

**LP 2971
LP 2974**

Industrial sewing machine

Service Instructions

GB

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Introduction and Safety regulations

Instruction for machine setting - LP 2971, LP 2974

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Notes:

1 General notes

This service manual describes the setting of the special sewing machine **LP 2971, LP 2974**.



ATTENTION!

The operations described in the service instructions must only be executed by qualified staff or correspondingly instructed persons respectively!



Caution: Danger of injury !

In case of repair, alteration or maintenance work turn off the main switch.

Carry out adjusting operations and functional tests of the running machine only under observation of all safety measures and with utmost caution.

The present service instructions describes the setting of the sewing machine in an appropriate sequence. Please observe in this connection that various setting positions are interdependent. Therefore it is absolutely necessary to carry out the settings by following the described order.

For all setting operations of parts involved in the stitch formation a new needle without damage has to be inserted.

Machine covers that need to be screwed off and on again for checking and adjusting operations are not mentioned in the text.

Hint

Some of the shafts of the special sewing machine LP 2971, LP 2974 are provided with flat surfaces. This facilitates the setting considerably.

With all settings on flat surfaces always screw in the first screw on the flat surface in the sense of rotation.

1.1 Position of the handwheel

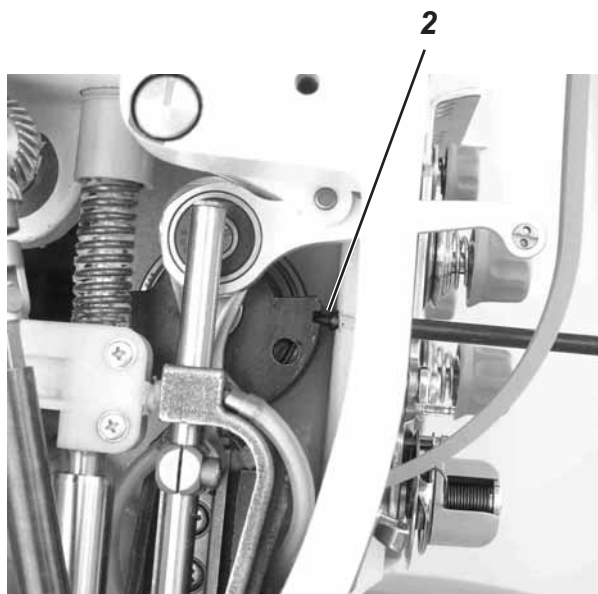
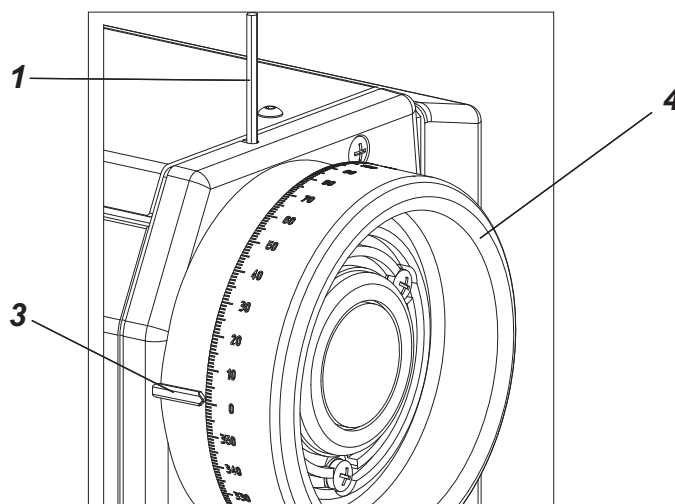
Standard checking

The handwheel (4) has a graduation scale printed on.

Certain settings are effectuated through these handwheel positions.

- Turn the handwheel until the index (3) points to the degree mentioned in this manual.
- Carry out the described setting.

The index (3) should point to the degree “0” when the needle bar is in its upper dead position.



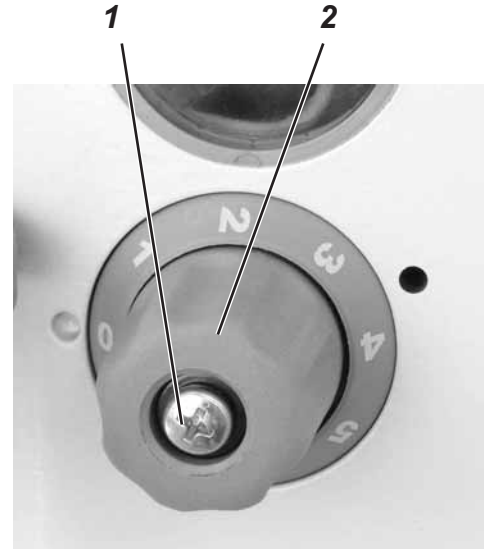
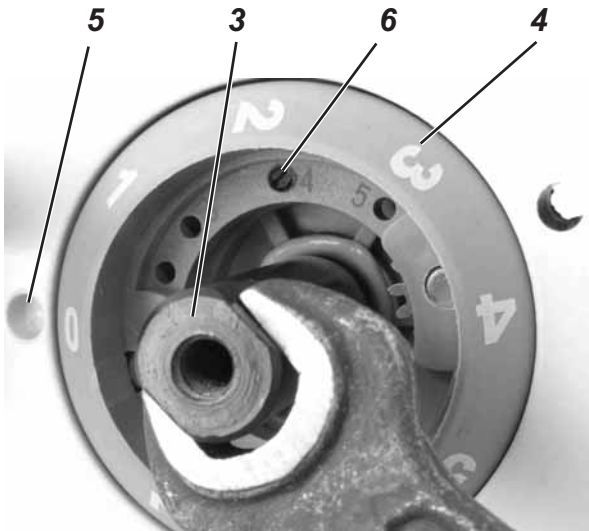
- Loosen the screws of the handwheel using an Allen key of 3mm (1).
- Turn the needle bar to the upper dead point and set position (2) using the locking pin (\varnothing 3 mm).
- Turn the handwheel so that the index (3) points to the degree mark “0”.
- Tighten the first screw with the key (1), then turn the handwheel to 50° and tighten the second screw with the key (1).

2. Bottom feed

2.1 Basic setting of the stitch regulation and the stitch length limitation

Standard checking

1. When setting the stitch length to "0" the stitch regulator gear should have the least clearance possible when the backtack lever is pushed down.
2. The maximum stitch length is to be limited according to the sewing category and the sewing equipment as described in the operating manual.



- Loosen screw (1) and pull off the setting wheel (2).
- Turn screw (3) to the right using a 10 mm wrench and test the clearance by pushing the backtack lever down until the stitch regulator gear has no more clearance, so that rule 1 is observed.
- Set the scale ring (4) with the stitch length "0" to the mark (5).
- Limit the stitch length according to second rule. In order to do so use the threaded pin (6) and screw it into the corresponding bore hole. The bore holes have numbers that correspond to the maximum stitch length.
- If the maximum stitch length of 7 mm is required unscrew screw (6) for about 2.5 mm. For this length exists another stop.
- Attach the setting wheel (2) and tighten screw (1).



Caution! Danger of accident!

Turn the mains switch off !

Proceed with the basic setting of stitch adjustment only with the sewing machine switched off.



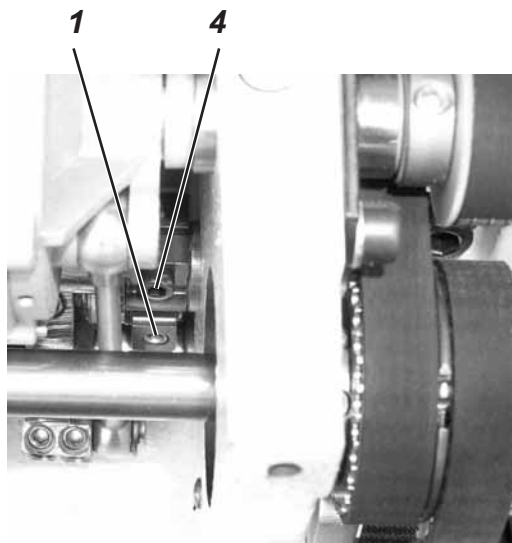
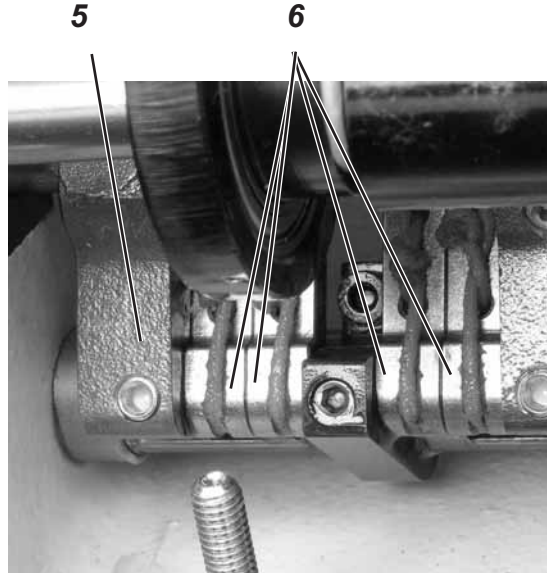
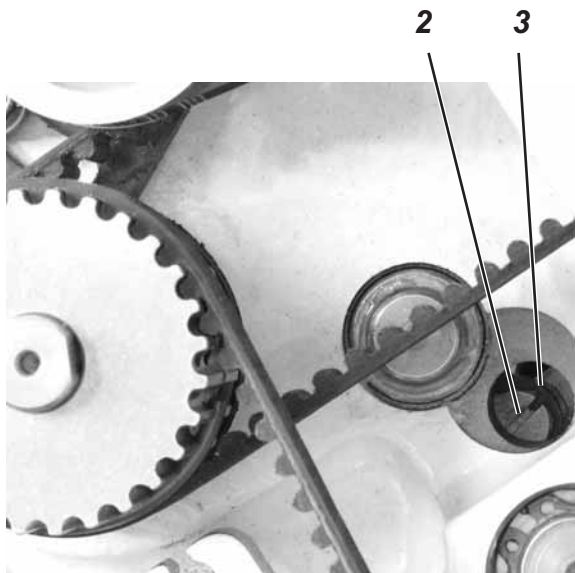
ATTENTION: Danger of breakage !

If the set stitch length is higher than the sewing equipment in use allows, the needle will hit the throat plate inset.

2.2 Stitch conformity of forward and backward stitch

Standard checking

1. With a rough adjustment of the stitch regulator gear the machine should not feed when the stitch length is set to "0".
2. With a fine adjustment of the stitch regulator gear the stitch length of the forward and backward stitch may not differ more than half a stitch length.

