DÜRKOPP ADLER AG

910

CNC-Nähanlage für freie Nahtkonturen
CNC sewing unit for free seam contours

Bedienanleitung / Operating Instructions

Aufstellanleitung / Installation Instructions

Serviceanleitung / Service Instructions

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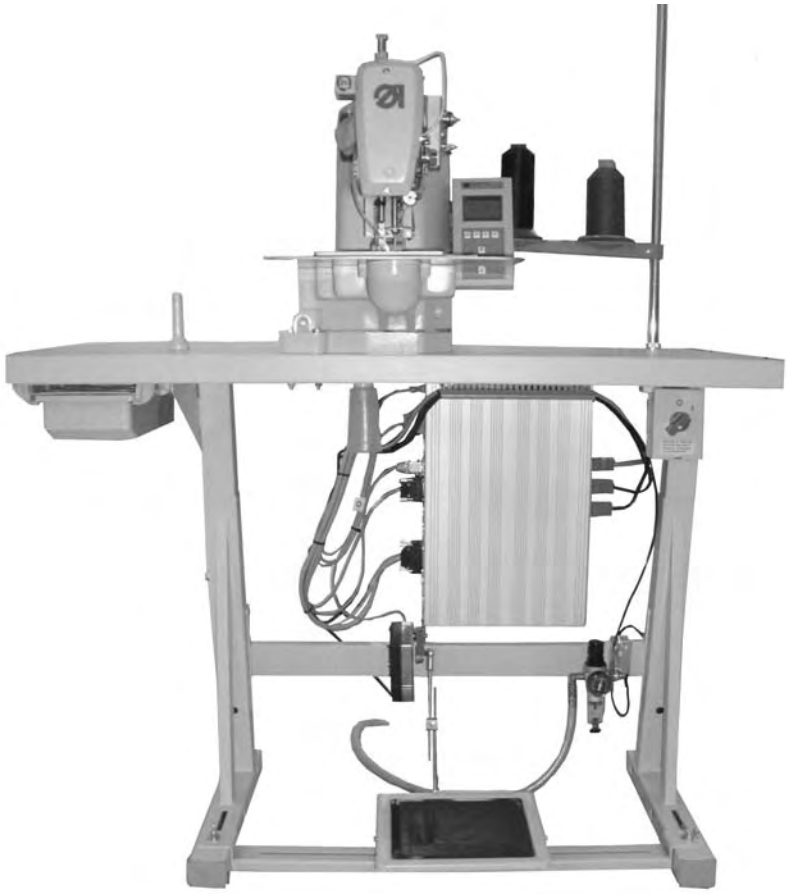
3



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Foreword

This instruction manual is intended to help the user to become familiar with the machine and take advantage of its application possibilities in accordance with the recommendations.

The instruction manual contains important information on how to operate the machine securely, properly and economically. Observation of the instructions eliminates danger, reduces costs for repair and down-times, and increases the reliability and life of the machine.

The instruction manual is intended to complement existing national accident prevention and environment protection regulations.

The instruction manual must always be available at the machine/sewing unit.

The instruction manual must be read and applied by any person that is authorized to work on the machine/sewing unit. This means:

– Operation, including equipping, troubleshooting during the work cycle, removing of fabric waste,
– Service (maintenance, inspection, repair) and/or
– Transport.

The user also has to assure that only authorized personnel work on the machine.

The user is obliged to check the machine at least once per shift for apparent damages and to immediatly report any changes (including the performance in service), which impair the safety.

The user company must ensure that the machine is only operated in perfect working order.

Never remove or disable any safety devices.

If safety devices need to be removed for equipping, repairing or maintaining, the safety devices must be remounted directly after completion of the maintenance and repair work.

Unauthorized modification of the machine rules out liability of the manufacturer for damage resulting from this.

Observe all safety and danger recommendations on the machine/unit! The yellow-and-black striped surfaces designate permanend danger areas, eg danger of squashing, cutting, shearing or collision.

Besides the recommendations in this instruction manual also observe the general safety and accident prevention regulations!

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.

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Part 3: Service Instructions for the Class 910

(Edition: 04/2007)

Index **Page:**

1. General notes

These service instructions describe the adjustments that can be made to the sewing unit 910.

ATTENTION!

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

Caution: danger of injury!

Always switch off main switch before any repair, alteration or maintenance.

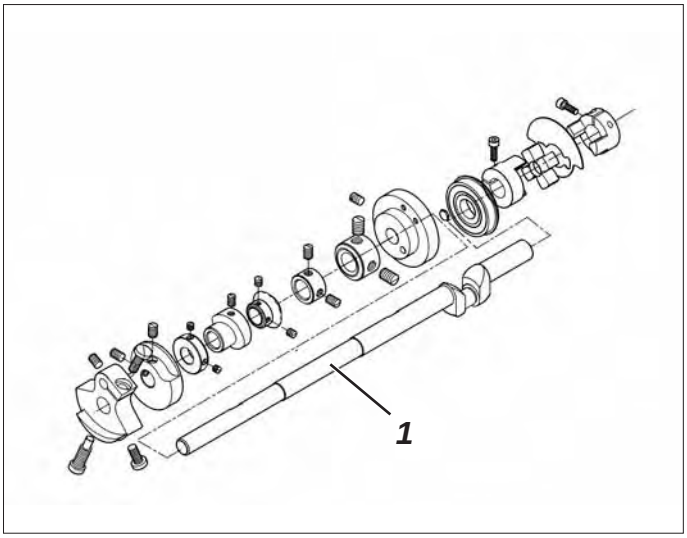
Carry out adjusting operations and functional tests of the running machine only under observation of all safety measures and with utmost caution.

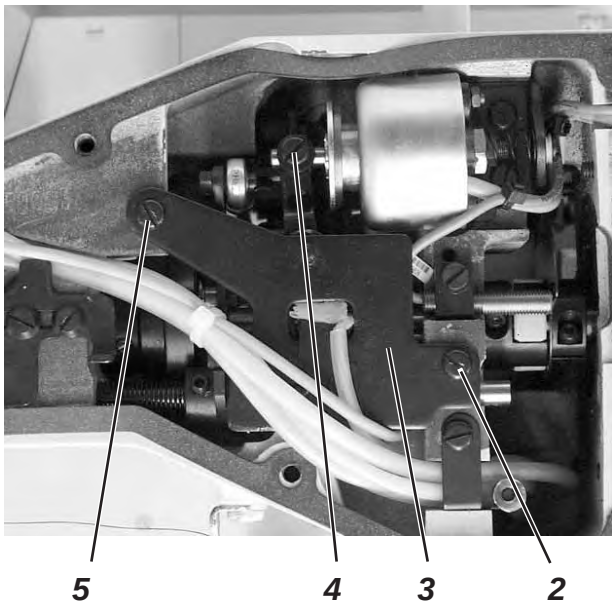
These service instructions describe the adjustment of the sewing unit in a logical order. Please observe that various setting positions are dependent on each other. The adjustment process must therefore be carried out in the order given.

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

2. Arm shaft

2.1 Preparatory adjustment work





Some of the adjustments at the arm shaft 1 can be carried more easily if the thread trimming mechanism 3 is removed.

Caution: danger of injury!

Switch off the main switch.

Remove and mount thread trimming mechanism only when the sewing unit is switched off.

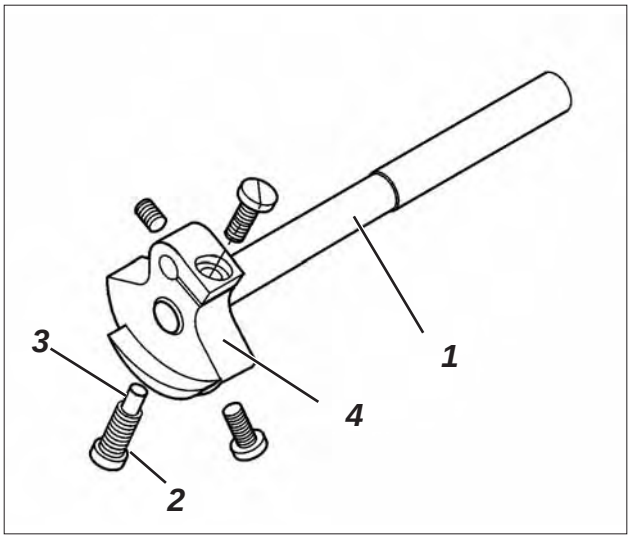
Remove mechanism

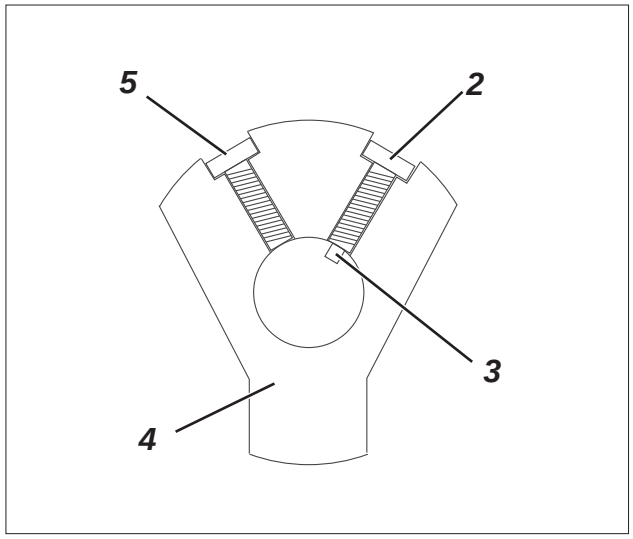
- Unscrew arm cover.
- Loosen screw 4 at the thread trimmer magnet.
- Unscrew screws 2 and 5 and take off thread trimming mechanism 3.

Mount mechanism

- Push thread trimming mechanism 3 on the magnet and place it on the machine head.
- Insert screws 2 and 5 and screw tight.
- Tighten screw 4 at the thread trimmer magnet.
- Adjust thread trimmer (see section 5.5).

2.2 Assembly of the crank





Caution: danger of injury!

Turn off the main switch.

Remove and mount crank only when the sewing unit is switched off.

3

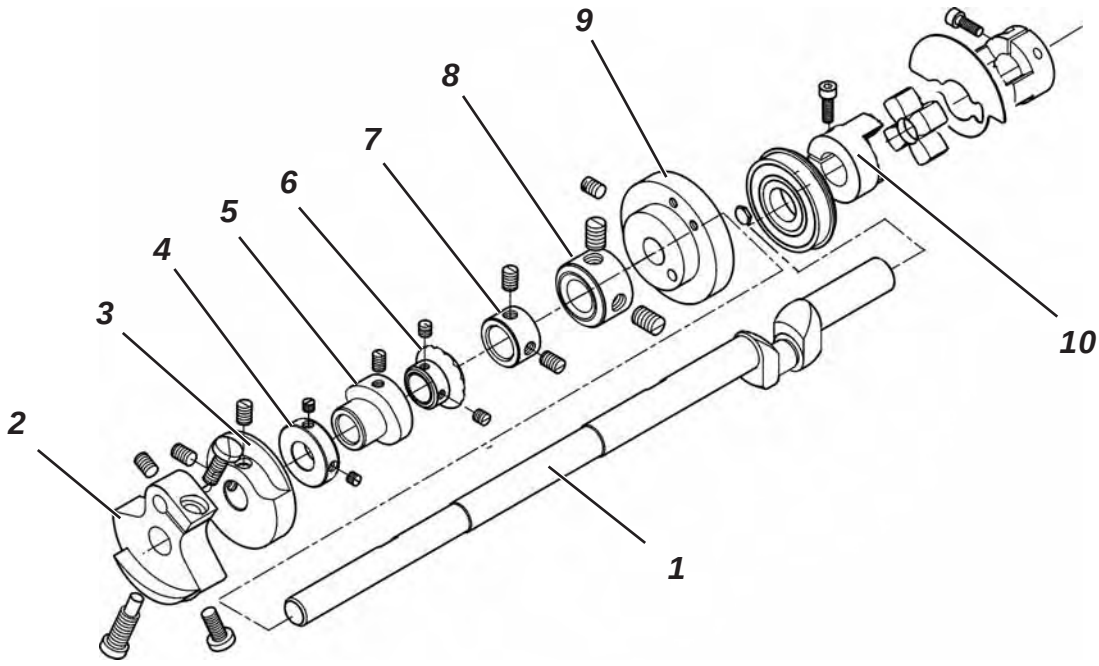
Important

The crank 4 has to be mounted on the arm shaft 1 in such a way that the pivot 3 of the screw 2 reaches into the drill-hole on the arm shaft. The screw 2 is the first screw in the direction of rotation.

Assembly

- Push crank 4 on arm shaft 1.
- Turn crank 4 so that its first drill-hole in the direction of rotation is located above the drill-hole in the arm shaft 1.
- Insert screw 2 and tighten.
- Insert screw 5 and tighten.

2.3 Arm shaft positioning



Caution: danger of injury!

Turn off the main switch.

Check and adjust position of the arm shaft only when the sewing unit is switched off.

Note and control

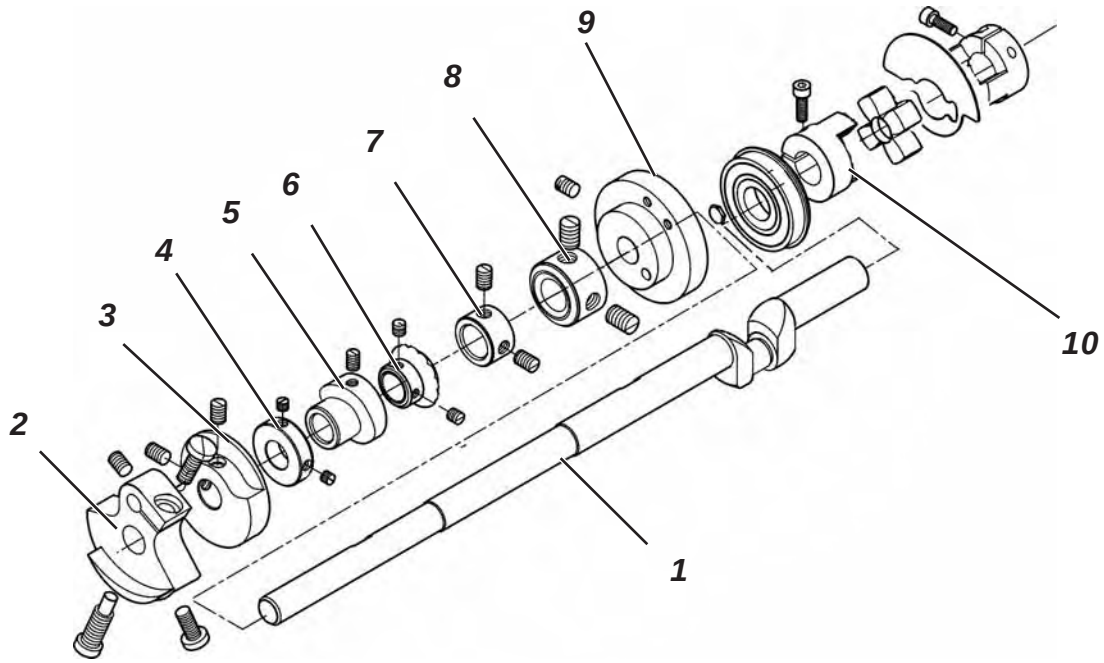
The arm shaft 1 should have no axial backlash, but it must not move too sluggishly.

Check the arm shaft with regard to axial backlash and sluggishness.

