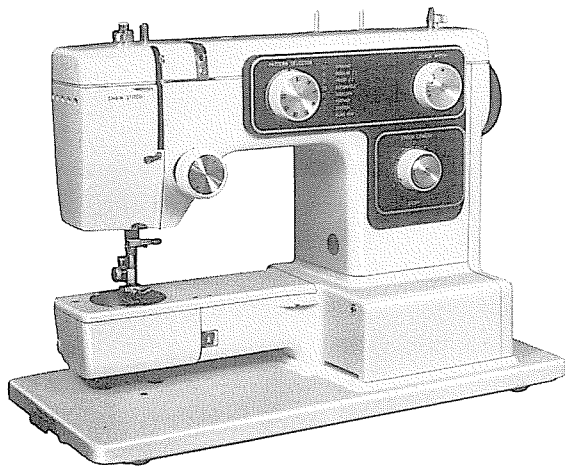
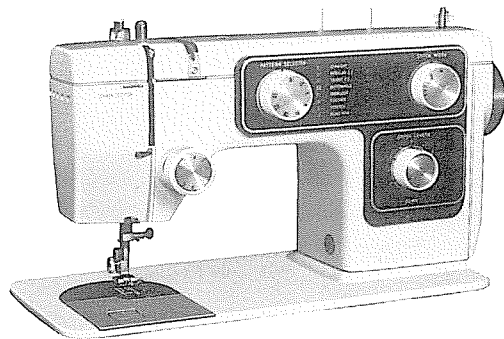


SERVICING MANUAL



MODEL 618




MODEL 681

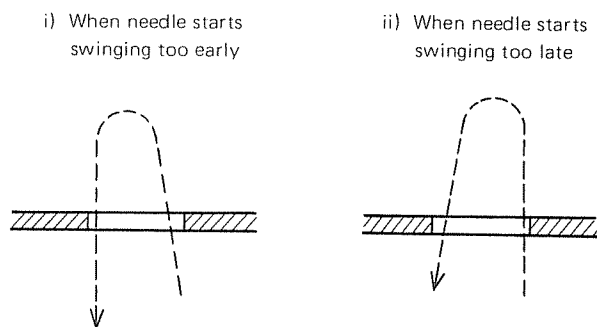
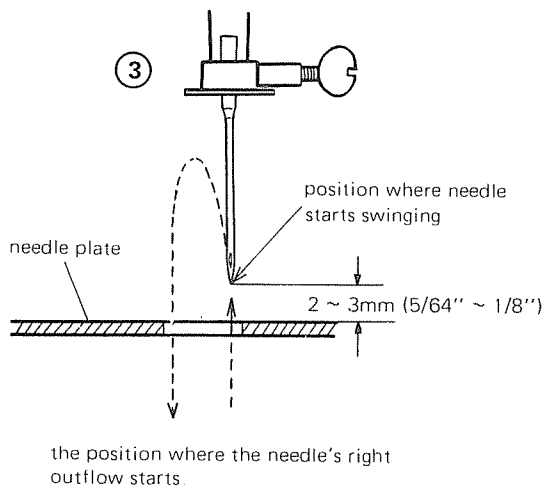
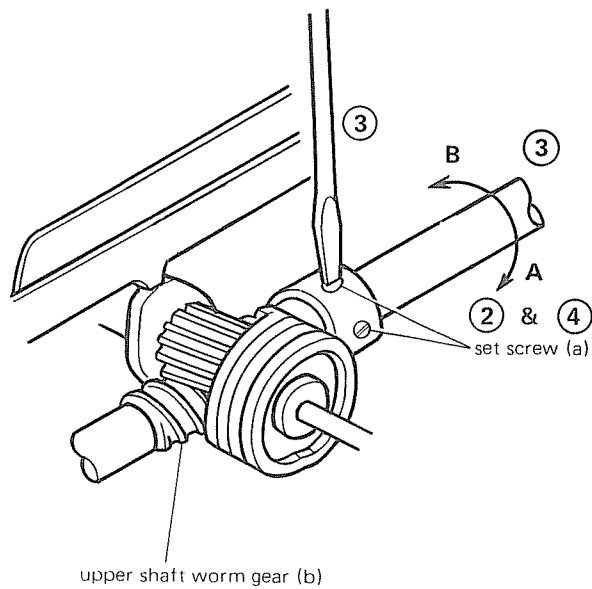
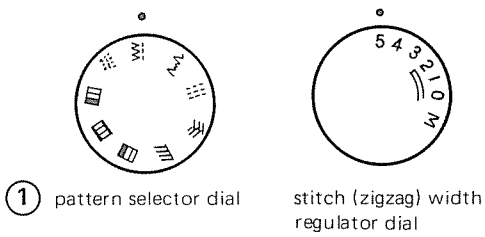
SERVICING MANUAL

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ADJUSTMENT FOR TIMING OF LATERAL NEEDLE SWING

As needle bar is raised, if needle swings while it is still in fabric with stitch (zigzag) width regulator dial set at "5", make adjustment as follows:

- ① Set stitch (zigzag) width regulator dial at "5" and pattern selector dial at "  ".
- ② Loosen two set screws (a) for upper shaft worm gear.
- ③ Hold upper shaft worm gear (b) with a screw driver and turn balance wheel slightly:
 - i) When needle starts its lateral swing too early, turn balance wheel in the (A) direction.
 - ii) When needle starts its lateral swing too late, turn balance wheel in the (B) direction.
 The standard starting point of lateral needle swing should be about 2 ~ 3mm (5/64" ~ 1/8") above needle plate.
- ④ Tighten two set screw (a) firmly after adjustment.

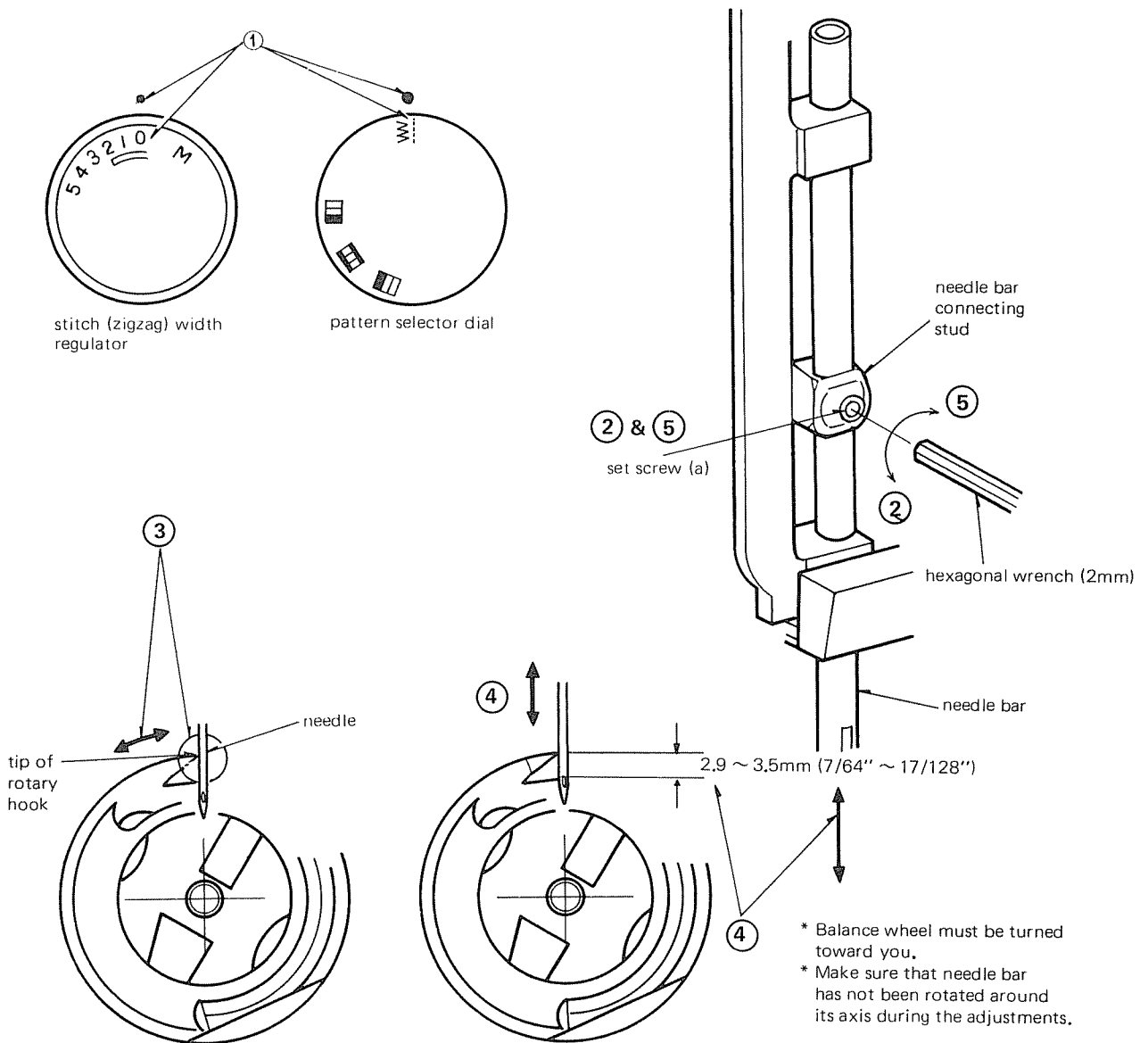


ADJUSTMENT OF HEIGHT OF NEEDLE BAR

Turn the balance wheel toward you until the needle bar comes to the lowest point of its travel. Then again turn balance wheel until the tip of rotary hook meets left side of needle.

The distance between the upper edge of needle eye and tip of rotary hook should be 2.9mm ~ 3.5mm (7/64" ~ 17/128"). If not, make adjustments as follows:

- ① Set stitch (zigzag) width regulator dial at "0" and pattern selector dial at "M".
- ② Turn balance wheel toward you until needle bar comes to the lowest point of its travel. Then loosen the needle bar connecting stud set screw (a) with hexagonal wrench.
- ③ Turn balance wheel toward you until tip of rotary hook comes to left side of needle.
- ④ Move needle bar upward or downward to adjust height of needle bar 2.9mm ~ 3.5mm (7/64" ~ 17/128").
- ⑤ Tighten the needle bar connecting stud set screw (a).



