DÜRKOPP ADLER AG

768

Spezialnähmaschine

Serviceanleitung

Instructions for service

D

GB

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1. General notes

ATTENTION !

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

Caution: Danger of injury !

In case of repair, alteration or maintenance work switch off main switch and disconnect the machine from the pneumatic supply system.

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

The instruction manual on hand describes the adjustment of the sewing machine in an appropriate sequence.

Please observe in this connection that various setting positions are interdependent. Therefore it is absolutely necessary to do the adjustment following the described order.

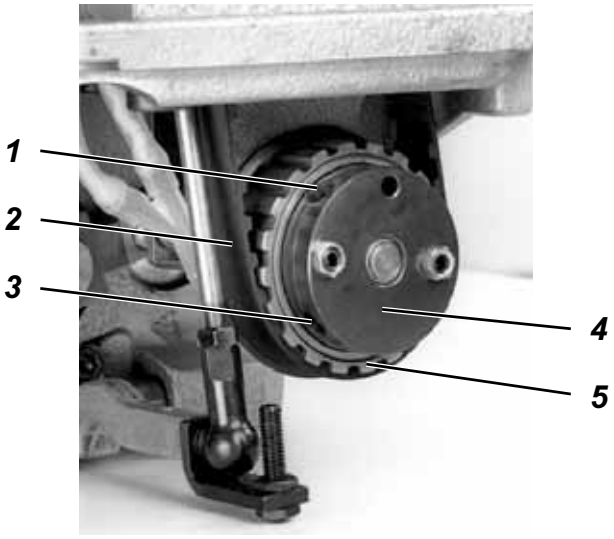
For all setting operations of parts involved in the stitch formation a new needle without any damage has to be inserted.

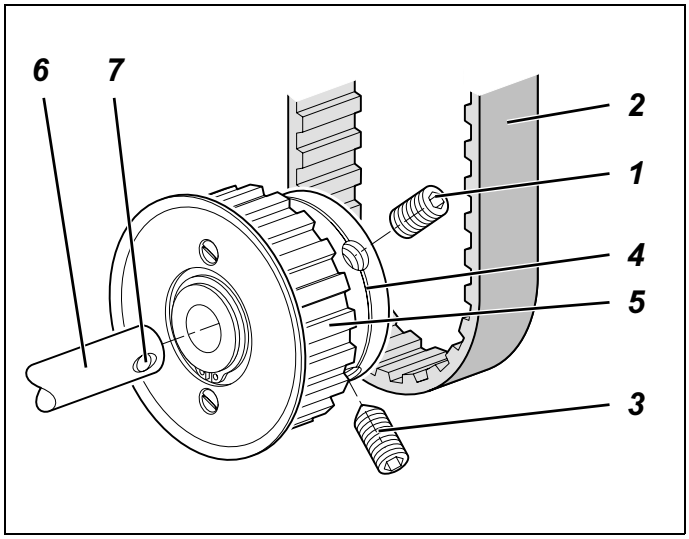
1.1 Gauge kit

The setting gauges mentioned below allow a precise setting and testing of the sewing machine.

Pos.	Setting gauge	Order No.	Use
1	Gauge	0981 150003	looping stroke (2mm)
2	Adjusting block	0981 150002	looping stroke

2. Position of the lower toothed belt wheel





Caution: Danger of injury !

Switch off main switch.
Check and adjust the position of the lower toothed belt wheel only when sewing machine is switched off.

Standard checking

The lower toothed belt wheel 5 is axially and radially fixed on shaft 6 via core pin 3.

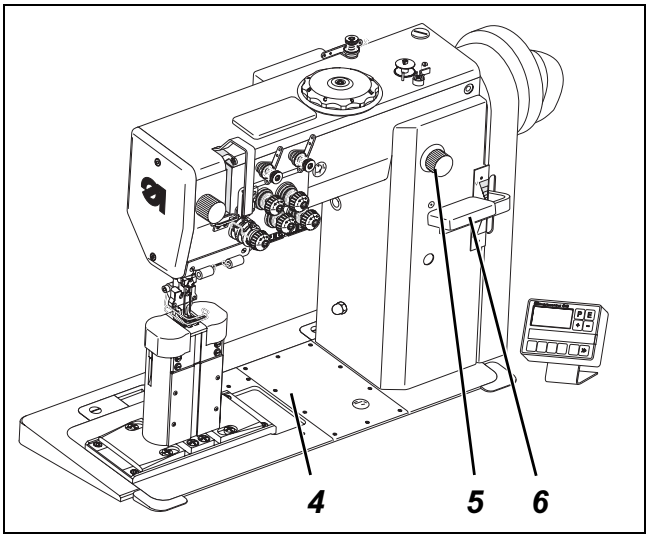
The position of the lower toothed belt wheel 5 is correct if core pin 3 (first core pin in direction of rotation) can be screwed in drill-hole 7 of the shaft.

Correction

- Tilt sewing machine head back.
- Loosen core pins 1 and 3 at the slip clutch 4.
- Twist lower toothed belt wheel 5 with slip clutch 4 on shaft 6 and/or shift axially.
  It must be possible to screw core pin 3 (first core pin in direction of rotation) in the drill-hole 7 of shaft 6.
- Check all settings described hereafter and correct them, if necessary.

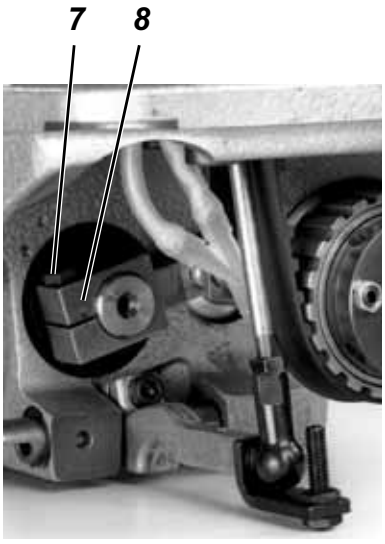
3. Zero position, feed with equipment

3.1 Zero position adjustment (position of the stitch regulator link)



Caution: Danger of injury !

Switch off main switch.
Check and adjust zero position of the stitch regulator only when sewing machine is switched off.



Standard checking

If stitch length "**0**" is set, feed-dog and needle must not make a feeding motion when turning the handwheel.

- Remove cover of oil pan 4.
- Set stitch length "**0**" with stitch regulator handle 6.
  Turn button 5 counter-clockwise as far as it will go.
- Put Allen key in screw 1 and turn handwheel.
  The adjustment is correct at the slightest possible motion of the Allen key.

Correction

- Tilt sewing machine head back.
- Loosen clamping screw 7 at block 8.
- Put a pin in drill-hole 3 of the stitch regulator shaft.
  Twist stitch regulator shaft with stitch regulator link.
- Tighten clamping screw 7.

