SERVICE MANUAL

MODEL 521/525S

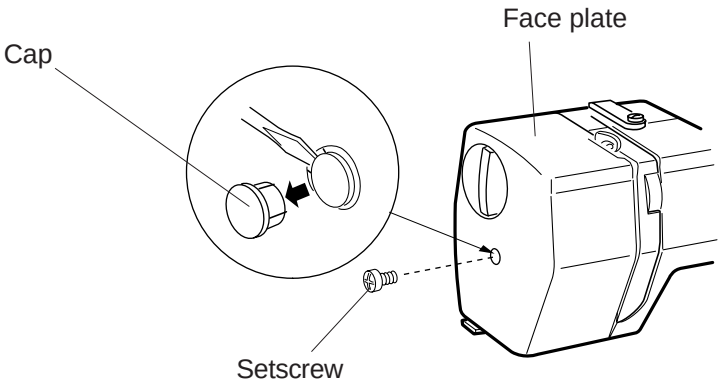
INDEX

Service Access (1)

• Face plate

<To remove>
Remove the cap and setscrew. Remove the face plate.

<To attach>
Attach the face plate with the setscrew. attach the cap.

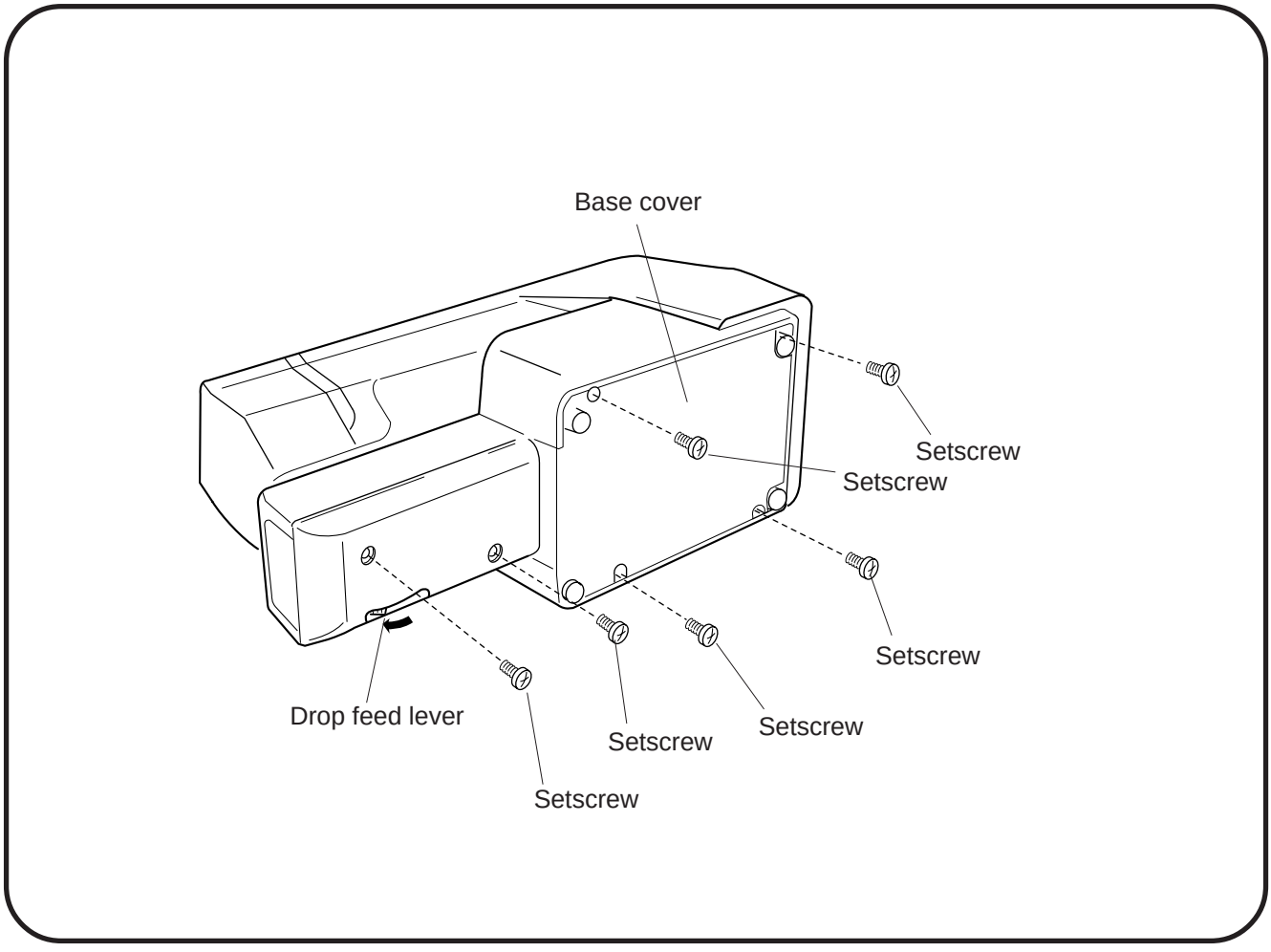


Service Access (2)

• Base cover

<To remove>
Remove the setscrews (6 pcs.) and remove the base cover.

<To attach>
Shift the drop feed lever in the direction of the arrow. Attach the base cover with setscrews.

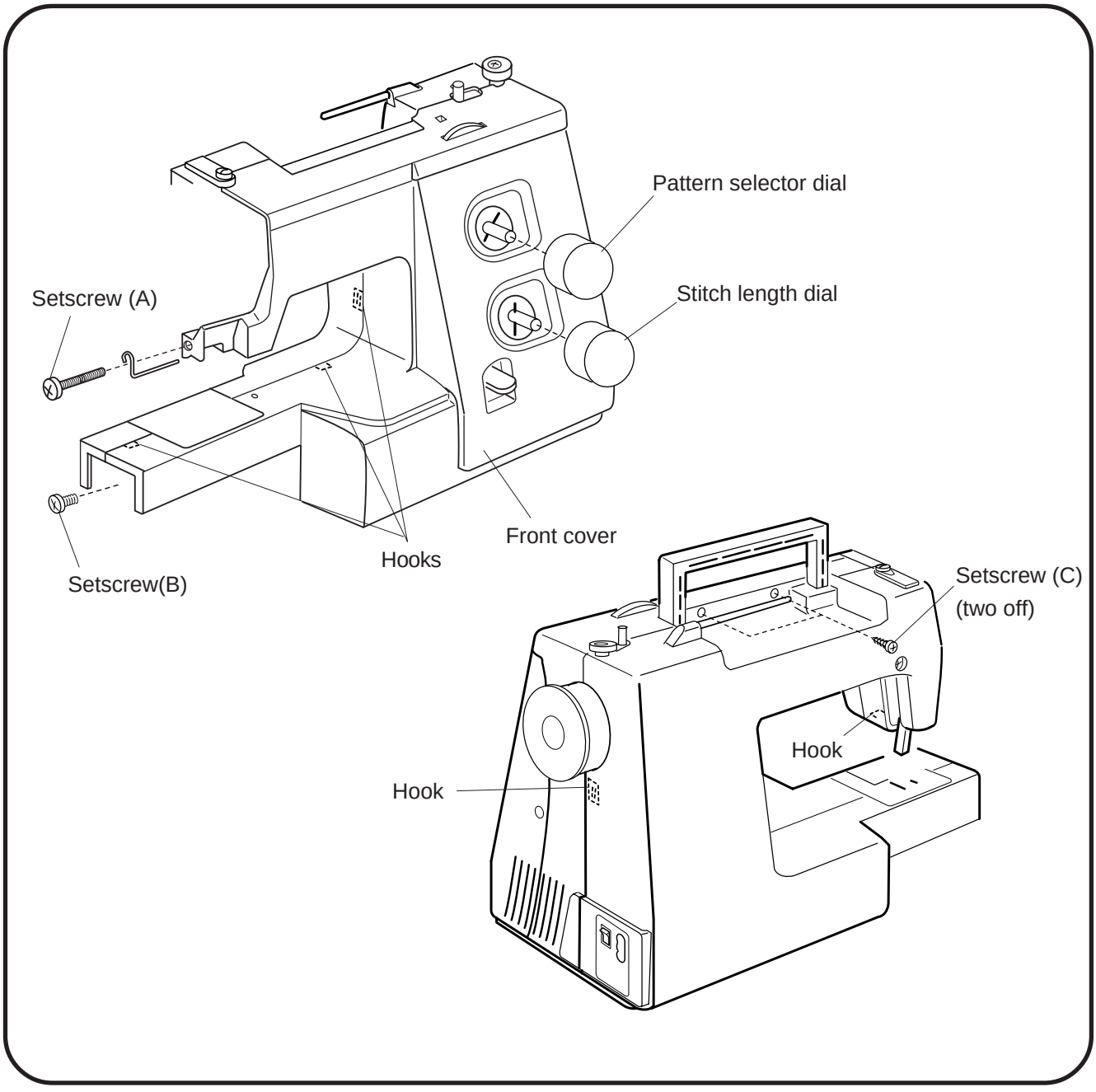


Service Access (3)

