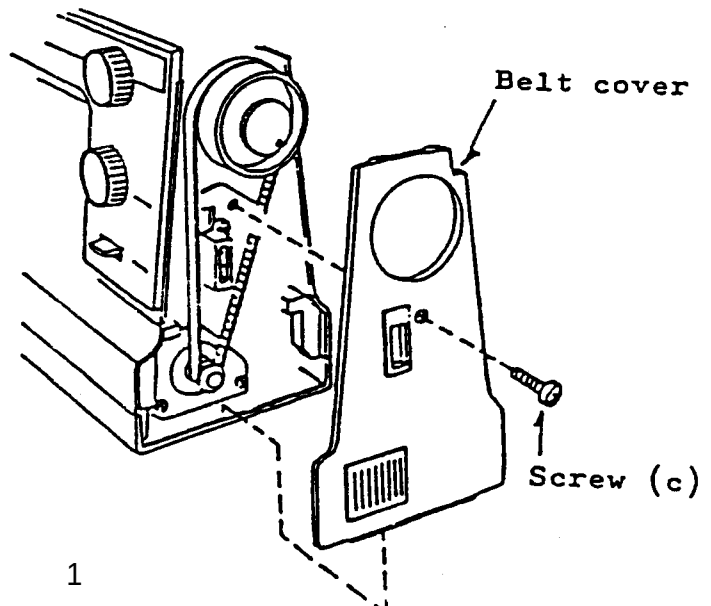
ii) BELT COVER

TO REMOVE :

1. Remove top cover (unit).
2. Loosen screw (c) and take out belt cover.

TO REPLACE

1. Insert convex portion of belt cover into groove of base. Then, fit belt cover into the machine arm.
2. Tighten screw (c).



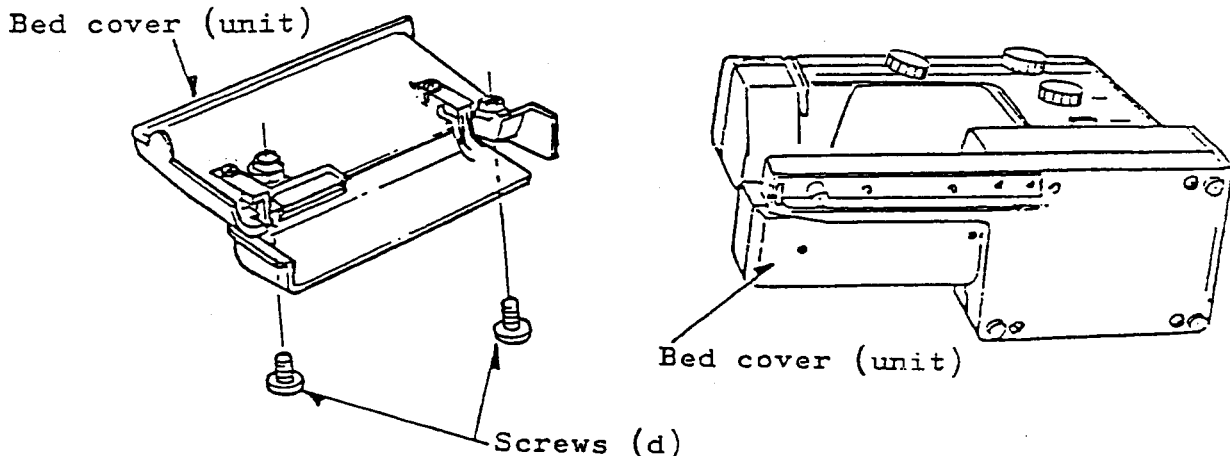
iii) BED COVER (UNIT)

TO REMOVE :

1. Tilt the machine back until it rests on flat table.
2. Loosen 2 pcs. of screws (d) and remove bed cover (unit).

TO REPLACE :

1. Fit bed cover into the machine bed.
2. Tighten screws (d) while taking care not to make discrepancy against the machine.



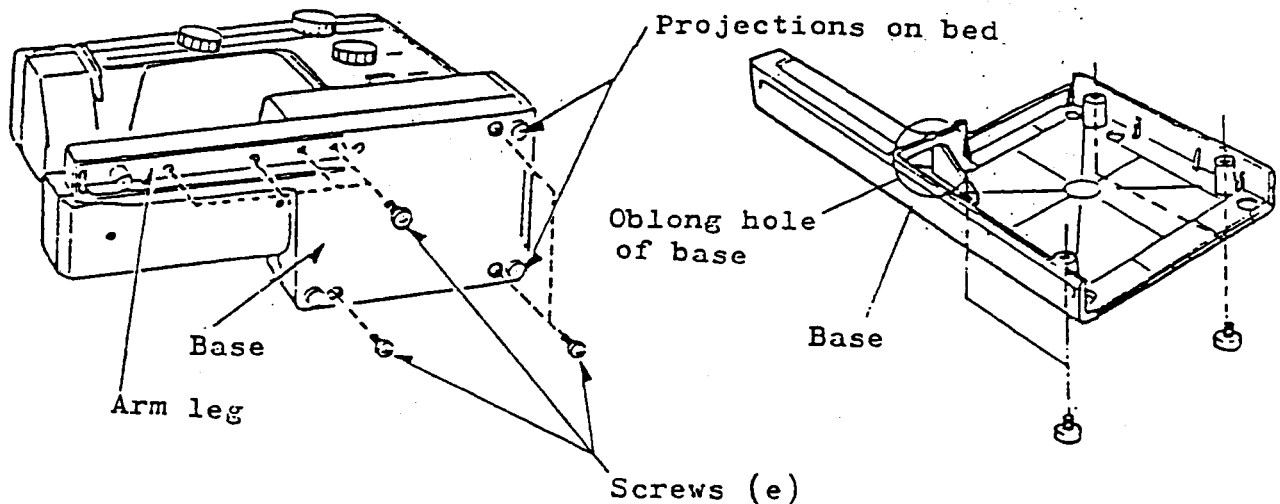
iv) BASE

TO REMOVE :

1. Tilt the machine back until it rests on flat table.
2. Loosen 7 pcs. of screws (e) and remove them.
3. Pull the right-side end of base toward you. Then, pull base to the left and draw out from the arm leg.

TO REPLACE :

1. Insert arm leg into the oblong hole of base.
2. Fit holes into the projections on bed, while pressing base toward the right hand side.
3. Tighten 7 pcs. of screws (e).