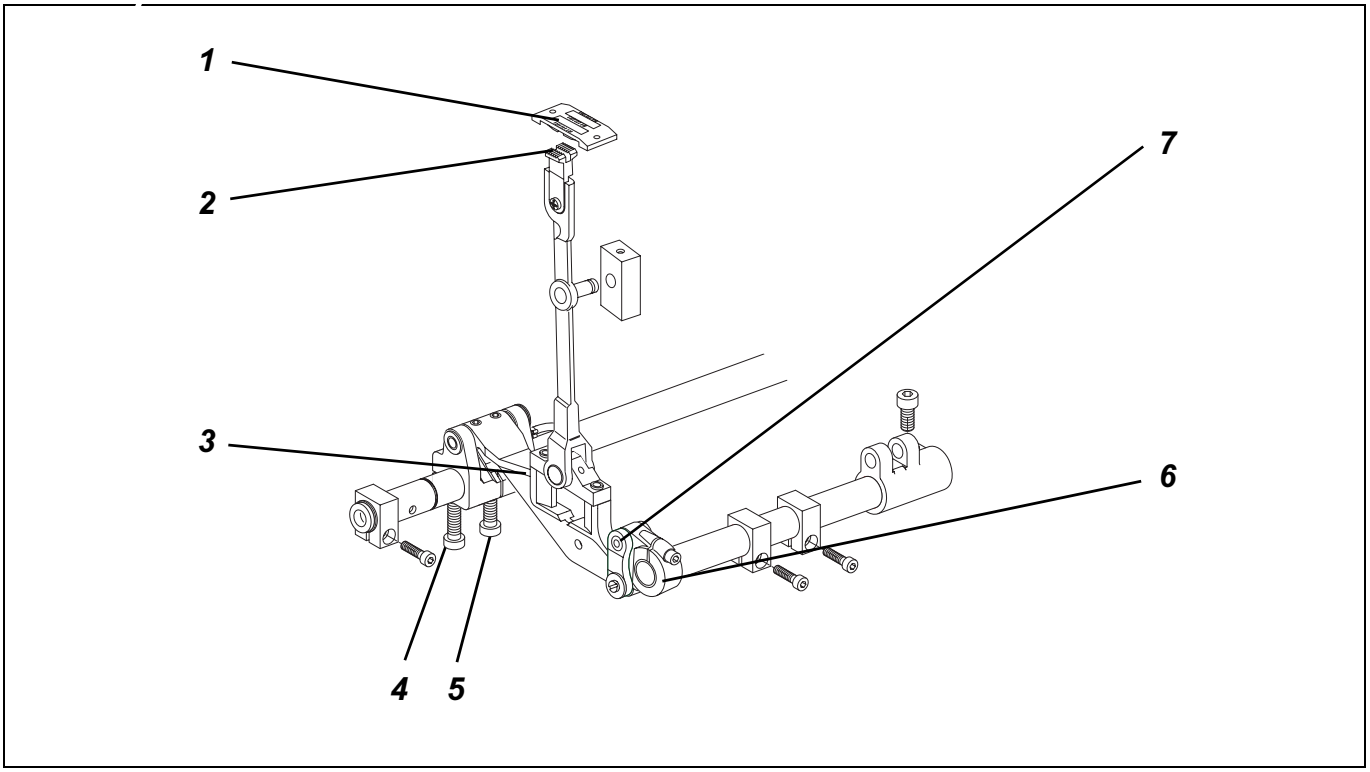
ATTENTION !

In case of a wrong adjustment the backward stitch lengths and the forward stitch lengths will differ.

The core pin 2 at the oil pan fixes the stitch regulator shaft.
Never screw in the core pin 2 up to the bottom.
If the core pin 2 is screwed in too deeply, the motion of the stitch regulator link can be hindered.

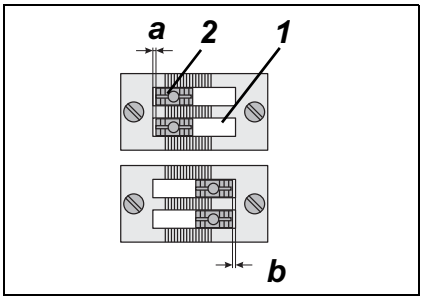
3.2 Bottom feed adjustment

3.2.1 Position of the feed-dog in the throat plate cutout



Caution: Danger of injury !

Switch off main switch.
Check and adjust position of the feed-dog only when sewing machine is switched off.



Standard checking

Laterial position:
The feed-dog 2 must be in the centre of the throat plate cutout 1.

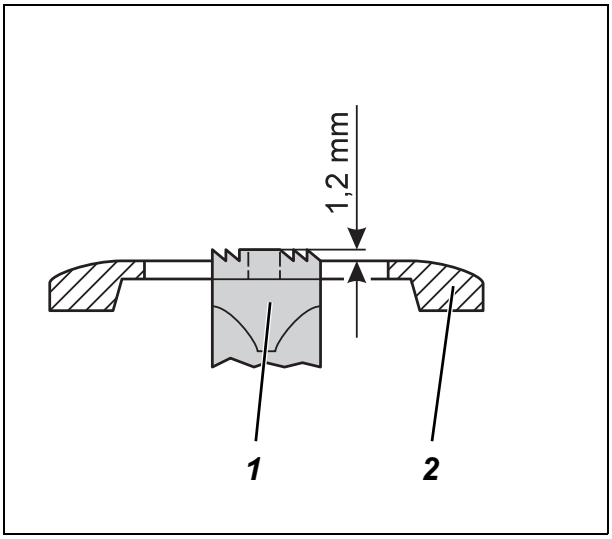
Position in feed direction:
In case of maximum stitch length the distance between feed-dog 2 and throat plate cutout 1 must be equal at the back (a) and at the front (b).

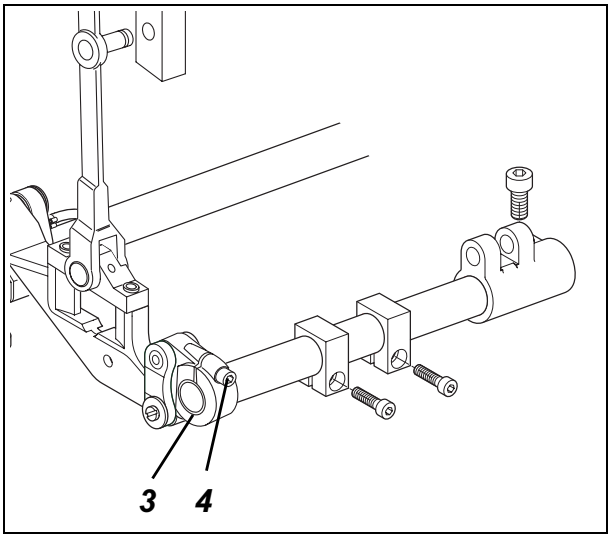
- Set maximum stitch length.
  Turn button in clockwise direction as far as it will go.
- Turn handwheel and check position of feed-dog 2.

Correction

- Loosen screws 4 and 5.
- Adjust feed-dog bar 3 in such a way that the above-mentioned conditions are fulfilled.
- Tighten screws 4 and 5 again.
- It has to be observed that the feed-dog is 1.2 mm higher than the throat plate and the feed-dog bar must be freely movable in the feed-dog support (see following chapter).
- Check whether the lifting shaft crank 6 has lateral clearance to joint 7.
  If not, the position of the lifting shaft crank 6 has to be changed correspondingly.

3.2.2 Height of the feed-dog





Caution: Danger of injury !

Switch off main switch.
Check and adjust height of the feed-dog only when sewing machine is switched off.

Standard checking

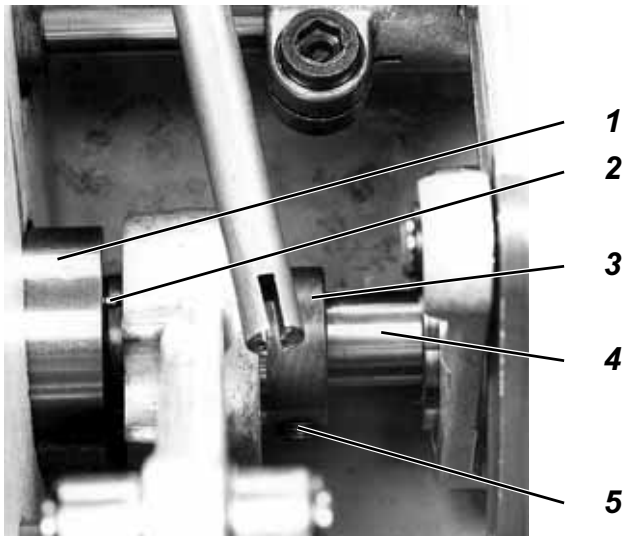
The highest position of feed-dog 1 must be 1.2 mm (approx. one tooth depth) above the throat plate level.

- Set stitch length "0".
  Turn button counter-clockwise as far as it will go.
- Turn handwheel until feed-dog 1 has reached its highest position.
- Check height of feed-dog 1 above throat plate level 2.

Correction

- Set stitch length "0".
- Loosen clamping screw 4 at crank 3.
- Twist crank 3 in such a way that the highest position of feed-dog 1 is 1.2 mm above throat plate 2.
  Attention!
  Crank 3 must not be shifted axially when being turned.
- Tighten clamping screw 4.

3.2.3 Lifting motion of the feed-dog



Caution: Danger of injury !

Switch off main switch.
Check and adjust lifting motion of the feed-dog only when sewing machine is switched off.