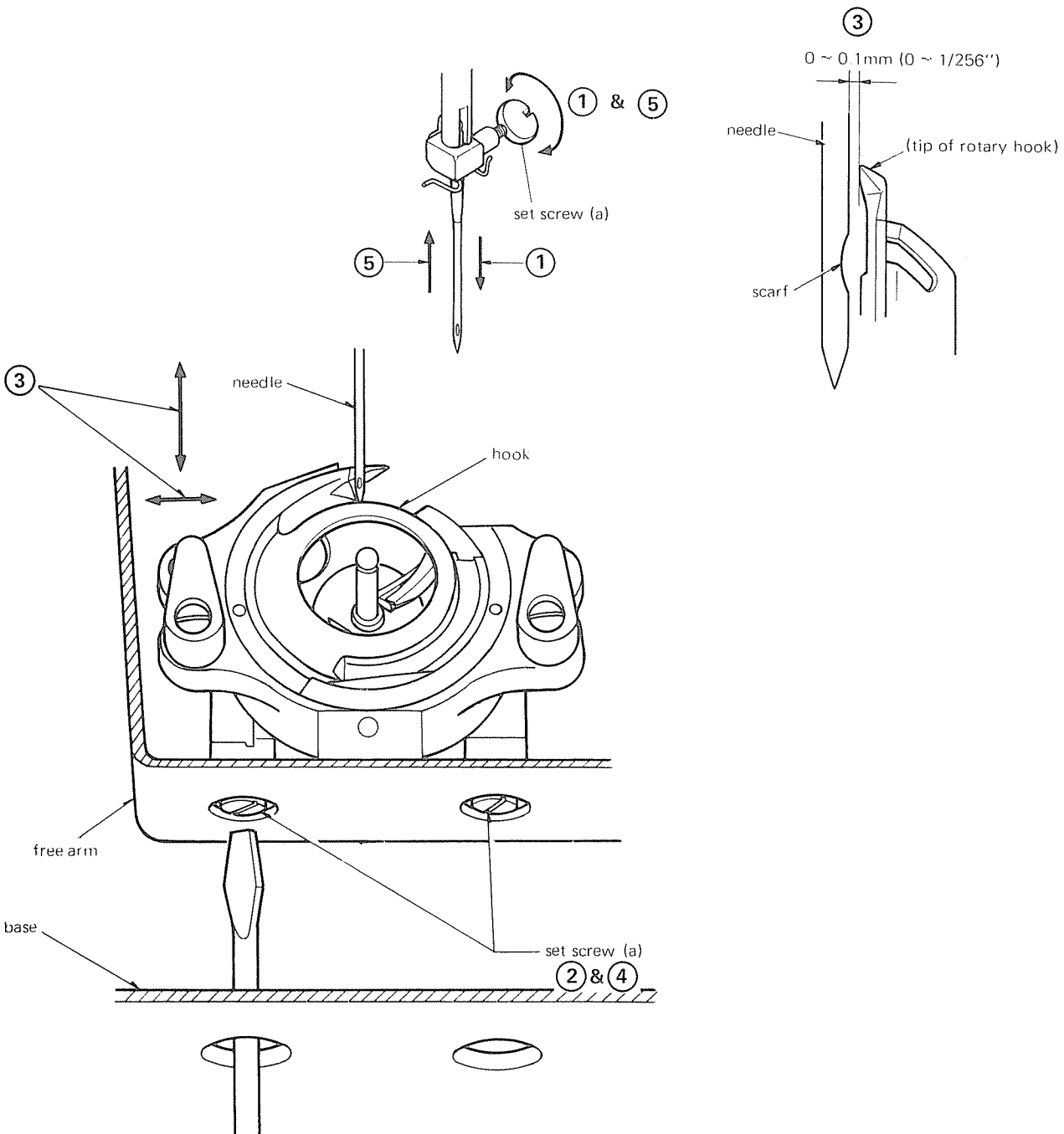
ADJUSTMENT OF CLEARANCE BETWEEN NEEDLE AND ROTARY HOOK

The clearance between needle and rotary hook should be 0 ~ 0.10mm (0'' ~ 1/256'').

If not, make adjustments as follows:

- ① Make sure that needle is straight .
Then, loosen needle clamp screw (a), lower needle so that the tip of rotary hook is above the scarf of needle when needle comes to the lowest point of its travel and tighten the needle clamp screw (a).
- ② Loosen set screws (a).
- ③ Move hook race units to adjust clearance between needle and rotary hook while adjusting back-rush or hook shaft gear.
- ④ Tighten set screws (a) firmly after the adjustment.
- ⑤ Reset needle in the normal position for sewing.

Note: After adjustments, make sure that hook timing, height of needle bar, feed lifting cam position and feed cam position are correct.

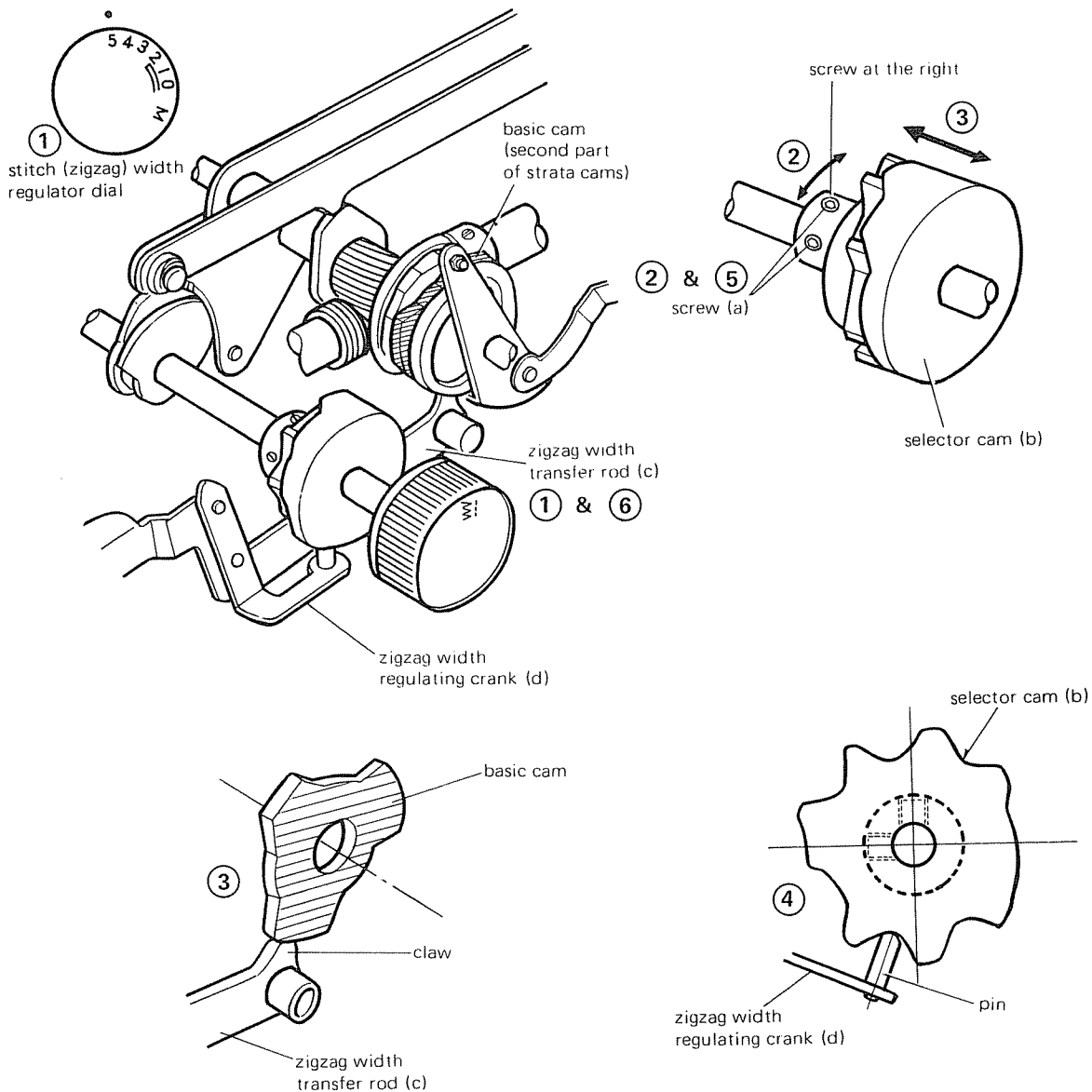


TO POSITION SELECTOR CAM

For adjustment of the following items, firstly, it is necessary to position the selector cam.

- ◇ To position buttonhole selector cam and stretch stitch selector cam (page 19).
- ◇ Adjustment for “0” position of ziazag stitch (page 20).
- ◇ Adjustment of needle drop (page 21).
- ◇ Adjustment of “M” needle positon (page 22).


- ① Set stitch (zigzag) width regulator dial at “5” and pattern selector dial at “ ”.
- ② Loosen two screws (a) and turn selector cam (b) so that the screw at the right comes to the top.
- ③ Move selector cam axially to position claw of zigzag width transfer rod (c) to the middle of convex part of basic cam which is found in the second part of strata cams.
- ④ Then adjust pin of zigzag width regulator crank (d) so that it comes to the middle of selector cam groove as shown below.
- ⑤ Tighten two screws (a).
- ⑥ Turn pattern selector dial to make sure of smooth turning and shifting.

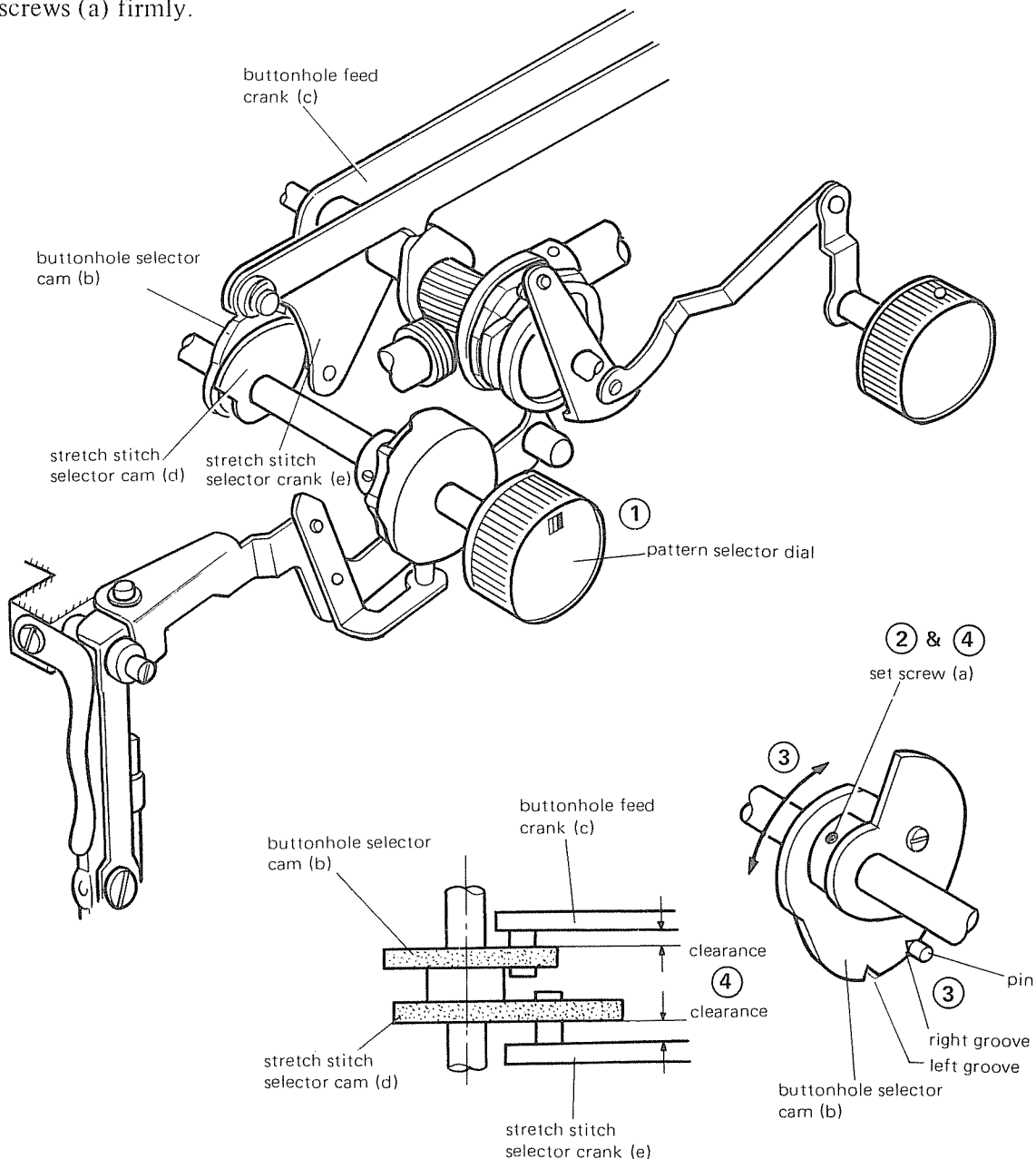


TO POSITION BUTTONHOLE SELECTOR CAM AND STRETCH STITCH SELECTOR CAM

For adjustment of the following items, firstly, it is necessary to position the buttonhole selector cam and stretch stitch selector cam.




- ◇ Adjustment for the bar-tuck feed of buttonhole (page 28).
- ◇ Adjustment of the pitch difference in feed for buttonhole sewing between right-side row and left-side row. (page 29).
- ◇ Adjustment for cutting space of buttonhole (page 30).
- ◇ Adjustment of automatic pattern reverse feed (page 31).