TO ADJUST STRAIGHT STITCH

CORRECT SETTING

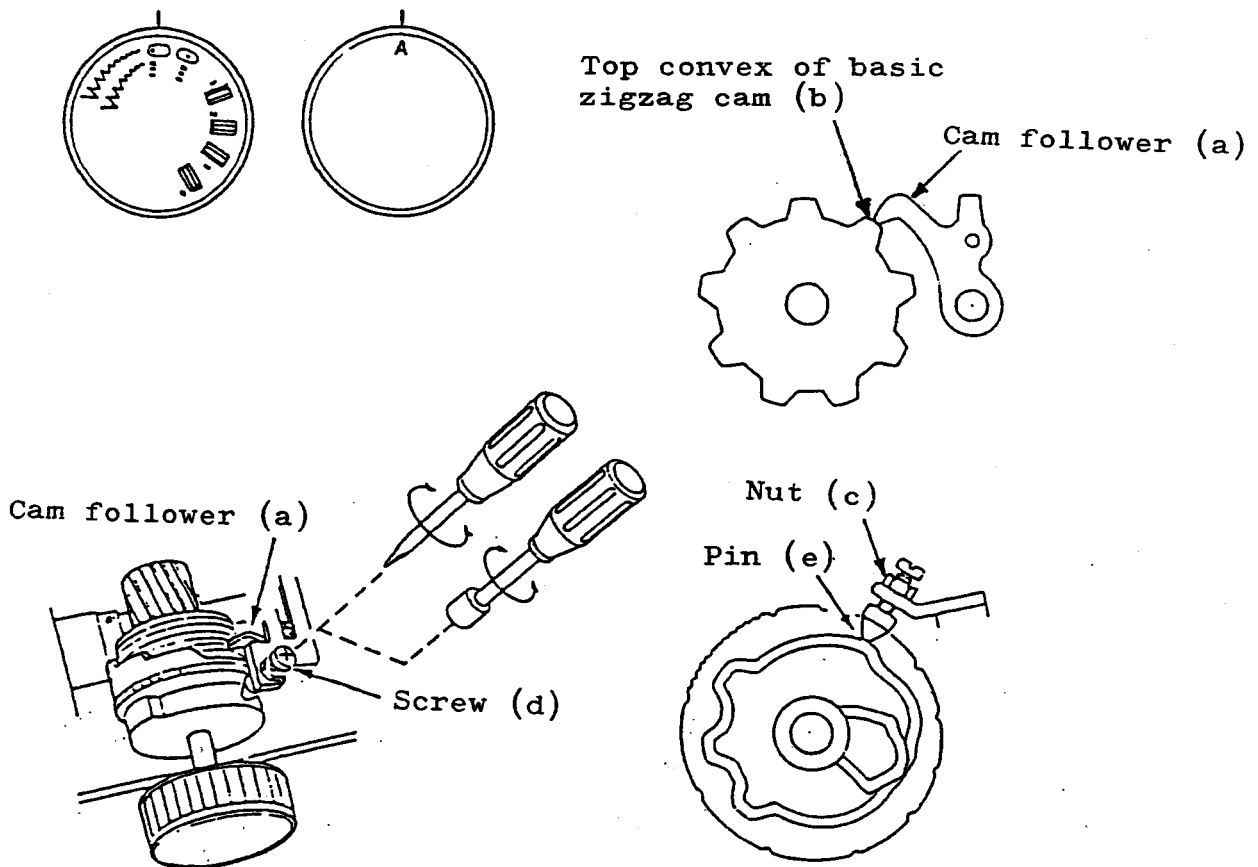
Needle bar should not swing when you turn balance wheel after zigzag width dial is set at "0" and pattern selector dial at "A".

CHECKING CONDITION

- * Set zigzag width dial at "0" and pattern selector dial at "A".
- * Remove top cover.

TO ADJUST

1. Turn balance wheel toward you until cam follower (a) comes up to the top convex of basic zigzag cam (b) as shown.
2. Loosen nut (c).
3. Turn screw (d) clockwise slightly until the pin (e) touches zigzag width regulator cam to minimize needle bar swing.
4. Tighten nut (c).



TO ADJUST TIMING OF LATERAL NEEDLE SWING

CORRECT SETTING

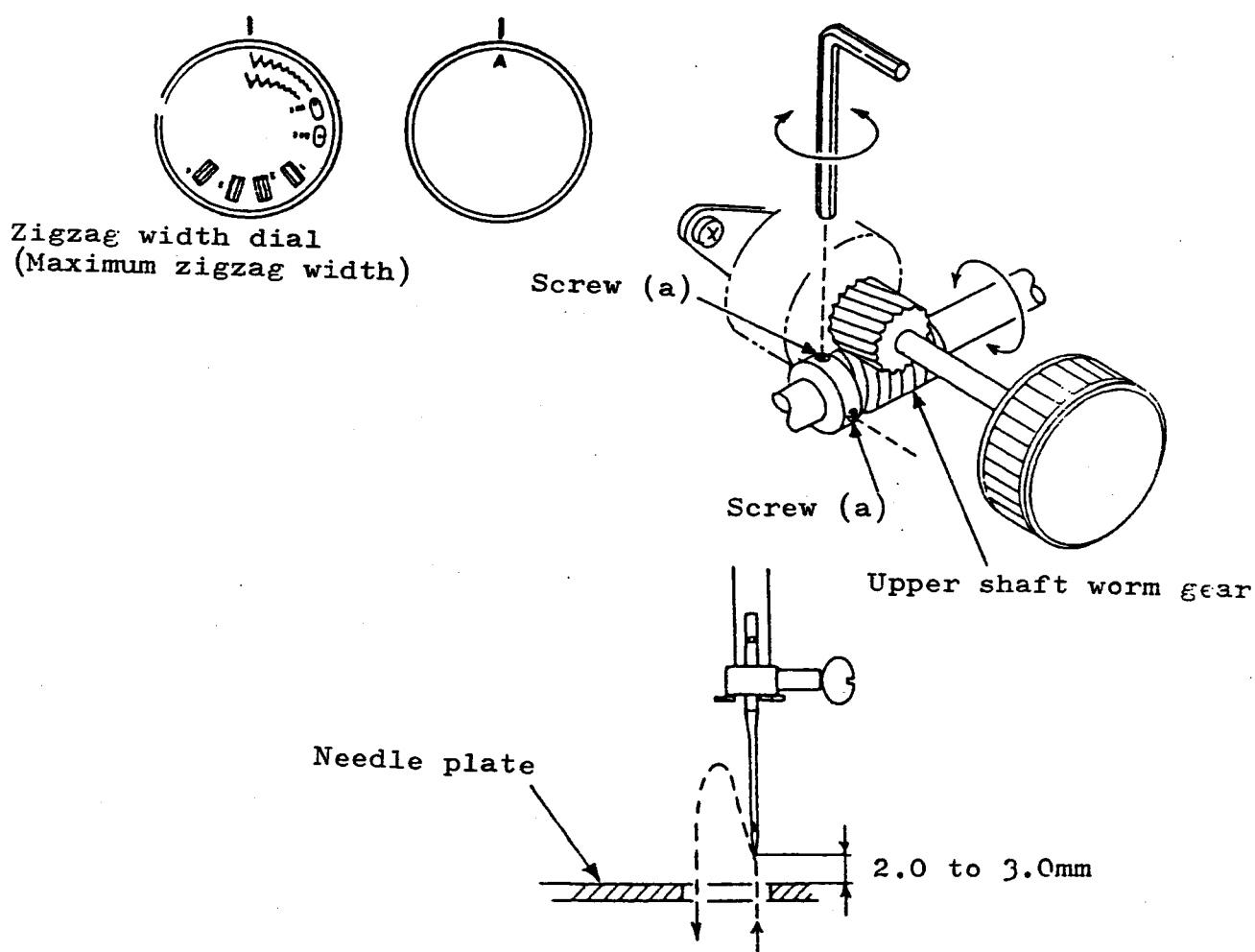
When needle bar is raised at RIGHT NEEDLE POSITION for zigzag stitching, the standard starting point of lateral swing should be in range of 2 to 3 mm above the surface of needle plate.