Standard checking

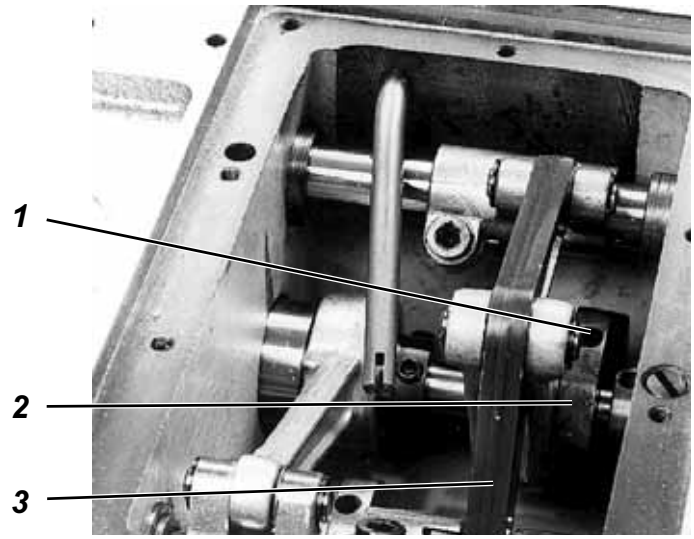
At needle position "down" the feed-dog must have reached its highest position.
If the needle moving downwards and the feed-dog moving upwards reach the throat plate level simultaneously, the adjustment is correct.

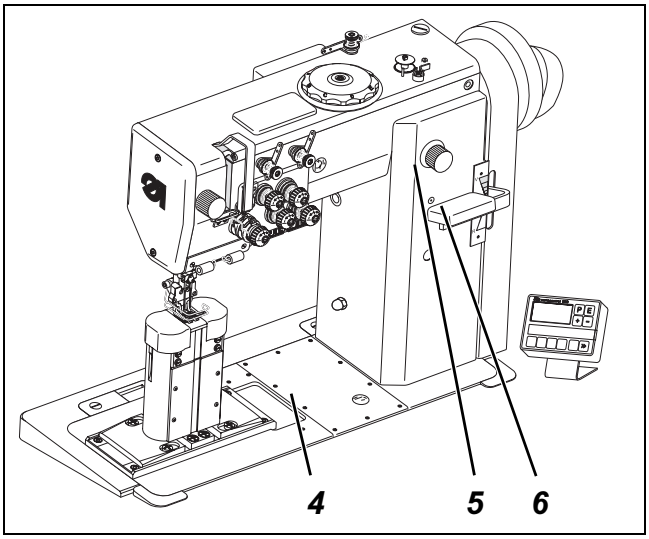
- Set stitch length "0".
  Turn button counter-clockwise as far as it will go.
- Move needle to position "down" by handwheel and check position of the feed-dog.

Correction

- Loosen two screws 5.
- Twist eccentric 3.
  The adjustment is correct if the above-mentioned conditions are fulfilled.
- For axial fixation press shaft 4 to the right and push eccentric 3 to the left against the pump.
  The lugs 2 of pump ring 1 must be in the corresponding grooves of the eccentric 3.
- Tighten two screws 5 again.

3.2.4 Feeding motion of the feed-dog





Caution: Danger of injury !

Switch off main switch.
Check and adjust feeding motion of the feed-dog only when sewing machine is switched off.

Standard checking

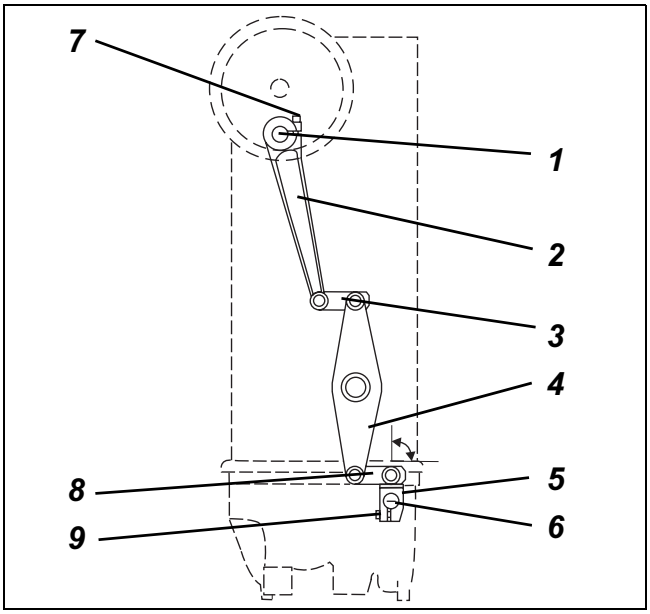
When the needle has moved upwards by 0.5 mm from its position "down", needle and feed-dog must not make a feeding motion when actuating the stitch regulator handle 6.

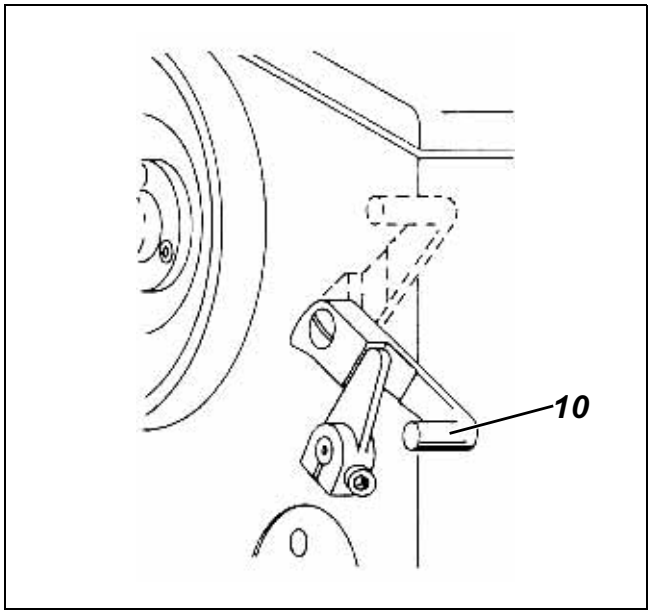
- Set maximum stitch length.
  Turn button 5 in clockwise direction as far as it will go.
- Turn handwheel until the needle is 0.5 mm above its bottom dead centre.
- Press stitch regulator handle 6 down and observe needle.

Correction

- Loosen two screws 1.
- Set eccentric 2.
  The needle must not move 0.5 mm after the bottom dead centre.
  Position eccentric 2 axially.
  The tie rod 3 should be central to the running surface of the eccentric.
- Tighten two screws 1 again.

3.2.5 Synchronous run of needle feed and bottom feed





The motion of the feeding shaft 6 is transmitted via block 5 and tie rod 8 to lever 4 and from there via tie rod 3 and lever 2 to needle bar wing 1.

Caution: Danger of injury !

Switch off main switch.
Check and adjust position of block 6 only when sewing machine is switched off.

Standard checking

During the feed the needle must not move in the needle hole. At stitch length **"0"** block 6 must be in perpendicular position.

- Set stitch length "**0**".
  Turn button counter-clockwise as far as it will go.
- Check position of block 6.
  Block 6 must be in parallel position to the cast edge of the casing.
- Lock sewing feet in lifted position with lifting lever 10.
- Set maximum stitch length.
  Turn button in clockwise direction as far as it will go.
- Turn handwheel and check the synchronous feeding motion of feed-dog and needle bar.
  The adjustment is correct if the position of the needle in the needle hole of the feed-dog does not change.

Correction

- Tilt sewing machine head back.
- Loosen clamping screws 7 and 9.
- Twist block 5 on feeding shaft 6.
- Tighten clamping screws 7 and 9.

ATTENTION !

After twisting of block 5 it has to be checked that the needle bar wing 1 is positioned in feed direction. Correct, if necessary (see chapter 6.2).

3.3 Top feed adjustment

Mechanical sewing foot stroke adjustment

By means of setting wheel 7 on the arm cover the sewing foot stroke can quickly be adapted to the material thickness, even while sewing.

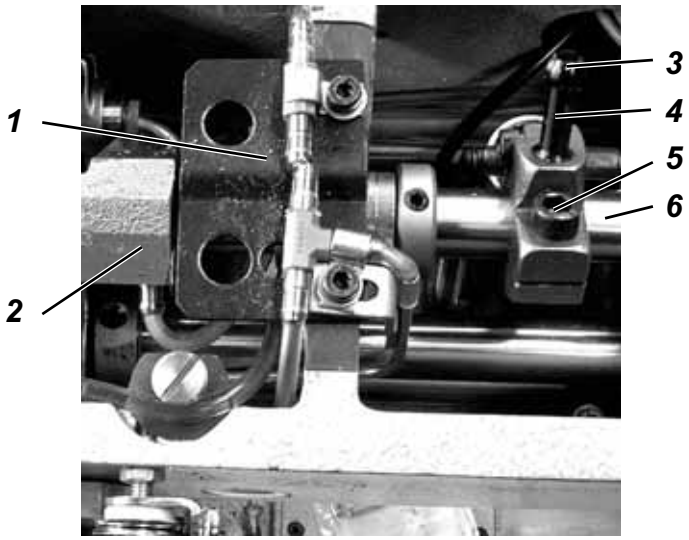
For this purpose the articulated gear for the sewing foot stroke adjustment is equipped with an eccentric. The eccentric allows a sewing foot stroke adjustment from 1 to 6 mm or 1.6 to 7 mm respectively.

