

ELNA 3210 - 3230



SERVICE MANUAL

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CONDITION	CAUSE	HOW TO FIX	REFERENCE
1. Skipped stitches	1. Needle is not inserted properly. 2. Needle is bent or worn. 3. Incorrectly threaded. 4. Needle or thread is inappropriate for fabric being sewn. 5. Sewing on stretch fabric. 6. Presser foot pressure is too weak. 7. Inappropriate needle bar height. 8. Inappropriate needle to hook timing. 9. Inappropriate needle to hook clearance.	Insert the needle properly. Change the needle. Rethread. Use the recommended sewing needle and thread. Use a #11 blue tip needle. Adjust the presser bar level to make the pressure stronger. See mechanical adjustment "Needle Bar Height". See mechanical adjustment "Needle Timing to Hook". See mechanical adjustment "Clearance Between Needle and Hook"	Page 16 Page 17 Page 18
2. Fabric not moving	1. Presser foot pressure is too weak. 2. Incorrect feed dog height. 3. Feed dog is in down position. 4. Thread on bottom side of fabric is jammed up 5. Feed dog teeth are worn.	Adjust the presser bar level to make the pressure stronger. See mechanical adjustment "Feed Dog Height". Raise the Feed dog level. Make sure to bring both needle and bobbin thread under the foot when starting sewing. Change the feed dog.	Page 15

CONDITION	CAUSE	HOW TO FIX	REFERENCE
3 Needle thread breaks	<ol style="list-style-type: none"> 1. Initial sewing speed is too fast. 2. Thread path is incorrect. 3. Needle is bent or dull. 4. Upper thread tension is too strong. 5. Needle size is inappropriate for fabric. 6. Needle eye is worn. 7. Needle hole in needle plate is worn or burred. 	<p>Start with medium speed</p> <p>Use the proper thread path.</p> <p>Replace with a new needle.</p> <p>Adjust needle thread tension correctly.</p> <p>Use appropriate needle for fabric and thread in use.</p> <p>Change the needle.</p> <p>Repair the hole or replace the needle plate.</p>	
4 Bobbin thread breaks.	<ol style="list-style-type: none"> 1. Incorrectly threaded bobbin. 2. Too much thread is on the bobbin. 3. Lint is stuck inside the bobbin holder. 4. Thread quality is too low. 5. Thread is jamming around the bobbin. 	<p>Thread bobbin correctly</p> <p>Adjust the position of stopper.</p> <p>Clean the shuttle.</p> <p>Change to a higher quality sewing thread.</p> <p>Clear out the jamming thread.</p>	
5. Needle breaks.	<ol style="list-style-type: none"> 1. Needle is hitting the needle plate 2. Needle is bent or worn. 3. Needle is hitting the shuttle. 4. The fabric moves while the needle is piercing it, or the needle zigzags while in fabric. 5. Fabric is being pulled too strongly while sewing. 	<p>See mechanical adjustment "Needle Drop Position"</p> <p>Change the needle</p> <p>See mechanical adjustment "Clearance between Needle and Hook"</p> <p>See mechanical adjustment "Needle Swing".</p> <p>Guide the fabric gently while sewing.</p>	<p>Page 13</p> <p>Page 18</p> <p>Page 11</p>

CONDITION	CAUSE	HOW TO FIX	REFERENCE
6. Noisy operation	1. Backlash between shuttle hook gear is too great.	See mechanical adjustment "Backlash between Hook Gear and Lower Shaft Gear".	Page 19
	2. Lower shaft gear is loose.	Eliminate the looseness.	
	3. Inappropriate belt tension.	See mechanical adjustment "Motor Belt Tension".	Page 26
	4. Not enough oil.	Oil all moving parts.	
	5. Upper shaft is loose.	Eliminate the looseness.	
7. Deformed pattern.	1. Inappropriate feed balance.	See mechanical adjustment "Stretch Stitch Balance"	Page 14
	2. Inappropriate zigzag synchronization.	See mechanical adjustment "Needle Swing".	Page 11
	3. Upper thread tension is too strong.	Adjust the needle thread tension correctly.	
8. Improper buttonhole results.	1. Buttonhole stitch balance is not correct.	See mechanical adjustment "Buttonhole Feed Balance".	Page 22
	2. Changing to bar tack is too early or will not work.	See mechanical adjustment "Buttonhole Length".	Page 23

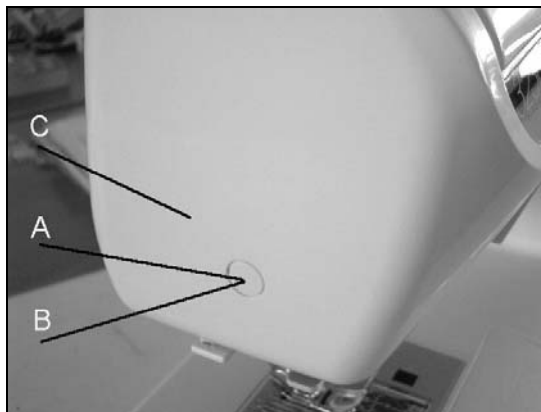
FACE COVER

To remove:

1. Remove the cap **A** and the screw **B**.
2. Remove the face cover **C**.

To attach:

1. Follow the above procedure in reverse.



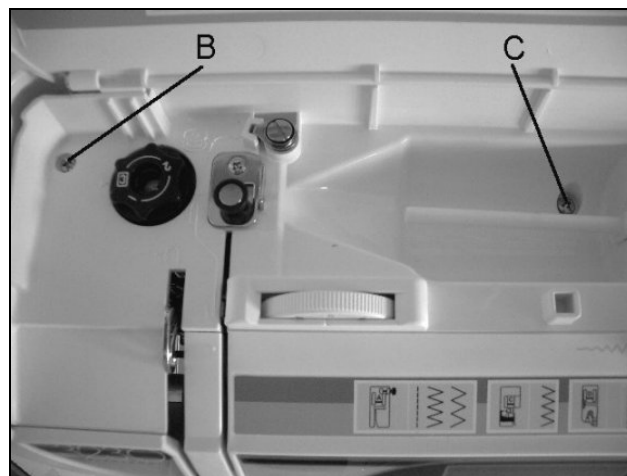
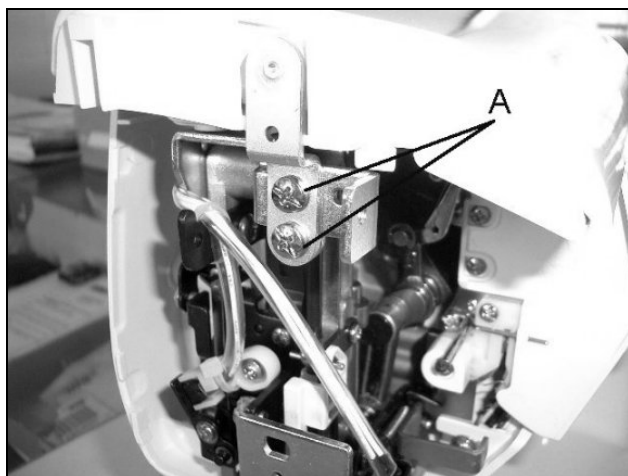
TOP COVER

To remove:

1. Remove the face cover (see here above).
2. Remove the two screws **A**
3. Remove the screws **B** and **C**
4. Remove the handle with the top cover.

To attach:

5. Follow the above procedure in reverse.

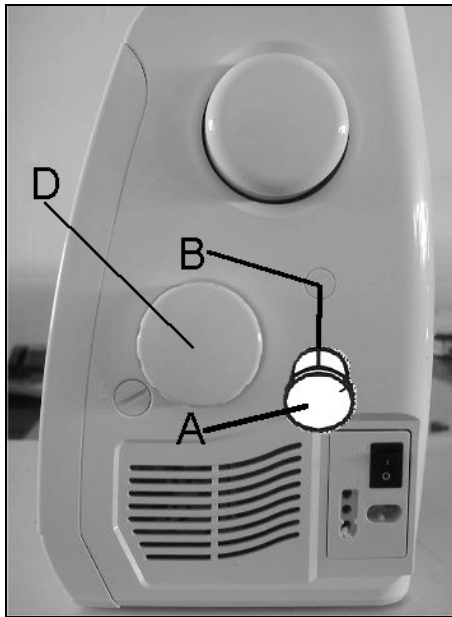


BELT COVER

To remove :

1. Remove the face and top cover (see page 4).
2. Remove the cap **A**.
3. Remove the screw **B**
4. Pull out the stitch selector **D**
5. Remove the screw **C** and remove the belt cover.

To attach: Follow the above procedure in reverse.

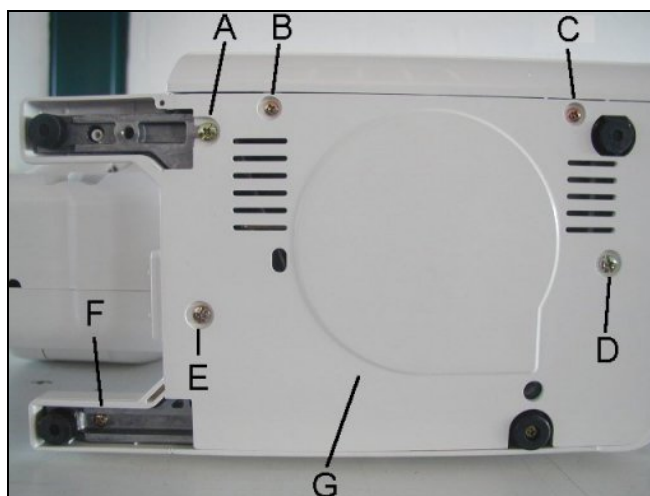


BASE

To remove :

1. Remove the screws **A** to **F**.
2. Remove the base **G**.

To attach : Follow the above procedure in reverse.

