



888

Service Instructions

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Introduction

This service booklet contains the instructions for setting the sewing machine head mechanisms.

The directions for putting the machine into operation and for setting the positioning drive are contained in another publication.

The service booklet is common for all subclasses of the machine and contains also the instructions for setting optional accessories of the machine, if this is necessary owing to their complexity. Provided the machine supplied does not contain some elements, then the respective chapters may be ignored.

The succession of the setting operations is expressed here by sequencing the paragraphs of this booklet. When setting, check up, if the setting operations related to this setting have already been performed.

General safety instructions

The non-observance of the following safety instructions can cause bodily injuries or damages to the machine.

1. The machine must only be commissioned in full knowledge of the instruction book and operated by persons with appropriate training.
2. Before putting into service also read the safety rules and instructions of the motor supplier.
3. The machine must be used only for the purpose intended. Use of the machine without the safety devices is not permitted. Observe all the relevant safety regulations.
4. When gauge parts are exchanged (e.g. needle, presser foot, needle plate, feed dog and bobbin) when threading, when the workplace is left, and during service work, the machine must be disconnected from the mains by switching off the master switch or disconnecting the mains plug.
5. Daily servicing work must be carried out only by appropriately trained persons.
6. Repairs, conversion and special maintenance work must only be carried out by technicians or persons with appropriate training.
7. For service or repair work on pneumatic systems, disconnect the machine from the compressed air supply system (max. 7-10 bar). Before disconnecting, reduce the pressure of the maintenance unit. Exceptions to this are only adjustments and functions checks made by appropriately trained technicians.
8. Work on the electrical equipment must be carried out only by electricians or appropriately trained persons.
9. Work on parts and systems under electric current is not permitted, except as specified in regulations DIN VDE 0105.
10. Conversion or changes to the machine must be authorized by us and made only in adherence to all safety regulations.
11. For repairs, only replacement parts approved by us must be used.
12. Commissioning of the sewing head is prohibited until such time as the entire sewing unit is found to comply with EC directives.
13. The line cord should be equipped with a country-specific mains plug. This work must be carried out by appropriately trained technicians (see paragraph 8).



It is absolutely necessary to respect the safety instructions marked by these signs.

Danger of bodily injuries !

Please note also the general safety instructions.



Service Instructions for the Class 888

(Edition 11.2021)

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1 General

These service instructions describe the adjustments that can be made to the class **888** special sewing machine.



CAUTION!

The operations described in these service instructions may only be carried out by qualified staff or other appropriately trained persons!



Caution: Risk of injury!

Turn the main switch off for repair, conversion and maintenance work and separate the machine from the pneumatic supply line.

Any adjustment work and functional testing with the machine running should be conducted only under observance of all safety measures and with the greatest possible caution.

EN

These service instructions describe the adjustment of the sewing machine in a logical order. Please observe that various setting positions are dependent on each other. Thus it is essential that the settings be conducted while keeping to the order described.

For all adjustments of parts involved in the stitch formation, a new undamaged needle must be inserted.

This text does not specifically mention any machine covers or panels which must be removed or re-mounted in order to conduct inspections or adjustments.

Note

Some shafts on the special **888** machine are provided with flat eccentric surfaces. This significantly simplifies machine adjustments.

For all adjustments on flat surfaces, the first screw screwed in the direction of the eccentric surface.

1.1 Setting gauges

The retention pin required for adjusting the machine is included with all units. It is located with the machine accessories and can be attached so that it is easily accessible below the oil tray.

1.2 Adjusting the handwheel

Rule:

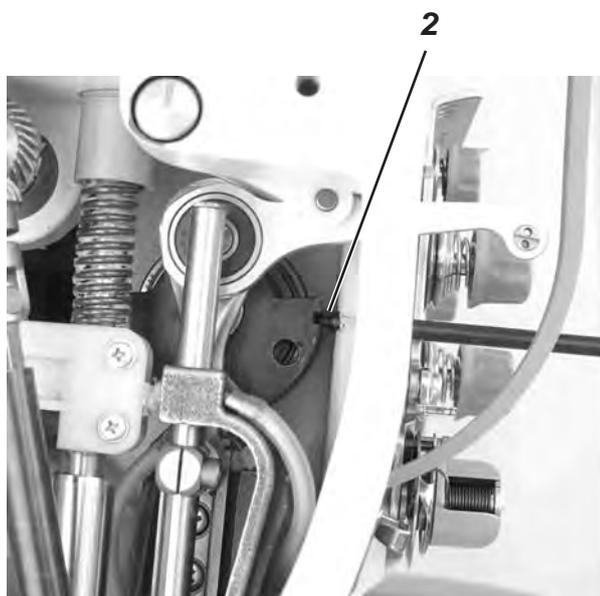
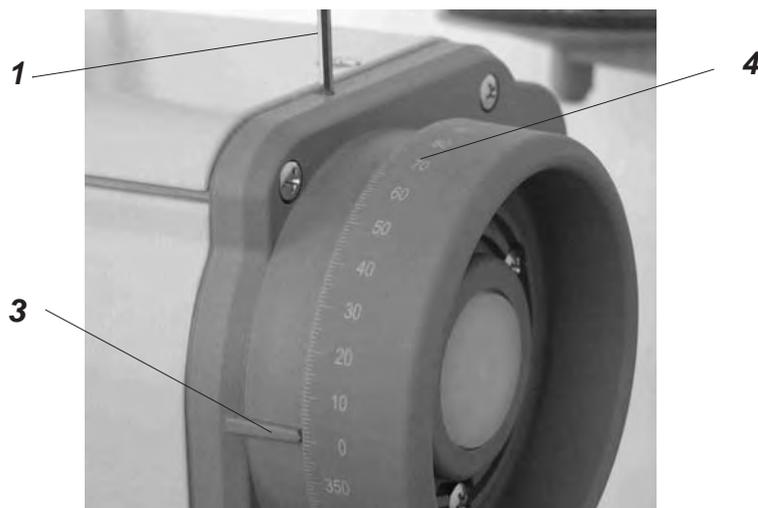
The handwheel (4) is labelled with degree numbers.

Certain adjustments are made with these marked handwheel positions.

- Turn the handwheel until the degree value specified in the instructions is aligned with the pointer (3).
- Proceed with the adjustment described.

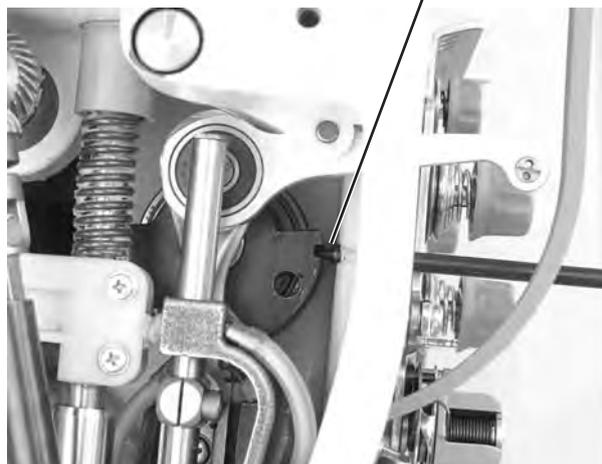
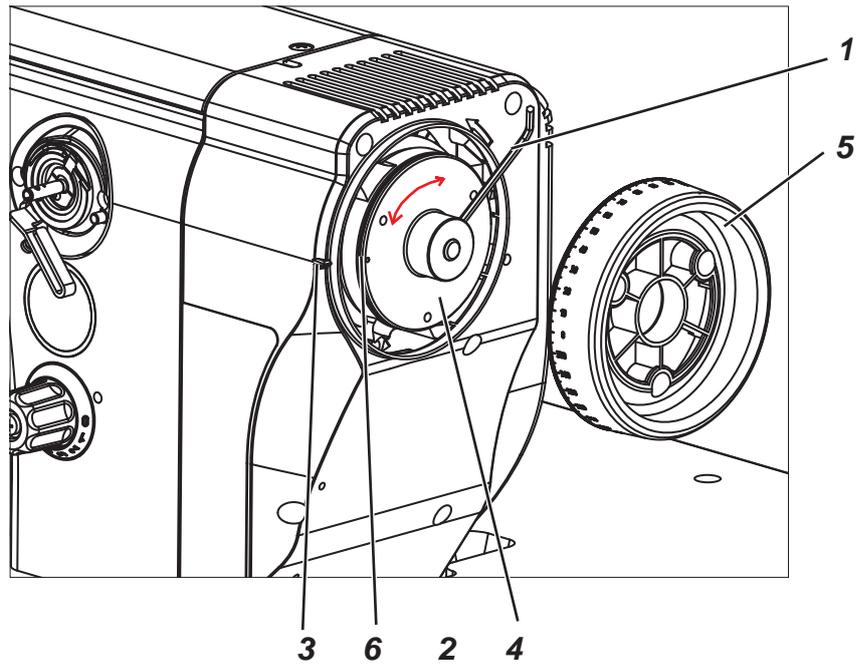
When the needle bar is at top dead centre, the pointer (3) should be aligned with “0” degrees.

1.2.1 Sewing machines with minimotor



- Loosen the handwheel screws with a 3 mm Allen key (1).
- Position the needle bar in the upper dead centre position. Use the retention pin (3 mm diameter) to peg the position (2).
- Turn the handwheel so that the pointer (3) points to 0 degrees on the rotary scale.
- Tighten the first screw with the Allen key (1). Turn the handwheel to **50°** and tighten the second screw with the Allen key (1).

1.2.2 Sewing machine with direct drive



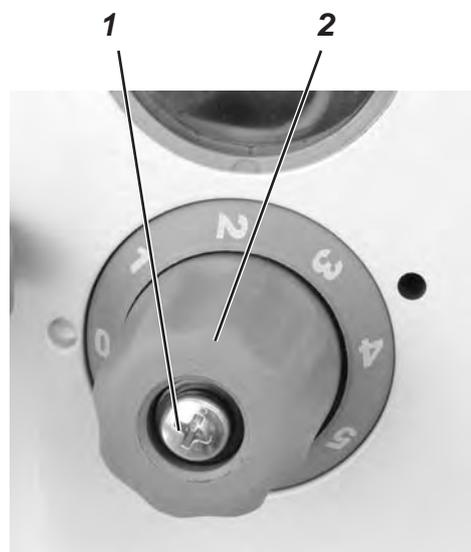
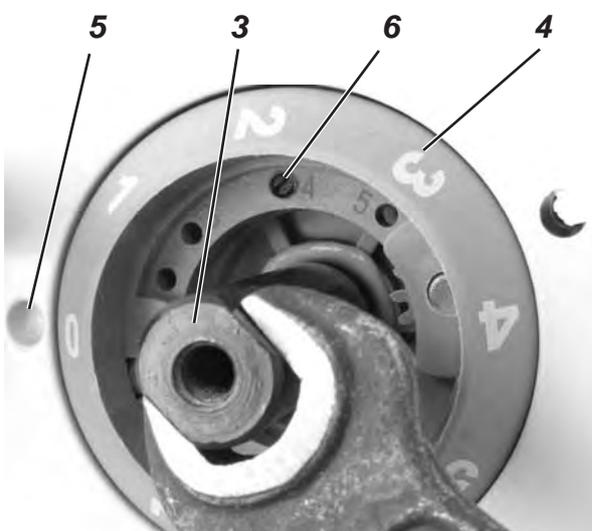
- Unscrew three fixing screws on the hand wheel (5) and remove it.
- Put the needle in the upper dead point and insert the setting pin (2), which is a part of the sewing machine accessories and which is fixed on the oil tray bottom side, into the crank head.
- Loosen two setting screws of the hand wheel flange (4) with the Allen key 3 mm (1).
- Turn the hand wheel flange with the hollow (6) against the sign (3).
- Tighten both setting screws with the key (1) and fix the hand wheel on again.

2 Bottom feed

2.1 Basic setting for stitch adjustment and stitch length limit

Rule:

1. When setting the stitch length at "0", the stitch regulator gear should have as little play (clearance) as possible when you press down on the bartacking lever.
2. The maximum stitch length limit depends on the material to be sewn and the sewing equipment being used (see operating instructions).



- Loosen screw (1) and take off the settings dial (2).
- Turn the screw (3) as far as needed to the right using a 10 mm open-ended wrench. Verify that the stitch regulator gear is without motion by pressing down on the bartacking lever. This fulfills rule 1.
- Set the scaling ring (4) with stitch length "0" to align with the circular mark (5).
- Limit the stitch length according to rule 2. For this, screw the retention pin (6) into the proper hole. The holes are marked with numbers which indicate the maximum stitch length.
- If a maximum stitch length of 7 mm is required, unscrew the screw (6) for 2.5 mm. Another end stop is available for this length.
- Put the settings dial (2) back on and tighten the screw (1).



Caution: Risk of injury!

Turn the main switch off.

Only carry out this basic stitch adjustment when the machine is turned off.



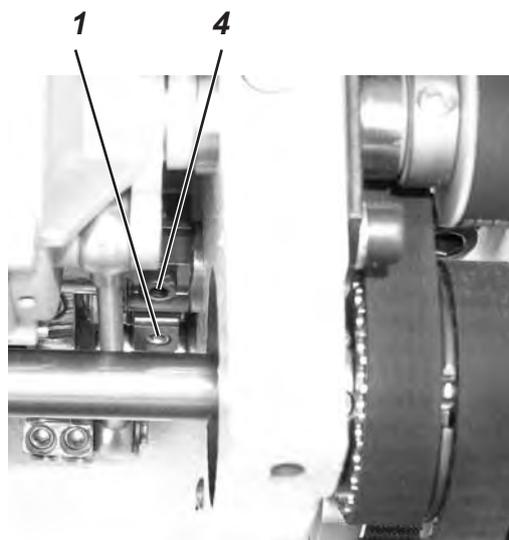
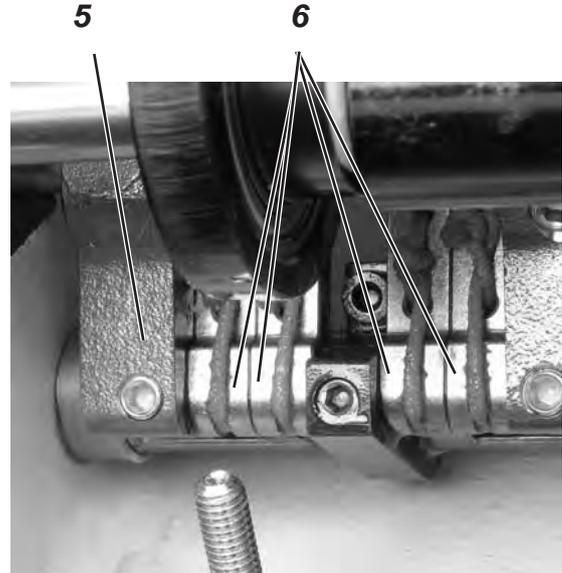
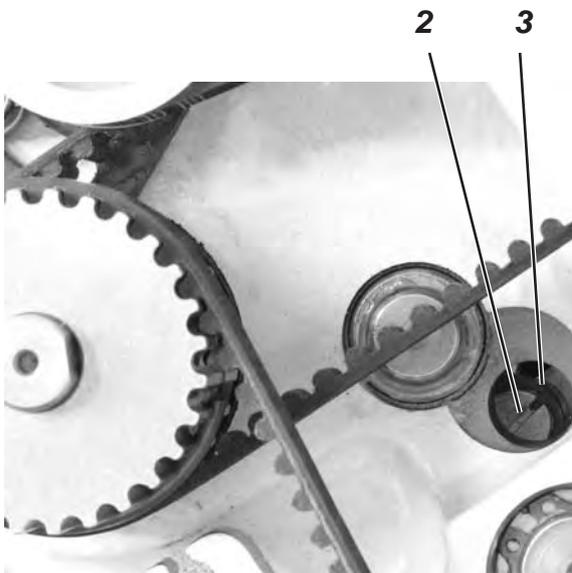
ATTENTION: Danger of breakage!

If the set stitch length is larger than allowed by the sewing equipment in use, then the needle will hit against the throat plate insert.

2.2 Stitch uniformity for forwards and reverse stitching

Rule:

1. When making a rough-scale adjustment to the stitch regulator gear, the machine should not feed when the stitch length is set to "0".
2. When making a fine-scale adjustment to the stitch regulator gear, the forwards and reverse stitch lengths should only deviate in value by a half stitch.

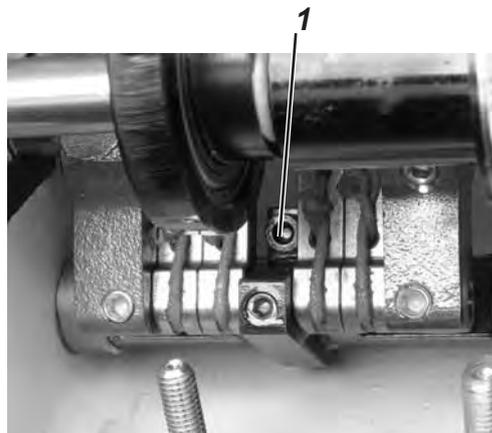
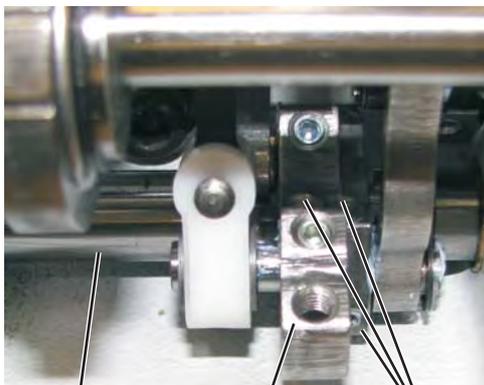


- Set the stitch length to "0".
- Loosen screw (1) and turn the grooved (3) eccentric tappet (2) according to the illustration. Fasten with screw (1).
- Loosen screw (4) on the clamping lever. Turn the settings frame (5) so that the shackles (6) are parallel. Tighten screw (4). This then fulfils rule 1.
- The next step is to match up the forwards and reverse stitch lengths. Sew ten stitches forwards. Press the bartacking lever and then sew ten stitches backwards. Rotate the eccentric tappet (2) so that rule 2 is fulfilled.
- Clockwise = increase forward stitch, decrease reverse stitch.
- Counter-clockwise = decrease forward stitch, increase reverse stitch.

2.3 Adjusting of feed shaft position and clutch lever position

Rule:

When setting the stitch length to "0" the groove on the feed shaft front side is in the vertical position. The feed clutch should be in the central position.



4

3

2

5

6



- Set the stitch length to "0".
- Loosen the screw (1).
- Loosen four screws (2) on the lever (3).
- Turn the shaft (4) so that the groove on its front side is in the vertical position.
- Tighten the screw (1).
- Unscrew the screw on the feed clutch (6) and insert the needle (5) into the hole left after it. Turn the clutch (6) with hand until the needle (5) fits 5 mm inwards. This fulfils the rule.
- Tighten the four screws (2).
- Remove the needle (5) and screw the screw back again.



Caution: Risk of injury!

Turn the main switch off.
Only carry out this adjustment when the machine is turned off.



