

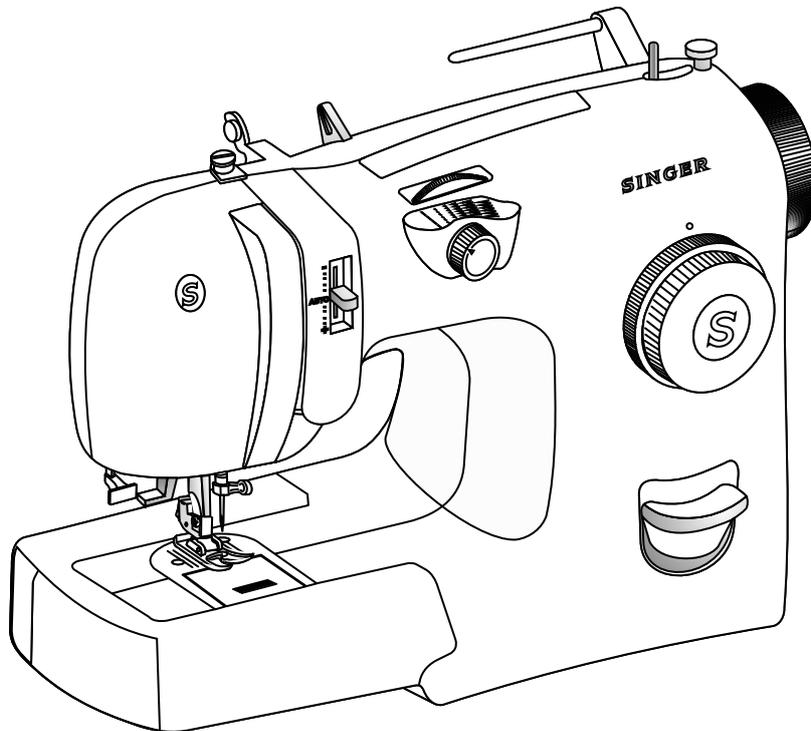


**SINGER** | Inspiration™

4228-4220

4212-4206

4210-4205



## Service manual

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## General information

This manual describes all of the servicing procedures, including all adjustments and parts removal and replacement for the "Inspiration" class machines

It is intended to be used by service workshop personnel, or by salesmen who carry out servicing their own districts. They assume a thorough knowledge of the handling of precision appliances and accessibility to service tools.

For more detailed information regarding the construction, etc., refer to the diagrams in the spare parts list.

Additional information covering any production changes, improvements or changes to parts will be made by issuing Singer service parts bulletins.

## Machine Description

Tubular bed.

Lightweight casting.

Sure fit sewing system.

Electronic triac foot speed controller.

New "FT" fabric feed system.

Vertical needle profile.

Motor concealed in bed.

Horizontal spool pin.

Automatic bobbin winder declutching.

Bobbin capacity of 41 m (45 yds) minimum.

Universal presser bar pressure control. Q Maximum stitch length 5 mm (5 s.p.i.).

Self-threading take-up lever.

Instant reverse.

One-way needle insertion.

One-way bobbin insertion.

Direct pattern selection.

Drop feed

One-step buttonholer

Automatic needle threader

Bed length 386 mm without cloth plate.

Bed width 150 mm.

Bed height 75 mm.

Clearance under free arm 28 mm.

Free arm circumference 264 mm.

Overall height 290 mm.

Weight 6,0 kg.

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## Service tools

A reasonable requirement in a domestic sewing machine is that it should be able to sew all types of fabrics used in the home. The settings made when assembling and sewing-in the machines are those most suited to give the best results in the majority of fabrics and fabric combinations. In doing so, consideration has been given to the requirements of different markets. This does, however, mean that when sewing extreme fabrics, better results may be obtained in certain cases by altering the settings. It must be pointed out that these altered settings can cause poorer results on more normal fabrics. How the different standard ratings are set can be seen from the description under each setting instruction. The following list of setting gauges and service tools is intended as an instruction about the special service tools needed to servicing this machine.

### Tool requirements

1. On several different occasions the needle is used as a setting gauge. The setting ratings are adapted to needle 90. Make sure to use an undamaged needle.

2. Flat screwdriver 1/8"



3. Flat screwdriver 3/16"

4. Flat screwdriver 1/4"

5. Extra long Flat screwdriver (5,0 mm dim. x 380 mm long)



6. Philips screwdriver



7. Open end wrench 6, 7, 8, 10 mm.

9. Pliers



10. Wire-cutter pliers

11. Feeler gauge GM8092

12. Feeler gauge set

13. Allen wrench 1,5 mm



14. Nose pliers 0,9 mm dim.



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## How to remove the covers

### Face Cover

1. Remove the Screw (A) From the back of the machine

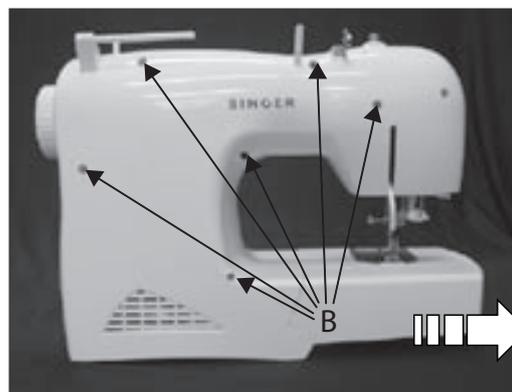


2. Lift away the face cover to the front.

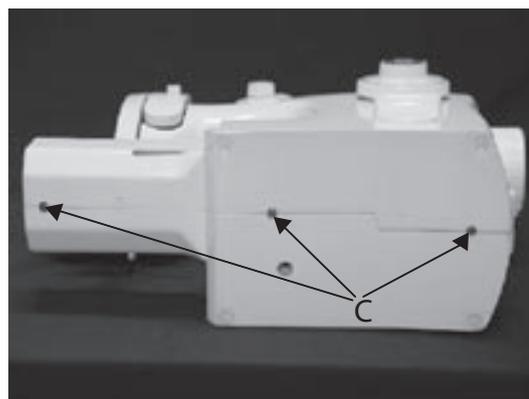


### Back Cover

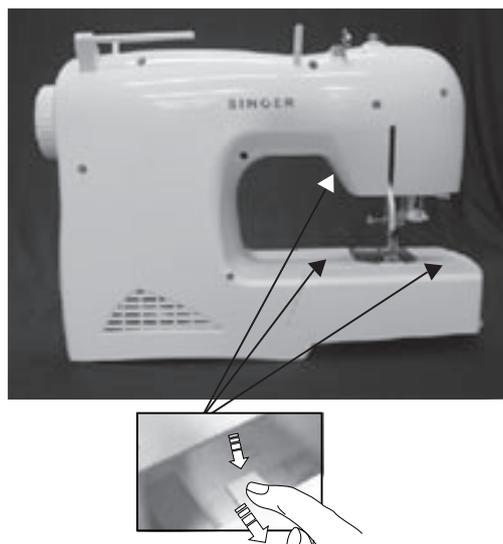
3. Remove the 6 Philips screws (B), from the backside of the machine



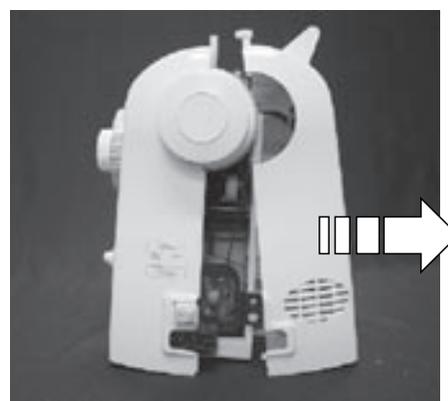
4. Lay the machine on its back and remove the 3 Philips screws (C) from the base of the machine.



5. Push on the cover at these 3 positions .



6. Push then the back cover away from the machine.

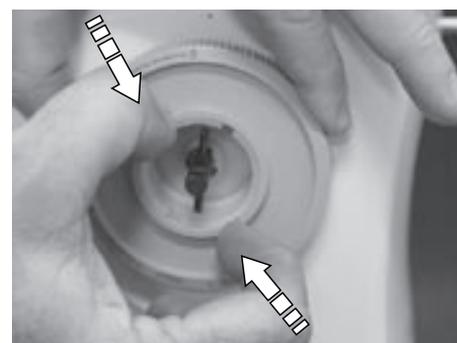


## Front Cover

7. Remove the stitch dial , by pulling it straight out



8. Squeeze the ring in the middle together and pull it then straight out.



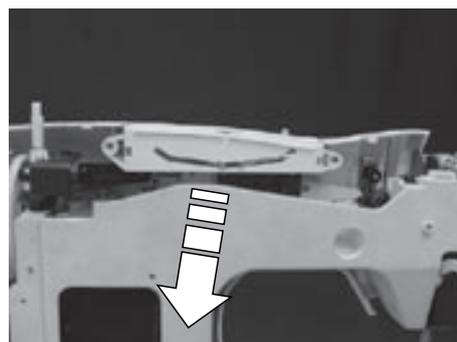
9. Remove the Tension Dial, by pulling it straight out.



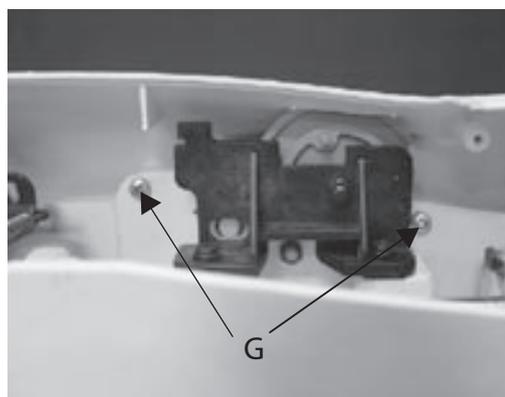
10. Remove the Presser bar pressure knob by pulling it straight out.