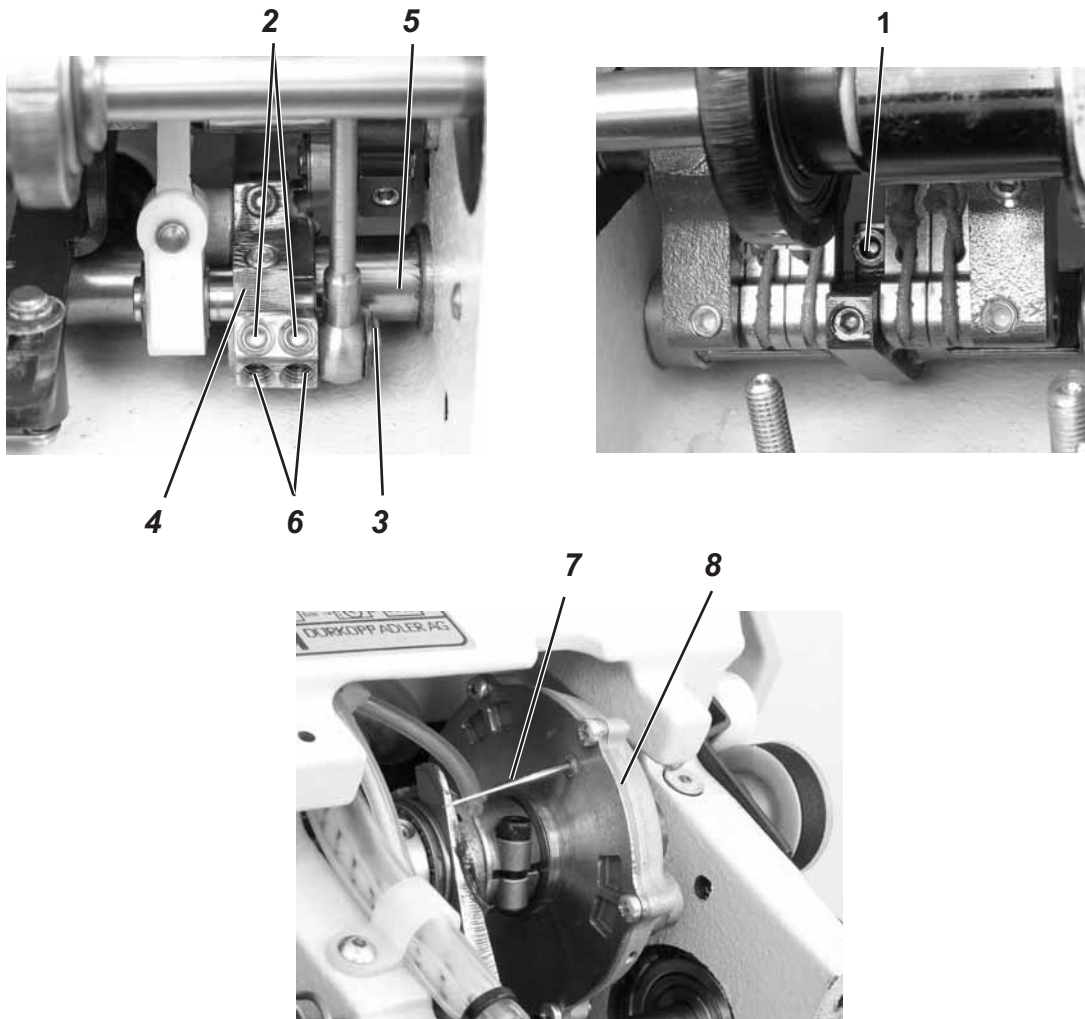


- Set the stitch length to "0".
- Loosen screw (1) and turn the eccentric (2) with its slot (3) as shown in the diagram. Fasten it with screw (1).
- Loosen screw (4) of the clamping lever and turn the setting frame (5) so that the fish plates (6) come parallel. Tighten screw (4). This procedure accomplishes rule 1.
- Then the stitch length of forward and backward stitches needs to be compared. Sew 10 stitches forward, push the backtack lever and sew 10 stitches backward. Turn the eccentric (2) in order to accomplish rule 2.
- Clockwise direction = forward stitch bigger, backward stitch smaller
- Counter-clockwise = forward stitches smaller, backward stitches bigger

2.3 Setting of levers on the rear feed shaft

Standard checking

When setting the stitch length to "0" the feed clutch should be in the middle section of the operation end positions.



- Set the stitch length to "0".
- Loosen screw (1).
- Loosen screw (2) and pull out the bolt (3). The two screws found underneath on the lever (4) must be fastened with an Allen key of 3 mm so that they sit on the flat surface of the shaft (5), mount the bolt (3) again.
- Unscrew the screw on the feed clutch (8) and push into the hole the needle (7). Turn the clutch (8) manually until the needle sinks 5mm into the bore hole. This procedure accomplishes the rule.
- Tighten screw (1).



Caution: Danger of injury !

Turn the mains switch off !

Set the basic setting of the levers only with the sewing machine switched off.



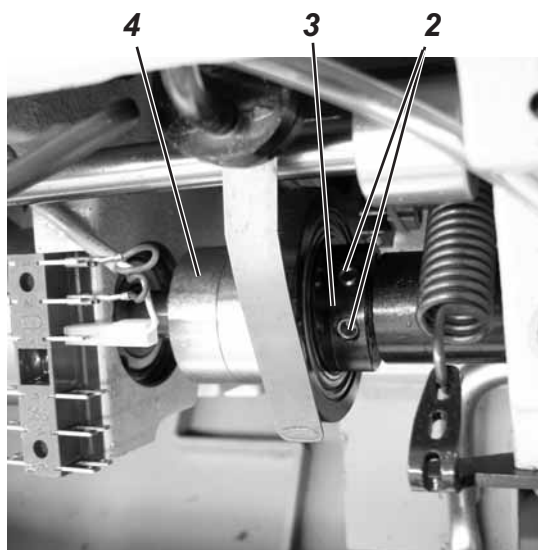
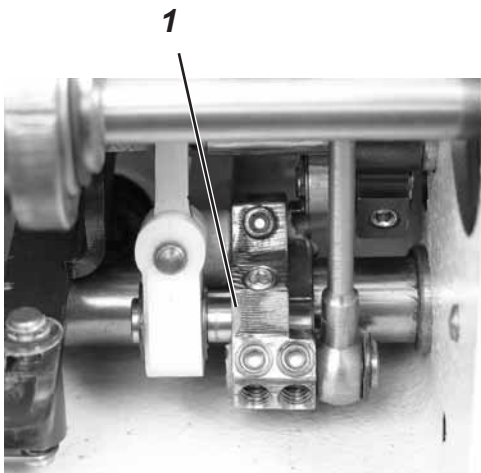
ATTENTION: Danger of breakage !

If the middle section of the clutch is overstepped it can come to collisions of parts inside the clutch when sewing with high stitch lengths.

2.4 Position of the eccentric of the feeding movement and balance weight

Standard checking

When the index points to the degree mark "0" on the scale of the handwheel, the feed lever (1) should not move when the backtack lever is being pushed.



- Turn the handwheel so that the the index points to the degree mark "0" and arrest it by using the locking pin (see chapter 1).
- Loosen screws (2) and turn the eccentric (3) for the rough adjustment approximately into the position shown on the photo. Now effectuate the fine adjustment until the position is found where the feed lever (1) does not move when the backtack lever is being pushed down.
- Fasten the screws on the eccentric (3).
- Attach the balance weight (4) to opposite position to the eccentric.



Caution: Danger of injury !

Turn the mains switch off !

Set the basic setting of the eccentric only with the sewing machine switched off.



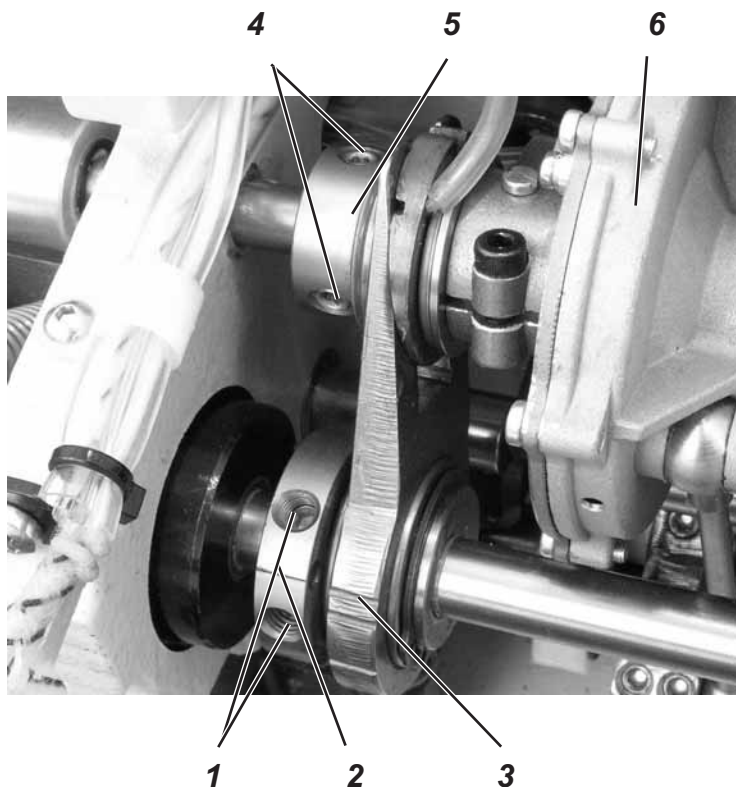
ATTENTION: Danger of breakage !

Inaccurate settings shorten the machine's life span.

2.5 Switching of the feed clutch

Standard checking

The clutch is to be switched when the clutch is motionless, that is in the dead points of its oscillating movement.



- Loosen screw (1) of the eccentric (2).
- Turn the eccentric with line (2) against line (3).
- Loosen the three screws (4) and the adjustment nut (5).
- Fasten the adjustment nut (5) until it butts (the tightening torque increases stepwise). Push the clutch (6) to the right as far as possible and fasten the screws (4).
- Check the adjustment. Turn the eccentric manually in counter-direction. The drag of the eccentric intensifies considerably when the two lines form together one line.



Caution: Danger of injury !

Turn the mains switch off !

Set the basic setting only with the sewing machine switched off.



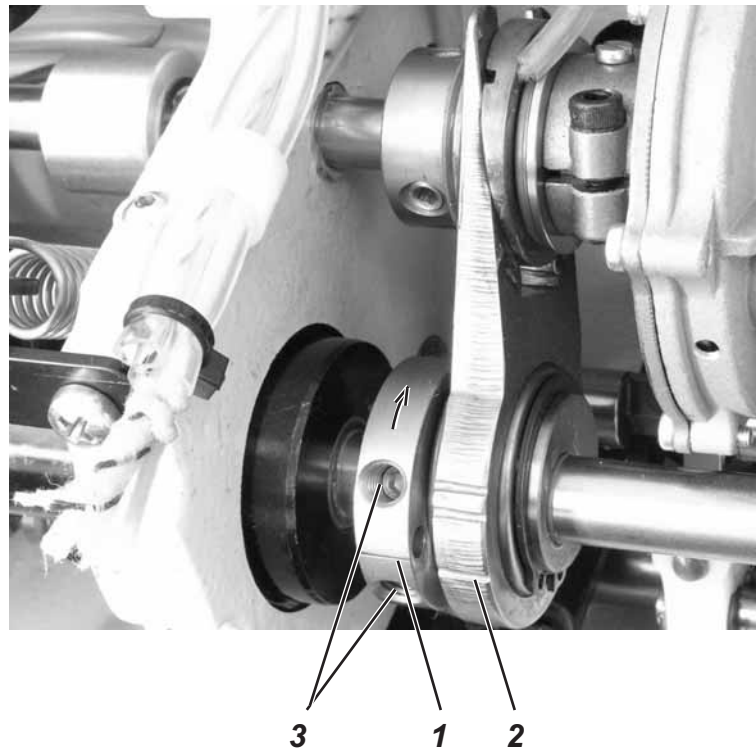
ATTENTION: Danger of breakage !

Inaccurate settings shorten the machine's life span.

2.6 Position of the eccentric for the switching of the feed clutch

Standard checking

When the index points to the degree "313" on the scale of the handwheel, the line (1) on the eccentric should form one line with the lower line (2) on the wedge pusher rod.



- Loosen screw (3).
- Set the handwheel to position "313".
- Turn the eccentric in the direction of the arrow until line (1) and line (2) form one line.
- Turn the eccentric about 2° back and push it along the axis towards the shaft until the middle between the stop positions is reached.
- Align the lines (1) and (2) again to form one line and fasten screw (3).



Caution: Danger of injury !

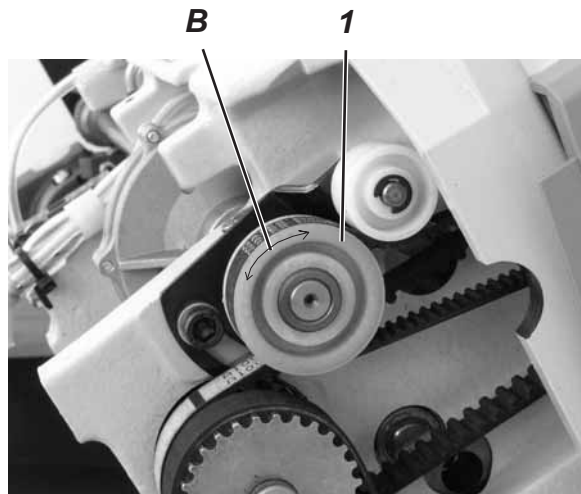
Turn the mains switch off !