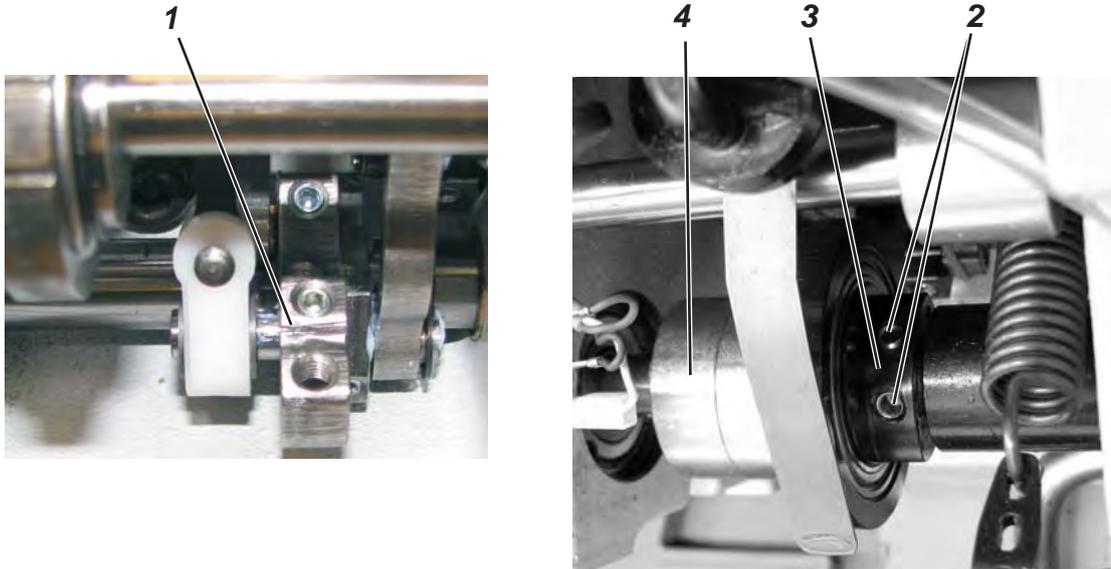
ATTENTION: Danger of breakage!

With large stitch lengths, it is possible that parts within the clutch will collide if the middle working range of the clutch is not maintained.

2.4 Position of the eccentric tappet for the feed movement

Rule:

When the handwheel pointer indicates “0” degrees, the feed lever (1) should not move when the bartacking lever is pressed down.



- Turn the handwheel so that the pointer indicates “0”.
- Loosen screws (2). To make the rough-scale adjustment, turn the eccentric tappet (3) so that it is approximately in the position shown in the illustration. Now make the fine-scale adjustment to the eccentric tappet. Continue until you have found the position where the feed lever (1) no longer moves when the bartacking lever is pressed down.
- Tighten screws at eccentric tappet (3).
- Fasten the weight (4) in the opposite position to the eccentric (3).



Caution: Risk of injury!

Turn the main switch off.

Only carry out this eccentric adjustment when the machine is turned off.



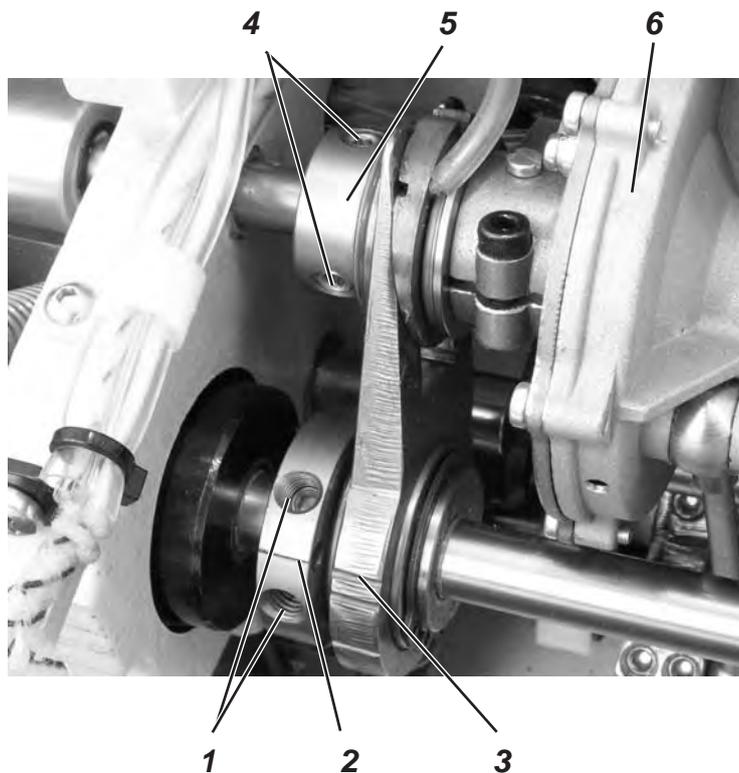
ATTENTION: Danger of breakage!

Imprecise settings can shorten the lifespan of the machine.

2.5 Switching over the feed clutch

Rule:

The clutch should be switched over when it is motionless (i.e., when it is in the dead centre point of its pendulum motion).



- Loosen the screws (1) on the eccentric tappet (2).
- Turn the eccentric tappet (2) so that the dash is aligned with the other dash (3).
- Loosen the three screws (4). Loosen the adjusting nut (5).
- Tighten the adjusting nut (5) until you feel it strike (the tightening increases in jumps).
Push the clutch (6) to the right until the end stop is reached.
Tighten the screws (4).
- Verify the adjustment. Turn the eccentric tappet with your hand in the other direction. The resistance during the rotation of the eccentric tappet should increase significantly when the two dashes are lined up.



Caution: Risk of injury!

Turn the main switch off.

Only carry out this adjustment when the machine is turned off.



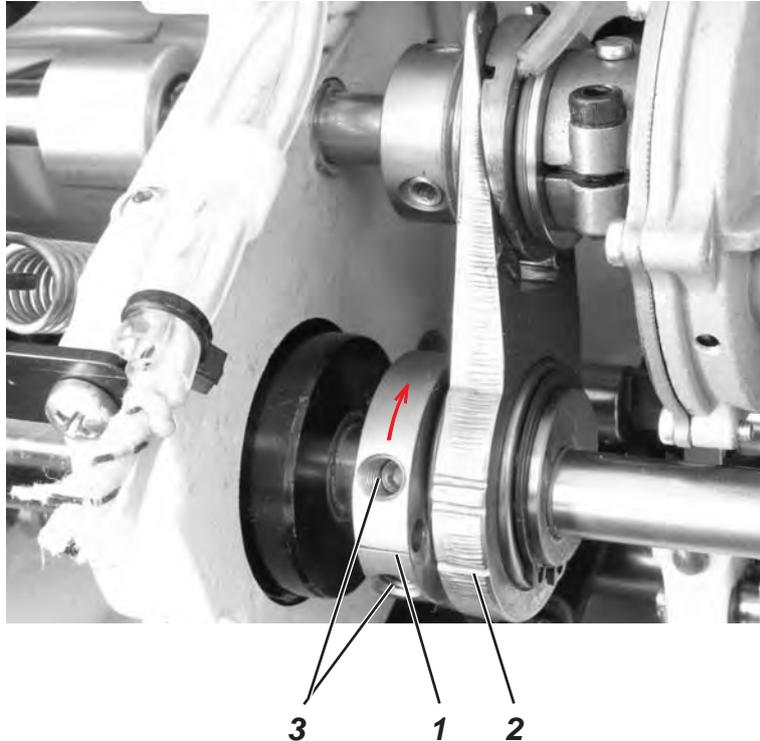
ATTENTION: Danger of breakage!

Imprecise settings can shorten the lifespan of the machine.

2.6 Position of the eccentric tappet for the switch over of the feed clutch

Rule:

When the handwheel pointer indicates “313” on the scale, the dash (1) on the eccentric tappet should be lined up with the lower dash (2) on the V-shaped push rod.



- Loosen screws (3).
- Turn the handwheel to position “313”.
- Turn the eccentric tappet in the direction of arrow so that dash (1) is lined up with dash (2).
- Turn back the eccentric tappet about 2° and move axially on the shaft until the middle is between the limit settings.
- Align the two dashes (1) and (2) again. Tighten the screws (3).



Caution: Risk of injury!

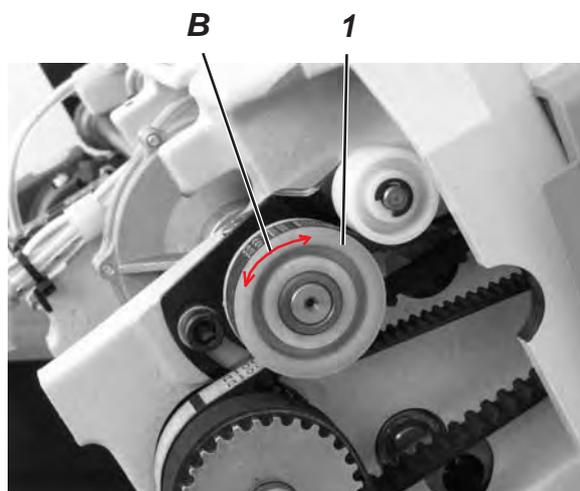
Turn the main switch off.

Only carry out this adjustment when the machine is turned off.

2.7 Checking the switch over of the feed clutch

Rule:

The feed clutch should be switched over when it is motionless (i.e., when it is in the dead centre point of its pendulum motion). This can be detected from the rotational direction of the belt pulley (1) in front of and behind the dead centre point.



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

- Set the maximum stitch length.
- Turn the handwheel (A) so that it is positioned at “274” degrees (refer to Table / A). Push the bartacking lever down. Check if the rotational direction (B) of the belt pulley (1) corresponds to the direction specified in the table. Do the same for “281” degrees.
- If the rotational directions do not correspond to those specified in the table, correct the necessary settings. If the clutch switches over too soon (on a smaller angle), tentatively loosen the adjusting nut (5) (see chapter 2.5) and repeat the check. Continue loosening until you locate the correct position for the nut. If the clutch switches over too late, tighten the controlling nut (5).



Caution: Risk of injury!

Turn the main switch off.

Only carry out this adjustment when the machine is turned off.



CAUTION!

Imprecise settings can shorten the lifespan of the machine.

2.8 Adjusting the reduced stitch length

Note: It is an optional equipment.

Rule:

If a reduced stitch is selected via a switch button, it should then be effectively 50% with 7 mm stitch length and between 60% and 70% with 2 mm stitch length.



- Loosen nut (1).
- Shift the piece (4) through changing the position of the screw (3) with a 2.5 mm Allen key (2) until the stitch length corresponds to the value given in the above rule.
- Fasten nut (1).



Caution: Risk of injury!

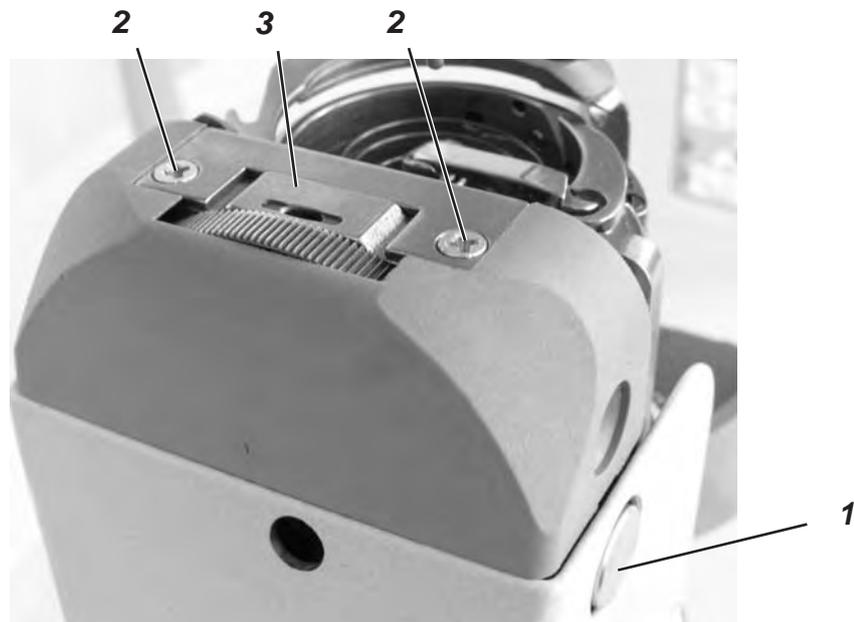
Turn the main switch off.

Only carry out this adjustment when the machine is turned off.

2.9 Throat plate

Rule:

With the standard setting of single needle machine the throat plate insert should be adjusted to the center of the throat plate.



- Push the two push buttons (1) and remove the throat plate.
- Loosen the screws (2) and adjust the throat plate insert (3) to be in the centre of the throat plate cutout.
- Fasten the screws (2) again.
- Mount the throat plate and check whether it is set in and fixed correctly.



Caution: Risk of injury!

Turn the main switch off.

Only carry out this adjustment when the machine is turned off.



ATTENTION: Danger of breakage!

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

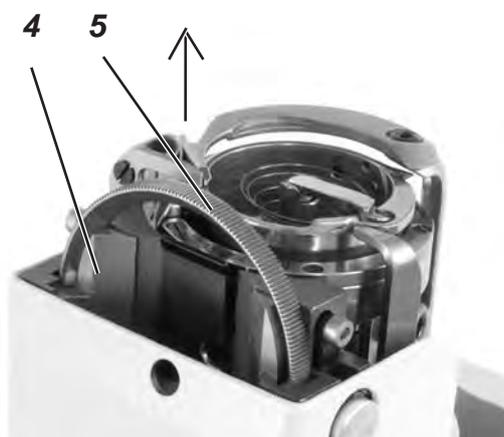
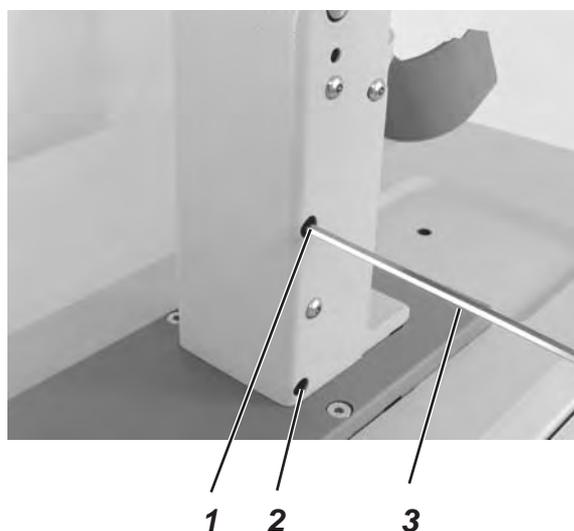
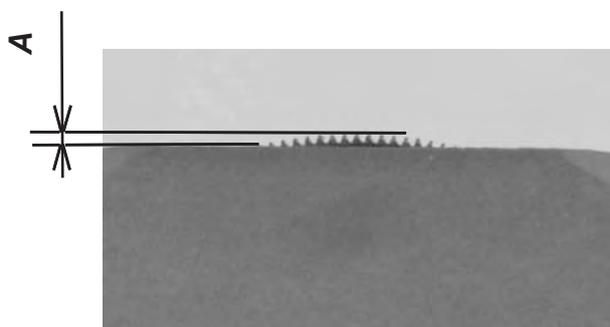
2.10 Slide wheel feeder

Rule:

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 insert see chart:

Needle thickness Nm	Height of the wheel feeder (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



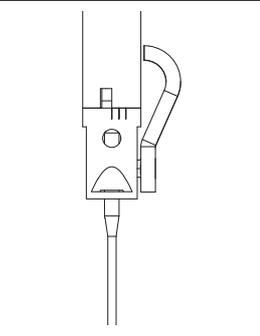
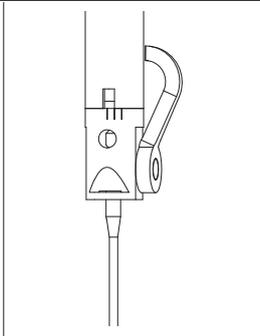
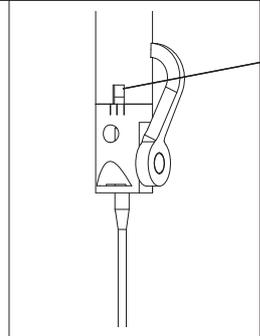
- Set the height of the wheel feeder (5) according to rule 2. Loosen screw (2) by using an Allen key (3) and retighten the screw (1). After reaching the desired height first tighten screw (2) and then retighten screw (1) once again.
- In order to lower the wheel feeder, loosen screw (1) and then retighten screw (2). Then the sequence is inverted.
- When exchanging the wheel (5) take out the throat plate (see chapter 2.9). 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.

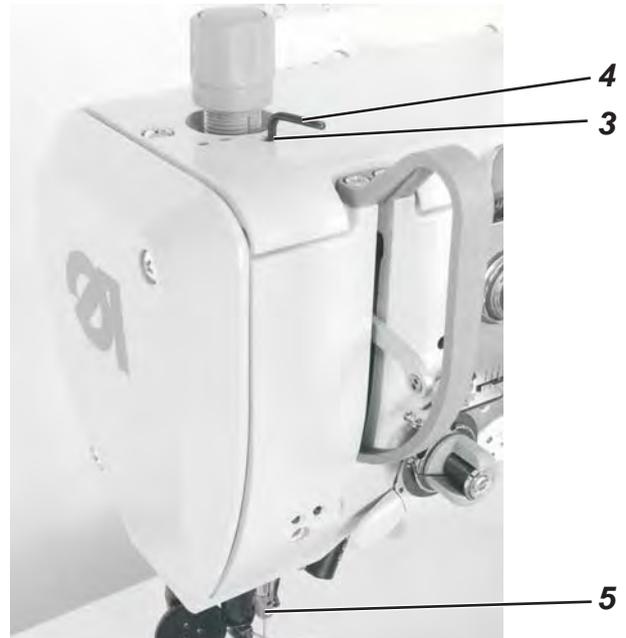
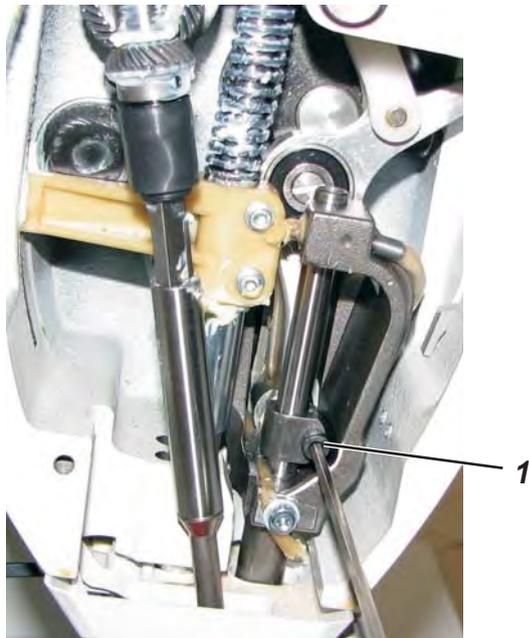
3. Top feed

3.1 Position of the needle holder with single needle sewing machines

Rule:

The position of the needle holder is to be set in dependence to the needle thickness according to the following chart.