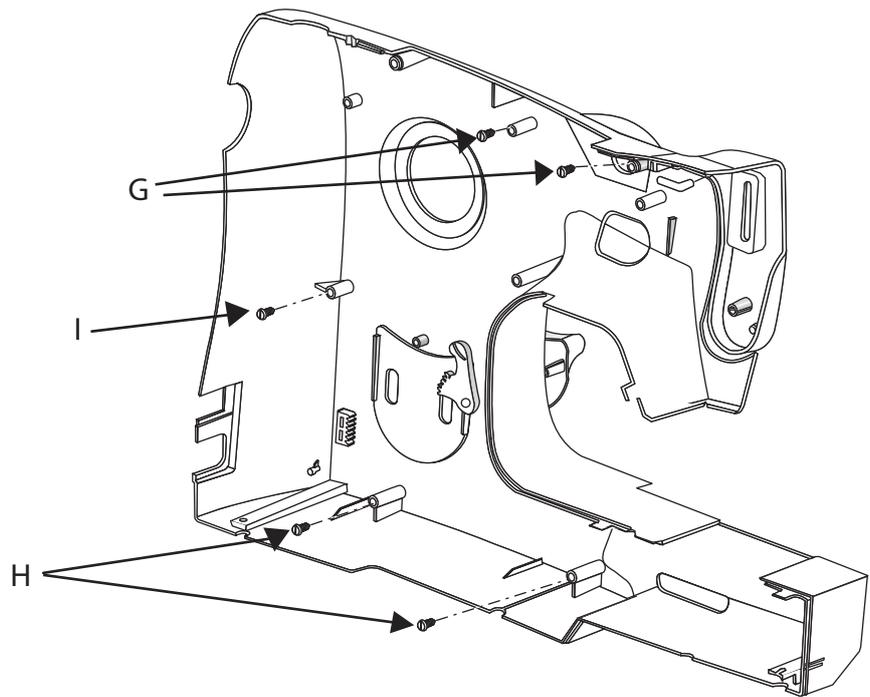


11. Remove the handle, towards the back

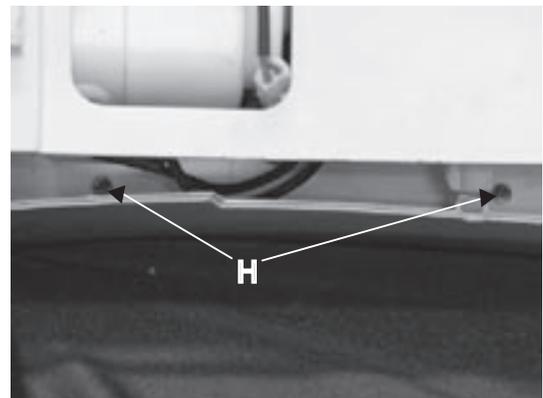


12. Remove the 2 Phillips screw (G), from the back of the front cover

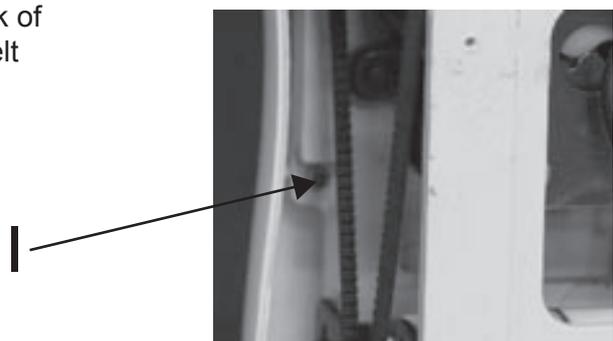




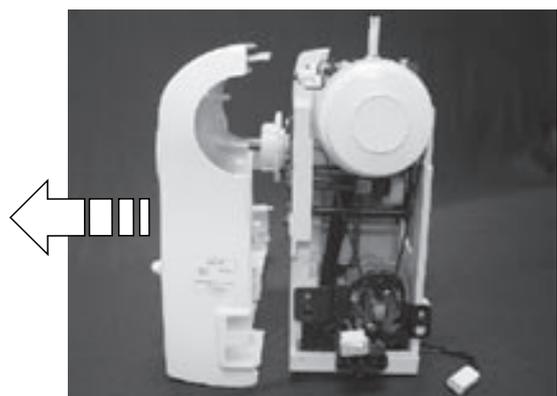
13. Remove the 2 Phillips screw (H), from the back of the front cover



14. Remove the Phillips screw (I), from the back of the front cover, located just beside the motor belt



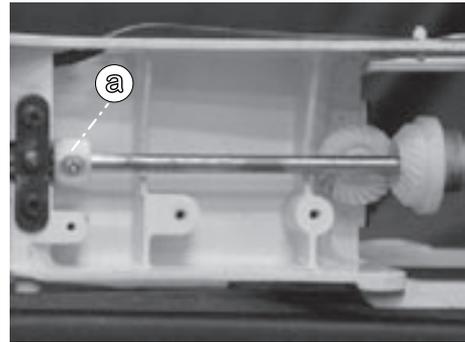
15. Remove the front cover to the front, and at the same time remove the on/off switch from the front cover.



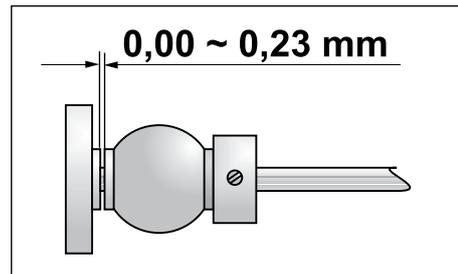
## Arm shaft end play and horizontal and vertical gear mesh

1. Loose the collar screw (a).

2. Push the hand wheel and arm shaft (b) to the left.



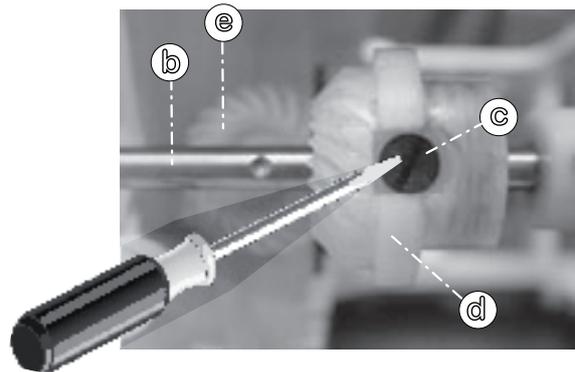
3. Insert a 0,23 mm shim gauge as indicated in the illustration and pull the handwheel and arm shaft to the right.



4. Loose the gear screw (c) and lightly move gear (e) to the left until it just touches the gear (d).

5. Tighten securely the gear screw (c).

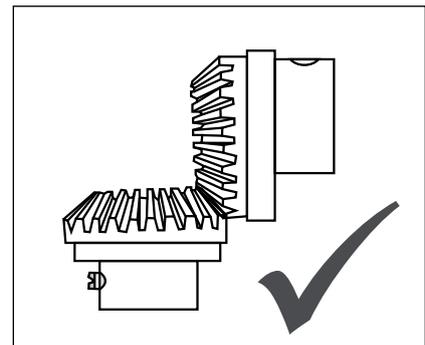
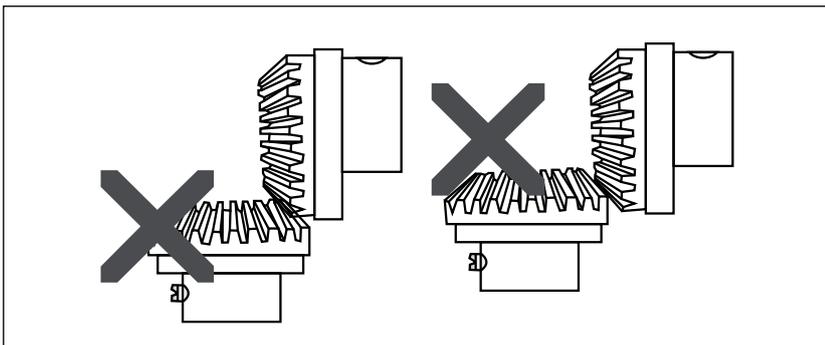
6. Remove the shim gauge and pull the hand wheel and the horizontal shaft to the right.



7. Push the collar to the left until it just touches the bushing.

8. Tighten firmly the collar screw (a).

Note that there are two identified teeth on the arm shaft gear, and only one tooth on the vertical shaft gear. This tooth must be located between the two teeth on the arm shaft gear.



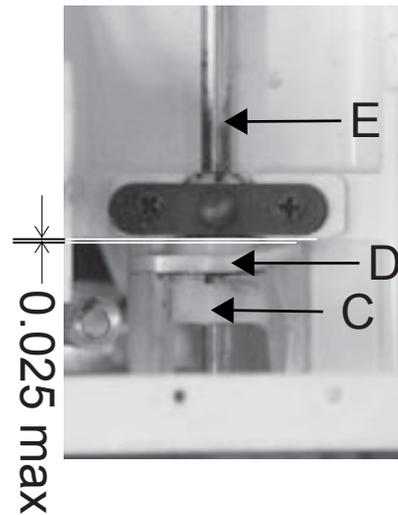
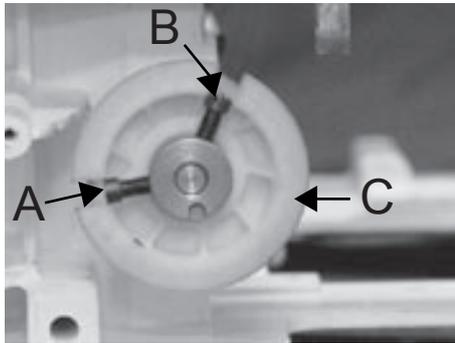
## Vertical Shaft End Play

### Check

The vertical shaft must be set to have 0,000 to 0,025 mm. If incorrectly set, noise may be generated.

### Adjust

1. Loose the pulley screws (A) and (B) on the pulley (C).
2. Push down on the vertical shaft (e) and push up on the pulley (C) with the cam (D), tighten the screws (A) and (B).
3. Make sure the shaft rotates freely without binds.
4. Recheck and readjust if necessary the gears of the shafts horizontal and vertical
5. Adjust hook timing.



## Take-up lever and needle bar connecting link play

Looseness in these parts will cause the machine to run noisy and may cause irregular stitching.

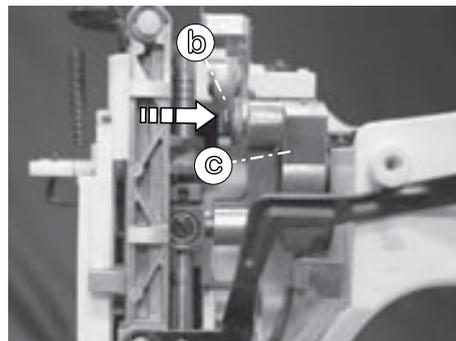
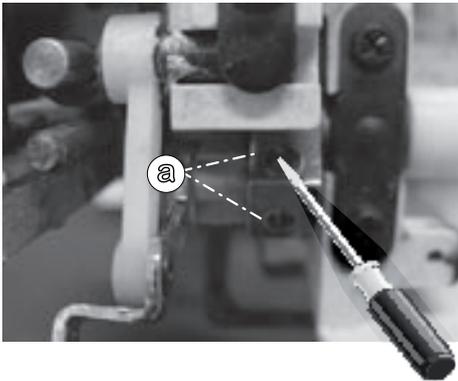
### Check

1. Remove needle and presser foot.
2. Run the machine at maximum speed and check for rapping noise in head end.
3. Turn handwheel to bring the needle bar to its lowest position.
4. Grasp the needle clamp and check for excessive vertical and radial play, by moving needle bar up and down rotatively.