Set the basic setting only with the sewing machine switched off.

2.7 Checking the switching of the feed clutch

Standard checking

The clutch is to be switched when the clutch is motionless, that is in the dead points of its oscillating movement. This can be recognized through the turning direction of the pulley (1) before and after the dead point.



| | 1 | 2 | 3 | 4 |
|---|------|------|-----|------|
| A | 274° | 281° | 94° | 101° |
| B | ← | → | ← | → |

- Set the maximum stitch length.
- Turn the handwheel until the index points to degree “274” (s. chart / A) on the scale. Push down the backtack lever and check whether the turning direction (B) of the pulley (1) corresponds to the chart. Do the same for the degree “281”.
- If the turning directions do not correspond to the chart correct the settings. If the clutch switches before (smaller angle) try this: Loosen the adjustment nut (5) according to chapter 2.5 and perform the mentioned check again until the correct position of the nut is found. When the clutch switches later fasten the adjustment nut (5).



Caution: Danger of injury !

Turn themainsoff !

Proceed with the basic setting only with the sewing machine switched off.



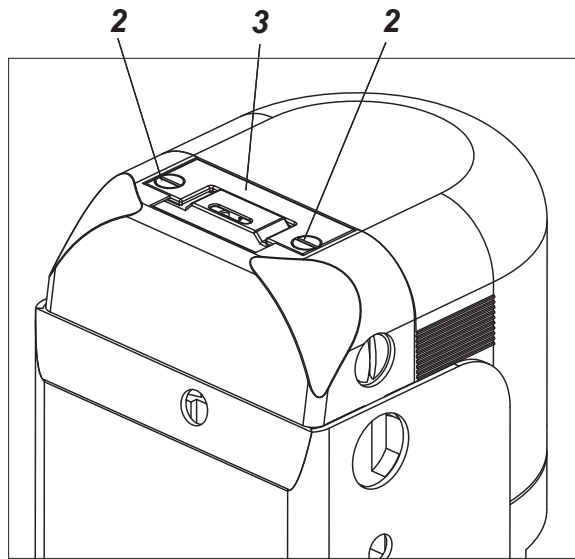
ATTENTION: Danger of breakage !

Inaccurate settings shorten the machine's life span.

2.8 Throat plate

Standard checking

With the standard setting the throat plate inset should be adjusted to the center of the throat plate.



- Loosen the screws (2) and align the throat plate in the center of the cutout.
- Fasten the screws (2) again.



Caution: Danger of injury !

Turn the main switch off !

Proceed with the throat plate setting only with the sewing machine switched off.



ATTENTION: Danger of breakage !

An incorrectly fixed throat plate causes the destruction of the parts when the machine is started.

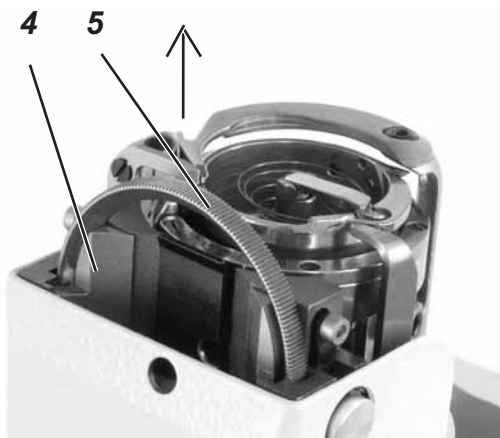
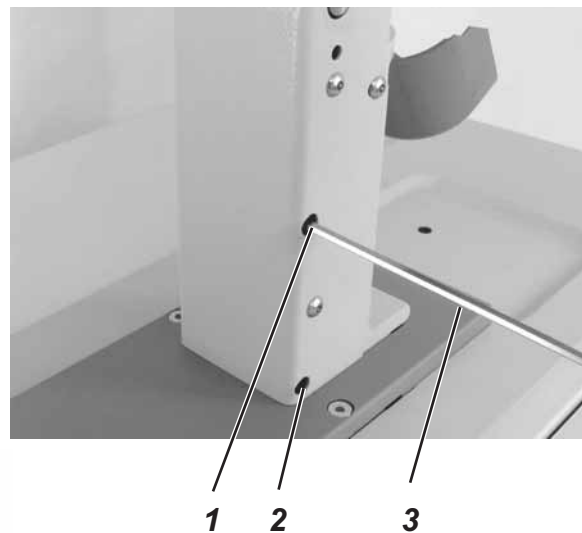
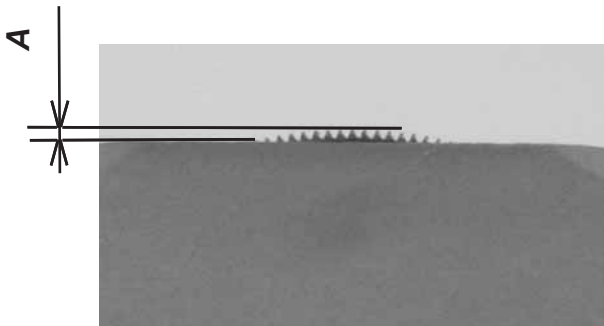
2.9 Slide wheel feeder

Regulation

1. The height (**A**) of the wheel feeder above the throat plate must be adjusted according to the thickness and rigidity of the material.
2. Standard height of teeth above the throat plate inset see chart:

| Needle thickness/Nm | Height of the wheel feeder/mm (A) |
|---------------------|-----------------------------------|
| 70 - 80 | 0.4 - 0.5 |
| 90 - 110 | 0.4 - 0.5 |
| 120 - 200 | 0.6 - 0.8 |

3. Also the tooth pitch must be adapted according to the material that is to be sewn:
thin material – fine teeth in order to avoid marks in the leather soft
thick material – thick teeth for sufficient feed traction



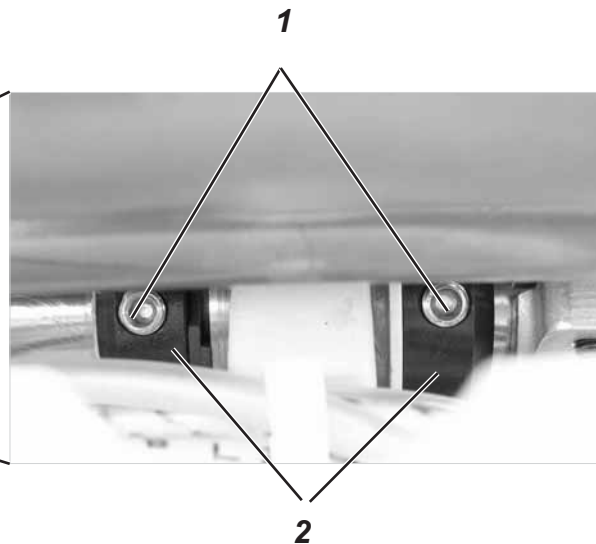
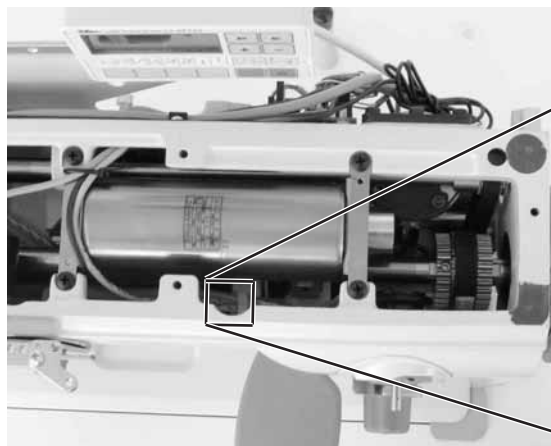
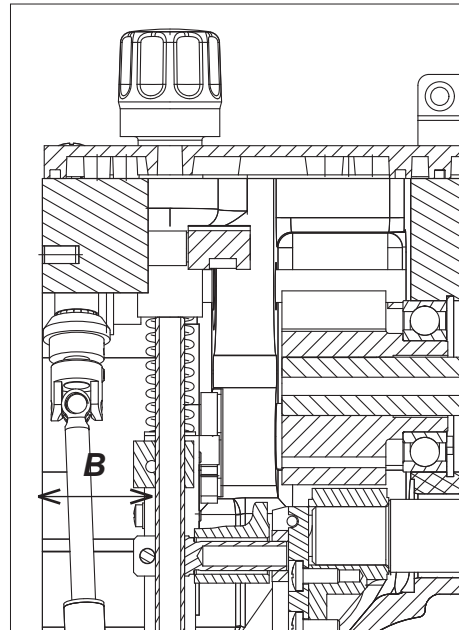
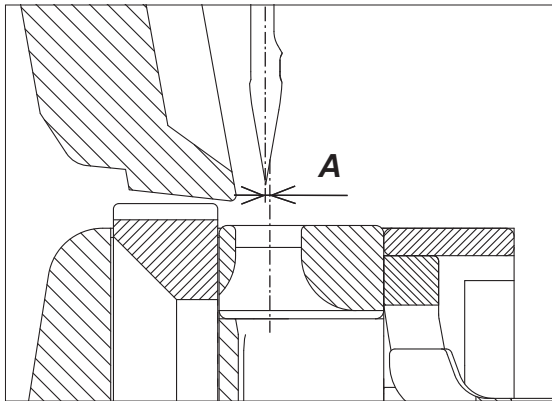
- Set the height of the wheel feeder (5) according to rule 2. Loosen screw (2) by using an Allen key (3) and retighten the screw (1). After reaching the desired height first tighten screw (2) and then retighten screw (1) once again.
- In order to lower the wheel feeder, loosen screw (1) and then retighten screw (2). Then the sequence is inverted.
- When exchanging the wheel (5) take out the throat plate (see chapter 2.8). Push the slide (4) with the wheel feeder (5) upwards. Exchange the wheel feeder according to rule 3 and remount the parts in inversed sequence again.

3. Upper feed

3.1 Needle feed

Standard checking

1. The needle bar must be set in line with the presser foot bar.
2. The post bed feed is to be set:
 - 2.1 with single needle machines, so that the axis of the needle is displaced about **A = 0,1 mm** to the left of the stitch hole center
 - 2.2 with twin needle machines, so that the needles are symmetrical to the stitch hole centers (after unblocking of needle feed)
3. The feed movement of the needle should be set, so that, with maximum stitch lengths, the needle leaves the throat plate close to the backward edge of the stitch hole.



- Loosen screw (1) and set the needle bar to the measure **(B) = 31mm** as shown in the diagram. This procedure accomplishes rule 1.
- Set the adjustment rings (2) and tighten the screws (1).