Angular position of the needle holder			
Needle thickness/Nm	70 - 110	120 - 160	180 - 200

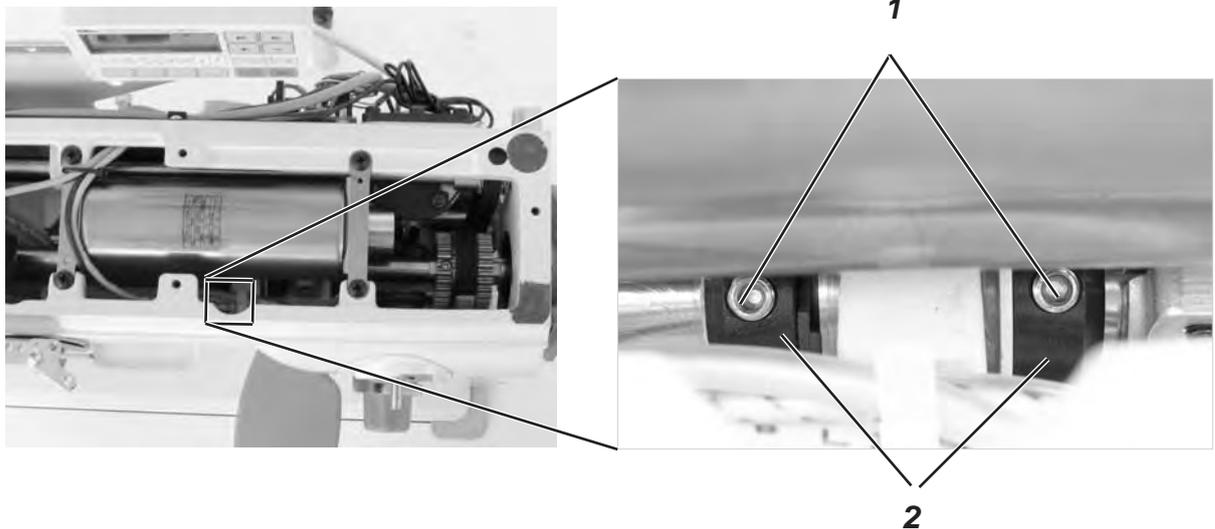
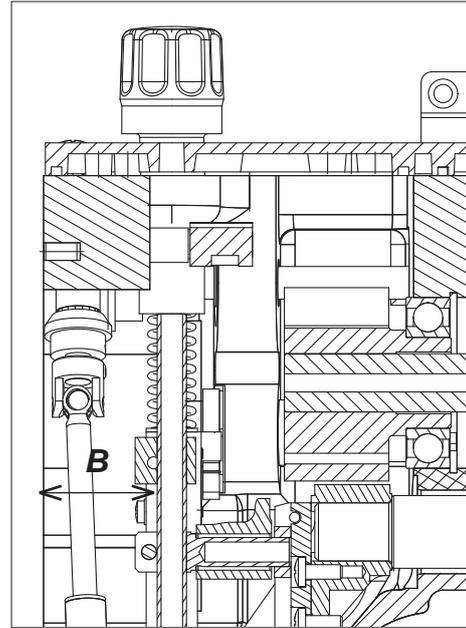
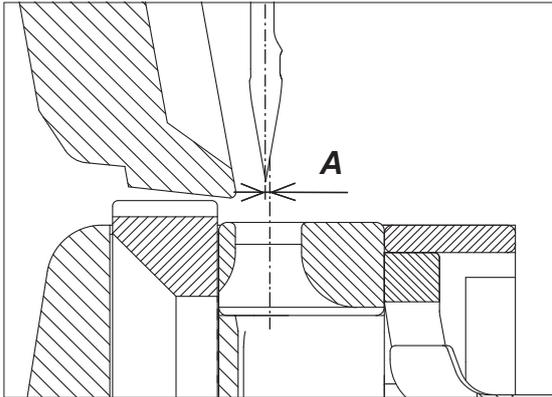


- Loosen screw (1) and turn the needle bar with the right groove edge (2) to the needle bar axis (in sewing direction) and tighten screw (1).
- Bring the needle bar to the upper dead center and loosen the screw of the needle holder through the bore (3) by using an Allen key of 2.5 mm (4).
- Turn the needle holder (5) according to the rule and tighten the screw.

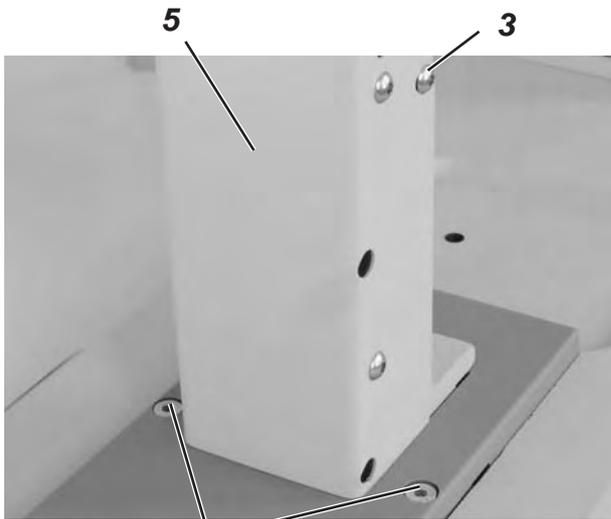
3.2 Needle feed

Rule:

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.
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) = 31 mm** as shown in the diagram. This procedure accomplishes rule 1.
- Set the adjustment rings (2) and tighten the screws (1).



4 Fig. 2

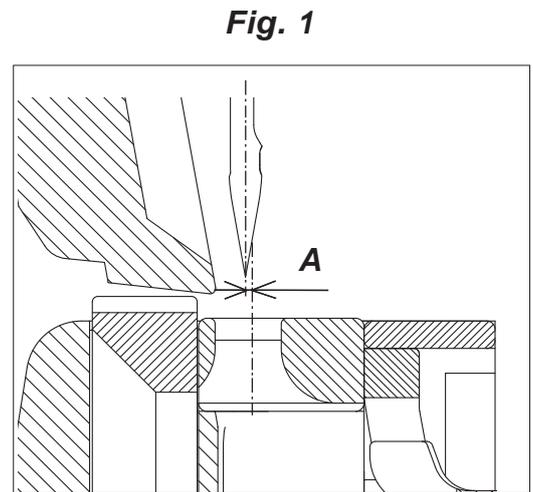
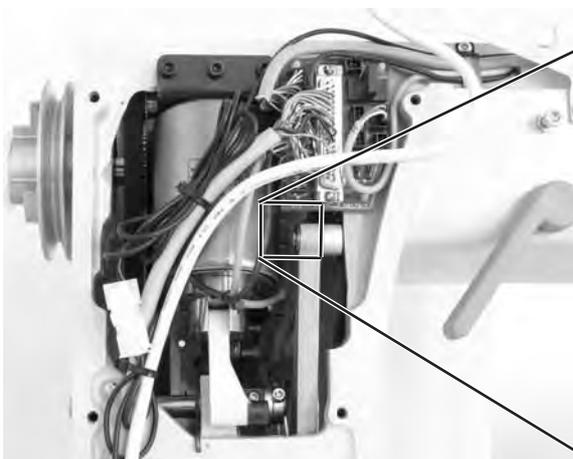
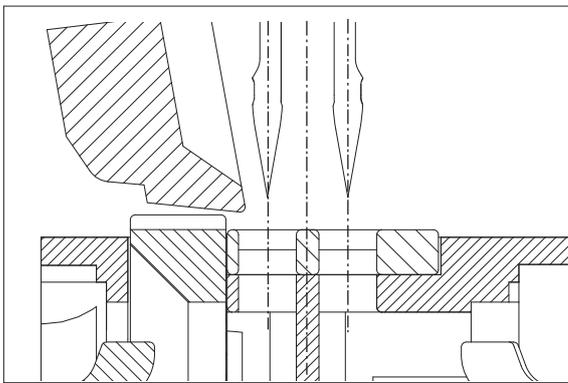


Fig. 3

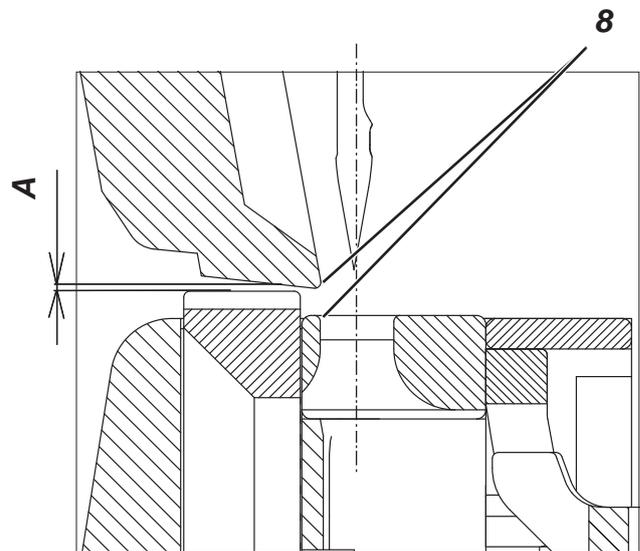
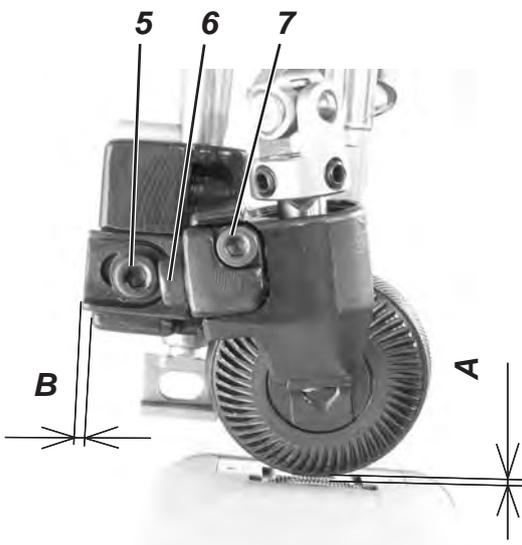
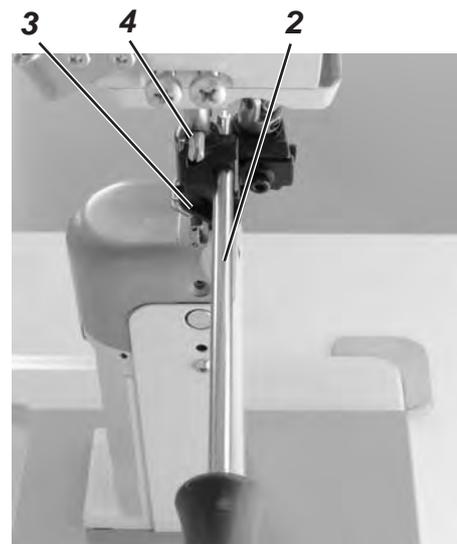
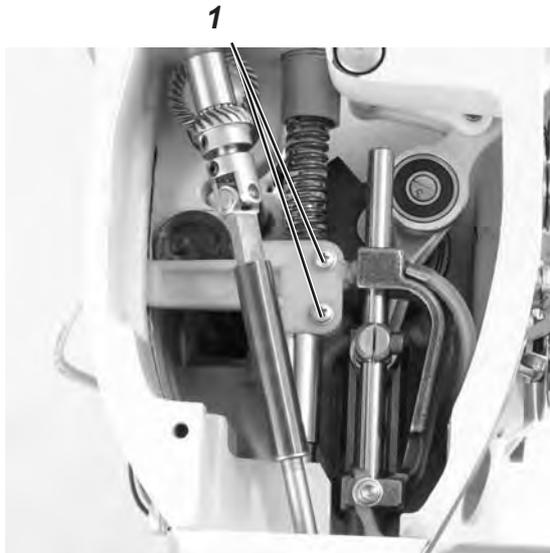


- Loosen screw (3) and the two screws (4). Displace the post bed feed (5) so that rule 2.1 (**A**) = **0,1 mm** according to **fig. 1** or rule 2.2 according to **fig. 2** is accomplished.
- Adjust the throat plate insert to the center as described in chapter 2.9.
- Set the maximum stitch length as described in chapter 2.
- Set the needle to the position in which it leaves the throat plate insert. Dismantle the rear cover and loosen screw (6). Set the needle manually to the position shown in **fig. 3** and tighten screw (6).

3.3 Roller foot

Rule:

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).



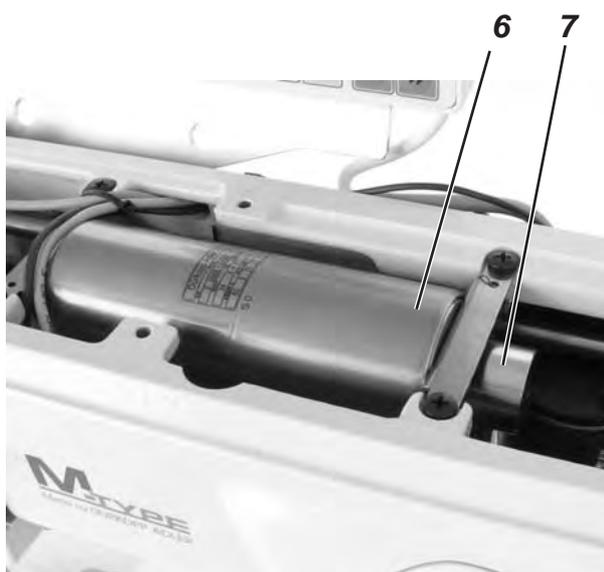
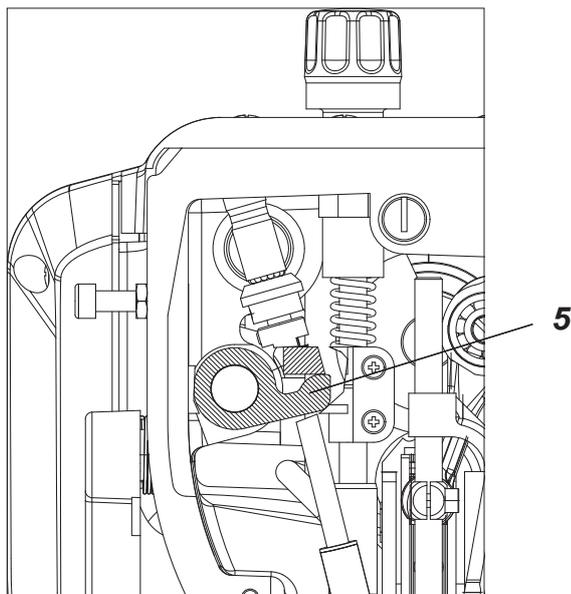
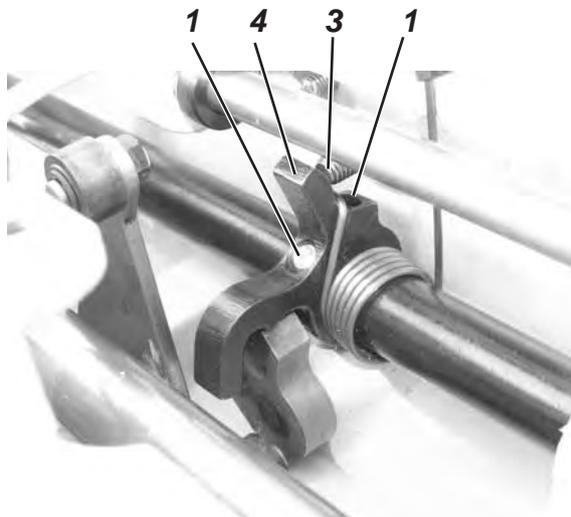
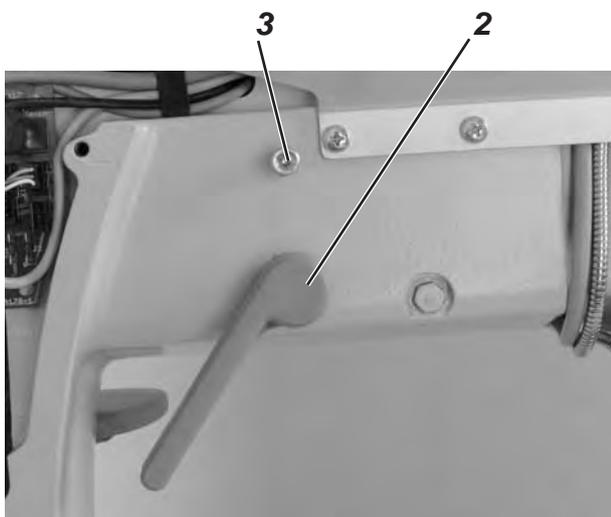
- Loosen screw (1). Displace the presser foot bar vertically according to rule 1. Insert the Philips screw-driver (2) that is part of the accessories into the hole of the roller foot holder (3) and turn the presser foot bar (4) together with the roller foot holder (3) until the Philips screw-driver comes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

EN

3.4 Roller foot lifting

Rule:

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**.
3. The lifting of the roller foot via knee lever should be of about **0.2 to 0.4 mm** higher than the electromagnetic lifting (if existing).