CHECKING CONDITION

- * Set zigzag width dial at " ∞ " (the maximum zigzag width) and pattern selector dial at " A ".
- * Position needle in RIGHT upward movement of its travel by turning balance wheel toward you.
- * Remove top cover.

TO ADJUST

1. Loosen two screws (a) and (b).
2. While holding screw (a) with hexagonal wrench in order to prevent upper shaft worm gear from turning, turn balance wheel toward you to make adjustment.
The standard point of needle's lateral swing should be 2 to 3 mm above the needle plate.
3. Tighten screw (a) and (b) firmly after adjustment.



TO ADJUST NEEDLE DROP IN NEEDLE PLATE HOLE

CORRECT SETTING

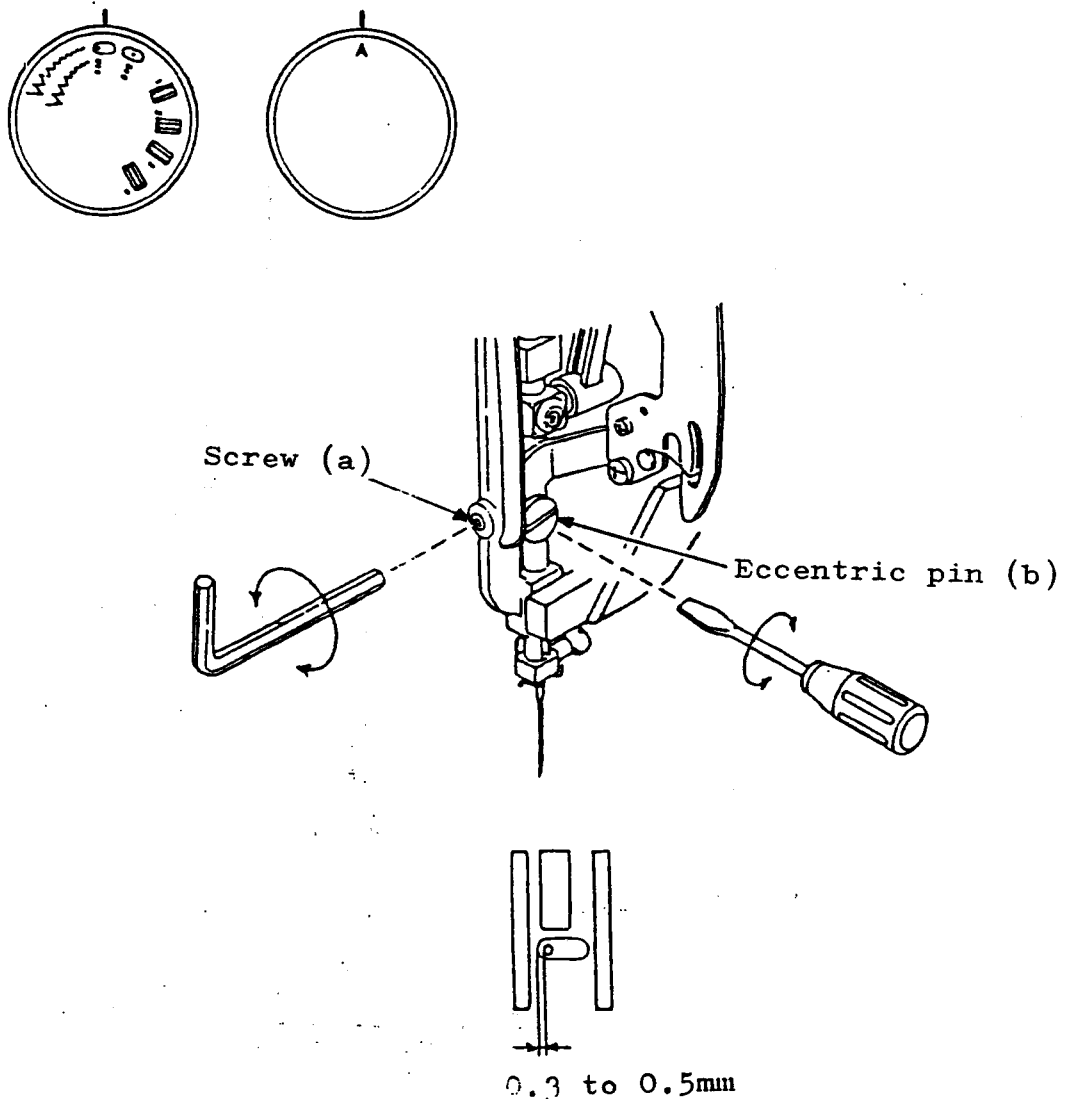
When zigzag width dial is set at " 0 " and pattern selector dial at " A ", needle should enter the needle hole on needle plate with a clearance of 0.3 to 0.5 mm from the left hand edge.

CHECKING CONDITION

- * Set zigzag width dial at " 0 " and pattern selector dial at " A ".
- * Use No.14 needle.
- * Open face plate.

TO ADJUST

1. Loosen screw (a).
2. Turn eccentric pin (b) to make adjustment. The clearance between needle and left-edge of needle hole should be 0.3 to 0.5 mm.
3. Tighten screw (a).



TO ADJUST PRESSER BAR HEIGHT AND DIRECTION

CORRECT SETTING

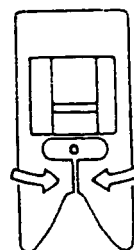
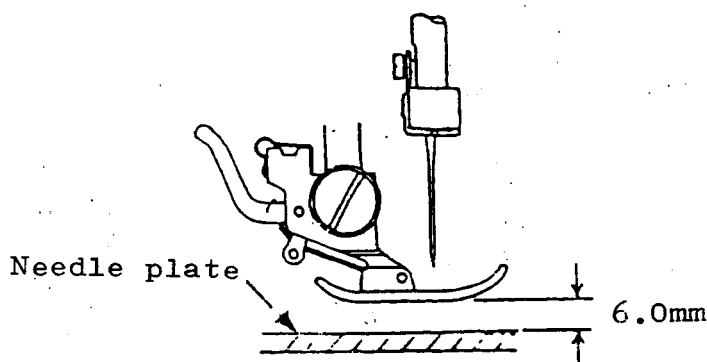
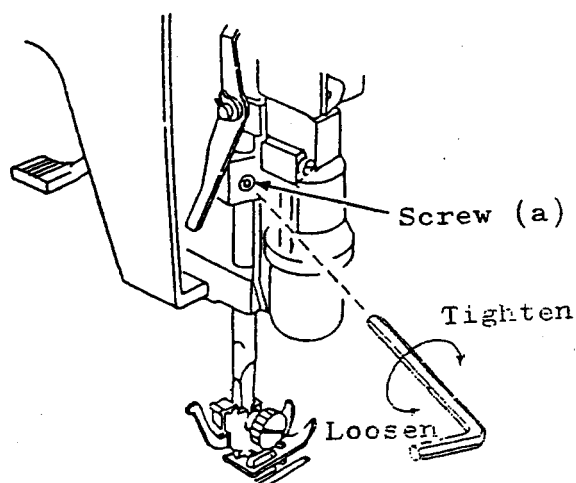
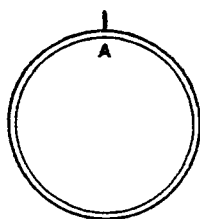
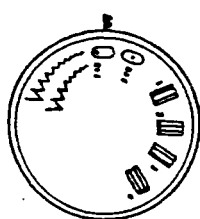
- * Correct alignment of presser foot should be in a straight line between needle and slit of zigzag foot.
- * Height of presser bar should measure 6 mm between needle plate and bottom of zigzag foot.

