

SERVICE MANUAL FOR

XL2600

XL2610

XL2620

XL3500

XL3500T

XL3510

XL3520

COMFORT 25

L25

L35

BM2600

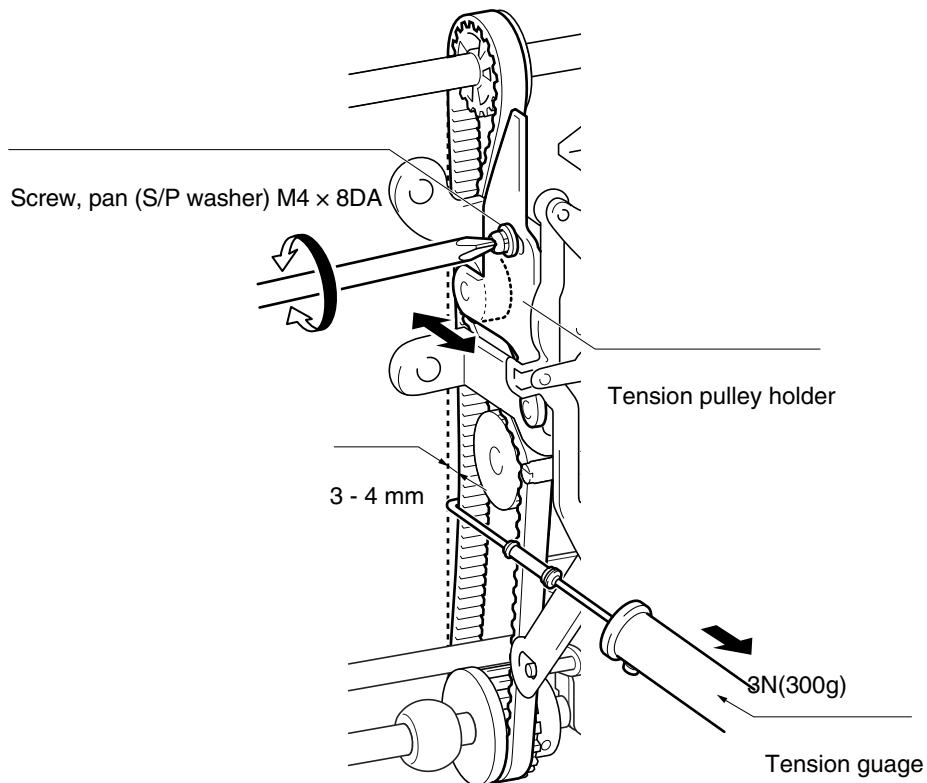
BM3500

Adjustment

Adjustment of the Timing Belt Tension	3 - 1
Adjustment of the Motor Belt Tension	3 - 2
Adjustment of the Needle Bar Stopper	3 - 3
Adjustment of the Needle Sidewise Movement (Needle Swing Timing)	3 - 4
Adjustment of the Needle Swing	3 - 5
Adjustment of the Left/Right Position of Zigzag Needle Down	3 - 6
Adjustment of the Amount of Needle Bar Rise	3 - 7
Adjustment of the Presser Bar Height	3 - 8
Adjustment of the Feed Dog Height	3 - 9
Forward/Back and Left/Right Position Adjustment of the Feed Dog	3 - 10
Adjustment of the Position of the Inner Rotary Hook Rotation Prevention Bracket	3 - 11
Adjustment of the Upper Thread Tension	3 - 12
Adjustment of the Inner Rotary Hook (Lower Thread) Tension	3 - 13
Adjustment of the Thread Winding (Uneven Bobbin Winding and Amount of Thread Winding)	3 - 14
Adjustment of the feed	3 - 15
Adjustment of the bar tack	3 - 16
Adjustment of the BH Left Over Edging	3 - 17
Adjustment of the zigzag width for BH Right Over Edging	3 - 18
Adjustment of the Supper Switch 1 Pattern	3 - 19
Adjustment of the Super Stitch 2 Pattern	3 - 20
Left and Right Balance of the Needle Clearance	3 - 21
Adjustment of Forward/Back Position of Needle Against the Needle Hole in the Presser Foot	3 - 22
Adjustment of the Needle Bar Height	3 - 23
Adjustment of the Needle Clearance	3 - 24

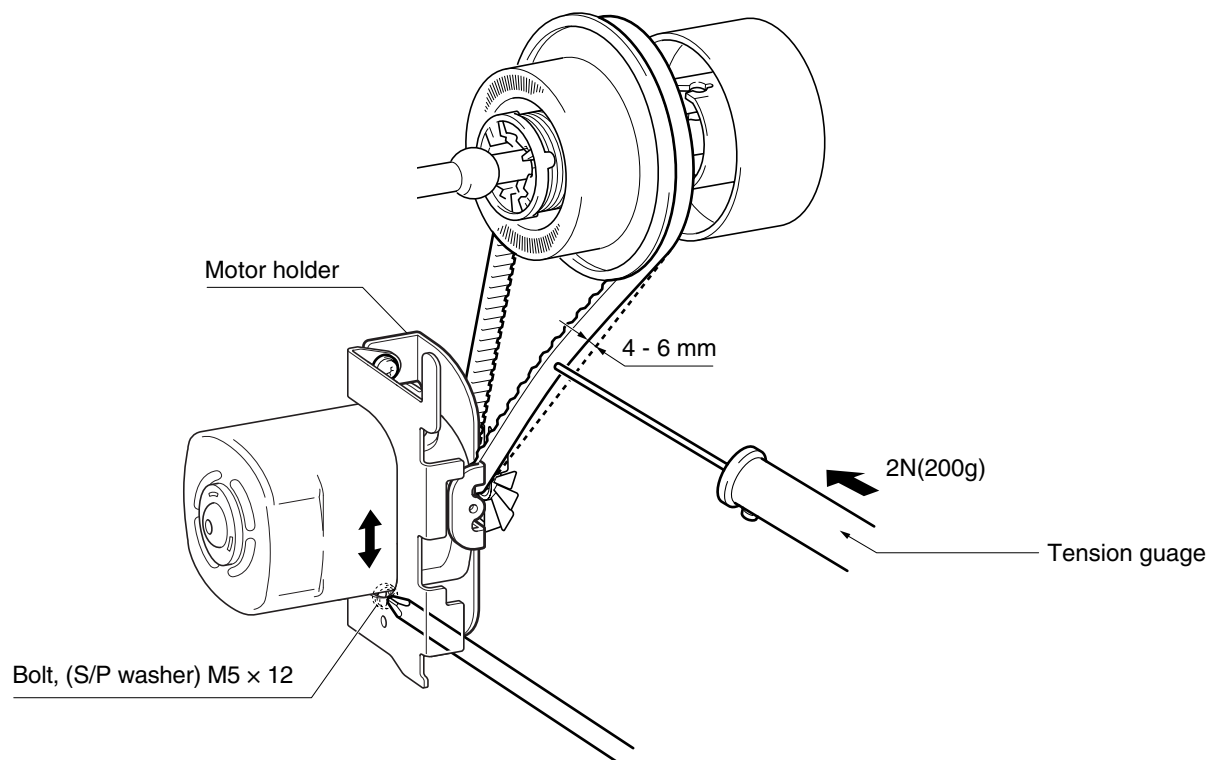
1. Adjustment of the Timing Belt Tension

- When pulling on the middle portion of the timing belt with a force of 3 N (300 g), there should be a slack of 3 to 4 mm.
- ① Loosen the screw (Screw, pan (S/P washer) M 4 × 8 DA) fastening the tension pulley holder.
 - ② Adjust the belt tension by moving the tension pulley holder up or down.
 - ③ Tighten the screw (Screw, pan (S/P washer) M 4 × 8 DA) to secure the tension pulley holder.
 - ④ Check the timing belt tension again.