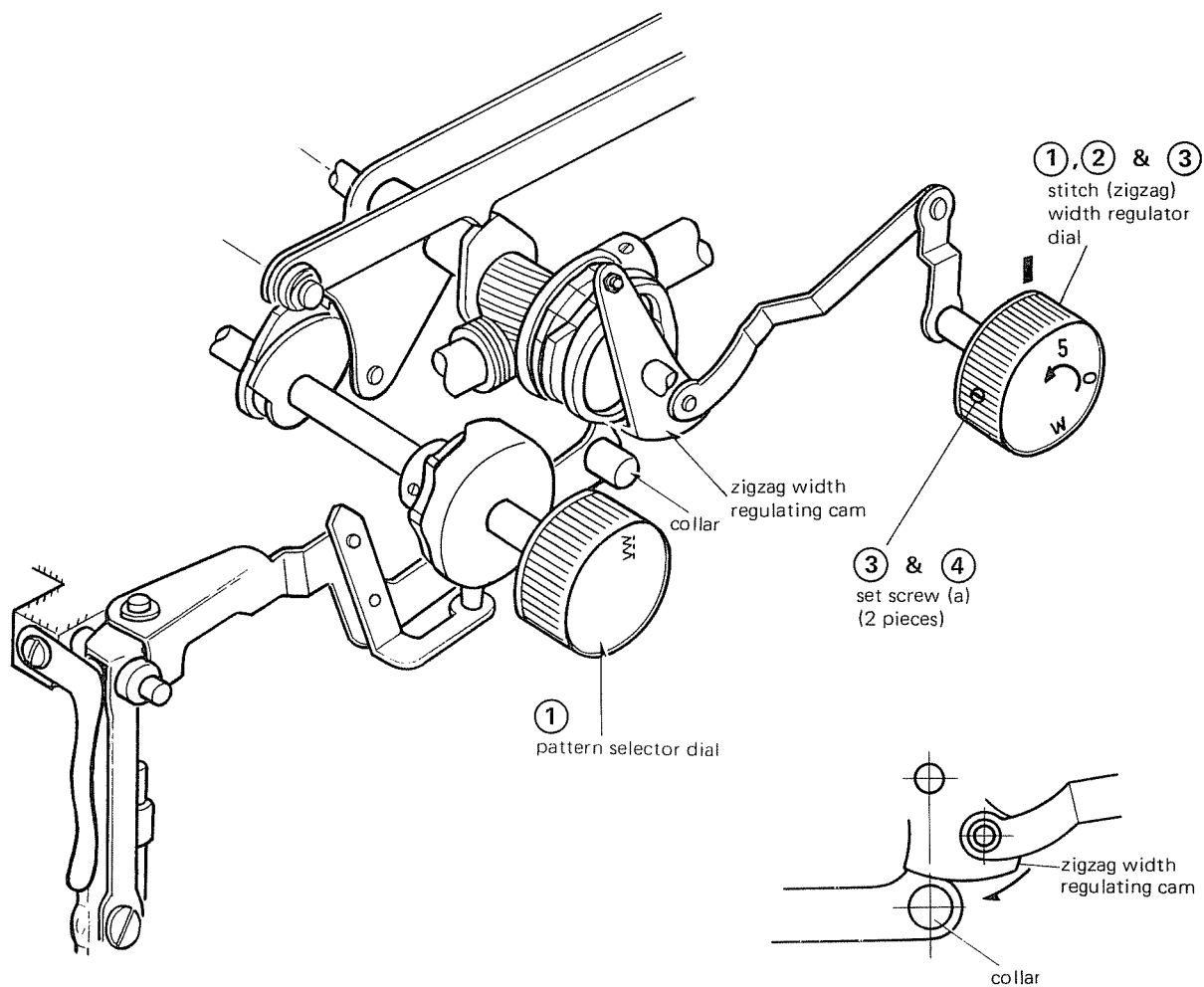
- ① Set pattern selector dial at “  ”.
- ② Loosen two set screw (a).
- ③ Turn buttonhole selector cam (b) to set pin of buttonhole feed crank (c) in the right groove of buttonhole selector cam.
- ④ Make the clearance between buttonhole selector cam (b) and buttonhole selector crank (c) equal to that between stretch selector cam (d) and stretch stitch selector crank (e). Then tighten two set screws (a) firmly.




ADJUSTMENT FOR "0" POSITION OF ZIGZAG STITCH

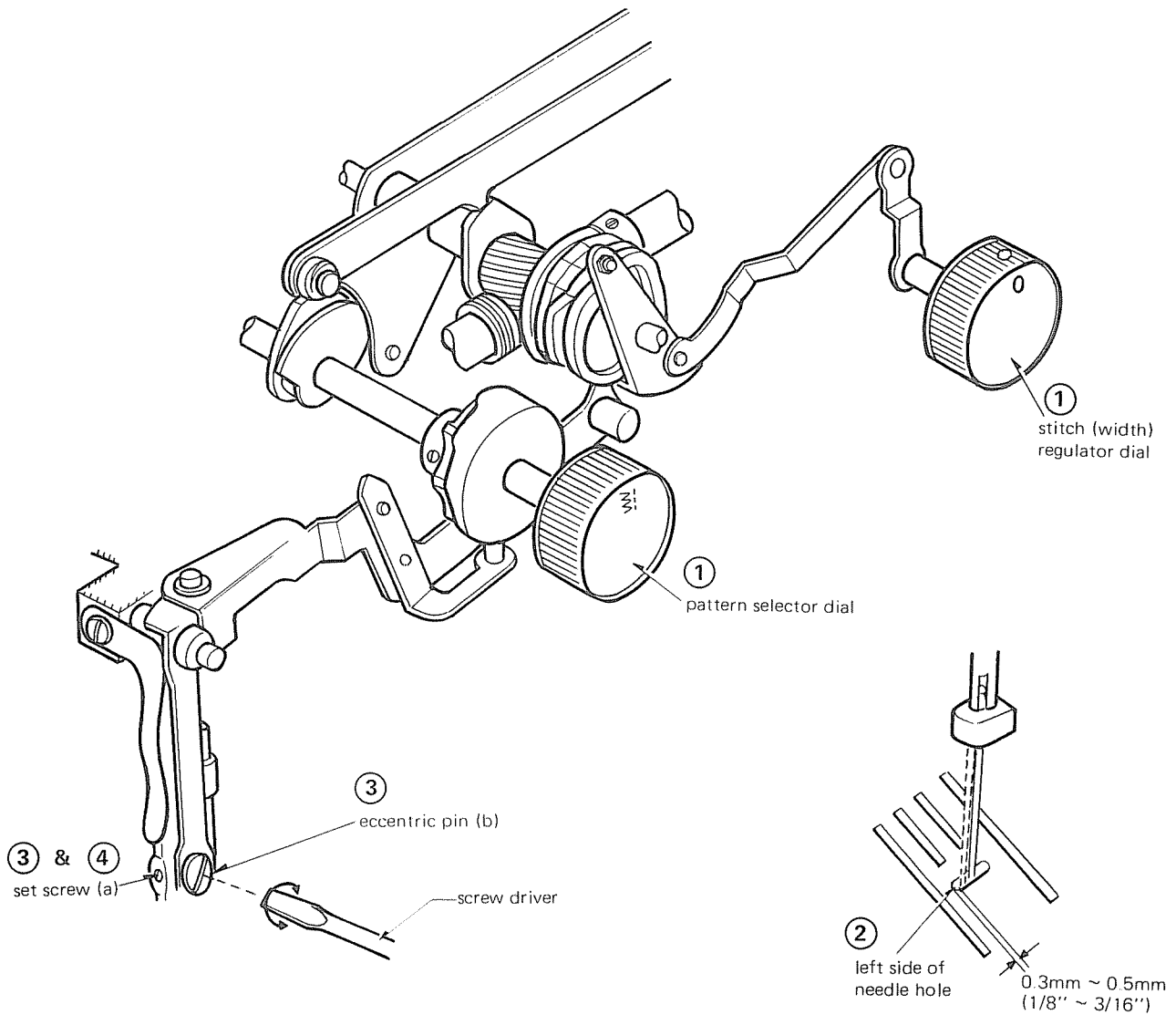
If needle zigzags with stitch (zigzag) width regulator dial set at "0", make adjustment as follows:

- ① Set stitch (zigzag) width regulator dial at "5" and pattern selector dial at "  ".
- ② Turn stitch (zigzag) width regulator dial in the direction of arrow "  " little by little until zigzag stitch does not appear.
- ③ Loosen two set screws (a) and set "0" indication of the stitch (zigzag) width regulator dial at the mark of "  " on the stitch pattern panel.
- ④ Tighten two set screws (a) firmly.




ADJUSTMENT OF NEEDLE DROP

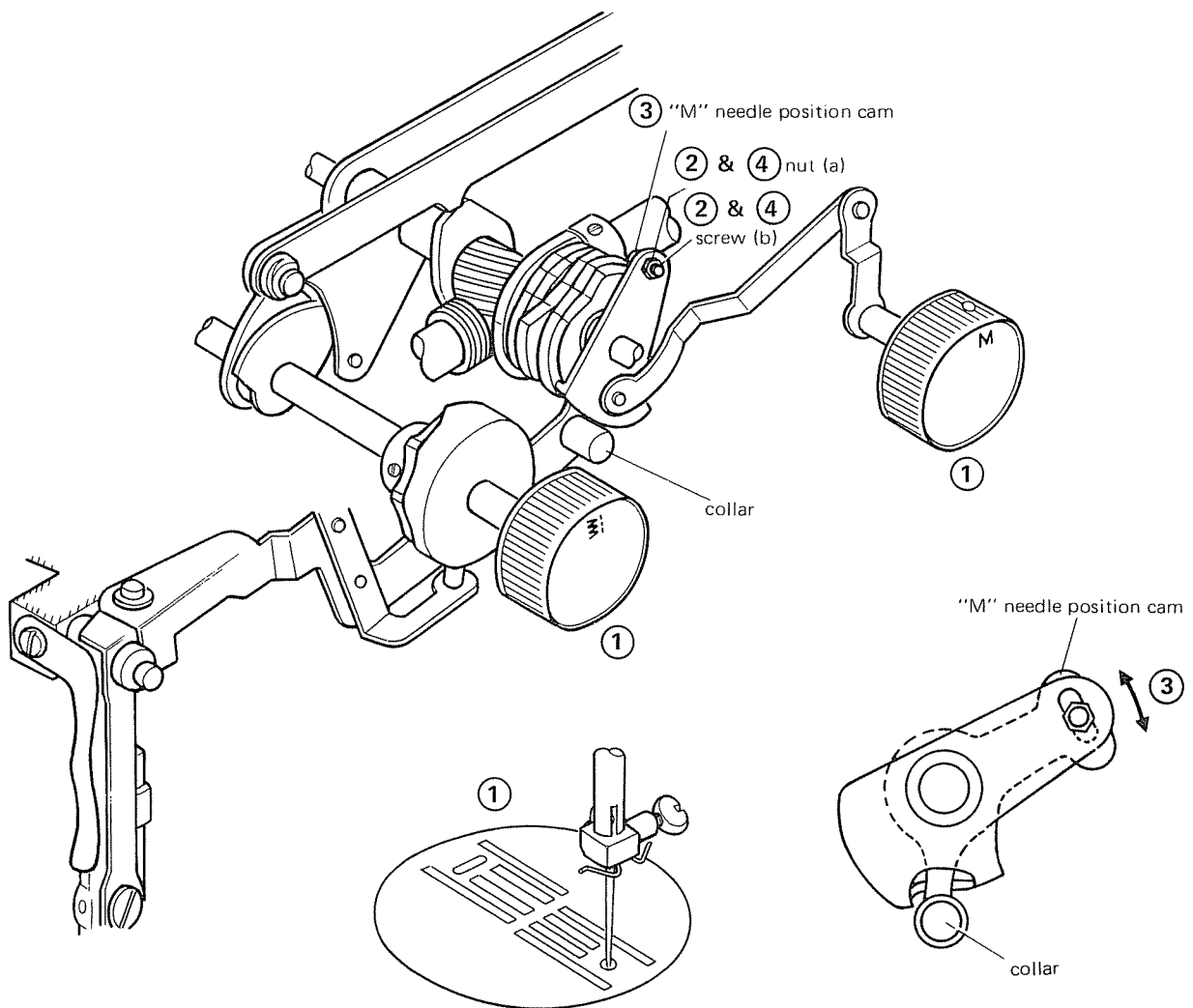
- ① Set stitch (zigzag) width regulator dial at "0" and pattern selector dial at "  ".
 - ② Turn balance wheel toward you to see if the clearance between left side of needle and left edge of needle hole is about 0.3mm ~ 0.5mm (1/8" ~ 3/16").
 - ③ If not, loosen set screw (a) for eccentric pin (b), and turn eccentric pin (b) clockwise or anti-clockwise to make the adjustment.
 - ④ Tighten set screw (a) after adjustment.
- Note: Make sure that needle drops in the center of straight stitch needle hole with the stitch (zigzag) width regulator at "M".