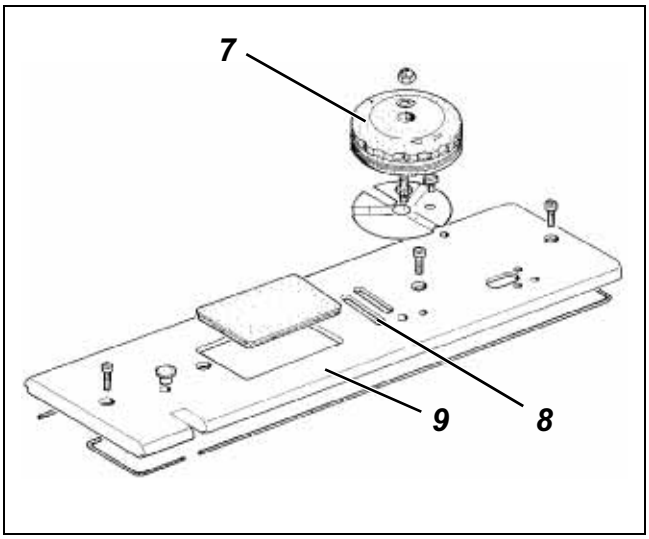
Electropneumatic quick stroke adjustment (HP)

The post bed sewing machine c**l. 768** is equipped with a standard electropneumatic quick stroke adjustment.

In case of thick spots in the material or for climbing over transversal seams the maximum sewing foot stroke can be engaged via knee switch while sewing.

3.3.1 Lateral position of the lever for transmitting the setting wheel motion





The rotation of the setting wheel 7 for the sewing foot stroke adjustment is transmitted to shaft 6 via ball stud 3 in lever 4.

Caution: Danger of injury !

Switch off main switch.
Check and adjust lateral position of the lever only when sewing machine is switched off.

Standard checking

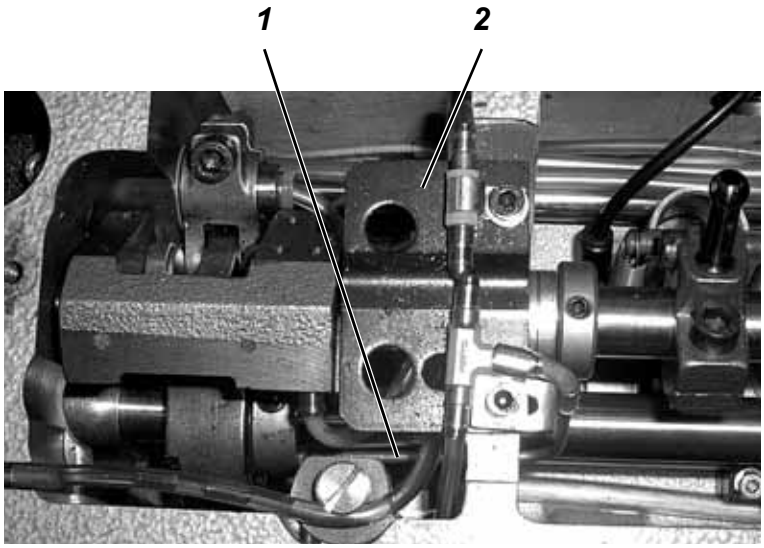
The lateral position of lever 4 must ensure that the ball stud 3 is in the centre of slit 8 when the arm cover is placed on.

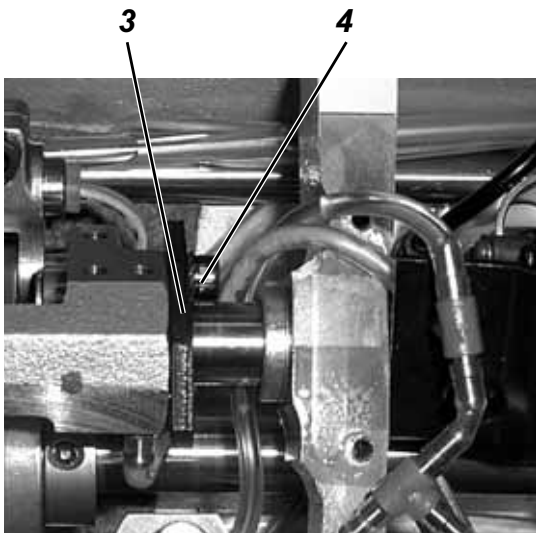
- Unscrew fastening screws of arm cover 9.
- Lift arm cover 9 slightly and check lateral position of lever 4.

Correction

- Remove arm cover.
- Loosen clamping screw 5 at lever 4.
- Shift lever 4 axially on shaft 6.
  Attention!
  The lever must not be twisted when being shifted axially.
- Tighten clamping screw 5.

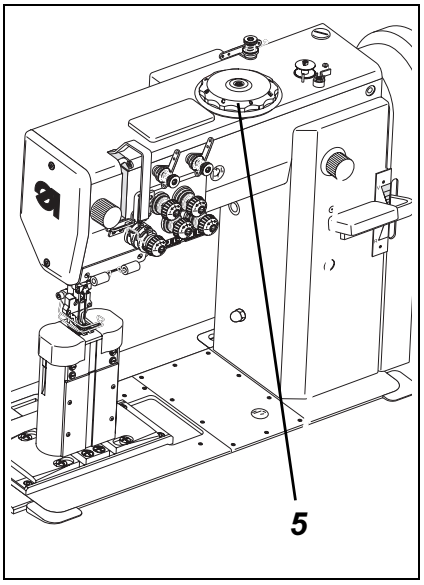
3.3.2 Setting range of the sewing foot stroke adjustment





Caution: Danger of injury !

Switch off main switch.
Check and adjust setting range of sewing foot stroke adjustment only when sewing machine is switched off.



Standard checking

If the setting wheel 5 for the sewing foot stroke adjustment is in position "**min.**", the minimum sewing foot stroke of 1 mm or 1.6 mm respectively must be effective.

- Turn setting wheel in setting position "**min.**".
- Turn handwheel and measure sewing foot stroke.

Correction

- Screw off arm cover.
- Screw off safety stop 2.
- Loosen fastening screw 4 of stop sheet 3.
- Adjust stop sheet 3.

  Stroke adjustment range 1 to 6 mm
  Press stop sheet 3 upwards as far as it will go.

  Stroke adjustment range 1.6 to 7 mm
  Press stop sheet 3 downwards as far as it will go.
- Tighten clamping screw 4.
- Screw on safety stop 2.

ATTENTION !

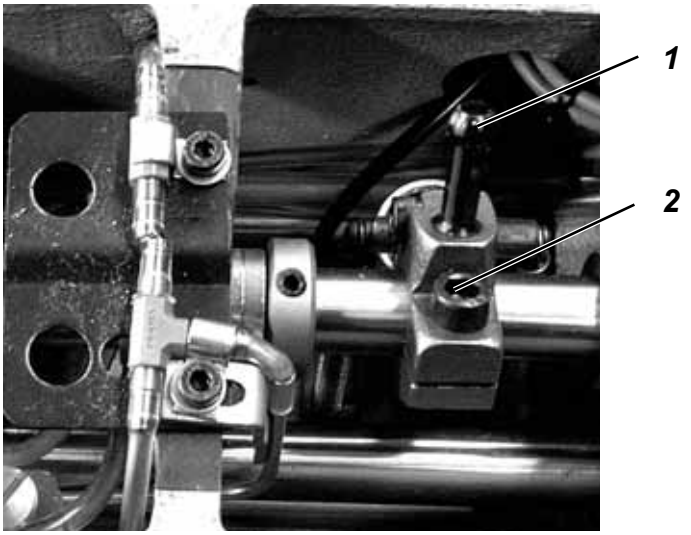
The safety stop 2 avoids that - when operating without arm cover - the joint, which is no longer locked, is pulled out of the bearing.
Never run the sewing machine without safety stop 2.