CHECKING CONDITION

- * Use zigzag foot.
- * Set zigzag width dial at "  " and pattern selector dial at " A ".
- * Open face plate.

TO ADJUST

1. Raise foot and loosen screw (a).
2. Adjust height and alignment of presser foot.
 - * The side of presser foot should parallel the grooves for feed dog on needle plate.
 - * The bottom of zigzag foot should measure 6 mm from the surface of needle plate.
3. Tighten screw (a) after adjustment.



TO ADJUST CLEARANCE BETWEEN NEEDLE AND HOOK

CORRECT SETTING

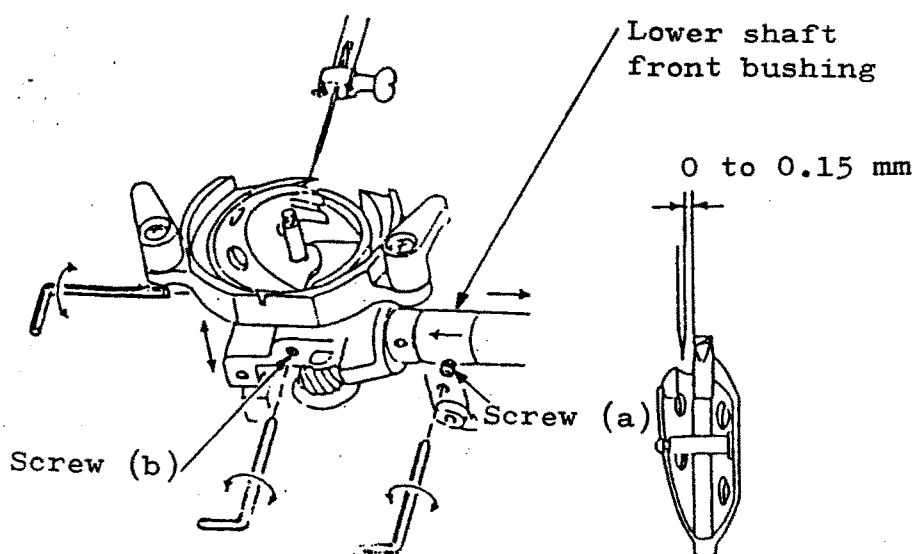
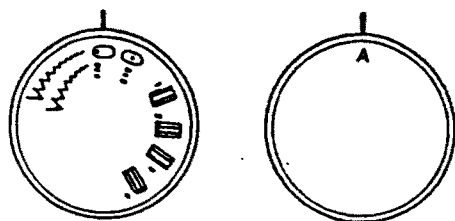
The standard clearance between needle and hook should be 0 to 0.15 mm.

CHECKING CONDITION

- * Set zigzag width dial at " 0 " and pattern selector dial at " A ".
- * Use No. 14 needle.
- * Remove bed cover (unit) with hook cover and gear box rear cap.
- * Take out bobbin case.

TO ADJUST

1. Loosen screw (a) and move lower shaft about 0.5 mm to the right. Then, tighten screw (a) temporarily.
2. Loosen screw (b).
3. Adjust the clearance between needle and hook by moving hook race (unit).
 - * Do not turn hook race (unit) when adjusting.
 - * The clearance should be 0 to 0.15 mm.
4. Tighten screw (b).
5. Loosen screw (a) and move lower shaft to the left in order to adjust backlash of lower shaft gear.
6. Tighten screw (a) firmly.
 - * Backlash play should be less than 0.3 mm and lower shaft turns smoothly while running the machine.



TO ADJUST NEEDLE BAR HEIGHT

CORRECT SETTING

The standard distance between the upper edge of needle eye and the tip of hook should be in range of 2.9 to 3.5 mm when the tip of hook meets the left side of the needle in ascending travel of needle from its lowest position.

CHECKING CONDITION

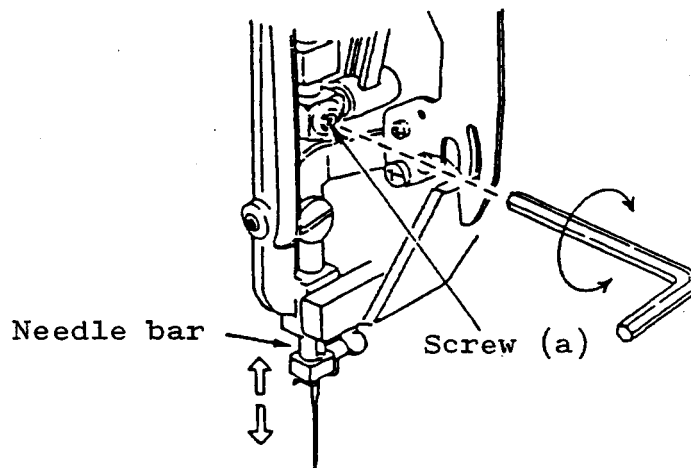
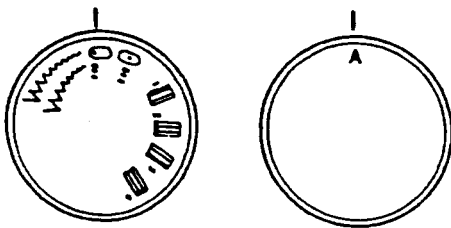
- * Use No. 14 needle.
- * Set zigzag width dial at "  " and pattern selector dial at " A ".
- * Open face plate.
- * Open hook cover. Then, remove hook race ring and bobbin case.

TO ADJUST

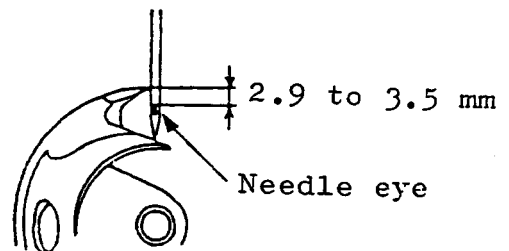
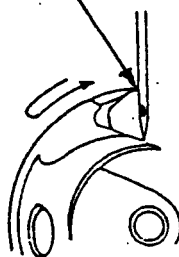
1. Turn balance wheel toward you until tip of hook meets the left side of needle.
2. Loosen screw (a).
3. Adjust needle bar height.
 - * Standard distance between upper edge of needle eye and the tip of hook should be in range of 2.9 to 3.5 mm.