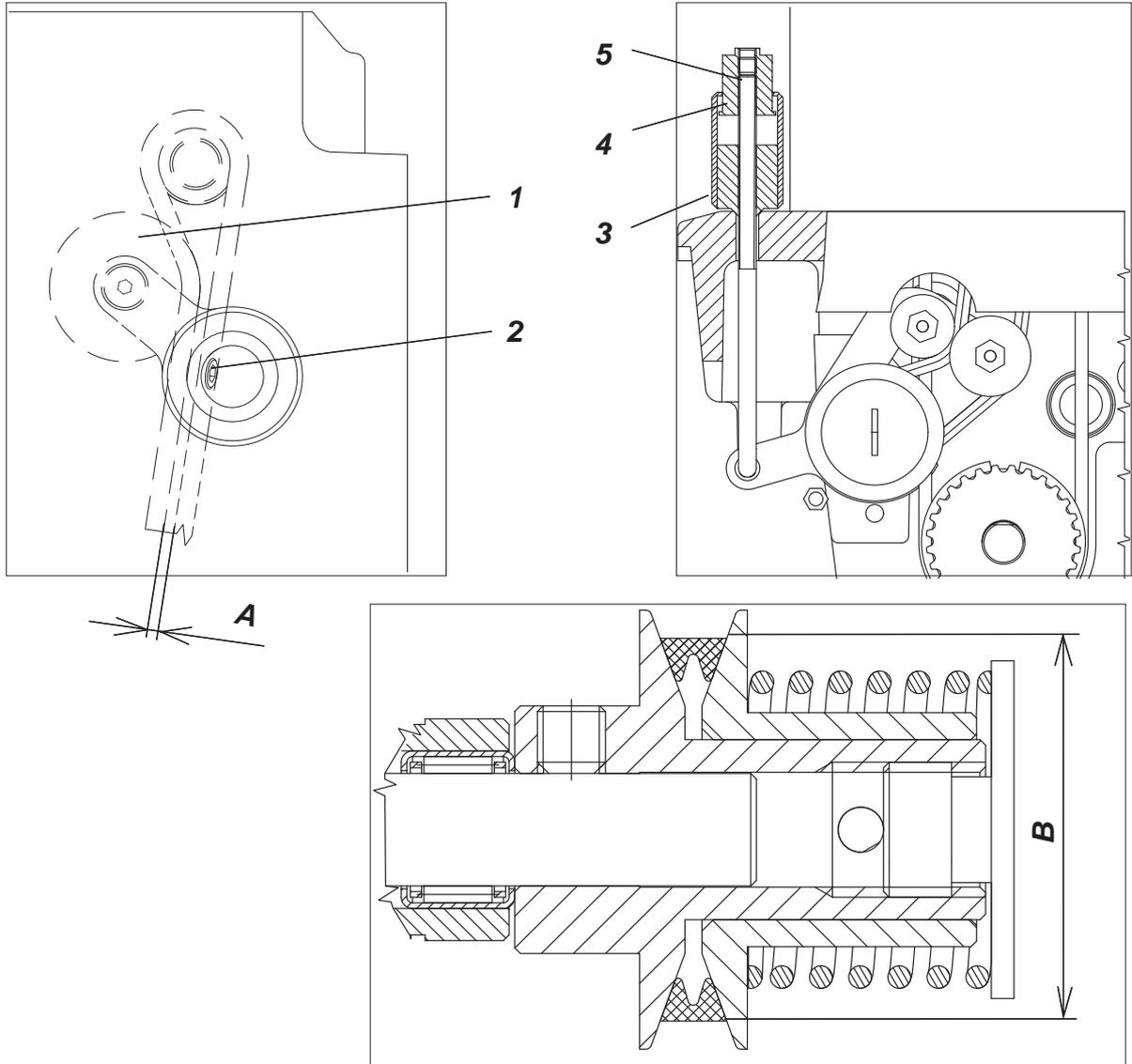


- Remove the solenoid of the presser foot lifting.
- Loosen screw (1). Bring the hand lever (2) into the depicted position and simultaneously screw in screw (3) until it butts against the lever (4). The lever (2) remains in the depicted position.
- Put a spacer of **5.6 mm** underneath the roller foot 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.
- Set the lifting of the knee lever according to rule 3 by adjusting screw (3).

3.5 Variator of the roller foot drive

Rule:

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 2 mm**.
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".



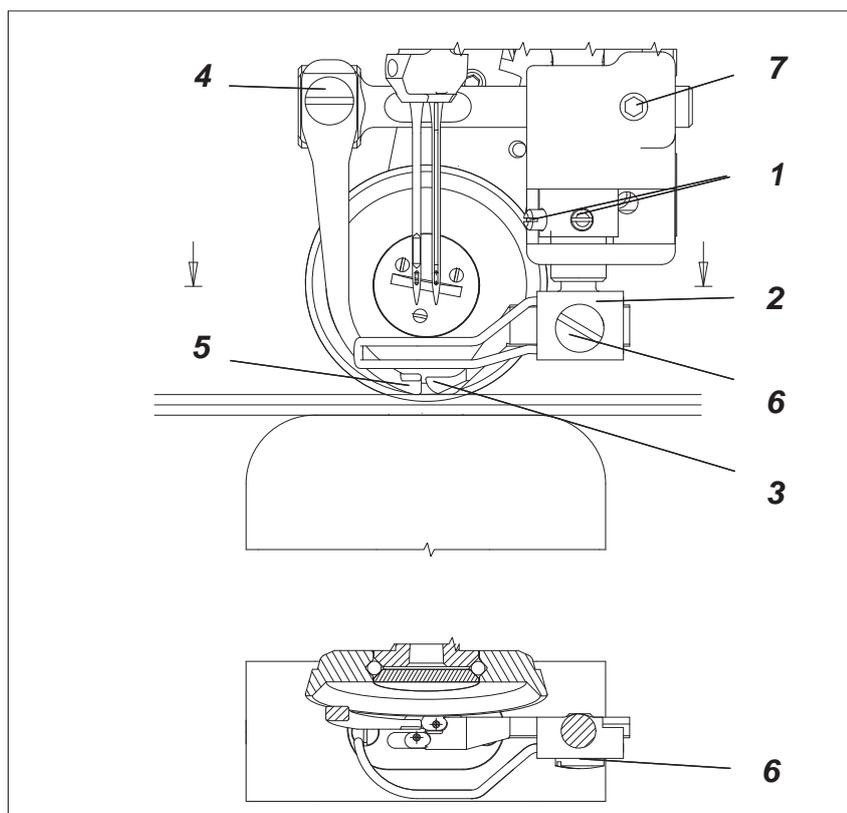
EN

- Loosen screw (2) and position the belt tensioner roller (1) according to rule 1. Tighten screw (2).
- Set the diameter **(B) = 34 mm** 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).

3.6 Fabric holder for double needle sewing machines

Rule:

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.



- Insert two pieces of material 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 the main switch off.

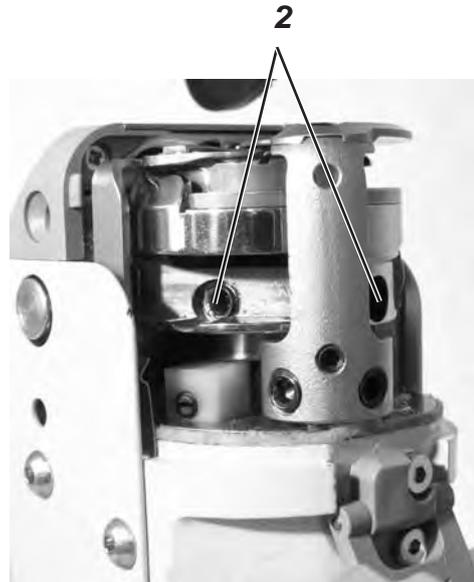
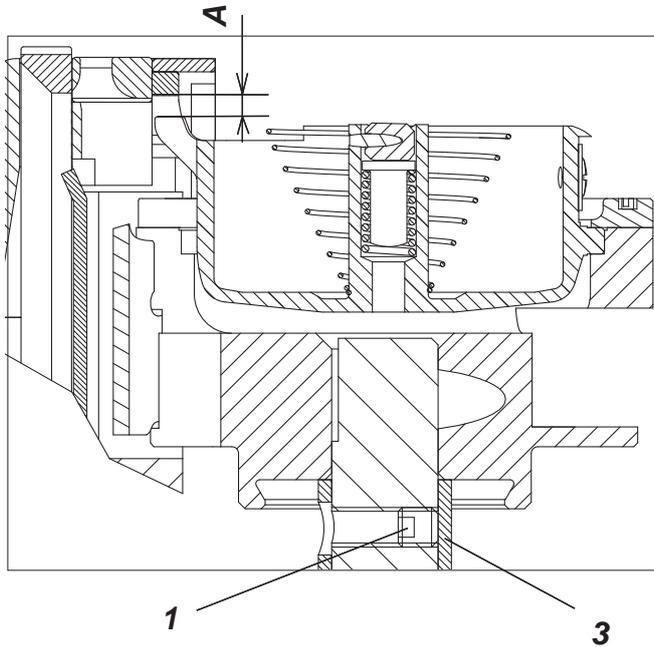
Proceed with the setting only with the sewing machine switched off.

4. Setting of the needle bar and of the hook

4.1 Hook height

Rule:

The distance **A** should be 1.7 up to 1.8 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 hook bottom and tighten screw (1). When replacing the hook, it is not necessary to readjust its setting in height again.



Caution: Danger of injury !

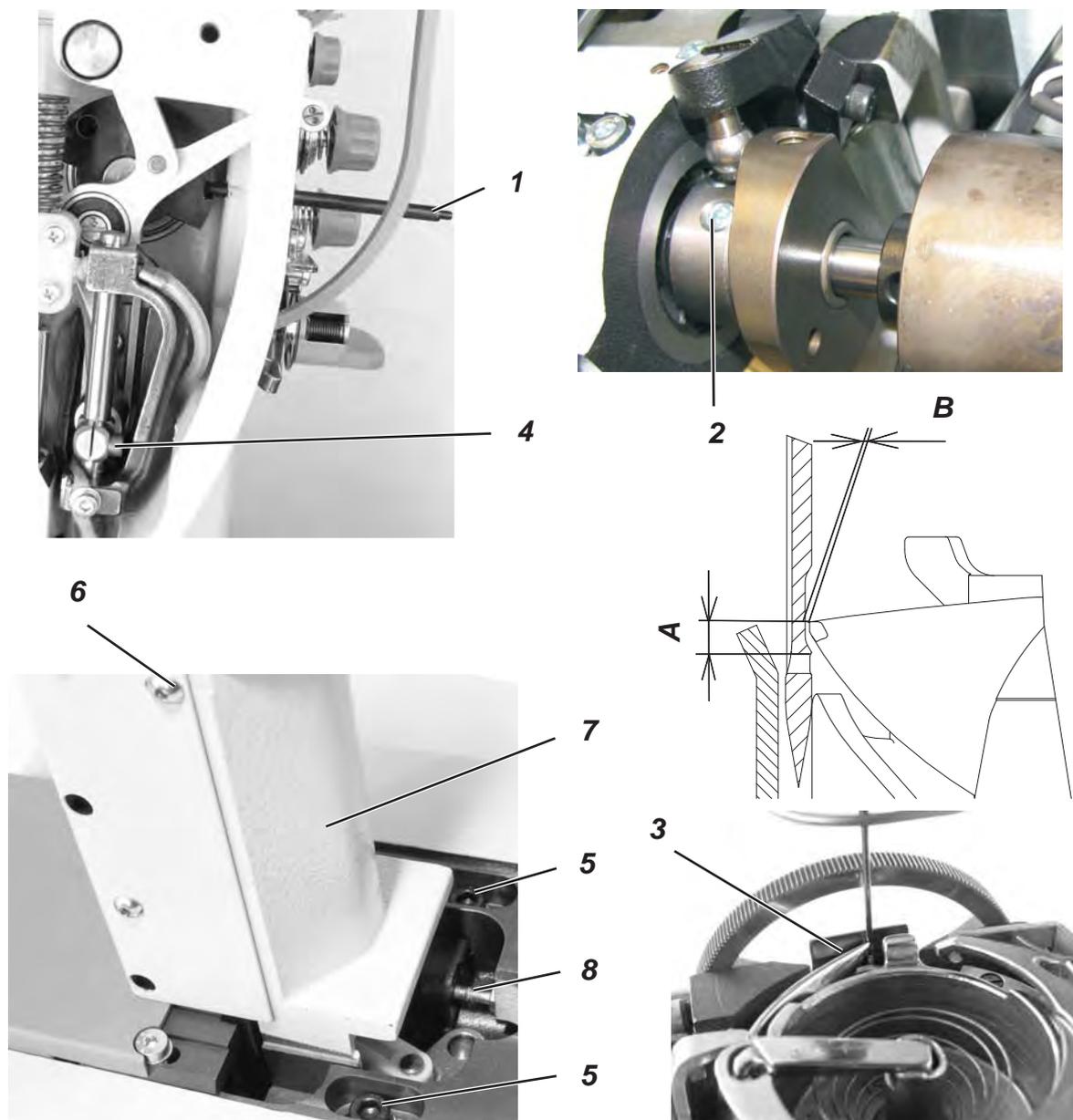
Turn the main switch off.

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

4.2 Needle bar height, play of needle to hook tip, loop stroke

Rule:

When the handwheel pointer indicates "205" degrees (2.3 mm loop stroke), the hook tip should stand at the needle axis at the stitch length "0". Length (A) = 1.5 mm, distance (B) = 0.02 to 0.1 mm.

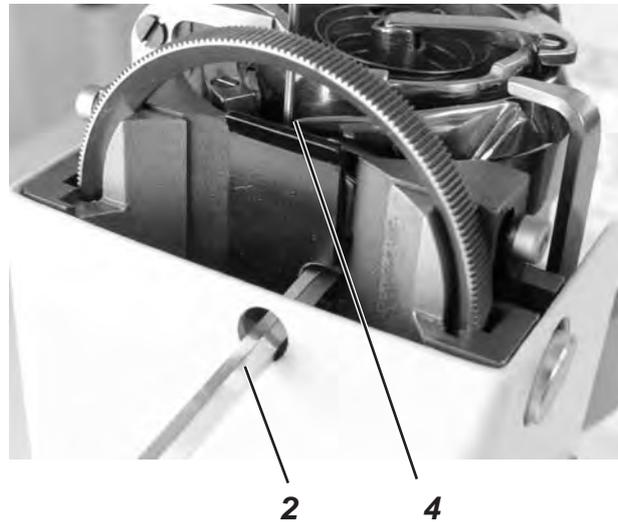
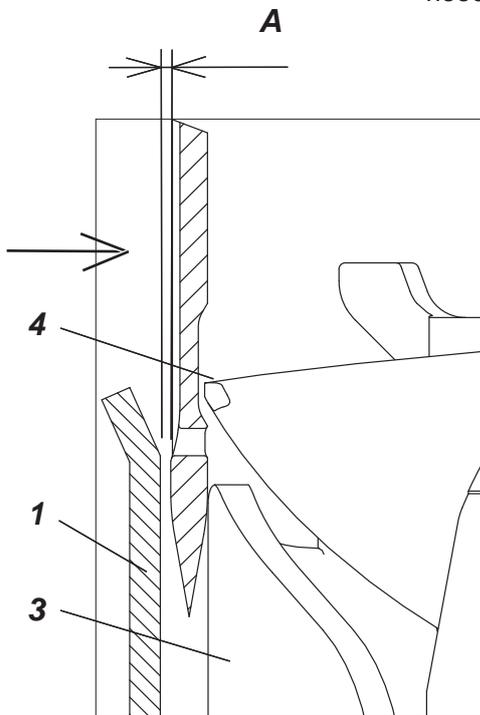


- Lock the handwheel in loop stroke position (2.3 mm) by using the locking pin (1) 5 mm, degree "205".
- Loosen four screws (2) and turn the hook tip (3) to the needle axis.
- Loosen screw (4), position the needle bar and needle to the distance measure (A) and tighten screw (4).
- Loosen the two screws (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

Rule:

1. The loop former (1) with the single needle machines 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 !

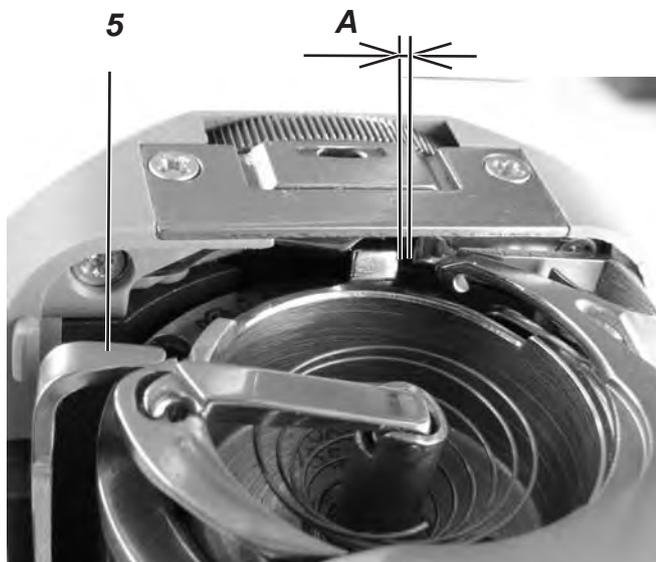
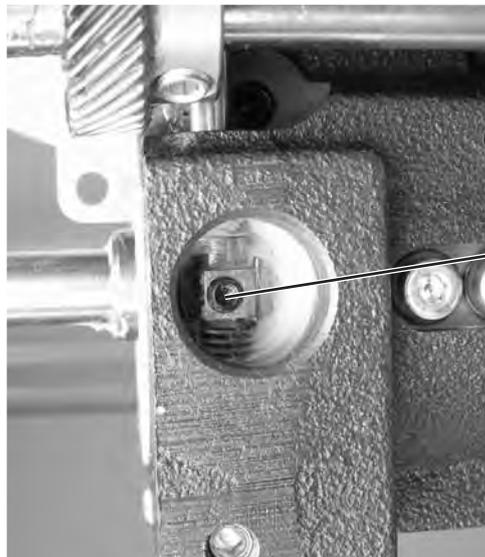
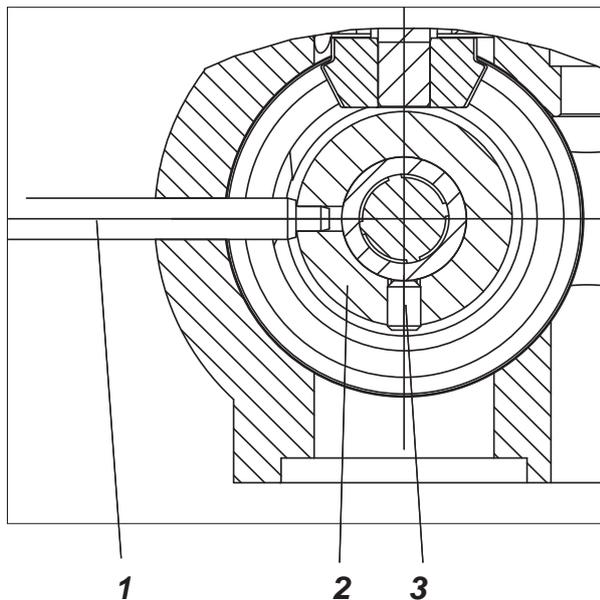
Turn the main switch off.

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

4.4 Bobbin housing release

Rule:

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 degree "310" to "315"
 - for the left hook column degree "45" to "50".
2. The distance measure (A) = 0.8 mm with max. release.

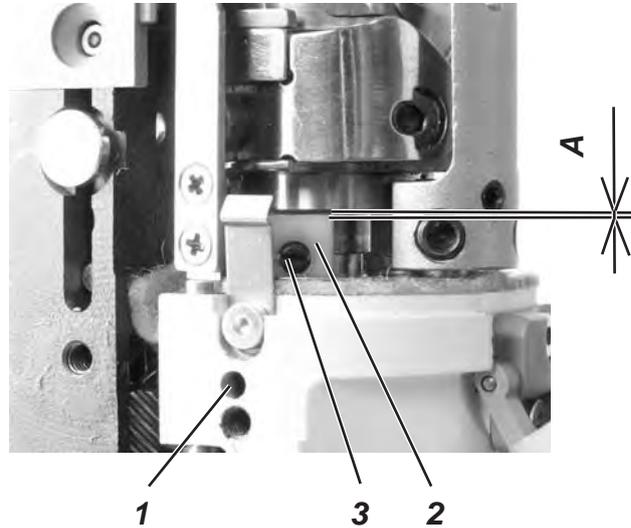


- Insert the locking pin (1) into the release trigger (2). On the right hook column at the rearside, on the left hook column at the front. Remove the lower plug, loosen screw (3), set the handwheel according to rule 1 and tighten screw (3).
- Set the degree "310" on the graduation scale of the handwheel 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

Rule:

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.



EN

- 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 main switch off.