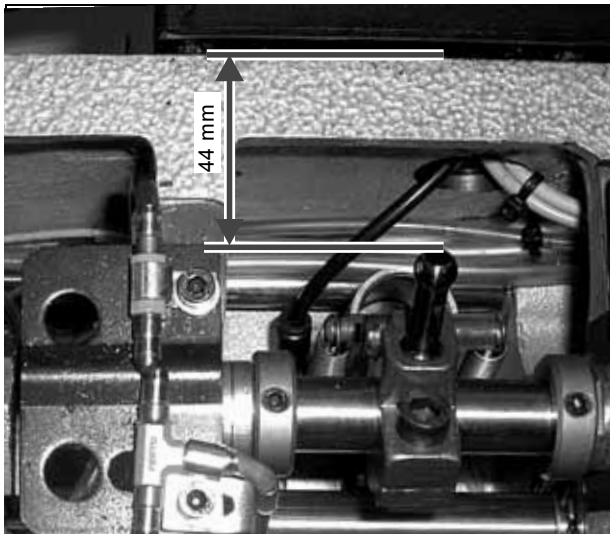
- The oil wick 1 must be in the lubrication groove of the stroke eccentric.

ATTENTION !

After a correction of the setting range of the sewing foot stroke adjustment the feeding motion of the feed-dog has to be checked and corrected, if necessary (see chapter 3.2.4).

3.3.3 Position of the lever for transmitting the setting wheel motion





Caution: Danger of injury !

Switch off main switch.
Check and adjust position of the lever only when sewing machine is switched off.

Standard checking

Check without setting gauge:

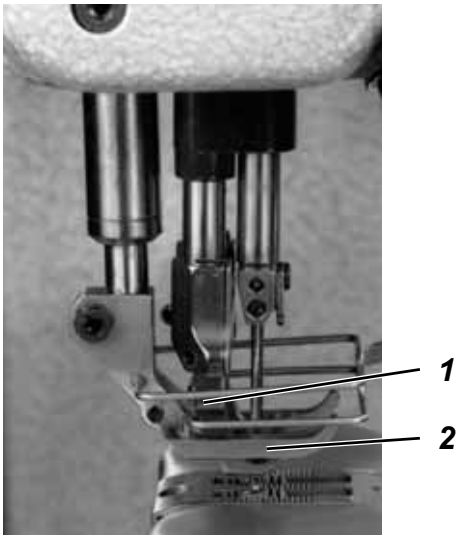
The distance of ball stud 1 to the exterior surface of the casing wall must amount to 44 mm.

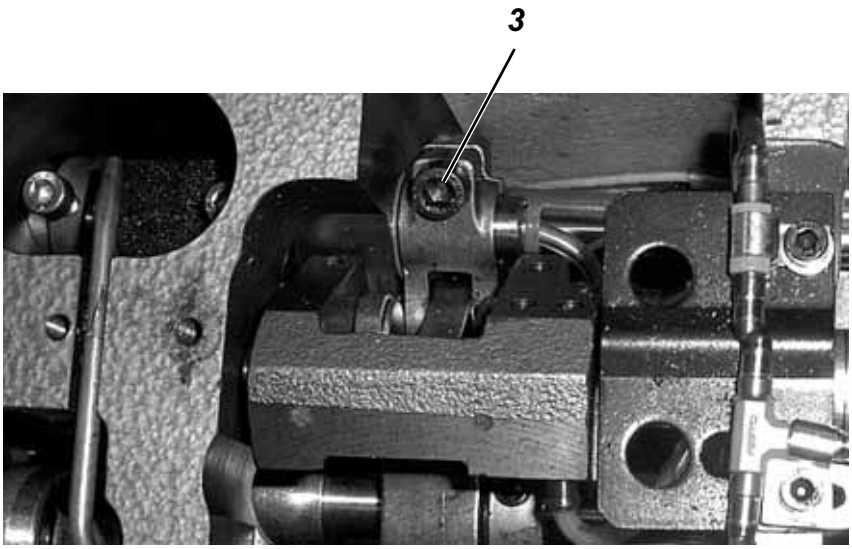
– Measure distance of the ball stud to the exterior surface of the casing wall.

Correction

– Loosen clamping screw 2 at the lever.
– If no setting gauge is available, twist lever on shaft until the distance of ball stud 1 to the exterior surface of the casing amounts to 44 mm.
– Tighten clamping screw 2.
– Screw on arm cover.

3.3.4 Feeding foot and presser foot stroke





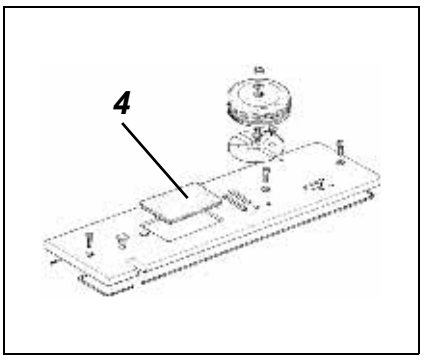
Caution: Danger of injury !

Switch off main switch.
Check and adjust feeding foot and presser foot stroke only when sewing machine is switched off.

Standard checking

The strokes of feeding foot 1 and presser foot 2 must be equally high, if the minimum sewing foot stroke is set.

- Set stitch length "0".
- Set sewing foot pressure.
- Set minimum sewing foot stroke (setting wheel in position "**min.**").
- Turn handwheel and compare strokes of feeding foot 1 and presser foot 2.



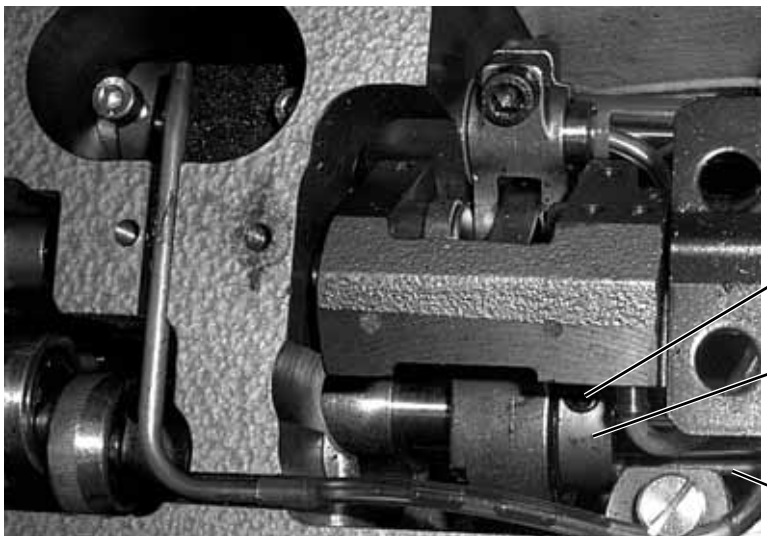
Correction

- Remove plastic cover 4 from the arm cover.
- Turn handwheel.
  The sewing foot with the higher stroke must be slightly lifted from the throat plate.
- Loosen screw 3.
  In case the presser foot had been lifted, it is lowered by the spring.
  In case the feeding foot had been lifted, it has to be pressed downwards manually.
- Tighten screw 3 again.
- Check whether both strokes are equally high.
  If not, the adjustment has to be corrected.
- Reinsert plastic cover 4.

3.3.5 Feeding motion of the feeding foot

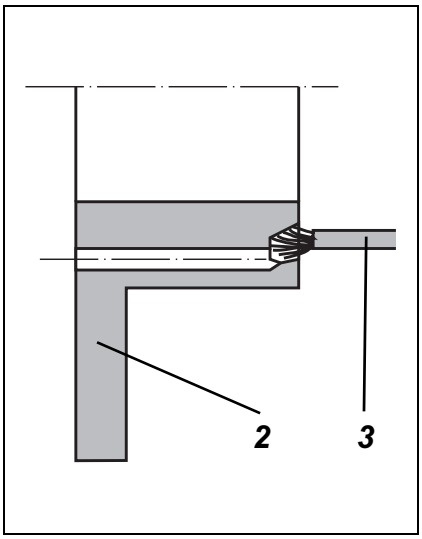
The correct feeding motion of feeding foot 1 ensues from the adjustment of the feeding motion of the feed-dog (see chapter 3.2.4). Both motions are generated by the same eccentric.