NOTE: Do not turn needle bar while adjustment is made.

4. Tighten screw (a).



Tip of hook



TO ADJUST HOOK TIMING

CORRECT SETTING

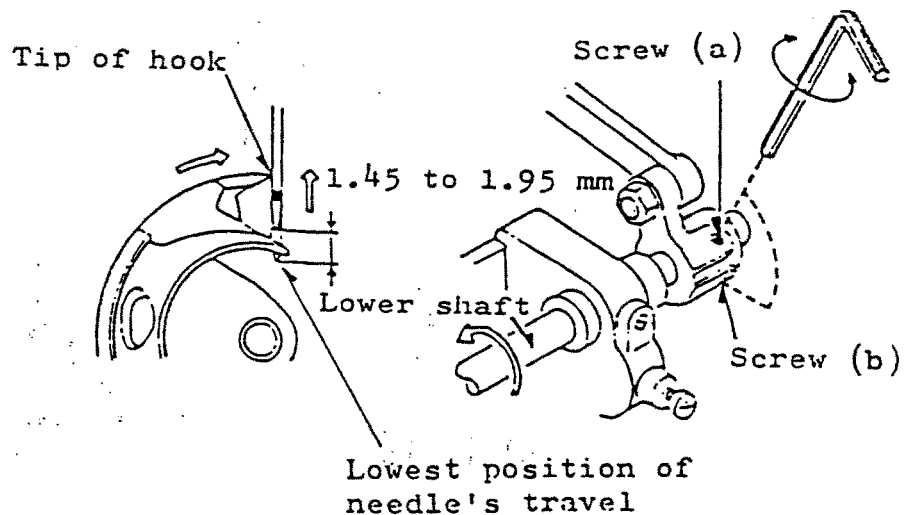
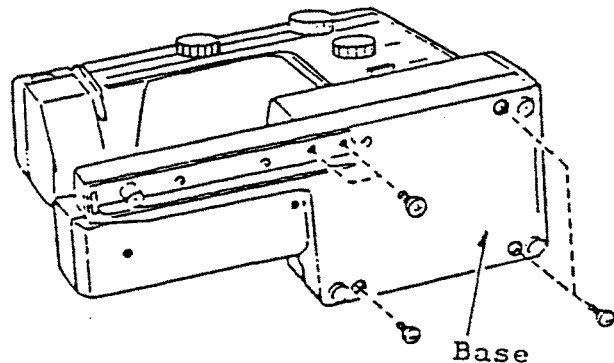
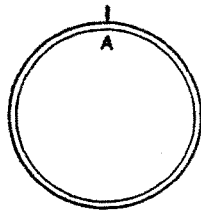
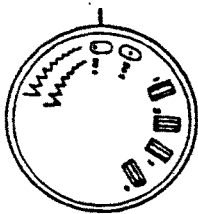
The standard height of needle point from its lowest point of travel should be in range of 1.45 to 1.95 mm when the tip of hook meets exactly the left side of needle in straight stitching.

CHECKING CONDITION

- * Use No.14 needle.
- * Set zigzag width dial at "0" and pattern selector dial is set at "A".
- * Remove base.
- * Open hook cover. Then, remove hook race ring and bobbin case.

TO ADJUST

1. Loosen screw (a).
2. Raise needle point for about 1.7 mm (1.45 to 1.95 mm) from its lowest position of travel by turning balance wheel toward you.
3. Loosen screw (b).
4. Turn lower shaft in the direction of arrow until tip of hook meets the left side of needle.
5. Tighten two pcs. of screws (a) and (b).



TO ADJUST LOWER SHAFT THRUST PLAY

CORRECT SETTING

- * The standard amount of lower shaft thrust play should be less than 0.03 mm in the axial direction.
- * The standard amount of backlash in the direction of hook driver rotation should be less than 0.3 mm between lower shaft gear and hook race shaft gear.

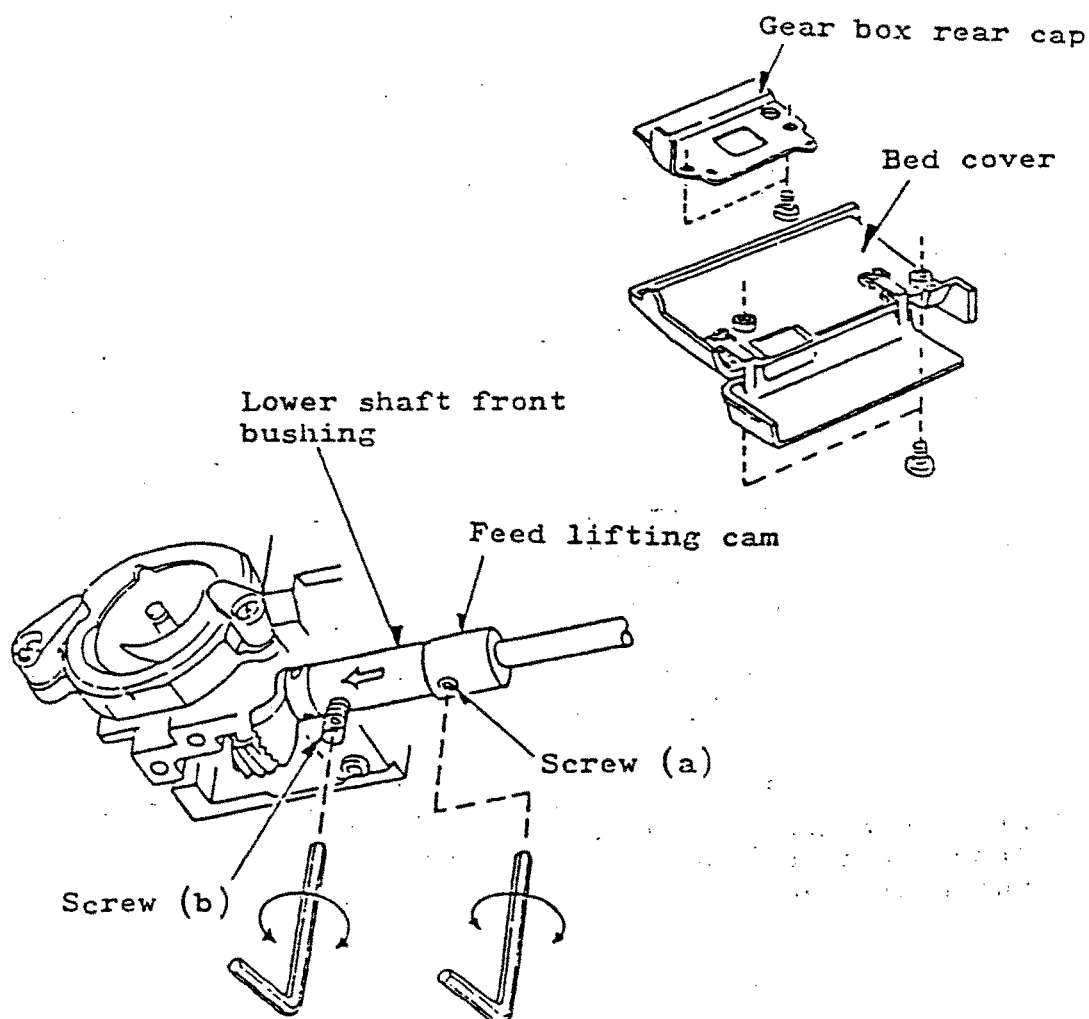
CHECKING CONDITION

- * Remove bed cover (unit) with hook cover and gear box rear cap.