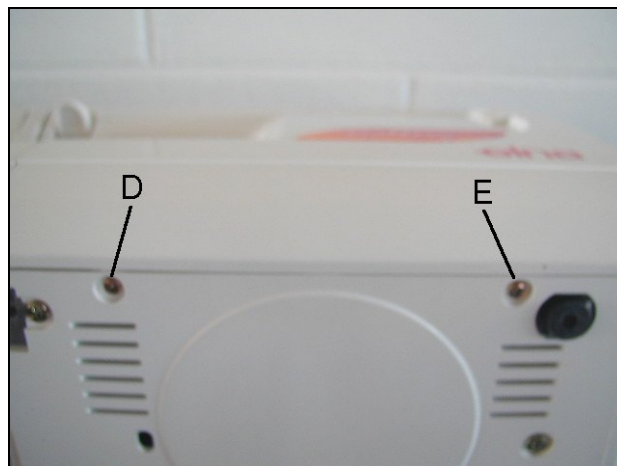
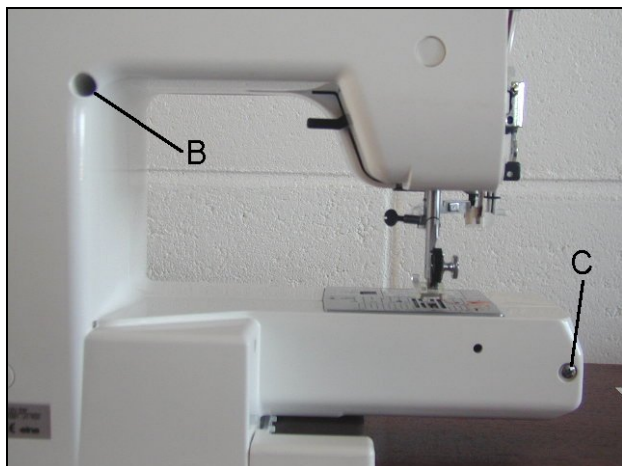
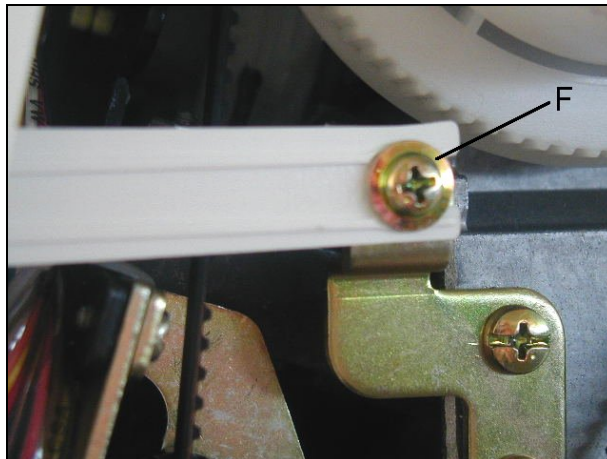
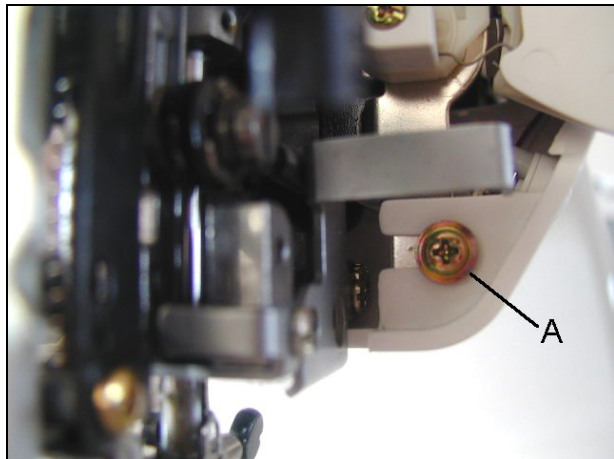


FRONT COVER

To remove :

1. Remove the face and belt cover (see pages 4 and 5)
2. Loosen the screw **A** and **F**
3. Remove the screws **B**, **C**, **D** and **E**.
4. Remove two connectors for model 3230.
5. Remove the front panel.

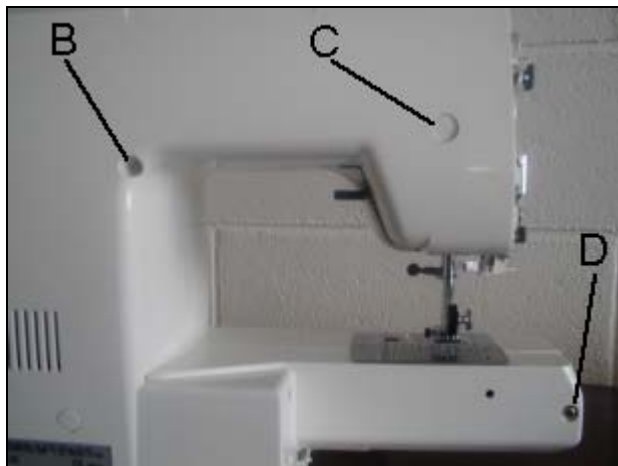
To attach : Follow the above procedure in reverse.



REAR COVER

To remove:

1. Remove the face cover, top cover and belt cover (see pages 4 and 5)
2. Loosen the screw **A**
3. Remove the screws **B**, **C** and **D**.

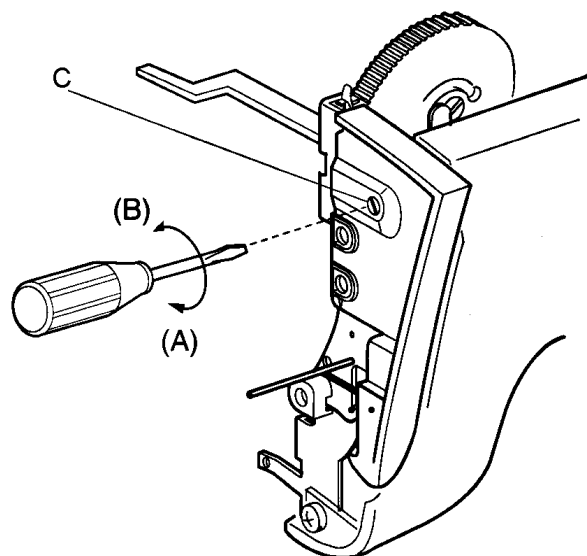
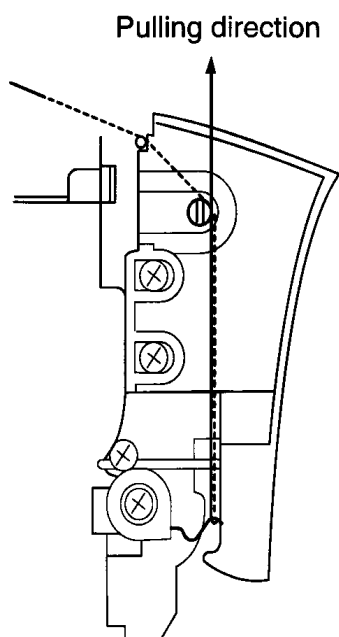


Needle Thread Tension

The standard tension should be 75 to 90 grams when the tension dial is set at "A" (Auto) for Model 3230 or at "4" for Model 3210, measured with a #50 white polyester thread being pulled at approximately 50 mm/sec. If the tension is outside the standard range, adjust it as follows. (Make sure the foot is lowered.)

Adjustment procedure:

1. Remove the face cover (see page 4).
2. If the thread tension is too tight: Turn the adjusting screw **C** in the direction of **A**.
3. If the thread tension is too loose: Turn the adjusting screw **C** in the direction of **B**.
4. Attach the front cover.



PRESSER BAR HEIGHT AND ALIGNMENT

To check:

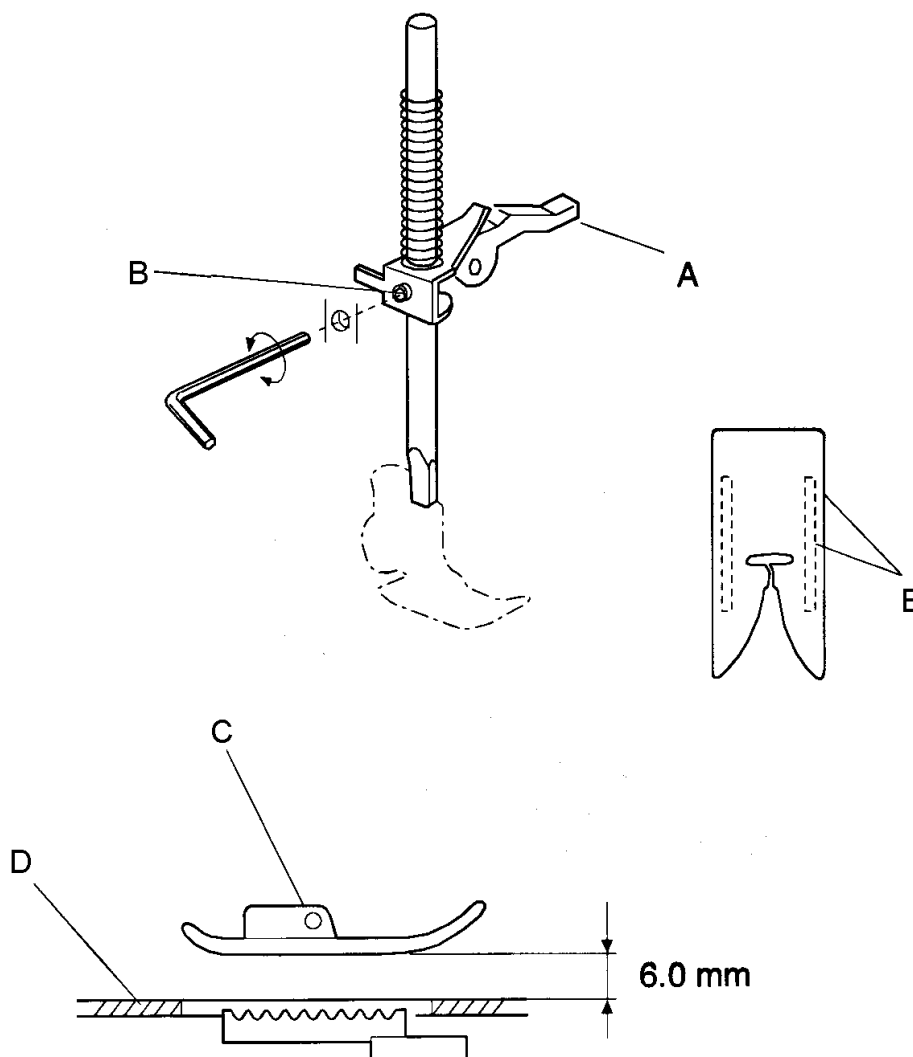
When the presser foot is raised, the clearance between the presser foot and the needle plate should be 6.0 mm.