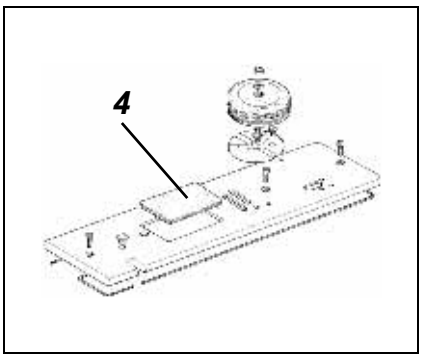
3.3.6 Stroke motion of the feeding foot



Caution: Danger of injury !

Switch off main switch.
Check and adjust stroke motion of the feeding foot only when sewing machine is switched off.





Adjustment preconditions

- Feeding foot and presser foot stroke correctly adjusted
- Stroke motion of feed-dog correctly adjusted

Standard checking

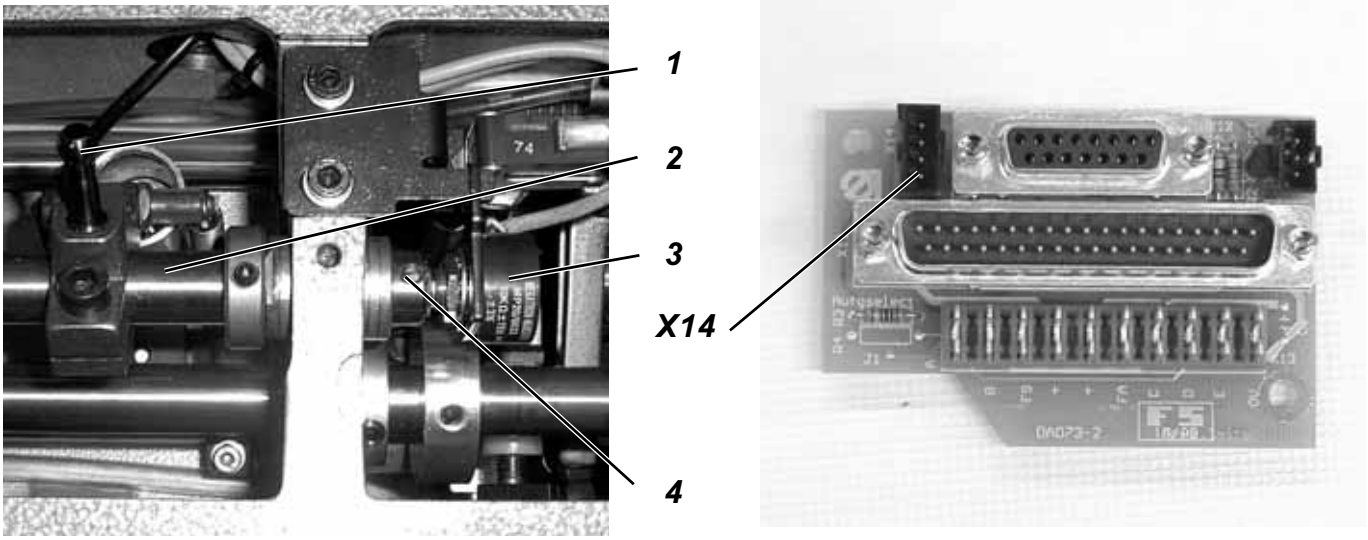
The feeding foot moving downwards must reach the throat plate level simultaneously with the feed-dog moving upwards and the needle going down.

- Set stitch length "**0**".
- Set maximum sewing foot stroke (setting wheel in position "**max.**").
- Turn handwheel in travel direction and observe stroke motion of feeding foot.

Correction

- Remove plastic cover from the arm cover.
- Loosen both core pins 1 at the stroke eccentric 2.
- Move point of the down-going needle to feed-dog height by handwheel.
- Twist stroke eccentric 2 on shaft in such a way that the feeding foot rests on the feed-dog.
  Attention!
  The stroke eccentric 2 must not be shifted axially on the shaft when being twisted.
  Through the drill-hole in the stroke eccentric 2 other sewing machine components are supplied with oil. Therefore the capillary tube 3 with the wick must touch the lubrication groove in the stroke eccentric.
- Tighten core pins 1.
- Reinsert plastic cover in arm cover.

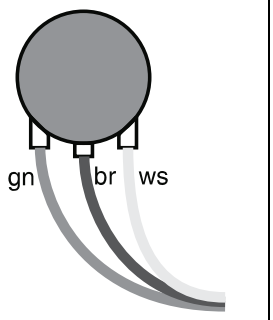
3.3.7 Potentiometer for automatic speed limitation



The sewing machine is equipped with a potentiometer for speed limitation in case of higher strokes.
The potentiometer 3 is mechanically connected with the setting wheel on the arm cover via shaft 2, lever 1 and ball stud.
The control recognizes the set sewing foot stroke via potentiometer 3 and adapts the speed automatically.

Caution: Danger of injury !

Switch off main switch.
Check and adjust position of the potentiometer only when sewing machine is switched off.



Standard checking

The sewing machine has to be checked according to the following description.

- Set the minimum foot stroke "min" by setting wheel.
- Take off cover of the machine head distributor.
- Separate plug X14 from the distributor.
- Remove arm cover.
- Measure the resistance at the green (a) and the brown (b) cable of potentiometer 3 with an ohmmeter. The resistance should amount to approx. 9 kOhm.
- Set the maximum foot stroke "max" by setting wheel.
- Pull lever 1 in the centre of the sewing head as far as it will go.
- Measure the resistance at the green (a) and the brown (b) cable of potentiometer 3 with an ohmmeter. The resistance should amount to approx. 1 kOhm.
- The adjustment has to be checked with parameter 188 afterwards.
- Mount arm cover.
- Reconnect plug X14 to the distributor.
- Mount cover of the machine head distributor.

Correction

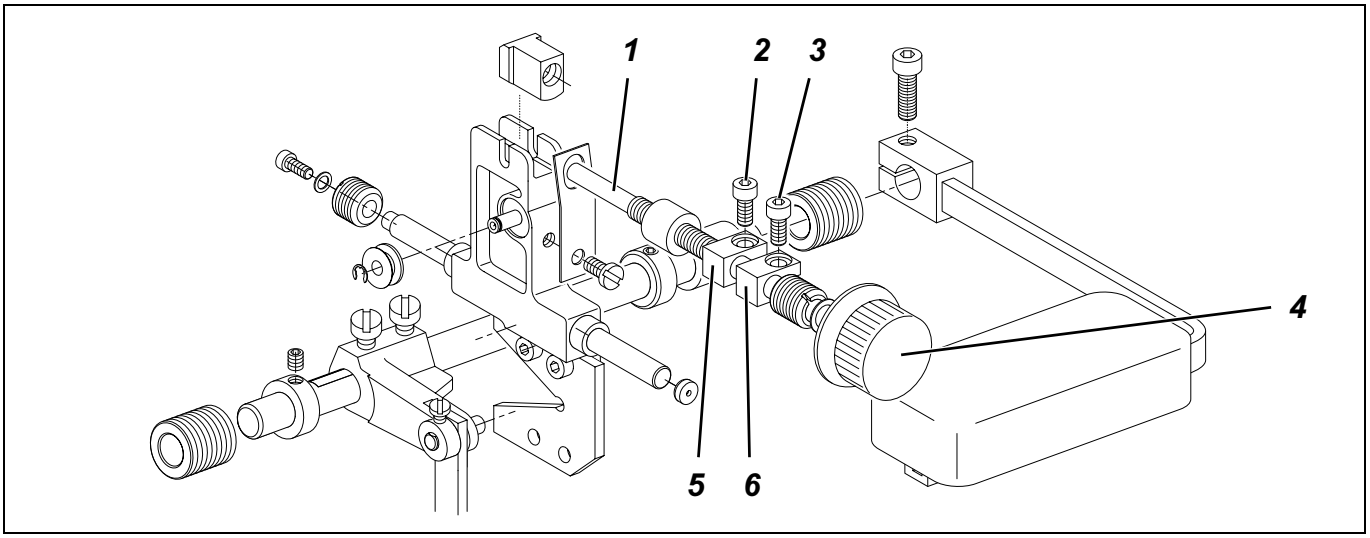
If the mentioned values are not correct, the position of potentiometer 1 has to be readjusted.