Adjustment

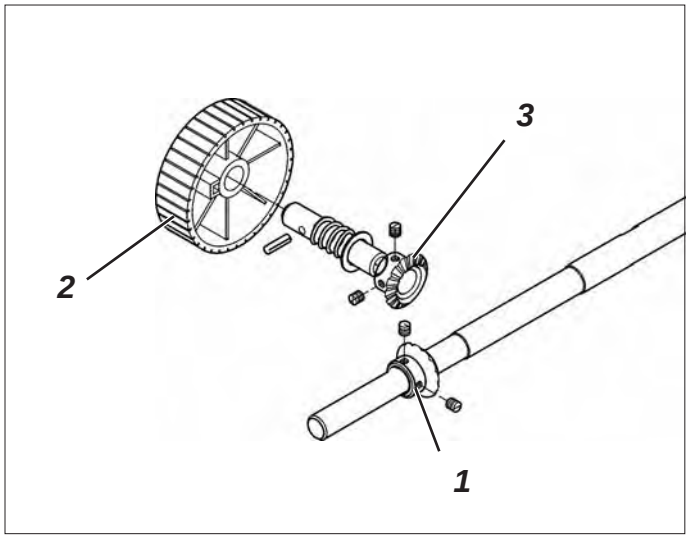
- Loosen screws at the bobbin winder wheel 3.
- Loosen screws at the adjusting ring 4.
- Loosen screws at eccentric 5.
- Loosen screws at the bevel gear 6.
- Loosen screw at the adjusting ring 7.
- Loosen screws at the thread trimmer cam 9.
- Loosen screws at the motor clutch10.

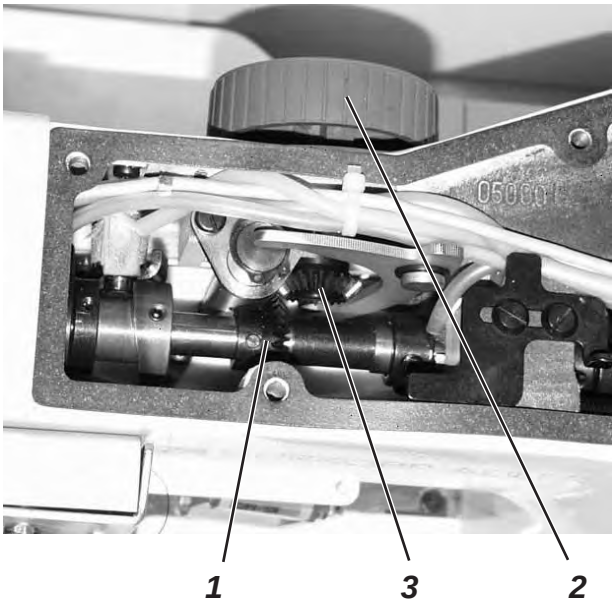
- Push arm shaft crank 2 axially to the right as far as it will go.
- Push adjusting ring 8 against the bearing bush, and tighten screws.
- Check arm shaft for axial backlash and smooth operation.
- Push adjusting ring 7 to the right against the bearing bush, and tighten screws.



- Loosen screws at the bobbin winder wheel 3.
  (For adjustment, see section 2.5).
- Tighten screws at the adjusting ring 4.
- Tighten screws at eccentric 5.
  For adjustment, see section 2.7).
- Tighten screws at the bevel gear 6.
  (For adjustment, see section 2.4).
- Tighten screws at the thread trimmer cam 9
  (for adjustment see section 2.6).
- Tighten screws at the motor clutch 10.
  (For adjustment, see section 2.9).

2.4 Bevel gear for the hand wheel





Caution: danger of injury!

Turn off the main switch.

Check and adjust bevel gear only when the sewing unit is switched off.

Note and control

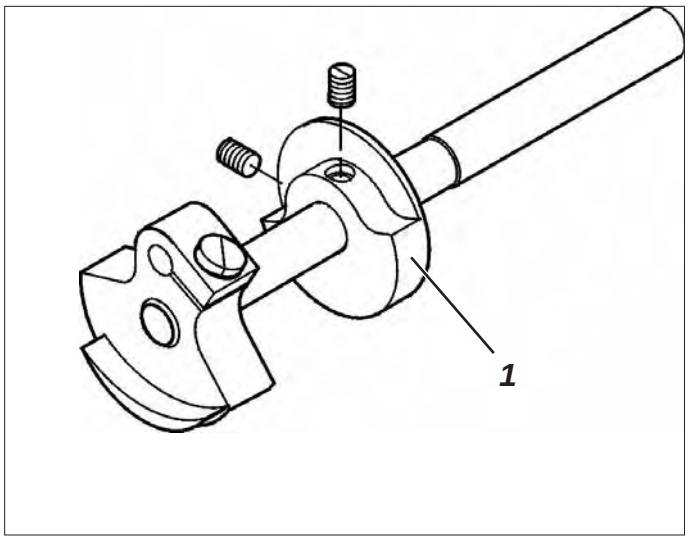
The bevel gear 1 has to be positioned on the upper shaft in such a way that when the handwheel 2 is engaged there is as little clearance as possible between bevel gear 1 and bevel gear 3.

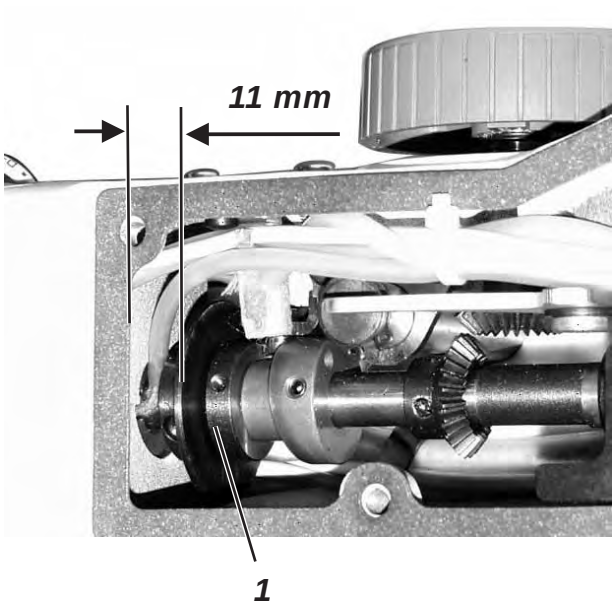
- Engage handwheel 2.
- Verify that there is as little clearance as possible between bevel gear 1 and bevel gear 3.

Adjustment

- Loosen screws at the bevel gear 1.
- Engage handwheel 2.
- Press bevel gear 1 against the toothed wheel 3 and tighten fastening screws.
- Turn handwheel and verify that there is as little clearance as possible between bevel gear 1 and toothed wheel 3.

2.5 Adjust bobbin winder

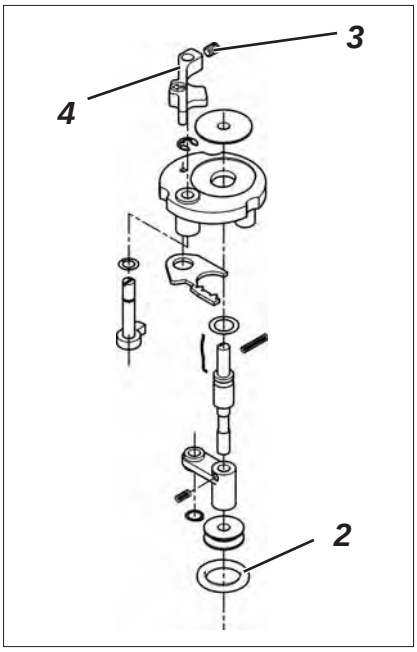




Caution: danger of injury!

Turn off the main switch.

Check and adjust bobbin winder only when the sewing unit is switched off.



Important

The bobbin winding operation must stop automatically when the bobbin is filled up to approx. 0.3 mm below the edge of the bobbin.

Preset for bobbin winder wheel

- Loosen screws at the driver wheel 1.
- Move driver wheel 1 axially, so that the right side is 11 mm from the left cast-iron edge.
- Tighten screws at the driver wheel 1.
  The second screw in the direction of rotation is located on the surface area.
- Put on head cover and tighten.
- Check bobbin winder and repeat adjustment, if necessary.

Note:

If the bobbin winder is open, it should not turn.

If the bobbin winder is closed, it must always turn.

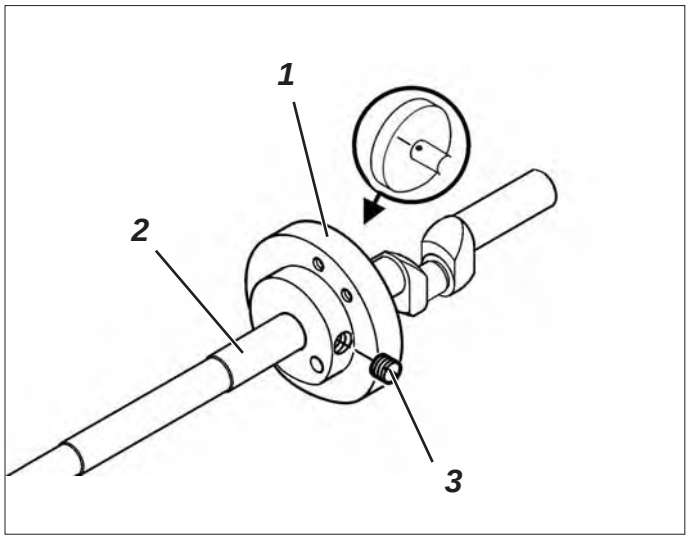
Adjustment of the bobbin capacity

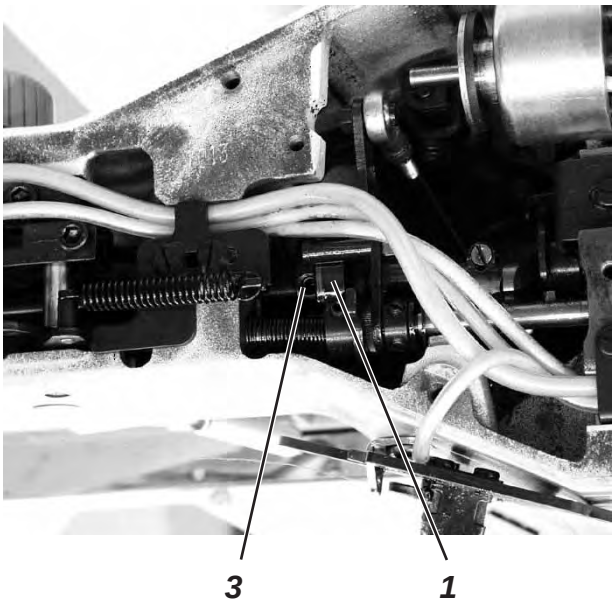
- Loosen screw 3.
- Adjust bobbin winder clip 4.
- Tighten screw 3.

Note:

When adjusting the driver wheel take care that afterwards the oil wicks do not collide with the driver wheel.

2.6 Thread-trimmer cam

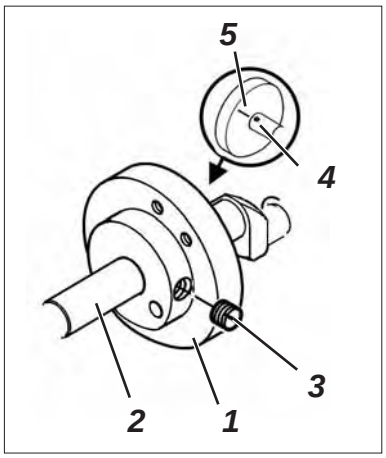




Caution: danger of injury!

Turn off the main switch.

Check and adjust thread trimmer cam only when the sewing unit is switched off.



Note and control

The correct position of the thread trimmer cam 1 is marked by a point on the upper shaft 2 and a line 5 on the thread trimmer cam 1.

The position is correct when both markings are opposite each other.

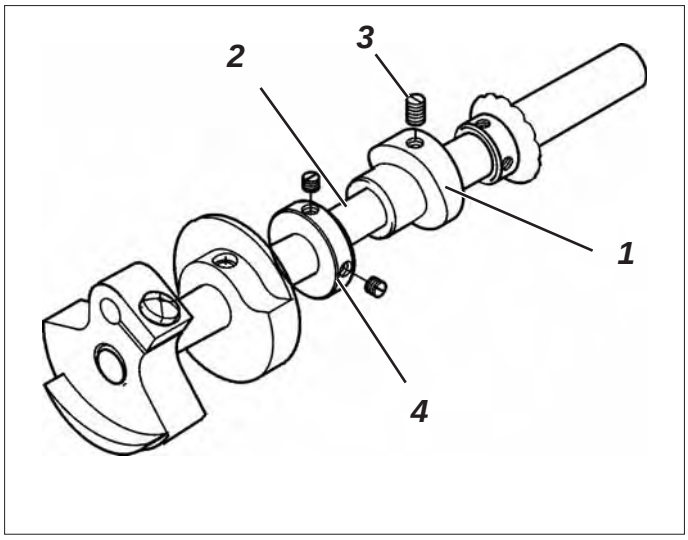
Engage handwheel and turn until the marking points 4 and 5 on the upper shaft and the thread trimmer cam are visible.

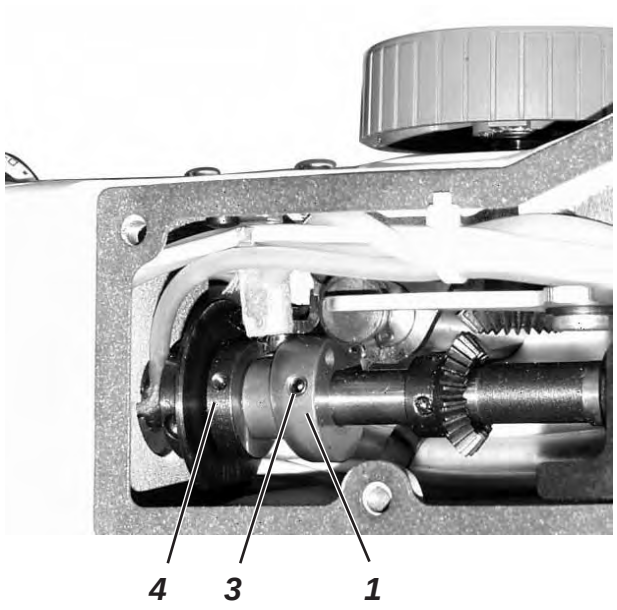
Verify that both markings are exactly opposite each other.

Adjustment

- Loosen screws 3 at the thread trimmer cam.
- Twist and axially shift the thread trimmer cam in such a way that both markings 4 and 5 are standing exactly opposite.
- Tighten screws 3.

2.7 Sewing foot hub eccentric

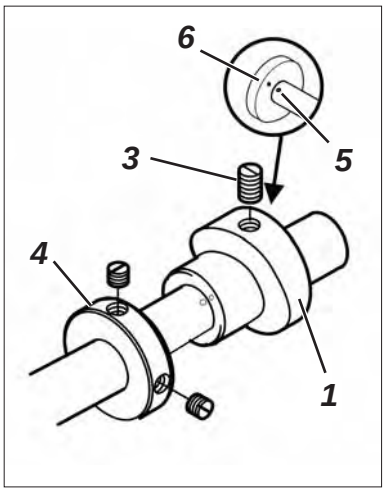




Caution: danger of injury!

Turn off the main switch.

Check and adjust hub eccentric cam only when the sewing unit is switched off.



Note and control

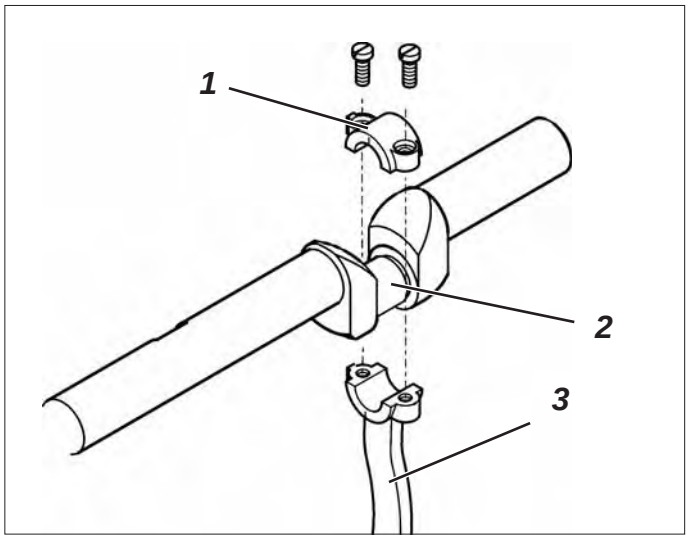
The correct position of the sewing foot hub eccentric 1 is marked by a point 5 on the upper shaft 2 and a point 6 on the hub eccentric 1.
The position is correct when both markings are opposite each other and when point 5 is half covered.