When the presser foot is lowered, The edge of The foot and The feed dog Windows on The needle plate should be parallel.

Adjustment procedure:

1. Remove the face cover (see page 4).
2. Raise the presser foot lifter A and loosen the screw B.
3. Adjust the distance between the presser foot C and the needle plate D to 6 mm.
4. Tighten the screw B securely.
5. Attach the face cover.

Note: When tighten the screw B, make sure that both sides of the presser foot are parallel to the feed dog windows on the needle plate D.



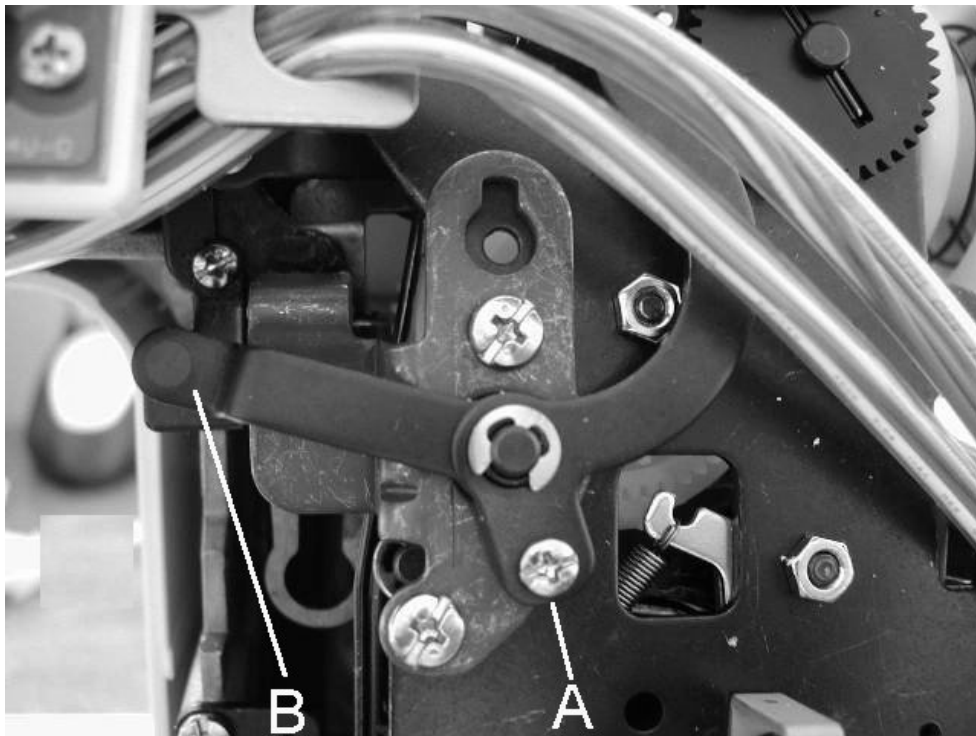
NEEDLE SWING IN STRAIGHT STITCH SEWING

To check:

If the needle swings when running the machine with zigzag stitch, at width "0", than correct this as follows:

Adjustment procedure:

1. Select **zigzag stitch** and set the stitch width dial at "**0**".
2. Remove the front cover (see page 6).
3. Loosen the set screw **A**.
4. Tighten the screw **A** while pushing the stitch width adjusting plate **B** up against the stitch width adjusting arm.
5. Check if the needle does not swing by running the machine.
6. Attach the front cover.



Needle Swing

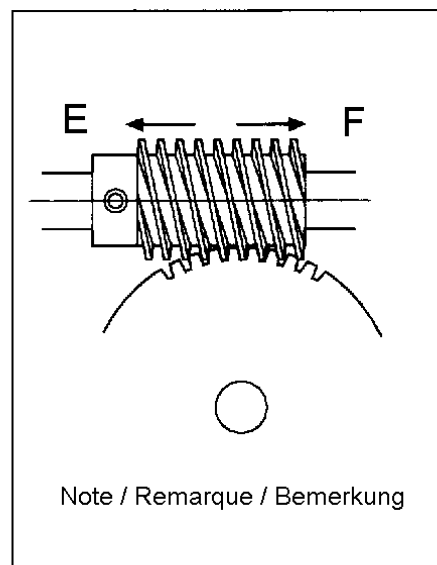
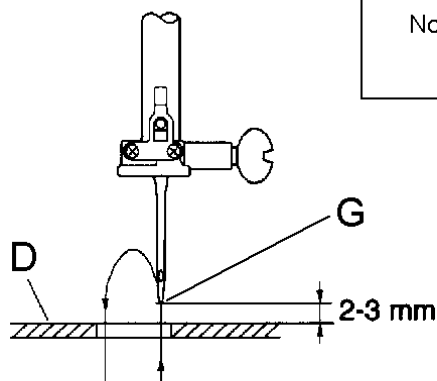
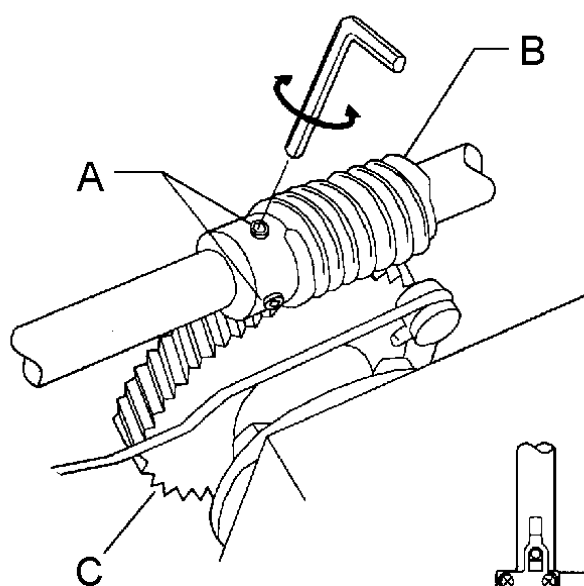
If the needle swings when it is still in the fabric, correct it as follows:

Adjusting procedure:

1. Remove the face cover and top cover (See pages 4-5).
2. Select **zigzag stitch** and set the stitch width control at "6.5".
3. Loosen 2 screws **A** in the upper shaft worm **B**.
4. Adjust the needle swing by turning the handwheel by hand while holding the worm **B** so as not to rotate it, until the needle starts to swing 2-3 mm above the needle plate when coming out from the right side **G** of the hole in the needle plate **D**.
5. Tighten 2 screws **A** firmly.
6. Attach the top cover and face cover.

Note:

The upper shaft shall turn smoothly without an excess backlash in the worm gear. If necessary adjust the backlash by pushing the worms **B** in direction **E** or **F**.



Note / Remarque / Bemerkung

Needle Position Misalignment

To check:

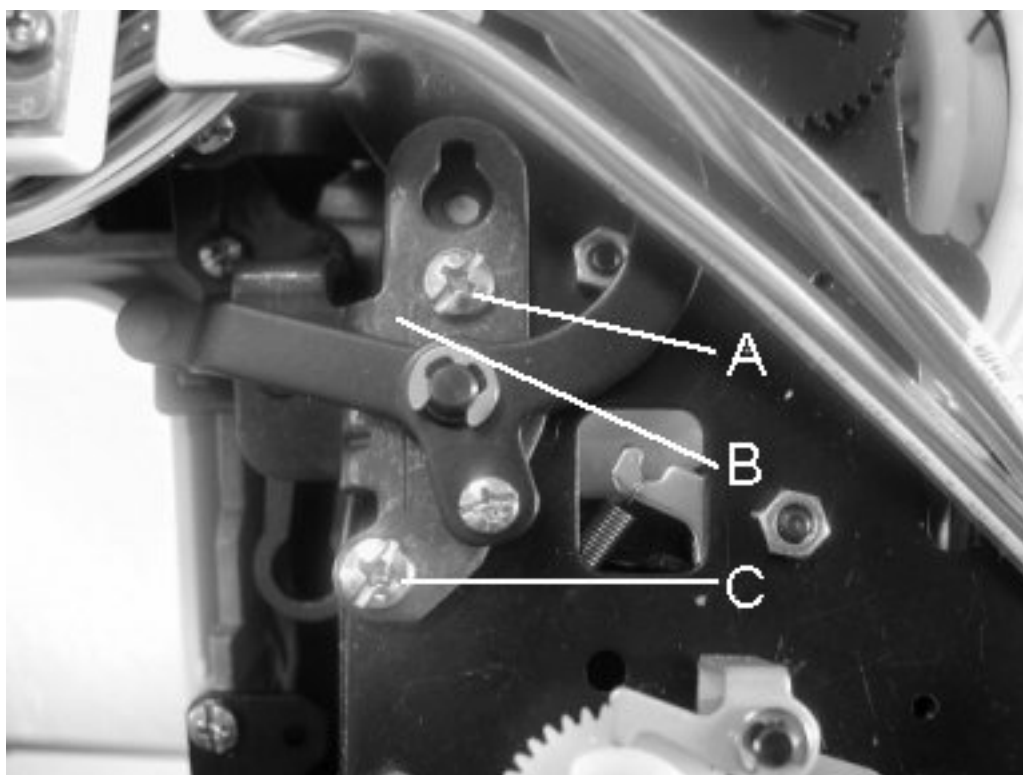
Select the pattern "Z" and set the stitch width control at "6.5". Rotate the handwheel several turns until the needle comes in the center needle drop position.

Turn the stitch width control from "0" to "6.5" and vice versa.

If the needle swings, correct it as follows:

Adjustment procedure:

1. Select the pattern "Z" and set the stitch width control at "6.5".
2. Rotate the handwheel several turns until the needle comes in the center needle drop position.
3. Remove the front cover (See page 6).
4. Loosen the setscrew **A** and **C**. Slightly tighten the setscrew **A**.
5. Adjust the position of the stitch width-adjusting arm **B** so that the needle does not swing when rocking the stitch width-adjusting lever. Tighten the setscrews **A** and **C**.
6. Attach the front cover.



Needle Drop Position

The needle should drop in the center of the hole in the needle plate when the straight stitch is selected and the stitch width control is set at "0".

The clearance between the needle and each side of the needle hole should be 0.2 mm or more when the needle swings maximum zigzag width.