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

5. Thread setting

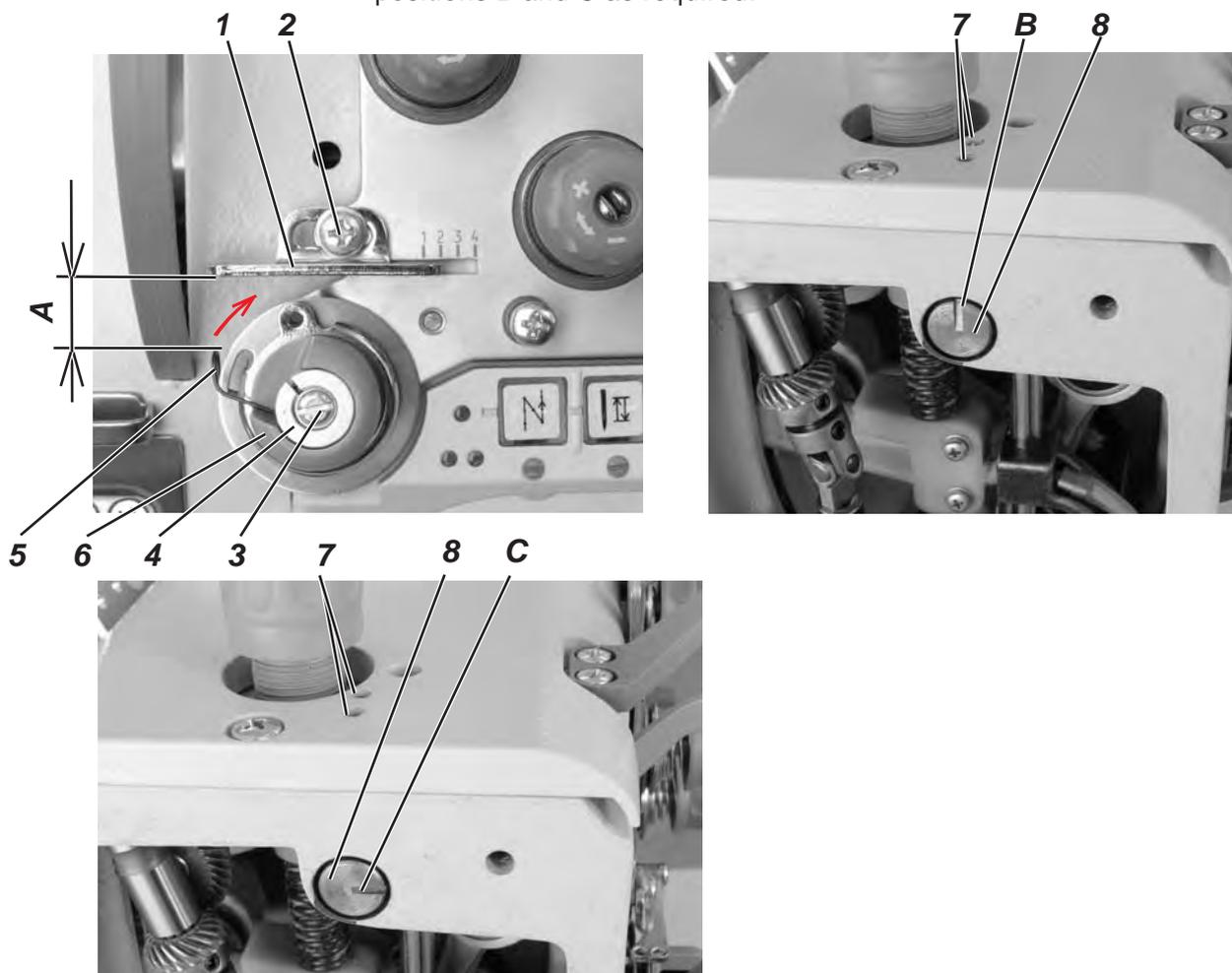
5.1 Thread regulator, check spring, bolt for the thread lever mechanism

Rule:

1. The right edge of the thread regulator (1) should end at figure 2 on the scale.
2. The check spring (5) should be set to the distance measure of **(A) = 10 to 12 mm**. The spring travel consists of about **30°**.
3. The position of the bolt (8) should be set as follows, depending on the needle in use:

Needle thickness Nm	Bolt position
70 - 80	B
90 - 200	C

Note: For better thread passage through the hook (and thus the quality of the seam), the pin (8) can be rotated between the two extreme positions B and C as required.

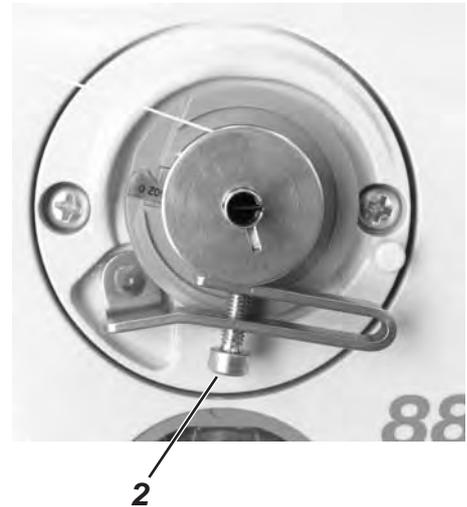
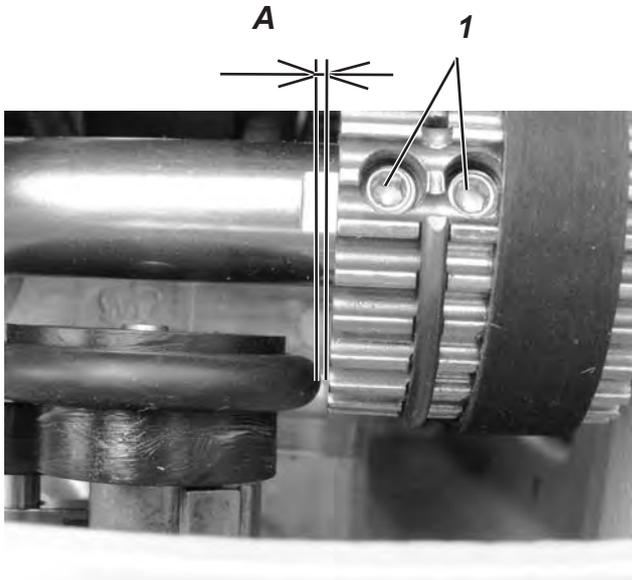


- Loosen screw (2), push the thread regulator (1) according to rule 1 to end at figure 2, tighten screw (2).
- Loosen screw (3). Turn the stop sleeve (4) in the direction of the arrow until the check spring (5) comes off the body (6). Turn the stop sleeve (4) against the direction of the arrow until the check spring (5) touches the body (6). Turn both parts (4) and (6) together to reach the distance measure **(A)**. Detain the body (6) and turn the stop sleeve (4) for another **30°** against the arrow. Detain the parts (4) and (6), tighten screw (3).
- Insert a 3 mm Allen key in the holes (7) and loosen the screws. Bring the bolt (8) into the correct position according to rule 3 and tighten screws (7).

5.2 Bobbin winder

Rule:

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.



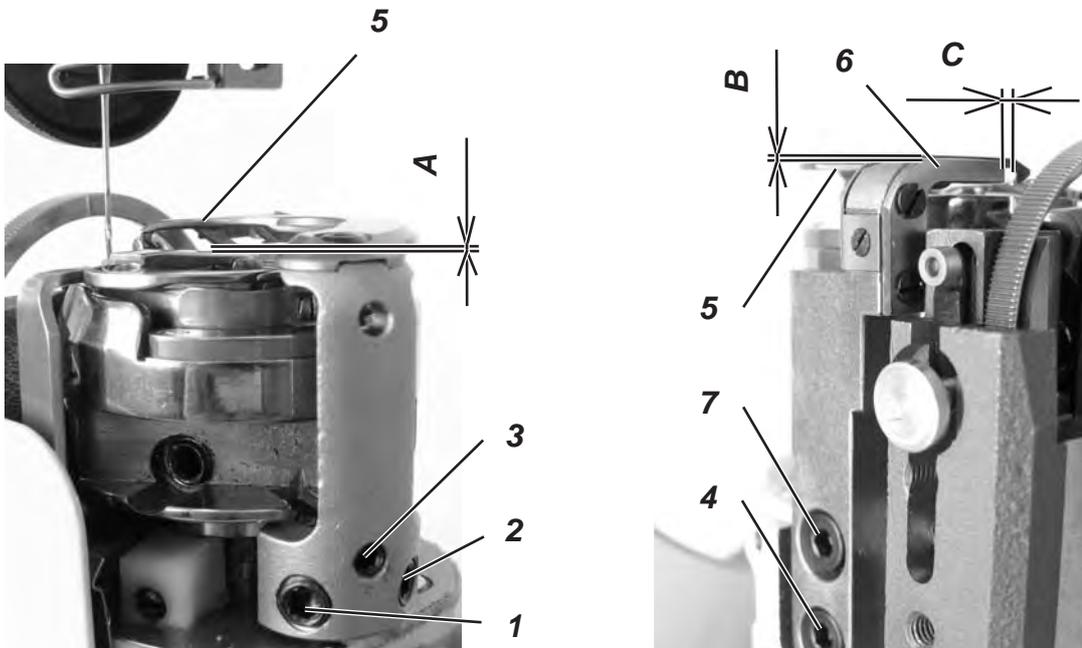
- Turn the belt pulley to the top using the screws (1). Push the toothed belt to the right so that both screws (1) are accessible. Loosen screws (1) and set the distance measure **(A)** according to rule 1, tighten screws (1).
- Determine the bobbin filling by adjusting screw (2). Screw in screw (2)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

6. Thread cutter

6.1 Thread cutter height, position of the counter knife

Rule:

1. The distance measure between the thread-pulling knife (5) and the hook should be **(A) = 0.2 mm**.
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 2 mm**.



- Loosen screws (1), (2), (3) and push the holder 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 (4). Set the distance measure **(B) = 0.3 to 0.5 mm** according to rule 2.
- Slightly tighten screw (4).
- 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 2 mm** and adjust the counter knife (6) accordingly until the knives touch smoothly (without any pressure).
- Tighten screws (7) and (4) and check whether the knives touch at the distance **(C)**.



Caution: Danger of injury !

Turn the main switch off.

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



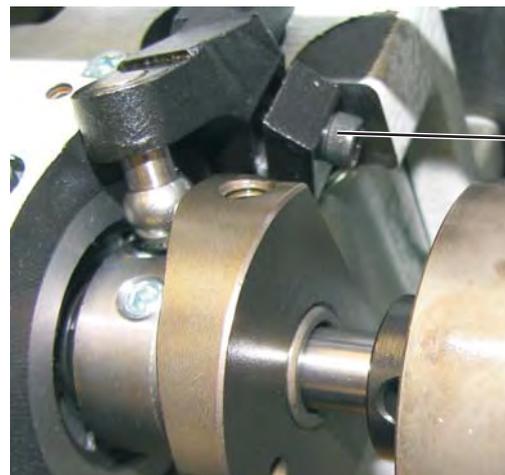
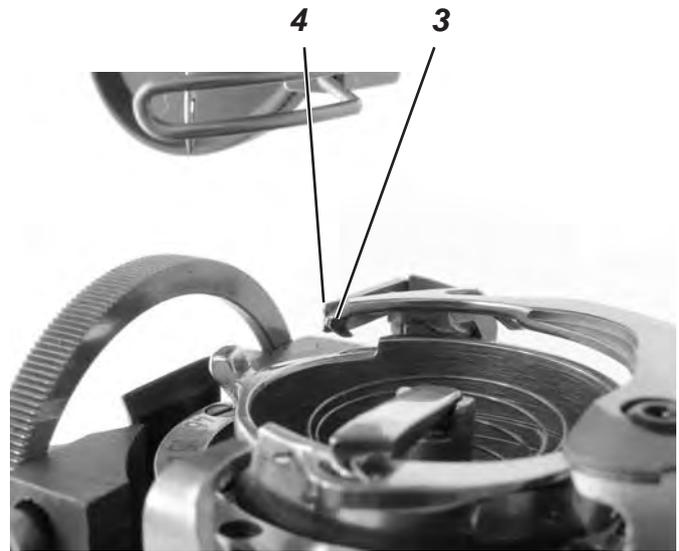
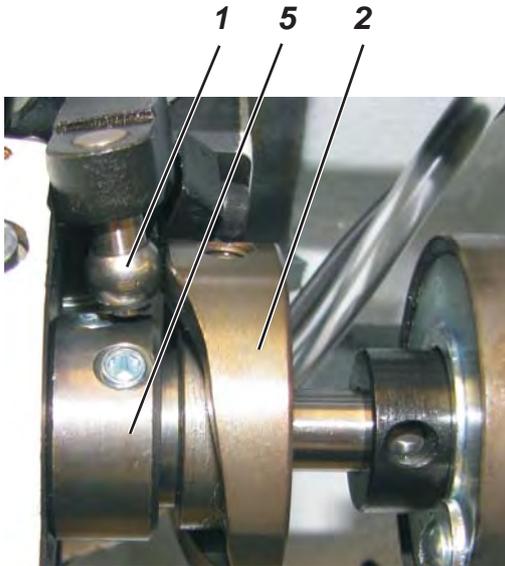
Attention!

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

Rule:

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 ring (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 !

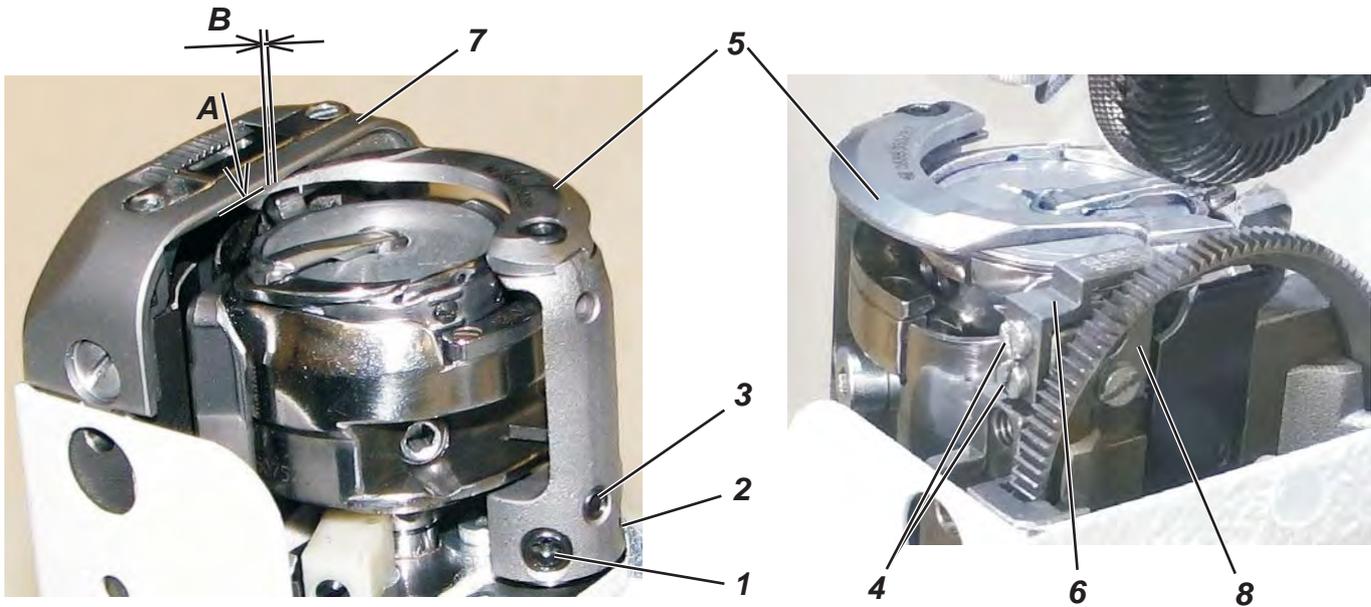
Turn the main switch off.

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

6.3 Short thread trimming adjustment

Rule

1. Minimum distance (point A) should be kept between the trimming knife (5) upper edge and the throat plate (7). At the same time the knife motion must be free.
2. The fixed knife (6) and the trimming knife (5) should be mutually set to cut threads with minimum cutting pressure.
3. If the copy roller (10) is in contact with the cam (9) highest point, the distance (B) between the trimming knife (5) and the throat plate (7) should be zero.

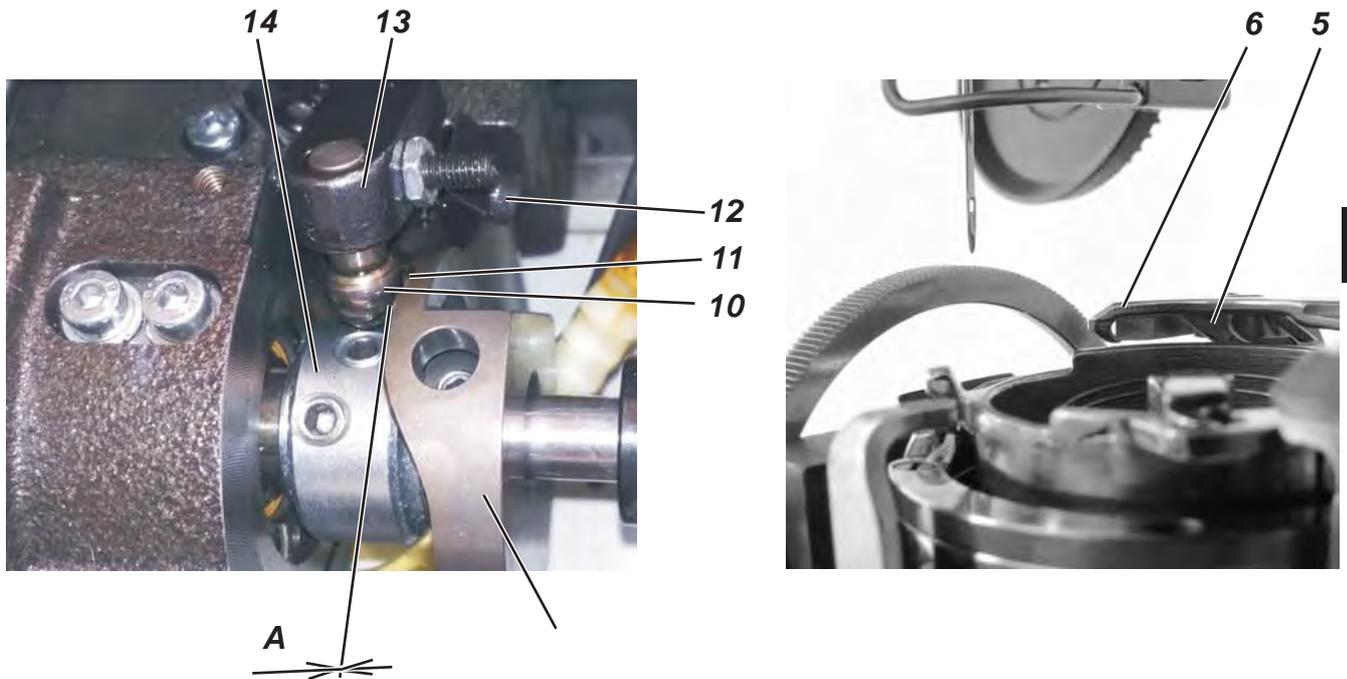


- With the fitted on throat plate loosen screws (1), (2), (3) and shift the knife holder downwards.
- Slightly tighten screw (2), which touches the thread trimmer shaft surface.
- Tighten the slide screw (3) until Rule 1 is accomplished.
- Tighten the screw (2) and subsequently also the screw (1).
- Dismantle the throat plate (7).
- Screw on a knife support (8) so that there is no clearance between the knife (5) and the support (8) and support does not lift up knife.
- Screw on the fixed knife (6) with two screws (4) and adjust as per Rule 2.
- Fit the throat plate (7).
- Loosen the clamp joint screw (12) on the roller (10) lever.
- Push the trimming knife (5) and the lever (13) to the end position on the throat plate as per Rule 3.
- Tighten the clamp joint screw (12) on the roller (10) lever.