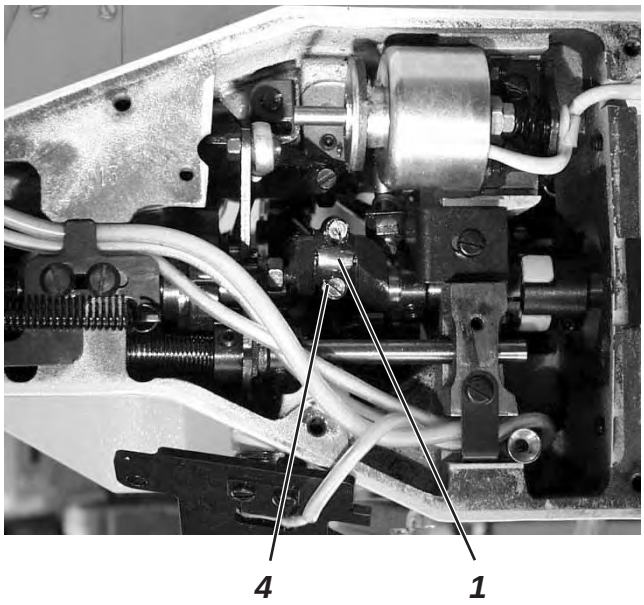
- Engage handwheel and turn until the marking points 5 and 6 on the upper shaft and the hub eccentric are visible.
- Verify that both markings are exactly opposite each other, and that point 5 on the shaft is half covered.

Adjustment

- Loosen screws at the adjusting ring 4.
- Loosen screws at the hub eccentric.
- Turn the hub eccentric and push axially, so that both markings 5 and 6 are exactly opposite, and only half of point 5 is visible.
- Tighten screws 3.
- Move adjusting ring 4 up to hub eccentric 1 and tighten.

2.8 Crankshaft drive to the hook shaft

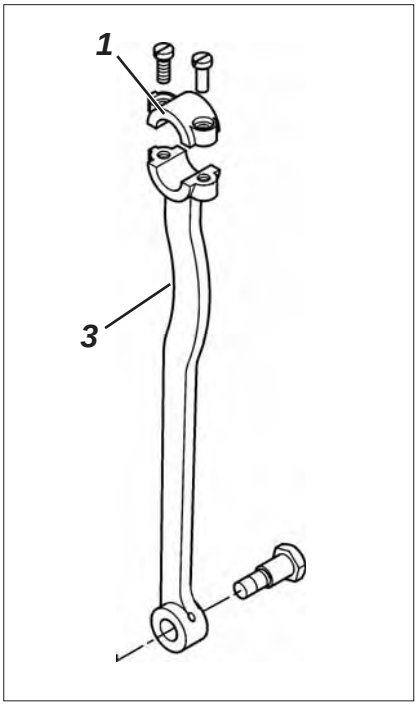




Caution: danger of injury!

Turn off the main switch.

Check and adjust crankshaft only when the sewing unit is switched off.



Note and control

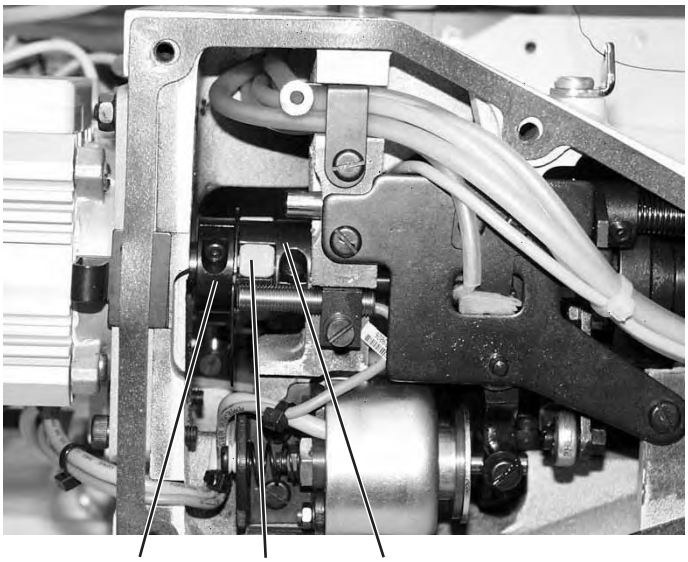
The arm shaft and the hook shaft are connected by the connecting rod 3 gripping into the crank 2 of the upper shaft.

The connecting rod 3 and the upper bearing shell 1 have a marking on one side. When assembling them the markings must be on the same side.

Connecting rod 3 and bearing shell 1 must not jam when screwed together.

– Verify that the markings are on the same side.
– Tighten screws 4 equally.

2.9 Sewing motor clutch



Caution: danger of injury!

Turn off the main switch.

Check and adjust sewing motor clutch only when the sewing unit is switched off.

Note and control

Both clutch halves 1 and 3 must be positioned in such a way that they abut the knobs of cam 2 on the left or right.

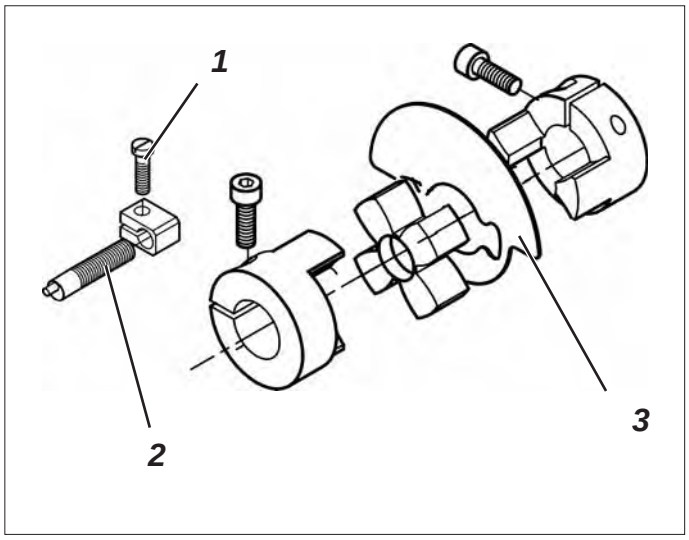
Rotate arm shaft with the handwheel and check whether the cam has enough clearance in each position.

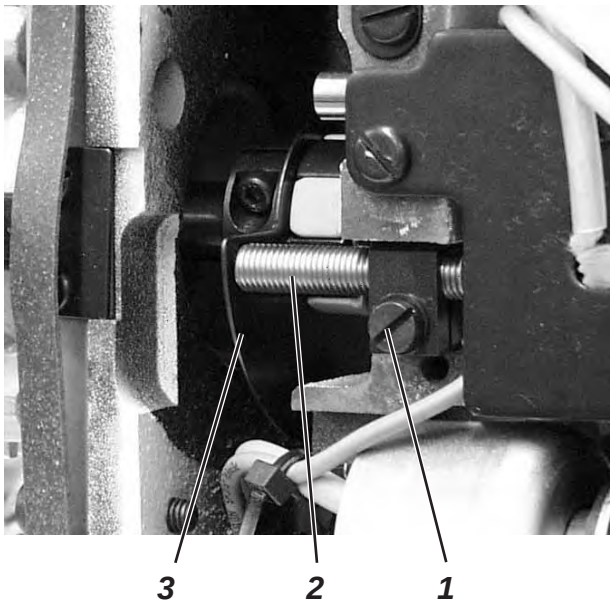
Adjustment

– Loosen screws at both clutch halves.
– Press both clutch halves together and tighten screws.

2.10 Reference position of the sewing motor

2.10.1 Position of the initiator





Caution: danger of injury!

Turn off the main switch.

If the sewing unit is turned on, use great caution when making adjustments and checking the initiator.

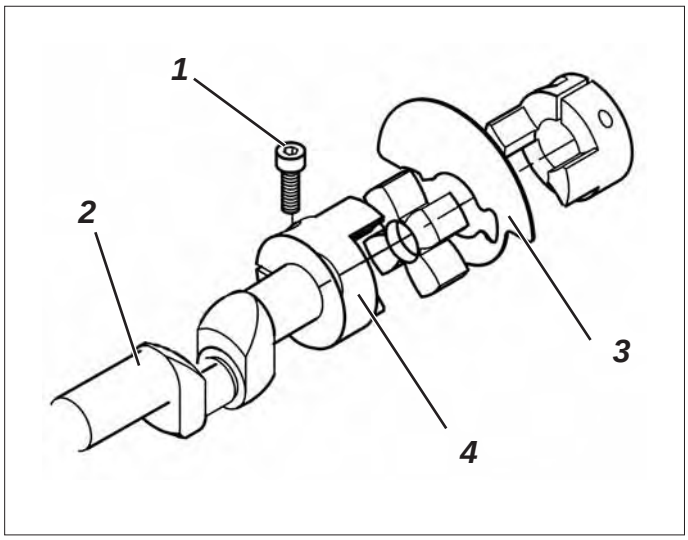
Note and control

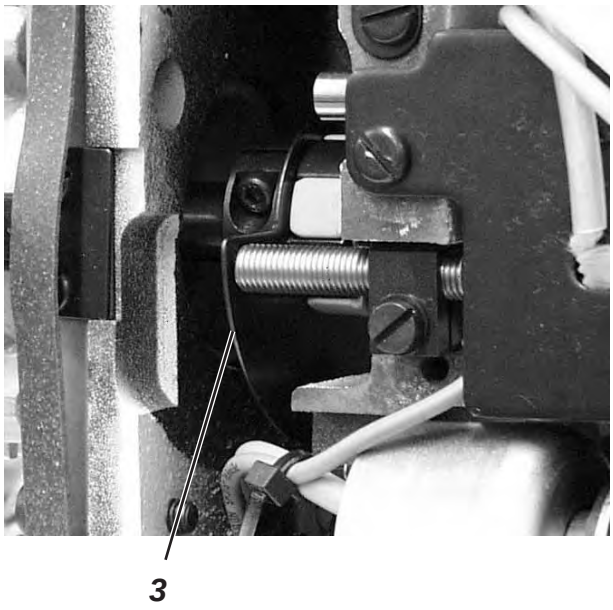
The distance between the initiator 2 and the reference disc 3 should be kept as small as possible.

Adjustment

- Loosen screw 1.
- Set the smallest possible distance between the initiator 2 and the reference disc 3.
- Tighten screw 1.

2.10.2 Adjust reference position





Caution: danger of injury!

Turn off the main switch.

Adjust the reference position only when the sewing unit is turned off.

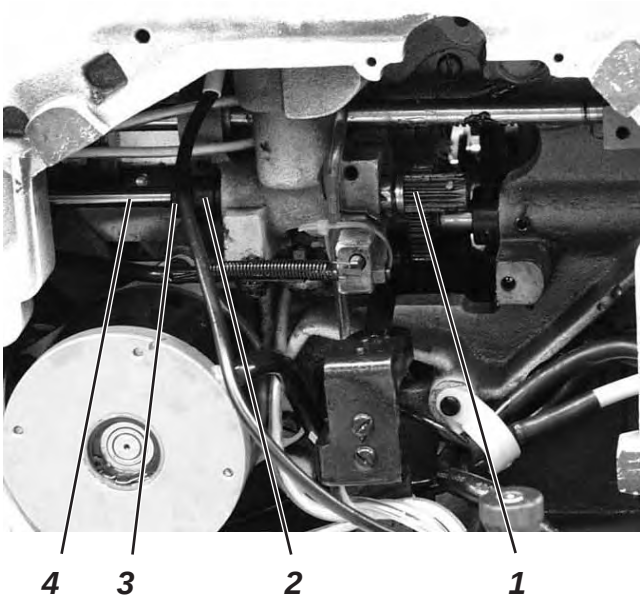
3

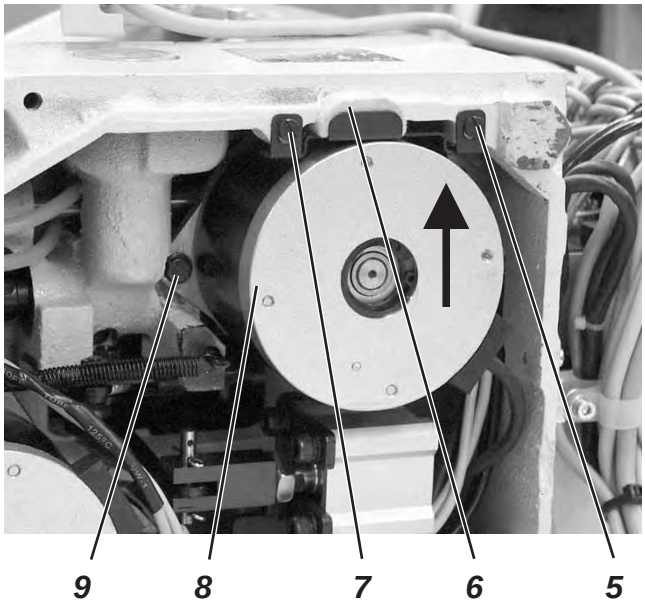
Adjustment

- Turn on main switch.
- Move pedal back.
  The reference position is established.
- Turn off the main switch.
- Loosen the screw 1 on the clutch halves 4, which are located on the upper shaft 2.
- Hold reference disc 3.
- Turn upper shaft 2, so that the thread lever is at its upper point and so that the marking on the 180° disc is located in front and on top.
- Tighten screw 1 at the clutch halves.

3. Hook, looping stroke, and needle bar height

3.1 Driver shaft





Caution: danger of injury!

Turn off the main switch.

Check and adjust driver shaft only when the sewing unit is switched off.

Note and control

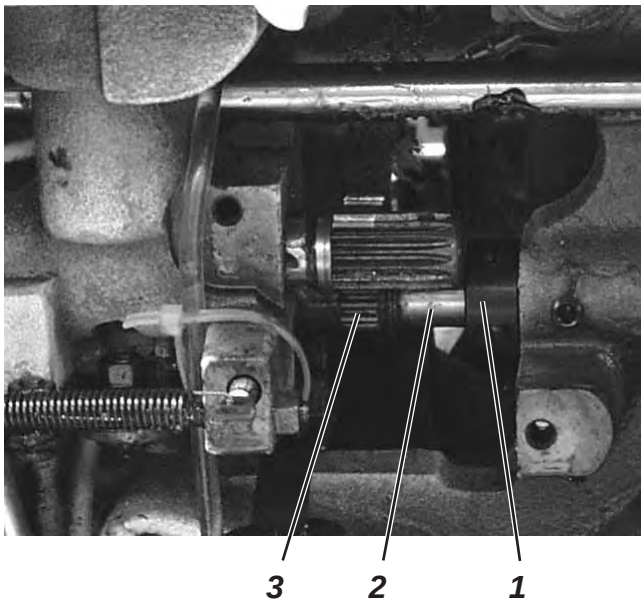
The driver shaft 4 should have no axial backlash, but it must also not move sluggishly.