TO ADJUST

1. Loosen screw (a) and move feed lifting cam slightly to the right. Then, tighten screw (a) temporarily.
- NOTE: Do not turn feed lifting cam when loosening screw (a).
2. Loosen screw (b). Then, thrust lower shaft front bushing toward gear so that thrust play and backlash can be minimized.
3. Tighten screw (b).
4. Loosen screw (a) and move feed lifting cam to the left until it touches lower shaft front bushing.
- Then tighten screw (a) firmly.

NOTE: Do not turn feed lifting cam all the time.



TO ADJUST FEED LIFTING CAM POSITION

CORRECT SETTING

Put zigzag foot between needle clamp (on the round portion) and bottom end of the machine arm by lowering the needle bar from its highest position. In this condition, if you insert hexagonal wrench into screw (a), then it touches feed rock shaft.

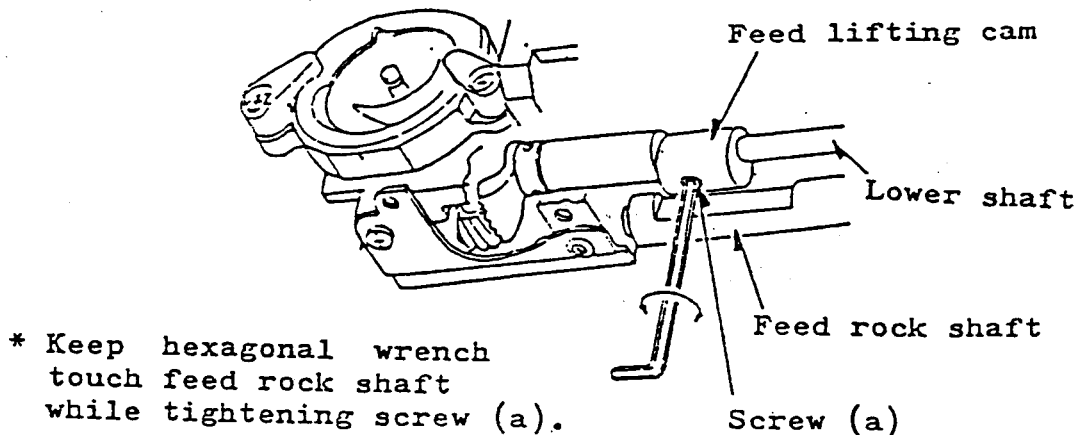
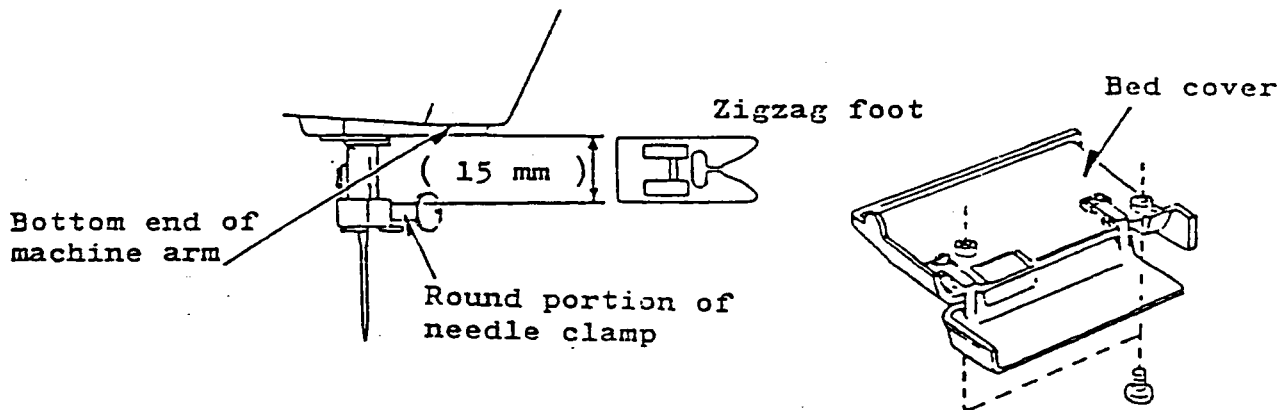
NOTE: Check FEED LIFTING CAM POSITION without fail, after HOOK TIMING and/or CLEARANCE BETWEEN NEEDLE AND HOOK is adjusted.

CHECKING CONDITION

- * Remove bed cover (unit) with hook cover.
- * Put zigzag foot between needle clamp (on the round portion) and bottom end of the machine arm, when needle bar is lowered from its highest position by turning balance wheel toward you.

TO ADJUST

1. Loosen screw (a).
2. Press the inserted zigzag foot down in order to touch the feed rock shaft.
3. Tighten screw (a) firmly while keeping the wrench touch the feed rock shaft.