Adjustment procedure:

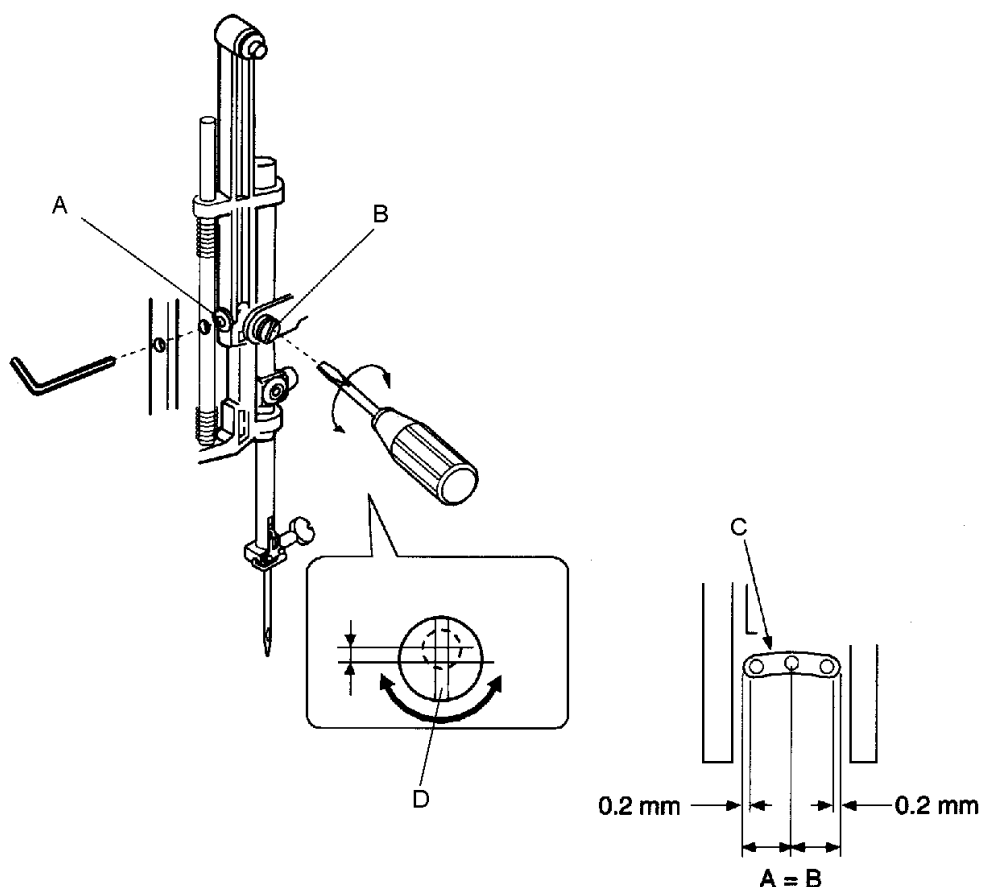
1. Remove the face cover (See page 4).
2. Check the needle drop position of the straight stitch with the stitch width "0" and the zigzag stitch with the stitch width "6.5".
3. Loosen the set screw **A** and adjust the needle drop position by turning the eccentric pin **B**.

Note:

The eccentric pin should be positioned with its off-centered head facing downward.

Tighten the set screw **A** after adjustment is finished.

Attach the face cover.

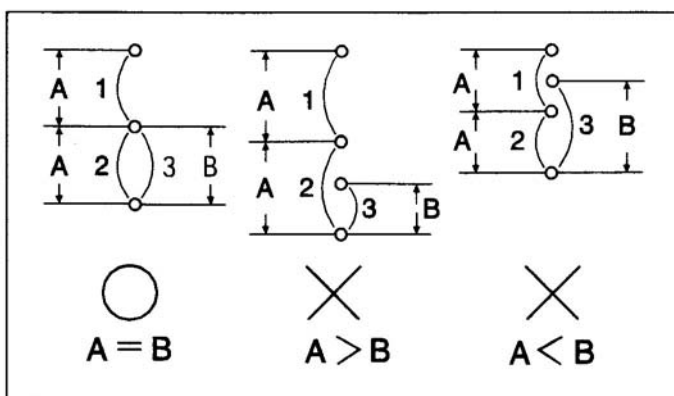
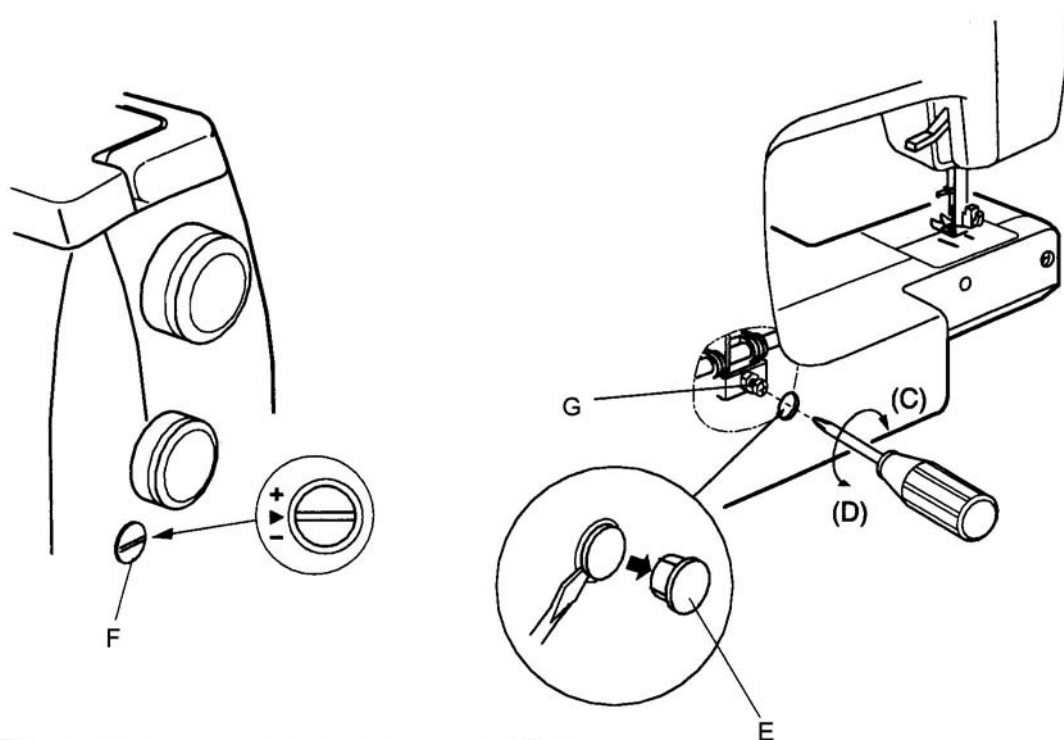


Stretch Stitch Feed Balance

If the stretch stitch patterns are deformed when sewing the patterns with the feed balancing dial is set at the standard position **F** (see **F**), correct it as follows:

Adjustment procedure:

1. Select the straight stretch stitch **■■■■■** and set the stitch width control at "O".
2. Set the feed balancing dial at the standard position **F**.
3. Place a piece of paper on the machine and lower the presser foot. Rotate the handwheel several turns and check the needle marks in the paper.
4. Remove the cap **E** on the rear cover to access the adjusting screw **G**.
5. If the forward feed is longer (**A>B**): Turn the adjusting screw **G** in the direction of **(C)**.
6. If the backward feed is longer (**B>A**): Turn the adjusting screw **G** in the direction of **(D)**.
7. Attach the cap **E**.

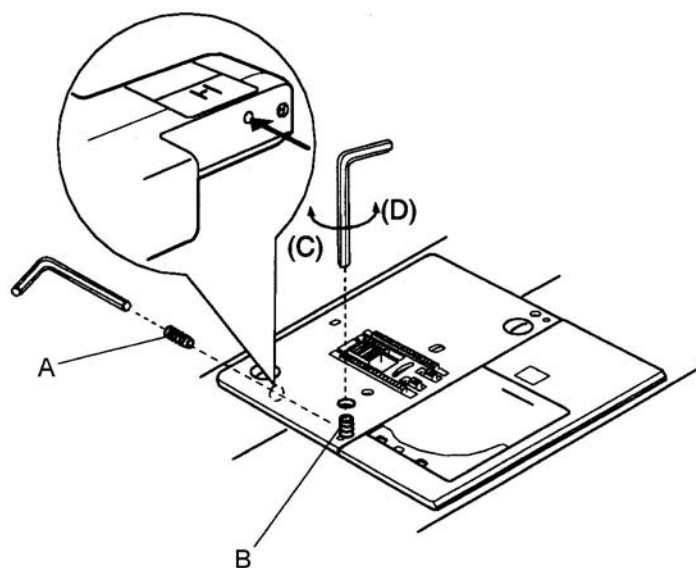
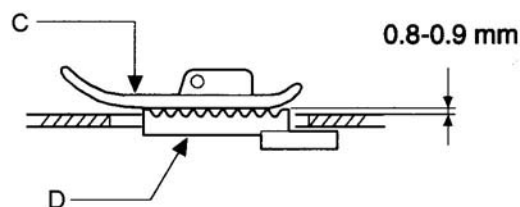


FEED DOG HEIGHT

The height of the feed dog should be 0.8-0.9 mm above the needle plate.

Adjustment procedure:

1. Select the straight stitch and set the stitch width control at "0".
2. Set the foot pressure dial at "3" and lower the foot.
3. Loosen the setscrew **A**
4. Turn the handwheel to bring the feed dog to its highest position.
5. If the feed dog height is lower than 0.8 mm: Turn the adjusting screw **B** in the direction of **C**.
6. If the feed dog height is higher than 0.9 mm: Turn the adjusting screw **B** in the direction of **D**.
7. Tighten the setscrew **A**.



NEEDLE BAR HEIGHT

When the tip of the hook **D** meets the left side of the needle in ascending travel of the needle from its left and lowest position, the distance between the top of the needle eye and the tip of the hook **D** should be in the range of 1.6-2.0 mm.