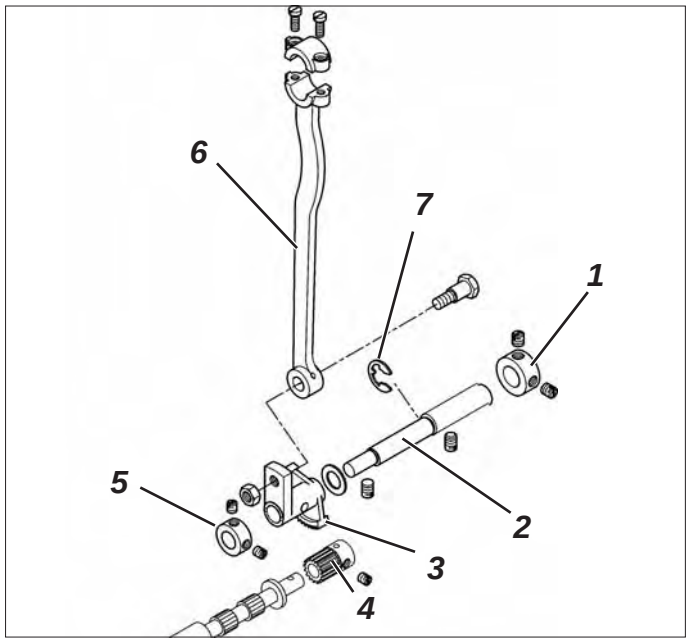
Check the driver shaft 4 for axial backlash and sluggishness.

Adjustment

- Unscrew screws 5 and 7 and take off oil felt pad 6.
- Loosen screws 9 (4 screws) on the motor and pull off the motor 8.
- Loosen screws at the adjusting rings 2 and 3.
- Press driver shaft 4 with toothed wheel 1 completely in the direction of the needle bar.
- Press adjusting rings 2 and 3 against the bushing and tighten screws.
- Check if the shaft is snug (without clearance) and runs smoothly.
- Insert motor 8 in direction of arrow, push up to top, and screw tight. (See section 6.1)
- Tighten oil felt pad 6 with the two screws 5 and 7.

3.2 Gear segment on the camshaft





Caution: danger of injury!

Turn off the main switch.

Check and adjust gear segment only when the sewing unit is switched off.

3

Note and control

The gear segment 3 should sit snuggly (have no clearance) on the camshaft 2, but it must not move sluggishly.
Gear segment 3 and camshaft 2 must be placed axially in such a way that the connecting rod 6 does not jam.

- Check gear segment for axial backlash and sluggishness.
- Verify that the connecting rod 6 does not jam.

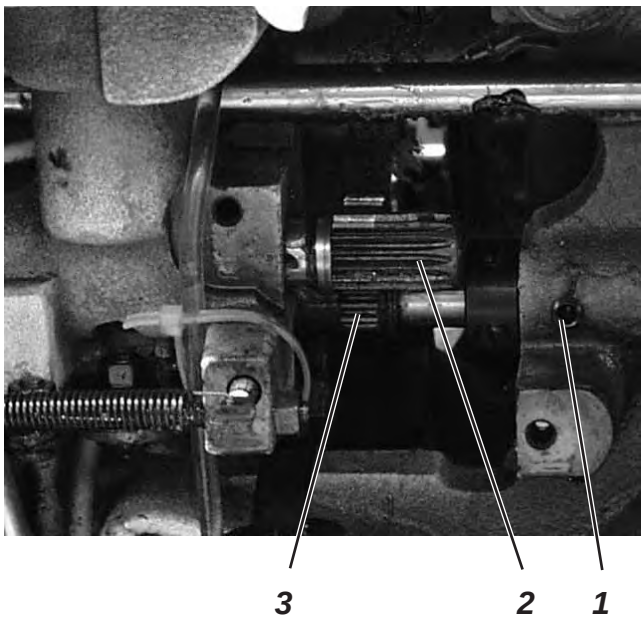
Adjustment of the gear segment on the camshaft

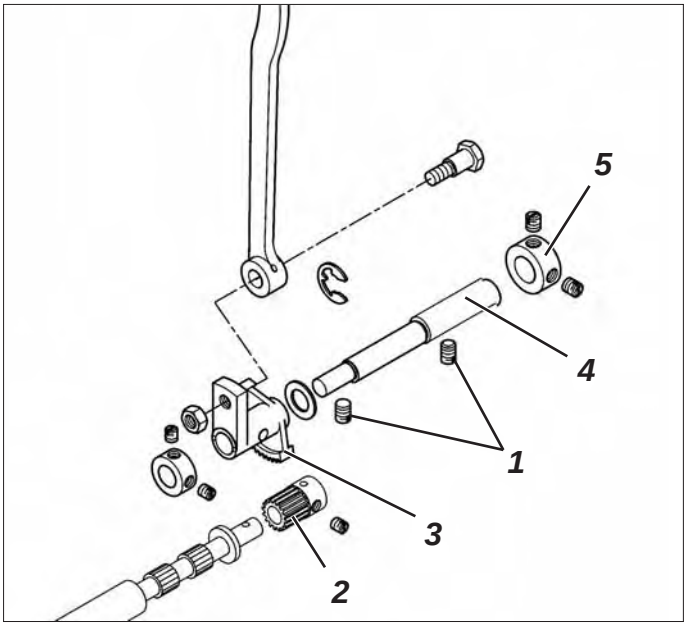
- Loosen screws at the adjusting ring 5.
- Push gear segment 3 all the way right against the locking ring 7.
- Push the adjusting ring 5 to the gear segment and tighten screws.
- Check gear segment for axial backlash and sluggishness.

Adjustment of the gear segment to the crankshaft drive

- Loosen screws at the adjusting ring 1.
- Shift gear segment 3 with camshaft 2 laterally in such a way that the connecting rod 6 is in the middle of the clearance space.
- Push the adjusting ring to the right against the casing.
- Tighten screws at the adjusting ring 1.
- Verify that the connecting rod 6 does not jam.

3.3 Gear segment to the driver shaft





Caution: danger of injury!

Turn off the main switch.

Check and adjust gear segment only when the sewing unit is switched off.

Note and control

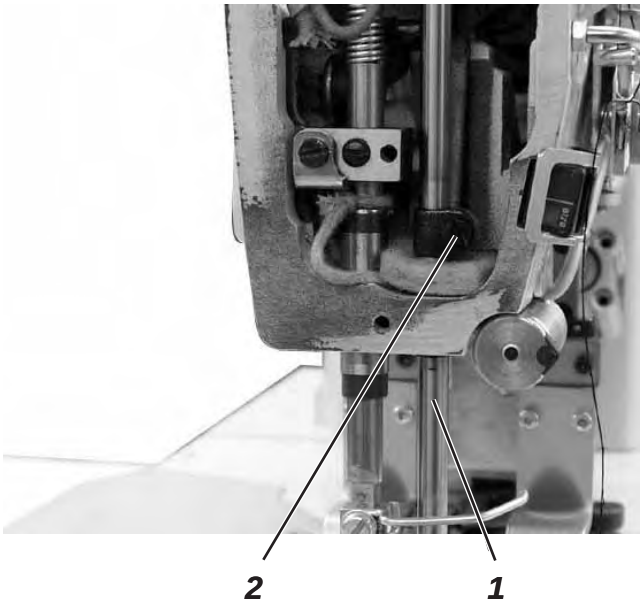
The gear segment 3 should grip into the toothed wheel 2 of the driver shaft with the smallest clearance possible, but it must not move sluggishly.

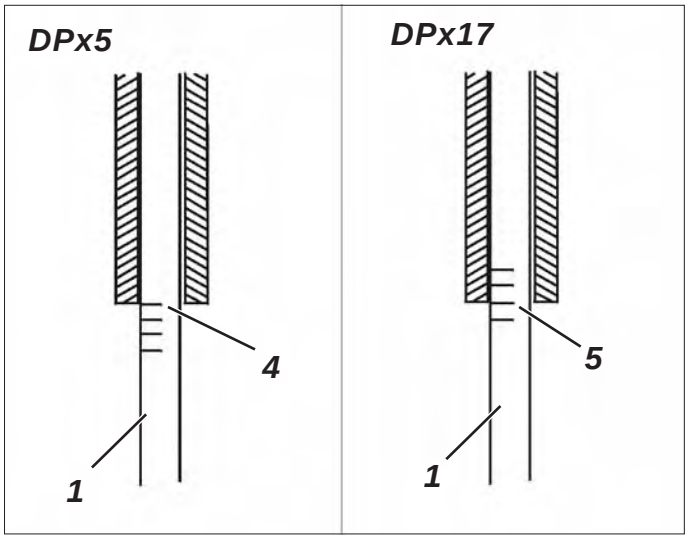
Turn handwheel and check clearance between gear segment 3 and toothed wheel 2.

Adjustment

- Loosen Allen screws 1.
- Twist camshaft 4 counter-clockwise until the clearance between gear segment 3 and toothed wheel 2 is as small as possible.
- Turn handwheel and check clearance between gear segment 3 and toothed wheel 2.
- Tighten Allen screws 1.

3.4 Needle bar height





Caution: danger of injury!

Turn off the main switch.

Check and adjust needle bar only when the sewing unit is switched off.

3

Note and control

The needle bar 1 is provided with four notches as an adjusting aid.

The uppermost two notches are for the DPx5 needle system. The lower two notches are for the needle system DPx17.

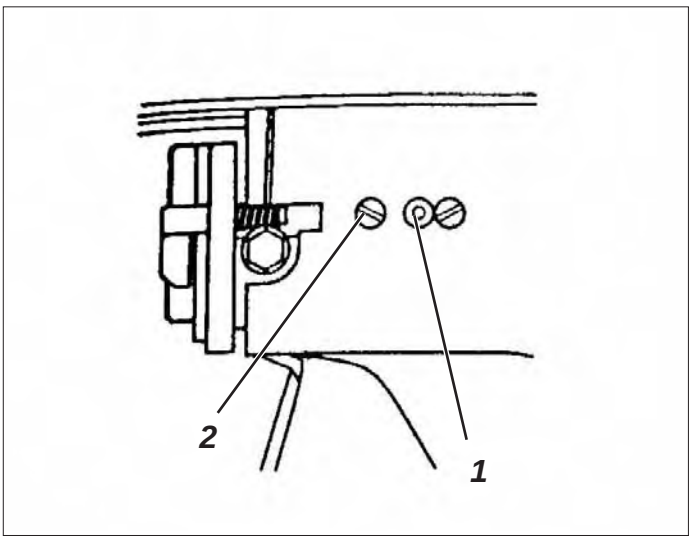
When the needle bar is in its lowest position, the upper notch 4 (DPx5) or 5 (DPx17) should be on the same level with the bottom of the needle bar bushing.

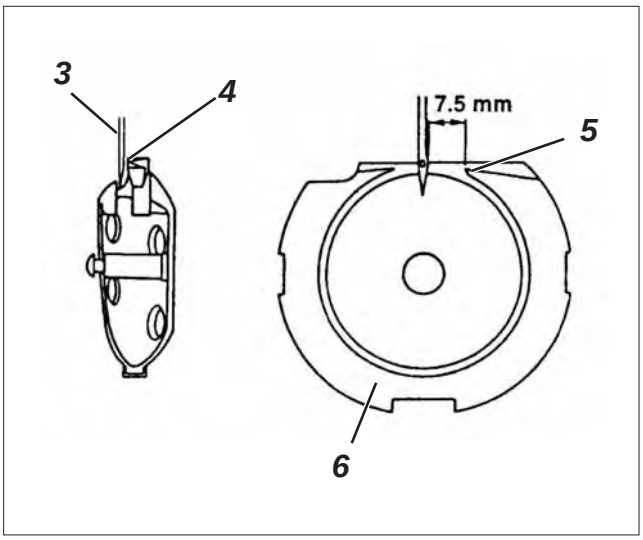
– Move needle bar 1 to its lowest position.
– Verify that the upper notch is level with the bottom of the needle bar bushing.

Adjustment

– Loosen needle bar fastening screw 2.
– Adjust height of needle bar 1. Make sure that the needle bar 1 is not twisted.
– Tighten needle bar fastening screw 2.

3.5 Distance between hook tip and needle





Caution: danger of injury!

Turn off the main switch.

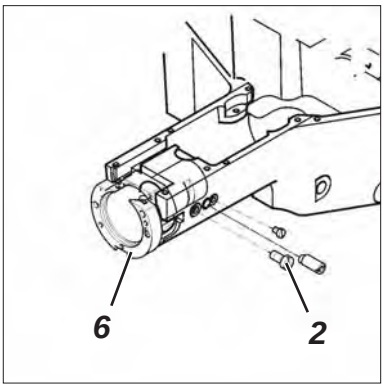
Check and adjust the distance between the hook tip and needle only when the sewing unit is turned off.

Note and control

The hook tip 4 must stand as close as possible to the hollow groove of the needle, without touching it.

The tip 5 of the hook path bearing 6 should have a distance of 7.5 mm to the right side of the needle.

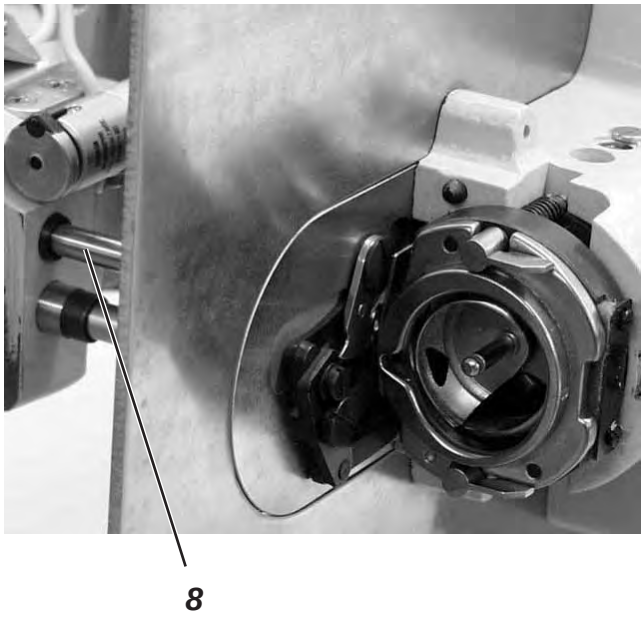
- Remove bobbin case top part with bobbin.
- Insert a new, straight needle 3.
- Move hook tip 4 up to the hollow groove of the needle 3 by turning the handwheel.
- Check position of the hook tip to the needle.
- Check the distance of the tip 5 of the hook path bearing to the right side of the needle.

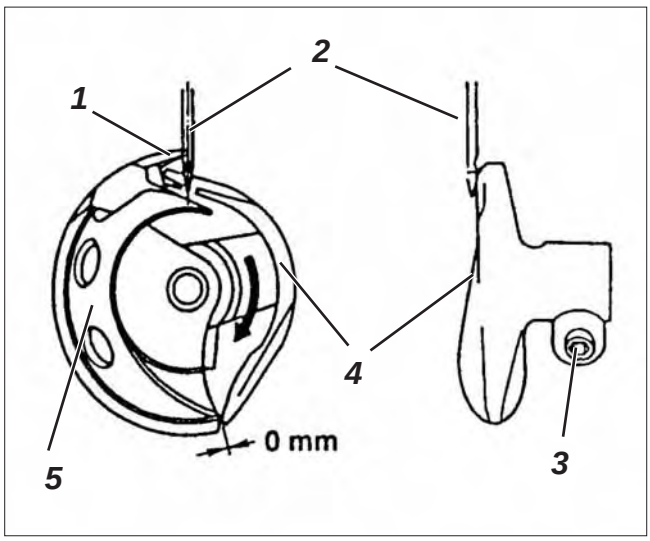


Adjustment

- Loosen screw 2.
- Adjust hook path bearing 6 axially with the eccentric 1.
  Eccentric to the left = smaller distance from hook tip to needle.
  Eccentric to the right = greater distance from hook tip to needle.
- Twist hook path bearing 6 in such a way that it has a distance of 7.5 mm to the right side of the needle.
- Tighten screw 2.

3.6 Looping stroke and needle protection



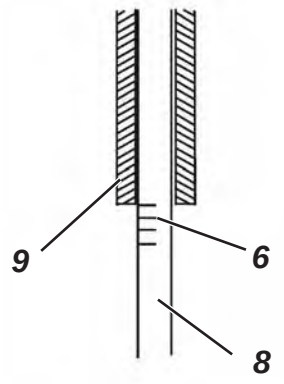


Caution: danger of injury!