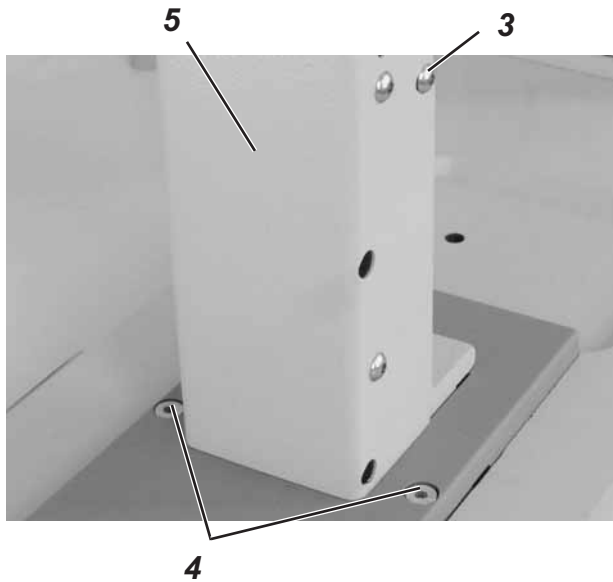


Fig. 2

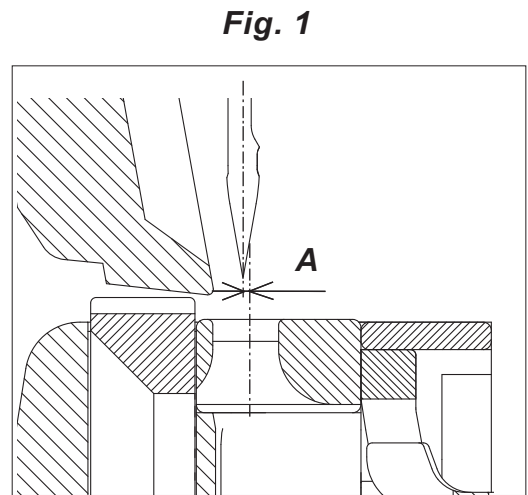
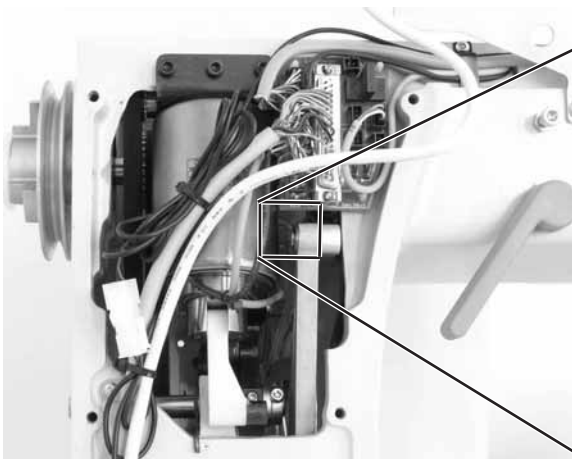
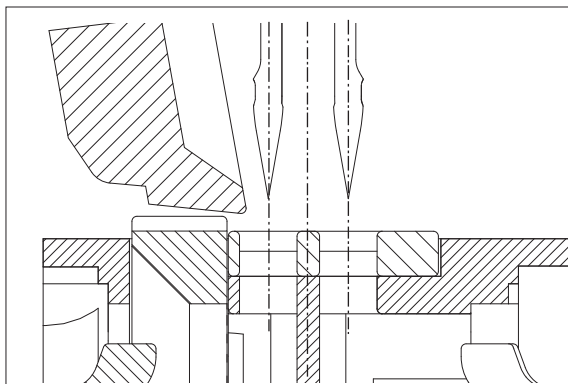


Fig. 1

Fig. 3

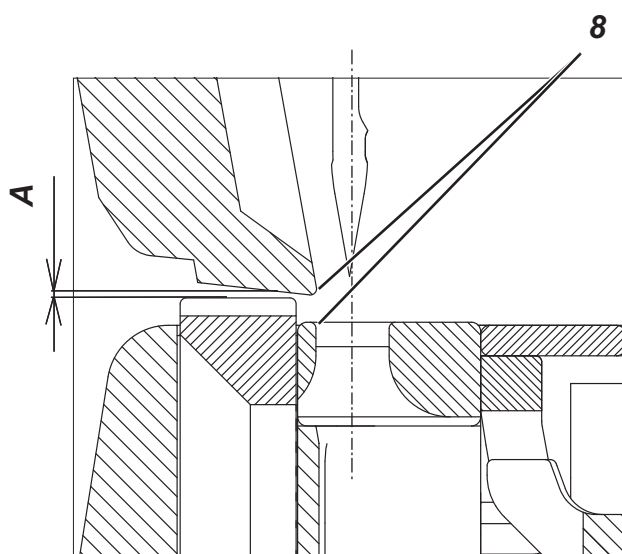
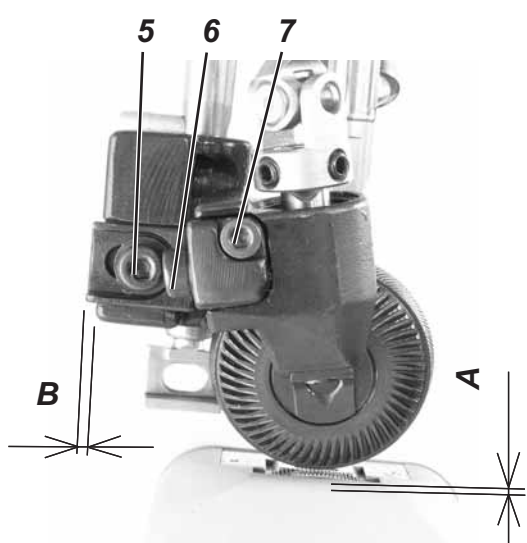
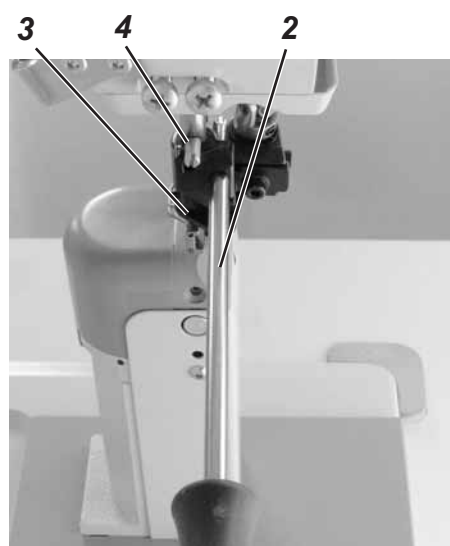
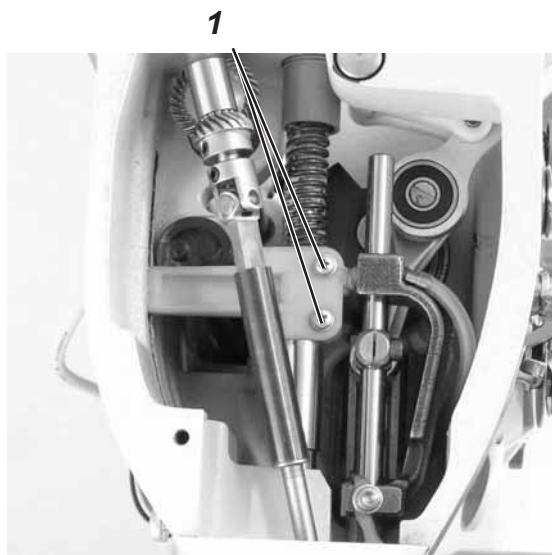


- Loosen screw (3) and the two screws (4). Displace the post bed feed (5) so that rule 2.1 (A) = 0,1 mm according to fig. 1 or rule 2.2 according to fig. 2 is accomplished.
- Adjust the throat plate inset to the center as described in chapter 2.8.
- Set the maximum stitch length as described in chapter 2.
- Set the needle to the position in which it leaves the throat plate inset. Dismantle the rear cover and loosen screw (6). Set the needle manually to the position shown in fig. 3 and tighten screw (6).

3.2 Roller foot

Standard checking

1. The location surface on the roller foot holder should be aligned in the right angle to the longitudinal axis of the machine.
Between the roller foot and the wheel feeder should be a distance of **(A) = 0,03 to 0,16 mm**.
2. The position of the roller foot in sewing direction should be set as follows:
-for single needle machines **(B) = 1,3 to 2,3 mm**
-for twin needle machines **(B) = 0 to 2,3 mm**
3. The lateral position of the roller foot should be set so that the lower edge of the roller foot ends with the left-hand edge of the stitch hole (8).

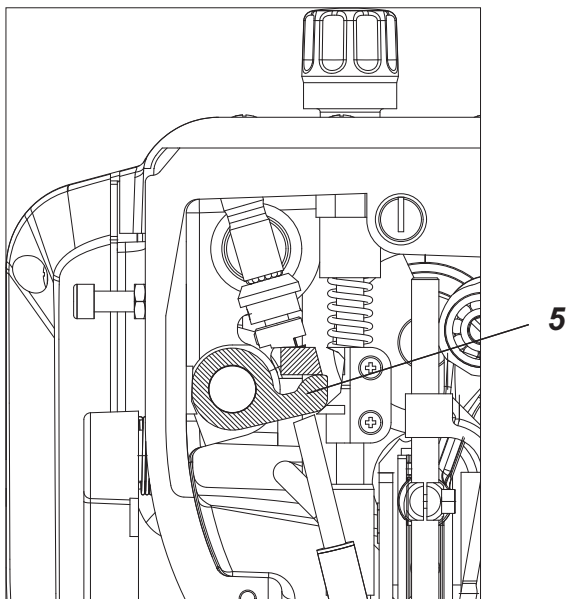
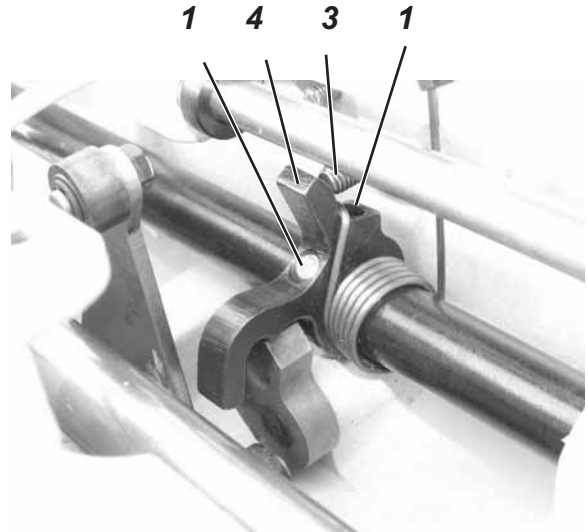
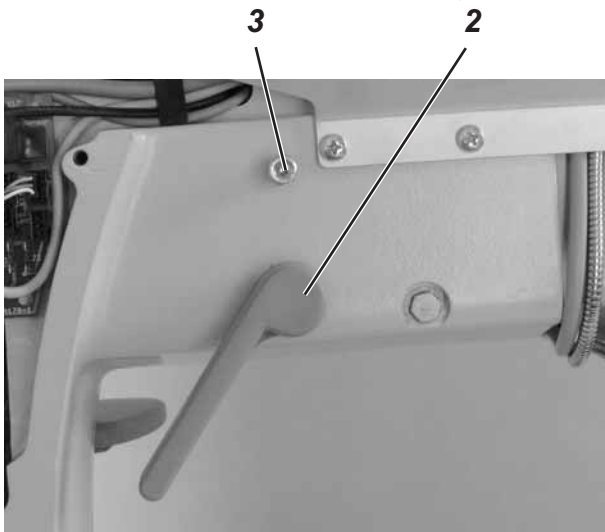


- Loosen screw (1). Displace the presser foot bar vertically according to rule 1. Insert the Philips screw-driver (2) that is part of the accessories into the hole of the roller foot holder (3) and turn the presser foot bar (4) together with the roller foot holder (3) until the Philips screw-driver comes to a right angle with the longitudinal axis of the machine. Tighten screws (1).
- Loosen screw Schraube (5). Displace the roller foot according to rule 2 and tighten screw (5).
- Loosen screw (6). Displace the roller foot according to rule 3 with the adjusting screw (7) and tighten screw (6).

3.3 Roller foot lifting

Standard checking

1. The lifting of the roller foot via hand lever should be of **5,4 to 5,6 mm**.
2. The lifting of the roller foot via electromagnet should be of **11,5 to 12,5 mm**.