• Front cover

<To remove>
Remove the face plate and base cover (see pages 1 and 2).
Pull out the pattern selector dial and stitch length dial.
Remove the setscrews (A), (B) and (C) (two off).
Remove the front cover, unlocking all the hooks.

<To attach>
Follow the above procedure in reverse.

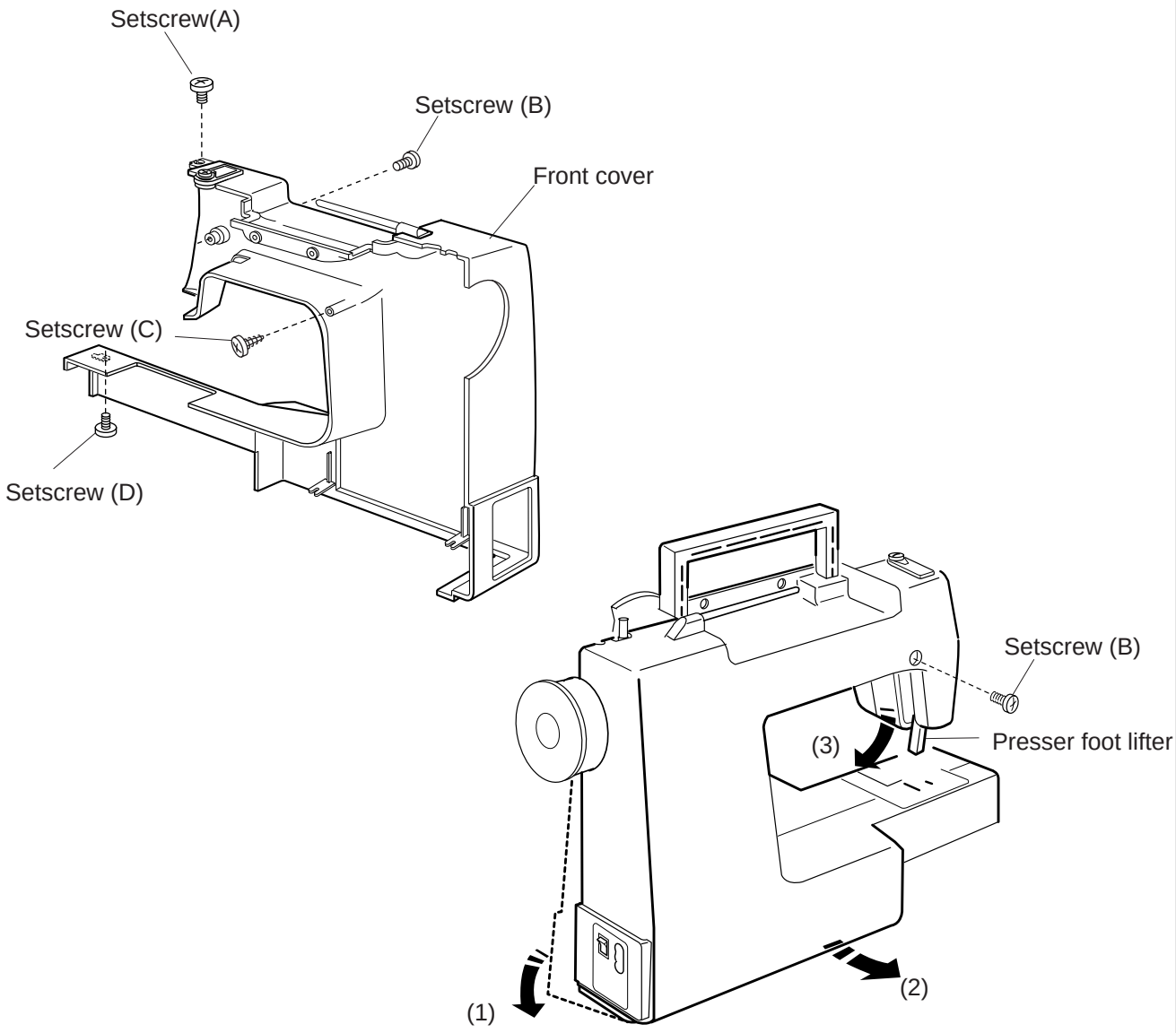


Service Access (4)

• Rear cover

<To remove>
Remove the face plate, base cover and front cover (see pages 1-3).
Remove the setscrews (A), (B), (C) and (D).
Lower the presser foot lifter and pull away the rear cover from the machine, clearing the parts (1), (2) and (3), in this order.

<To attach>
Follow the above procedure in reverse.



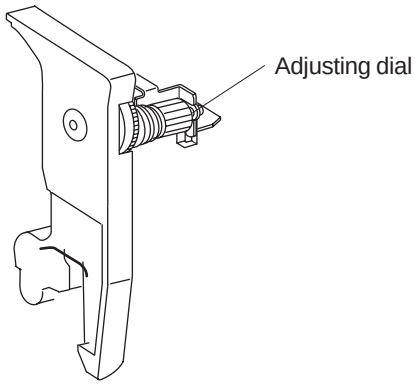
Adjusting Thread Tension

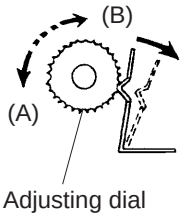
• The standard tension should be 75 - 90 grams measured with a white polyester thread #50 being pulled in the direction of the arrow, when the tension dial is set at "4".

<To adjust>
Remove the front cover (see apge 3).
Set the tension dial at "4".

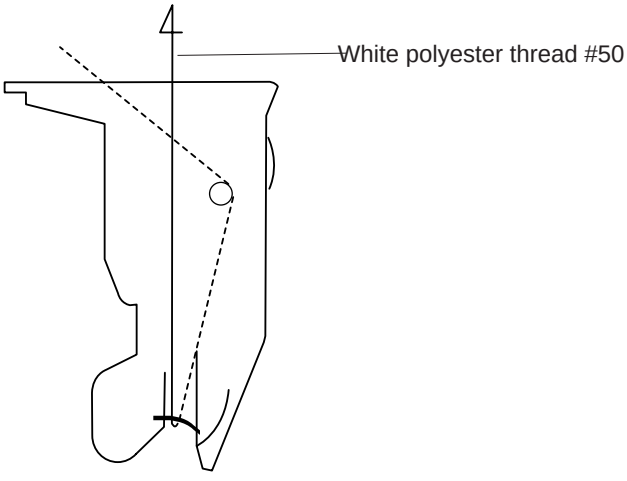
If the tension is too tight, turn the adjusting dial in the direction (A).
If the tension is too loose, turn the adjusting dial in the direction (B).

Check the tension again and attach the front cover.





Pull the thread in this direction at approx.
110 mm per second.