### Adjustment

1. To correct, loosen the two screws (a).
2. Press firmly the stud (b) against the crank (c) and tighten the screws (a).
3. Turn the handwheel through several revolutions and check for binds. Readjust if necessary.
4. Recheck for noise or radial play.

NOTE! If excessive play still exists, the parts must be replaced.



## Needle to hook relationship

Proper needle to hook relationship is important to prevent skipping of stitches if needle is too far from the hook, and hook or needle damage if the needle is too close to the hook.

**NOTE! Always use a new needle for checking and adjusting**

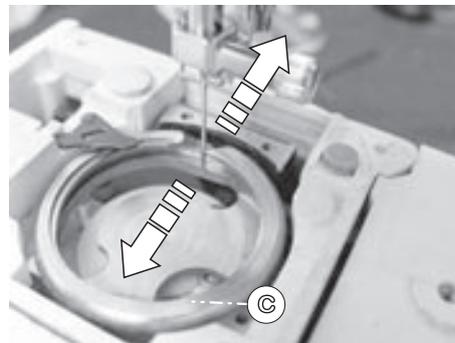
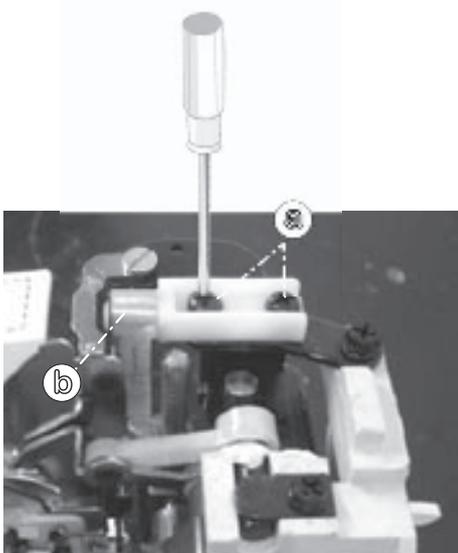
### Check

1. Set the machine on straight stitching
2. Remove the needle plate, the bobbin and the bobbin case.
3. Check the hook point. If the point is bent or burred - replace the hook.
4. Rotate hand wheel until the tip of the hook arrives behind the needle.
5. Check the gap by pressing a small screw driver against the needle.  
The gap should be as small as possible, but max 0.15 mm.



### Adjustment

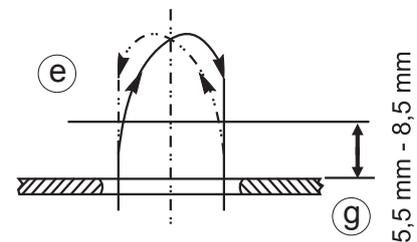
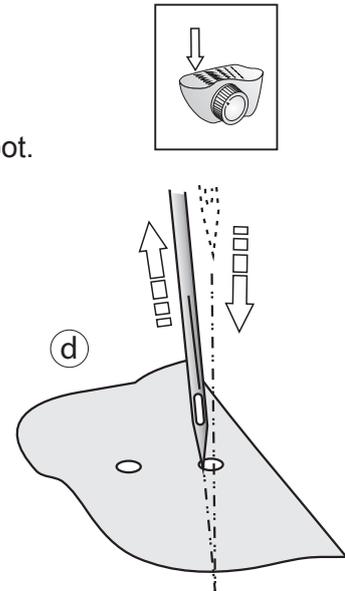
1. Loose the two screws (a) lightly.
- NOTE! When the two screws (a) is loosened up the needle in center position can change.
2. Move the pivot (b), located on top of the needle bar, to the front or to the back until distance between the point of the hook and the needle is correct.
  3. Tighten securely the two screws (a).
  4. Recheck and readjust if necessary.



## Needle bar pendulum timing

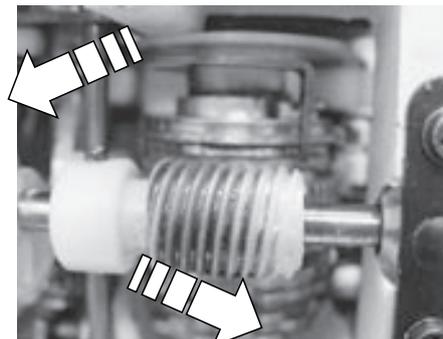
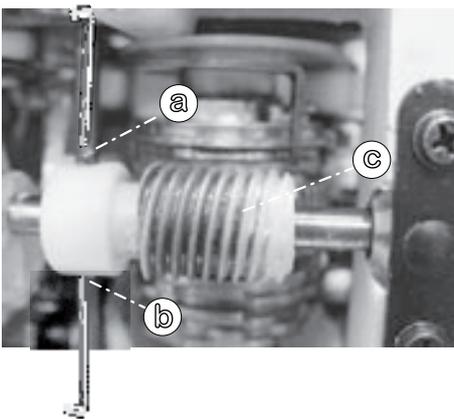
### Check

1. Set machine for widest zig-zag.
2. Hold a piece of paper on the needle plate and raise the presser foot.
3. Turn handwheel. As the needle is raising from the right perforation, the point of the needle should be moving to the left, lightly touching the edge of the hole without enlarging it (d).
4. The needle should reach its peak of ascent slightly past center of the two extreme position of the needle (e).
5. On the downward stroke, all lateral movement should cease when the needle point is 5,5 to 8,5 mm above the needle plate (g). The needle must return into the opposite hole precisely.



### Adjustment

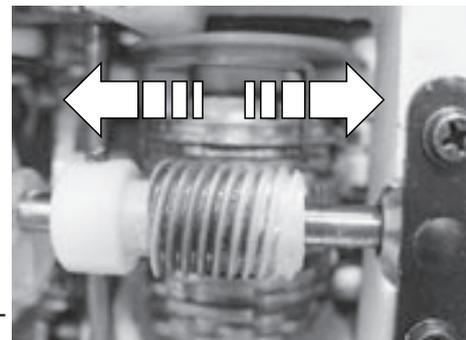
1. Remove the Bobbin winding unit.
2. Loose up the two Allen screws (a) and (b) of the spindle (c)
3. Turn the spindle to the front or to the back to reach the correct adjustment .
3. Tighten the two screws (a).
- 4.Recheck and readjust if necessary.
- 5.Check for the disc stack radial play and readjust if necessary
6. Check the hook timing and re-adjust if necessary.



## Disc stack radial play

When the arm shaft rotates, the discs cylinder rotate together, and without binds.

1. Loose the two Allen screws (a) and (b) of the spindle (c).
2. Hold the discs cylinder and push the spindle manually frontward or backward to eliminate radial play.
  - Frontward: Tighter
  - Backward: Looser
3. Tighten the screws (a) and (b).
4. Turn hand wheel to verify the machine is running freely.
5. Check and adjust if necessary the needle bar pendulum timing.

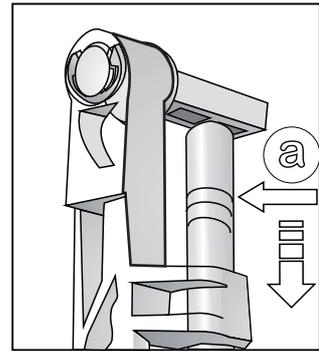


The follower must be located in the center of the discs track. Turn the pattern selector to check the follower is centralized in the center of the track.

## Needle bar height

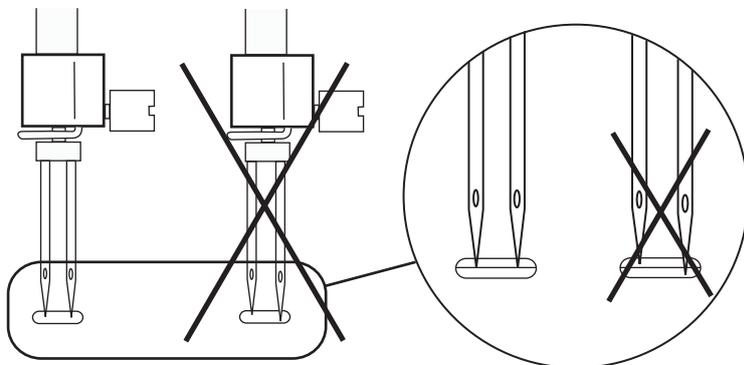
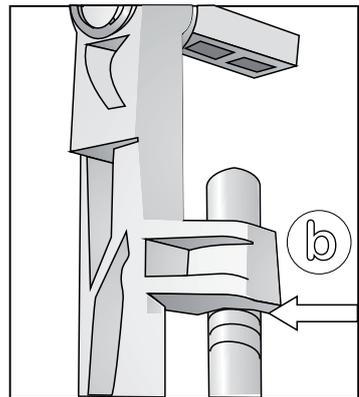
### Check

1. Set the pattern selector at straight stitch position.
2. Turn the handwheel to bring the needle bar to its lowest position.
3. When the upper mark (a) is aligned with the bottom face of the bushing (b) the needle bar height is correct.



### Adjustment

1. If the mark is not aligned with the bottom face of the bushing (b), loose the screw (c) a little, and push the needle bar up or down to bring the mark (a) to the correct position.
2. Tighten the screw (c).
3. Check by means of a twin needle that the needle bar is not twisted, it may cause jump stitches when sewing with a twin needle.
4. Check the hook timing and readjust if necessary.



## Needle centralizing for zig-zag and straight stitch

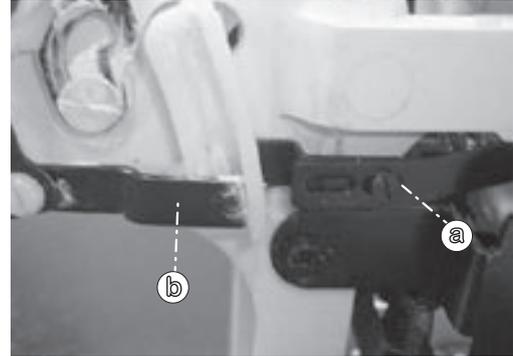
### Zig-zag centralizing:

Check

1. Set the machine to maximum zig-zag
2. Turn the handwheel to the front of the machine and observe the needles zig-zag centralization according to the needle plate slot.
3. The distance on both sides should be equal.