ADJUSTMENT OF "M" NEEDLE POSITION

If needle does not drop in the center of needle hole by setting stitch (zigzag) width regulator dial at "M", make adjustments as follows:

- ① Set stitch (zigzag) width regulator at "M" and pattern selector dial at "  ". Reverse the needle plate with straight stitch use needle hole in position.
- ② Loosen nut (a) and screw (b).
- ③ Move "M" needle position cam up or down to adjust position of needle so that needle drops in the center of needle hole.
- ④ Tighten nut (a) and screw (b).
- ⑤ Make sure that straight stitch does not stagger at "M" of stitch (zigzag) width regulation dial.



HOOK TIMING

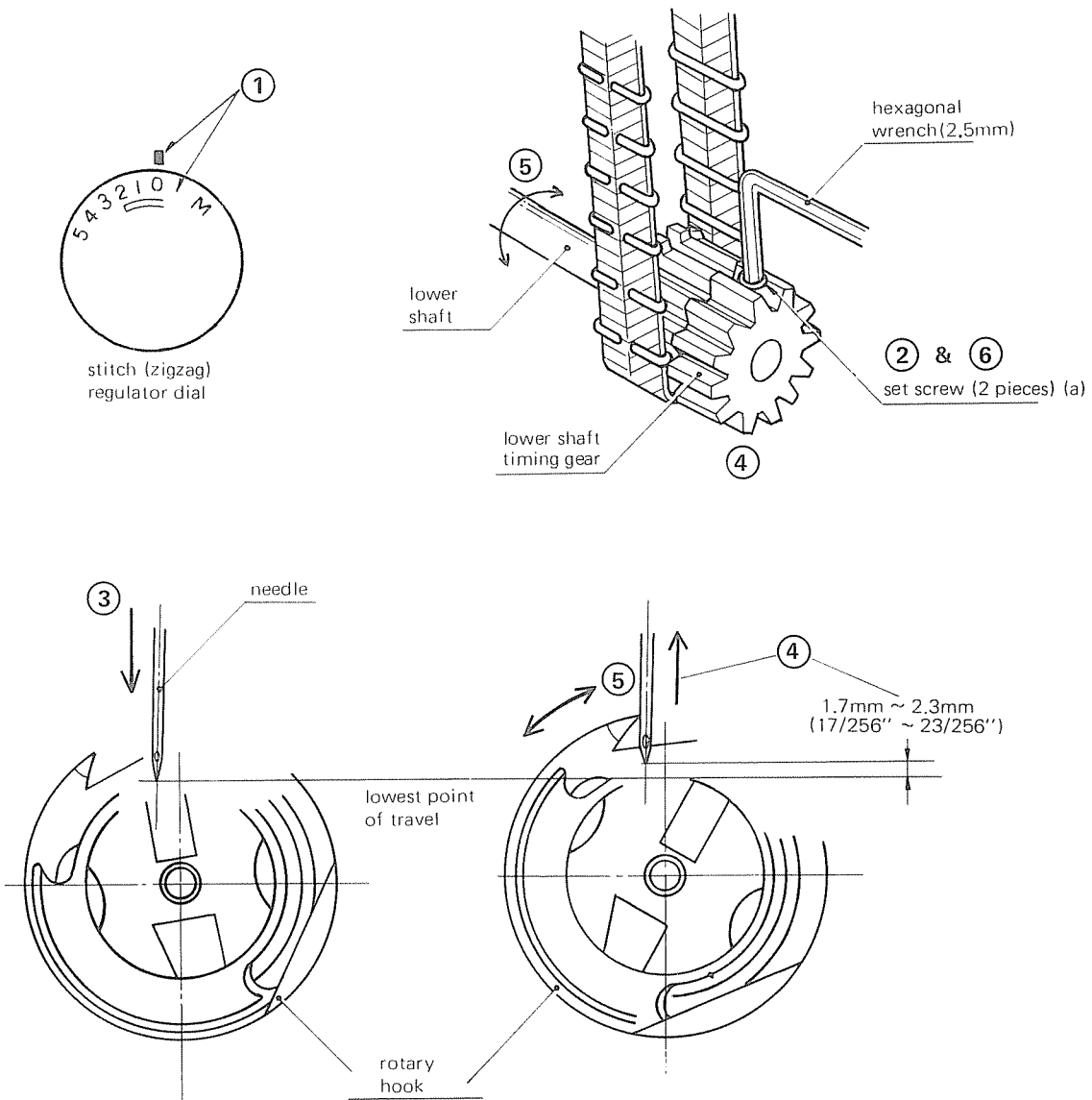
Set stitch (zigzag) width regulator dial at "0". Then turn the balance wheel toward you until the needle bar comes to the lowest position of its travel.

Again turn the balance wheel toward you until the tip of rotary hook meets the left side of needle. The height of needle point from the lowest position of its travel should be about 1.7mm ~ 2.3mm (17/256" ~ 23/256")

If not, make adjustments as follows:

- ① Set stitch (zigzag) width regulator dial at "0".
- ② Loosen two set screws (a) for the lower shaft timing gear.
- ③ Turn balance wheel toward you until the needle bar comes to the lowest position of its travel.
- ④ Turn balance wheel slowly toward you until needle point raise 1.7mm ~ 2.3mm (17/256" ~ 23/256") from the lowest position of its travel, while holding the rotary hook with your hand to prevent the lower shaft from turning.
- ⑤ While holding balance wheel with your hand to prevent upper shaft from turning, rotate lower shaft until tip of rotary hook meets the left side of needle.
- ⑥ Tighten two set screws (a) for lower shaft timing gear.

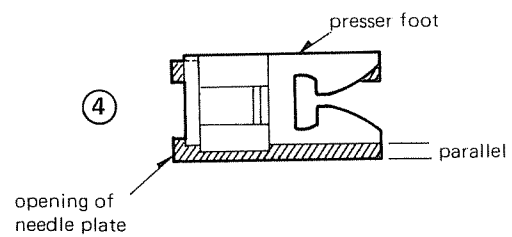
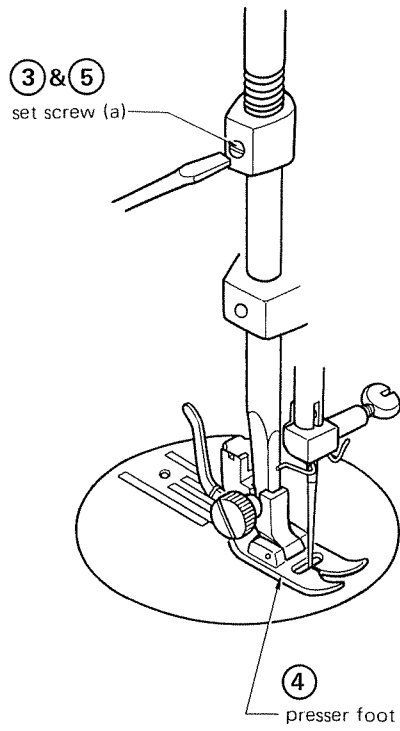
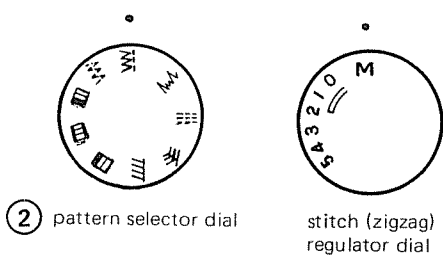
Note: After the adjustments, make sure that the height of needle bar, the position of feed cam and the position of feed lifting cam are correct.



ADJUSTMENT FOR DIRECTION OF PRESSER FOOT

The direction of presser foot should be correctly positioned or parallel with the feed dog slots in the needle plate so that the needle may drop in center of its needle hole. If not, make adjustments as follows:

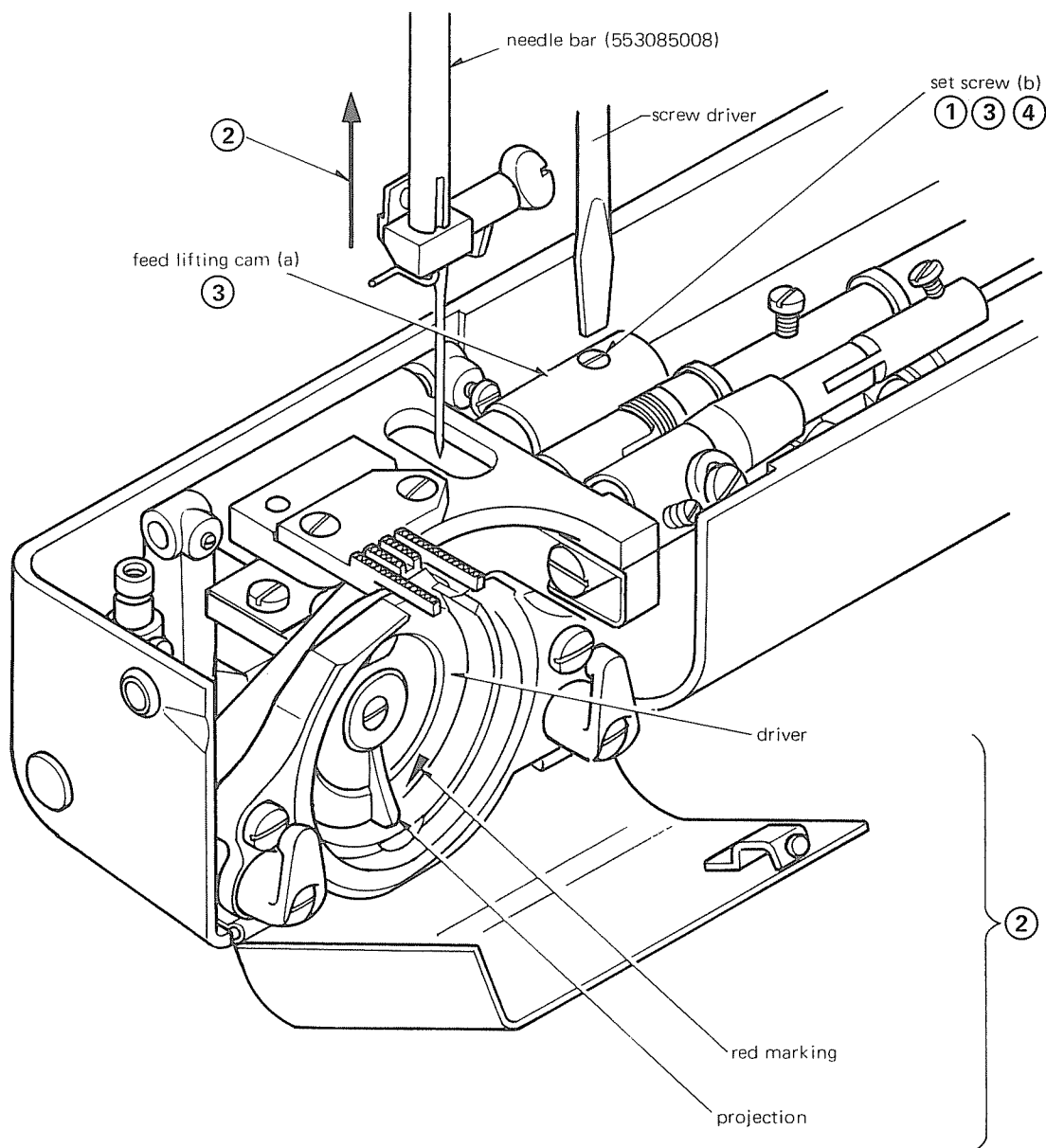
- ① Remove lamp and other light fittings from the front of the machine.
- ② Set stitch (zigzag) width regulator dial at "M" and pattern selector dial at "W".
- ③ Raise presser bar lifter and loosen set screw (a) for presser bar guide bracket.
- ④ Adjust direction of the presser foot so that the needle drops in center of the needle hole and the both sides of presser foot may be in parallel with feed dog slots in the needle plate.
- ⑤ Tighten set screw (a) firmly.
- ⑥ Fix light fittings on the machine.



ADJUSTMENT OF FEED LIFTING CAM POSITION

After hook timing is adjusted, position feed lifting cam (a) correctly as follows:

- ① Loosen set screw (b).
- ② Turn balance wheel toward you until a projection near red marking on shuttle driver comes to the lowest point of its turn when needle is in up-rising travel.
- ③ Turn feed lifting cam (a) until set screw (b) comes to the top.
- ④ Tighten set screw (a) firmly.