TO ADJUST FEED DOG HEIGHT

CORRECT SETTING

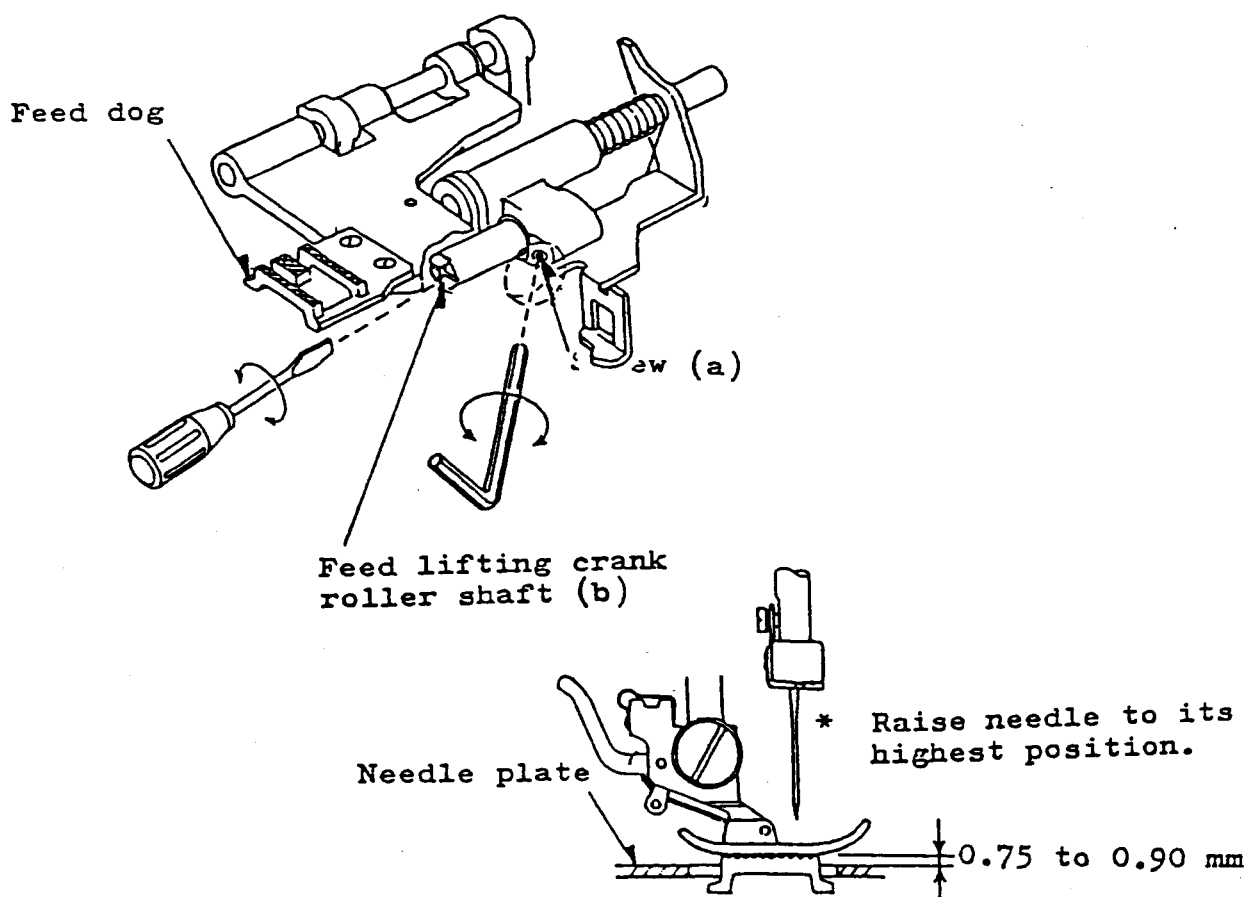
The standard highest position of feed dog should be 0.75 to 0.90 mm above needle plate, when presser foot is lowered with stitch length dial at "4".

CHECKING CONDITION

- * Set stitch length dial at "4".
- * Lower presser foot.
- * Set pressure regulator at about 5 mm (middle way).
- * Turn balance wheel toward you until needle bar comes at its highest position of travel.
- * Open hook cover.

TO ADJUST

1. Loosen screw (a).
2. Turn feed lifting crank roller shaft (b) and adjust the feed dog height.
3. Tighten screw (b).



TO ADJUST STRETCH STITCH FEED BALANCE

CORRECT SETTING

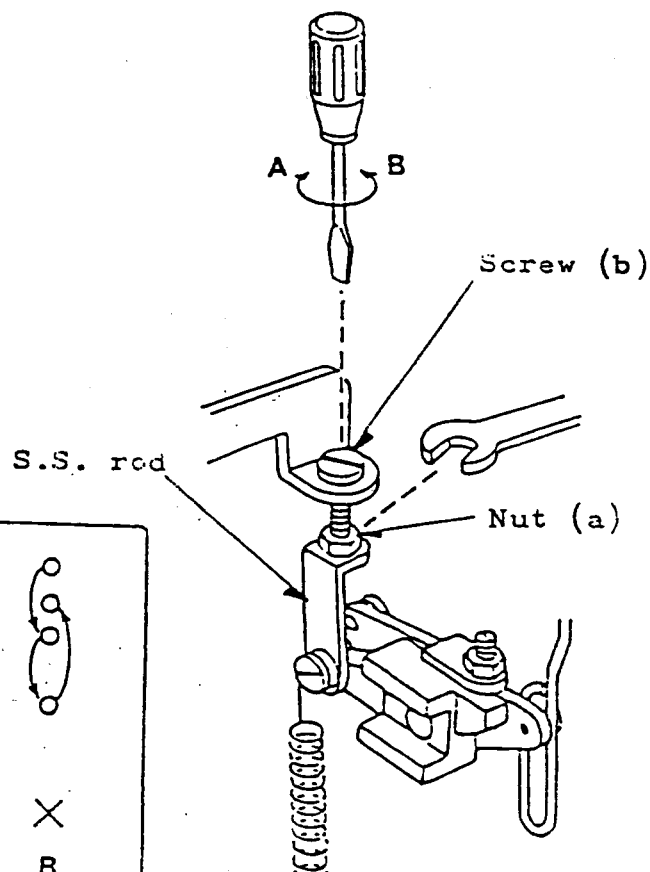
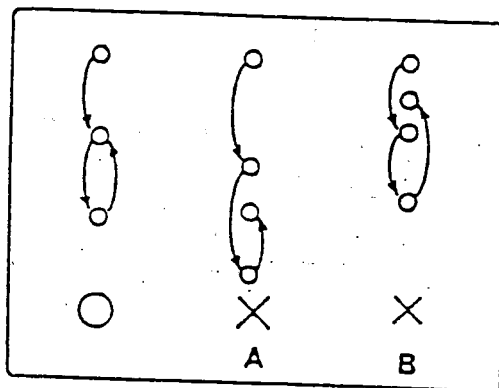
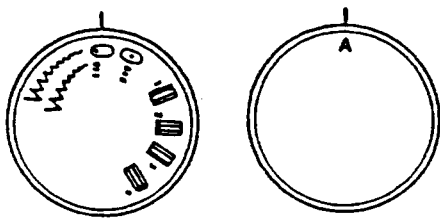
When the machine is set for Triple Strength Stitch "A", needle should enter the same perforation during forward and backward feeding.

CHECKING CONDITION

- * Set zigzag width dial at "0" and pattern selector dial at "A".
- * Set stitch length dial at "S.S."
- * Place a piece of paper over needle plate and lower the foot. Then, turn balance wheel toward you to check needle perforation.
- * Remove top cover.

TO ADJUST

1. Loosen nut (a).
2. Turn screw (b) to adjust stretch stitch feed balance:
 - i) If forward feeding (A) is longer than backward feeding (B), turn screw (b) clockwise.
 - ii) If forward feeding (A) is shorter than backward feeding (B), turn screw (b) counter-clockwise.
3. Tighten nut (a). (Do not bend S.S. rod.)