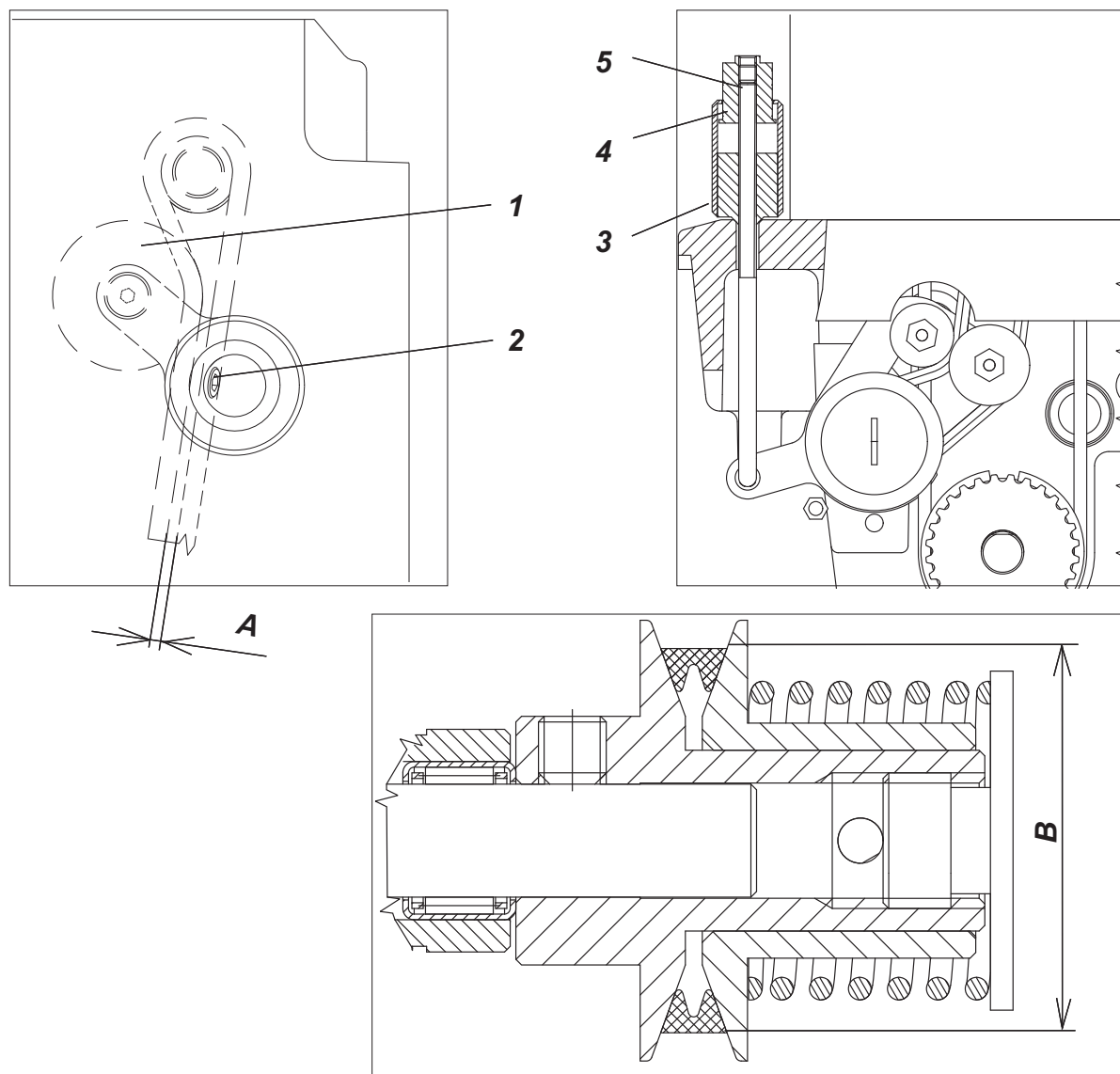


- Dismount the head cover, upper arm cover and electromagnet (if existing) of the presser foot lifting.
- Loosen screw (1). Bring the hand lever (2) into the depicted position and simultaneously screw in screw (3) until it butts against the lever (4). The lever (2) remains in the depicted position.
- Put a spacer of 5.6 mm underneath the roller foot and push the lever (5) manually according to the figure above until it stops. Tighten screw (1). This procedure accomplishes rule 1.
- Remove screw (3) and mount the electromagnet of the presser foot lifting (6). In order to check whether rule 2 is accomplished, engage the magnetic core. If the values are not correct, effectuate an adjustment.

3.4 Variator of the roller foot drive

Standard checking

1. With the correct position of the belt tensioner (1) the distance between the two cords of the V-belt should be **(A) = 1 to 2mm**.
2. If the difference between upper and lower feed is set to zero on the setting nut (3), the graduation scale on the nut (4) should point exactly to "0".

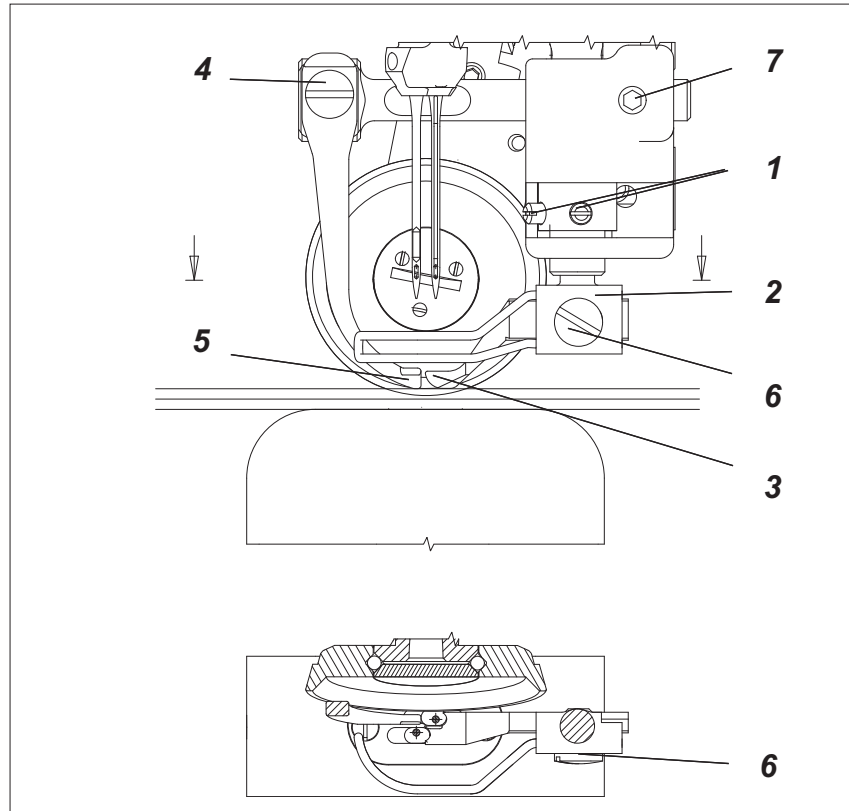


- Loosen screw (2) and position the belt tensioner roller (1) according to rule 1. Tighten screw (2).
- Set the diameter **(B) = 34mm** by turning the setting nut (3).
- Make sure that there is no material displacement between upper and lower feed. Sew two narrow strips of sewing material of about 30 cm together. If the strips after sewing are vaulted upward or downward, this indicates a difference between upper and lower feed. The position of the setting nut (3) must be adjusted accordingly.
- After reaching the point of "zero difference", the graduation scale on the nut (4) must be adjusted. Turn the nut (4) until the third line of the scale is on the upper edge of the the nut (3). This marks the zero position.
- Secure the nut (4) with screw (5).

3.5 Fabric holder for twin needle sewing machines

Regulation

1. The fabric holder should touch the sewing material without exerting any pressure on it.
2. The fabric holder should be positioned in sewing direction and laterally on the edges of the stitch holes.



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- Insert two pieces of leather of about 1.5 mm thickness underneath the roller foot and set a medium fabric pressure.
- Loosen screw (1) and displace the holder (2) with the rear fabric holder (3) vertically until it comes to rest without any pressure on the leather. Tighten screw (1), but not too hard. Loosen screw (4) and effectuate the same setting for the front fabric holder (5). Remove the leather, rule 1 is now accomplished.
- Set the fabric holder according to rule 2: Set the rear fabric holder (3) to the sewing direction by using screw (6) and laterally by turning the holder (2). Set the front fabric holder to the sewing direction and laterally by using screw (7).
- Tighten all screws.



Caution: Danger of injury !

Turn themainswitchoff.

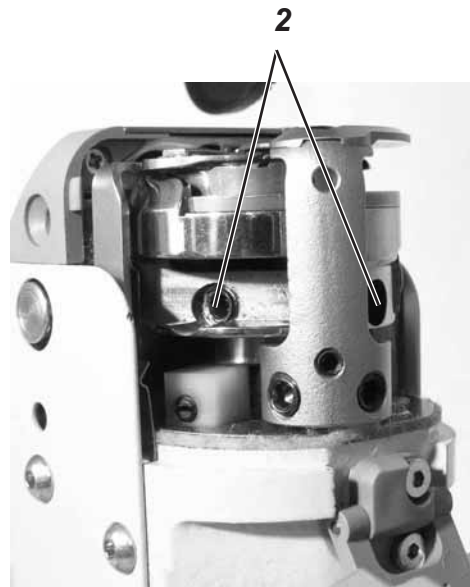
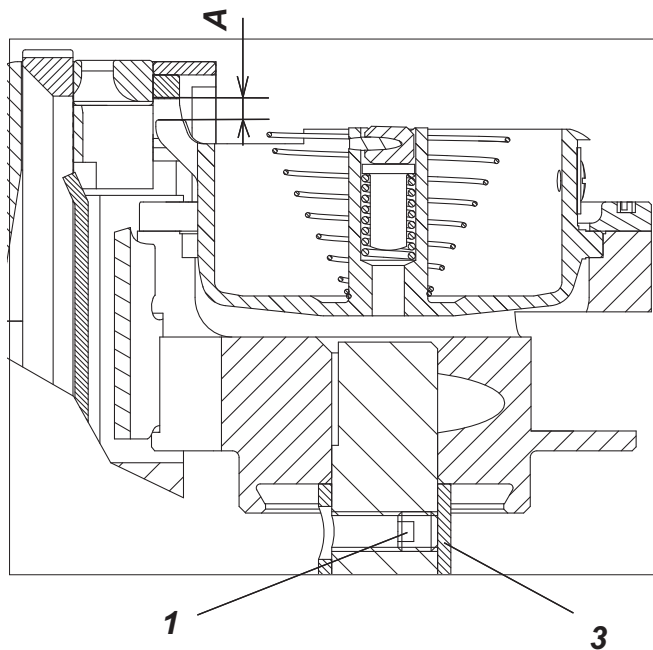
Proceed with the setting only with the sewing machine switched off

4. Setting of the needle bar and of the hook

4.1 Hook height

Standard checking

The distance (A) should be 1.55 up to 1.85 mm.



- Loosen screw (1).
- Loosen screws (2), shift the hook at the distance (A) and tighten the screws (2).
- Push the ring (3) until it stops at the bottom of the hook and tighten screw (1). When replacing the hook, it is not necessary to readjust its setting in height again.



Caution: Danger of injury !