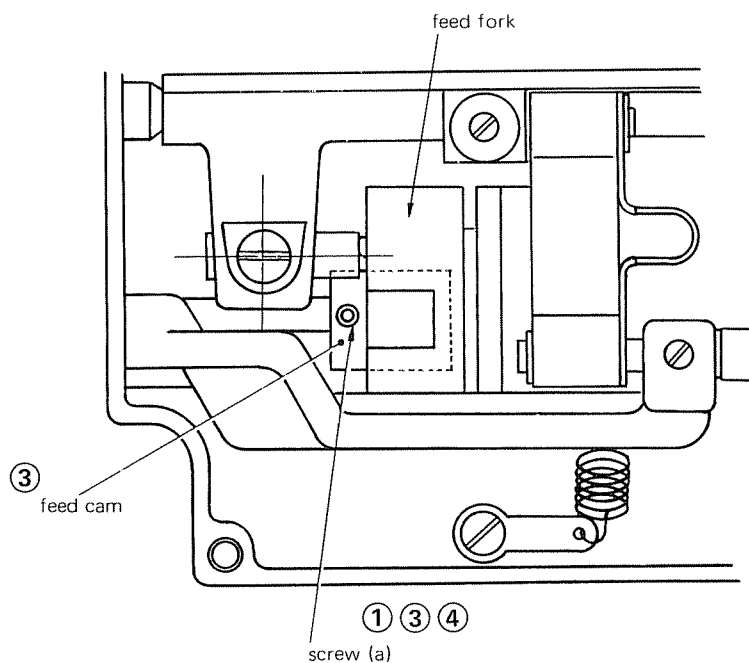
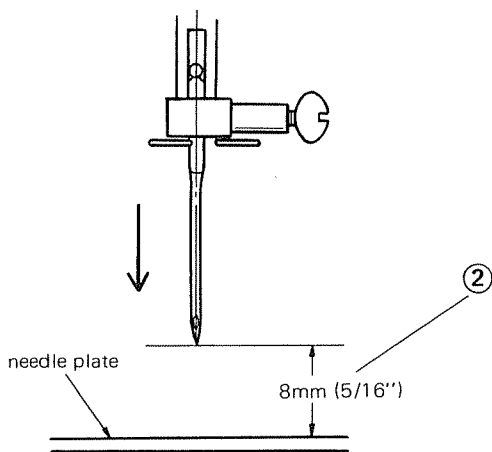


TO PLACE FEED CAM IN CORRECT POSITION

After hook timing is adjusted; place feed cam in correct position as follows:

- ① Remove bottom cover and loosen set screw (a).
- ② Turn balance wheel toward you until the tip of needle comes down to 8mm (5/16") above the surface of needle plate.
- ③ While holding balance wheel with your hand to prevent the upper shaft from turning, turn feed cam until the set screw (a) comes to the right underneath.
- ④ Tighten set screw (a).
- ⑤ Attach bottom cover on the machine.

Note: After adjustment of hook timing, make sure that the position of feed cam is correct.

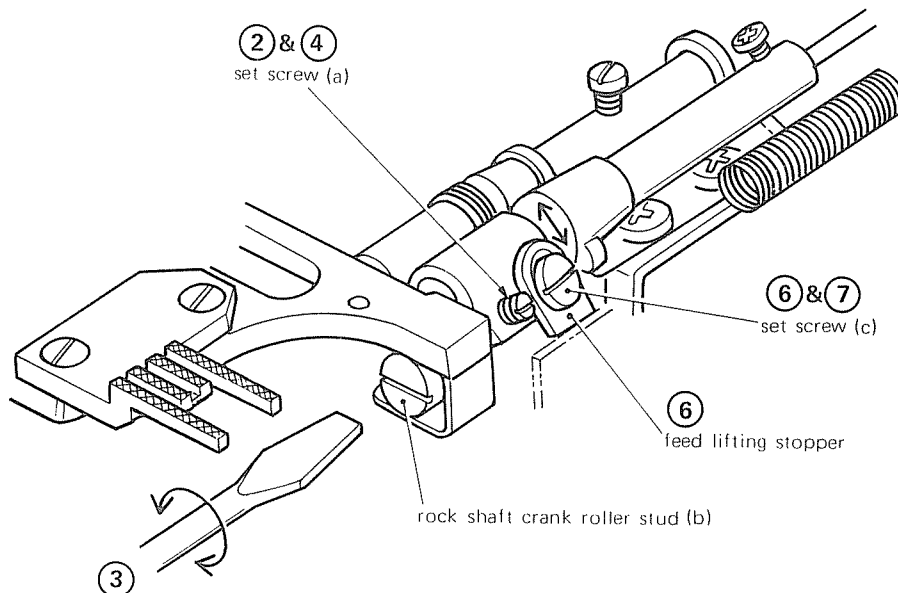


ADJUSTMENT OF HEIGHT OF FEED DOG


Set stitch length dial at "4", lower presser foot (the pressure regulator should be set at red line) and turn balance wheel toward you until needle bar comes to highest point of its travel. In this condition, height of feed dog above needle plate should be 0.7 ~ 0.85mm (7/256" ~ 17/512").


When stitch length dial is set at "DOWN", feed dog should be below top surface of needle plate and should not touch hook race body (unit). To adjust:

- ① Set stitch length dial at "4", (pressure regulator set at red line) and turn balance wheel toward you until needle bar comes to highest point of its travel. Then lower presser foot.
- ② Loosen set screw (a).
- ③ Turn feed lifting rock shaft crank roller stud (b) with screw driver to make adjustment.
- ④ Tighten set screw (a) after correct height of feed dog (0.7 ~ 0.85mm) is obtained.
- ⑤ Set stitch length dial at "DOWN".
- ⑥ Loosen set screw (c) and make adjustment of its lower position that feed dog should not touch the hook race by moving feed lifting stopper plate upward and downward.
- ⑦ Tighten set screw (c) after adjustment.

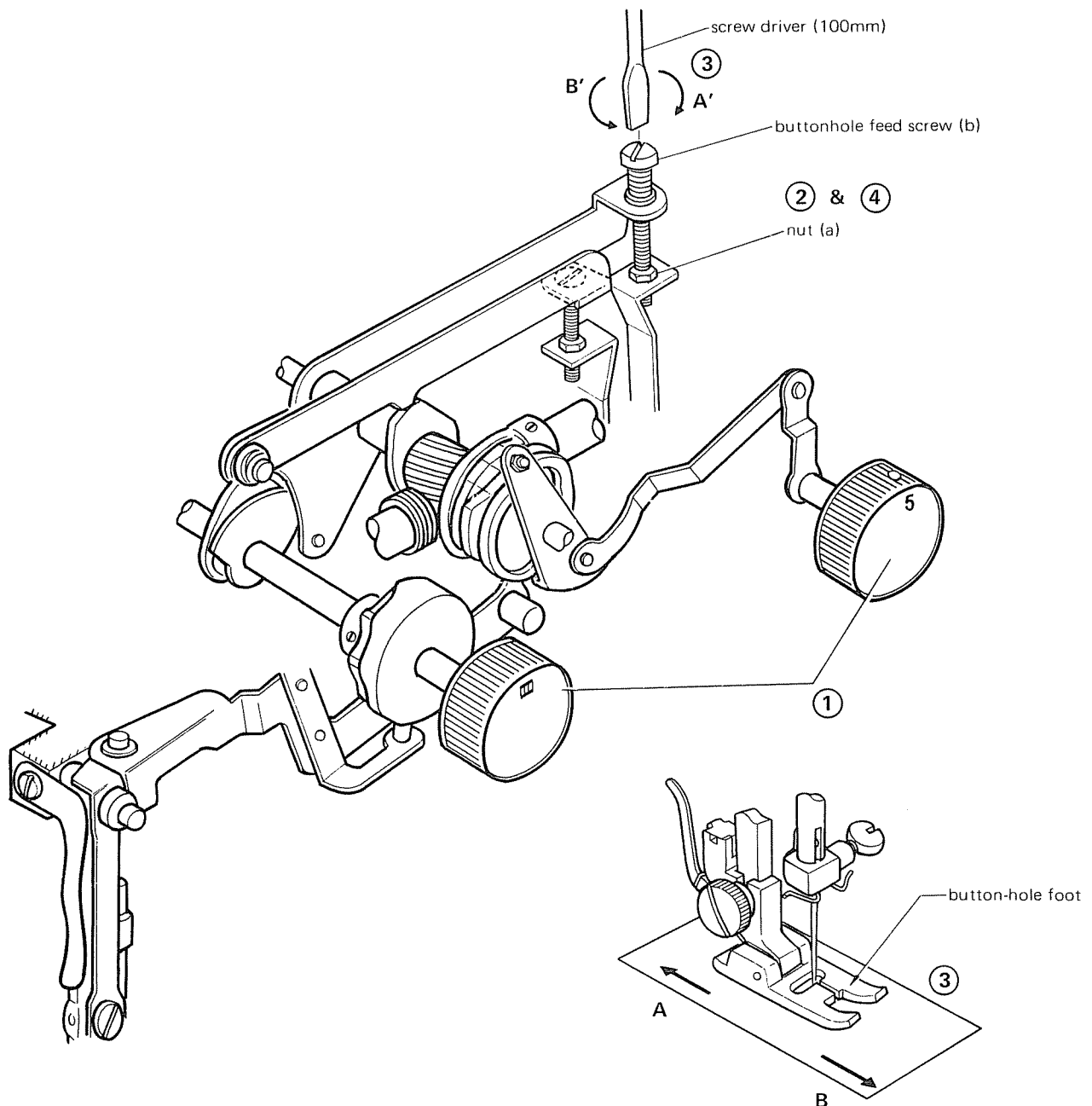


ADJUSTMENT FOR BAR-TUCK FEED OF BUTTONHOLE

If the fabric is fed with pattern selector dial at “” and stitch length regulator dial at “4”, make adjustment as follows:

- ① Set stitch length regulator dial at “4”, stitch (zigzag) width regulator dial at “5” and pattern selector dial at “”, respectively. Replace the presser foot with the button-hole foot.
- ② Loosen nut (a).
- ③ Place a piece of paper under the presser foot and turn balance wheel toward you.
 - i) If the paper moves in the direction of “A”, turn buttonhole feed screw (b) clockwise. (in the direction of “A”’).
 - ii) If the paper moves in the direction of “B”, turn buttonhole feed screw (b) anti-clockwise. (in the direction of “B”’).
- ④ Tighten nut (a) firmly after adjustment.

Note: After adjustment, check the difference in feed for buttonhole sewing between right-side row and left-side row.