### Adjustment

1. To centralize, loose the screw (a) and move the lever (b) to the left or to the right.
2. Tighten the screw (a).
3. Recheck and readjust if necessary.



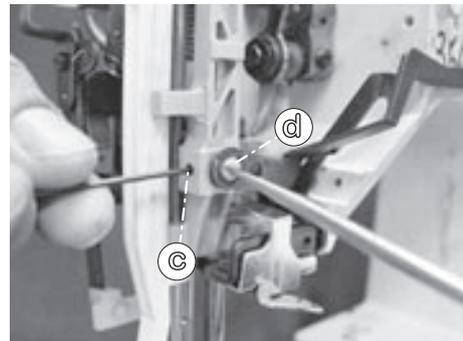
### Straight stitch centralizing:

Check

1. Set the machine to straight stitch
2. Turn the handwheel until the needle reaches the needle plate level.
3. Observe the centralization.

### Adjustment

1. Loosen the allen screw (c)
2. Turning the eccentric screw (e) to the left or to the right.
3. Tighten the screw (c).
4. Re-check and readjust if necessary.
5. Check the hook timing and readjust if necessary.
6. Check the zig-zag centralizing and readjust if necessary.



## Needle bar safety bight stop

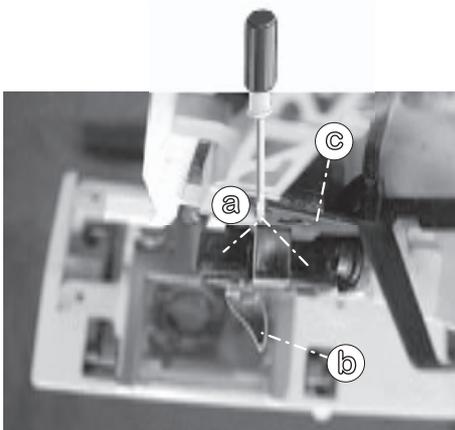
### Check

1. The needle should be set to its maximum zig-zag position and the needle set to its right hand position in needle plate.
2. When the needle bar is pushed to its most right position, by hand, the needle should just slightly touch the right hand sides needle plate slot end.

### Adjustment

Adjust the bight stop by moving the thread guide that is located under the face plate.

1. Set the stitch width selector to a maximum zig-zag position.
2. Turn handwheel so the needle comes to its most right position, with the point of needle a little inside the needle plate slot.
4. Loosen the two screws (a) .
5. Push the needle bar to the right until the needle slightly touches the needle plate slot end.
5. push the guide line (b) until it touches the bracket (c).
5. Readjust if necessary.



## Needle threader

To adjust needle threader is sufficient removing the face plate.

### Check

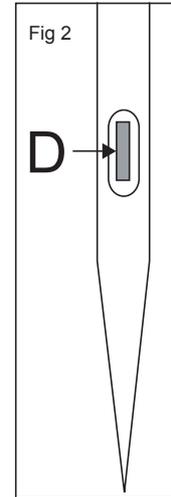
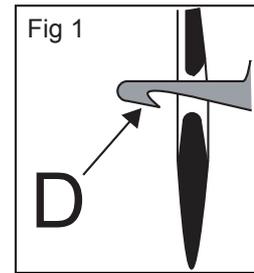
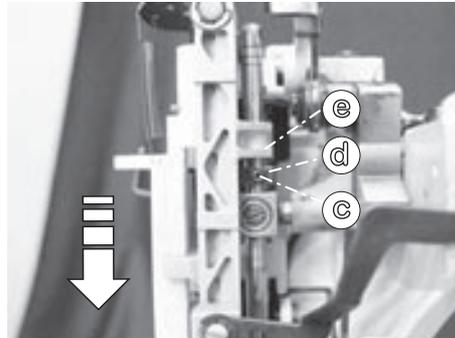
1. Turn handwheel to set the needle bar to its highest position.
2. Press the needle threader actuating support down.
3. The Hook (D) shall go smoothly into the needles eye.

If the hook do not go correctly, then a lateral or height displacement may be present.

NOTE! Before any adjustment is done, ALWAYS check the needle bar height.

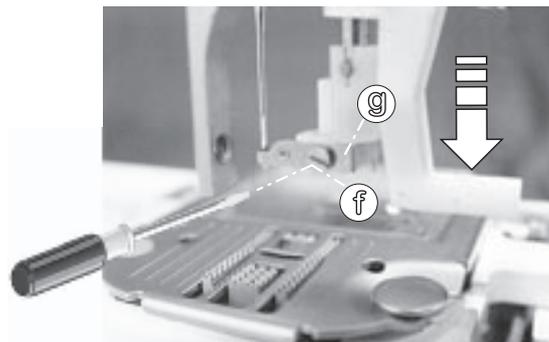
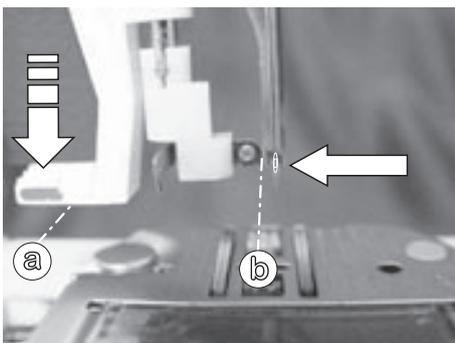
### Adjustment - Height

1. Loose the screw (c) and move the stop (d) up or down to centralize hook inside the needle eye.
2. Tighten screw (c) making sure no interference is present between this stop and the support (e).



### Adjustment - Lateral

1. Loose screw (f) on guide plate (g) and slide this plate to the left or right to centralize the hook inside needle eye.
2. Tighten screw (f). Do not overtighten the screw to prevent damage on the inner nut thread.
3. Recheck to confirm.



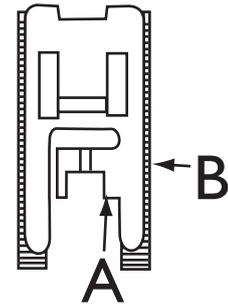
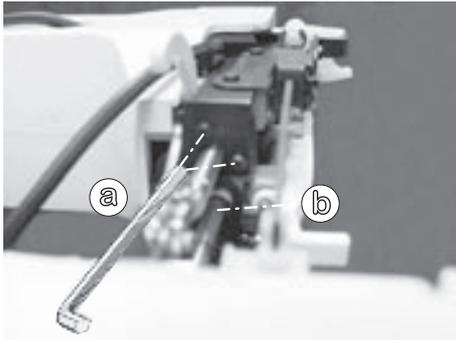
## Presser bar height and alignment

### Check

The presser foot (A) should be parallel to the Needle plate slot (B).

### Adjustment

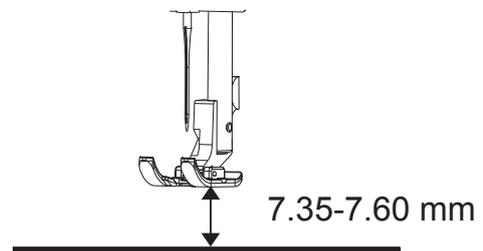
1. Loose the two allen screws (a) to release the position plate.
2. Move the presser bar (b) to the left or to the right until it is parallel to the needle plate slot.
3. Tighten the screws (a).



## Presser bar height

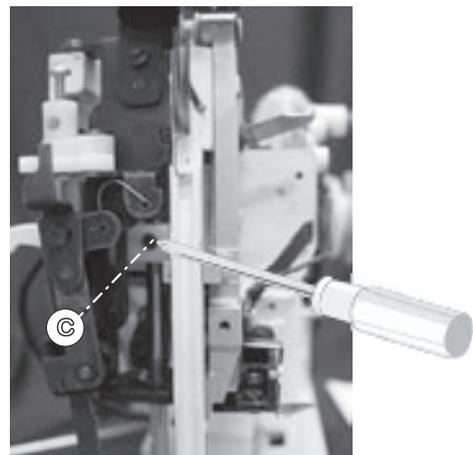
### Check

When the presser foot is in its highest lifting position it shall be between 7,35 to 7,60 mm above the needle plate.



### Adjustment

1. Raise the presser foot.
2. Loose the screw (c).
3. Raise or lower the presser bar to reach the distance of 7,35 and 7,60 mm from the underside of the foot and the surface of needle plate.
4. Tighten the screw (c) and check so the presser foot (A) is parallel to the Needle plate slot (B).
5. Re-check and re-adjust if necessary.



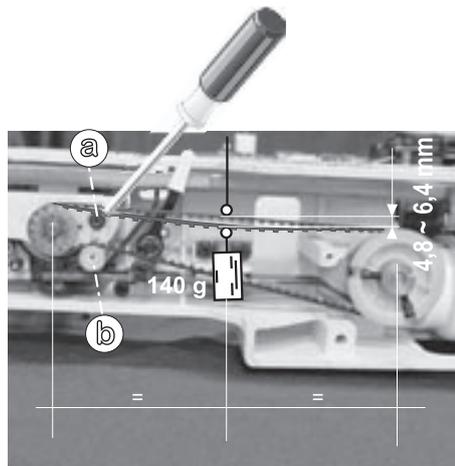
## Hook drive belt tension

### Check

1. Remove the Needle plate, the bobbin case holder and the bobbin case
2. Rotate the hook back and forth and check the play, it should be small as possible.

### Adjustment

1. Loose the screw (a) and adjust the tensioner so that a weight of 140 g, centrally located between the pulleys, deflect the belt 4,8 to 6,4 mm.
2. Tighten the screw.



## Timing of Hook and Needle

### Check

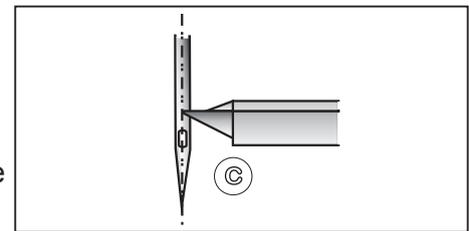
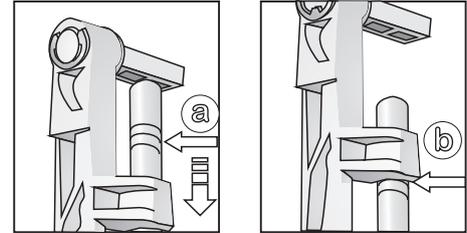
NOTE! Before checking hook timing, check the following first.