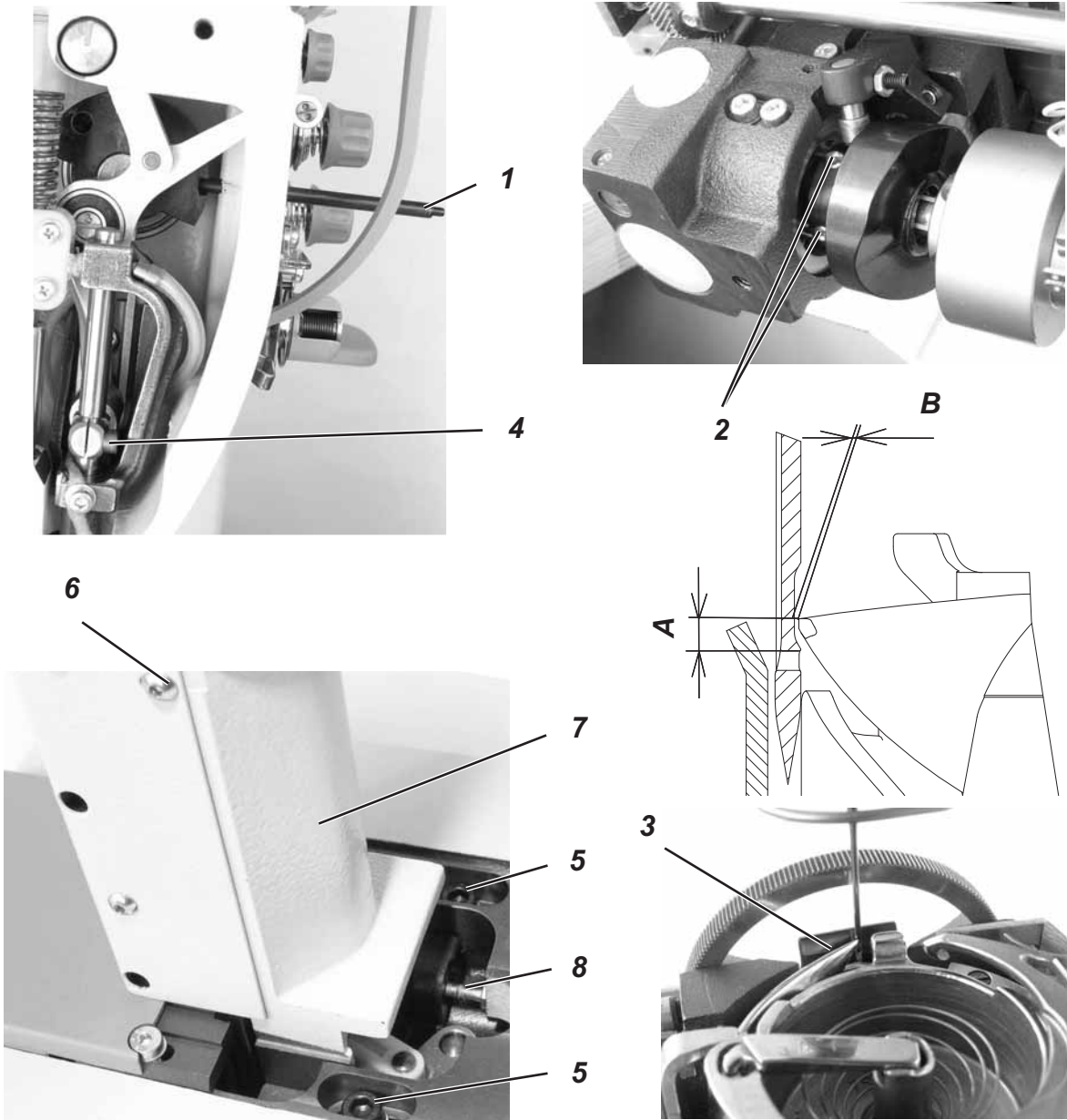
Turn the main switch off.

Proceed with the hook setting only with the sewing machine switched off.

4.2 Needle bar height, clearance of the needle towards the hook tip, loop stroke

Standard checking

When the index points to degree "203" on the graduation scale of the handwheel (loop stroke 2 mm) and the stitch length is set to "0", the hook tip should stand in the needle axis, length (A) = 1.5 mm, distance (B) = 0.02 to 0.1 mm.



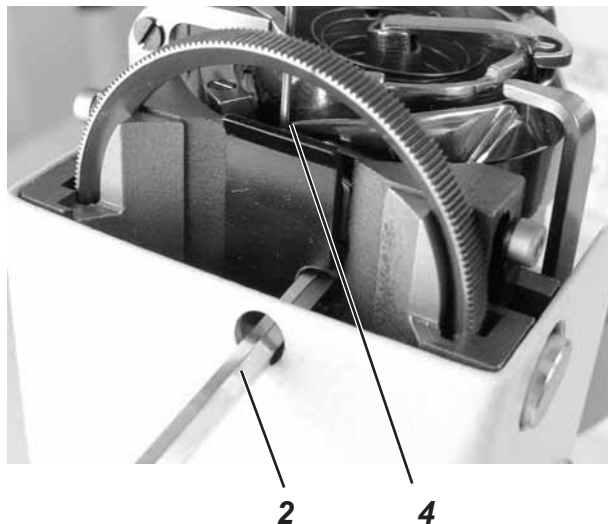
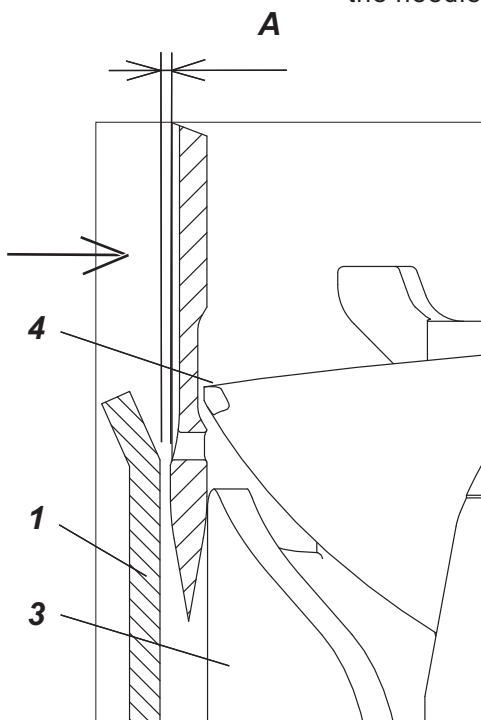
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- Lock the handwheel in loop stroke position (2 mm) by using the locking pin (5 mm), degree "203".
- Loosen screw (2) and turn the hook tip (3) to the needle axis.
- Loosen screw (4), position the needle bar and needle to the distance measure (A) and tighten screw (4).
- Loosen the two screws (5) and screw (6) and displace the hook column (7) from off the needle.
- Slightly tighten screw (5) and bring the hook column to the distance measure (B) by using the screw (8). Tighten screws (5) and (6).
- Check whether the hook tip (3) is positioned in the range of the needle axis, tighten screw (2).

4.3 Hook tip guard and loop former

Standard checking

1. The loop former (1) should be set to have a distance to the needle thickness of **(A) = 0.1 up to 0.2 mm**.
2. The guard plate of the hook (3) should prevent a contact between the needle and the hook tip (4).



- Set the maximum stitch length according to the sewing equipment.
- Dismount the throat plate.
- Bend the loop former (1) to have the distance (A) according to rule 1.
- Position the hook tip (4) on the needle and adjust the setting screw of the guard plate by using an Allen key of 3 mm (2), so that the needle does not touch the hook tip (4).
- Checking: Exert a light pressure on the needle (see arrow) and turn the hook at the same time.
- The setting is not incorrect if the guard plate (3) slightly deflects the needle.



Caution: Danger of injury !

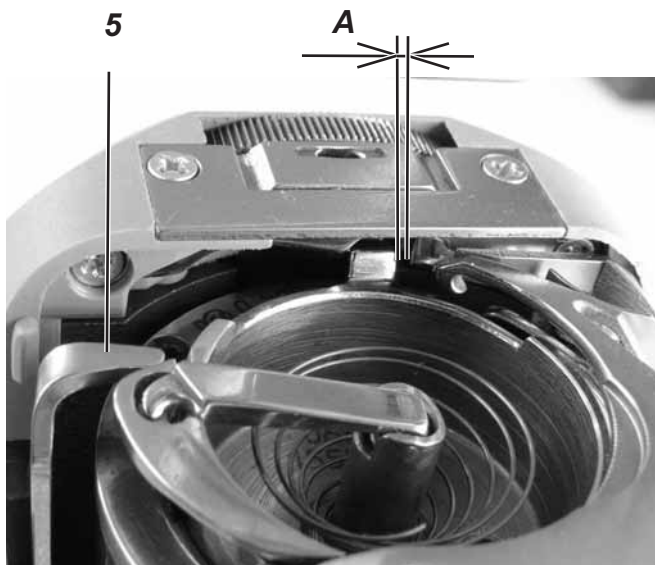
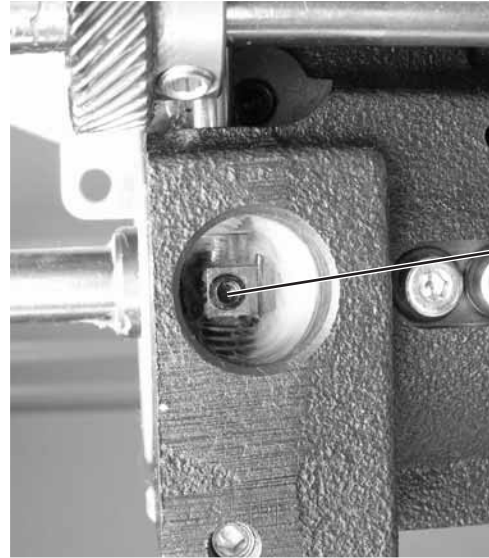
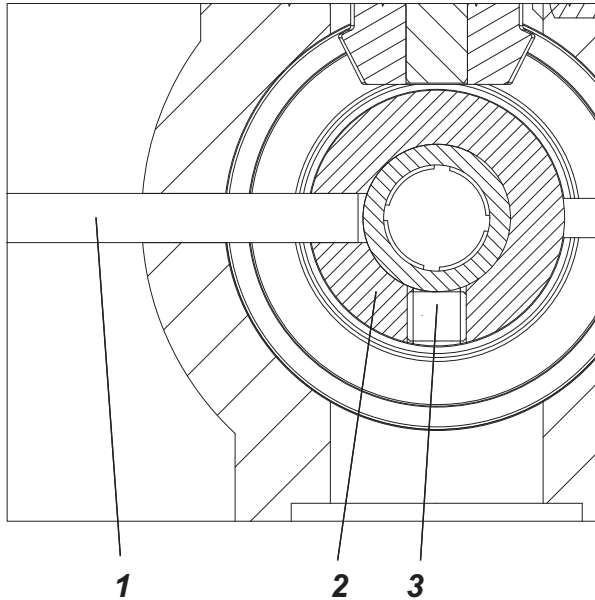
Turn the mains switch off.

Proceed with the setting of the hook guard and loop former only with the sewing machine switched off.

4.4 Bobbin housing release

Standard checking

1. When the locking pin (1) is inserted in the release trigger, the index should point to following the degrees on the graduation scale of the handwheel:
 - for the right hook column "310" to "315"
 - for the left hook column "45" to "50".
2. The distance measure (A) with max. release should be as follows:
 - for the needle thickness range Nm 70 to 110-(A) = 0.5mm
 - for the needle thickness range Nm 120 to 200-(A) = 0.8 mm

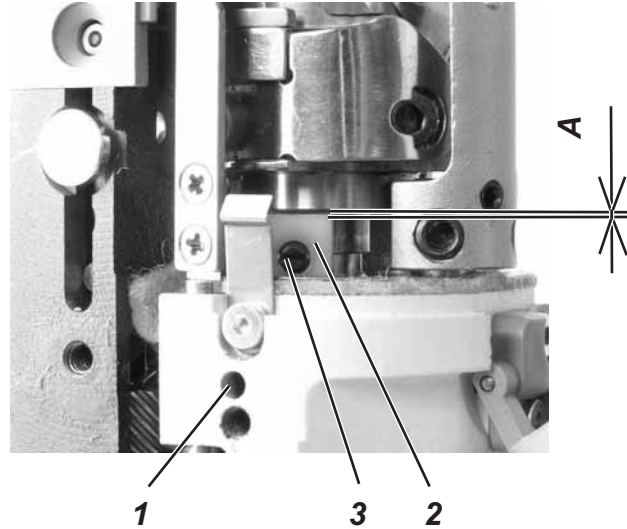


- Insert the locking pin (1) into the release trigger (2). On the right hook column at the rearside, on the left hook column at the front. Remove the lower plug, loosen screw (3), set the handwheel according to rule 1 and tighten screw (3).
- Set the degree "310" on the graduation scale of the handwheel to point to the index, remove the plug, loosen screw (4), turn the bobbin housing release (5) so that the distance measure (A) according to rule 2 is accomplished. Tighten screw (4) and plug the openings again.

4.5 Hook lubrication

Standard checking

1. Between the lubricating fitting (2) and the hook should be a distance of **(A) = 0.3 mm**.
2. The setting screw (3) of the lubrication should proceed **0.5 mm** out of the lubricating fitting.



- Loosen screw (1), set the height of the lubricating fitting (2) to the distance measure **(A)** according to rule 1 and tighten screw (1). This procedure accomplishes rule 1.
- Screw in screw (3) according to rule 2.
- In order to throttle the lubrication, screw in deeper the screw (3), but not any further than **0.5 mm** below the surface of the lubricating fitting (2).