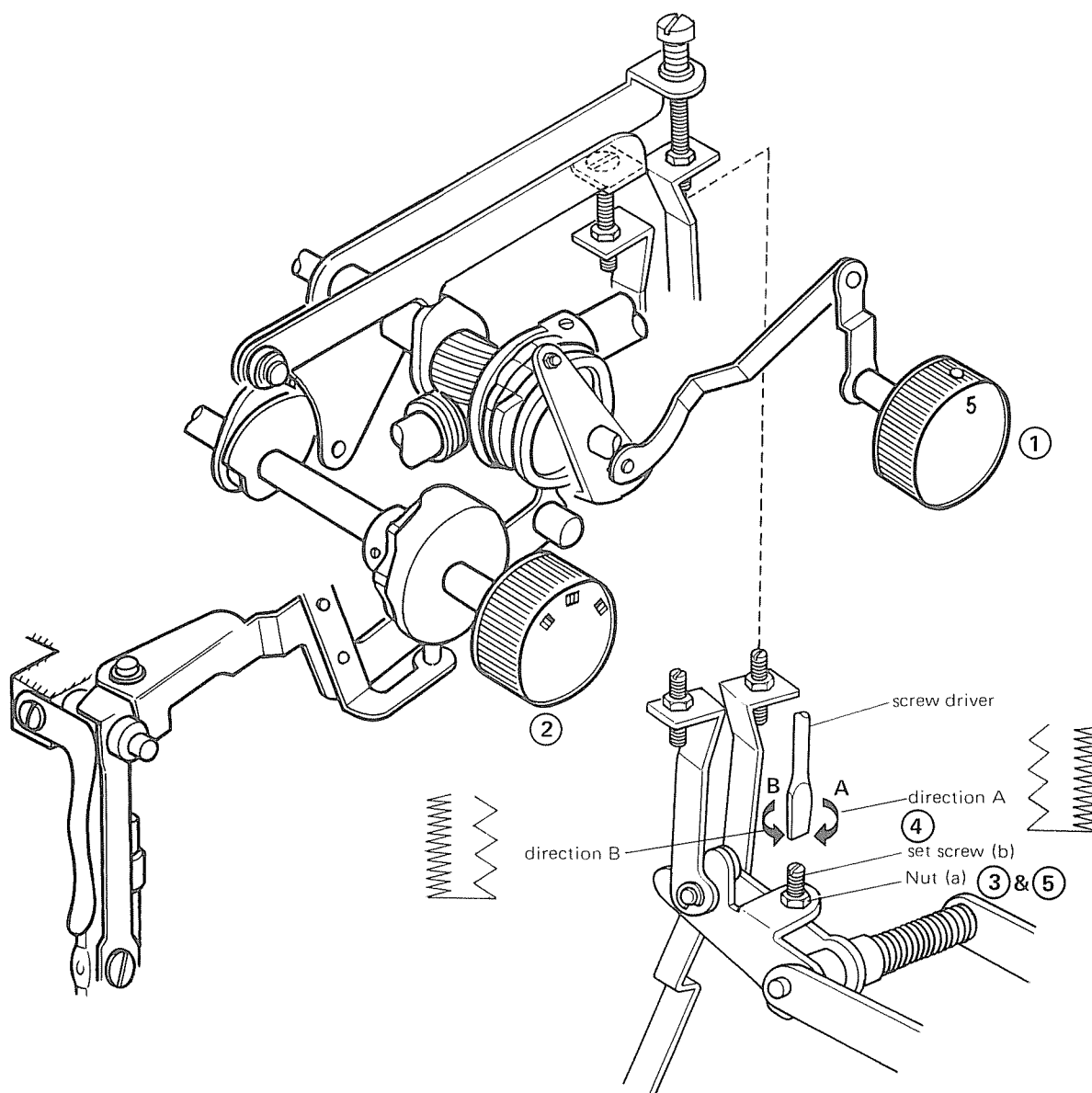
ADJUSTMENT OF THE DIFFERENCE IN FEED FOR BUTTONHOLE SEWING BETWEEN RIGHT-SIDE ROW AND LEFT-SIDE ROW

Count 10 stitches in the left row. Then, see how many stitches in the same length of the right row. The variance of 10 to 14 stitches in the right row against 10 stitches in the left row is considered acceptable for the buttonhole sewing.

If not, make adjustments as follows:

- ① Set stitch length regulator dial at about "0.5" and stitch (zigzag) width regulator dial at "5".
- ② Turn pattern selector dial in the order of "■□" → "■□□" → "■□□□" → "■□□□□", while sewing buttonhole slowly and see any difference between the right row and the left row.
- ③ Loosen nut (a).
- ④ If the left row coarser than the right row, turn set screw (b) clockwise (in the direction of "A"). If the right row is coarser, turn set screw (b) anti-clockwise (in the direction of "B").
- ⑤ Tighten nut (a) firmly after adjustment.

Note: When making adjustment, be sure to use the buttonhole foot.
After adjustment, check the bar-tuck feed.



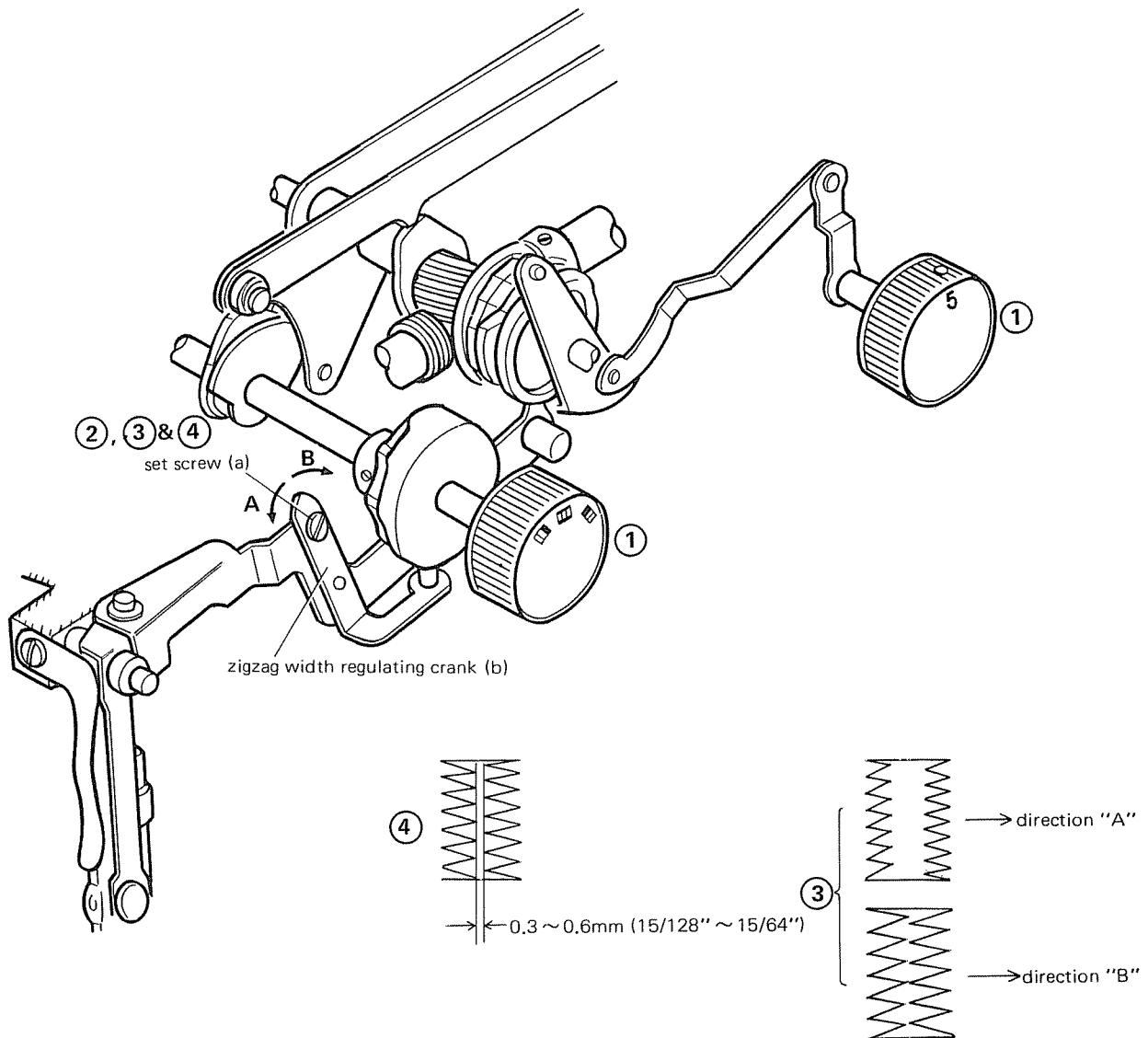
ADJUSTMENT FOR CUTTING SPACE OF BUTTONHOLE

The cutting space of buttonhole should be 0.3 ~ 0.6mm (3/256" ~ 3/128").

When the cutting space is too wide or too narrow, make adjustments as follows:

- ① Set stitch (zigzag) width regulator dial at "5" and stitch length regulator dial at "0.5".
Then turn pattern selector dial in the order of "■□" → "■□" → "■□" → "■□" while sewing buttonhole.
- ② Loosen set screw (a)
If the cutting space is too wide, move zigzag width regulating crank (b) in the direction "A".
If the cutting space is too narrow, move zigzag width regulating crank (b) in the direction "B".
- ③ Tighten set screw (a) temporarily after adjustment.
- ④ Sew buttonhole and see if the cutting space is 0.3 ~ 0.6mm (3/256" ~ 3/128").
Then, tighten set screw (a) firmly.

Note: When making adjustment, use the buttonhole foot.

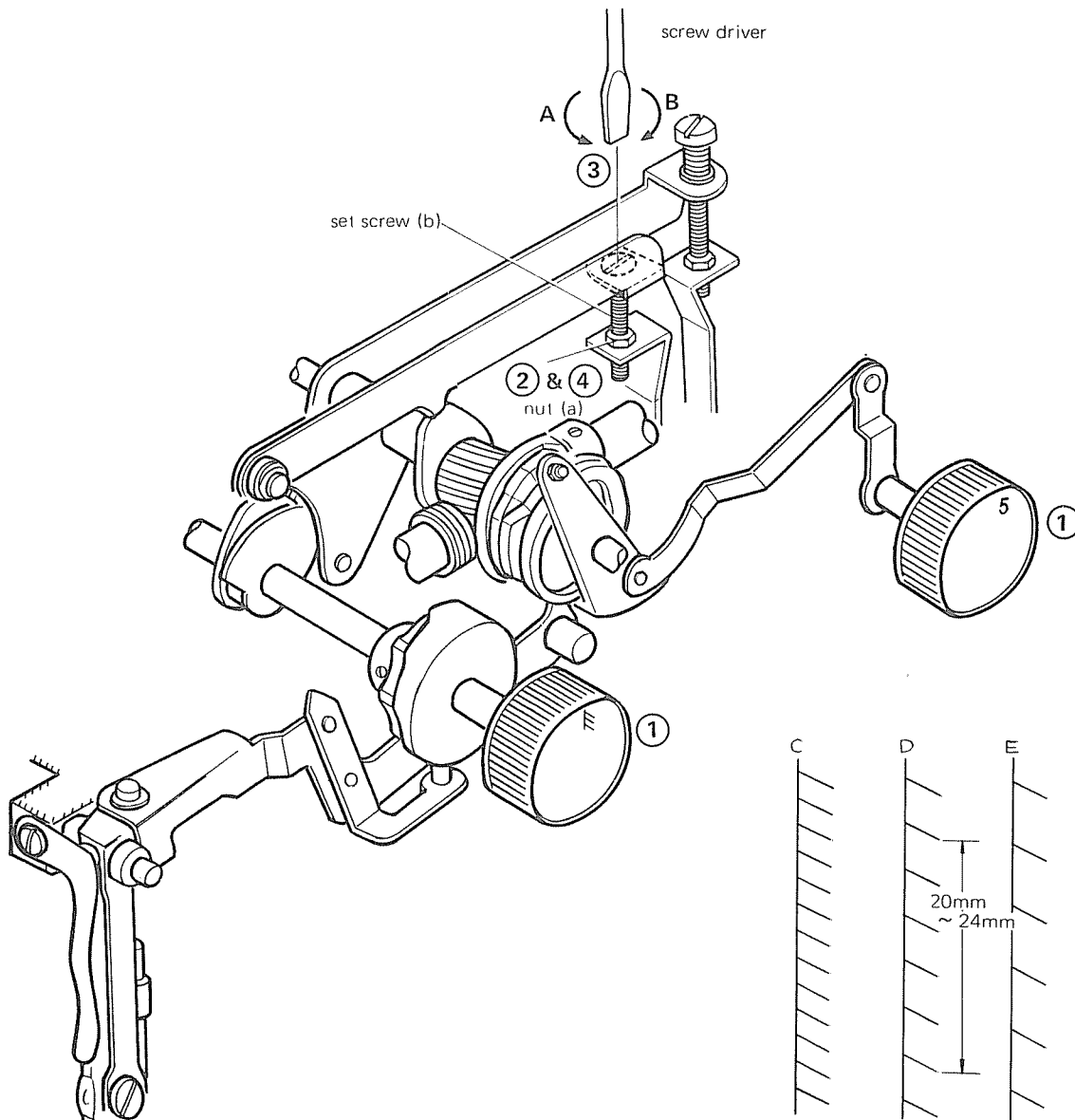


ADJUSTMENT OF AUTOMATIC PATTERN REVERSE FEED

If there is any difference in feed between forward and reverse stitching on automatic reverse feed pattern sewing, the deformed patterns can be caused.