- Needle bar height
- Needle to hook relationship.
- Needle bar safety bight stop.
- Hook belt drive tension.

1. Place a size 18/110 needle in the machine

2. Turn the handwheel to the front of the machine, to so the needle bar comes to its lowest position, continue turning to raise presser bar until the central mark (a) is flush with bottom face of bushing (b).

3. the point of the hook (c) should now be in the center of the needle blade.



### Adjustment

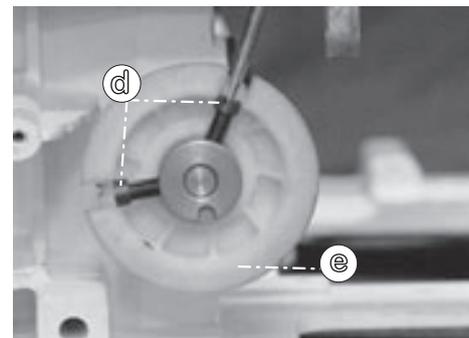
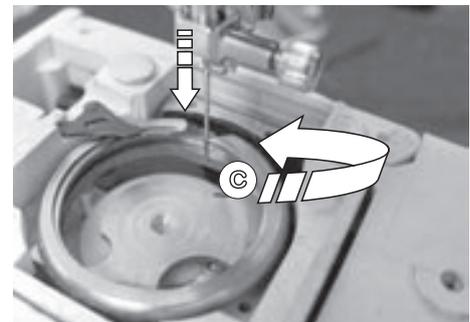
1. Turn the handwheel to the front of the machine, to so the needle bar comes to its lowest position, continue turning to raise presser bar until the central mark (a) to is flush with bottom face of bushing (b).

2. the point of the hook (c) should now be in the center of the needle blade.

3. Loose the two screws (d) of the pulley (e). Turn the pulley until the hook point is behind and in the center of the needle.

4. Push the pulley up and tighten the two screws. Recheck and readjust if necessary.

5. After, check the needle bar height.



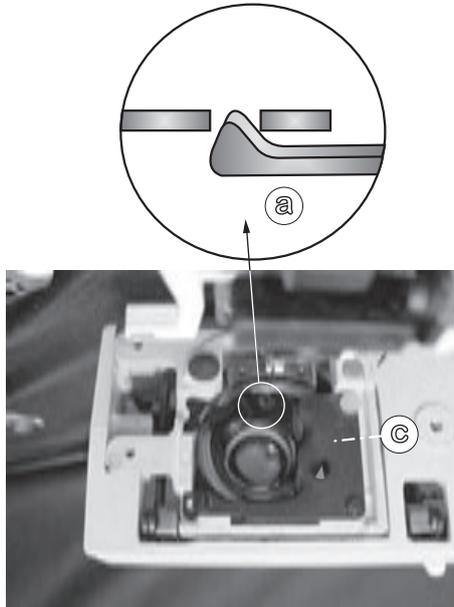
## Bobbin case position finger

### Check

The position finger (a) must not extend above the left face of the bobbin case fork, and must be evenly with the surface of this fork.

### Adjustment

1. Adjust the finger position to obtain the correct location, or replace the position bracket (c).



## Bobbin case position plate

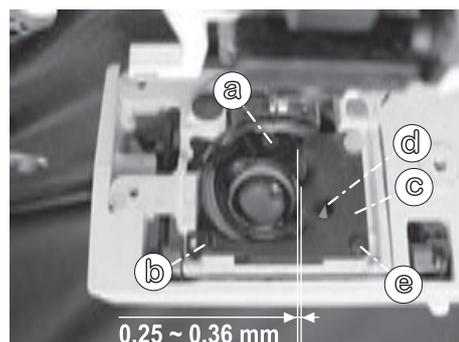
### Check

1. Turn handwheel to the front of the machine, to bring hook point to position (d).
2. Locate the bobbin case so that the left side of its fork is resting against the position finger (a).
3. The clearance should between the heel of the bobbin case and position bracket (c) be 0,25 to 0,36 mm

### Adjustment

1. Loose the screws (b) and (e).
2. Move the position bracket (c) to obtain the correct clearance.
3. Tighten the screws (b) and (e).

NOTE! Make sure the right edge of bracket (c) is parallel with the edge of the machine bracket.



## Bobbin case clearances

### Check

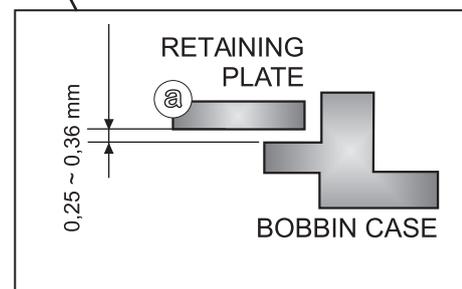
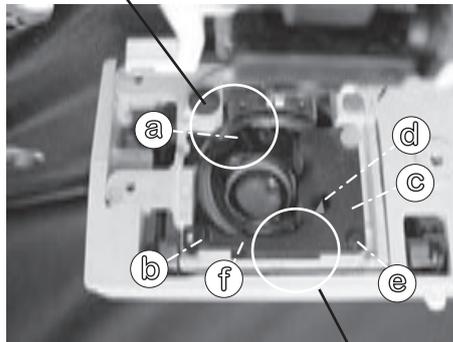
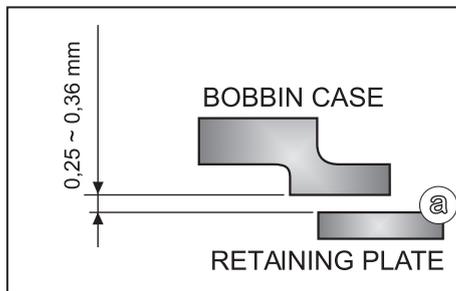
1. Remove the needle plate.
2. Turn handwheel to the front of the machine, to lead hook point to position (d).
3. Rest heel of the bobbin case against the position plate (c).
4. The clearance between retaining plate and bobbin case must be between 0,25 and 0,36 mm.

NOTE ! Equally, the clearance between the extension of position plate (c) and bobbin case upper surface (f) should comply with the above criteria.

If the measurement is not correct:

### Adjustment

1. Turn handwheel to the front of the machine, to lead hook point to position (d).
2. By means a screwdriver adjust clearances bending the extension upwards or downwards according the measures.



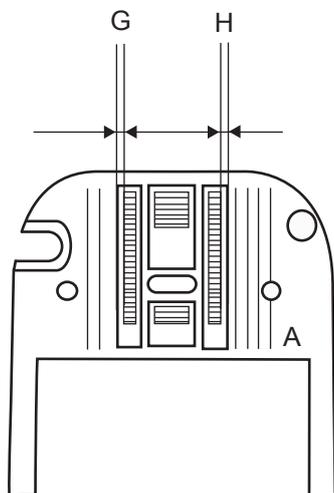
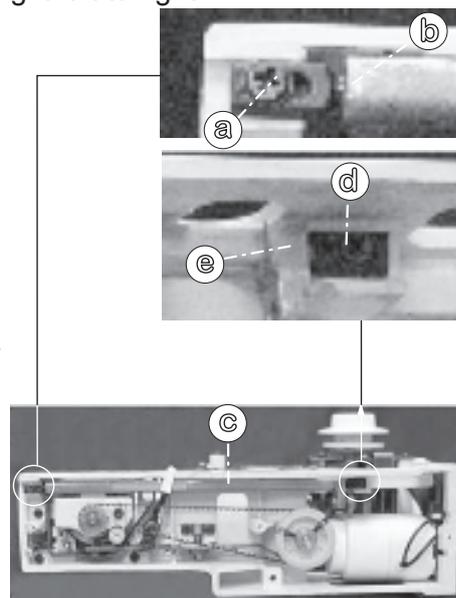
## Feed rock shaft end play

### Check

The the feed rock shaft (c) should have no end play when moving it left to right

### Adjustment

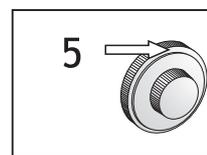
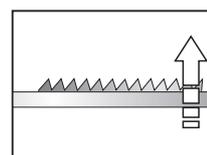
1. Hold feed rock shaft (c) to the left against rock shaft center (b) and check that the feed dog is centralized in the needle plate slots.
3. If is not, loose the screw (a) and move center (b) with rock shaft (c) left or right move feed dog so the distance (G) and (H) is equal in needle plate slot.
4. Tighten the screw (a) and loose the screw (c).
5. Move the rock shaft center (e) to the left against the shaft (c).
6. Tighten the screw (d).



## Feed dog centralization

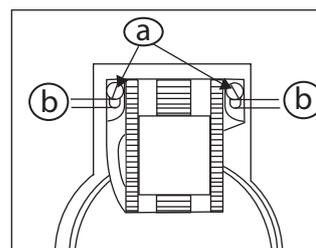
### Check

1. Make sure the feed dog is up.
2. Set the stitch lengths to 5.
3. The feed dog should sideways, be symmetrically so the distance (G) and (H) is equal to the needle plate slot.



### Adjustment

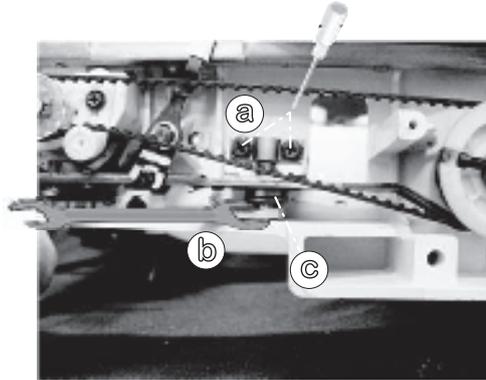
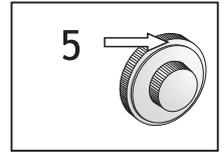
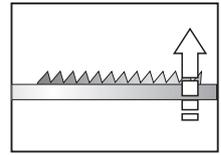
1. Remove the needle plate
  2. Make sure the feed dog is up (If the Machine has a drop feed)
  3. Loose the two screws (a) lightelly.
  4. Mount the needle plate.
  3. Move feed dog so the distance (G) and (H) is equal.
  4. Remove the needle plate and tighten the screws (a).
- Note! The Feed dog screws (a) must be located at the very rear of the slots (b) of feed dog.