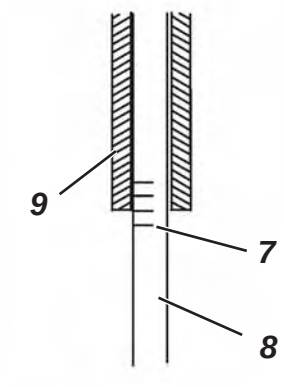
Turn off the main switch.

Check and adjust looping stroke and needle protection only when the sewing unit is switched off.

DPx5



DPx17



Note and control

The needle bar is provided with four notches as an adjusting aid. The uppermost two notches are for the DPx5 needle system. The lower two notches are for the needle system DPx17.

The looping stroke is the course of the needle 2 from its bottom dead centre to the point where the hook tip 1 is at the level of the middle of the needle.

In the looping stroke position, the needle should be pushed away slightly from the driver (needle protection).

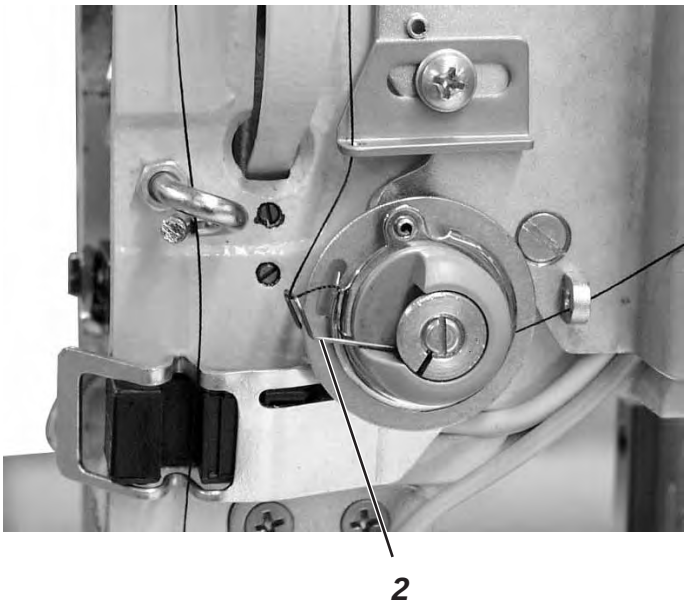
- Insert a new, straight needle.
- Move needle bar 8 into its lowest position by turning the handwheel.
- Turn handwheel in rotation direction until the lower notch 6 (DPx5) or the lower notch 7 (DPx17) stands at the bottom of the needle bar bush 9.
- Press hook 5 against the driver 4 in the opposite direction of rotation.
- Verify that the hook tip 1 is at the level of the middle of the needle.
- Verify that the needle is pushed away from the driver tip a little bit (needle protection).

Adjustment

- Loosen screw 3 at the driver 4.
- Twist driver accordingly.
- Move driver axially in such a way that the needle abuts on the driver tip and is pushed away a little bit.
- Tighten screw 3.

4. Thread-guiding parts

4.1 Thread controller spring



Caution: danger of injury!

Turn off the main switch.

Check and adjust thread controller spring only when the sewing unit is switched off.

Note and control

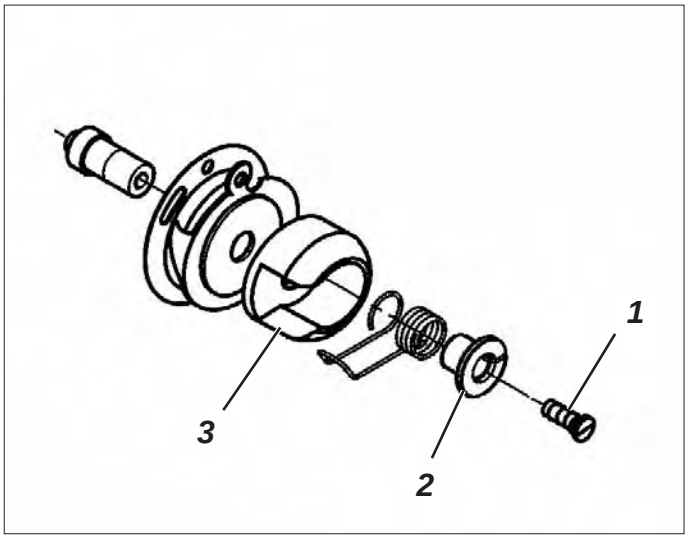
The adjustment standards for spring travel and spring tension refer to normal needle thread sizes.
In the cases of extremely thick or thin needle threads or fabrics, different adjustments may be required.

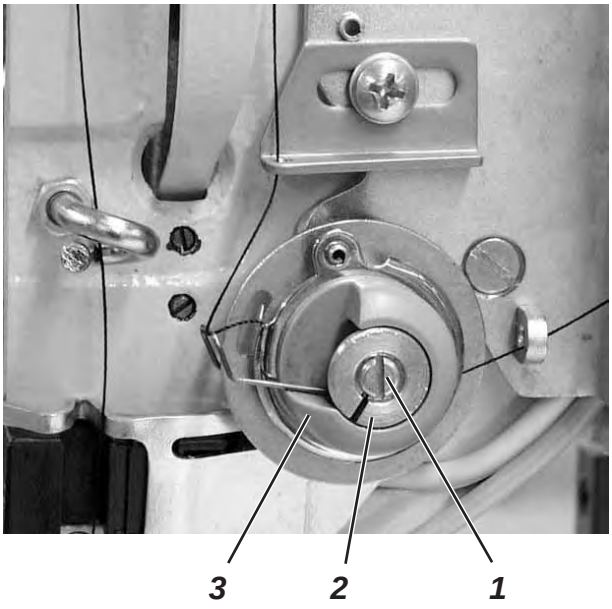
Path of spring

The thread controller spring 2 must hold the needle thread under minor tension from the highest position of the thread lever to the moment the needle's eye penetrates the fabric.
In order to achieve a uniform seam pattern with a low thread tension it is possible to further lengthen the path of the controller spring.
The thread controller spring must abut on the stop after the needle's eye has penetrated the fabric.

Spring tension

The spring tension should be lower than the needle thread tension.





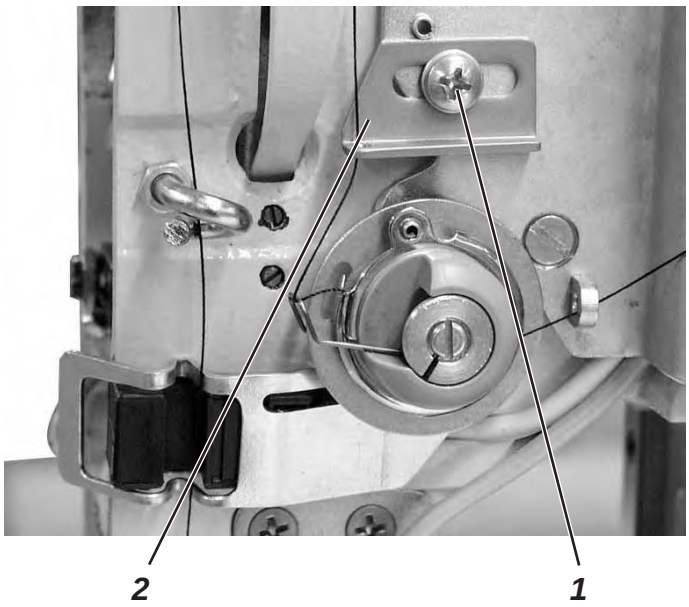
Path of spring

- Loosen screw 1.
- Turn stop 3.
  Turn counter-clockwise = greater path.
  Turn clockwise = smaller path.
- Tighten screw 1.

Spring tension

- Loosen screw 1.
- Adjust spring washer 2, without changing the position of the stop 3.
  Turning the washer clockwise = less spring tension.
  Turning the washer counter-clockwise = more spring tension.
- Tighten screw 1, without turning the position of stop 3 and spring washer 2.

4.2 Thread regulator



Caution: danger of injury!

Turn off the main switch.

Check and adjust thread regulator only when the sewing unit is switched off.

Note and control

The position of the thread regulator is dependent on the material thickness and the thread size.
It must be adjusted so that the thread is guided around the hook in a controlled way.

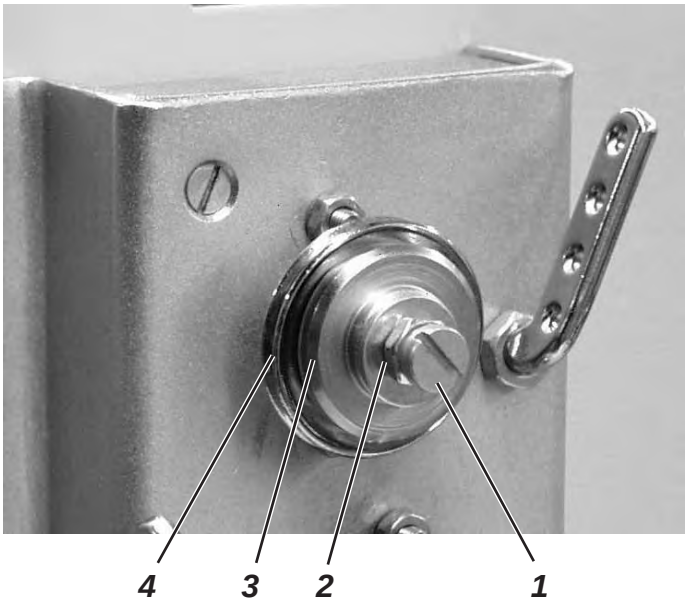
- Load workpiece (fabric).
- Thread in needle thread and bobbin thread.
- Tilt upper machine head to the left.
- Turn handwheel slowly and observe how tightly the needle thread is guided around the hook.

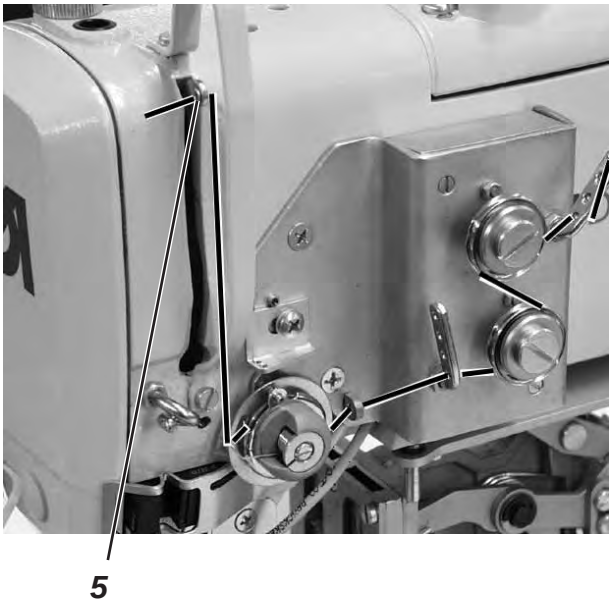
Adjustment

- Loosen screw 1.
- Move thread regulator 2.
  Thread regulator to the left = more thread.
  Thread regulator to the right = less thread.
- Tighten screw 1.

4.3 Adjusting the thread tension

4.3.1 Mechanical adjustments to the thread tension



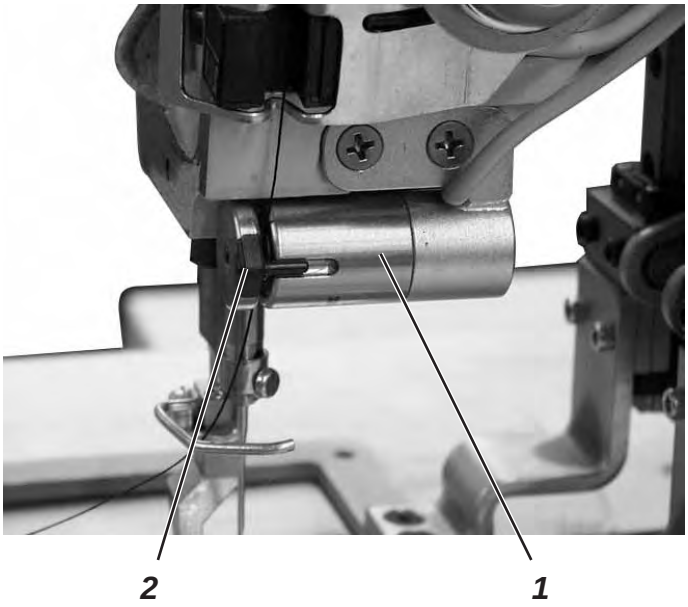


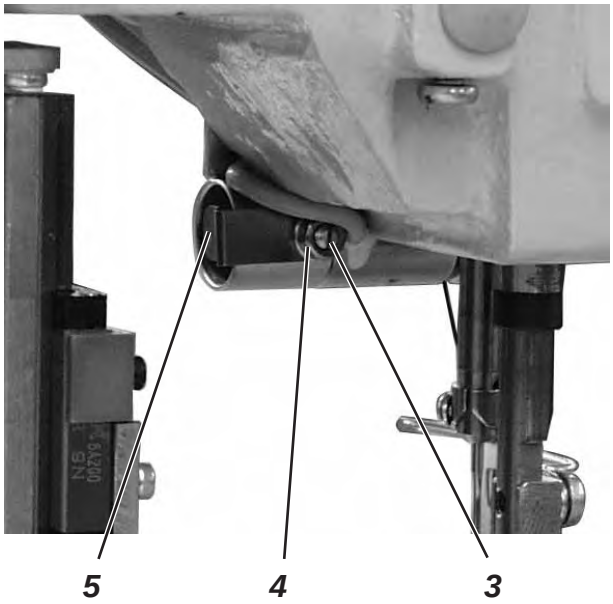
- Loosen locknut 2.
- Select “Kali.3" in the ”thread tension" sub-menu.
- Turn washer 3 right until stop.
- Lightly turn locknut 2 back.
- Select “Kali.1" in the ”thread tension" sub-menu.
- Press the “OK” key to open the thread tension.
- The thread tension should be set with light pressure, and opened wide enough so that the largest type of thread can be pulled between the tension discs unhindered.
- Press the “OK” key to close the thread tension again, and verify that the thread tension is again completely closed.

4.3.2 Calibrating

- Thread in sewing thread 40 three times up to the thread lever.
- Measure the tension with a thread scale.
- Enter the value into the control.
- Measure as described for calibration 2 and calibration 3, and enter the values.

4.4 Thread feeding mechanism





The thread feeding mechanism 2 is operated by the magnet 1.

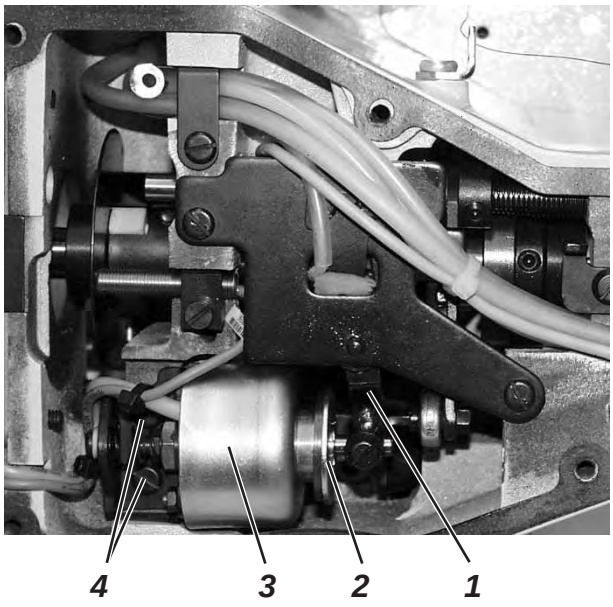
When using thin thread, the thread feed-in device may not reopen wide enough because of residual magnetism.