2. Adjustment of the Motor Belt Tension

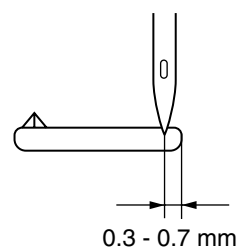
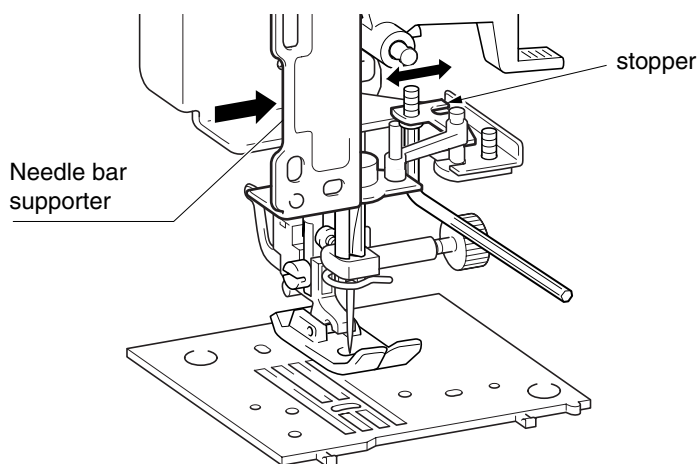
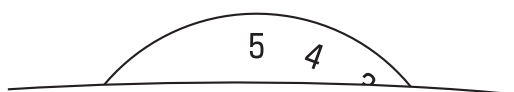
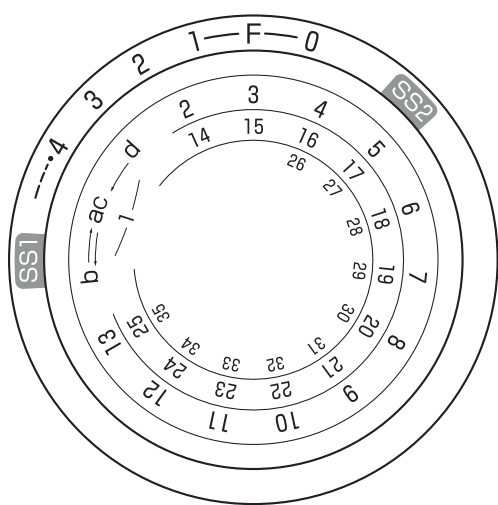
- When pulling on the middle portion of the motor belt with a force of 2 N (200 g), there should be a slack of 4 to 6 mm.
- ① Loosen the two screws (Bolt, (S/P washer) M 5 × 12) fastening the motor holder.
 - ② Adjust the belt tension by moving the motor holder up or down.
 - ③ Tighten the two screws (Bolt, (S/P washer) M 5 × 12) to secure the motor holder.
 - ④ Check the motor belt tension again.



3. Adjustment of the Needle Bar Stopper

- The needle tip should not touch the needle plate when the needle bar is lowered and the needle bar support is pushed to the right. The needle bar support should not contact the stopper when the needle is at the right down position with the maximum zigzag width setting.

- ① Turn the selection dial to [3].
- ② Turn the dial to [5] to maximize the zigzag width.
- ③ Turn the pulley to lower the needle bar until the needle tip is level with the top face of the needle plate.
- ④ Loosen the screw (bolt, socket, size M3 x 6) securing the stopper.
- ⑤ Adjust the stopper position (left/right) so that the needle tip does not contact the needle plate when the needle bar support is pushed to the right.
- ⑥ Tighten the screw (bolt, socket, size M3 x 6) to secure the stopper.
- ⑦ Turn the pulley to verify that the needle bar support does not contact the stopper when the needle is swung to the right. If it contacts the stopper, repeat from step 1.

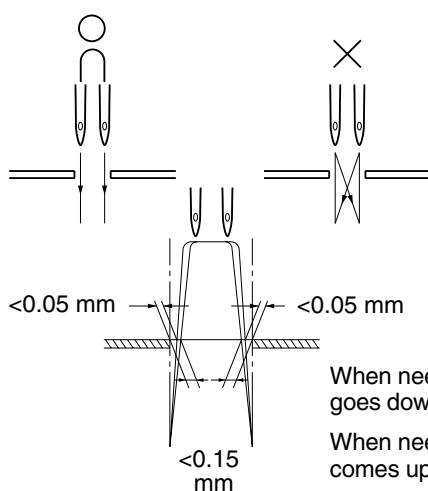
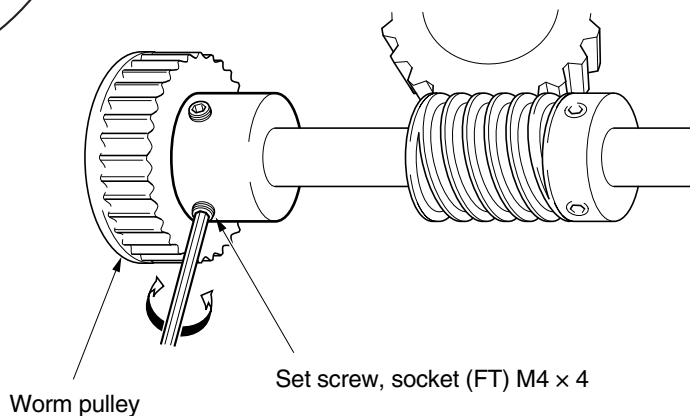
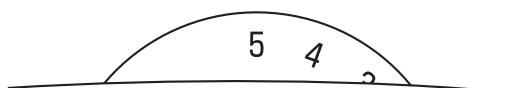
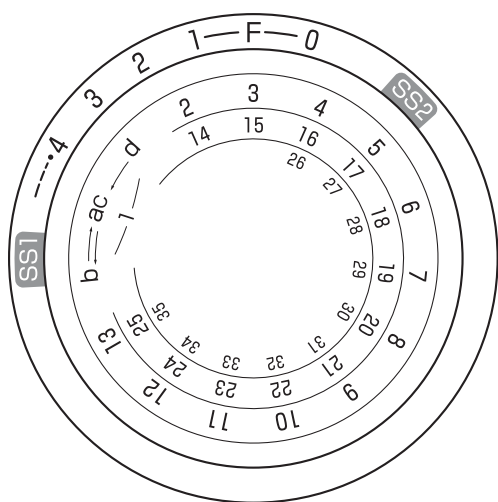


Adjustment of the stopper position

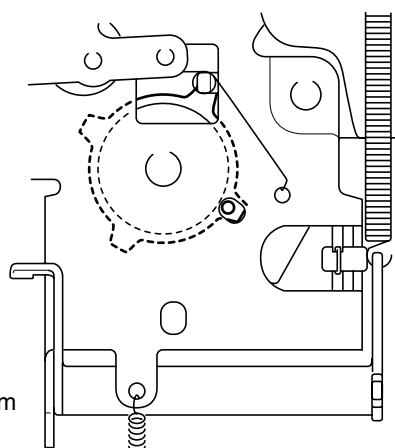
4. Adjustment of the Needle Sidewise Movement (Needle Swing Timing)

- The needle movement from the top of the needle hole to the needle's lowest point should be within 0.05 mm.

- Turn the selection dial to [3].
- Turn the dial to [5] to maximize the zigzag width.
- Align the position of the oval part of the cam with the hole on the frame.
- Loosen the two screws (set screw, socket (FT), size 4M x 4) securing the worm pulley.
- Turn the pulley to move the needle bar to its highest position.
- Tighten the two screws (set screw, socket (FT), size 4M x 4) to secure the worm pulley.
- Turn the pulley to verify that needle swing timing is within the criteria.

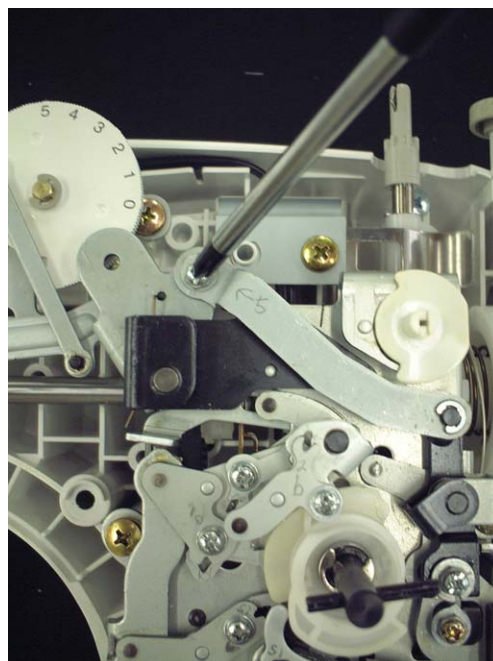
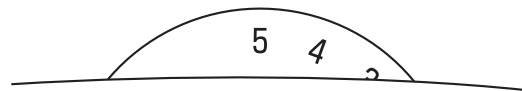
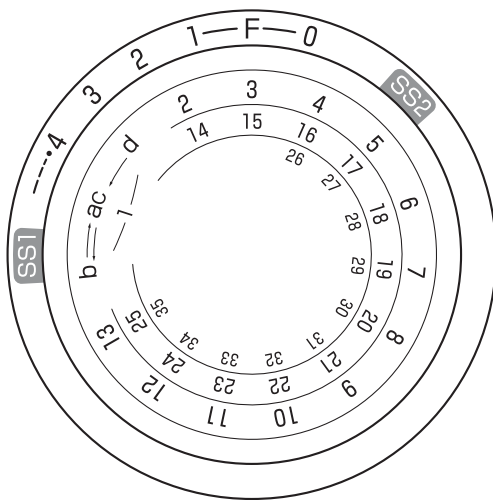