## Feed dog height

### Check

1. Make sure the feed dog is up.
2. Set the stitch lengths to 5..
- 3 . The top of feed dog must be from 1,0 to 1,2 mm above the top surface of the needle plate.

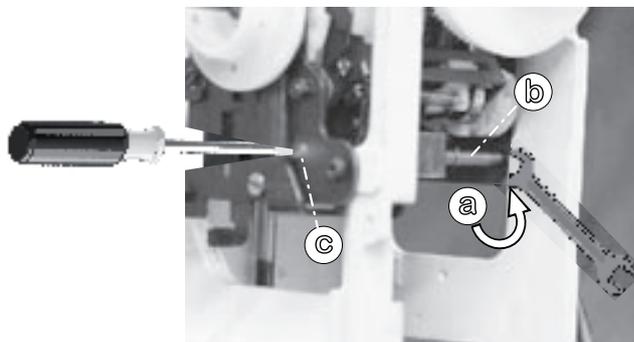


### Adjustment

1. Set the feed dog at its highest position
  2. Loose the screws (a) just lightelly.
  3. By means of an open end wrench, rotate the eccentric hinge stud (b) left or right to raise or lower the feed dog.
- NOTE! The highest point of eccentric hinge stud (c) must be to the right before making the adjustment.
4. Hold the eccentric hinge stud (c) with the open wrench while tighten screws (a).
- Other wise it may cause the feed lifting lever (b) to raise slightly thereby causing the feed dog to be slightly higher.
5. Check so there is no looseness or binding of feed lifting lever.

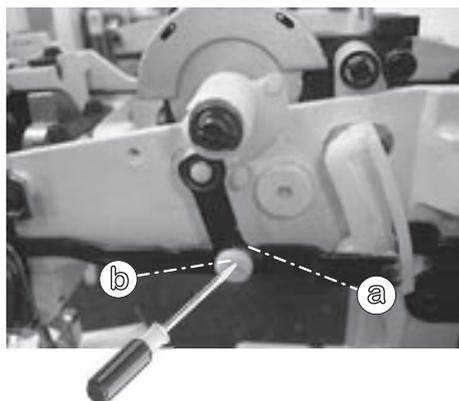
## Cam controlled feed follower adjustment

1. To adjust, loosen the nut (a) and hold the slit of the shaft (b) by means a screwdriver.
2. Turn the shaft (b) to centralize the follower.
3. Tighten the nut (a).
4. Recheck and readjust if necessary.



## Stitch width selector adjustment

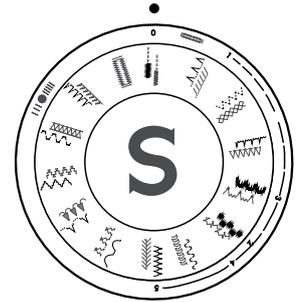
1. Turn handwheel to the front of the machine and observe the maximum movement of zig-zag.
2. To increase or decrease the width, loose the nut (a) and rotate the eccentric screw (b) clockwise or counter clockwise.
3. Tighten nut (a).
4. Recheck and readjust if necessary.



## Zero feed

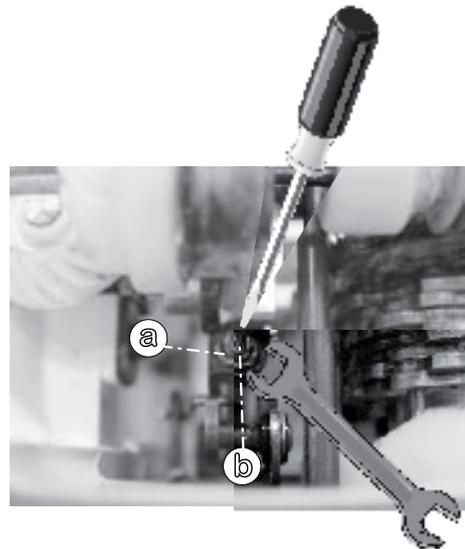
### Check

1. Remove the needle.
2. Set the stitch length selector at "0" and the pattern selector at straight stitch.
3. Place 2 layers of light fabric under the presser foot and lower it.
4. Run the machine at maximum speed.
5. The fabric should not move in any direction under the presser foot.



### Adjustment

1. Loosen the nut (a) and turn the screw (b) clockwise or counter clockwise until the feeding of the fabric stops.
2. Tighten the nut (a).
3. Re-check



## Buttonhole's Forward and reverse adjustment

### Check

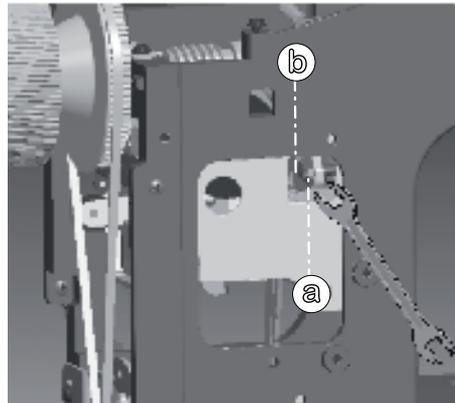
When a button hole is selected the machine first retreats, makes the bar tack, advances, makes the other bar tack and stops.

If the procedure is not correct:

### Adjustment One-step buttonholer

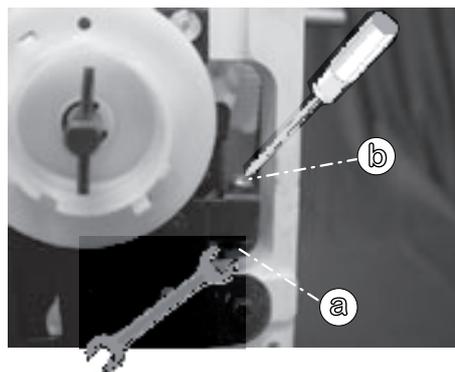
1. Loosen the nut (a).
2. Rotate the eccentric stud to reach the correct condition.
3. Tighten the nut (a).

Note! This Setting influence the Buttonholer stitch density balance



### Adjustment 4-step buttonholer

1. Set the pattern selector at buttonhole position.
2. Loose the nut (a) and turn screw (b) clockwise or counter clockwise to reach a quantity of stitches in the sides of buttonhole, between 55 and 65 at 25 mm of sewing.
3. Tighten the nut (a).
4. Re-check and make a complete buttonhole test and readjust if necessary.



## Buttonholer stitch density balance

### Check

Under normal working, the buttonholer retreats, makes the bar tack, advances, makes the other bar tack and stops and both legs/columns of the buttonhole should have equal density.

### Adjustment

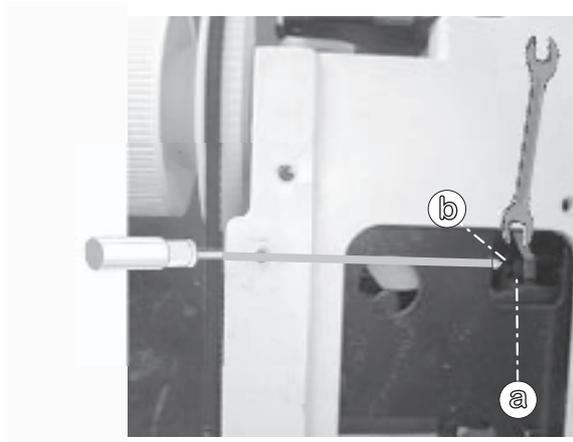
1. First check so the Buttonhole's Forward and reverse adjustment is correct.
2. Sew a button hole.
  - The Left and right sides of buttonhole must have an equal number of stitches
  - The distance between the two inner perforations should be 0,5 to 1,0 mm.

### Buttonhole forward Leg/colum balancing:

1. Loosen the nut (a).
2. Turn the eccentric screw (b) to reach the correct density of stitches.
3. Tighten the nut (a).

### Buttonhole reverse balancing:

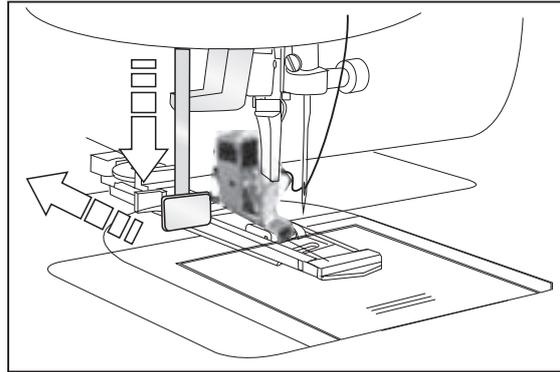
NOTE ! This is a enduser adjustment, done with the stitch length selector so the reverse side is equal to the forward side.



## Buttonholer pendulum timing (1-step buttonholer)

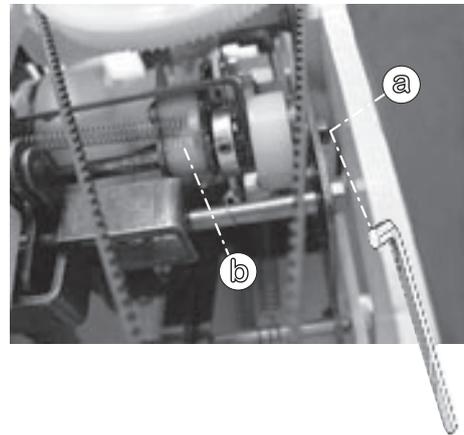
### Check

1. Set the machine on Buttonhole.
2. Mount the button hole foot.
3. Place a piece of paper on the needle plate and lower the presser foot.
4. Turn handwheel to sew the buttonhole lower bar tack.
5. The needle must perform three equidistant stitches and lateral displacement of the needle takes place above and out of the paper.



### Adjustment

1. Set the machine on Buttonhole.
2. Mount the button hole foot.
3. Place a piece of paper on the needle plate and lower the presser foot.
4. Turn handwheel to sew the buttonhole lower bar tack.
5. Loose the screw (a) and turn the eccentric bushing (b) upwards or downwards to reach the correct balancing point.
6. Tighten securely the screw (a)
7. Check that The needle performs three equidistant stitches and lateral displacement of the needle takes place above and out of the paper.



## Flexi stitch zeroing (accurate adjustment)

### Check

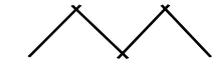
The balance between between forward and reverse feeding shall be such that the needle in the reverse feeding stitch goes down into the hole of the former stitch.