Caution: Danger of injury !

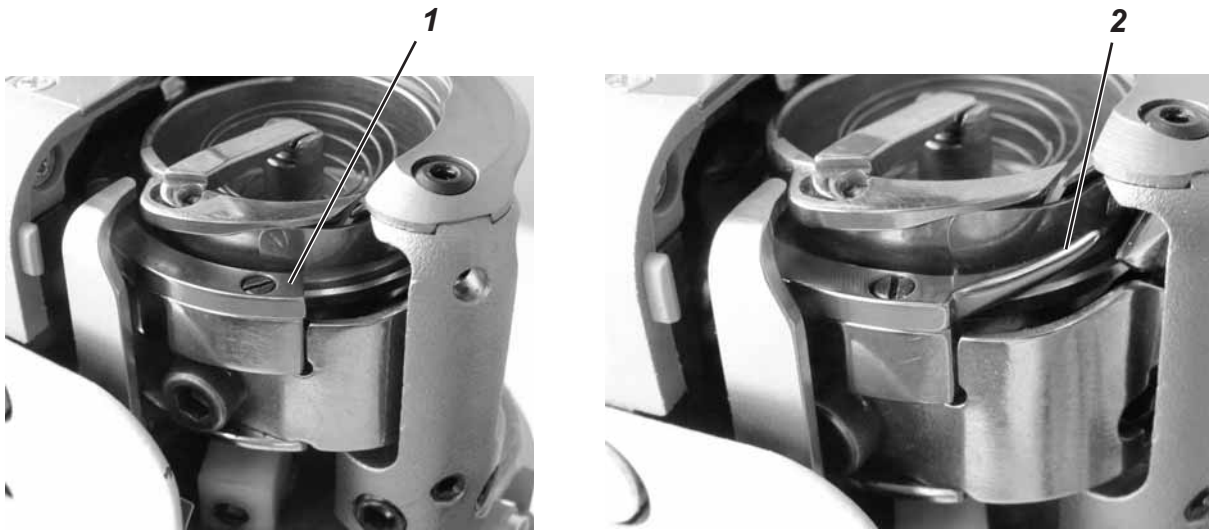
Turn the mains switch off.

Proceed with the setting of the hook lubrication only with the sewing machine switched off.

4.6 Shuttle plunger ring

Standard checking

With the sewing equipment for light-weight material (needle thickness Nm 70 to 80) a shuttle plunger ring with spur should be used.



- Dismount the shuttle plunger ring (1).
- Mount the shuttle plunger ring with spur (2) that is part of a complete sewing equipment.



Caution: Danger of injury !

Turn the mains switch off.

Exchange the shuttle plunger ring only with the sewing machine switched off.

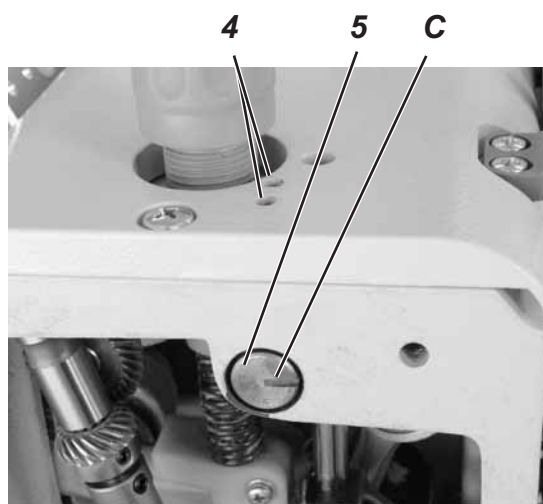
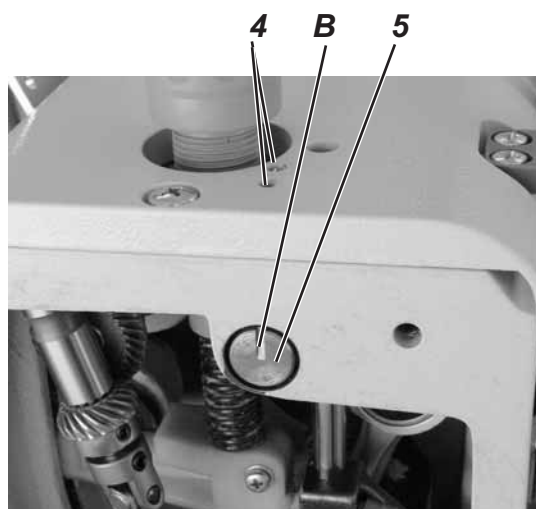
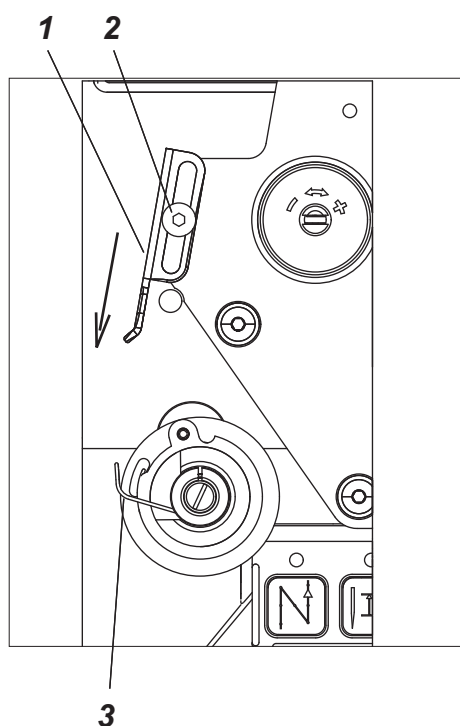
5. Thread setting

5.1 Thread limiter, check spring, thread lever mechanism pin

Standard checking

1. The thread limiter (1) is to be set in such a way that, when sewing and passing the thread through the most distant point of the hook, the spring (3) shifts by about 1/4 to 1/2 length of its total length. This means that the thicker will be the sewn material and the longer will be the stitch length, the more will be the limiter shifted in the sense of the arrow and inversely.
2. The position of the bolt (5) should be set as follows, depending on the needle in service:

| Needle thickness Nm | Bolt position |
|---------------------|---------------|
| 70 - 110 | B |
| 120 - 200 | C |

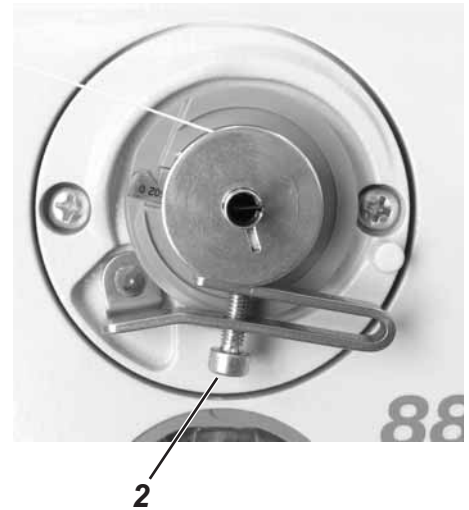
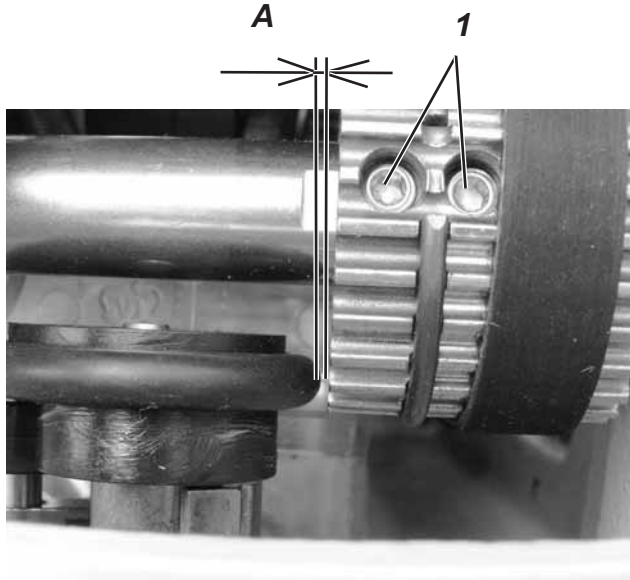


- Loosen screw (2), push the thread limiter (1) according to rule 1, tighten screw (2).
- Insert a 3 mm Allen key in the holes (4) and loosen the screws. Bring the bolt (5) into the correct position according to rule 2 and tighten screws.

5.2 Bobbin winder

Standard checking

1. When the bobbin winder is switched off, the distance between bobbin winder wheel and belt pulley should be **(A) = 0.8 mm**.
2. The winding procedure should stop automatically, when the bobbin is filled up to 0.5 mm underneath the the bobbin edge.



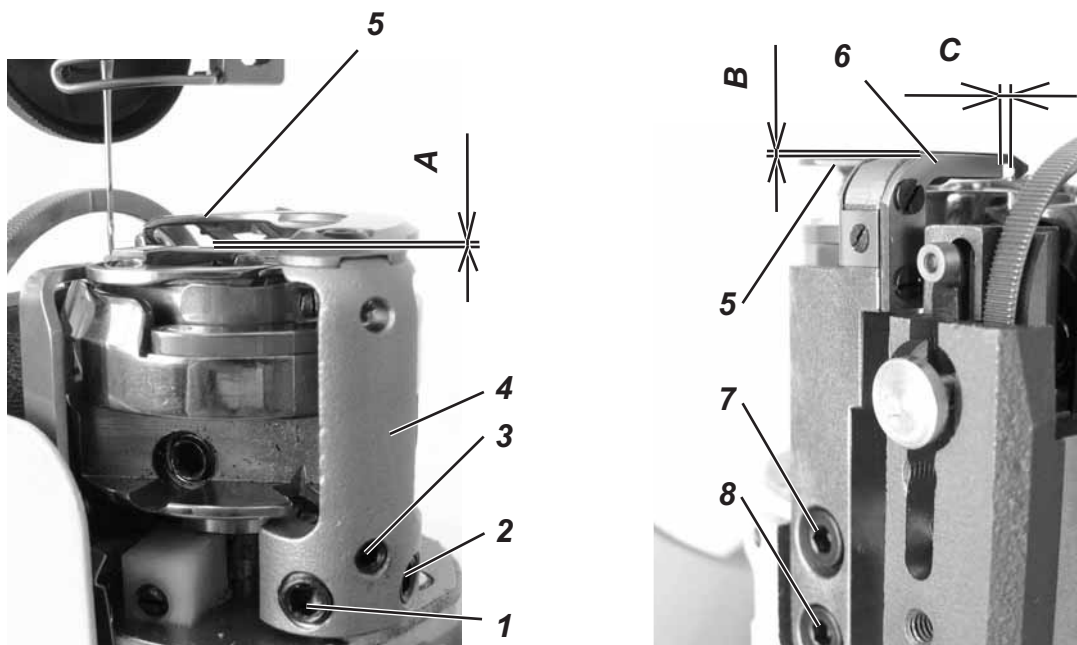
- Turn the belt pulley to the top using the screws (1). Push the toothed belt to the right so that both screws (1) are accessible. Loosen screws (1) and set the distance measure **(A)** according to rule 1, tighten screws (1).
- Determine the bobbin filling by adjusting screw (2). Screw in screw (2) for 1 to 2 mm, but a bobbin on the bobbin winder shaft and wind on thread. Check the filling when the winder switches off and adjust the position of screw (2) until rule 2 is accomplished.

6. Thread trimmer

6.1 Thread trimmer height, position of the counter knife

Standard checking

1. The distance measure between the thread-pulling knife (5) and the hook should be **(A) = 0.2mm**.
2. The distance measure between the counter knife (6) and the thread-pulling knife (5) should be **(B) = 0.3 to 0.5 mm**.
3. The knives should have contact at the distance **(C) = 1 to 2mm**.