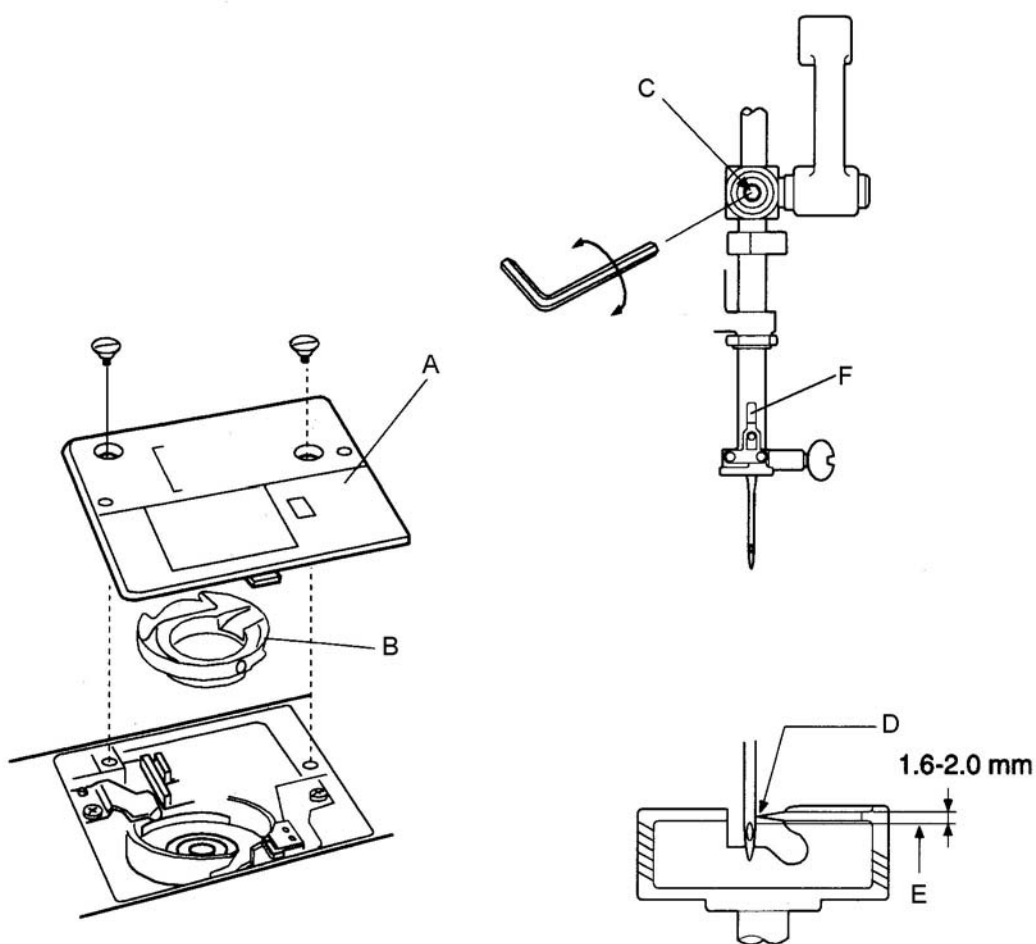
Adjustment procedure:

1. Select the straight stitch and set the stitch width control at "6.5".
2. Remove the needle plate **A** and bobbin holder **B**.
3. Turn the handwheel until the tip of the hook **D** meets with the right side of the needle.
4. Remove the face cover and loosen the setscrew **C**.
5. Adjust the needle bar height by moving the needle bar up or down.
6. Tighten the setscrew **C**.

Note:

Be sure that the groove on the needle bar **F** is facing right in the front.

7. Attach the face cover, bobbin case and needle plate.

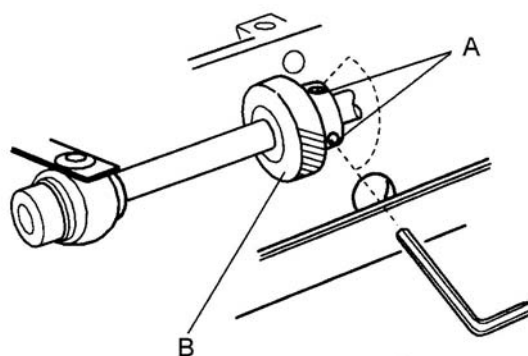
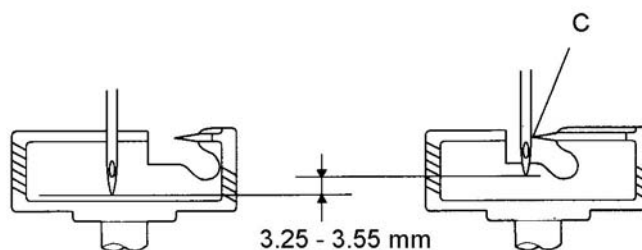


Needle Timing to Hook

When the hook point meets with the right side of the needle, the height of needle point from its lowest and left most position should be 3.25-3.55 mm.

Adjustment procedure:

1. Select the straight stitch and set the stitch width control at "6.5".
2. Remove the presser foot, needle plate and bobbin holder.
3. Remove the front cover (See page 6).
4. Turn the handwheel to bring the needle **C** to its lowest position.
5. Loosen the 2 setscrews **A** in the lower shaft gear **B**.
6. Turn the handwheel to raise the needle bar 3.4 mm from the lowest position.
7. Rotate the lower shaft gear until the hook point meets the right side of the needle, while holding the handwheel in place.
8. Tighten the setscrews **A**.
9. Attach the front cover.
10. Attach the bobbin holder, needle plate and presser foot.

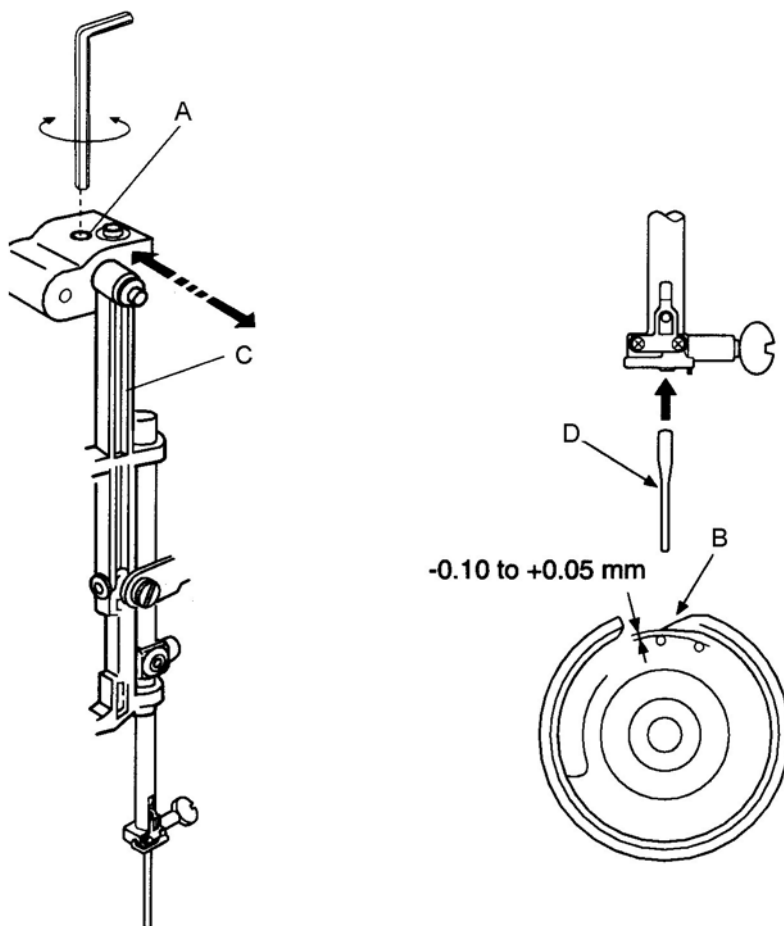


Clearance between Needle and Hook

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

Adjustment procedure:

1. Select the zigzag stitch and set the stitch width control at "6.5".
2. Remove the needle plate and bobbin holder.
3. Replace the needle with the gauge **D** 100240-10 and tighten the needle clamp screw.
4. Remove the face cover (See page 4.).
5. Turn the handwheel to bring the hook point **B** just behind the gauge 100240.
6. Loosen the setscrew **A** and adjust the clearance between the needle and hook point to -0.10 to 0.05 mm by moving the top end of the needle supporter **C** back or forth.
7. Tighten the setscrew **A**.
8. Attach the face cover.
9. Attach the bobbin holder and needle plate. Replace the master needle with the sewing needle.



Backlash between Hook Gear and Lower Shaft Gear

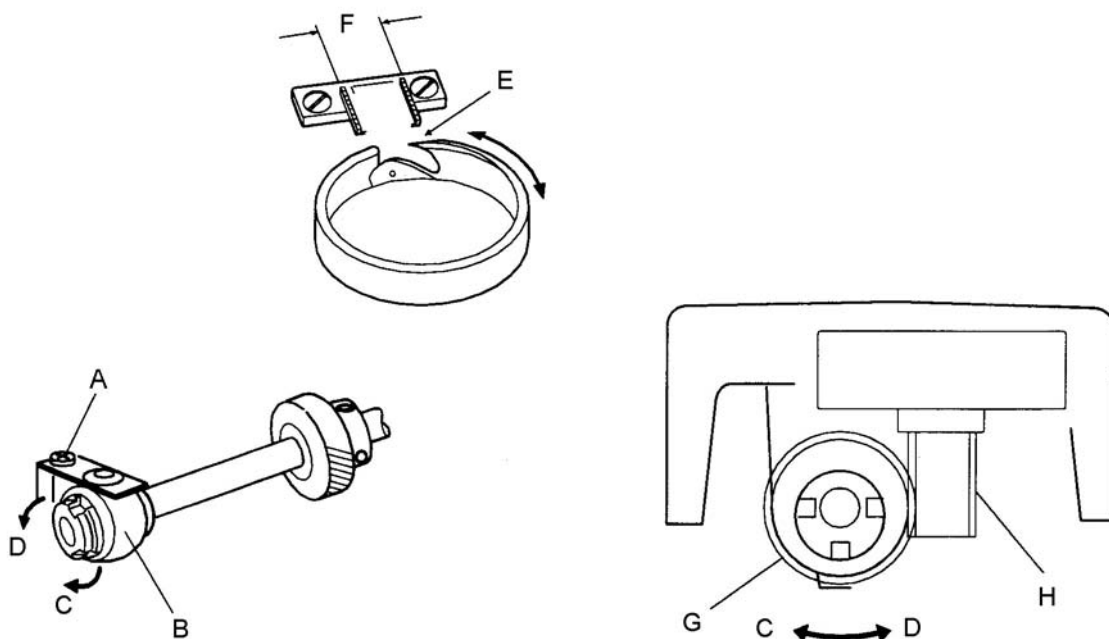
The rotary play of the hook point should be 0.8 mm or less when it is in between the span of the feed dog teeth and, the gears should turn smoothly.