### Adjustment

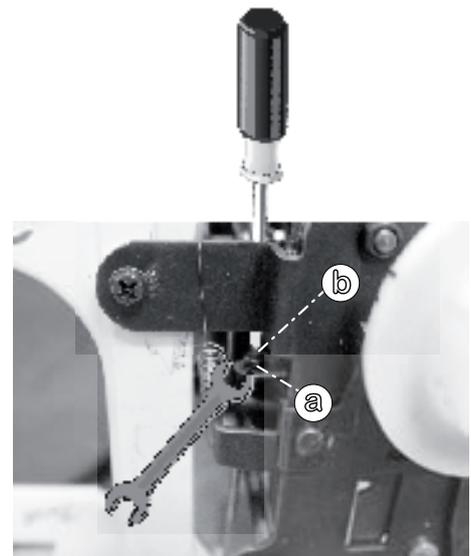
NOTE! Always check the “Zero feeding” before this adjustment is done, adjust if necessary.

1. Place a piece of paper on the needle plate and lower the presser foot.
2. Turn handwheel and observe the needle penetrations.
3. The machine should produce two penetrations forward and one reverse. The reverse penetration should enter the previous hole cleanly.
4. If Not : Loosen the nut (a).
5. While holding nut (a) move the screw (b)
  - Clockwise to make closer stitches (1).
  - Counterclockwise to make distant stitches (2).
6. Tighten nut (a).
7. Recheck and readjust if necessary.

①



②



## Needle thread tension

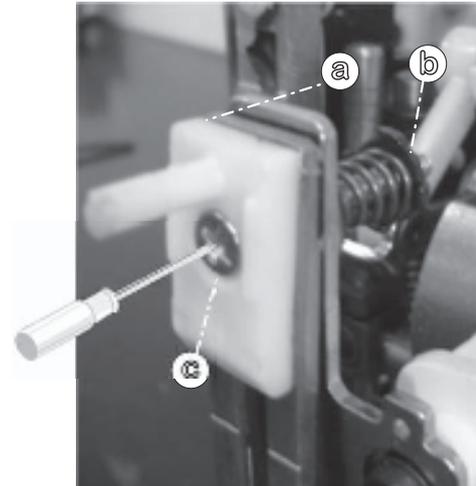
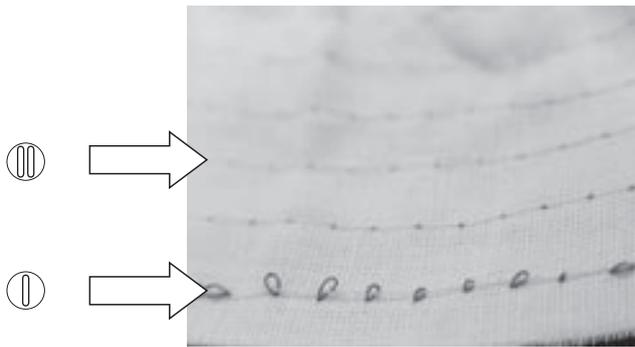
### Check

When the thread tension dial is set at "AUTO", a correct take-up should be obtained at straight stitching and zig-zag using normal cotton fabrics and polyester thread.

### Adjustment

**NOTE!** Before any adjustment is done remove any loose pieces of thread or fluff from the thread tension discs

1. Make a straight stitch sew , maximum speed, in two layers of light fabric. Set the tension at the lateral reference marks (a) direction.
2. In this condition, the machine will produce several loops, in the back side of sew (see illustration bellow- 'I')
3. If it not happens, turn the nut (b) to the right or to the left, holding the screw (c) by a small screwdriver.
4. Make a new sew test, and readjust if necessary.
5. Make another test using the tension at position "AUTO". Verify if the sitch finishing is well balanced (see illustration bellow- 'II').
6. Readjust if necessary.



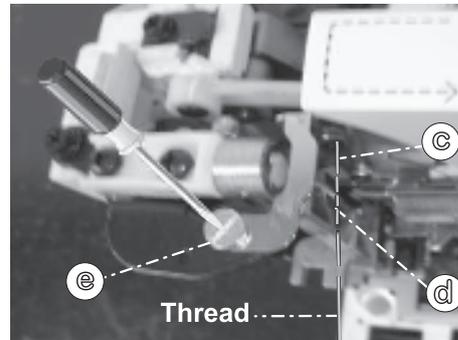
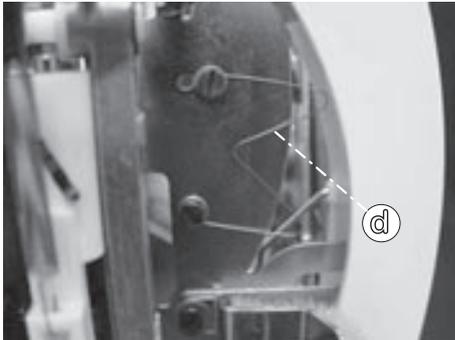
## Adjusting of the thread retainer spring “M”

### Check

The correct condition of the thread work is when the take up lever pull up the thread, and the thread pass between the retainer plate (c) and the spring (d).

### Adjustment

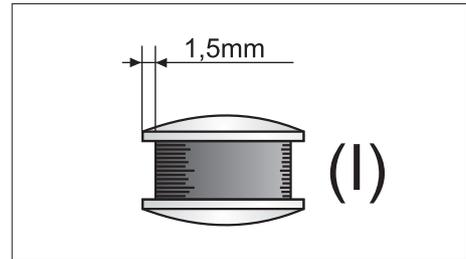
1. Make a straight stitch sew and observe the thread passing between the spring (d) and the plate (c). If the thread does not pass correctly:
2. Loose the screw (e) and push the retainer plate in the take up lever direction, leaving approximately 1,0 mm of clearance.
3. Tighten the screw (e).
4. Repeat the procedures and readjust if necessary.



## Bobbin winder

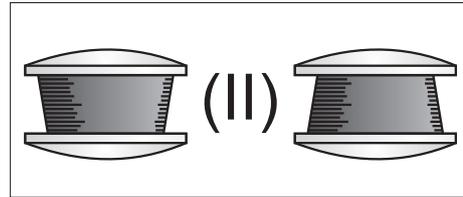
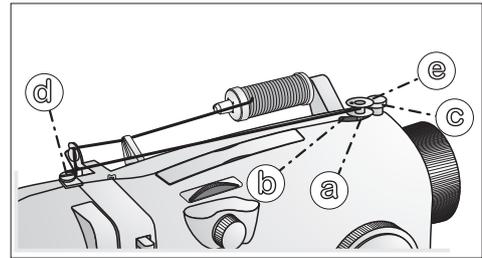
### Check

When winding up the lower thread onto the bobbin the bobbin winder should stop turning when the thread is wound min. of 1.5 mm between the edge of the bobbin and the thread. (see illustration I).



### Adjustment

1. Place an empty bobbin on bobbin winder spindle (a)
2. Push bobbin winder from side to side through the opening (b). At no time should any part of bobbin winder touch either the opening or stop (c).
3. Check that the spindle (a) turns freely and there is no vertical play. If either conditions exists, the assembly should be replaced.
4. Check that the bobbin winder stays in either, left or right position under spring pressure. If the pressure is absent, spring will need to be replaced.
5. Lift up on bobbin winder tension disc. If tension is absent, replace the assembly.
6. Check for even rotation of bobbin winder. If it hesitates or fails to rotate, check for worn bobbin winder rubber ring.
7. Wind a bobbin and check if thread is wound evenly (see illustration) or forms a cone. The bobbin winder should stop turning when the thread is wound to 1,5mm from the outer rim of the bobbin (see illustration I).
8. To correct conical winding, adjust the height of the pre-tension assembly, by turning the screw (d) clockwise or counterclockwise.
9. If the bobbin winder stop (c) disengage too soon or fails to operate, loosen screw (e) and turn stop (c) left or right to adjust. Tighten the screw (e).
10. Check once again all procedures.



## Buttonholer engage and disengaging lever

### Check 1

1. Sewing a buttonhole.
2. The buttonholer engaging lever must disengage automatically when it touches the presser foot rim.

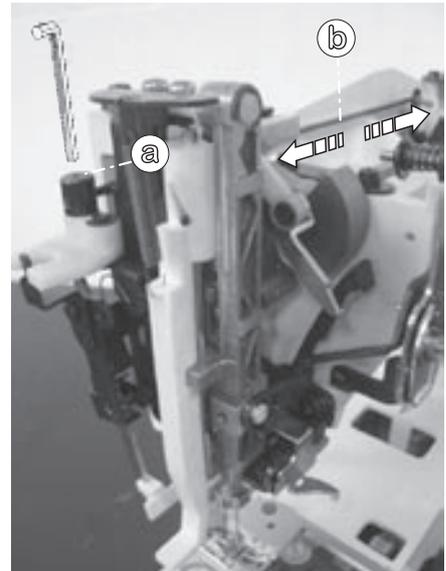
### Check 2

When pushing the buttonholer engaging lever backwards, a click should be heard.

### Adjustment

1. Loose screw (a)
2. Push the rod (b) to the right or to the left.
3. Tighten the screw (a).
4. Make a buttonhole sample in two layers of light fabric and verify that the buttonholer engaging lever disengages automatically when it touches the presser foot rim.

NOTE! This disengaging operation must occur automatically. If not, readjust the rod (b) position.