When needle goes down ... less than 0.05 mm
When needle comes up ... less than 0.15 mm



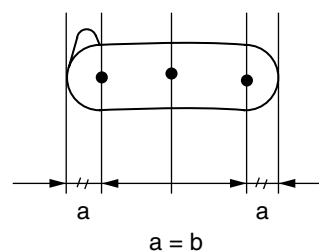
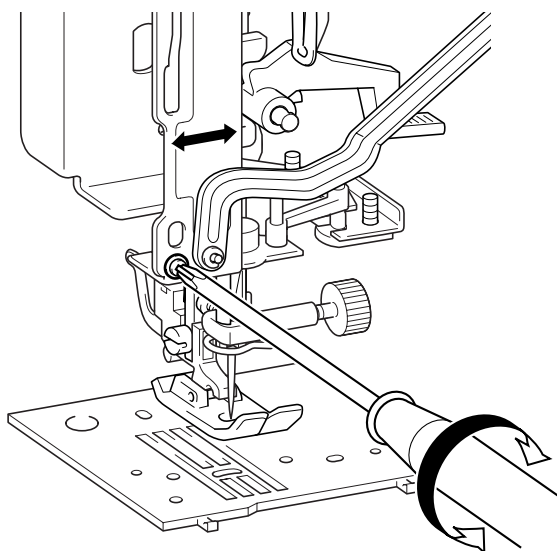
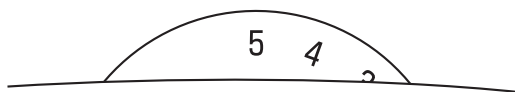
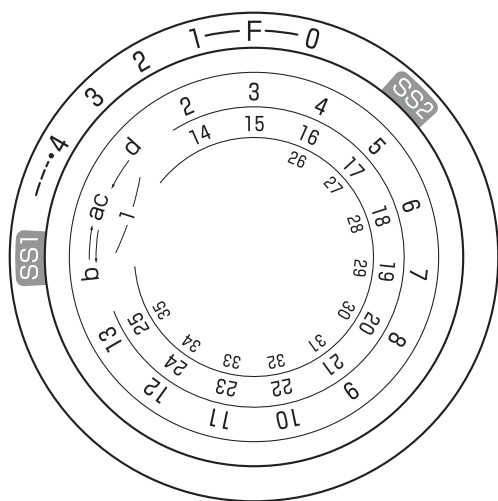
5. Adjustment of the Needle Swing

- When the Z dial is turned from 0 to 5 while the needle is at the right down position with the maximum zigzag width setting, variation in needle down should be within 0.15 mm.
- ① Turn the selection dial to [3].
 - ② Turn the dial to [5] to maximize the zigzag width.
 - ③ Turn the pulley to lower the needle bar until the needle tip is level with the top face of the needle plate when the needle is at the right down position.
 - ④ Loosen the screw at the Z adjustment nut.
 - ⑤ Adjust the position of the needle with the Z adjustment nut so that the needle tip does not move when the Z dial is turned from 5 to 0.
 - ⑥ Tighten the screw.
 - ⑦ Turn the Z dial from 0 to 5 and 5 to 0 to verify that variation in needle down is within the criteria.



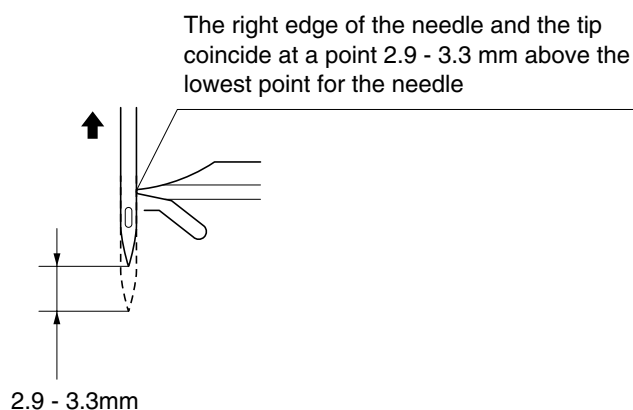
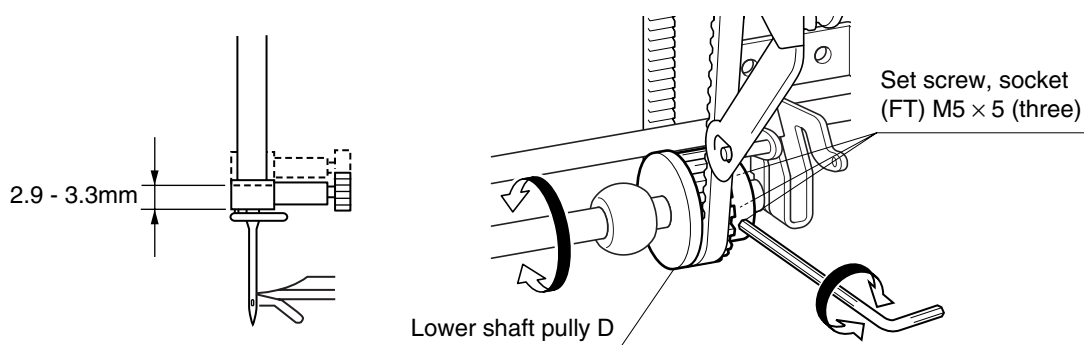
6. Adjustment of the Left/Right Position of Zigzag Needle Down

- The zigzag width with the maximum zigzag set should be equal to the right and left from the needle hole on the needle plate.
- ① Turn the selection dial to [3].
 - ② Turn the dial to [5] to maximize the zigzag width.
 - ③ Turn the pulley and check the zigzag width.
 - ④ Loosen the screw (screw, pan (S/P washer) M3 x 8 DB) beside the Z linkage and adjust the zigzag width so that it is equal to the right and left from the needle hole on the needle plate.
 - ⑤ Tighten the screw (screw, pan (S/P washer) M3 x 8 DB) beside the Z linkage.
 - ⑥ Turn the pulley to verify that the zigzag width is equal as required above.



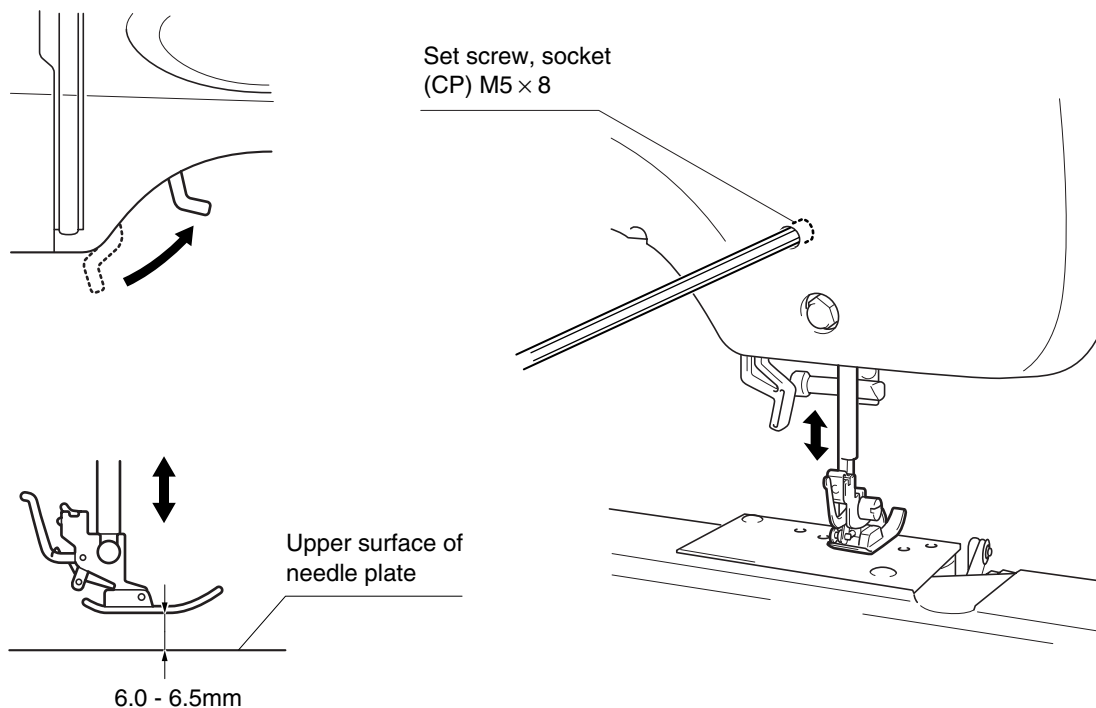
7. Adjustment of the Amount of Needle Bar Rise

- When a needle (#14) is raised by 2.9 to 3.3 mm above the lowest point of its zigzag (max.) left needle down position, the rotary hook point should be even with the perimeter of the needle.
- ① Select the maximum zigzag width.
 - ② Turn the pulley by hand to bring the needle to the lowest point of its left needle down position.
 - ③ Loosen the two screws (Set screw, socket, FT, M5 × 5) on the lower shaft pulley.
 - ④ Adjust assembly of the lower shaft and the lower shaft pulley so that the right edge of the needle and the rotary hook point are even when the needle bar is raised by 2.9 to 3.3 mm above the reference line of the needle bar's lowest point.
 - ⑤ Tighten the socket type set screws (Set screw, socket, FT) on the lower shaft pulley to secure it.