Adjustment procedure:

1. Remove the needle plate and bobbin holder.
2. Remove the front cover (See page 8.).
3. Loosen the setscrew **A**.
4. If the rotary play **E** is too large: Turn the lower shaft bushing **B** in the direction of **C**.
5. If the rotary play **E** is too small: Turn the lower shaft bushing **B** in the direction of **D**.
6. Tighten the setscrew **A**.
7. Attach the front cover.
8. Attach the bobbin holder and needle plate.

Note:

After adjustment of the backlash, check the needle timing to hook and feed dog height, and adjust them if necessary

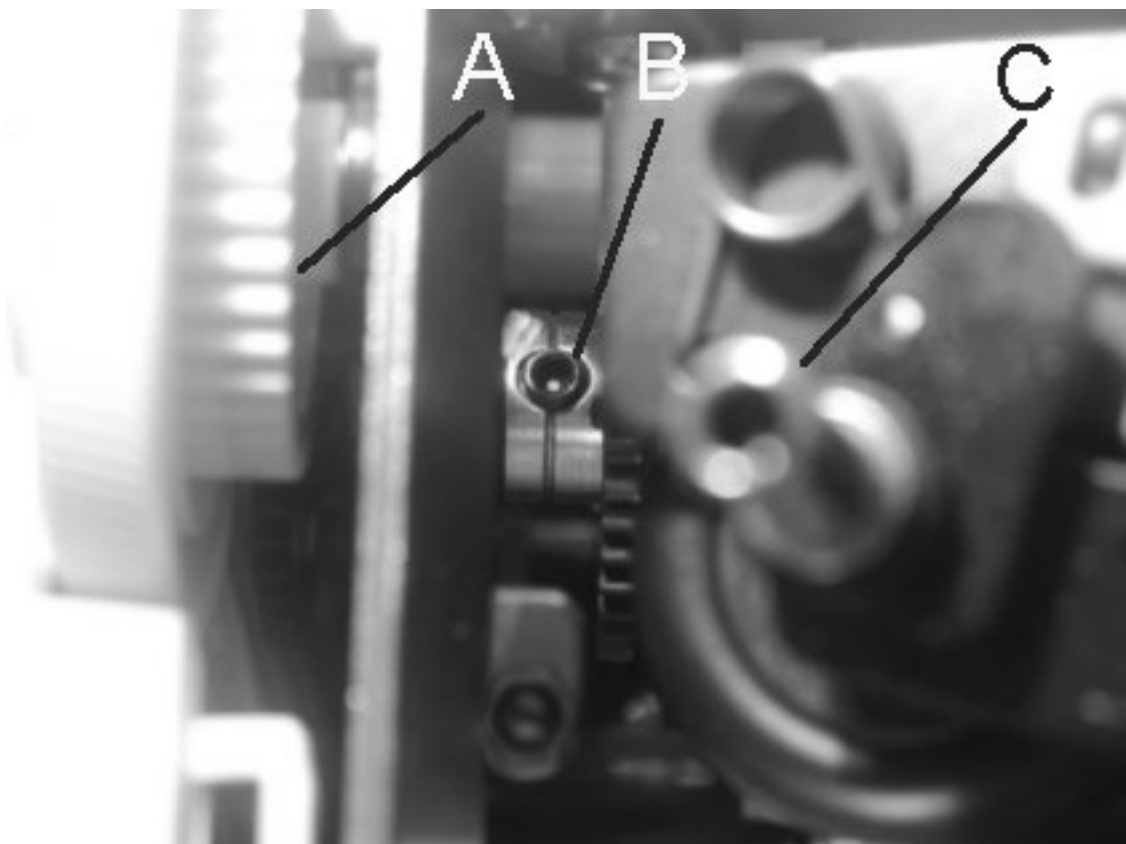


Zero Feeding

The machine should not feed the fabric when the stitch length control is set at "O".

Adjustment procedure:

1. Select the straight stitch and set the stitch length control **A** at "O".
2. Remove the Top cover (See page 4).
3. Place a piece of paper on the machine and lower the presser foot. Rotate the handwheel to check if the paper is fed or not.
4. Loosen the setscrew **B** on the feed adjusting gear near to bobbin winder **C**.
5. Turn the feed adjusting gear with the screw **B** to adjust the Zero feeding.
6. Tighten the setscrew **B**.
7. Attach the Top cover.

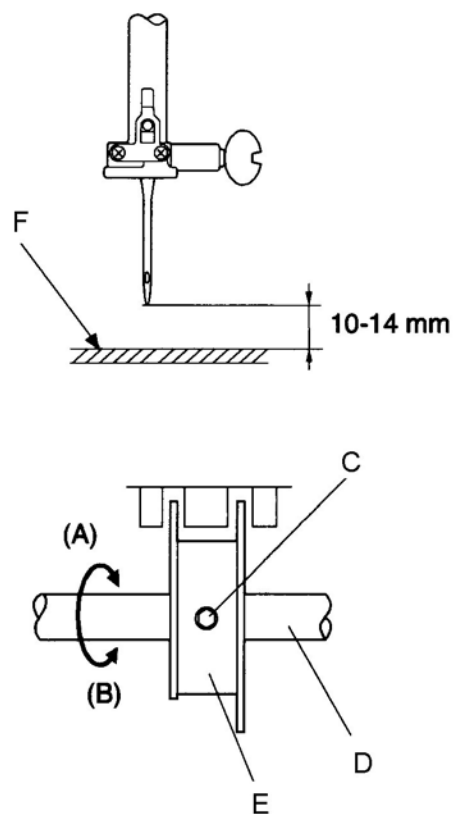
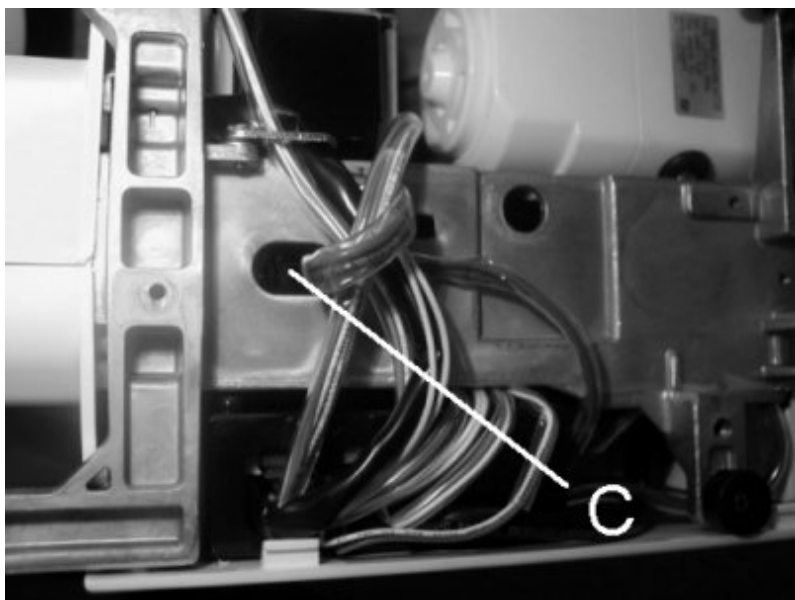


Needle Bar Stop Position (Model 3230 only)

The height of the needle point should be 10-14 mm above the needle plate when the machine stops. If not, correct it as follows:

Adjustment procedure:

1. Remove the base (See page 5.)
2. Turn the power switch ON and press the needle up/down button twice to bring the needle bar to the highest position.
3. If the needle point is higher than 14 mm: Loosen the setscrew **C** and turn the lower shaft shielding plate **E** in the direction of **A**.
4. If the needle point is lower than 10 mm: Loosen the setscrew **C** and turn the lower shaft shielding plate **E** in the direction of **B**.
5. Tighten the setscrew **C**.
6. Press the needle up/down button twice and check the needle stop position.
7. Attach the base.

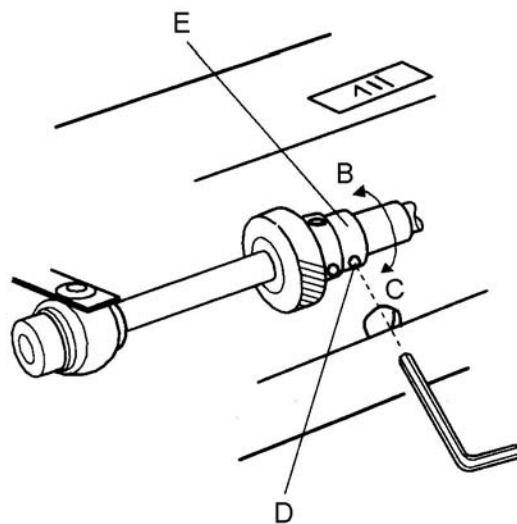
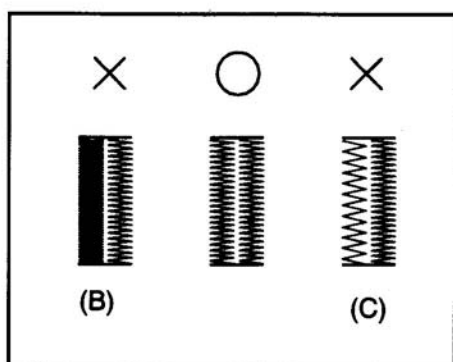
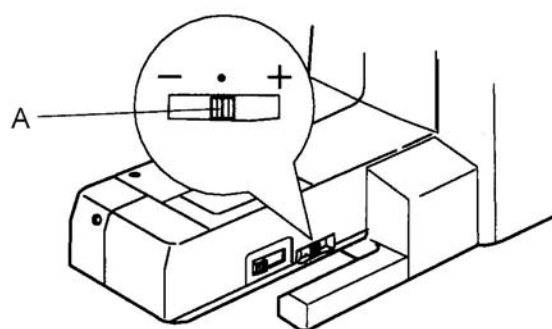


Buttonhole Feed Balance

When sewing a buttonhole with the BH pitch balancing lever set at the neutral position, the stitches on each side of the buttonhole should be of the same stitch density. A range of 9-12 stitches in the "backward feeding" (right side row) against 10 stitches in the "forward feeding" (left side row) is considered acceptable.