TO ADJUST BAR-TACK FEED OF BUTTONHOLE

CORRECT SETTING

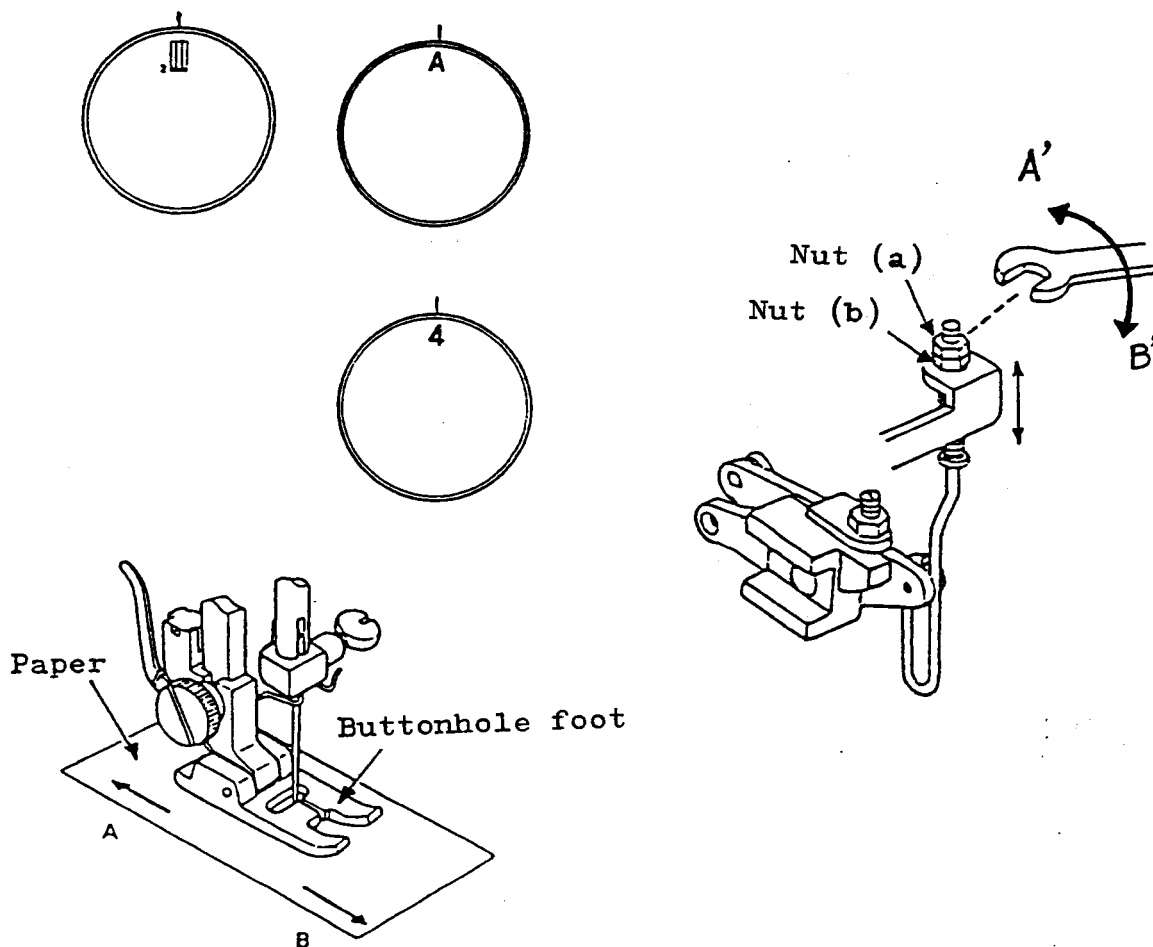
The acceptable bar-tack feeding of buttonhole should be less than 1 mm per 20 stitches with maximum stitch length.

CHECKING CONDITION

- * Set zigzag width dial at "  " and pattern selector dial at " A ".
- * Set stitch length dial at "4".
- * Place a piece of paper over needle plate.
- * Use buttonhole foot.
- * Remove top cover.

TO ADJUST

1. Turn balance wheel toward you to check feeding paper.
 - i) If paper moves forward (in the direction of "A"), loosen the upper nut (a) at first and then turn the lower nut (b) clockwise (in the direction of "A'").
 - ii) If the paper moves backward (in the direction of "B"), loosen the upper nut (a) at first and then turn the lower nut (b) counter-clockwise (in the direction of "B'").
2. Tighten the upper nut (a) without fail while taking care not to turn the lower nut (b) after adjustment.



TO ADJUST BUTTONHOLE FEED BALANCE

CORRECT SETTING

When sewing buttonhole, stitches on each side of buttonholes should be the same stitch density.

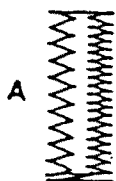
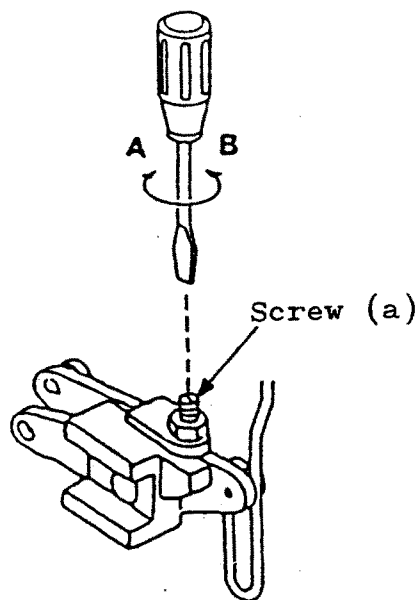
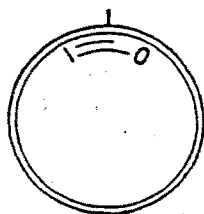
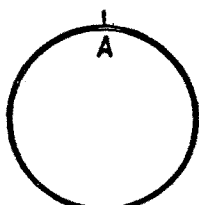
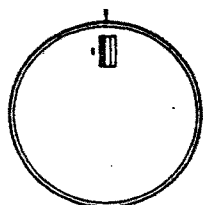
The variance of 9 to 11 stitches in the right-side row against 10 stitches in the left-side row is considered acceptable feed balance for buttonhole sewing.

CHECKING CONDITION

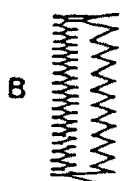
- * Set stitch length dial at about " 0.5" { in range of " — " (0.3 to 0.5) mark }.
- * Use buttonhole foot.
- * Test sew buttonhole by setting zigzag width dial in the order of "  →  →  →  " and pattern selector dial at " A ". Then, check stitch density on each side of buttonhole.
- * Remove top cover.

TO ADJUST

1. Turn screw (a) to make adjustment:
 - i) If left-side row is coarser than right-side row, turn screw (a) clockwise (in the direction of "A").
 - ii) If the right-side row is coarser than the left-side row, turn screw (a) counter-clockwise (in the direction of "B").



A Left-side row is coarser than right-side row.



B Right-side row is coarser than left-side row.

TO ADJUST DISENGAGEMENT CLEARANCE OF CAM FOLLOWER

CORRECT SETTING

Too narrow or too far apart clearance between cam follower and the top convex portion of basic zigzag cam (which is found in the second part of layer-built cam) may often cause unsatisfactory turning of pattern selector dial.

The permissible clearance should be 0.2 to 0.3 mm.

CHECKING CONDITION

- * Set zigzag width dial at "  " and pattern selector dial at " A ".
- * Remove top cover.

TO ADJUST

1. Turn balance wheel toward you until cam follower (a) comes up to the top convex of basic zigzag cam (b) as shown.
2. Turn pattern selector dial from " A " to " B " and check the clearance.

Then, if necessary, make adjustment as follows:

- i) In case clearance is too narrow, loosen screw (c) and move cam follower lever (d) in the direction of " A ".
 - ii) In case clearance is too far apart, loosen screw (c) and move cam follower lever (d) in the direction of " B ".
3. Tighten screw (c) after the proper clearance is obtained.