The adjustment should be made as follows:

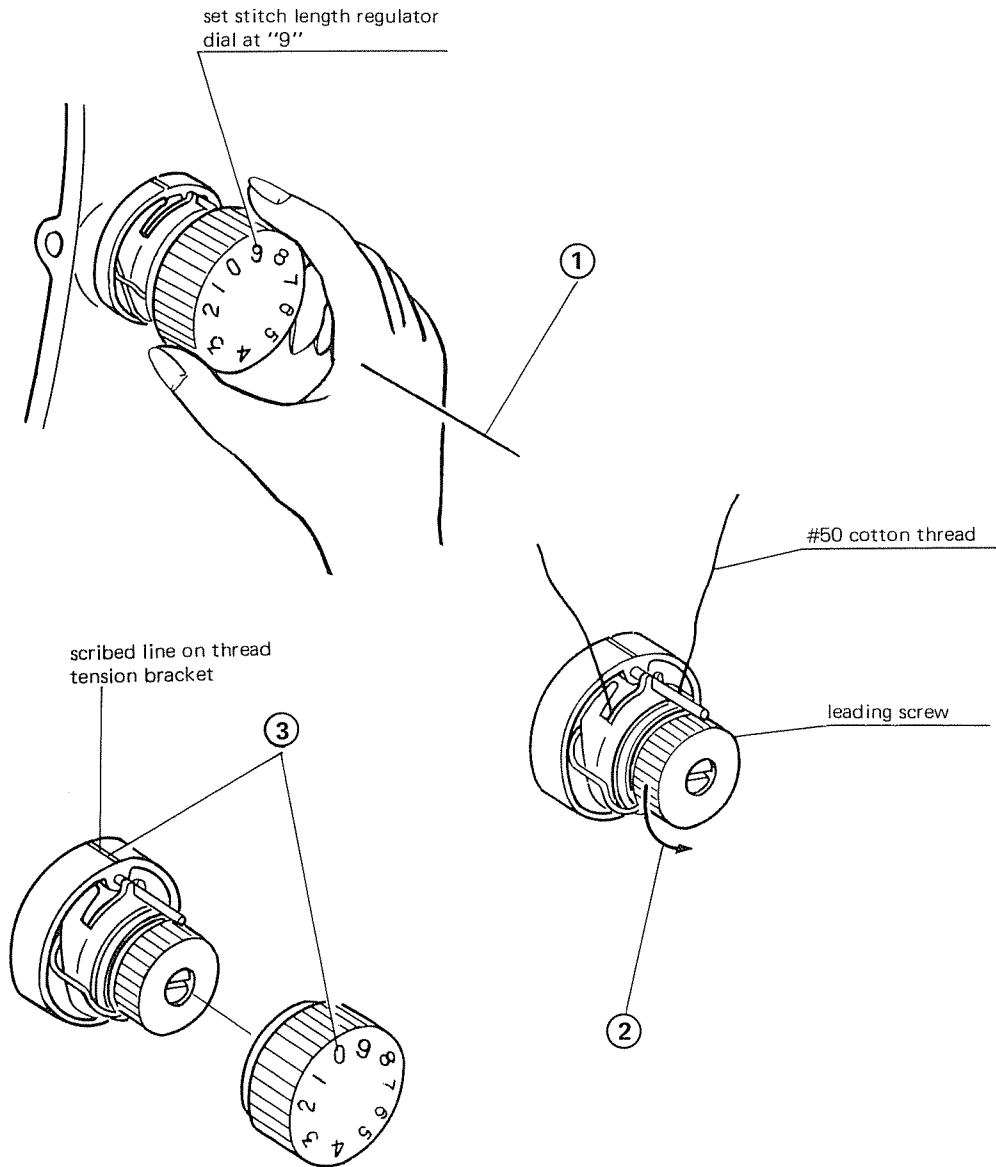
- ① Set stitch length regulator at “4”, stitch (zigzag) width regulator dial at “5” and pattern selector dial at “ Ξ ”, respectively.
Try to sew stitches and see if the length of the patterns in its 5 cycles is 20mm ~ 24mm as illustration “D”. If not, make the adjustment as follows:
- ② Loosen nut (a).
- ③ i) If patterns appear as illustration “C”, turn set screw (b) anti-clockwise (in the direction of “A”).
ii) If the patterns appear as illustration “E”, turn set screw (b) clockwise (in the direction of “B”).
- ④ After adjustment, tighten the nut (a) firmly and make sure that there is no difference in feed between forward and backward on the stretch stitch pattern “ |||| ”.



ADJUSTMENT OF THREAD TENSION

To check proper thread tension, set thread tension regulator dial at “0” and lower the presser bar lifter. It is the most desirable when thread can get through without resistance with thread tension regulator dial being set at “0” and a slight resistance is felt with the dial at “1”.

- ① Pull out the thread tension regulator dial knob from the dial unit. (Thread tension regulator dial should be set at “9”).
- ② Loosen the leading screw until thread can be pulled out without resistance.
- ③ Set the dial “0” on thread tension regulator dial at the line on thread tension bracket and push them as far as it will go.



ADJUSTMENT OF CLEARANCE BETWEEN NEEDLE AND ROTARY HOOK

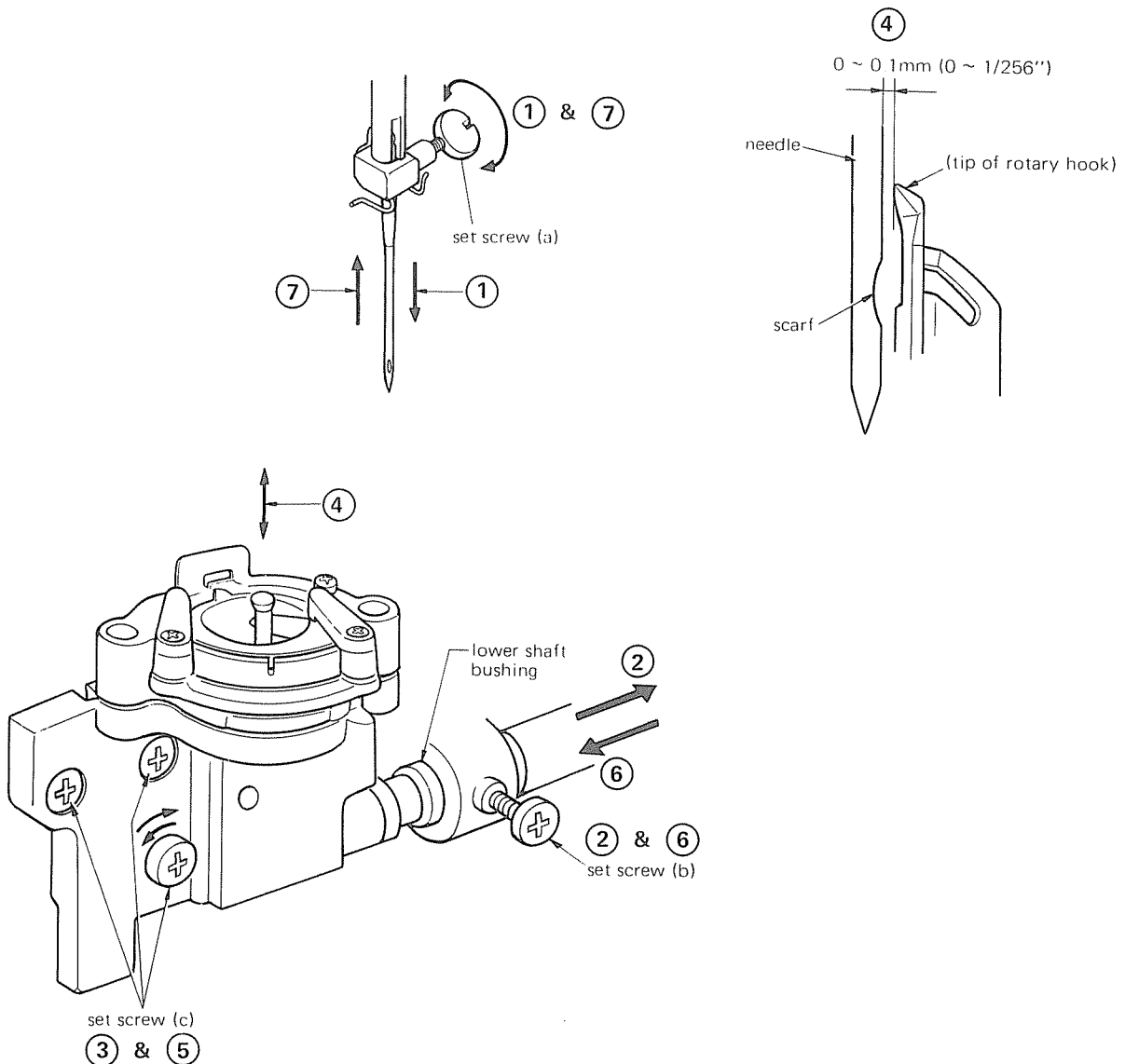
The clearance between needle and rotary hook should be 0 ~ 0.10mm (0'' ~ 1/256'').

If not, make adjustments as follows:

- ① Make sure that needle is straight .
Then, loosen needle clamp screw (a), lower needle so that the tip of rotary hook is above the scarf of needle when needle comes to the lowest point of its travel and tighten the needle clamp screw (a).
- ② Loosen set screw (b) and shift lower shaft gear to the right.
- ③ Loosen three set screws (c).
- ④ Move hook race units to adjust clearance between needle and rotary hook.
- ⑤ Tighten three set screws (c).
- ⑥ Properly engage lower shaft gear with driver shaft gear. Then, tighten set screw (b).
- ⑦ Reset needle in the normal position for sewing.


Note: After adjustments,

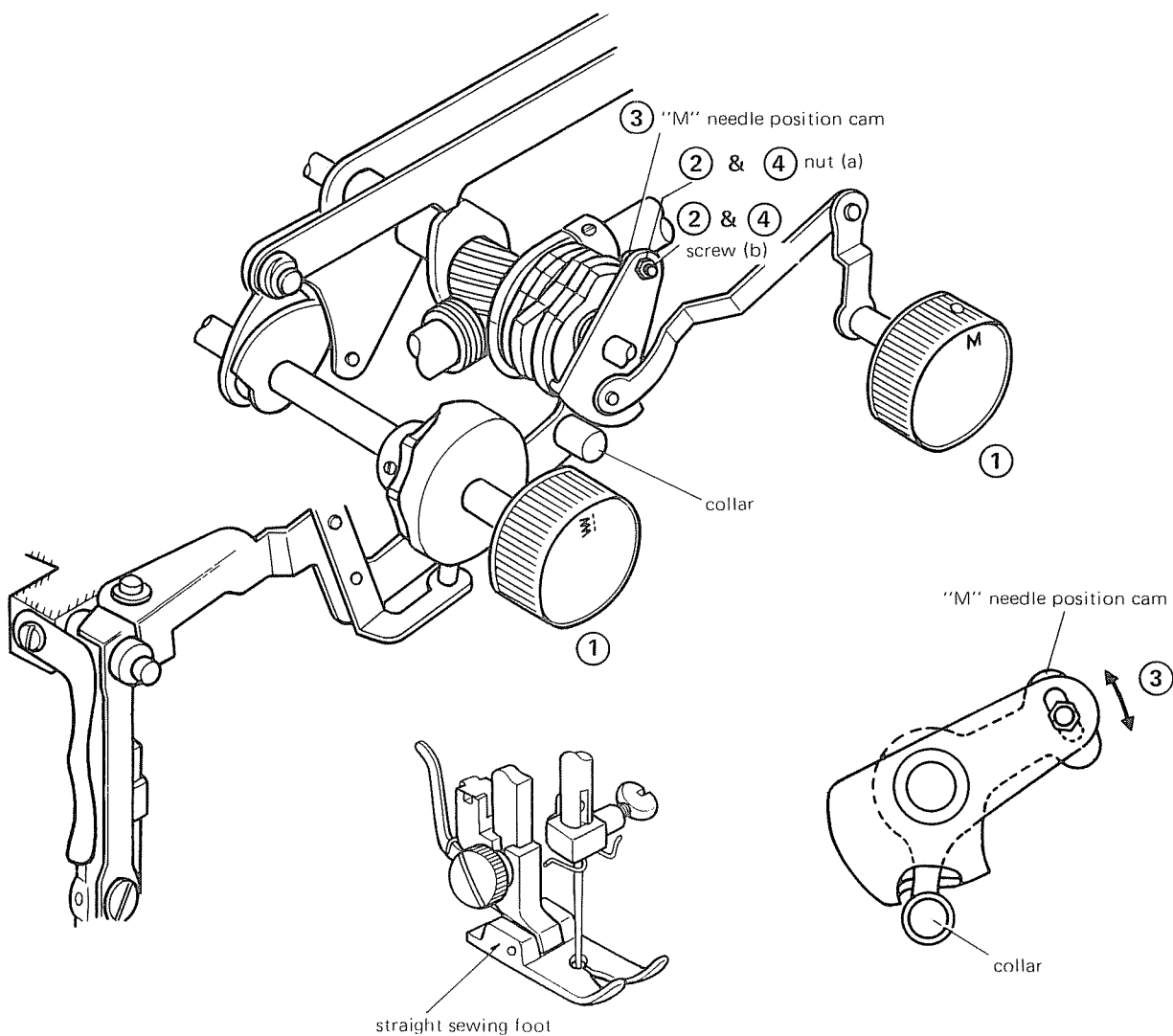
- 1) See if the engagement with lower shaft gear and driver shaft gear is smooth by turning balance wheel toward you.
- 2) Make sure that hook timing, height of needle bar, feed lifting cam position and feed cam position are correct.