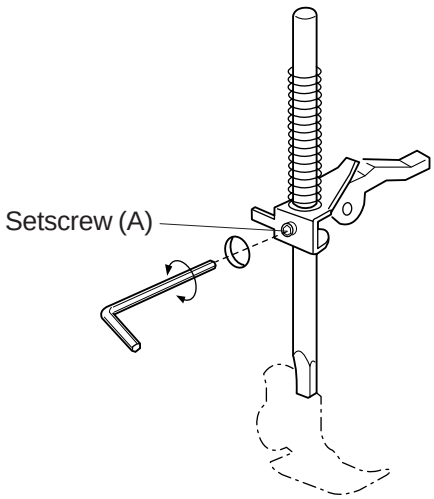


Adjusting Presser Foot Height and Alignment

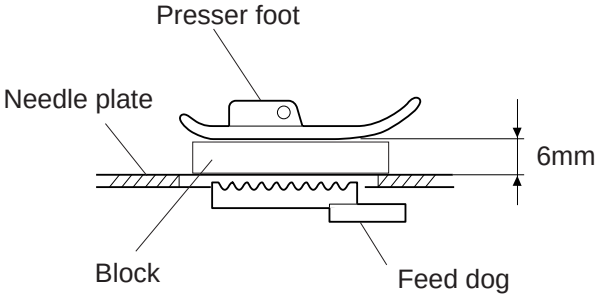
• The distance between the bottom of the presser foot in up position and the needle plate should be 6.0 mm.

<To adjust>
Remove the face plate and needle.
Lower the feed dog below the needle plate. Place a block 6 mm thick under the presser foot and lower the presser foot lifter.
Loosen the setscrew (A). Raise the presser foot lifter and tighten the setscrew (A) firmly.
Attach the needle and face plate.
Attach the face plate.

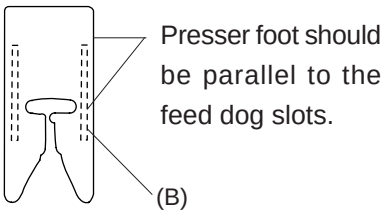
NOTE:
Make sure that the presser foot should be parallel to the feed dog slots (B) in the needle plate.



Presser foot height



Presser foot alignment

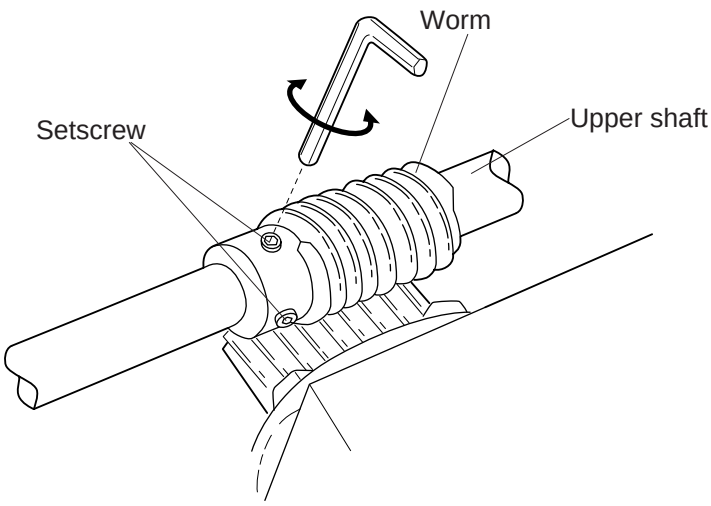


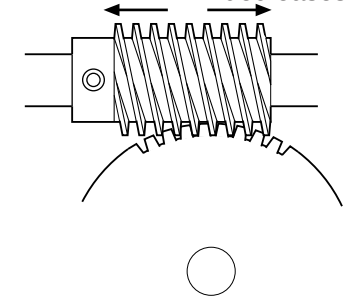
Adjusting Needle Swing

• If the needle swing when it is still in the fabric, correct it as follows.

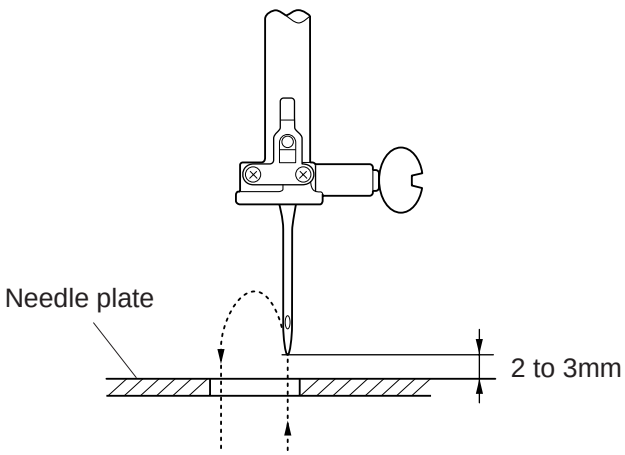
<To adjust>
Remove the front cover (see page 3).
Select the zigzag stitch ( ) and set the stitch wodth dial at 5.0.
Loosen the setscrews on the worm.
While holding the worm as not to rotate, turn the handwheel to adjust the needle bar swing so that the needle starts to swing 2 - 3 mm above the needle plate in the right outflow.
Tighten the setscrews on the worm securely.
Attach the front cover.

Note:
The upper shaft should turn smoothly without an excessive backlash between the worm and gear.





Note:
Make sure the worm does not move sideways when turning the handwheel, otherwise the backlash will change.



Adjusting Needle Drop Position

• The clearance between the needle and side edges of the needle hole should be 0.2 mm or more when the maximum width zigzag stitch ( ) is selecte. And the neddle should drop in the center of the needle hole when the straight stitch is selected.

<To adjust>

Remove the face plate (see page 1).

Select the straight stitch ( ).

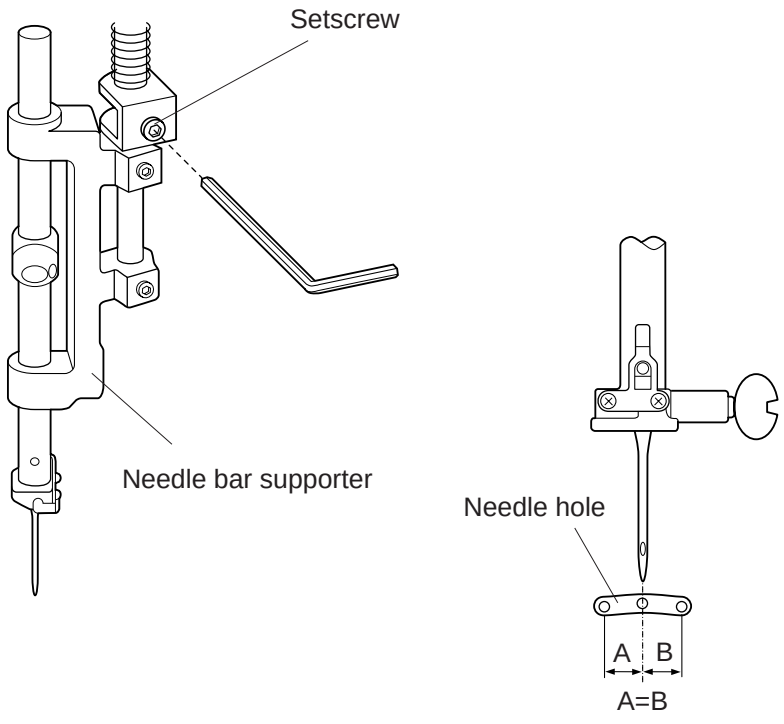
Loosen the setscrew.

Move the needle bar supporter so that the needle drops in the center of the needle hole.

Tighten the setscrew.

Select the zigzag stitch ( ) and set the stitch width dial at 5.0 to check the clearance between needle and side edges of the needle hole.

Attach the face plate.