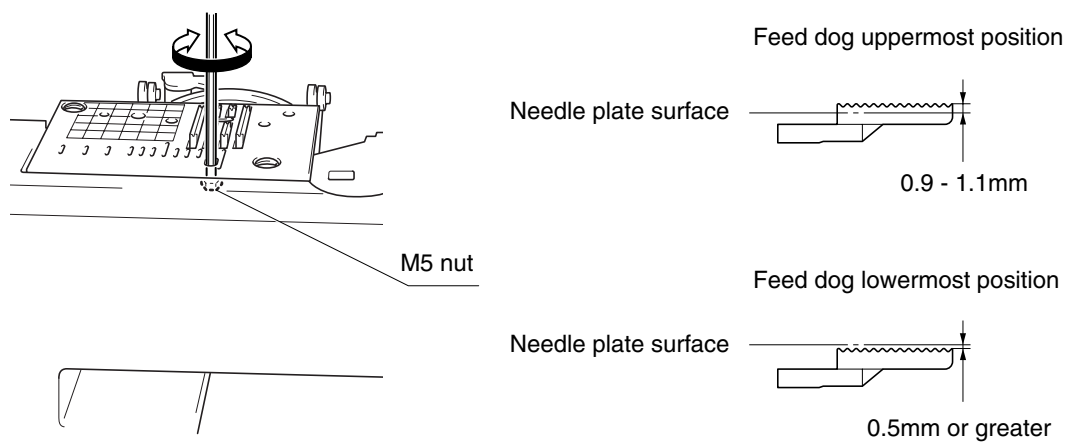
8. Adjustment of the Presser Bar Height

- The gap between the top surface of the needle plate A and the bottom surface of the presser foot should be 6.0 to 6.5 mm.
- ① Raise the presser lifter.
 - ② Turn the pulley until the feed dog is lowered below the needle plate A.
 - ③ Loosen the screw (Set screw, socket, CP, M 5 × 8) on the presser bar clamp assembly.
 - ④ Adjust the presser bar height so that the gap between the upper surface of the needle plate A and the bottom surface of the presser foot is 6.0 to 6.5 mm.
 - ⑤ Tighten the screw (Set screw, socket, CP, M 5 × 8) on the presser bar clamp assembly.



9. Adjustment of the Feed Dog Height

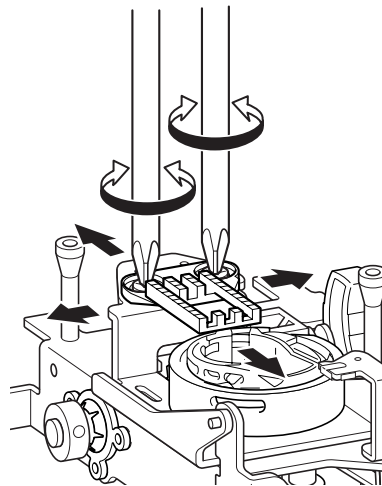
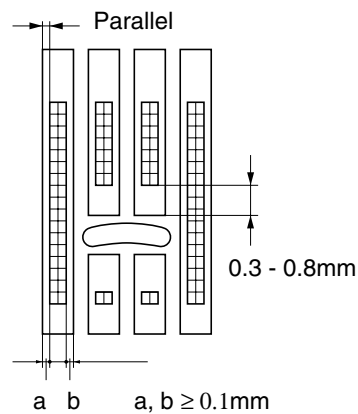
- Adjust the tightening amount of the bolt, socket M 4 × 4 so that the feed dog height is 0.9 to 1.1 mm from the top surface of the needle plate A.
- ① Turn the pulley to move the feed dog to its highest position.
 - ② Adjust the amount of tightening of the bolt, socket, M 4 × 4, until the feed dog is exposed 0.9 to 1.1 mm above the top surface of the needle plate A.
 - ③ Check that the feed dog is at least 0.5 mm below the top surface of the needle plate A when the feed dog is moved to its lowest position.



10. Forward/Back and Left/Right Position Adjustment of the Feed Dog

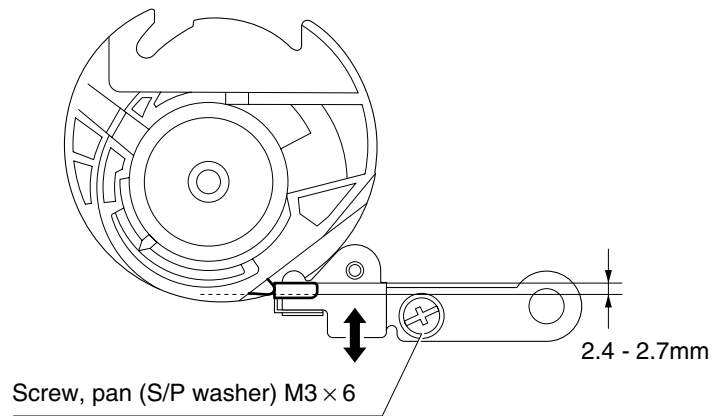
- Forward/back direction: The gap between the feed dog and the needle plate on the near side should be 0.3 to 0.8 mm when the feed amount is maximum.
- Left/right direction: The feed dog should not touch the needle plate (gap being 0.1 mm min.) when the feed amount is maximum.

- ① Remove the screw and then the needle plate A.
- ② Loosen the 3×6 bind screw and temporarily attach the needle plate A to adjust the forward/back and left/right position of the feed dog.
- ③ Tighten the 3×6 bind screw to secure the feed dog.
- ④ Tighten the M4 screw completely to secure the needle plate A.



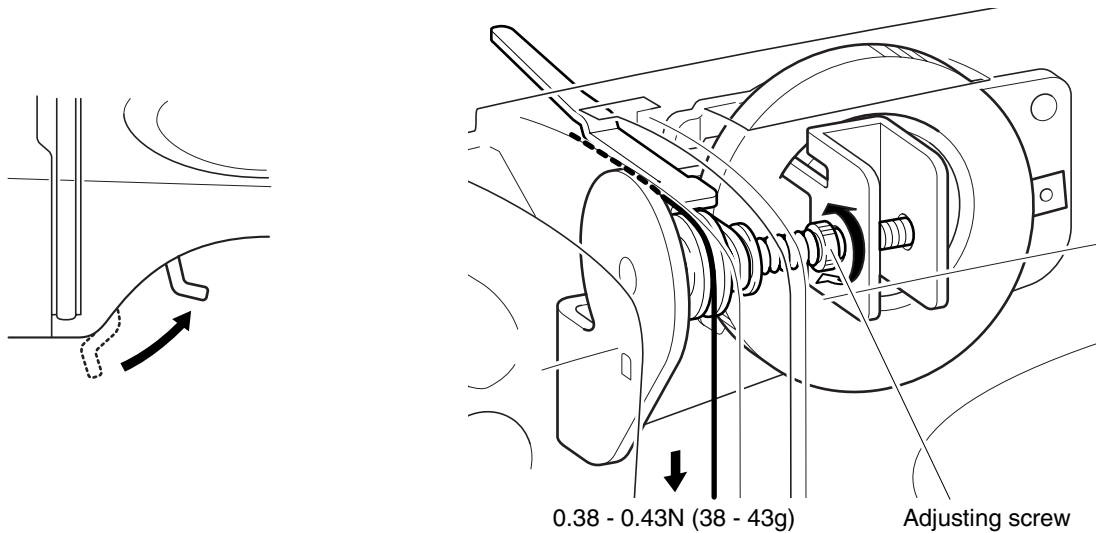
11. Adjustment of the Position of the Inner Rotary Hook Rotation Prevention Bracket

- ① Set the inner rotary hook in the rotary hook.
- ② Loosen the bind screw securing the inner rotary hook rotation prevention bracket assembly.
- ③ Adjust the position of the inner rotary hook rotation prevention bracket assembly so that the overlap distance between the inner rotary hook and the rotation prevention bracket assembly is 2.4 to 2.7 mm and secure it with the screw, pan (S/P washer) M3 × 6.