ADJUSTMENT OF "M" NEEDLE POSITION

If needle does not drop in the center of needle hole by setting stitch (zigzag) width regulator dial at "M", make adjustments as follows:


- ① Set stitch (zigzag) width regulator at "M" and pattern selector dial at "  ".
Replace presser foot with straight sewing foot.
- ② Loosen nut (a) and screw (b).
- ③ Move "M" needle position cam up or down to adjust position of needle so that needle drops in the center of needle hole.
- ④ Tighten nut (a) and screw (b).
- ⑤ Make sure that straight stitch does not stagger at "M" of stitch (zigzag) width regulator dial.

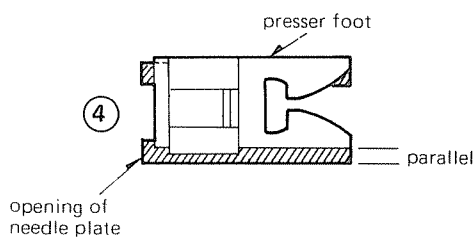
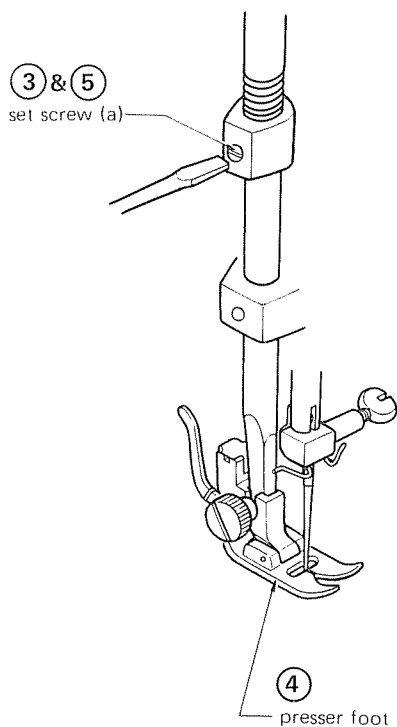
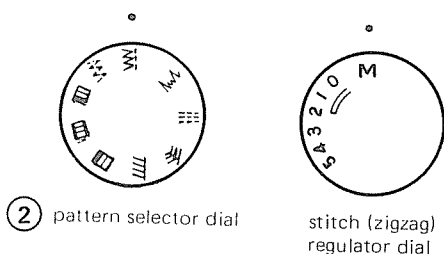


ADJUSTMENT FOR DIRECTION OF PRESSER FOOT

The direction of presser foot should be correctly position or parallel with the feed dog slots in the needle plate so that the needle may drop in center of its needle hole.

If not, make adjustments as follows:

- ① Remove lamp and other light fittings from the front of the machine.
- ② Set stitch (zigzag) width regulator dial at “M” and pattern selector dial at “  ”.
- ③ Raise presser bar lifter and loosen set screw (a) for presser bar guide bracket.
- ④ Adjust direction of the presser foot so that the needle drops in center of its needle hole and the both sides of presser foot may be in parallel with feed dog slots in the needle plate.
- ⑤ Tighten set screw (a) firmly.
- ⑥ Fix light fittings on the machine.



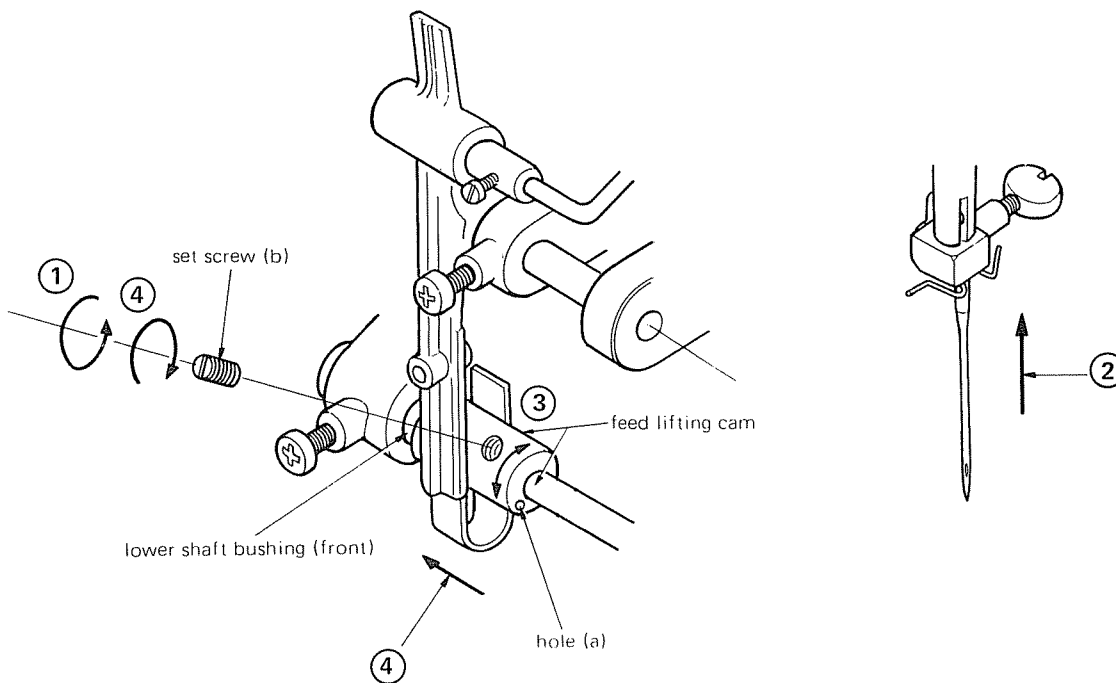
ADJUSTMENT OF FEED LIFTING CAM POSITION

As the needle comes to the highest point of its travel, the hole (a) in the feed lifting cam should be at the bottom (with the sewing machine in the upright position).

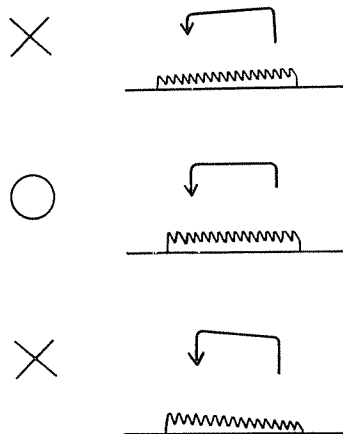
If not, make adjustments as follows:

- ① Loosen set screw (b).
- ② Turn balance wheel toward you until needle comes to the highest of its travel.
- ③ Adjust to position feed lifting cam (c) so that its hole is at the bottom.
- ④ Tighten set screw (a) while lightly pressing feed lifting cam against lower shaft bushing (front).

Note: Make sure that with stitch length regulator dial knob set at "4", the feed dog is held level as it moves from the highest point of its travel down below needle plate while the balance wheel is turned toward you. Also see if the deformed patterns are not caused with super automatic pattern sewing.



movement of feed dog



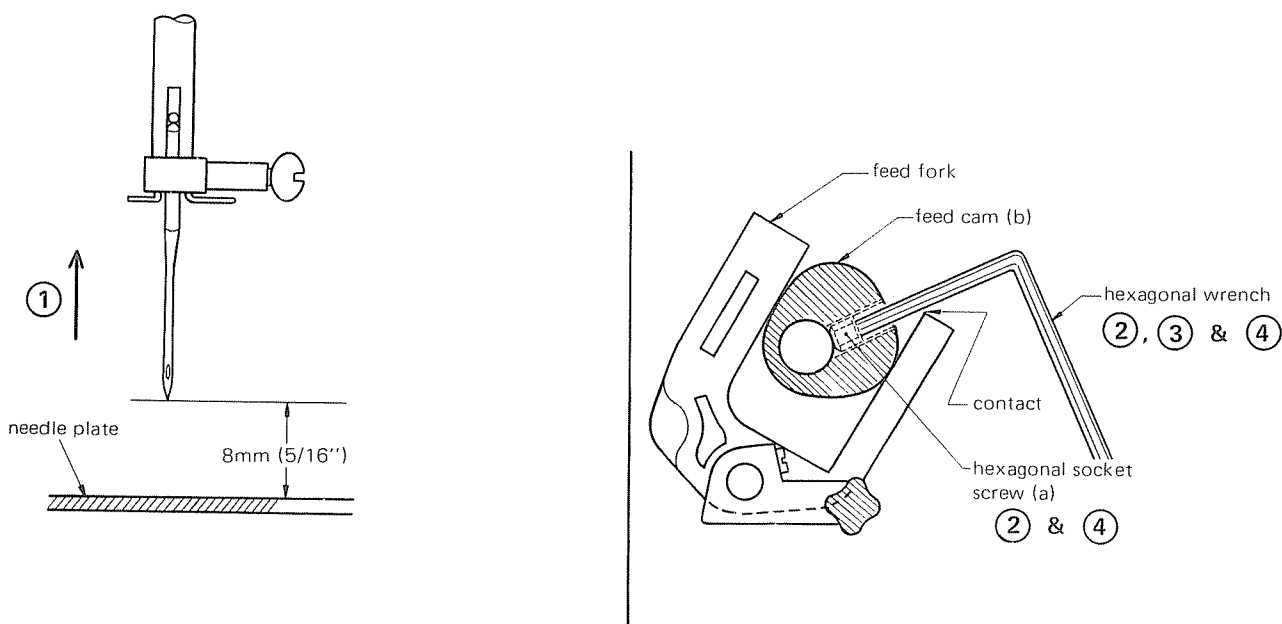
TO PLACE FEED CAM IN CORRECT POSITION

When the tip of needle is 8mm (5/16") above the surface of needle plate in its up-rising travel, the hexagonal wrench, which is inserted in the hexagonal socket screw in the feed cam, should be in contact with the inside edge of the feed fork as shown below.

If not, make adjustments as follows:

- ① Turn balance wheel toward you until the tip of needle comes down to 8mm (5/16") above the surface of needle plate.
- ② Loosen hexagonal socket screw (a).
- ③ Move feed cam (b) so that hexagonal wrench-inserted in hexagonal socket screw (a) comes in contact with the inside edge of feed fork as shown below while holding balance wheel with your hand to prevent it from turning.
- ④ Tighten hexagonal socket screw (a) while lightly pressing feed cam (b) against lower shaft bushing (rear).

Note: After adjustment, make sure that in sewing the super automatic patterns, the tension of the upper and lower threads are balanced.



ADJUSTMENT OF HEIGHT OF FEED DOG

Set stitch length dial at "4", lower presser foot (the presser regulator should be set at red line) and turn balance wheel toward you until the needle comes to highest point of its travel.

In this condition, the height of feed dog above the needle plate should be 0.7 ~ 0.85mm (7/256" ~ 17/512").

When the stitch length dial is set at "DOWN", feed dog should be below the surface of needle plate and should not touch the hook race body (unit).

To adjust:

- ① Set stitch length dial at "4" (presser regulator set at red line) and turn balance wheel toward you until needle comes to highest point of its travel. Then lower presser foot.
- ② Loosen set screw (a).
- ③ Turn feed lifting rock shaft crank roller stud (b) with a screw driver to make the adjustment.
- ④ Tighten set screw (a) after correct height of feed dog (0.7 ~ 0.85mm) is obtained.