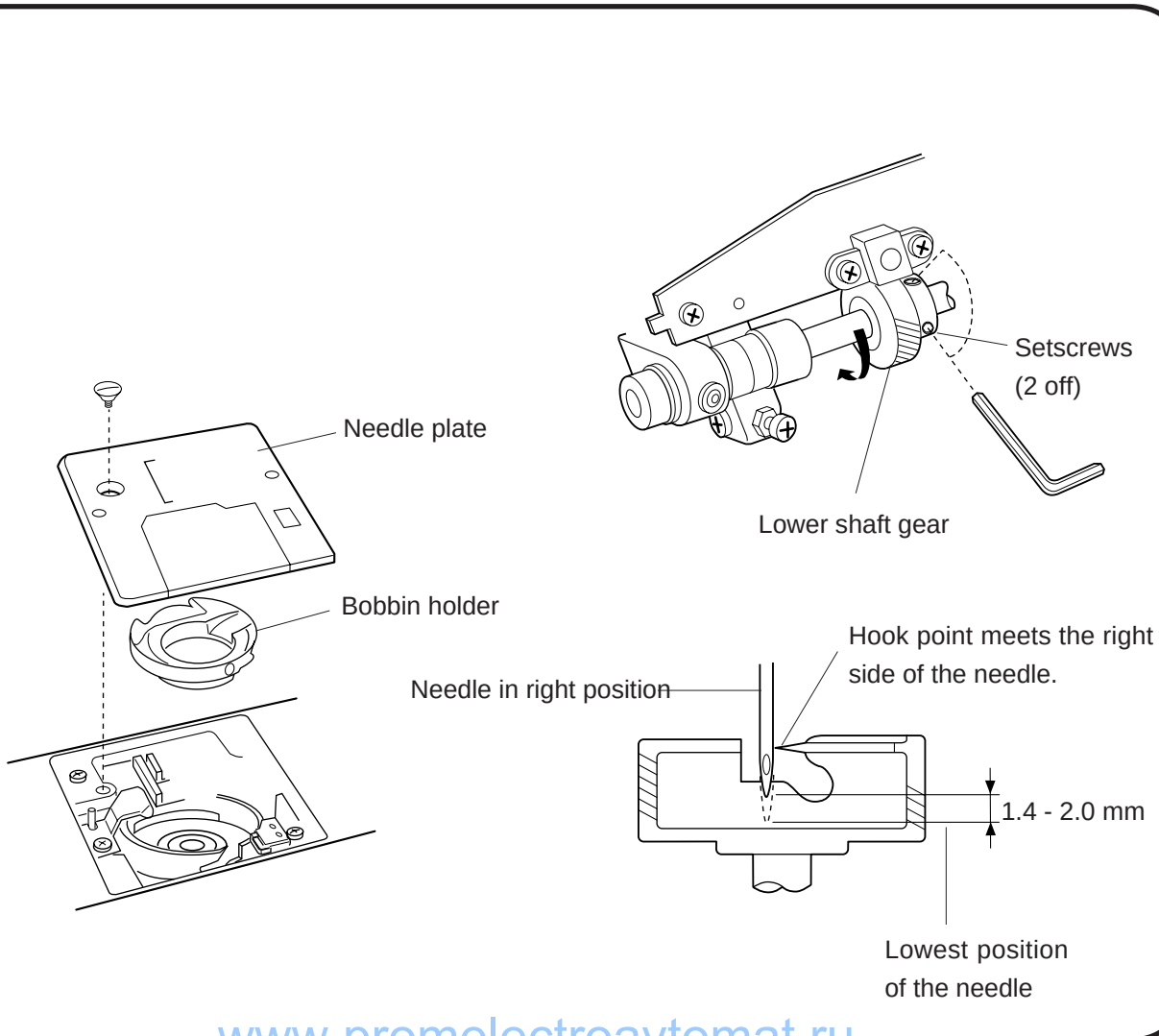


Adjusting Needle to Hook Timing

• The amount of ascending travel of the needle in the maximum width zigzag stitch ( ) from the right lowest position should be 1.4 to 2.0 mm where the hook point meets the right side of the needle.

<To adjust>

Select the maximum width zigzag stitch ( ).
Remove the base cover (see page 2).
Remove the needle plate and bobbin holder.
Loosen the setscrews on the lower shaft gear.
Turn the handwheel toward you to bring the needle to the right lowest position. Then raise the needle 1.7mm from the lowest position.
While holding the handwheel as not to move the needle bar, rotate the hook race until the hook point meets the right side of the needle.
Tighten the setscrews.
Attach the boobin holder and needle plate.
Attach the base cover.
Note: Before performing this adjustment, be sure to check the needle bar height.



Adjusting Needle Bar Height

• The standard distance between the upper edge of the needle eye and the upper surface of the hook race should be in the range of 3.0 - 3.3 mm when the hook point meets the right side of the needle in its ascending travel from the right lowest position of the maximum width zigzag stitch ( ).

<To adjust>

Select the maximum width zigzag stitch ( ) and bring the needle to the right lowest position.

Remove the face plate (see page 1).

Remove the needle plate and bobbin holder.

Turn the handwheel toward you until the hook point meets the right side of the needle.

Loosen the setscrew and move the needle bar up or down to adjust the needle bar height.

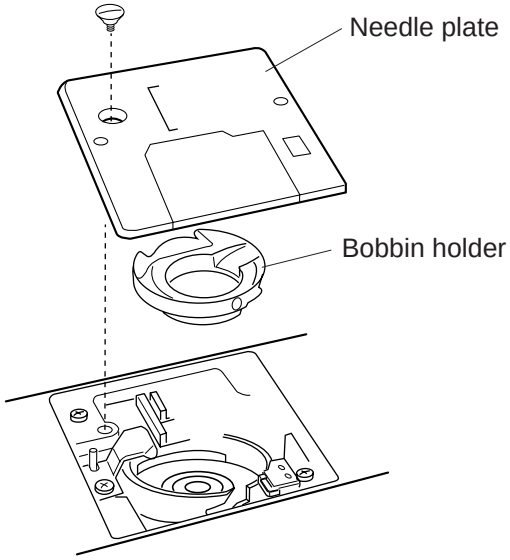
Note: Be careful not to rotate the needle bar.

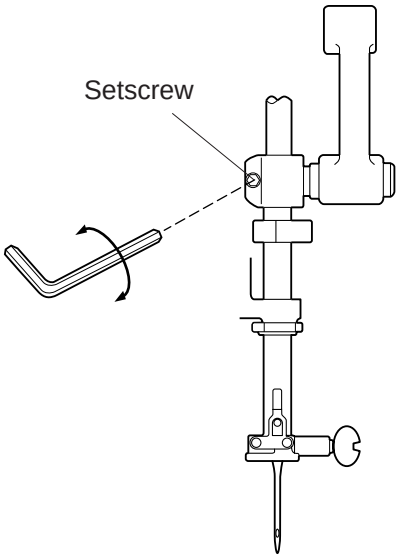
Tighten the setscrew.

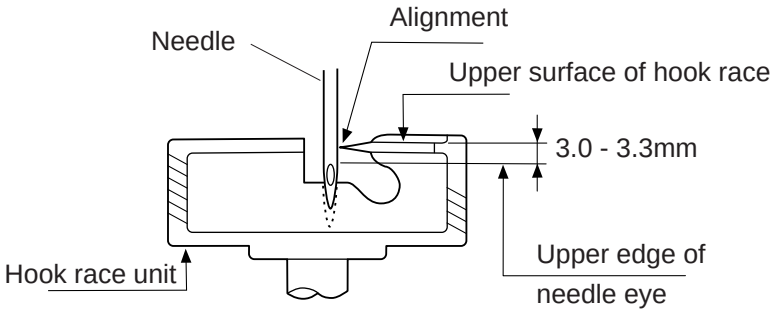
Attach the bobbin holder, needle plate and face plate.

Note:

Before performing this adjustment, check the needle to hook timing.