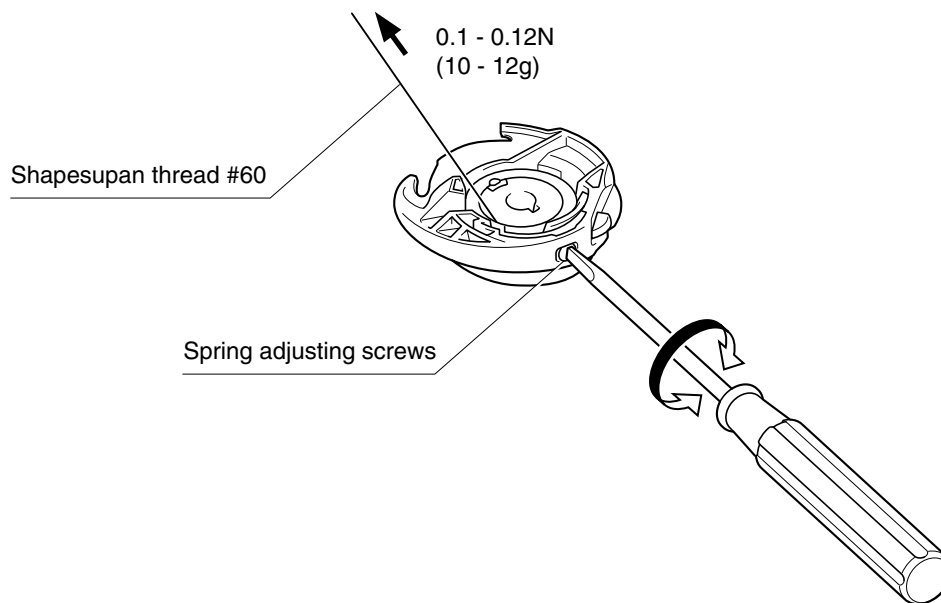
12. Adjustment of the Upper Thread Tension

- The thread tension should be 0.38 - 0.43 N (38 - 43g) when pulled slowly using a tension gauge.
- ① Raise the presser foot.
 - ② Set the thread tension dial to 4.
 - ③ Thread a schappe spun sewing thread # 60 through the thread guide and the thread tension disc.
 - ④ Lower the presser lifter.
 - ⑤ Adjust the tightening amount of the thread tension adjusting screw so that the thread tension is 0.38 - 0.43 N (38 - 43g) when pulled slowly using a tension gauge.
 - ⑥ Apply a small amount of screw locking agent to the thread tension adjusting screw.



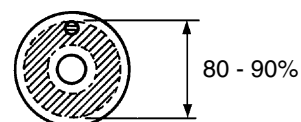
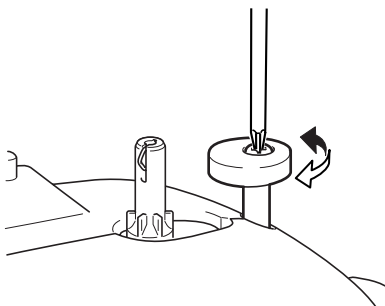
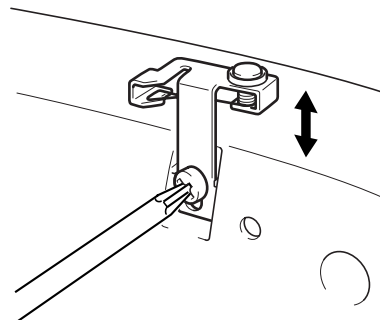
13. Adjustment of the Inner Rotary Hook (Lower Thread) Tension

- ① Set a bobbin (wound with a schappe spun sewing thread # 60) in the inner rotary hook and put a thread through.
- ② Adjust the tightening amount of the spring tension adjusting screw so that the thread tension is 0.10 to 0.12 N (10 to 12 g) when pulled slowly using a tension gauge.



14. Adjustment of the Thread Winding (Uneven Bobbin Winding and Amount of Thread Winding)

- ① Move the thread winding guide assembly up or down to adjust and correct for uneven bobbin winding. (Uneven bobbin winding)
- ② Rotate the bobbin presser to adjust the amount of thread winding. (As a guideline of thread winding amount, a bobbin should be wound up to 80 to 90% of the external diameter of the bobbin.)



IMPORTANT!

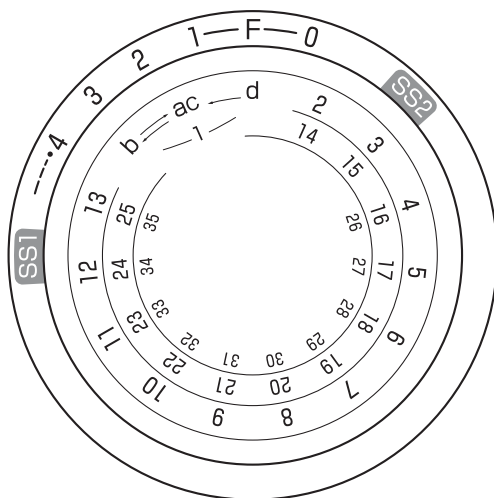
Be sure to perform adjustments from No.16 (Adjustment of the bar tack) to No.20 (Adjustment of the Super Stitch 2 Pattern) again after performing this adjustment.

15.Adjustment of the feed

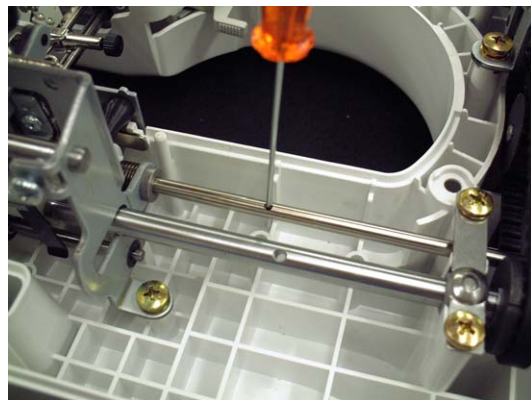
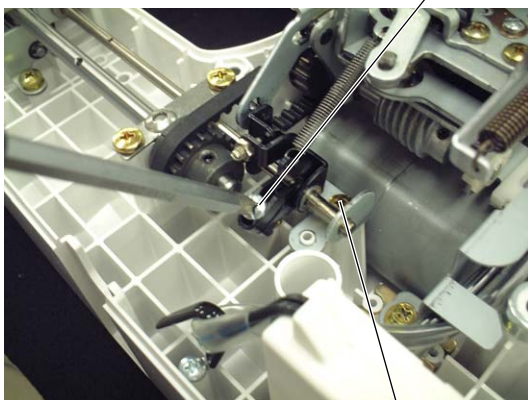
- The feed should be 5 to 6 mm when 11 stitches are sewn in feed [F] mode
- ① Turn the selection dial to [BH(d)].
- ② Turn the feed dial to [F].
- ③ Loosen the binding screw of feed transmission lever A.
- ④ Move the axis back and forth to roughly adjust the feed to be within the criteria.
- ⑤ Tighten the feed transmission lever screw.
- ⑥ Fine-tune the feed with the adjustment screw.

*Key point

- After adjusting the feed, be sure to check the feed for the super stitch 1 pattern and super stitch 2 pattern. If the feed needs adjusting, follow the descriptions in sections 12 and 13.