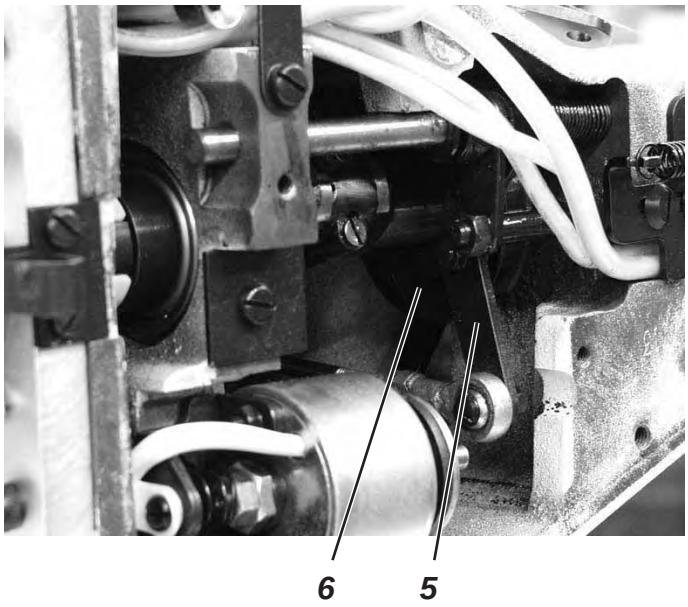
The spring 5 presses against the residual magnetism and thus helps open the thread feed-in device 2.

– Loosen locknut 4.
– Push spring 5 accordingly:
  To the right = increase spring tension,
  To the left = decrease spring tension.
– Tighten locknut 4.

5. Thread trimmer

5.1 Thread trimmer magnet





Caution: danger of injury!

Turn off the main switch.

Check and adjust thread trimmer magnet only when the sewing unit is switched off.

3

Note and control

The magnet 3 pushes the lever 5 with the roller bolt into the thread trimmer cam 6 by means of lever 1.

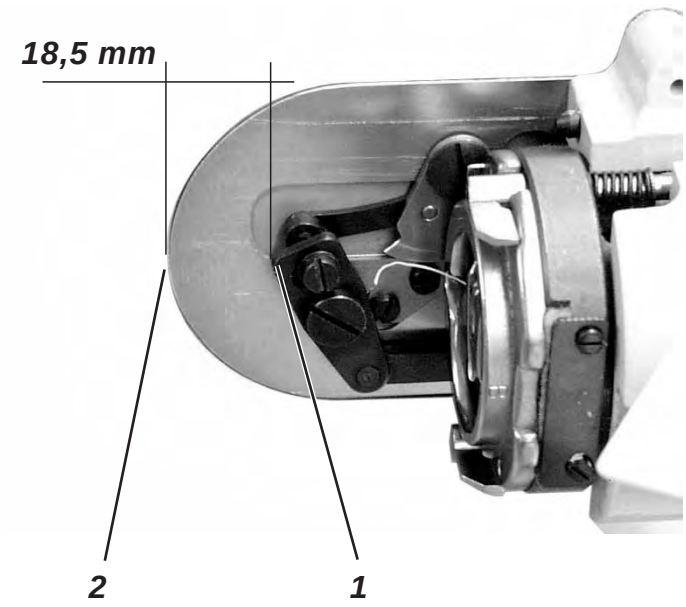
When the roller bolt is pushed in, it must have some axial clearance in the cam.

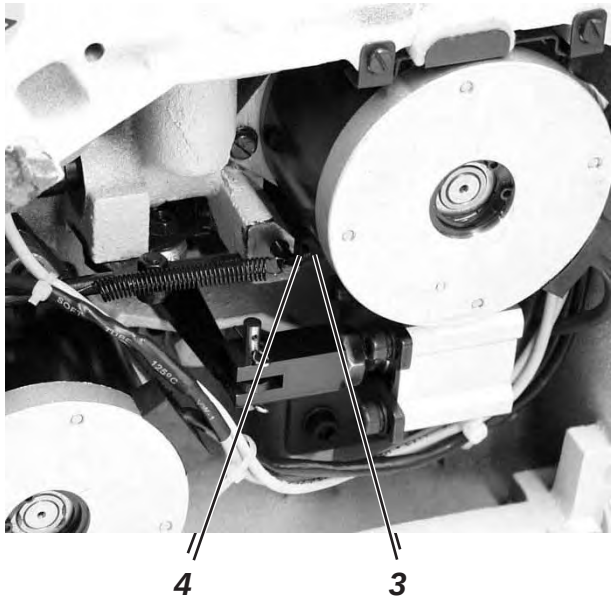
Push magnet shaft 3 to the left into the magnet, and verify that there is some clearance between the roller bolt and the thread trimmer cam.

Adjustment

- Loosen screws 4.
- Press together magnet shaft 2 and magnet 3.
- Then shift the magnet to the left as far as it will go.
- Move magnet back minimally.
- Tighten screws 4.
- Check whether there is some clearance between the roller bolt and the thread trimmer cam when the roller bolt is pushed in.

5.2 Drive shaft position





Caution: danger of injury!

Turn off the main switch.

Check and adjust drive shaft only when the sewing unit is switched off.

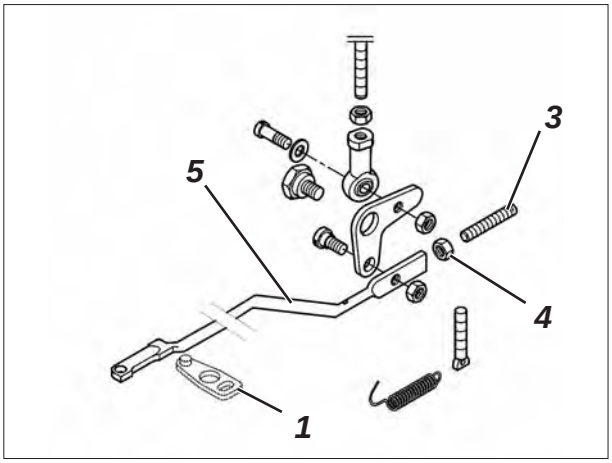
Important

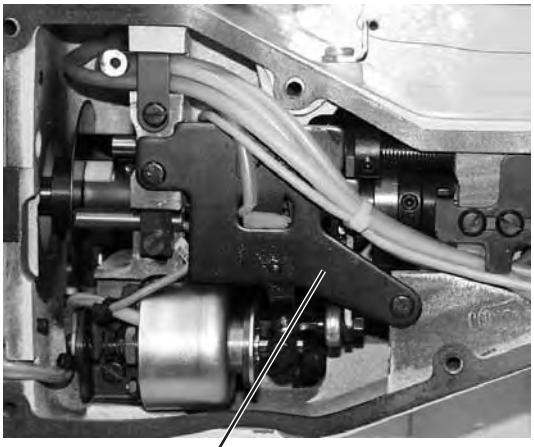
In its resting position, the drive shaft 1 should be 18.5 mm distant from the front edge of the throat plate 2.

– Verify that the drive shaft 1, in resting position, is 18.5 mm from the front edge of the throat plate 2.

ATTENTION: Fragile, danger of breakage!

When the drive bar 5 is being adjusted, the fixing plate 6 for the thread-cutting magnet must also be re-adjusted. See section 5.5.





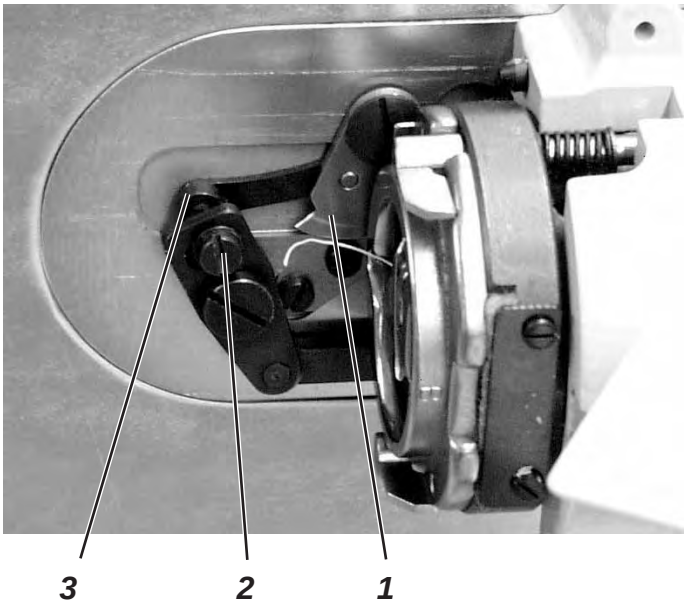
Adjustment

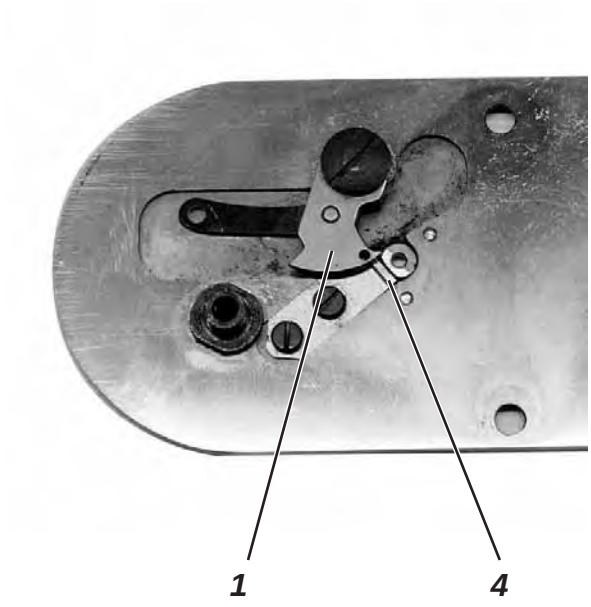
– Loosen locknut 4.
– Adjust the drive shaft 1 with screw 3 so that it is 18.5 mm from the front edge of the throat plate 2.
– Tighten locknut 4.

Note:

When the thread lever is located at upper dead centre, verify that the roller bolt is correctly gripping the thread-cutting cam.

5.3 Position of the hook knife





Caution: danger of injury!

Turn off the main switch.

Check and adjust hook knife only when the sewing unit is switched off.

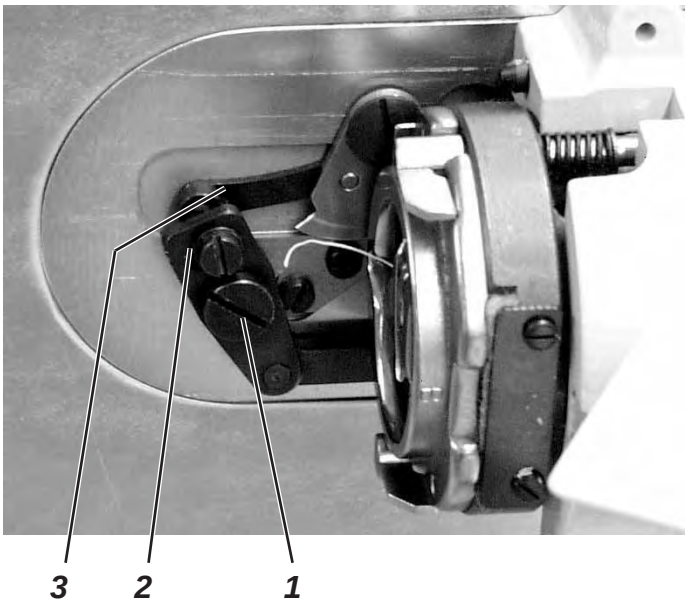
Important

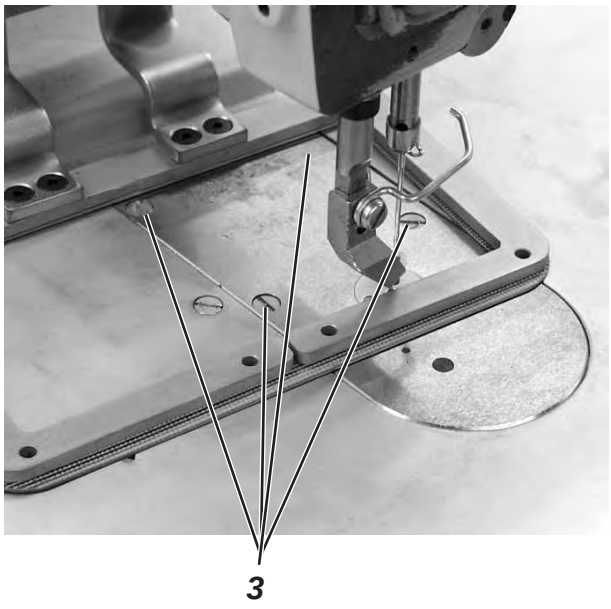
In resting position, the hook knife 1 should abut the counter-knife 4.

Adjustment

- Loosen screw 2.
- Push lever 3 to the right until you notice that the hook knife 1 contacts the counter-knife 4.
- Tighten screw 2.

5.4 Throat plate removal





Caution: danger of injury!
Turn off the main switch.
Remove and mount throat plate only when the sewing unit is switched off.

3

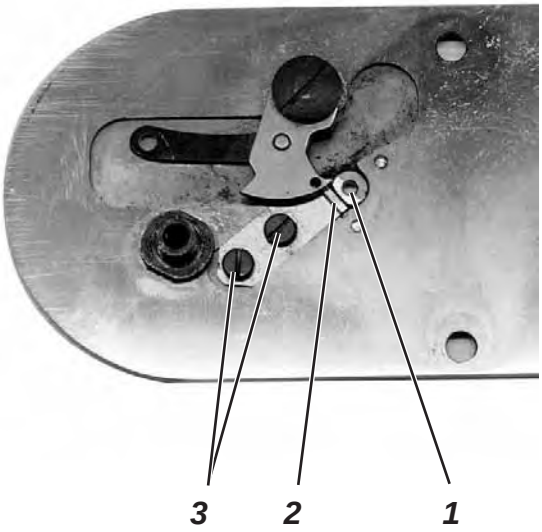
Throat plate removal

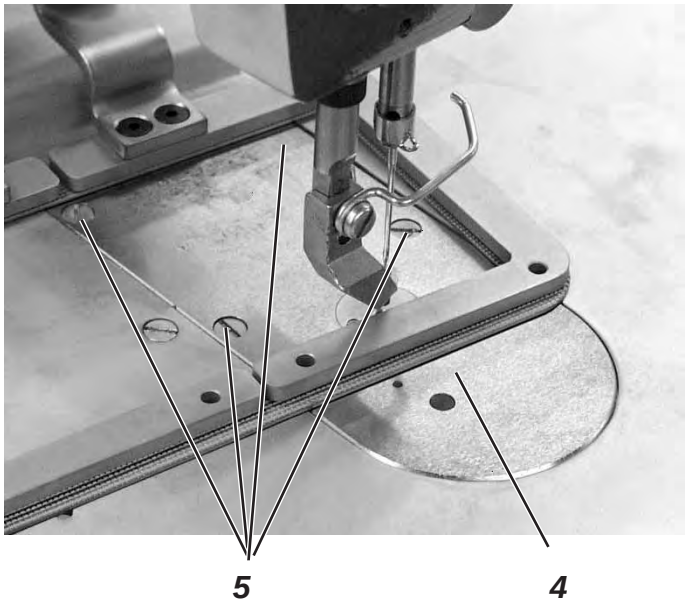
- Unscrew screw 1.
- Pull lever 2 away from the knife mechanism 3.
- Unscrew screw 3.
- Remove throat plate.

Mount throat plate.

- Put on throat plate.
- Screw throat plate tight with screws 3.
- Place lever 2 onto the bolts of the knife mechanism 3.
- Insert screw 1 and tighten.

5.5 Cutting pressure - position of the stationary knife





Caution: danger of injury!

Turn off the main switch.