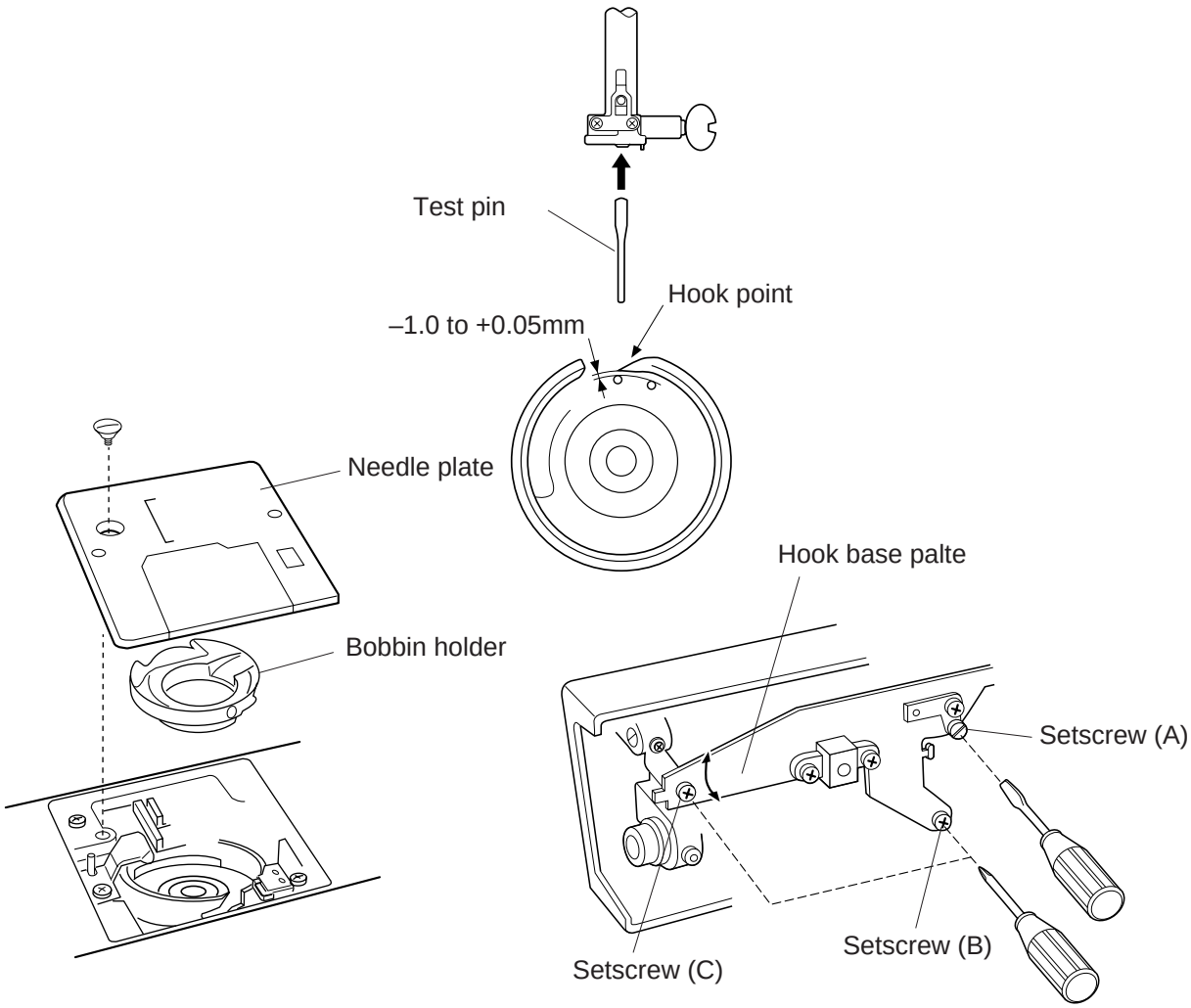




Adjusting Clearance between Needle and Hook Point

• The standard clearance between the needle and hook point should be -0.10 to +0.05 mm.

<To adjust>
Select the maximum width zigzag stitch ( ).
Remove the base cover (see page 2). Remove the needle plate and bobbin holder.
Replace the needle with the test pin. Loosen the setscrews (B) and (C). Slightly loosen the setscrew (A).
Turn the handwheel toward you to bring the hook point behind the test pin.
Adjust the clearance to -0.1 to +0.05 mm by moving the hook base plate up or down.
Tighten the setscrews (A), (B) and (C) securely.
Check the backlash of the hook drive gear and lower shaft gear.
Note: Adjust the backlash if neccessary (see page 12).
Attach the base cover.
Replace the test pin with the needle. Attach the bobbin holder and needle plate.

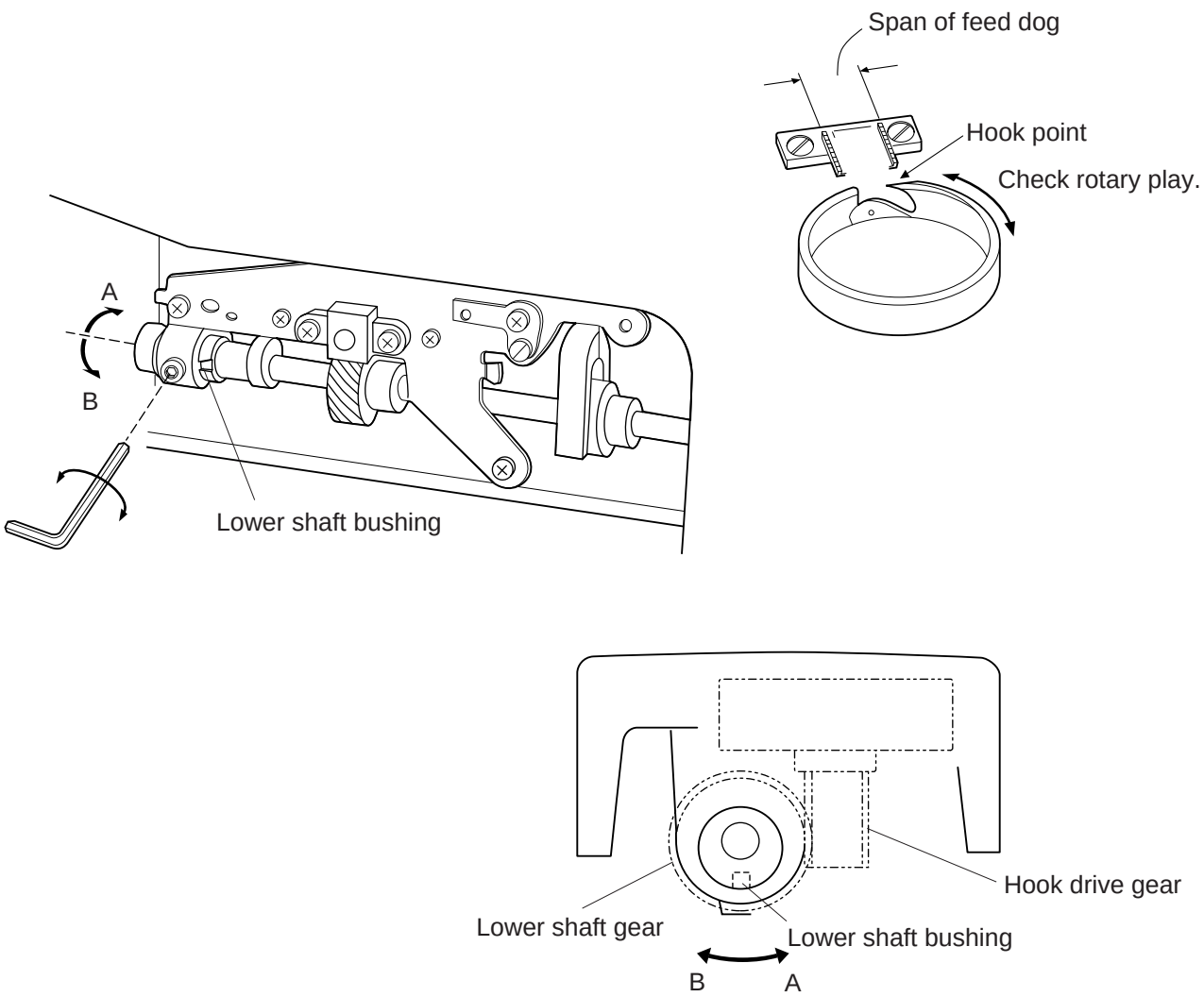


Adjusting Backlash between Hook Drive Gear and Lower Shaft Gear

• The rotary play should be 0.8 mm or less when the hook point is within the span of the feed dog, and the gears should turn smoothly.