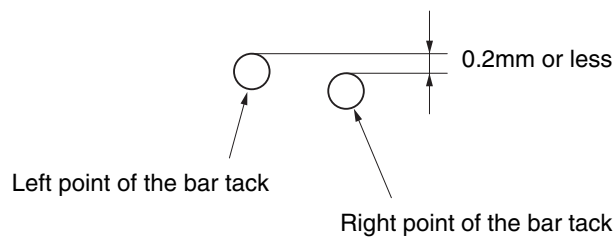
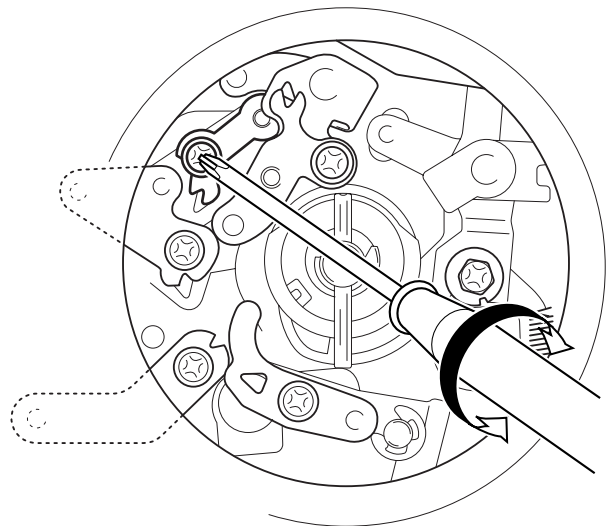
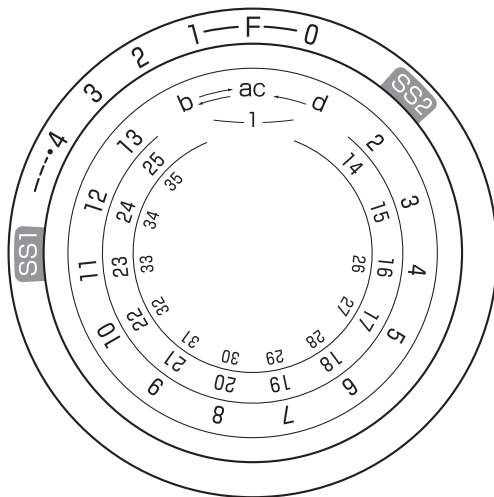
Binding screw (③)



Fine-tune the feed with the adjustment screw (⑥)

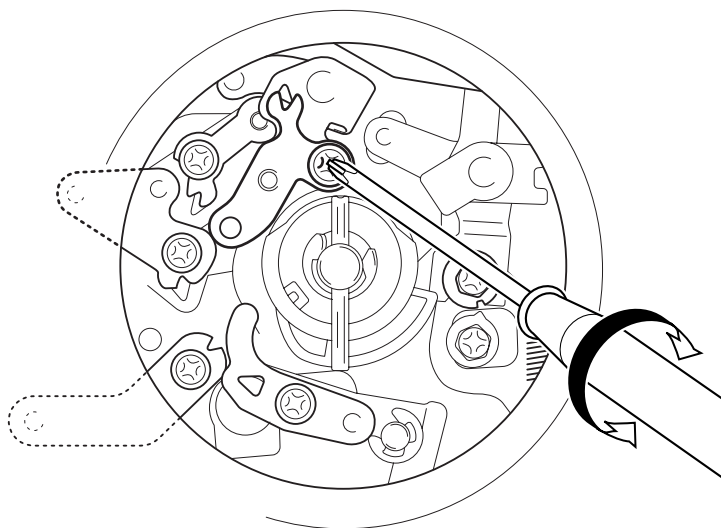
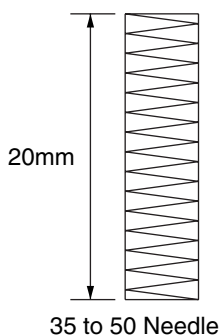
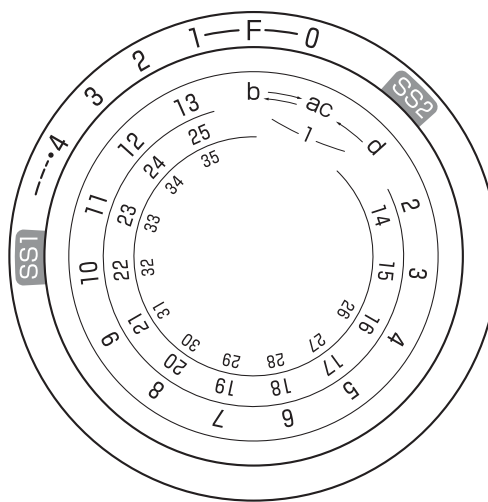
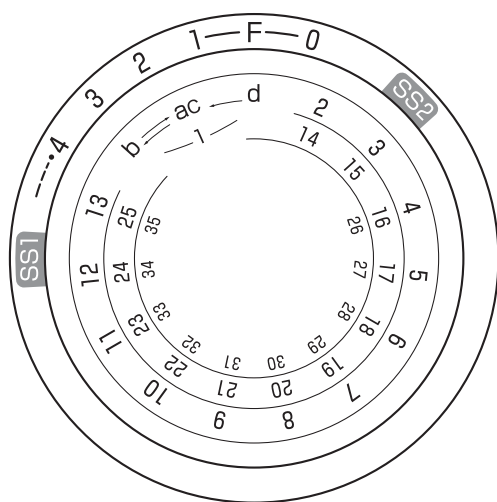
16.Adjustment of the bar tack

- The feed when [AC] is selected should be 0.2 mm or less.
- ① Turn the selection dial to [AC].
- ② Keep the feed dial set to [F].
- ③ Loosen the bar tack adjustment screw.
- ④ Turn the adjustment screw to adjust the feed to 0.2 mm or less.
- ⑤ Tighten the bar tack adjustment screw.



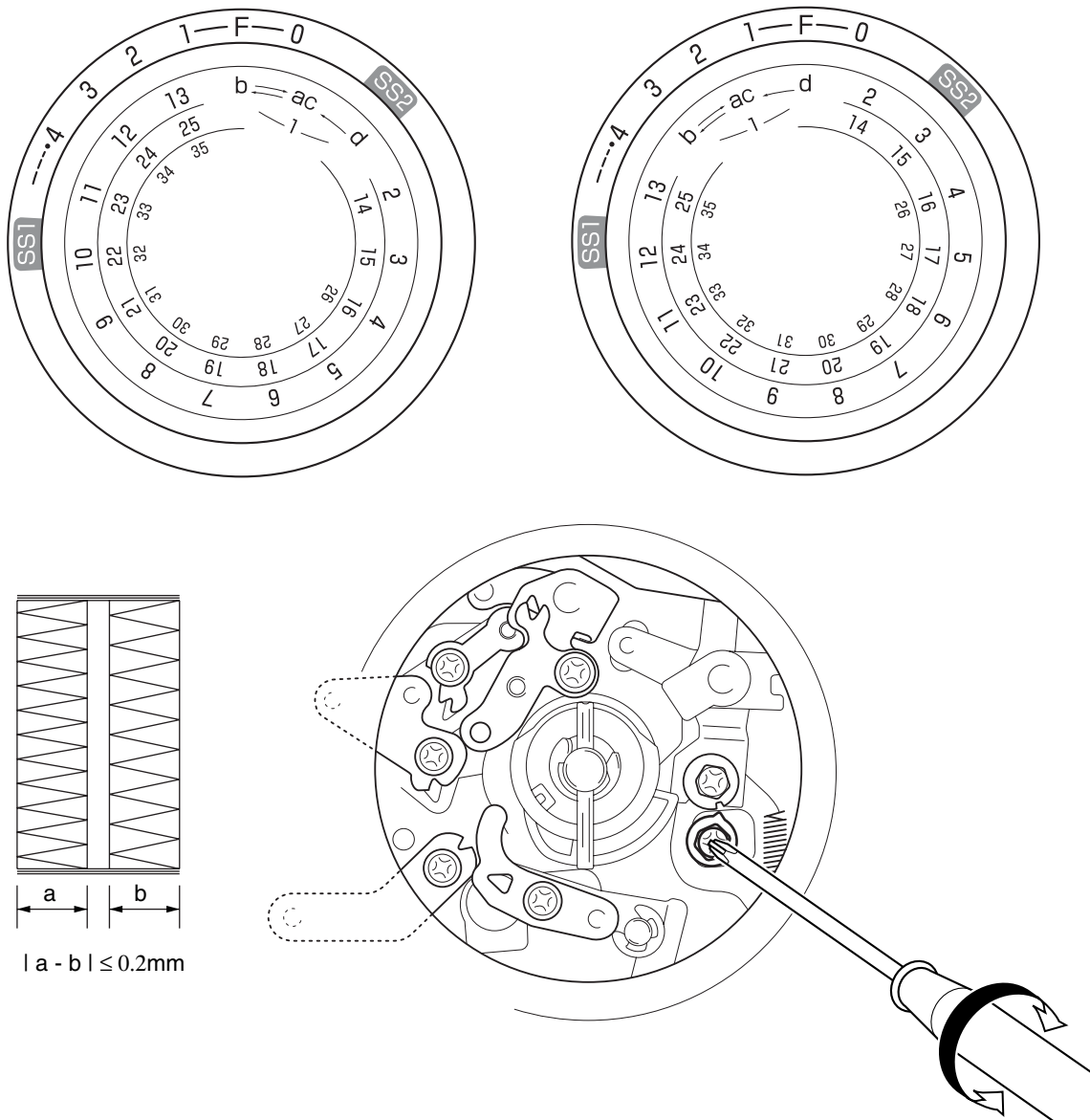
17. Adjustment of the BH Left Over Edging