- Loosen screws (1), (2), (3) and push the holder (4) downwards.
- Slightly tighten screw (2), that sits on the surface of the shaft.
- Tighten screw (3) until the distance measure **(A) = 0.2 mm** is set and thus rule 1 is accomplished.
- Tighten screw (2) and afterwards also screw (1).
- Dismount the column protection.
- Loosen screws (7) and (8). Set the distance measure **(B) = 0.3 to 0.5 mm** according to rule 2.
- Slightly tighten screw (8).
- Turn the handwheel, so that the index points to degree "270".
- Turn the thread-pulling knife (5) manually to set it to the distance measure **(C) = 1 to 2mm** and adjust the counter knife (6) accordingly until the knives touch smoothly (without any pressure).
- Tighten screws (7) and (8) and check whether the knives touch at the distance **(C)**.



Caution: Danger of injury !

Turn the mains switch off.

Proceed with the thread trimmer setting only with the sewing machine switched off.



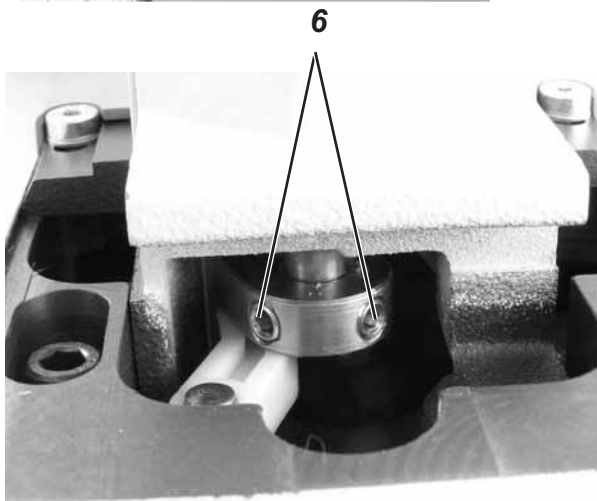
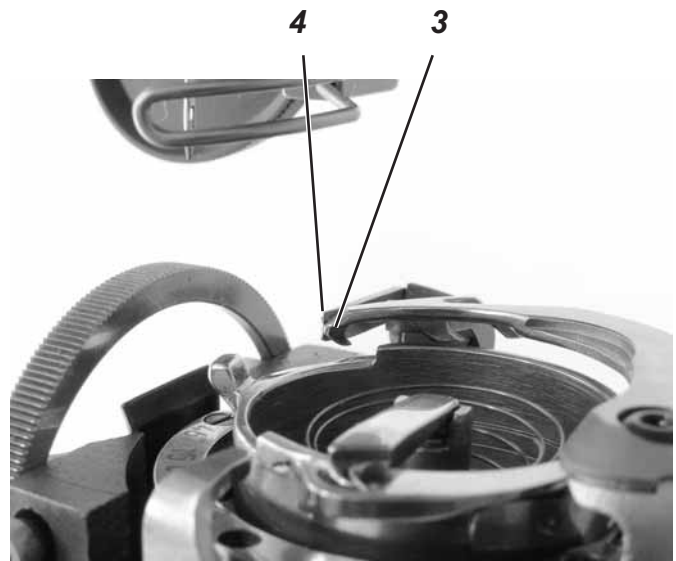
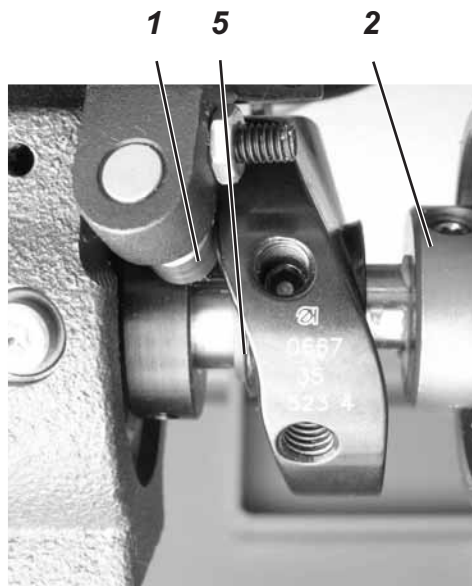
Attention!

When the pressure of the counter knife is set too high this results in a higher knife wear

6.2 Starting position of the thread-pulling knife

Standard checking

When the roller (1) is in the highest point of the control cam (2) the end of the thread-pulling knife (3) should overrun the blade of the counter knife (4) of 0.5-1 mm.



- Check whether the control cam (2) butts against the circlip (5).
- Position the control cam according to the rule.
- Loosen screw (6).
- Set the thread-pulling knife (3) according to the rule.
- Tighten screw (6).



Caution: Danger of injury !

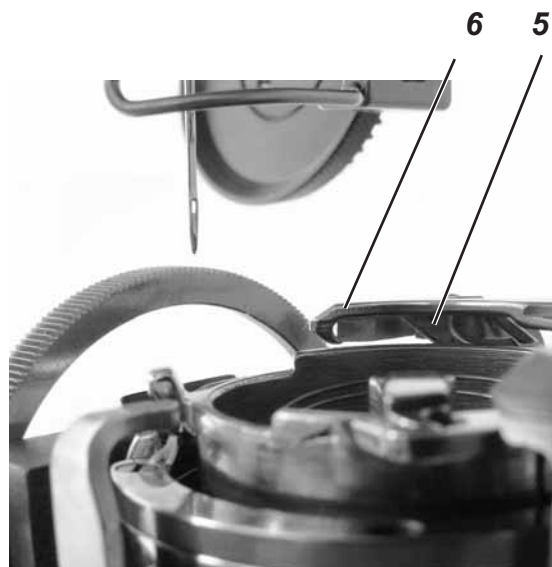
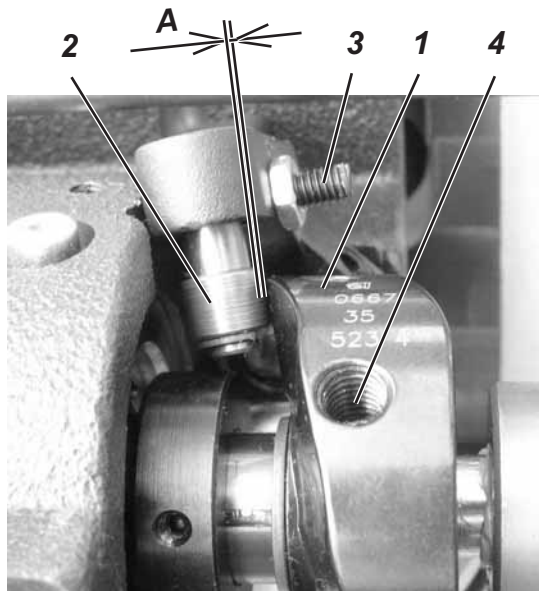
Turn the mains switch off.

Proceed with the thread trimmer setting only with the sewing machine switched off.

6.3 Control cam

Standard checking

1. Between the highest point of the control cam (1) and the roller (2) should be a distance measure of **(A) = 0.05 to 0.1 mm**.
2. The threads should be separated when on the handwheel degree "40" to "45" points to the index.



- Loosen the counter nut, turn screw (3) until the distance **(A) = 0.05 to 0.1 mm** according to rule 1 is set between the roller (2) and the highest point of the control cam (1).
- Loosen the two screws (4). Set the handwheel until the index points to degree "40" to "45" on the scale. Set the thread-pulling knife (5) manually so that the blade of the thread-pulling knife overlaps the blade of the counter knife.
- Push the control cam (1) to the left and at the same time turn it in the turning direction of the machine until roller (2) butts.
- Tighten the screws (4).



Caution: Danger of injury !

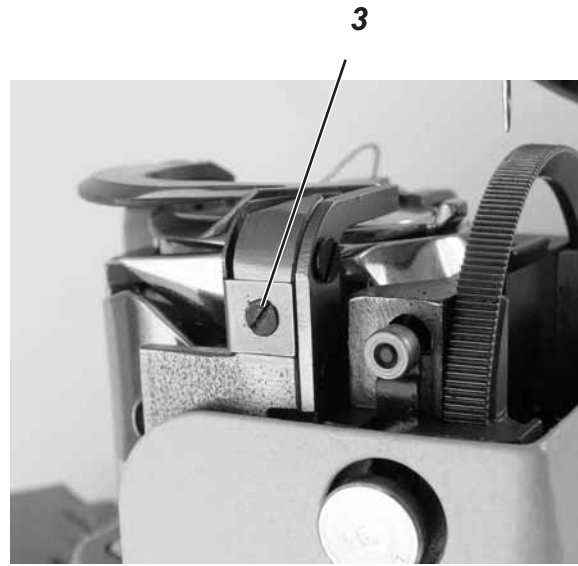
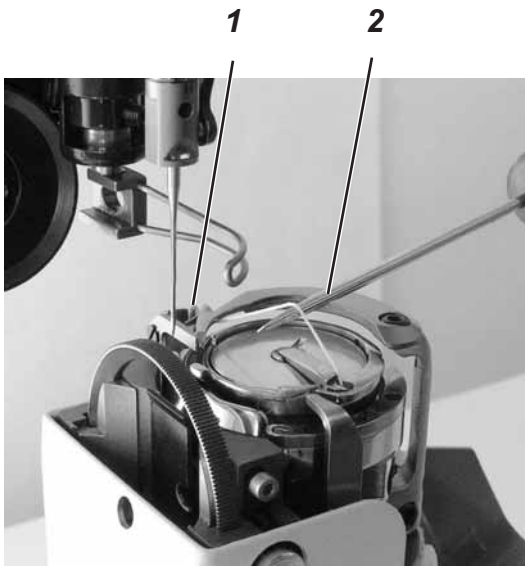
Turn the mains switch off.

Proceed with the control cam setting only with the sewing machine switched off.

6.4 Bobbin thread clamp

Standard checking

The clamping effect of the spring (1) should not be set stronger than the strength needed to pull out the bobbin thread of the hook.



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- Sew and cut the threads.
- Check with a screw driver (2) as shown in the figure whether the thread is pulled out of the bobbin or out of the clamp (1).
- Adjust the clamping effect of the spring (1) with screw (3) until the rule is accomplished.



Caution: Danger of injury !

Turn the mains switch off.

Proceed with the clamp spring setting only with the sewing machine switched off.



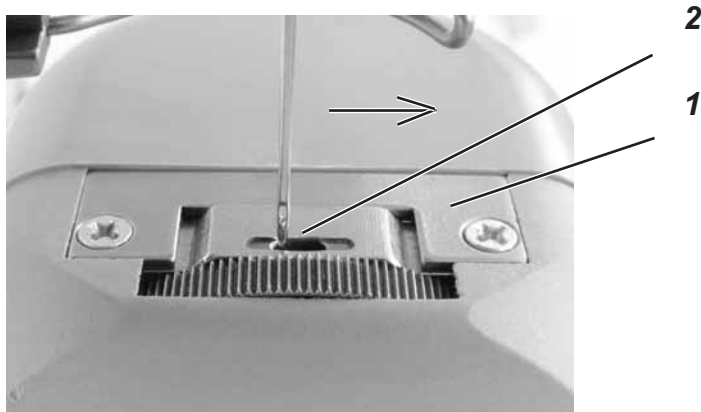
Attention!

A wrong setting of the clamp spring can lead to problems at the seam beginning.

6.5 Position of the throat plate inset

Standard checking

When sewing with a short stitch, the throat plate inset should be pushed aside towards the operator in order to avoid a missed stitch at the seam beginning.



- Set the stitch length to **1.5 to 2.5 mm** depending on the thread size.
- Check whether at the seam beginning missed stitches occur. If this is the case, push the throat plate inset (1) into the direction of the arrow until the rear edge of the stitch hole (2) has a distance of **0.2 to 0.3 mm** to the needle. Screw the throat plate inset on again.
- Limit the stitch length to 2.5 mm. The rule of the stitch length limitation is described in chapter 2.1.



Caution: Danger of injury !

If the position of the throat plate inset has been altered and the stitch length is not limited to 2.5 mm, the needle will hit the throat plate inset with higher stitch lengths and needle breakage will occur. At the same time the operating personnel will suffer injury

7. Electronic control and machine drive – positioning drive

Detailed operating instructions of the positioning drive are enclosed to the machine (also see www.efka.net).