<To adjust>
Remove the base cover (see page 2).
Loosen the setscrews.
If the backlash is too big, turn the lower shaft bushing in the direction (B).
If the gear engagement is too tight, turn the lowershaft bushing in the direction (A).
Tighten the setscrews and attach the base cover.

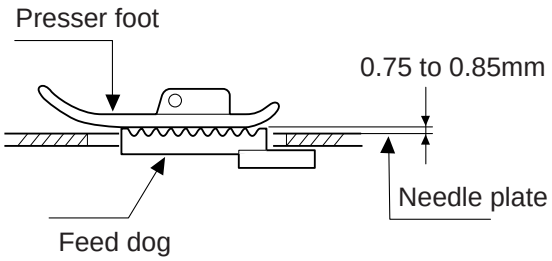
Note:
Be sure to check and adjust the needle to hook timing and feed dog height if neccessary, after performing this adjustment.

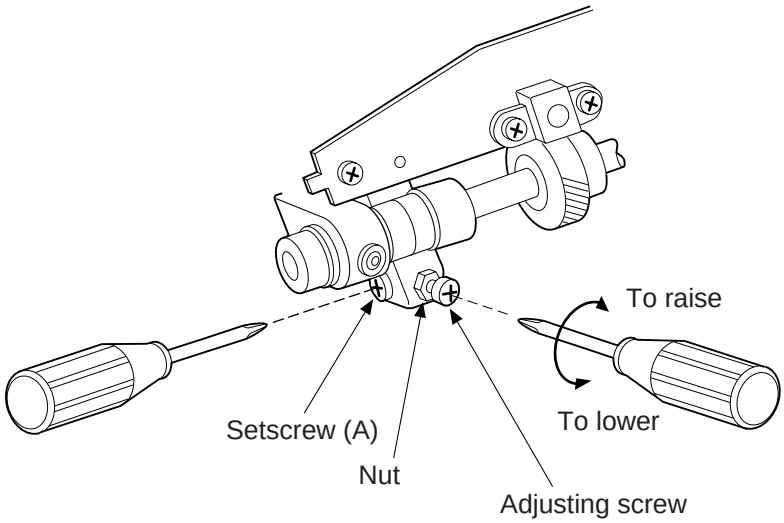


Adjusting Feed Dog Height

• The distance between the lowered presser foot and needle plate should be 0.75 to 0.85 mm when the feed dog is in its highest position.

<To adjust>
Select the straight stitch ( ) and set the stitch width at "4".
Lower the presser foot. Turn the handwheel to bring the feed dog to its heighest position.
Remove the base cover (see page 2).
Loosen the setscrew (A) and nut.
Turn the adjusting screw to set the feed dog height to 0.75 to 0.85 mm.
Tighten the nut and setscrew (A).
Attach the base cover.

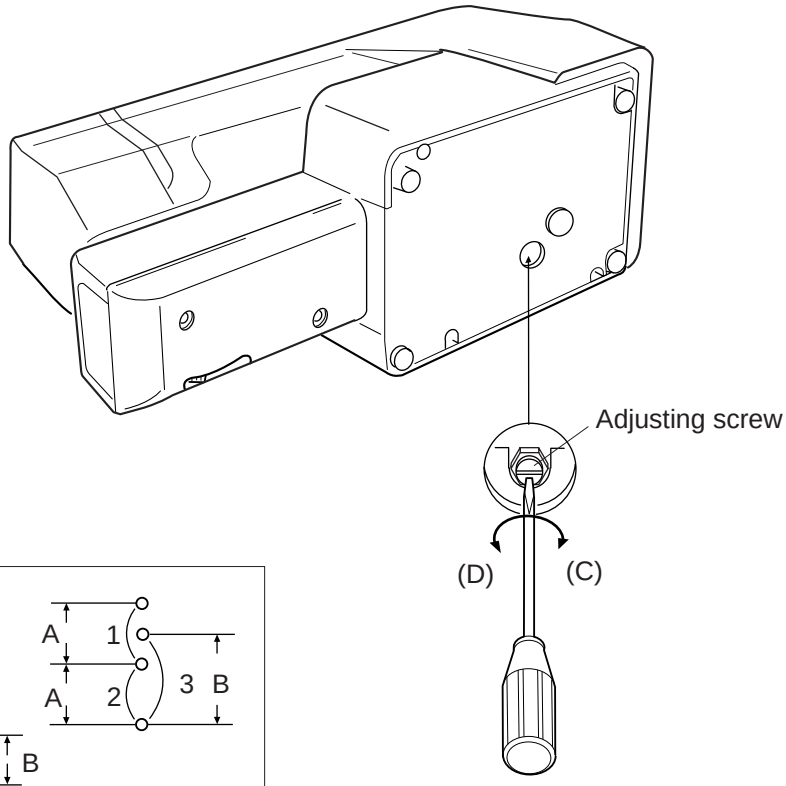


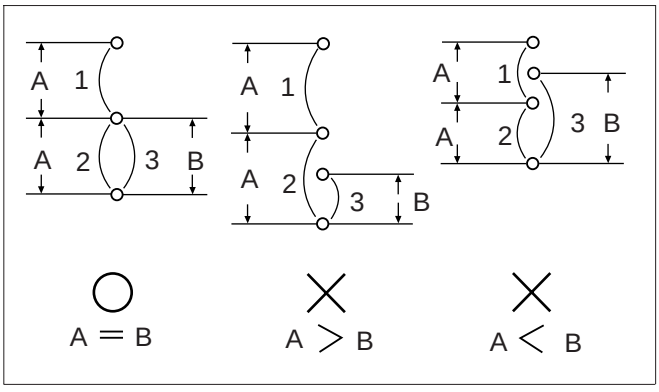


Adjusting Feed Balance

The forward feeding (A) and backward feeding (B) should be equal when sewing stretch stitch pattern.

<To adjust>
Select the straight stretch stitch (|||).
Place a piece of paper under the foot. Turn the handwheel to check the needle marks.
Remove the cap to access the adjusting screw.
If the forward feeding (A) is longer than backward feeding (B), turn the adjusting screw in the direction (C).
If the forward feeding (A) is shorter than backward feeding (B), turn the adjusting screw in the direction (D).
Attach the cap.

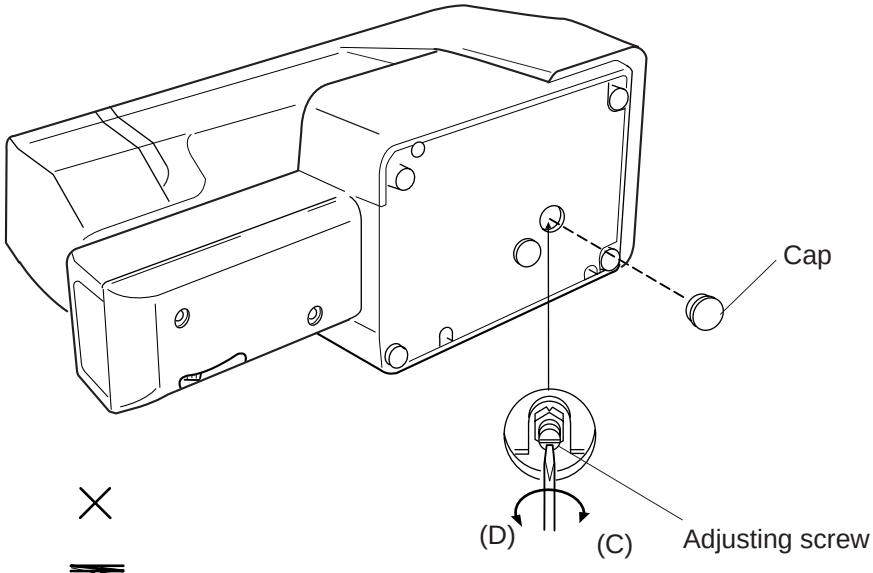


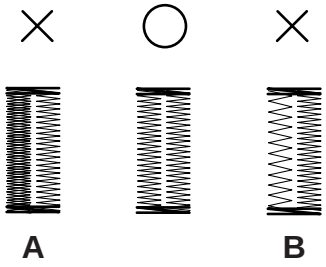


Adjusting Buttonhole Feed Balance

• When sewing a buttonhole, the stitches on each side of the buttonhole should be the same density.
The range of 9 to 12 stitches in the right side row against 10 stitches in the left side row is considered acceptable.