- When stitching 20 mm in BH left over edging mode, the number of stitches relative to the right over edging should be in the range of -4 to +10.
- ① Turn the selection dial to [BH d] (BH right over edging).
 - ② Move the slit on the BH fine turning knob to the upright position.
 - ③ Turn the feed dial to [F].
 - ④ Check that the number of stitches is 35 to 50 per 20 mm when two pieces of broad cloth are stitched together. (Adjusted in section 7.)
 - ⑤ Turn the selection dial to [BH b] (BH left over edging).
 - ⑥ Loosen the screw so that the number of stitches is within the criteria when two pieces of broad cloth are stitched together.
 - ⑦ Tighten the selection dial screw.



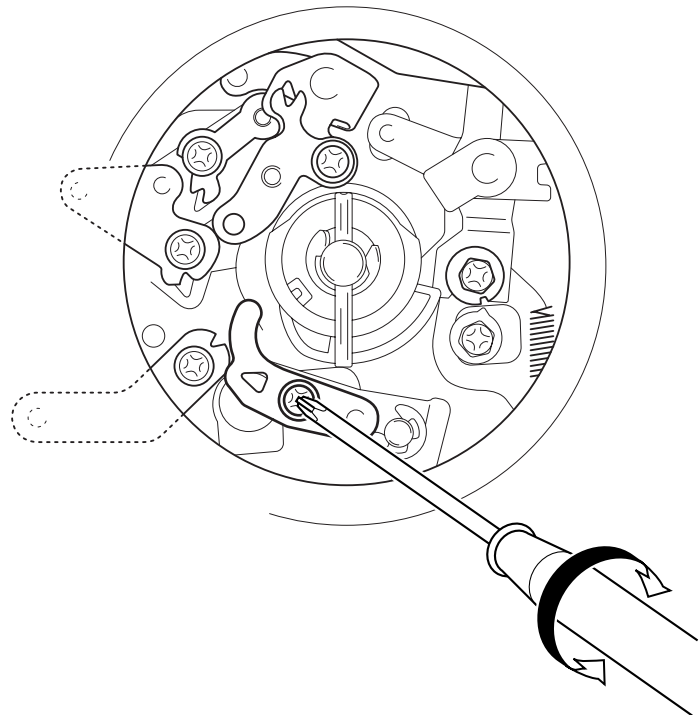
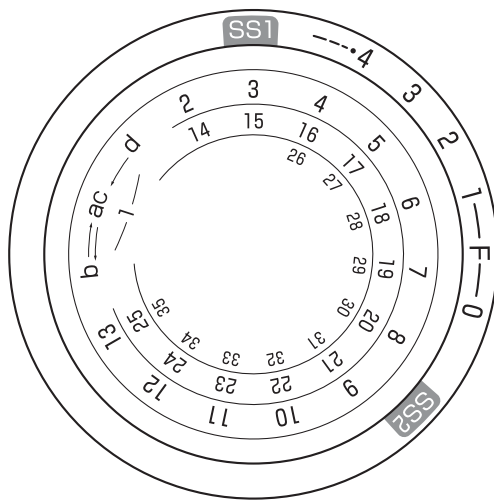
18. Adjustment of the zigzag width for BH Right Over Edging

- The zigzag width for BH right over edging should be so that the difference with the zigzag width of BH left over edging (BH b) is 0.2 mm or less.
- ① Attach a J presser foot, lower the presser lever, and attach a cover.
 - ② Turn the selection dial to select the BH left over edging (BH b).
 - ③ Attach a BH presser foot.
 - ④ Hold a piece of paper by hand and turn the pulley to pierce the paper with the tip of the needle.
 - ⑤ While holding the piece of paper by hand, turn the selection dial to select the BH right over edging (BH d).
 - ⑥ Hold the piece of paper by hand and turn the pulley to pierce the paper with the tip of the needle.
 - ⑦ Check the zigzag width of right over edging against that of left over edging.
 - ⑧ Loosen the screw (Screw, pan M 3 × 8) of the adjusting nut. (Lower right screw)
 - ⑨ Turn the adjusting nut with a spanner to adjust the zigzag width of right over edging to make it equal to that of left over edging.
 - ⑩ Tighten the screw (Screw, pan M 3 × 8) of the adjusting nut.
 - ⑪ Repeat steps ① through ⑤ above to check the zigzag width again.



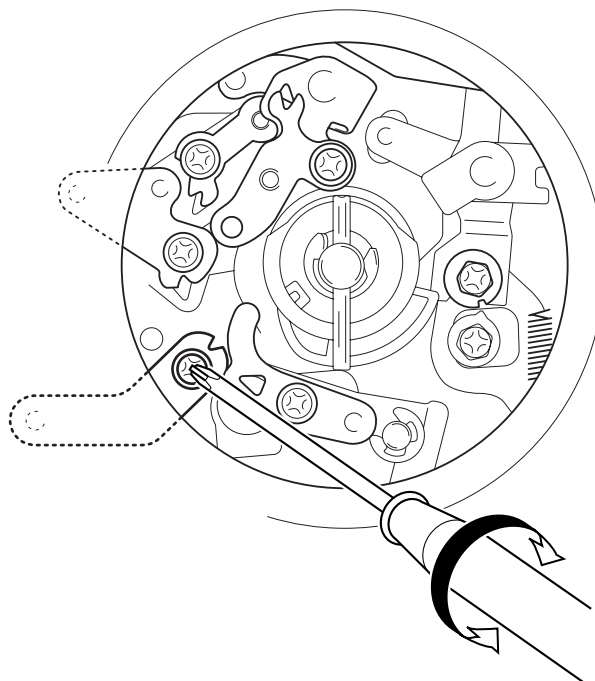
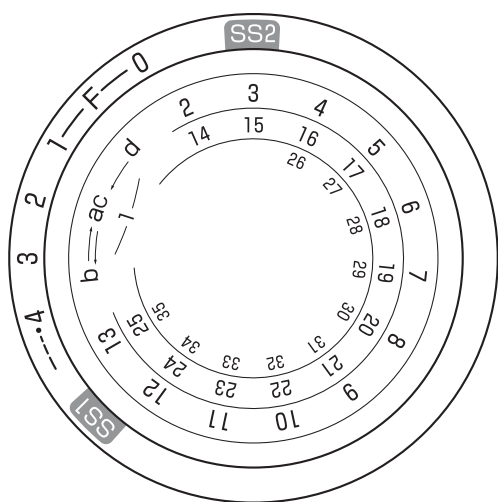
19. Adjustment of the Supper Switch 1 Pattern

- Excessive space between patterns or overlapping of patterns should not be allowed when patterns 14 to 25 are stitched.
- ① Turn the selection dial to [3].
 - ② Turn the feed dial to [SS1].
 - ③ Loosen the screw so that excessive space between patterns or overlapping of patterns does not occur when two pieces of broad cloth are stitched together.
 - ④ Tighten the screw.
 - ⑤ Check the stitching.



20. Adjustment of the Super Stitch 2 Pattern

- Excessive space between patterns or overlapping of patterns should not be allowed when patterns 14, 15, and 26 to 35 are stitched.
- ① Turn the selection dial to [3].
 - ② Turn the feed dial to [SS2].
 - ③ Loosen the screw so that excessive space between patterns or overlapping of patterns does not occur when two pieces of broad cloth are stitched together.
 - ④ Tighten the screw.
 - ⑤ Check the stitching.

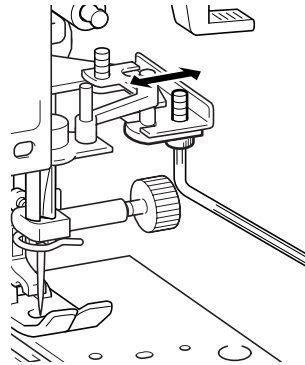
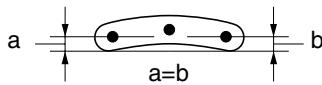


IMPORTANT!