6.4 Control cam

Rule:

1. If the lever (13) is in its basic rest position, there is a distance **(A) = 0,05 - 0,1 mm** between the cam (9) top point and the roller (10). In this position, the trimming knife is at the longest rear distance from the sewing machine operator.
2. The cam (9) angle position (timing) should allow for the thread trimming when **40° - 45°** angle is on the hand wheel (**60°** for short thread trimming). This is guaranteed when the roller (10) fits in the cam path recess (11) at the hand wheel position **90°** (**100°** for short thread trimming.)



- Loosen the screws of the ring (14).
- Loosen the screws of the cam (9).
- Turn the cam (9) with its top against the roller (10). Shift the cam laterally so that the distance between the cam and the roller is **(A) = 0.05 – 0.1 mm**.
- Shift the ring (14) to the right towards the cam (9) until it stops. Take care that the hook timing (par. 4.2) is not destroyed.
- Tighten the ring (14) screws.
- Tighten the cam (9) screws so that the trimming knife (5) edge and the fixed knife (6) edge flush at 40° - 45° (60° for short thread trimming) on the hand wheel.
- Check the setting of the distance according to rule 1, cam angle according to rule 2, and hook timing according to par. 4.2.



Caution: Risk of injury!

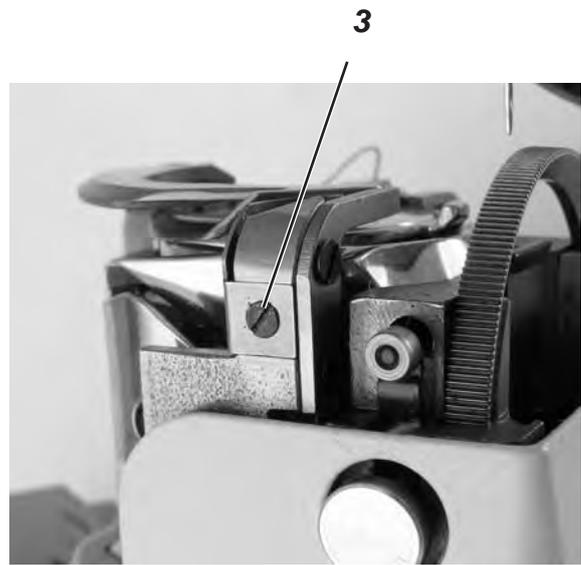
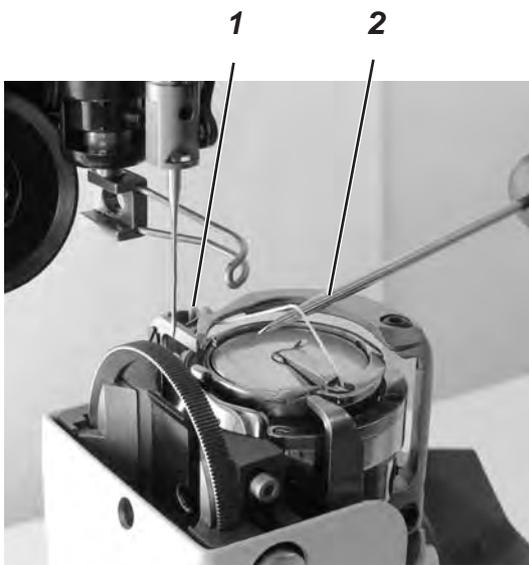
Turn the main switch off.

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

6.5 Bobbin thread clamp

Rule:

The clamping force of the spring (1) should not be set higher than needed. It should just be able to pull out the lower thread from the hook.



- Sew and cut the threads.
- Using a screwdriver (2), inspect the thread according the illustration. Check if the thread is being pulled out of the bobbin winder or from the clamping (1).
- Using screw (3), control and adjust the spring pressure (1) until the rule is fulfilled.



Caution: Risk of injury!

Turn the main switch off.

Only adjust the clamping spring when the machine is turned off.



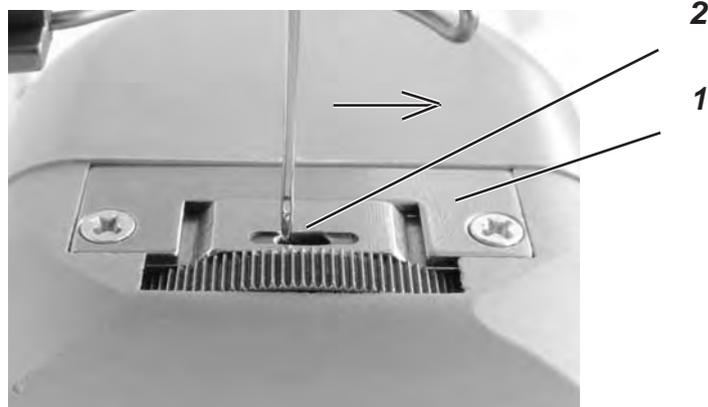
CAUTION!

Sewing problems can result when the clamping spring is improperly adjusted.

6.6 Position of the throat plate insert

Rule:

When sewing with short stitch length, the throat plate insert should be shifted against the operator to avoid stitch skipping at the beginning of sewing.



EN

- Depending on the thread thickness, set the stitch length from **1.5 to 2.5 mm**
- At seam beginning check if skipped stitch occurs. In such a case, shift the throat plate insert (1) in the arrow direction, until the rear edge of the needle hole (2) will be **0.2 up to 0.3 mm** from the needle. Fasten the insert.
- Limit the stitch length to **2.5 mm**. The explanation on how to limit the stitch length is described in chapter 2.1.



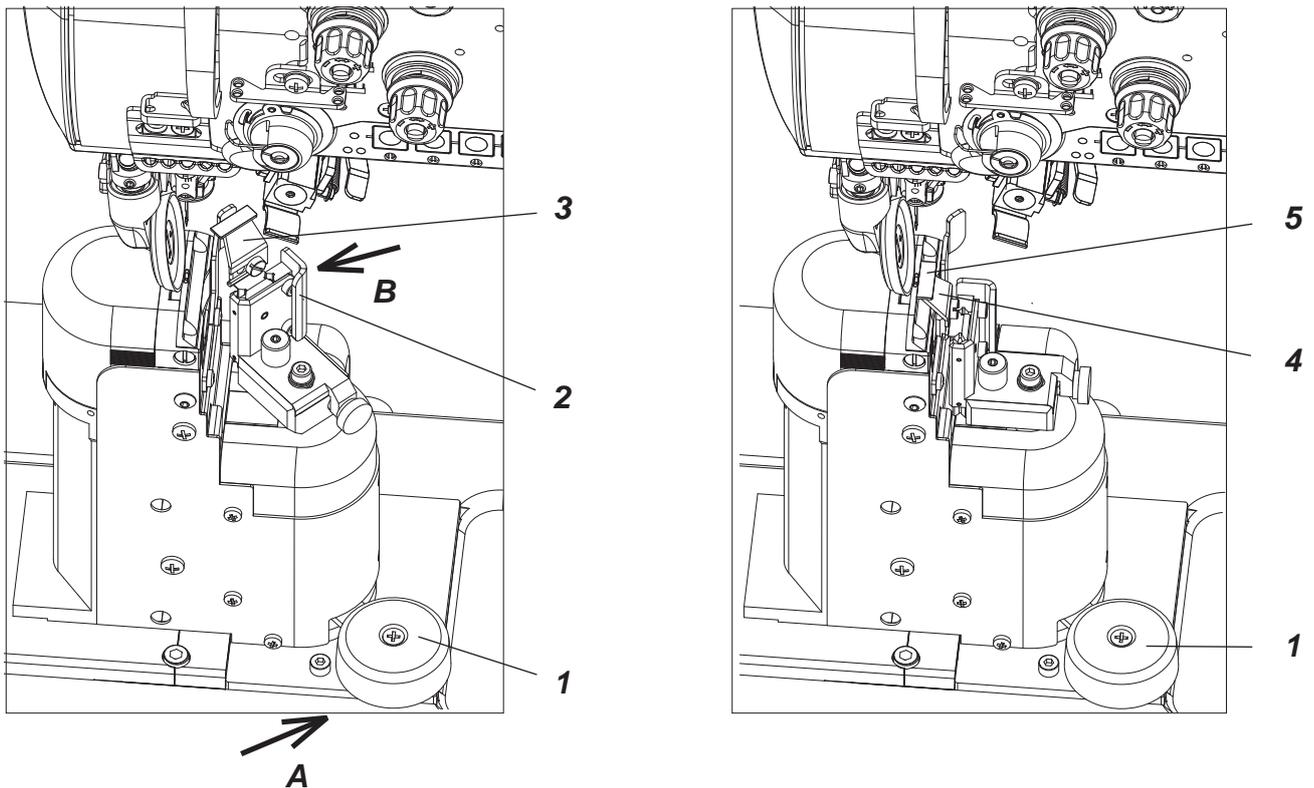
Caution: Risk of injury!

If the position of the throat plate insert is changed without limiting the stitch length to 2.5 mm, the needle may then strike against the throat plate insert if the stitch length is increased. This will damage the machine and may even injure the operator.

Notes:

7. Lower edge trimming control

7.1 Switching the edge trimmer on/off



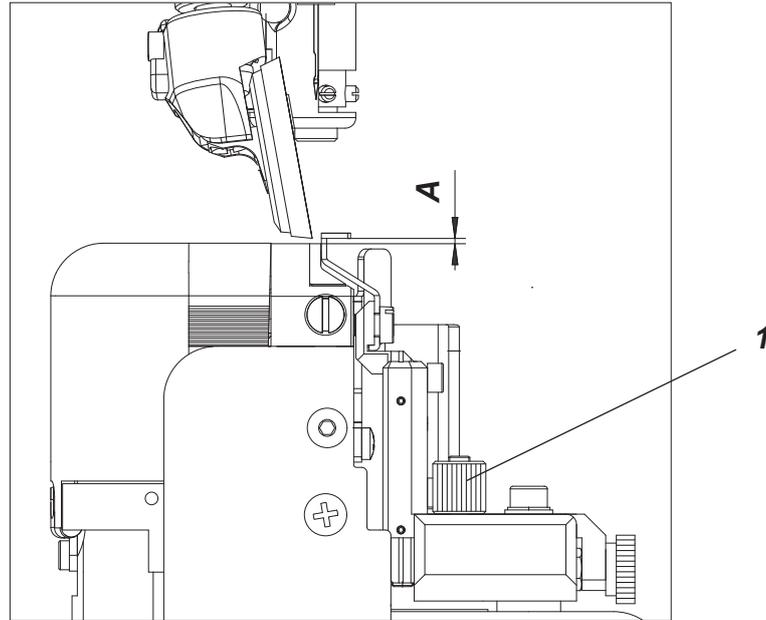
Switch on

- Push the knob (1) in the direction of the arrow (A) or pull the handle (2) in the direction of the arrow (B) until the trimming knife moves from its initial position (3) to the trimming position (4).
- The edge trimming mechanism is started automatically when switched on, and the trimming knife starts oscillating. While sewing trimming (e.g. a lining) is effectuated simultaneously.
- When trimming edges, direct the trimmed material to come underneath the knife collar (5).

Switch off

- Push the knob (1) downwards. The trimming knife turns from the trimming position (4) to the initial position (3) and the edge trimming mechanism switches off automatically.

7.2 Height adjustment of the trimming knife



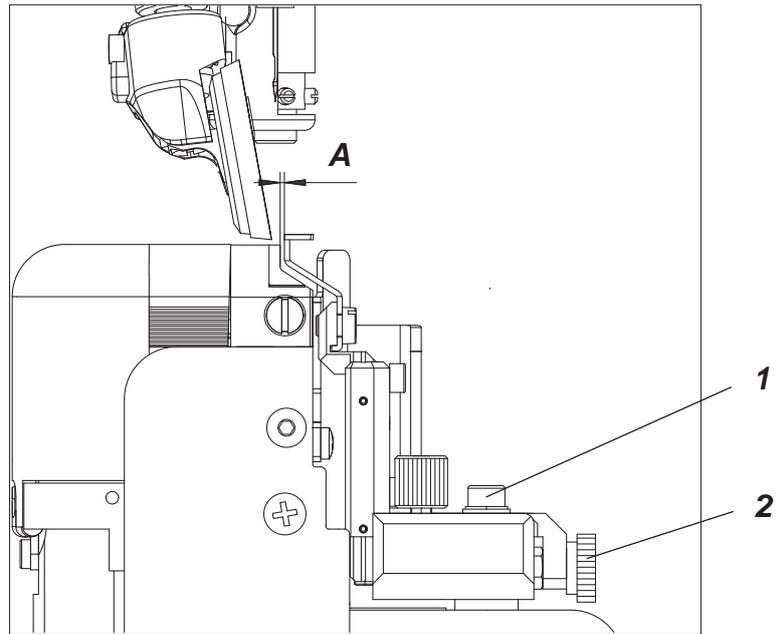
- Adjust the trimming knife height with the nut (1). When tightening the nut, the knife shifts upwards, and vice versa.
- Adjust it in a way that the gap (A) corresponds to the thickness of the material to be trimmed. If the material is thicker in some section (e.g. at sections where two parts of lining are sewn together), the trimming knife height is automatically adjusted to the increased material thickness.



Attention!

If the trimming knife is set too high, its cut will be of poor quality and will also damage the upper layer of the material.
If the trimming knife is set too high, the edge trimming is noisy.

7.3 Adjustment of the trimming knife distance to the throat plate



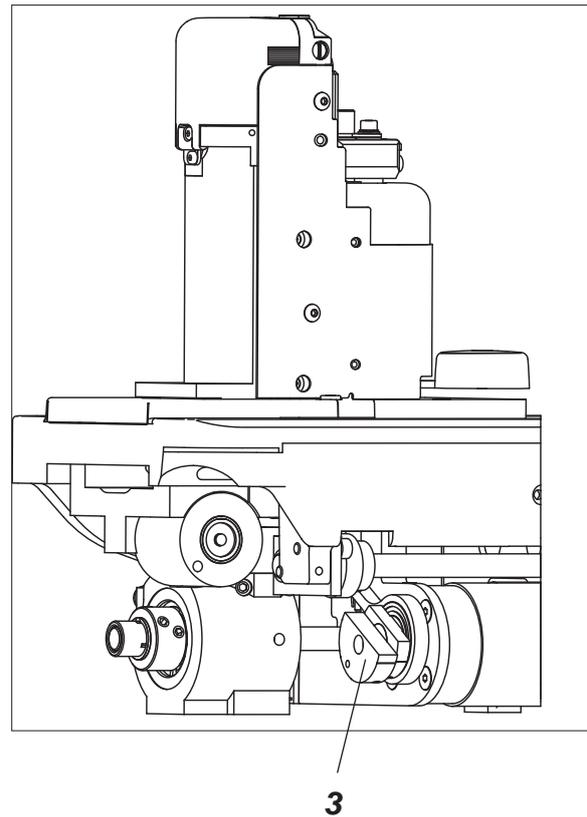
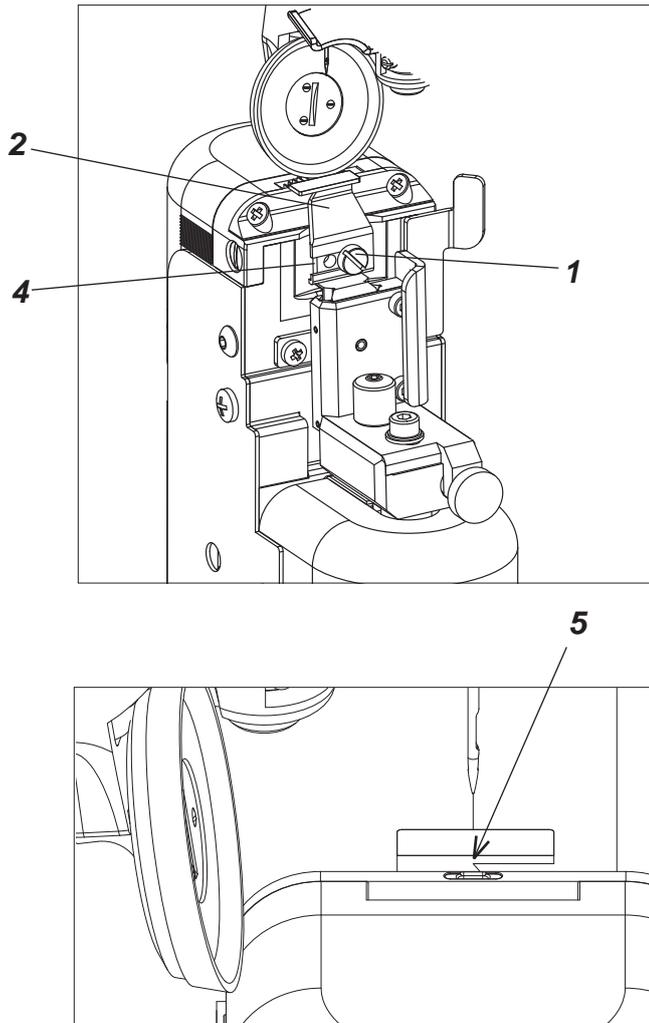
- Switch the machine off and switch the edge trimming mechanism on.
- Loosen the bolt (1) and tighten it slightly (only to set up the gap A).
- Turn the bolt (2) in clockwise direction, shift the trimming bolt to the left or to the right.
- Adjust the gap between the knife and the throat plate to approx. (A) = 0.05 mm.



Attention!

An excessive gap between the knife and throat plate will result in a trimming of poor quality. If the knife touches the throat plate, an unpleasant noise will occur.

7.4 Knife replacement



- Switch the machine off and switch the edge trimming mechanism on.
- Loosen the bolt (1) and remove the knife (2).
- Tilt the machine and turn the eccentric (3) manually until the trimming knife holder (4) is in its front dead center.
- Insert a new knife and, with its trimming edge (5), shift it to the needle hole center. The knife should be oscillating in the space behind the needle hole center.
- Tighten screw (1).



Attention!

If the knife oscillates in the space in front of the needle hole center, the trimmed material will be poorly trimmed with a small radius in the point where the seam continues in the right angle.