<To adjust>
Sew a test buttonhole and count the stitches on each side.
Remove the cap to access the adjusting screw.
If the left row is denser (A), turn the adjusting screw in the direction (C).
If the right row is denser (B), turn the adjusting screw in the direction (D).
Attach the cap.

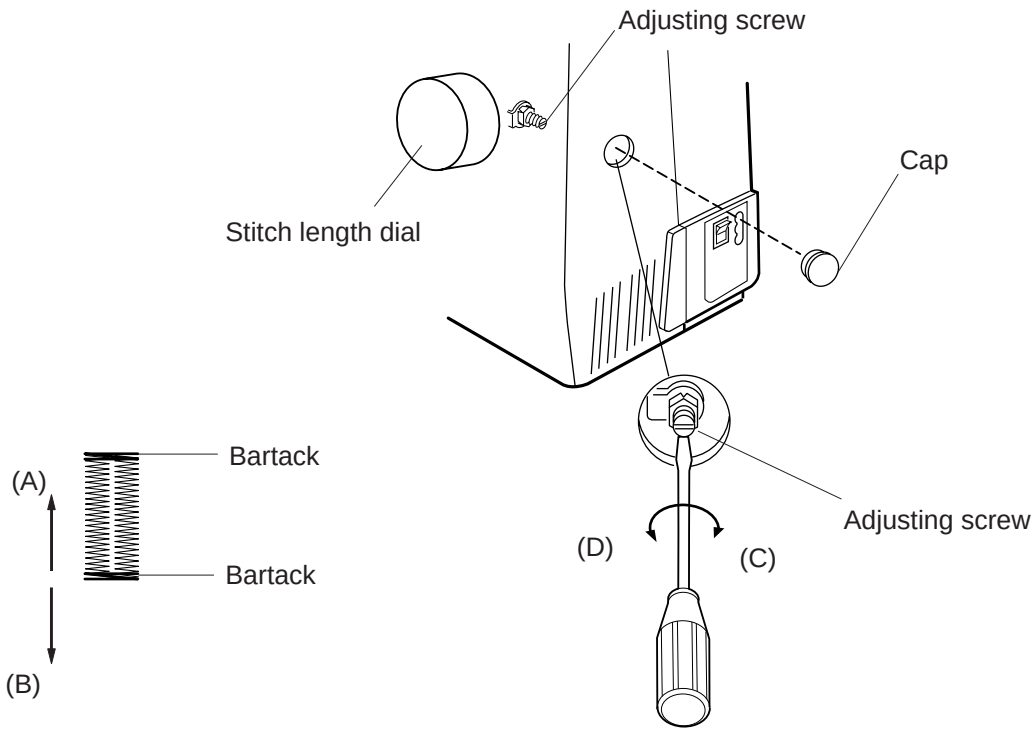




Adjusting Buttonhole Zero Feed

• If the fabric is fed when sewing a bartack of the buttonhole, correct it as follows:

<To adjust>
Sew a test buttonhole to check if the fabric is fed while sewing the bartacks.
Remove the cap to access the adjusting screw.
If the fabric is fed foward (A), turn the adjusting screw in the direction (C).
If the fabric is fed backward (B), turn the adjusting screw in the direction (D).
Attach the cap.

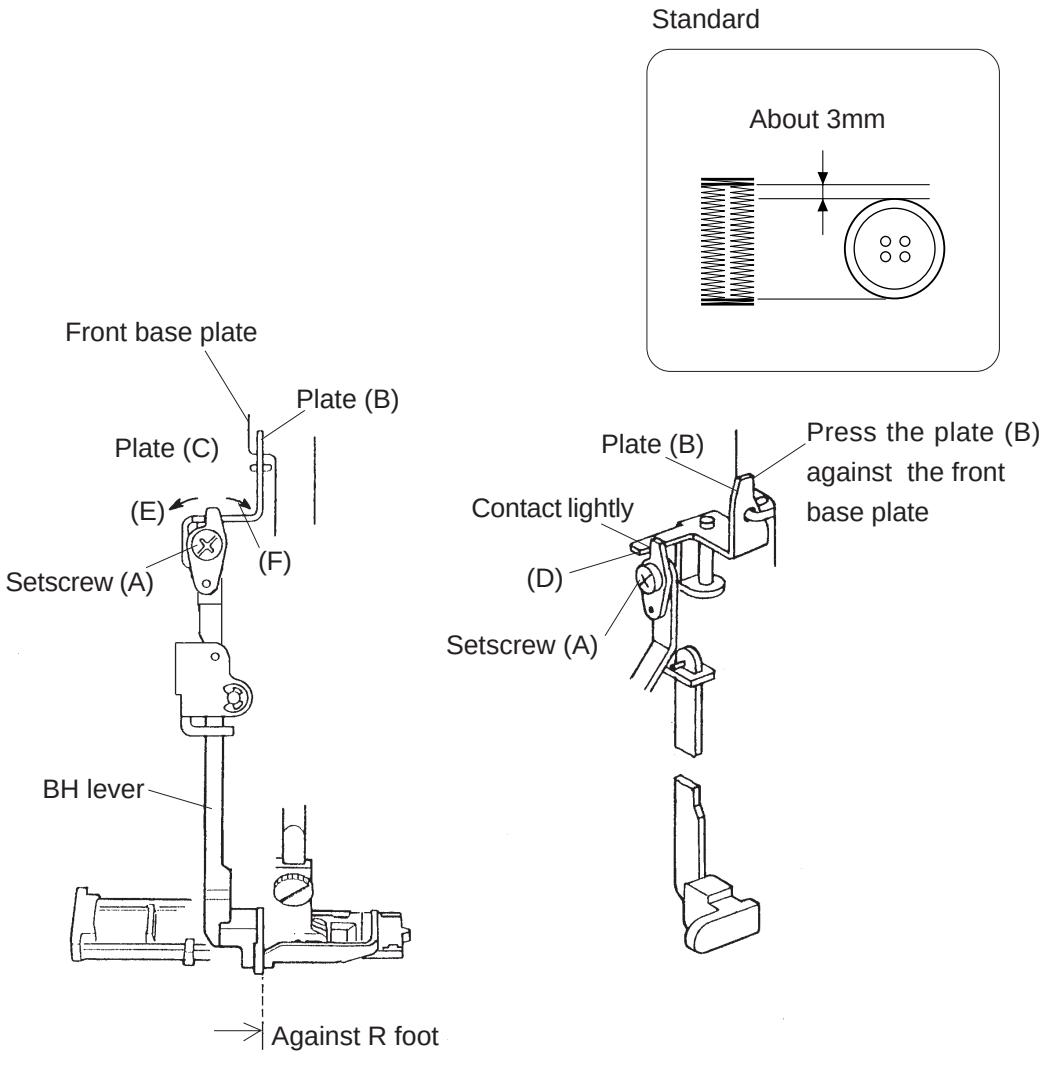


Adjusting Buttonhole Function

MODEL 525S

<To check>
Buttonhole should be about 3mm longer than the length set by the R foot.
if this length cannot be obtained, then check and adjust as follows:

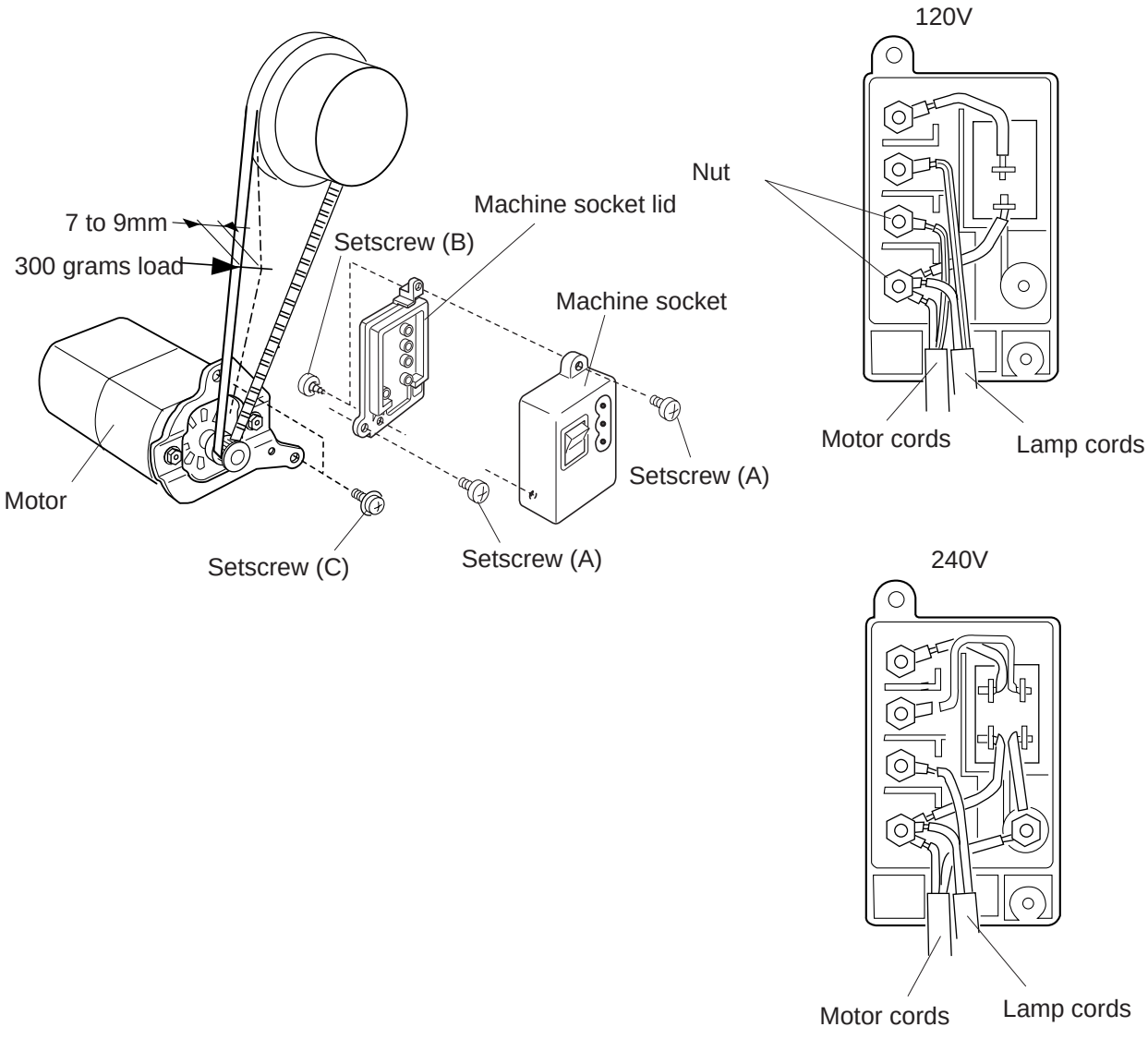
<To adjust>
Lower the feed dog and set the R foot.
Remove the face plate. Loosen the setscrew (A).
Lower the buttonhole lever to its lowest position and press it against the R foot.
Press the plate (B) against the front base plate lightly. Move the plate (C) so that it contacts with the plate (D) and tighten the setscrew (A).
Raise the feed dog and sew a test buttonhole to check the length.
Move the plate (C) in the direction of (E) if the buttonhole stitch length is longer than the standard,or in the direction of (F) if the buttonhole stitch length is shorter than the standard.
Tighten the setscrew (A).
Attach the face plate.



Replacing Motor and Adjusting Motor Belt Tension

<To replace the motor>
Remove the face plate, base cover, front cover and rear cover (see pages 1 to 4).
Remove the setscrews (A) and machine socket. Remove the setscrews (B) and machine socket lid.
Remove the nuts and disconnect the motor cords.
Remove the setscrews (C) and motor.
To attach the motor, follow the above procedure in reverse.

<To adjust the motor belt tension>
Slightly loosen the setscrews (C).
While pushing the middle of the motor belt with a 300 grams load, move the motor up or down so that the belt deflects 7 to 9 mm.
Tighten the setscrews (C) securely.



Replacing and Adjusting Threader

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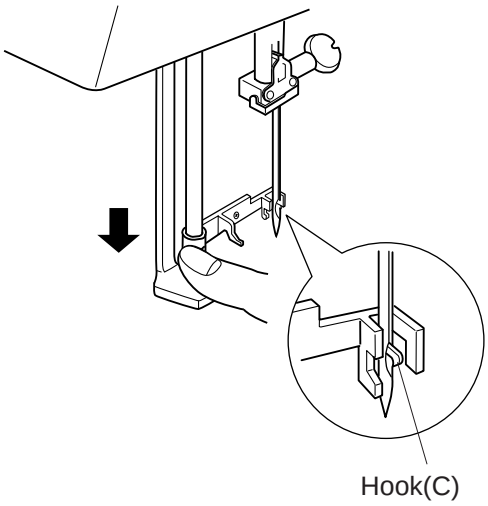
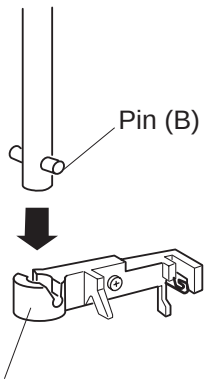
<To replace>
Remove the face plate (see page 1).
Pull the threader guard away from the threader.
Align the groove on the threader guide with the pin on the threader shaft and push the threader guide up to snap it in place. (see Fig. 1).

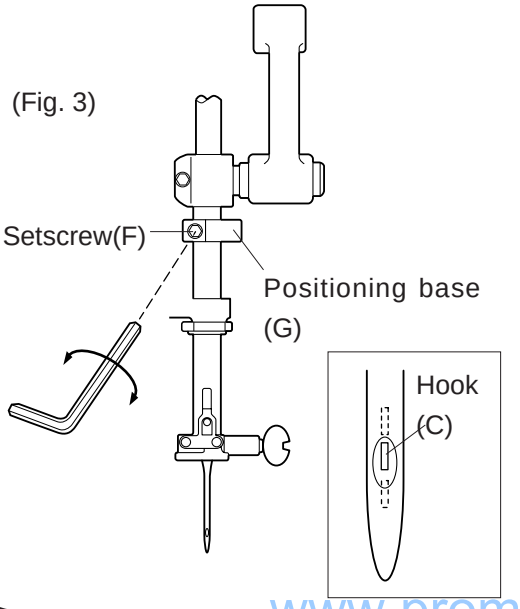
<To adjust>
If the hook (C) of the threader thrust or hit against the side edge of the needle eye, loosen the setscrew (D) and adjust the lateral position of the threader palte (see Fg. 2).
If the hook (C) thrust against upper or lower edge of the needle eye, remove the face plate and loosen the setscrew (F) and move the positioning base (G) up or down so that the hook enters through the needle eye (see Fig. 3).



(Fig. 1)



(Fig. 3)



(Fig. 2)