Adjustment procedure:

1. Sew a test buttonhole.
2. Loosen the setscrew D in the ring E.
3. If the left row (backward feed) is less denser (C): Rotate the ring in the direction of (C).
4. If the left row (backward feed) is denser (B): Rotate the ring in the direction of (B)



Buttonhole Length

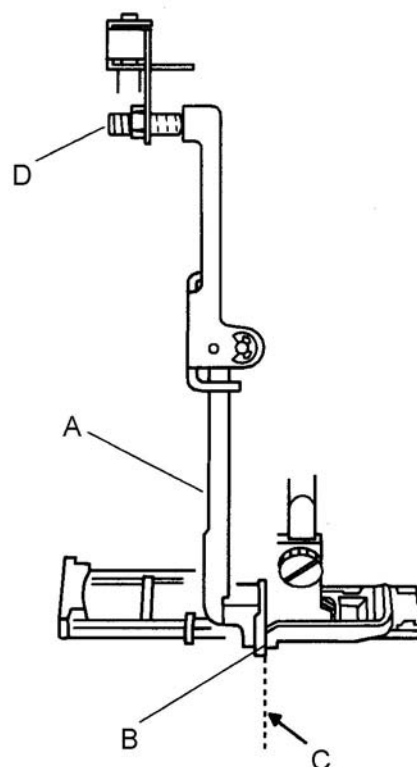
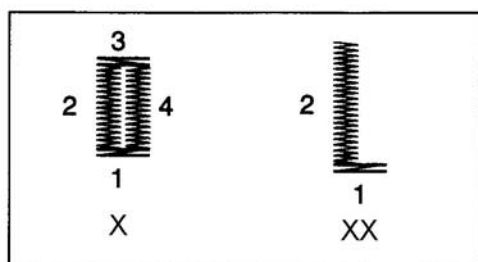
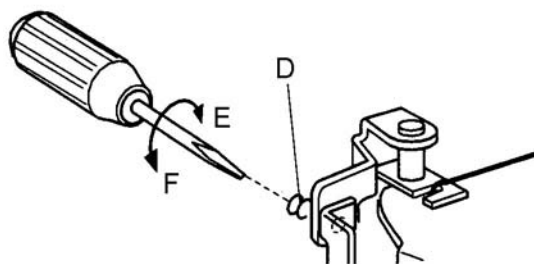
The machine should sew a buttonhole in a single step and the buttonhole length should be about 3 mm longer than the length set by buttonhole foot R.

Adjustment procedure:

1. Attach the buttonhole foot **R**.
2. Place a button in the button holder on the foot. Sew a test buttonhole.
3. If the buttonhole length is shorter than the button: Turn the adjusting screw **D** in the direction of **E**.
4. If the buttonhole length is longer or the machine will not sew the back bartack: Turn the adjusting screw **D** in the direction of **F**.
5. The knob of the buttonhole lever should align with the end of a horn **C** on the buttonhole foot **R**.

X = Buttonhole is short.

XX = Buttonhole is too long or machine will not sew bartack

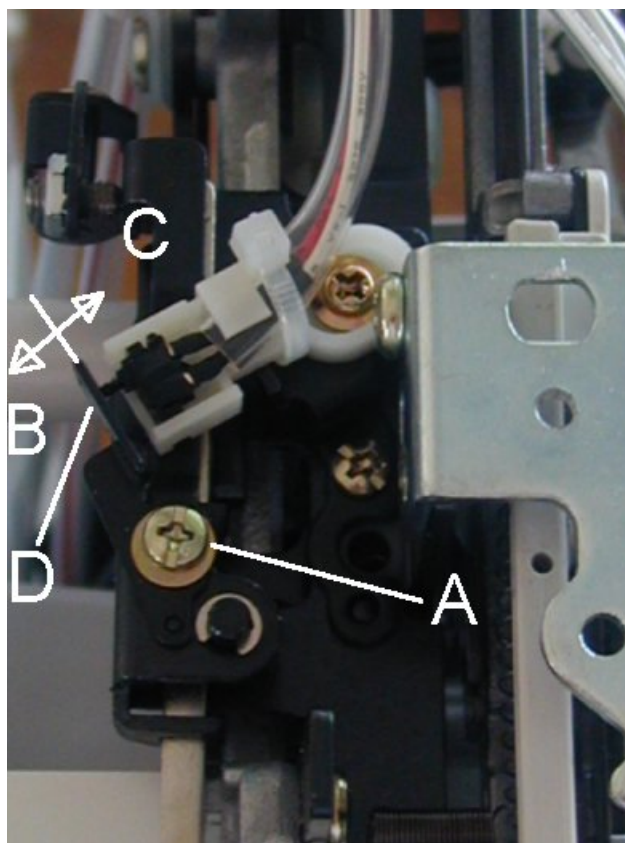
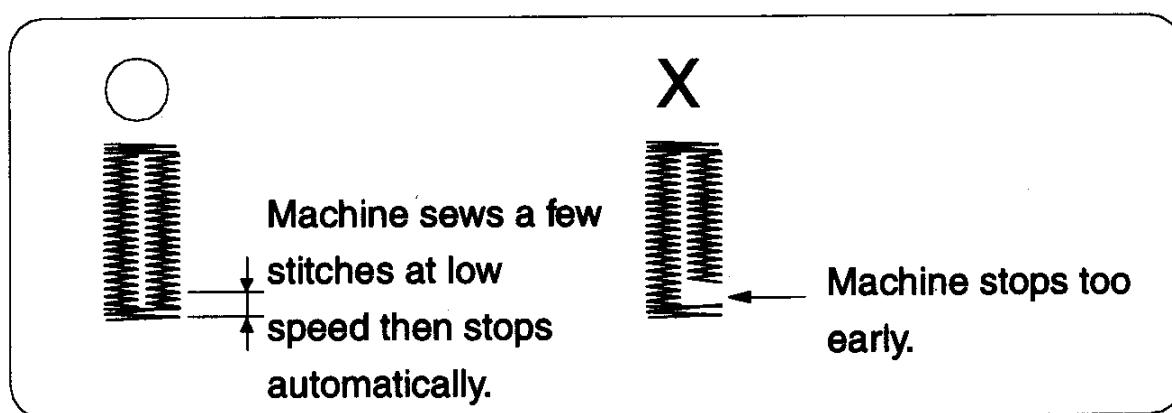


Auto-Stop Buttonhole (Model 3230)

The machine will stop automatically when buttonhole is completed.
If the machine stops too early or too late, correct it as follows:

Adjustment procedure:

1. Remove the face cover (See page 4.).
2. Loosen the setscrew (A).
3. If the machine stops too early: Move the adjusting plate in the direction of (B).
4. If the machine stops too late or does not stop: Move the adjusting plate in the direction of (C).
5. Tighten the adjusting screw (A).
6. Attach the face cover.



Replacement and Adjustment of Needle Threader Plate

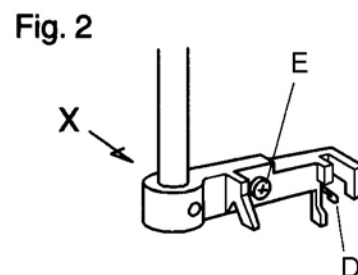
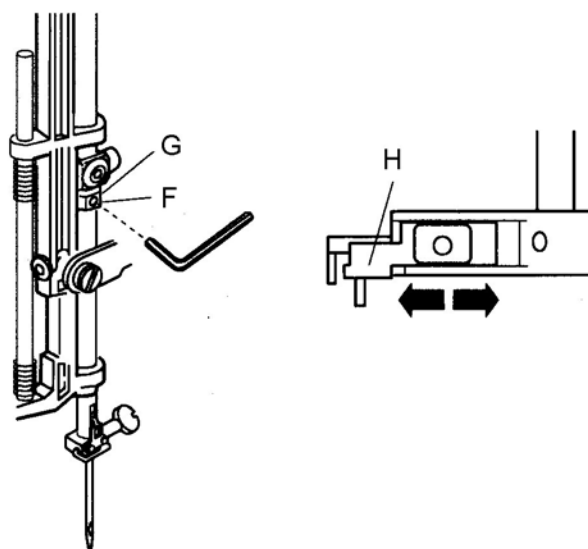
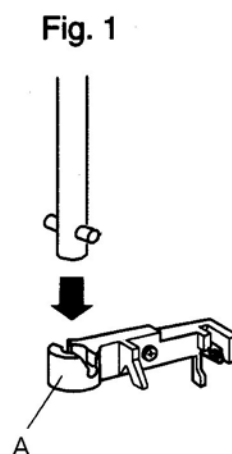
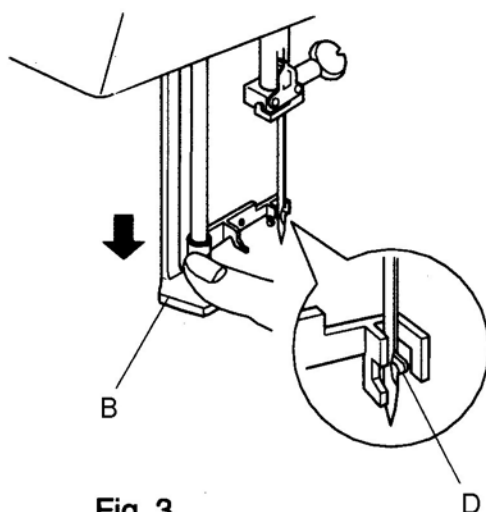
To replace:

Pry out the threader plate holder with a screwdriver while pushing and holding the threader knob (See fig. 1.).

Align the groove on the new threader plate holder with the pin (B) on the threader shaft. Push the threader plate holder (C) up until it snaps in place.