## Removing the motor

### Remove

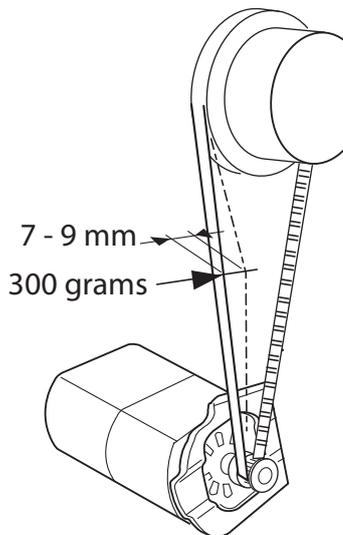
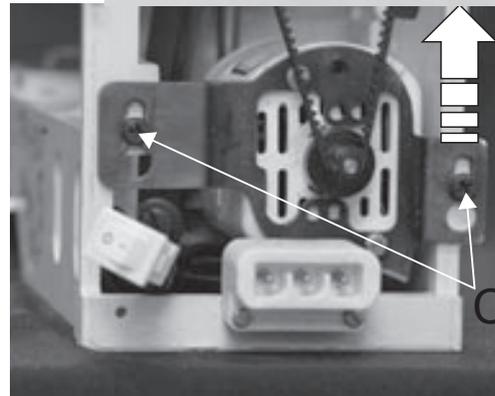
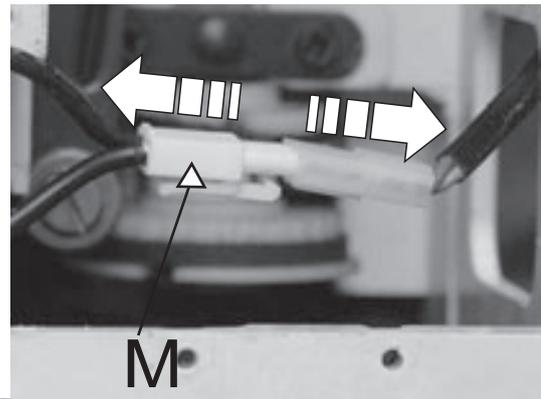
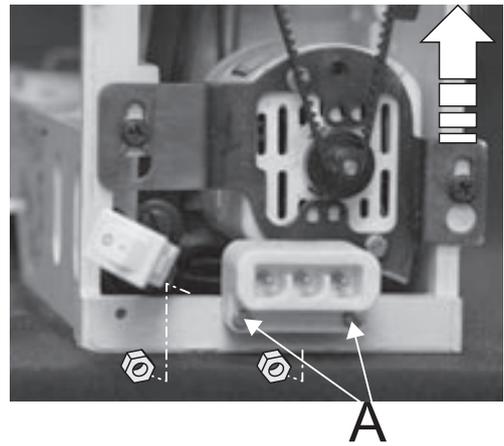
1. Remove the face plate, rear cover and front cover.
2. Remove the setscrews (A) and its nuts and lift away the machine socket (D).
3. Disconnect the Lamp cable (M).
4. Remove the setscrews (C) and motor (G) .

### Mount

- To attach the motor, follow the above procedure in reverse.

### Adjustment

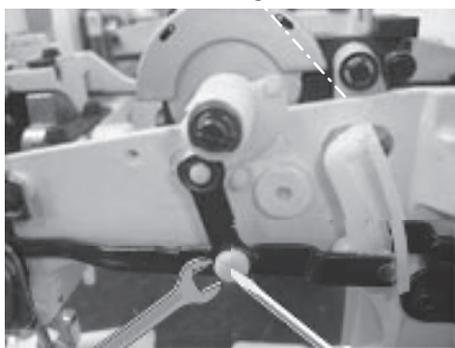
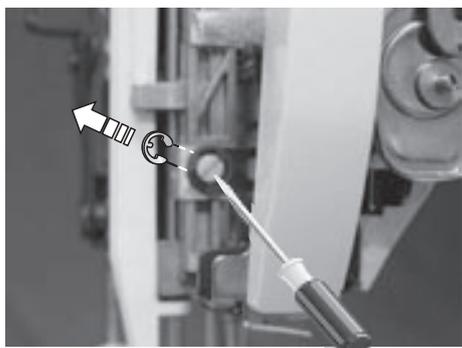
1. Slightly loosen the setscrews (C).
2. While pushing the middle of the motor belt with a 300 grams load, move the motor up or down so that the belt deflects 7 to 9 mm.
3. Tighten the setscrews (C) securely.



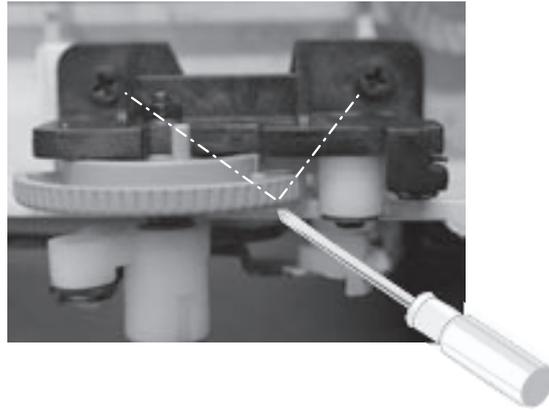
## Removing the Thread tension Unit



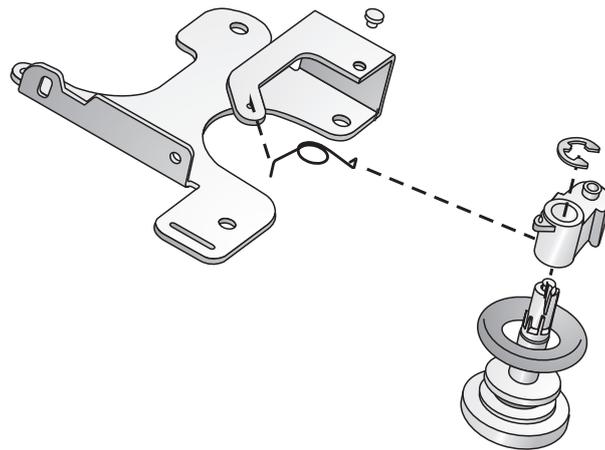
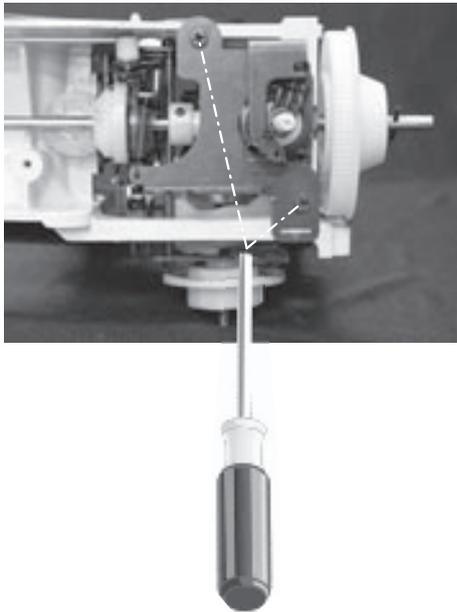
## Removing the Needle bar Bracket



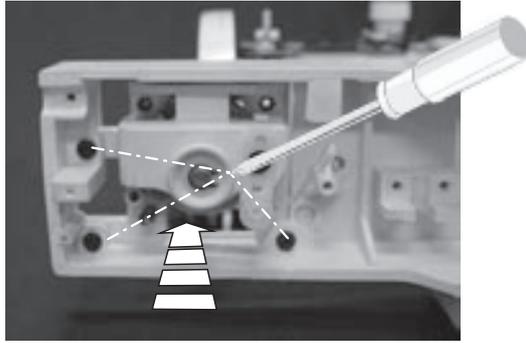
## Removing the Stitch width selector



## Removing the Bobbin Winder Mechanism



## Removing the Hook and Bobbin mechanism



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## Lubrication

Verify the following instructions:

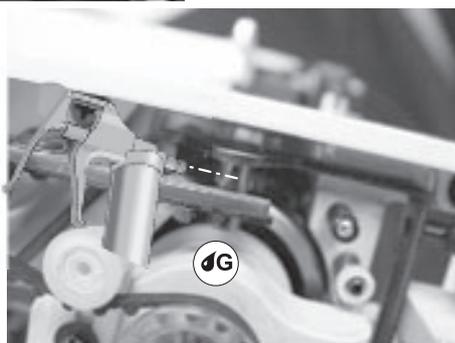
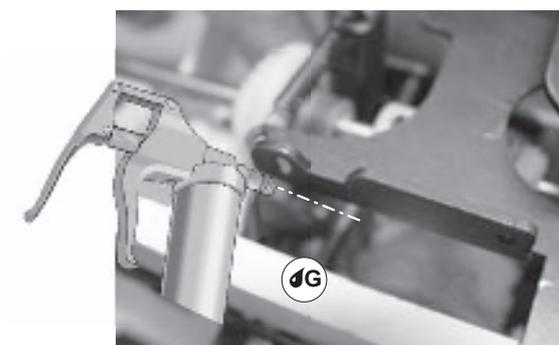
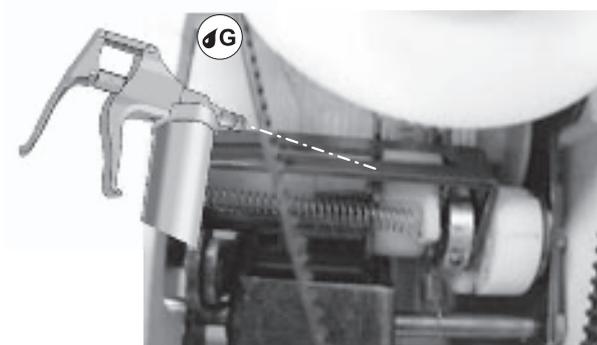
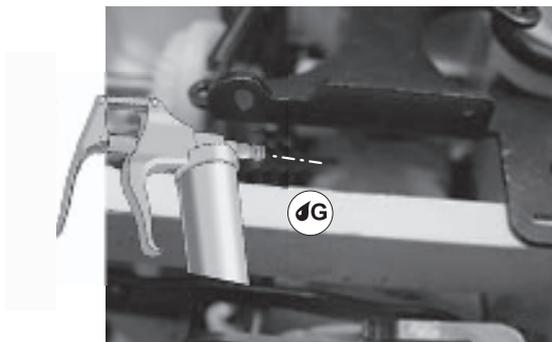
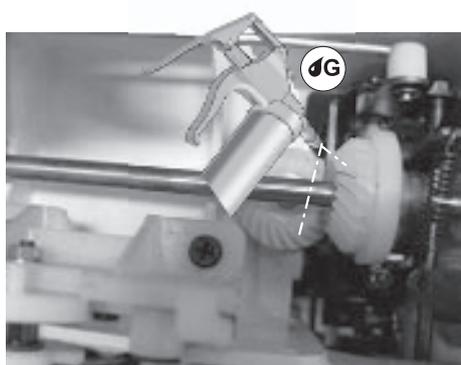
1. Only Singer Oil and high quality silicon type grease must be used.
2. The use of a paraffin based oil, or non silicon type grease, will be defeated by clogging of the pores in the bearing surface, if such oil or grease are used.
3. All thread, lint or any foreign matter must be removed before lubrication.

Caption:

 Singer Oil

 Silicon type grease

4. - Apply to and cover entire cam bearing surfaces.  
- Apply to and cover each tooth of gears.  
- Apply to and cover entire surface of slides.
5. Do not apply grease to self-lubricated parts, except to the cam incorporated to the vertical shaft gear.



🔧 Singer Oil