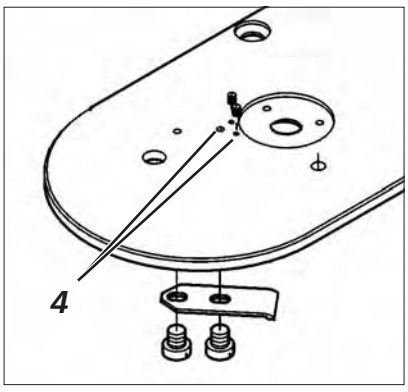
Check and adjust stationary knife only when the sewing unit is switched off.

Note and control

There must be 0.5 mm between the needle hole 1 and counter-knife 2.

The counter-knife 2 should be aligned in such a way that both threads are safely cut in the middle of the cutting area and with the lowest possible pressure. A low cutting pressure ensures a low wear and tear on the knives.

- Unscrew screws 5 and take off throat plate 4.
- Measure the distance between the needle hole 1 and the counter-knife 2.
- Take two threads which are to be cut, and insert them into the needle hole.
- Operate the hook knife, and verify that the threads are cleanly cut.



Adjustment of the counter-knife position

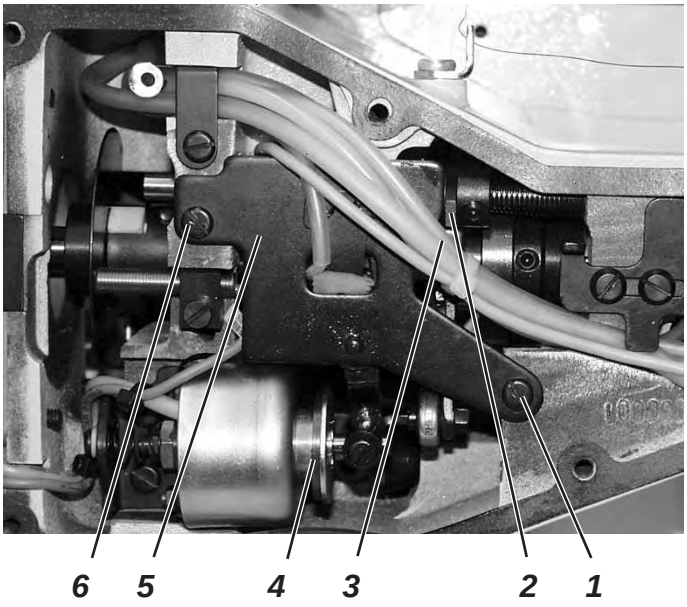
- Loosen screws 3.
- Set distance of 0.5 mm between needle hole 1 and counter knife 2.
- Tighten screws 3.

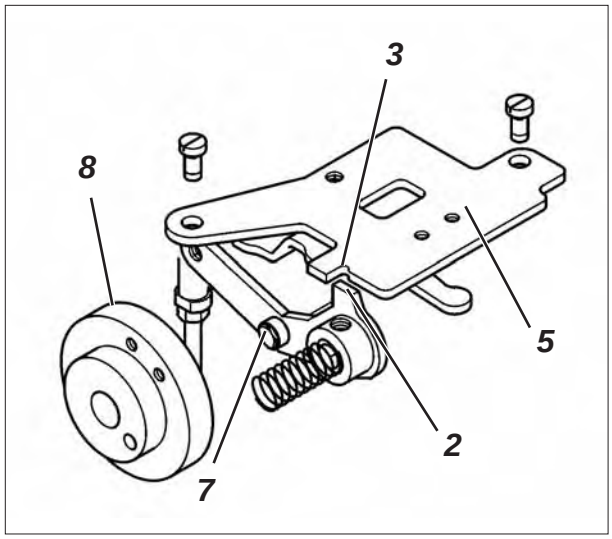
Adjustment of cutting pressure

- Set the cutting pressure with the screws 4 on the upper side of the throat plate.

- Replace throat plate 4.
- Insert screws 5 and tighten.

5.6 Fixing plate for the magnet





Caution: danger of injury!

Turn off the main switch.

Check and adjust fixing plate only when the sewing unit is switched off.

3

Note and control

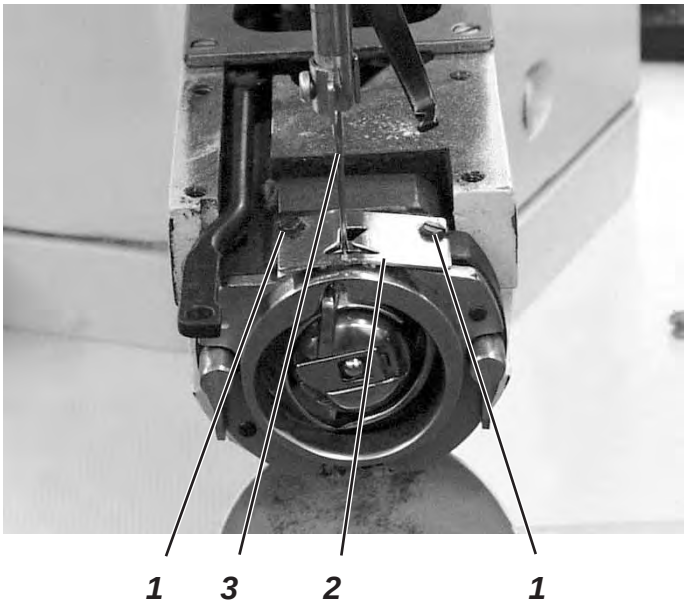
When the thread trimmer is in the resting position, the latch 2 should snap unhindered into the cutout 3 of the fixing plate 5.
There should be as little clearance as possible between the latch 2 and the cutout 3.

- Press the magnet shaft 4 to the left.
- Turn the handwheel until the roller bolts 7 grip on the cam disc 8.
- Turn the handwheel further until the cutting process is ended.
- Check the position of latch 2.

Adjustment

- Loosen screws 1 and 6.
- Adjust fixing plate 5 accordingly.
- Tighten screws 1 and 6.
- Proceed with the cutting process.
- Check the position of latch 2.

5.7 Thread guiding sheet



Caution: danger of injury!

Turn off the main switch.

Check and thread guiding sheet only when the sewing unit is switched off.

Note and control

The needle 3 should stand in the center of the cutout of thread guiding sheet 2.

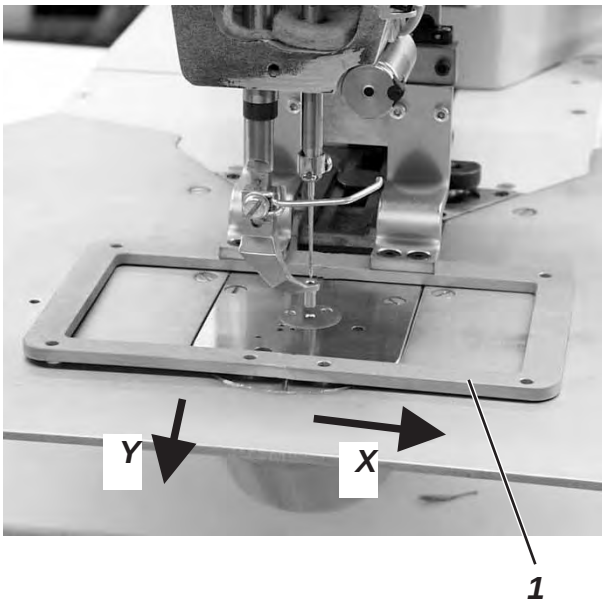
Check position of the thread guiding sheet

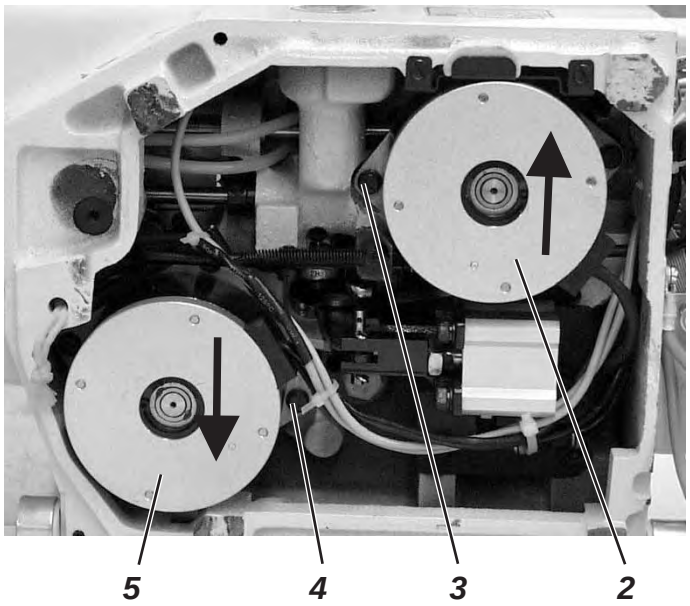
Adjustment

- Loosen screws 1.
- Align thread guiding sheet with the needle.
- Tighten screws 1.

6. Material feed

6.1 Drive and motor positioning





Caution: danger of injury!

Turn off the main switch.

Check and adjust motor only when the sewing unit is switched off.

3

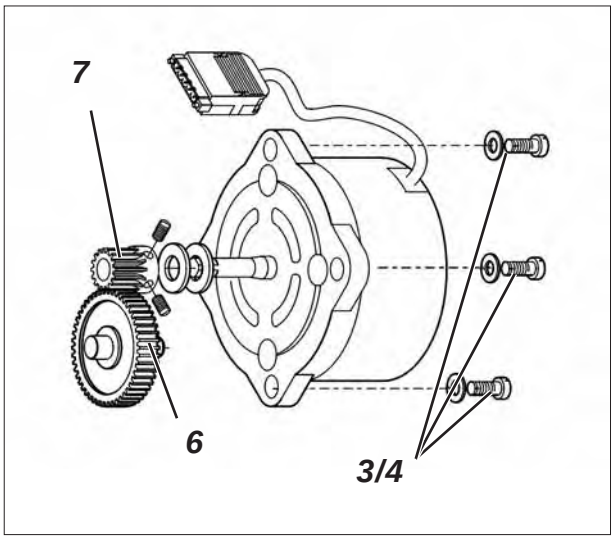
Note and control

The fabric clamp 1 should fit snugly (i.e., have no extra clearance) in the X and Y directions.

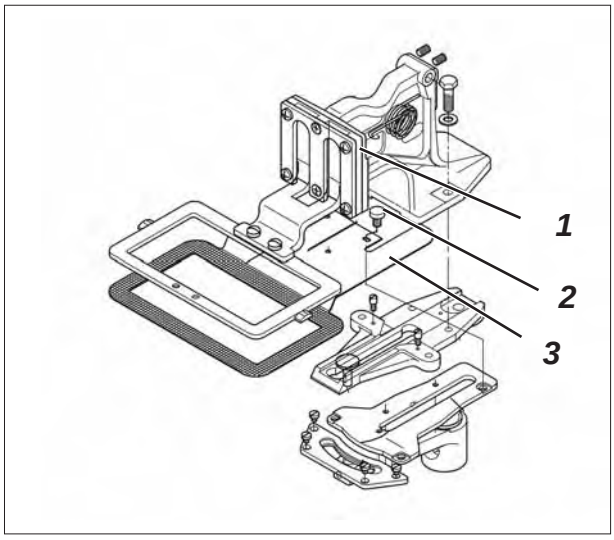
The toothed wheels 7 of the drive motor must grip the toothed wheels 6 snugly, but not so tightly that they move sluggishly.

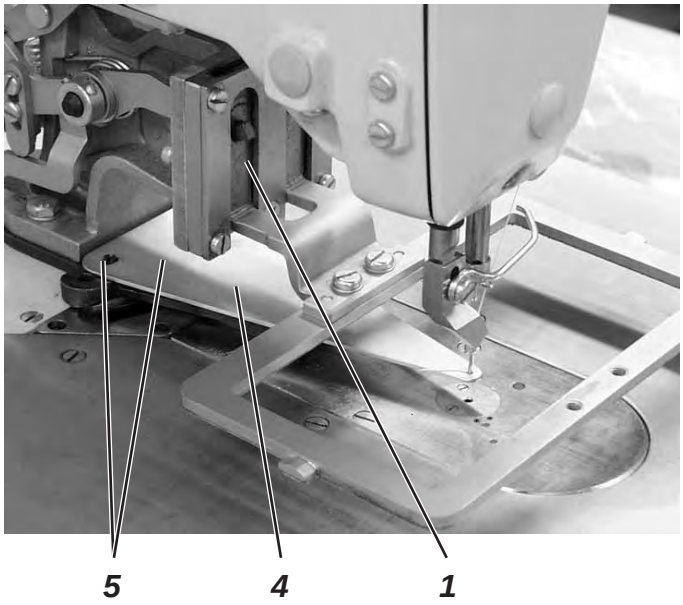
Adjustment

- Loosen screws 3 and 4 (four screws each) on motors 2 and 5 respectively.
- Lightly press the motor in the direction of the arrow against the toothed wheel.
- Tighten screws 3 and 4.



6.2 Reference position





Caution: danger of injury!

Turn off the main switch.

Check and adjust reference position with utmost caution when the sewing unit is switched on.

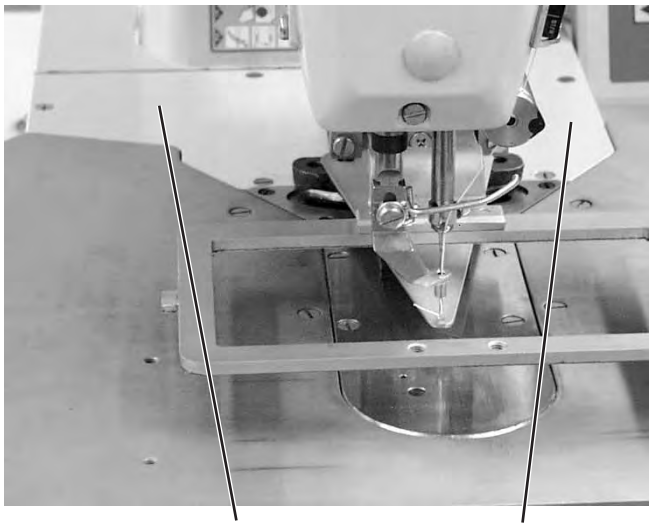
Note and control

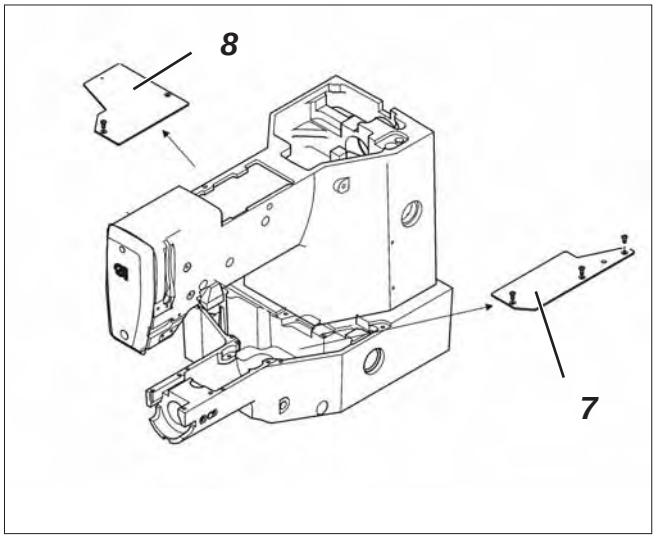
Two step motors move the clamping arm 1.