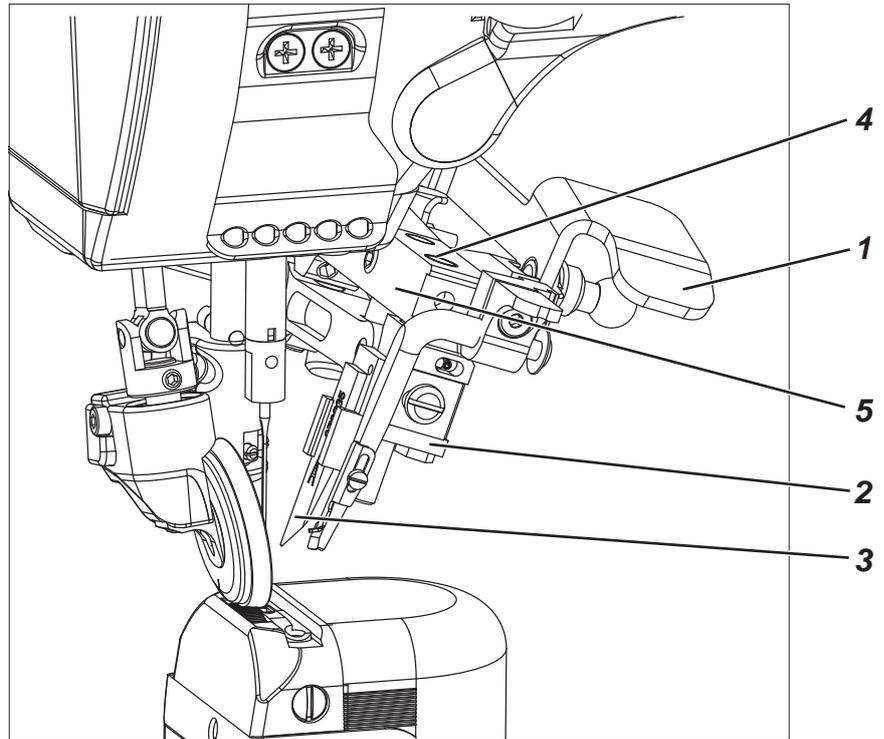
8 Upper oblique edge trimming control

8.1 Switching the edge trimmer on/off



Caution: Risk of injury!

Adjust the edge trimmer mechanism only with the sewing machine switched off.



EN

Switch on

- Push the lever (1) down.
- By this action the upper knife holder (2) together with the trimming knife (3) is shifted to the bottom cutting position.
According to the standard parameter setting, the knife driven by an electric motor vibrates only at the pedal treading down to set the sewing machine in operation

Switch off

- Return the lever (1) to top position.

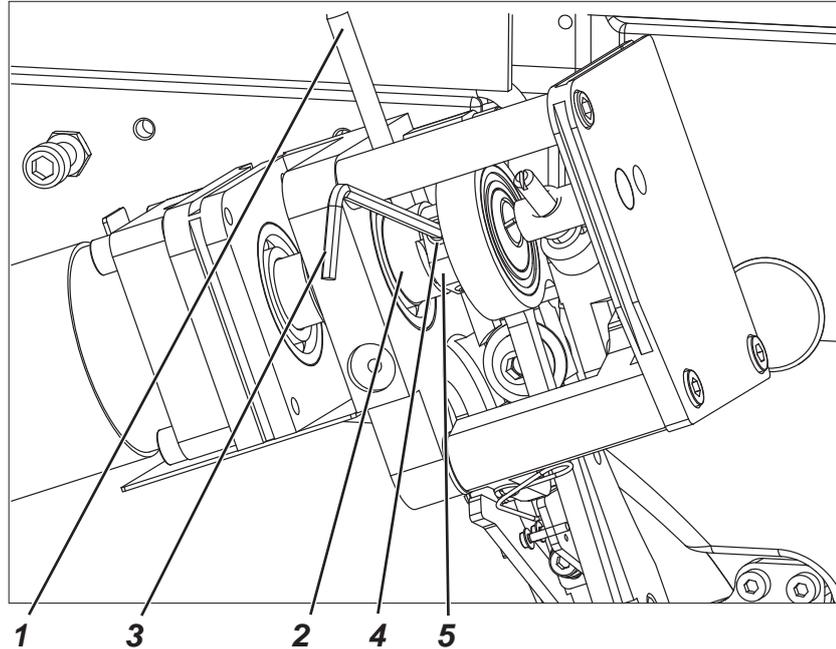


To provide a faultless function, it is needed to fill in several drops of lubrication in the felt lubrication spot (4) on the main holder of the trimming edge (5) once a week.

8.2 Upper knife height adjustment

Rule:

The standard height value of the trimming knife is 2,4 mm for the oblique edge trimmer. This value can be changed as needed as follow:



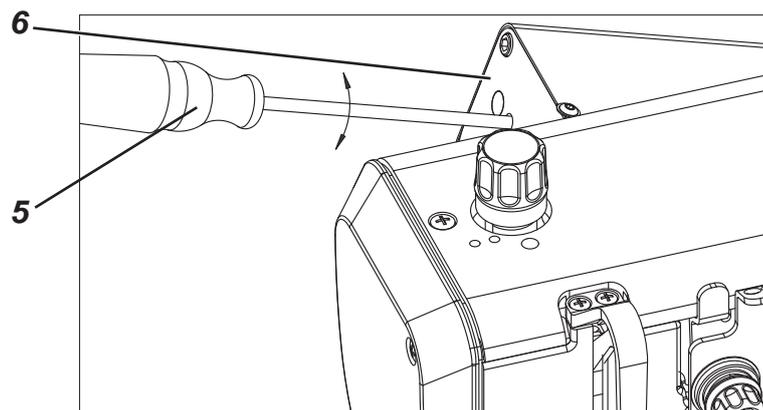
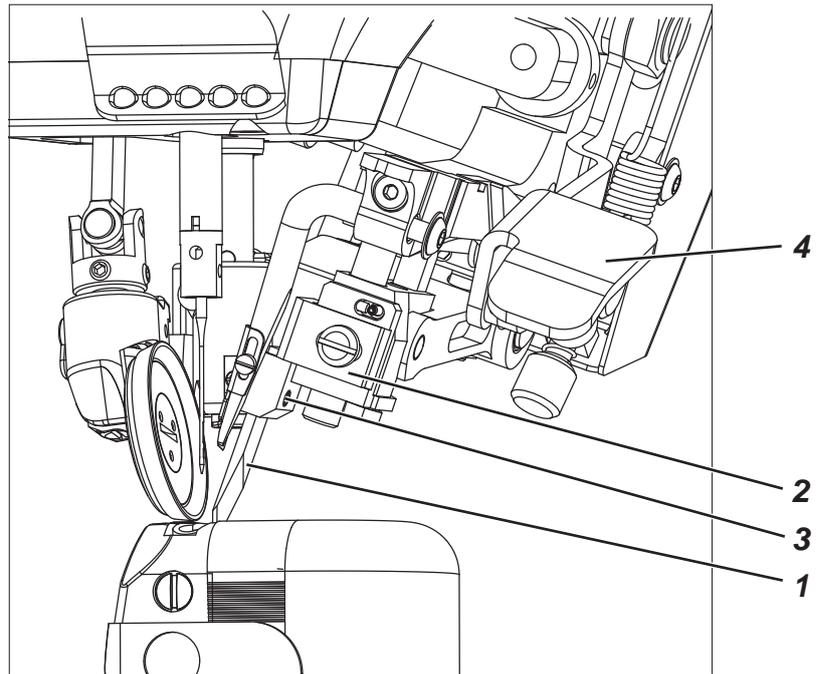
- Insert the setting pin (1) in the hole in eccentric (2) and set in the vertical position.
- With Allen key (3) inserted in one of the two screws (4) of the eccentric (5) loosened beforehand, turn in a limited reach to achieve the needed change of the knife height.
- Tighten the screws (4) in the set up position, remove the setting pin (1).



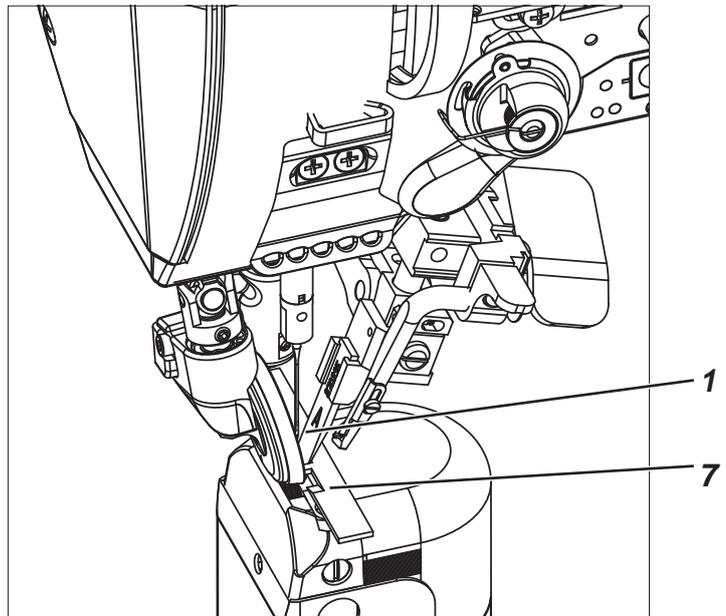
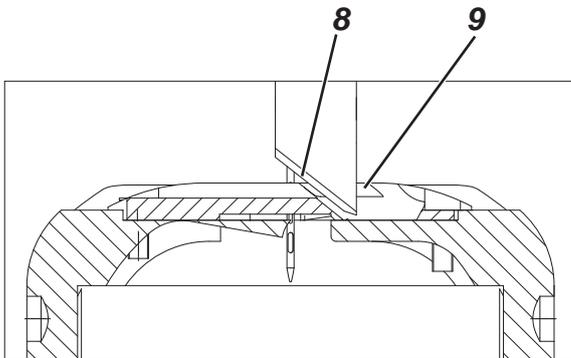
Attention!

The trimming knife must not strike the bottom of the throat plate recess in its bottom dead center.

8.3 Height adjustment of trimming knife



- Insert the trimming knife (1) into the groove of holder (2) and clamp by the screw (3).
- Slowly lower the knife holder (2) to the bottom position by means of the lever (4).
- Set the knife (1) bottom position with a flat screwdriver (5) inserted in the lifting eccentric groove through the side cover hole (6).



- Put the supplied gauge M268 (7) onto the throat plate and push the upper end of the loosened trimming knife so that it carefully seats on the respective recess in the gauge (depends on knife type).
- Tighten the screw (3) and after lifting the knife up remove the gauge (7).
- By manual rotating the screwdriver when the knife is lowered, check its correct movement.
- To provide for the correct adjustment in the sewing direction, the trimming knife (1) should be in a correct position against the cutting edge on the throat plate recess (9) so that any contact is avoided of the upper knife cutting edge (8) with the oblique recess of the throat plate in front of the knife.

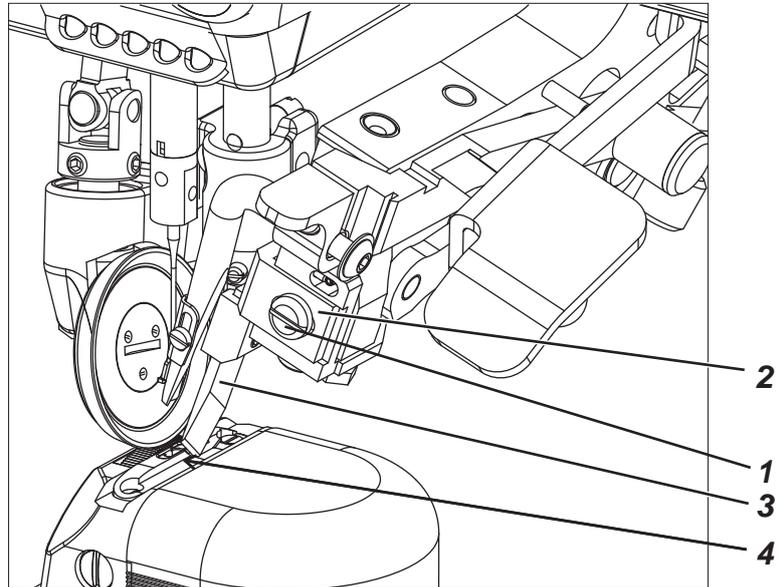


Attention!

The trimming knife must not run out over the throat plate with its tip, or strike the bottom of the recess in the throat plate.

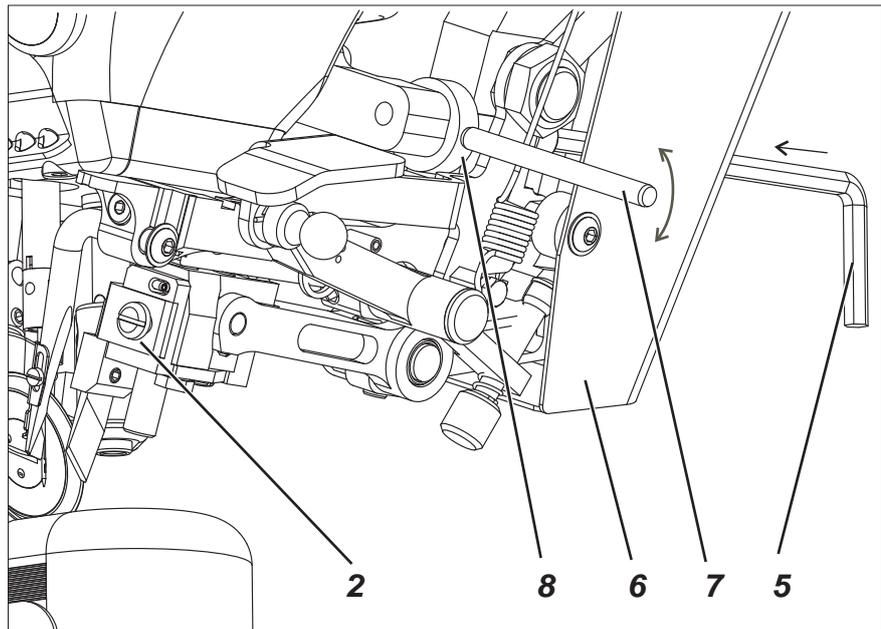
8.4 Setting of side (lateral) position of knife

The lateral position of the trimming knife depends on the sewn material distance from the needle. To provide for the correct function of the edge trimmer, there must not be any gap between the bottom and upper cutting edge.



- With the lowered edge trimmer and with the trimming knife in the bottom dead center, loosen the fixing bolt (1) on the trimming knife holder (2).
- The trimming knife (3) will be pressed, by means of a spring, onto the cutting edge of the throat plate insert (4).
- Tighten the bolt (1) strongly and check the pressure and correct cutting function.

If the setting range of trimming knife holder is not sufficient applied as above described, make a modification of the trimming mechanism position as follows:



- Put the Allen key (5) sized 5mm through the cover rear hole (6) in the respective screw and loosen it.
- Move the inserted setting pin (7) in the hole in the part (8) in the direction up and down, by which we roughly adjust, by means of the movement of the whole drive mechanism, the lateral position of the knife holder (2).
- In the position set with the key (5) tighten the rear fixing bolt and finely adjust the lateral position of the trimming knife in the way described in the previous paragraph.

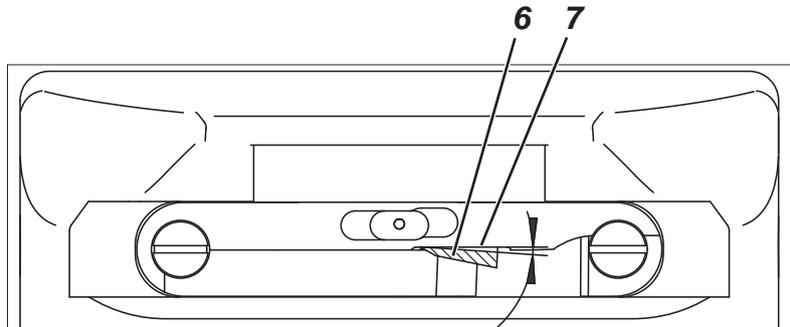


Attention!

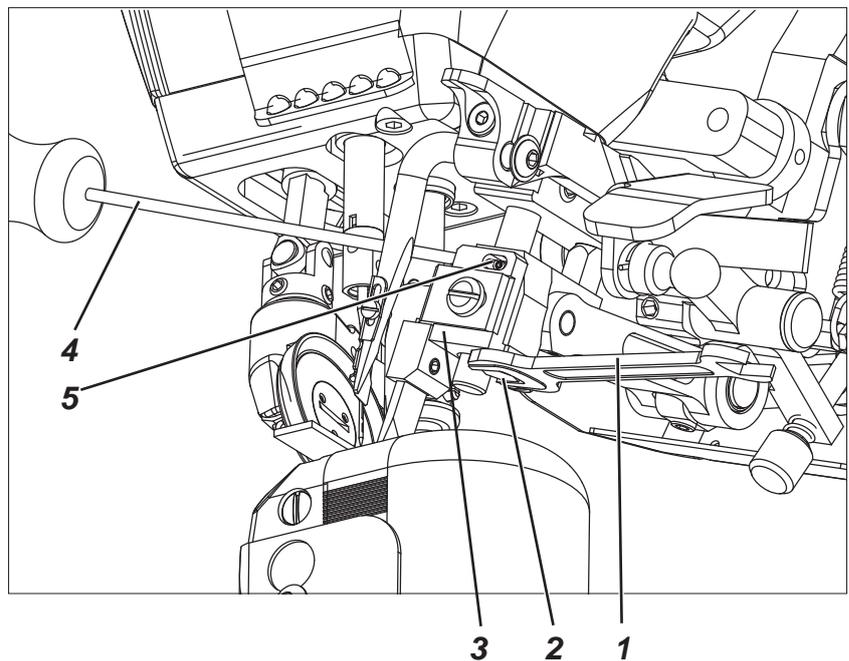
The trimming knife must not strike the throat plate insert from above with its tip, when it is lowered into the switch-on position, or it must not be bent as a result of a strong pressure on the bottom knife.

8.5 Setting of upper knife angle with regard to bottom cutting edge

Setting of the crossing of the trimming knife (6) and bottom cutting edge (7) is important for the correct function of the edge trimming and look of the cut edge of the sewn material. For thinner materials, both cutting edges should be parallel, with thicker materials, a demand may arise to slightly turn the front part of the upper knife in the direction of the bottom knife cutting edge.



- With a flat Allen key sized 7mm (1) slightly loosen the bolt (2) located on the bottom of the upper knife holder (3).
- With a small flat screw (4) turn the setting bolt (5) to achieve the required holder turning (3).
- After setting the needed crossing of the cutting edges, tighten the bolt (2) again.
- Check the function of the edge trimmer carefully by repeated lowering of the upper knife, and set the lateral position of the knife again as needed in accordance with 8.4.