Be sure to perform adjustments from No.21 (Adjustment of Left and Right Balance of the Needle Clearance) to No.24 (Adjustment of the Needle Clearance) again after the front cover has been removed.

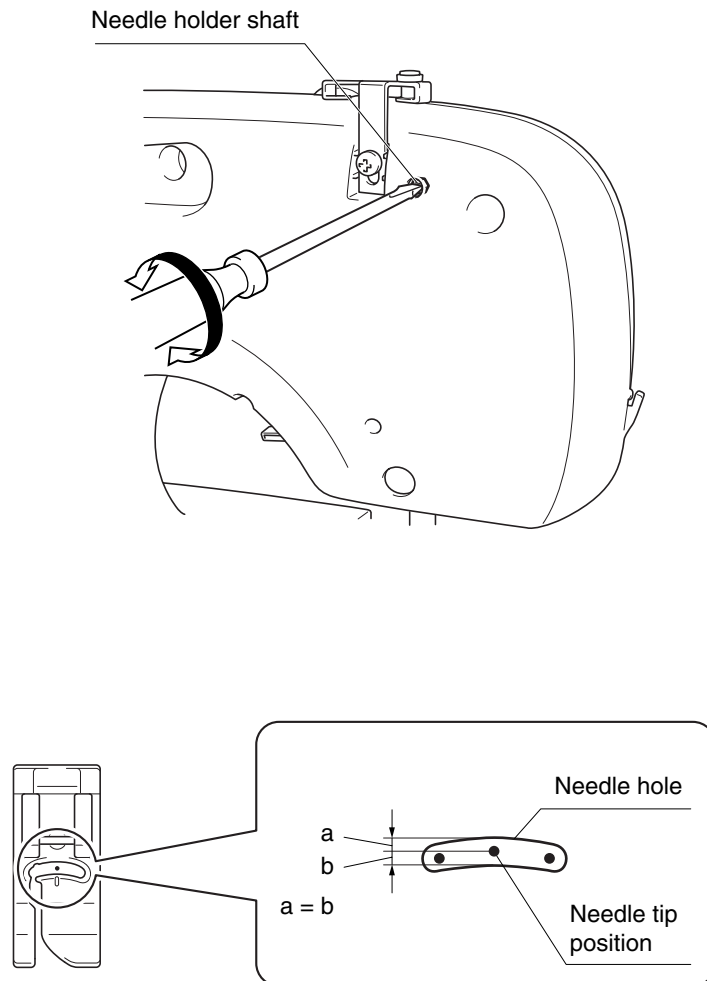
21. Left and Right Balance of the Needle Clearance

- Needle clearance in the down position along the left and right reference lines shall be equally balanced in the forward and backward directions with reference to the needle hole of the needle plate A.
- ① Turn the pulley by hand to insert the tip of the needle into the needle hole.
 - ② Loosen the Bolt, socket M 3 × 6.
 - ③ Adjust the needle bar supporter stud holder left or right so that the needle clearance in the down position along the left and right reference lines shall be equally balanced in the forward and backward directions with reference to the needle hole of the needle plate A.
 - ④ Tighten the Bolt, socket M 3 × 6, complete with a washer.



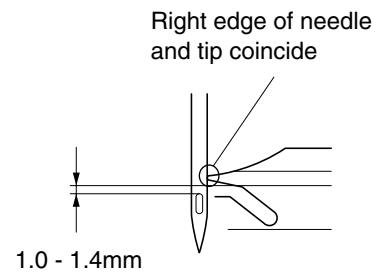
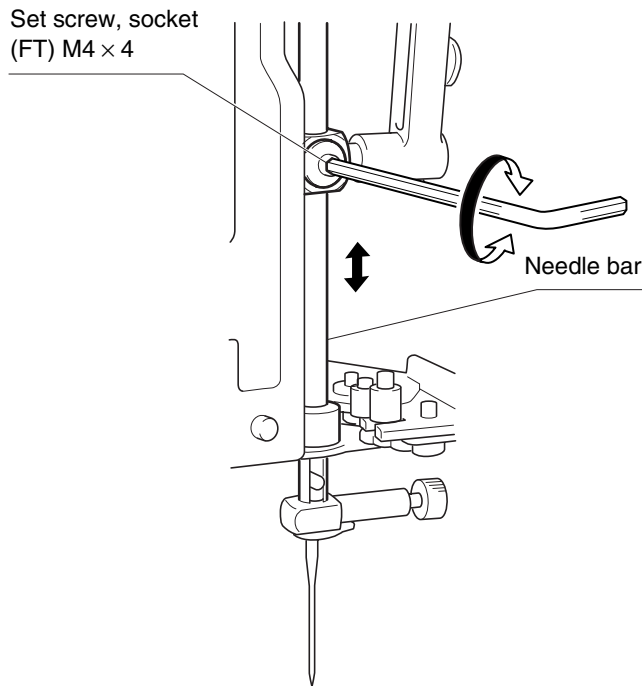
22. Adjustment of Forward/Back Position of Needle Against the Needle Hole in the Presser Foot

- ① Turn the pulley by hand to insert the tip of the needle into the needle hole.
- ② Adjust the amount of tightening of the adjusting screw to bring the tip of the needle into the center of the needle hole along the forward/back direction.



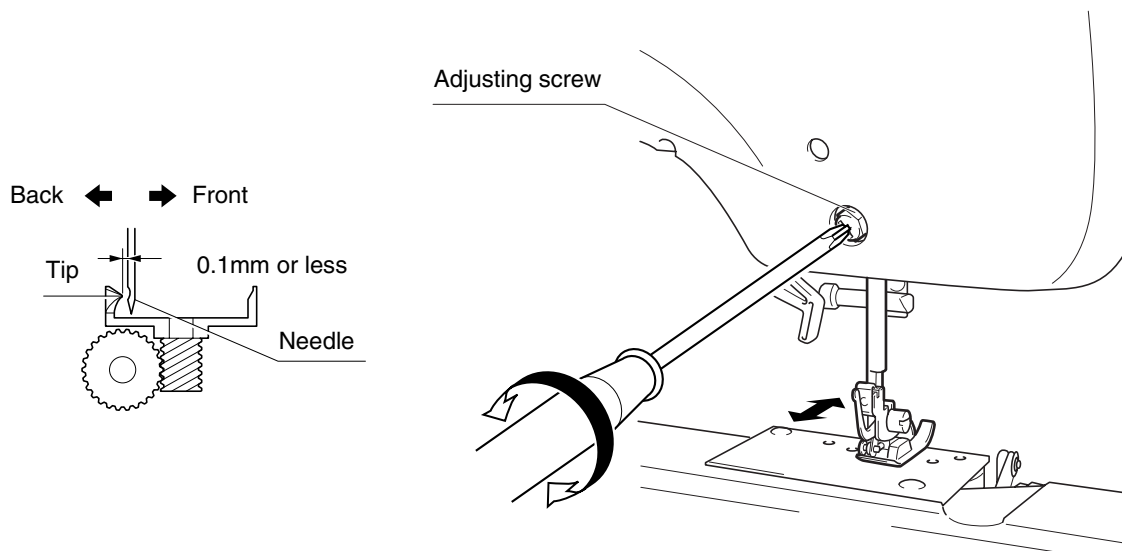
23. Adjustment of the Needle Bar Height

- When the rotary hook point is even with the perimeter of the needle (#14) after turning the pulley by hand from the zigzag maximum left needle down position, the distance from the highest point of the needle hole to the lower edge of the rotary hook point should be 1.0 to 1.4 mm.
- ① Select the maximum zigzag width.
 - ② Turn the pulley until the perimeter of the needle is even with the rotary hook point near the left needle drop position.
 - ③ Loosen the screw (Set screw, socket, FT, M 4 × 4) on the needle bar clamp.
 - ④ Adjust the needle bar height until the distance between the highest point of the needle hole and the lower edge of the rotary hook point is 1.0 to 1.4 mm.
 - ⑤ Tighten the screw (set screw, socket, FT, M 4 × 4) on the needle bar clamp.



24. Adjustment of the Needle Clearance

- When the rotary hook point is even with the perimeter of the needle (#14) after turning the pulley by hand from the zigzag maximum right needle down position, the clearance between the needle and the rotary hook point should be 0.1 mm or less.
- ① Select the maximum zigzag width.
 - ② Turn the pulley until the right-most edge of the needle is even with the rotary hook point.
 - ③ Adjust the amount of tightening of the adjusting screw so that the clearance between the needle and the rotary hook point is 0.1 mm or less.
 - ④ Tighten the screw, pan M 3 × 25.



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