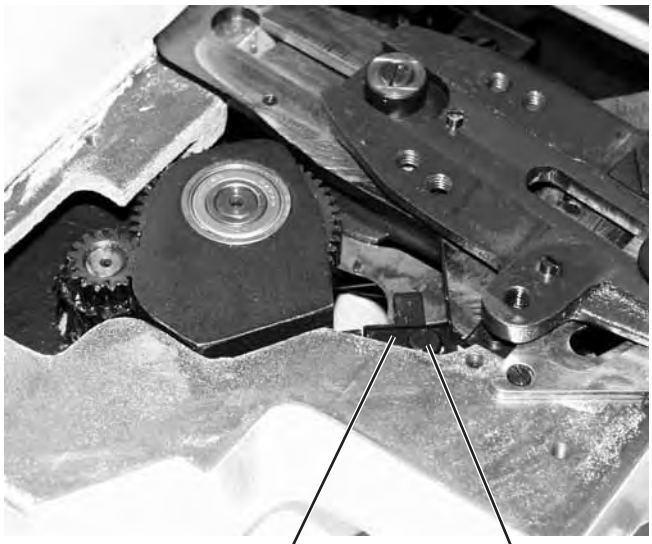
- Unscrew screws 2 and take off rest plate 3.
- Set gauge 4 (in accessories) on the retaining pins 5.
- Turn on the sewing unit.
- Move pedal back.
  The sewing unit calibrates itself.
- Turn the needle bar down with the handwheel. Verify that the needle is located in the middle of the drill-hole 7.

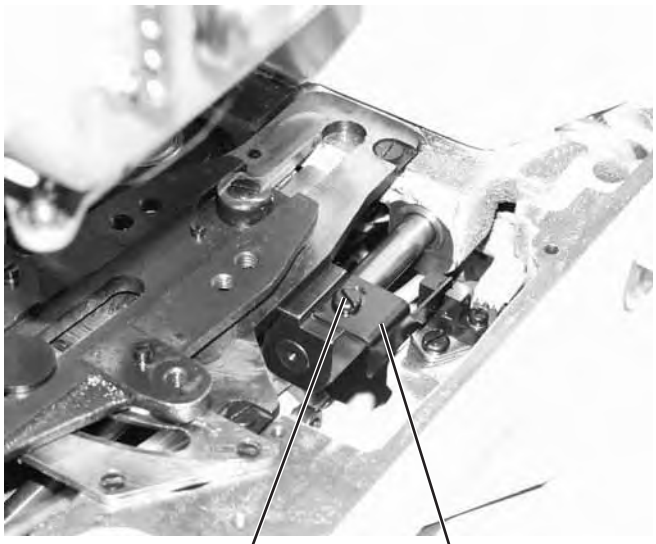
Adjustment

- Take off covers 7 and 8.









Adjustment of the X-axis

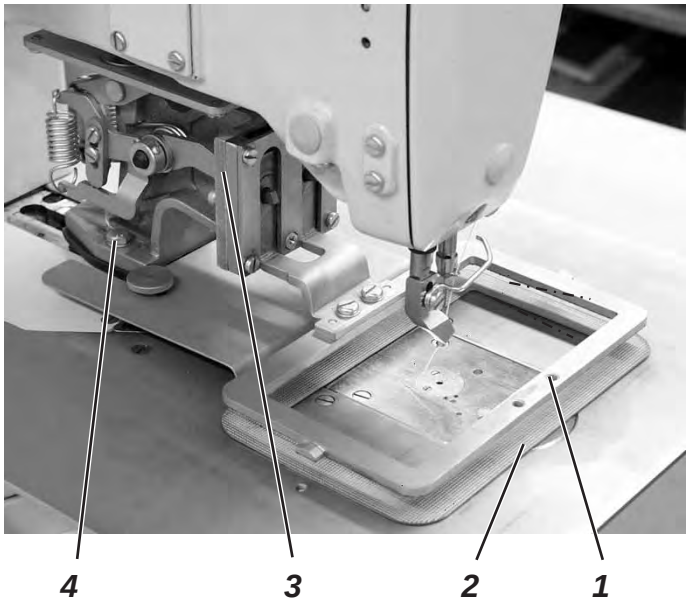
– Loosen screw 9.
– Adjust light barrier 10 accordingly.
– Tighten screw 9.

Adjustment **of the Y-axis**

– Loosen screw 12.
– Adjust cam switch 11 accordingly.
– Tighten screw 12.

– Move pedal back.
  The sewing unit calibrates itself and stays at the zero-point.
– Turn the needle bar down with the handwheel. Verify that the needle is located in the middle of the drill-hole.

6.3 Position of the fabric clamps in relationship to the transport plate.



Caution: danger of injury!

Turn off the main switch.

The transport plate and fabric clamp should only be checked and adjusted when the sewing unit is turned off.

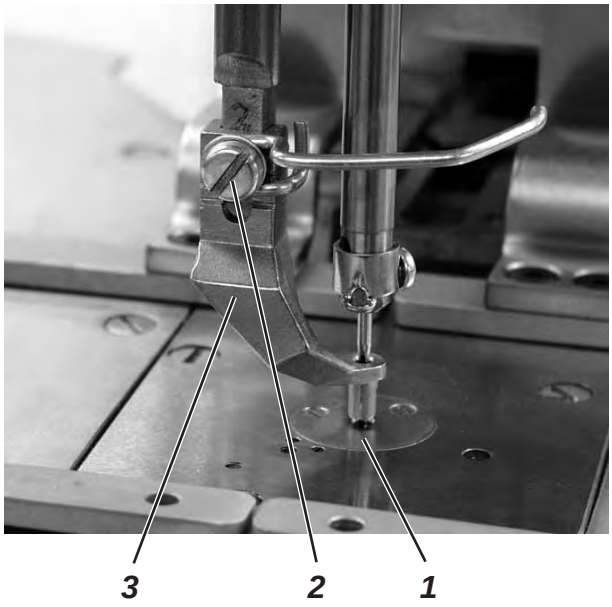
Important

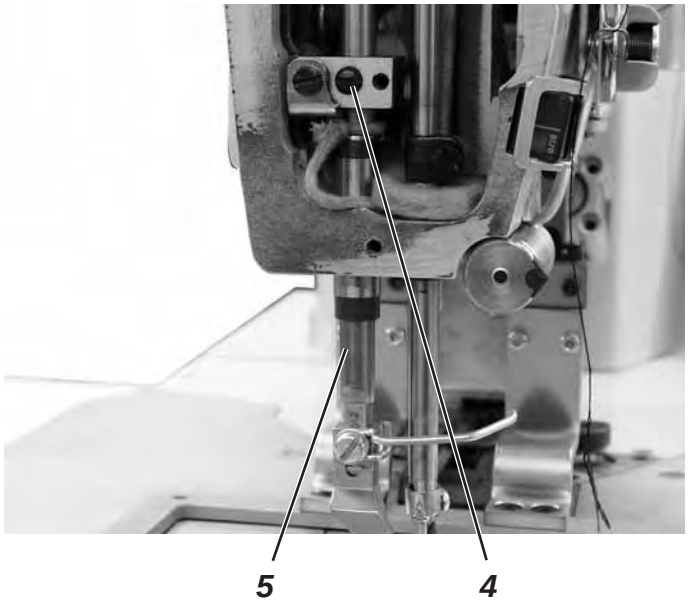
The fabric clamp 1 and transport plate 2 should be arranged as congruently as possible.

Adjustment

- Loosen screws 4 (two screws).
- Move clamping arm so that the fabric clamp 1 and the transport plate 2 are as congruent as possible.
- Tighten screws 4.

6.4 Sewing foot





Caution: danger of injury!

Turn off the main switch

Check and adjust sewing foot only when the sewing unit is switched off.

Note and control

The sewing foot should be fastened as deeply as possible on the cloth presser bar, so that the operator can adjust the sewing foot for thicker material when necessary.

The sewing foot, at its deepest position, should be 0.5 mm from the throat plate inset 1.

– Turn handwheel until the needle is at its lowest point.
– Check the position of the sewing foot.

Adjustment

– Turn off the sewing unit and remove air pressure.

or

– “Safe stop” and press the “S” key.
– Loosen screw 2.
– Press the sewing foot all the way down into its slotted hole.
– Tighten screw 2.
– Turn the handwheel until the needle is positioned at its deepest point.
– Loosen screw 4.
– Push the cloth presser bar 5 down so that the sewing foot, in its deepest position, is 0.5 mm from the throat plate inset 1.
– Tighten screw 4.
– Loosen sewing foot with screw 2 and adjust to fit material thickness.
– Tighten screw 2.

7. Oil lubrication

Caution: danger of injury!

Oil can cause damage to skin.
Avoid prolonged contact with skin.
Wash thoroughly after any contact.

ATTENTION!

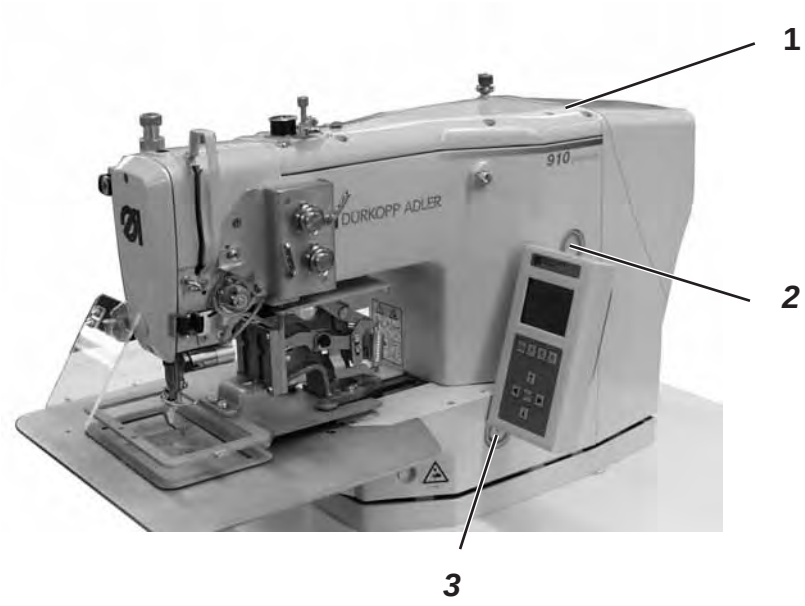
The handling and disposal of mineral oils is subject to laws and regulations.
Deliver used oil to an authorized collecting station.
Protect your environment.
Be careful not to spill any oil.

Oil the sewing unit exclusively with the lubricating oil **DA-10** or equivalent oil with the following specifications:

- Viscosity at 40° C: 10 mm²/s
- Ignition point: 150° C

DA-10 can be purchased at sales branches of **DÜRKOPP ADLER AG,** under the following part number:

250-ml container:	9047 000011
1 liter container:	9047 000012
2 liter container:	9047 000013
5 liter container:	9047 000014

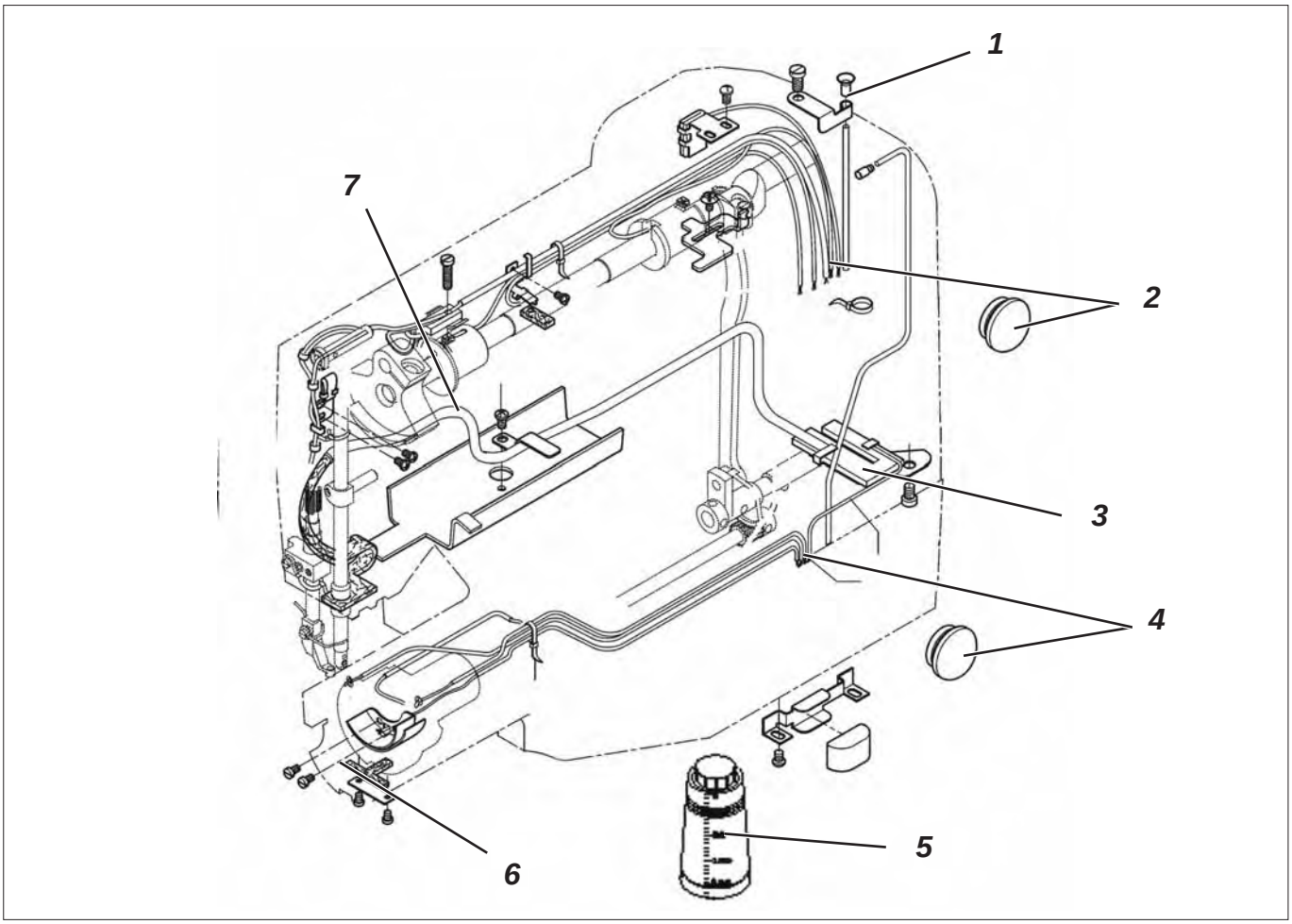


The sewing unit is equipped with a central oil wick lubrication. The bearings are supplied by the oil reservoirs 2 and 3.

Oil must be visible through the window.

- Fill oil though the drill-hole 1, up to the red mark on the reservoir 3. The reservoir 3 is filled by the overflow of reservoir 2.

7.1 Oil circulation



From the filler pipe 1, the oil flows into the oil reservoir 2 and then it runs over into the oil reservoir 4.

All lubricating points in the arm and head zone are provided with oil from the oil reservoir 2. The oil reservoir 4 supplies all lubricating points of the base plate.

Oil that sprays off of the crankshaft drive flows into the felt pad 3 via the oil pan 7.

The oil which is not needed by the hook flows back to the oil pan via the hook-oil return pipe 6.

All sprayed-off residual oil flows into the oil pan and then drips into the reservoir 5 under the table plate.

Caution: danger of injury!

Turn off the main switch.

Carry out assembly work on the oil circulation only when the sewing unit is switched off

ATTENTION!

When carrying out assembly work please observe that
the hose ends and wicks are re-fixed to the correct connections.

Empty reservoir 5 regularly.

8. Maintenance

Caution: danger of injury!

Turn off the main switch.
Maintenance work on the sewing unit must only be carried out when the machine is switched off.

All daily and weekly maintenance work (cleaning and oiling) to be carried out by the operators of the sewing unit are described in the operating instructions (Chapter 10). They are only listed in the following table to complete the picture.

Maintenance work to be carried out	**Operating hours**			
	8	**40**	**160**	**500**
Sewing unit head				
- Remove sewing dust and residual thread.	X			
- Check oil level in the oil reservoirs for the lubrication of the sewing unit head	X			
Control circuitry cabinet				
- Remove sewing dust and residual thread.	X			
- Clean fan grill	X			