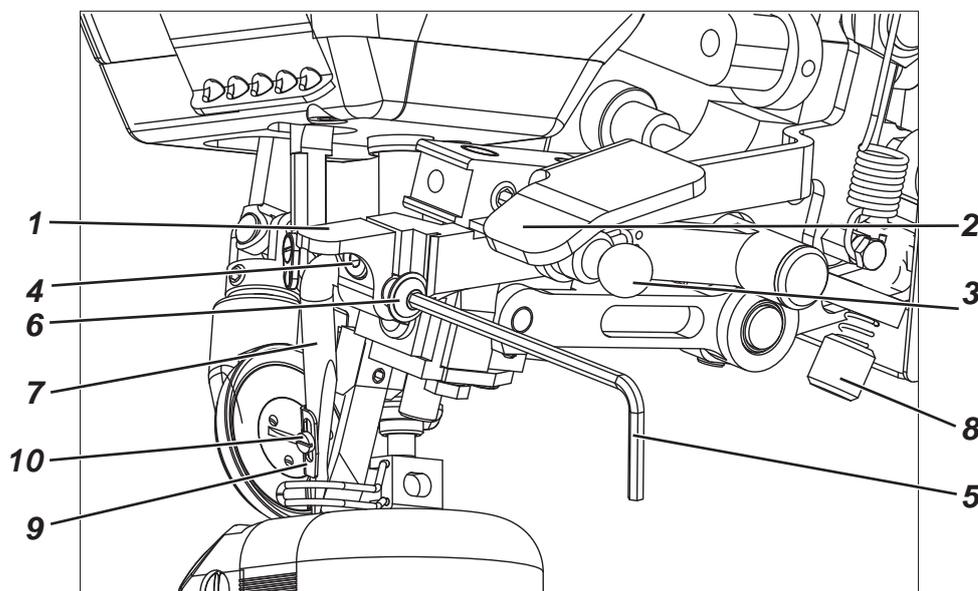
Attention!

By setting of a too large angle of the upper knife in the sewing direction an increased wear of the cutting edges occurs as well as an increased load of the edge trimmer electric drive.

8.6 Material guide adjustment

For a correct guiding of the sewn material against the trimming knife a tipping guide can be used.

The guide can be lowered in the bottom position independent of the trimming knife holder by pushing down of the control lever (1). Another possibility is to switch the guide on and off simultaneously with the switching on the edge trimmer main lever (2), which is ensured by pushing down of the pin (3) in the upper (switched off) position of both levers.



- With the lowered control lever (1), slightly loosen the bolt (4) and with an Allen key (5) turn the bolt (6) to achieve the required lateral position towards the trimming knife.
- At the same time it is necessary to set the position of the guide (7) in the sewing direction by its turning in the lever (1).
- Set the suitable height of the guide over the throat plate by turning of the setting bolt (8).
- After adjusting the guide, tighten the fixing bolt (4).

For better guiding of the sewn material it is possible to use a retaining part (9) attached to the guide (7), the height of which can be set up after the fixing bolt (10) loosening.

8.7 Change the sewing category

At the change of sewing category it is also necessary to replace the throat plate insert (can be purchased additionally). At the same time with the insert replacement, the trimmed edge width is also changed (see Operating manual, par. 3.3, table 1), so it is necessary to change the trimming knife lateral setting (paragraph 8.4).



Caution!

Danger of injury with knife edge when handling.

8.8 Sharpening the upper knife

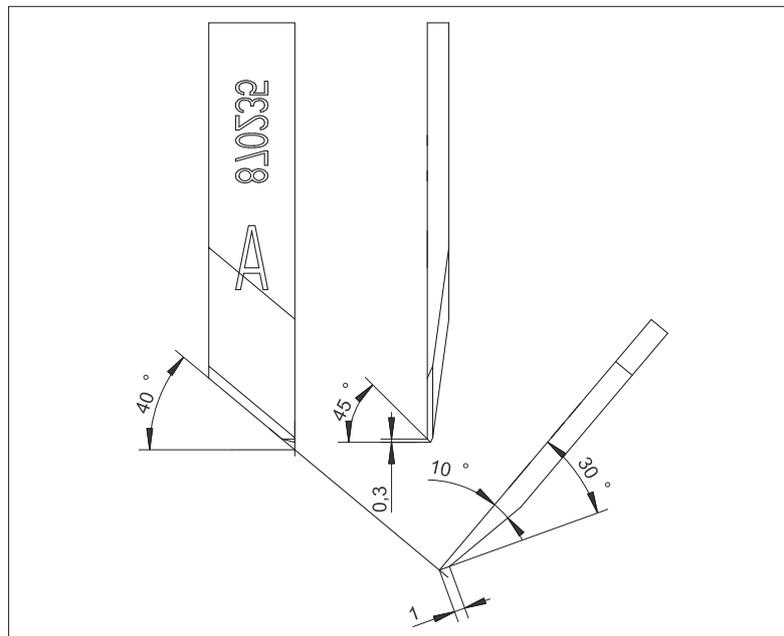
The upper trimming knives supplied as standard, which are made of tool steel, can be sharpened again after they get blunt, best of all by means of a special clamping fixture M269 (can be ordered additionally) either manually, or on a special machine grinder at observing its prescribed geometry (see the picture).

EN



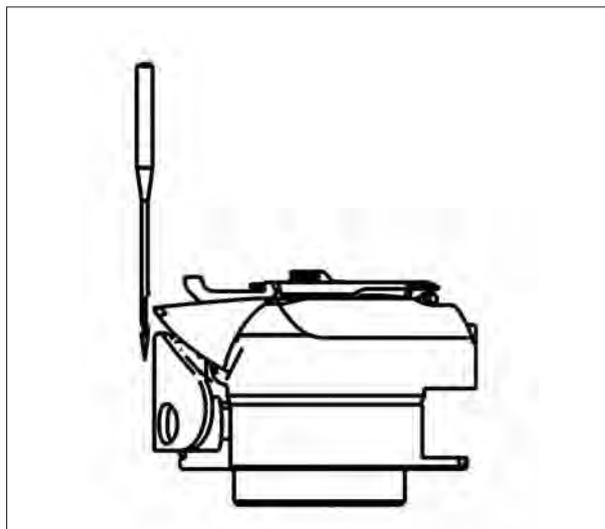
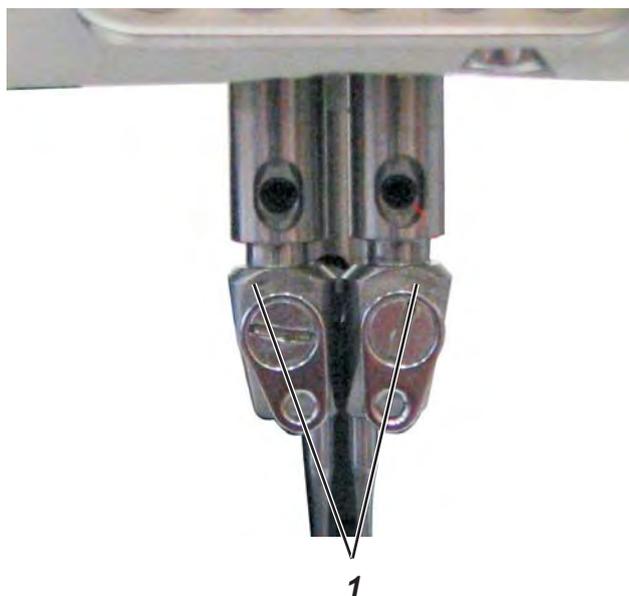
Caution!

Danger of injury with knife edge when handling or sharpening.



9 Machines with disconnectable needle bar

9.1 Needle bar height



Caution: Danger of injury !

Turn the main switch off.

Check and set the needle bar height only when the machine is switched off.

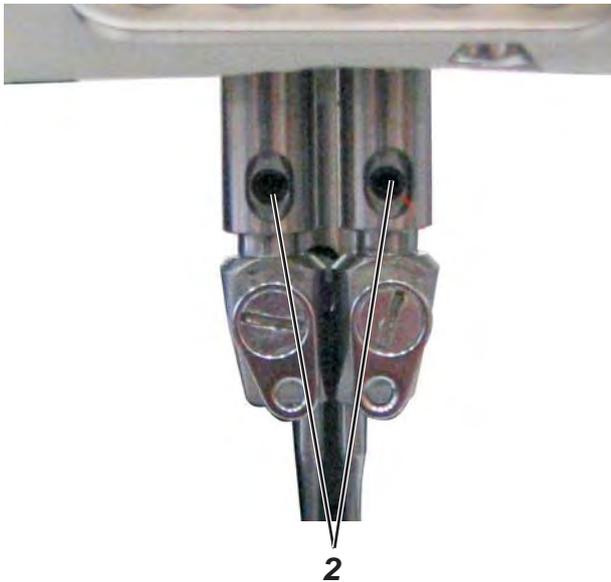
Rule and checking

The needle bar height for machines with disconnectable needle bar can not be set.

The needle height to the hook tip is set with needle holders (1).

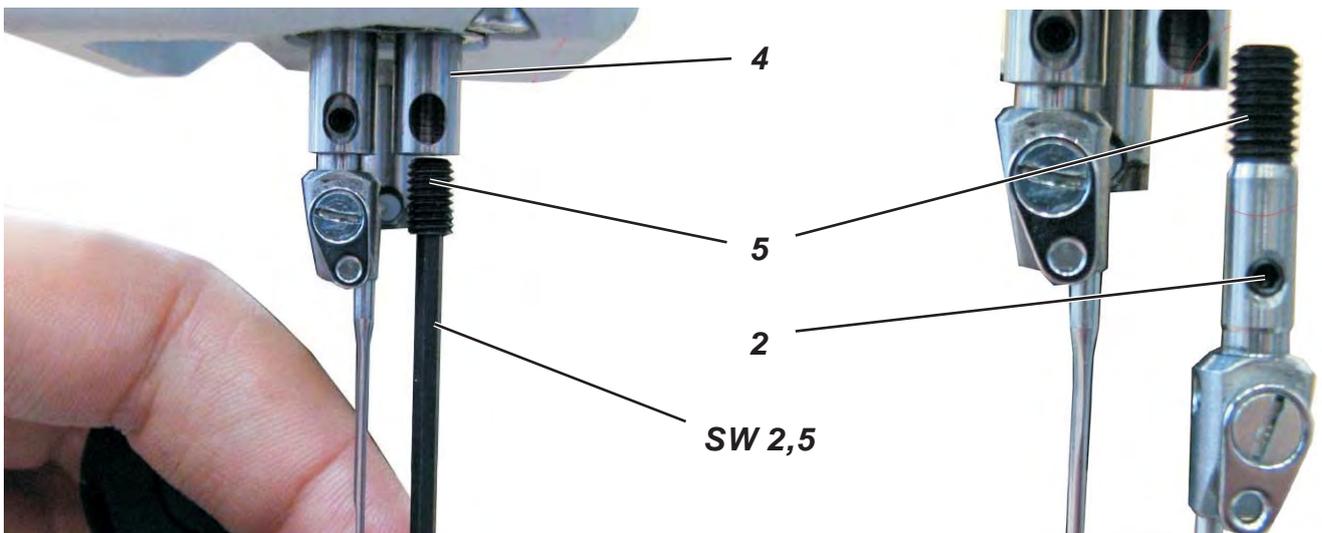
The needle holders to be set in a way that hook tip stands in the lower third of the needle scarf with the stitch length set to "0" in the looping stroke position.

- Set the stitch length setting wheel to "0".
- Set the sewing machine in the looping stroke position (par. 4.2).
- Check the position of the needle in relation to the hook tip.



Correction

- Set the stitch length setting wheel to "0".
- Loosen the screw (2).
- Remove the needle holder (3).



- Screw the set screw (5) with the Allen key SW 2,5 accordingly to the needle bar (4). Set screw serves as a stop for needle holder.
- Insert needle holder (3) back to needle bar and slide it upwards until it stops. Hexagonal bolt (6) on the needle holder (3) must sit in Allen set screw (5) in the same time.
- Tighten the screw (2).

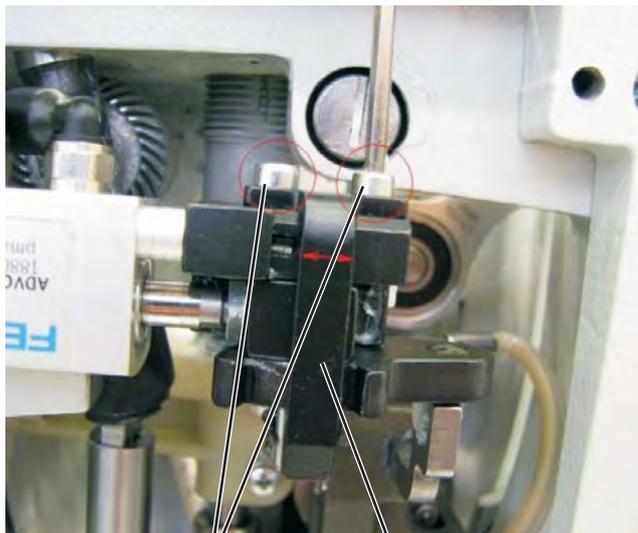
A wrong setting of the needle bar height can have the following consequences:

- Damage on the hook tip.
- Jamming of the needle thread between needle and hook guard.
- Missed stitches and thread breakage.

ATTENTION !

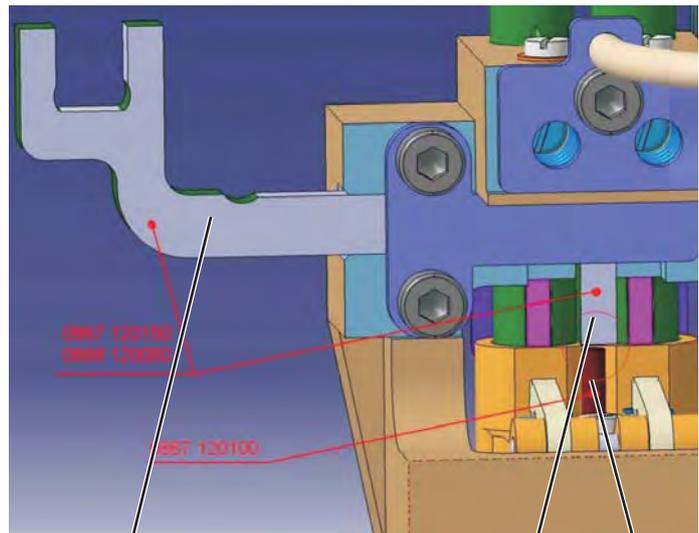
After a correction of the needle bar height, the hook guard position has to be checked (see chapter 4.3).

9.2 Setting the guide bar for the needle bar coupling



2

5



1

4

3



Caution: Danger of injury !

Turn the main switch off.

Proceed with the setting of the guide bar for the needle bar coupling only with the sewing switched off.

Rule:

Set the guide bar (1) in a way that at position zero (both needles engaged) the pivot centre (4) stands exactly above the pin centre (3).

- Loosen the screws (2).
- Correct the guide bar's (1) position by using stop (5) according to the rule.
- Tighten the screws (2).
- Check whether the needle bars can be switched correctly.

10 Electronic control and sewing machine drive - positioning motor

All operating instructions and parameter sheets are available at the manufacturers' websites (see www.efka.net, www.duerkopp-adler.com, www.hohsing.com, etc.).

Selected instructions concerning the control and drive setting needed for the operators are included in the Operating instructions.

Selected instructions needed for the technician to set the drive are included in the Operating instructions.

Important notes concerning electrostatic discharges (ESD)



Caution!

Before effectuating any works on electronic components: Turn off the main switch. Remove the plug from the socket.

EN

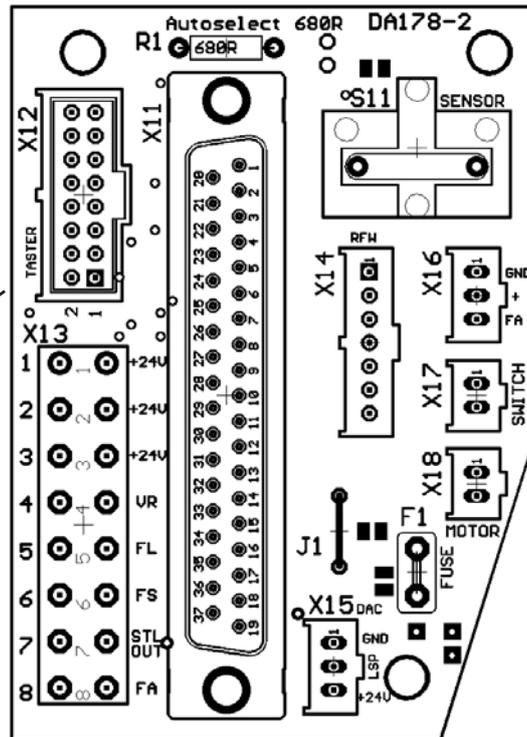
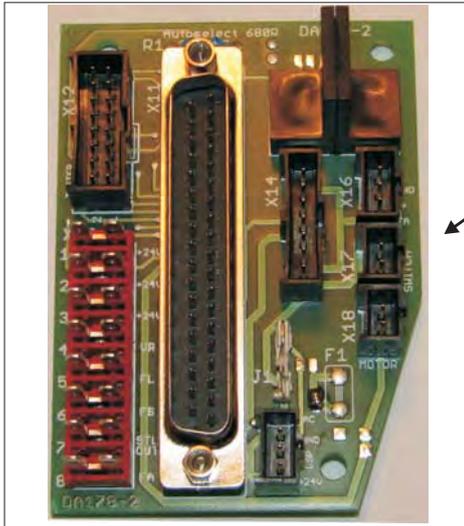
Electrostatic discharges can cause damage to PCBs and other components. You can obtain a certain protection by wearing anti-static gloves or wrist-wraps that you can connect for grounding on the mass of any unpainted metal piece of the machine head or on the switch cabinet.

Handle the PCBs with utmost caution. They are very sensitive towards electrostatic discharges. Hold the PCBs only at their edges.

Put the PCBs after unwrapping or after dismounting with their components upside onto a grounded statically discharged surface. We recommend to use a conductive foam underlay but not as the protective cover of the PCB.

Pay attention not to pull the PCBs over any surface.

10.1 Terminals to PCB connections - electromagnetic variant



Description of DA178-2 (9850 688001) switchboard connection

X11 - main connection cable to control unit

X12 - keypad (Taster)

X13 - terminals for solenoid connection

1,2,3 – supply voltage +24V

4 - VR (backtacking)

5 - FL (foot lifting)

6 - FS (thread tensioner)

7 - STL OUT (half stitch)

8 - FA (thread trimmer)

X14 - bobbin thread monitor

X15 - connection of side switchboard when using DAC control
(with cable 9870 867018)

X16* - connection of connecting cable 9870 688002 for connector on base plate
(thread trimmer solenoids, sewn material edge horizontal trimmer)

X17 - microswitch of sewn material edge trimmer (vertical, oblique)

X18 - sewn material edge trimmer motor

F1 - sewn material edge trimmer resettable fuse

R1 - Autoselect resistor (sewing machine class selection)

S11 - tilt sensor

J1 - switch; if the sewing machine has a direct drive (DAC control, side switchboard), switch J1 off, otherwise switch J1 on.

* Connection of edge trimmer solenoids to the grey connector on the base plate is to be made between FA and + (white and brown).

Connection of the horizontal edge trimmer is to be made between + and GND (brown and green).



DÜRKOPP ADLER GmbH
Potsdamer Str. 190
33719 Bielefeld
Germany
Phone +49 (0) 521 925 00
E-Mail: service@duerkopp-adler.com
www.duerkopp-adler.com