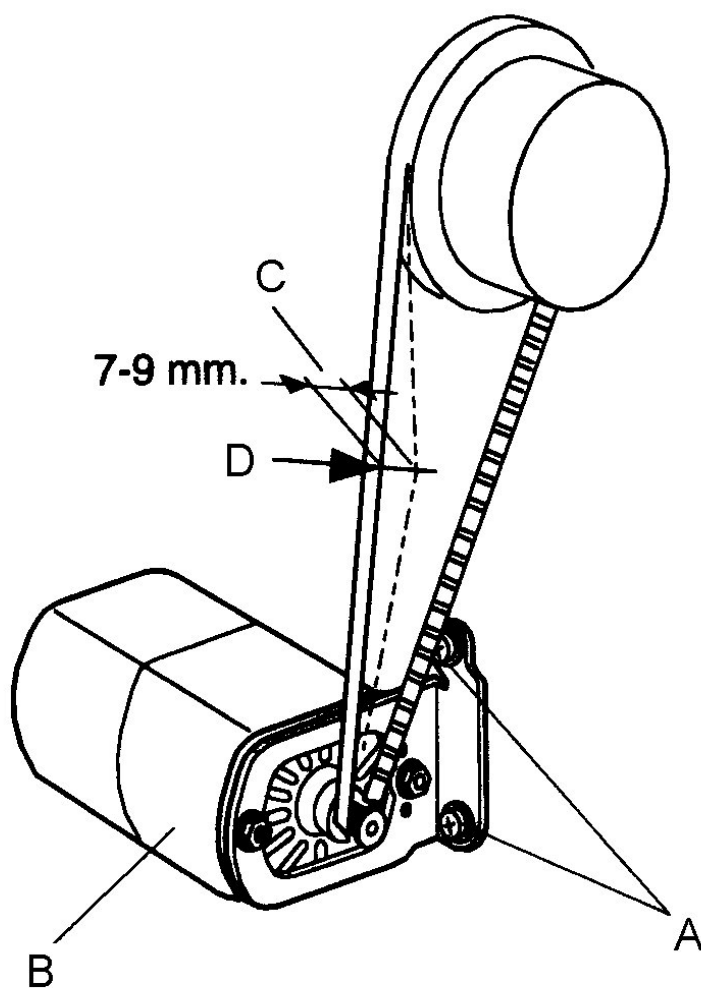
Adjustment procedure:

1. If the threader hook thrusts or hits against either left or right edge of the needle eye: Loosen the setscrew (E) and adjust the position of the threader plate (H) (See fig. 2).
2. If the threader hook thrusts against either top or bottom edge of the needle eye, or misses the needle eye: Remove the face cover and loosen the setscrew (F). Move the threader position setting holder (G) up or down to adjust the hook position.



Motor Belt Tension

1. Remove the front cover (See page 6.).
2. Slightly loosen the 2 setscrews (A).
3. Move the motor to adjust the motor belt tension so that the belt is bent 7-9 mm when pressing the middle of the belt with approximately 300 grams of pressure.
4. Tighten the setscrews

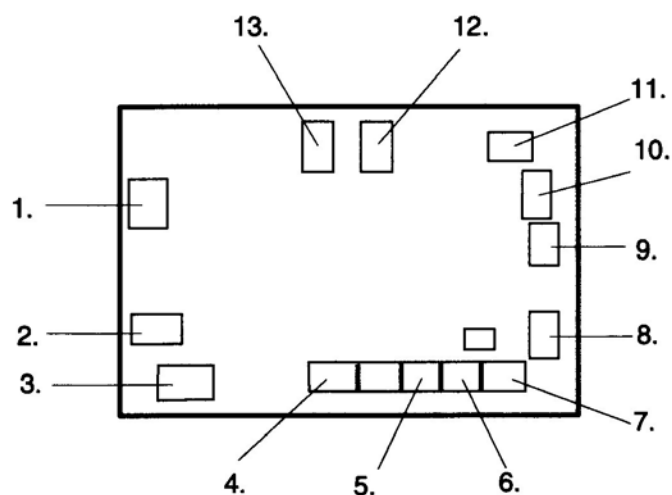
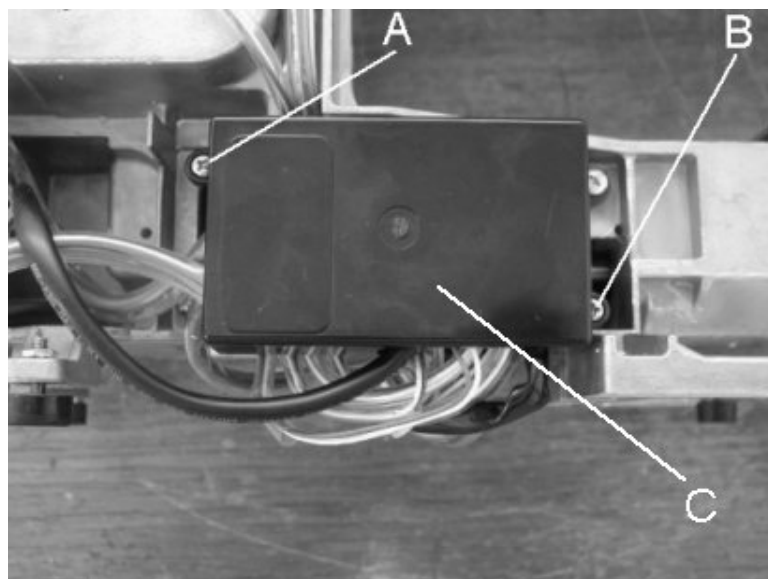


B-Board and Connector Location (Model 3230)

To access:

1. Remove the Rear cover (see page 7).
2. Remove the two screws **A** and **B**.
3. Remove the circuit box lid **C**.

- | | |
|---------------------------------------|---------------------------------------|
| 1. Machine socket connector (primary) | 2. Transformer connector (primary) |
| 3. Motor connector | 4. Needle position sensor connector |
| 5. Bobbin winding switch connector | 6. BH limited switch connector |
| 7. BH selecting switch connector | 8. Photo sensor connector |
| 9. Slide volume connector | 10. Machine socket connector |
| 11. LCD connector | 12. Transformer connector (secondary) |
| 13. Lamp connector | |

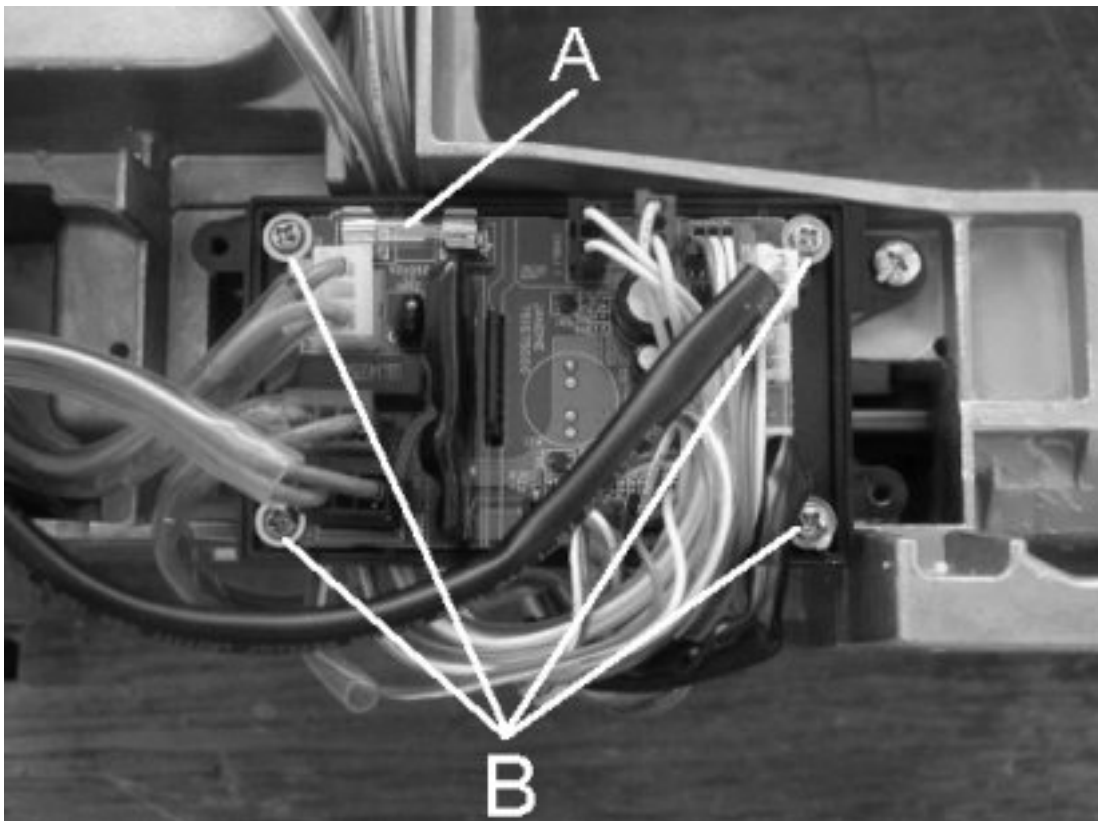


Remplacement of B-Board and fuse (3230 only)

1. Remove the rear cover (see page 7).
2. Remove the circuit box lid (see page 27).
3. Disconnect all connectors and unscrew the four screws **B**.
4. Replace the circuit board and fix it.
5. Insert all connectors (see page 27)
6. Attach the circuit board lid and the rear cover.

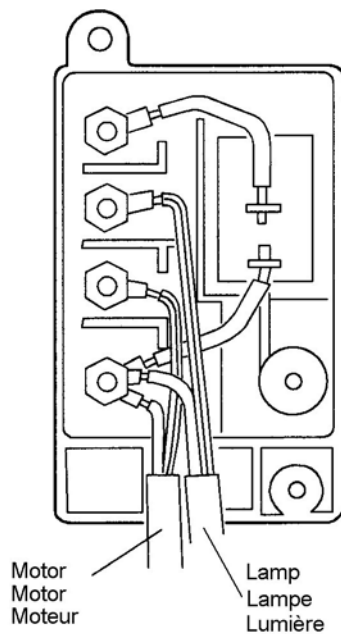
To replace the fuse:

1. Pry out the fuse **A** with a screwdriver.
2. Replace the fuse and push it down into the fuse clip.



Wiring of Terminals in Machine Socket

For 110-120V



(For 220-240V)