- Loosen core pin 4.
- Adjust shaft of potentiometer 1 in such a way that the corresponding resistance is achieved.
- Push potentiometer completely in the drill-hole of setting shaft 2.
- Tighten core pin 4 again.

Checking and adjusting of the potentiometer is also possible with the Efka control DA82GA with control panel V810 or V820 (see chapter 12.4).

3.4. Stitch regulator

3.4.1 Limitation of maximum stitch length



Caution: Danger of injury !

Switch off main switch.
Check and adjust limitation of maximum stitch length only when sewing machine is switched off.

Standard checking

The stitch length adjustment must be limited to the maximum stitch length allowed.

- Set maximum stitch length.
  Turn button 4 in clockwise direction as far as it will go.
- Sew test seam on thin cardboard and measure stitch length.
  The measured stitch length must not exceed the maximum stitch length allowed to realize with the used sewing equipment.

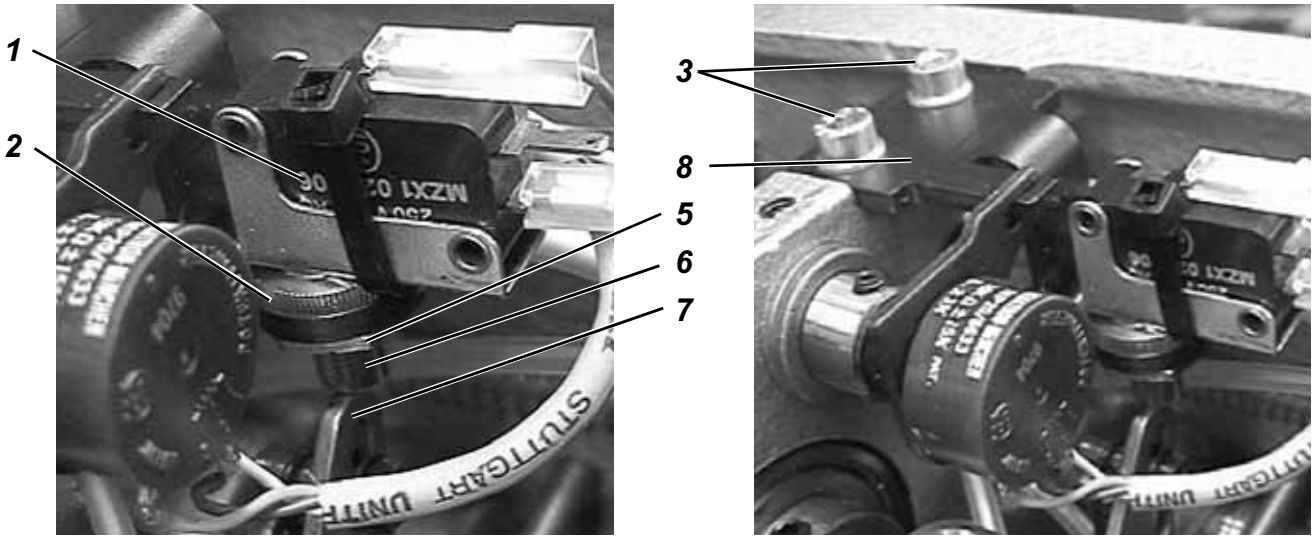
Correction

- Screw off arm cover.
- Loosen clamping screw 2.
- Shift clamping block 5 on threaded spindle 1.
- Tighten clamping screw 2.

After a longer operation of the sewing machine an axial clearance can occur in the threaded spindle 1 so that the maximum stitch length can no longer be set. In this case the position of clamping block 6 has to be readjusted.

- Loosen clamping screw 3.
- Shift clamping block 6 on threaded spindle 1.
- Tighten clamping screw 3.

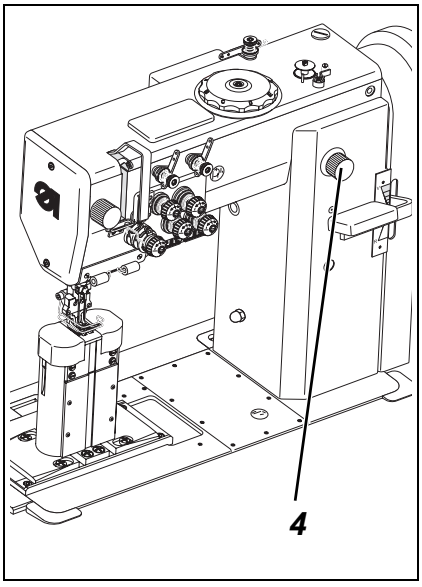
3.4.2 Automatic speed limitation (stitch lengths of more than 8 mm)



In order to avoid an overcharge of the stitch regulator gear the speed of the sewing drive is automatically reduced to **1600 min^{-1}** in case of **stitch lengths of more than 8 mm.** The position of the stitch regulator is called up by switch 1 in the sewing machine arm.

Caution: Danger of injury !

Switch off main switch.
Check and adjust switch for the automatic speed limitation only when sewing machine is switched off.



Standard checking

Lateral position of the switch:
The press button 6 of switch 1 must be centric above the spring bow 7.

Height of the switch:
From a stitch length of 8 mm spring bow 7 must actuate switch 1 in the sewing machine arm.

- Screw off arm cover.
- Set minimum stitch length.
  Turn button 4 counter-clockwise as far as it will go.
- Turn button 4 slowly in clockwise direction, until spring bow 7 actuates switch 1.
  The switch actuation point can be recognized by a slightly audible click.
- Sew test seam on thin cardboard and measure stitch length.
  The stitch length must be 8 mm.

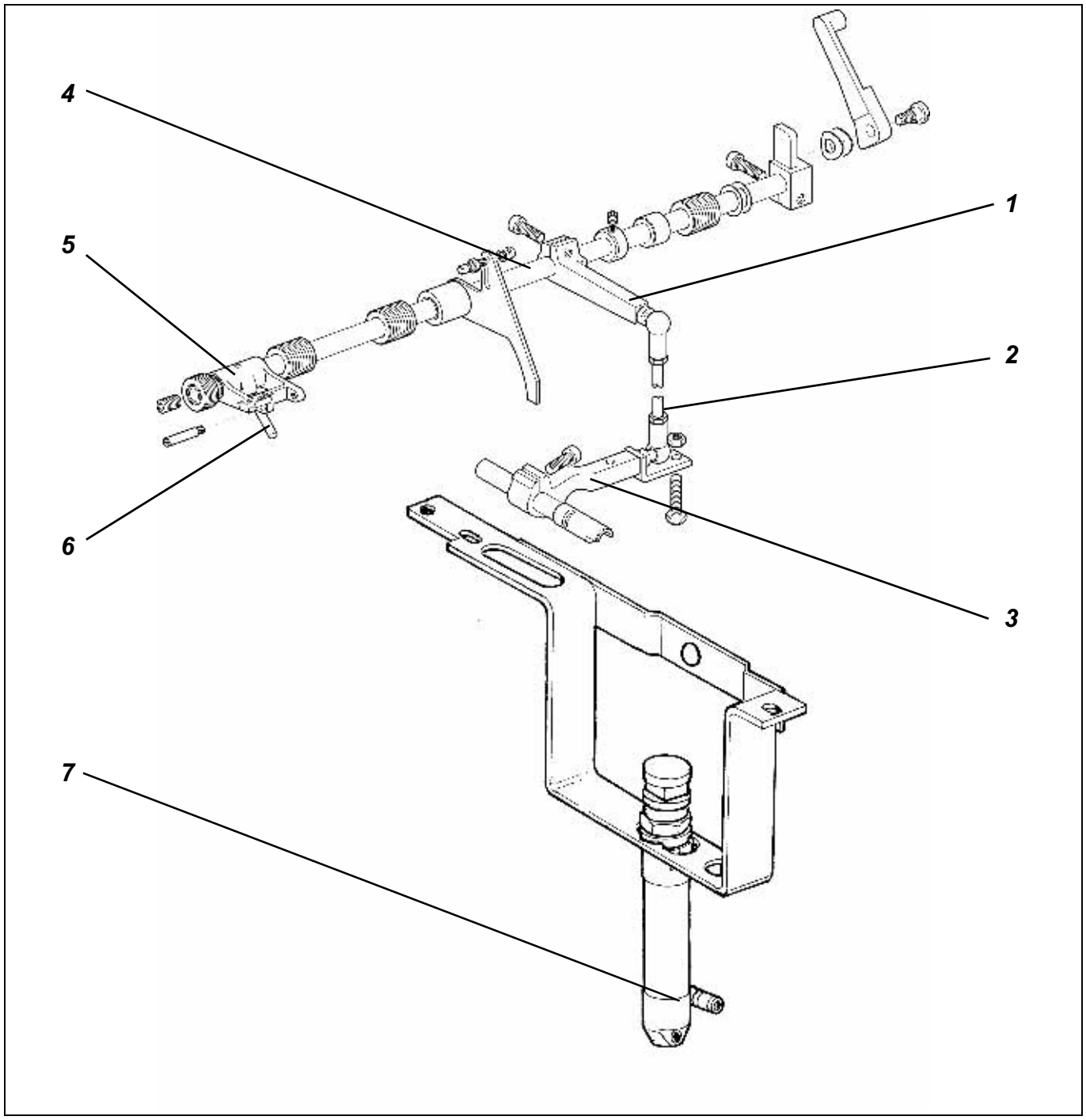
Correction

Lateral position of the switch:

- Loosen both screws 3 at the holding sheet 8.
- Shift holding sheet laterally until press button 6 is centric above the spring bow 7.
  For this purpose the holding sheet 8 is equipped with slotted holes.
- Tighten screws 3.

Height of the switch:

- Loosen nut 5 and knurled nut 2.
- Set switch 1 by corresponding turning of nut 5 and knurled nut 2.
- Tighten nut 5.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6
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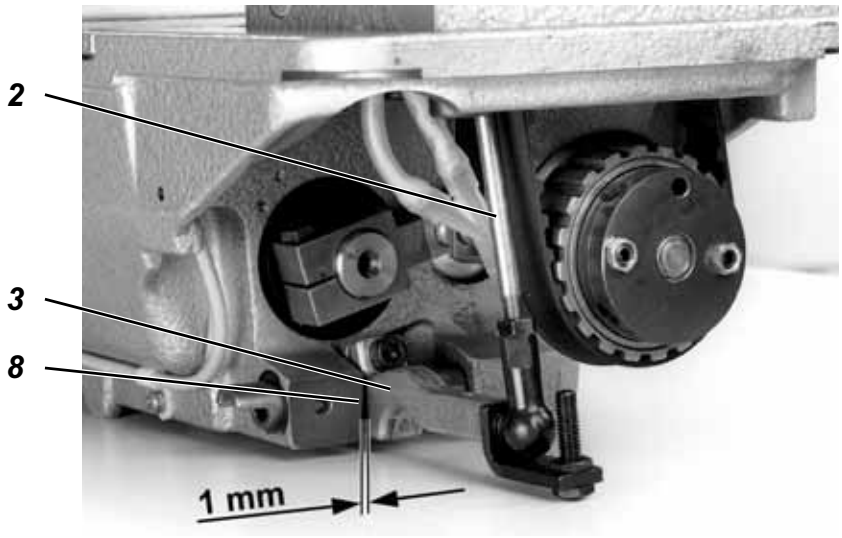

2
3
8
1 mm

4. Sewing foot height and sewing foot lift

4.1 Electropneumatic sewing foot lift

The post bed sewing machine **768** is equipped with a standard electropneumatic sewing foot lift (FLP).
By pedalling backwards the sewing feet are pneumatically lifted via cylinder 7 (e.g. for corner sewing).

For lifting the sewing feet the piston rod of cylinder 7 extends.
The motion of the piston rod is transmitted to shaft 4 via lever 3, rod 2 and lever 1.

Standard checking

In case of electropneumatically lifted sewing feet:

– The distance between sewing feet and throat plate should amount to 16 mm.

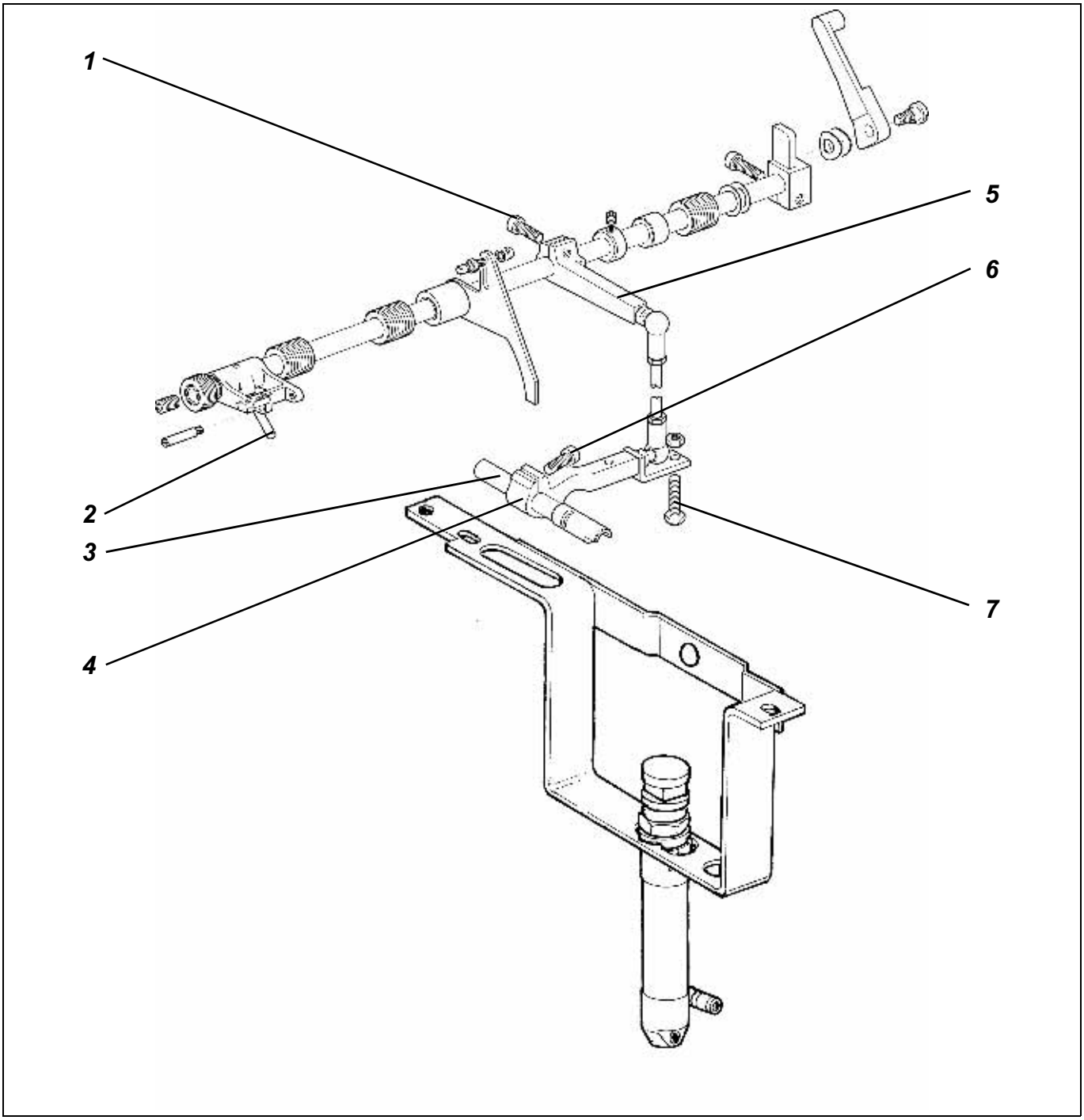
In case of lowered sewing feet:

– Lever 3 must stand horizontally.
– The distance between lever 3 and the front cast edge 8 must be 1 mm.
– Dowel pin 6 must have a distance of approx. 0.5 mm to the end of the slit in fork lever 5.

ATTENTION !

If the sewing feet are lowered, dowel pin 6 must not abut on the end of the slit in fork lever 5. Otherwise the dowel pin prevents that the sewing feet are lowered to the fabric level, which can lead to feeding problems when sewing thin material.

– Switch on main switch.
– Step pedal backwards halfway.
  Lift sewing feet.
– Check distance between lifted sewing feet and throat plate.
– Lower sewing feet.
  The sewing feet must rest on the throat plate.
– Switch off main switch.
– Tilt sewing machine back.
– Check horizontal position of lever 3.
– Check distance between lever 3 and front cast edge 8.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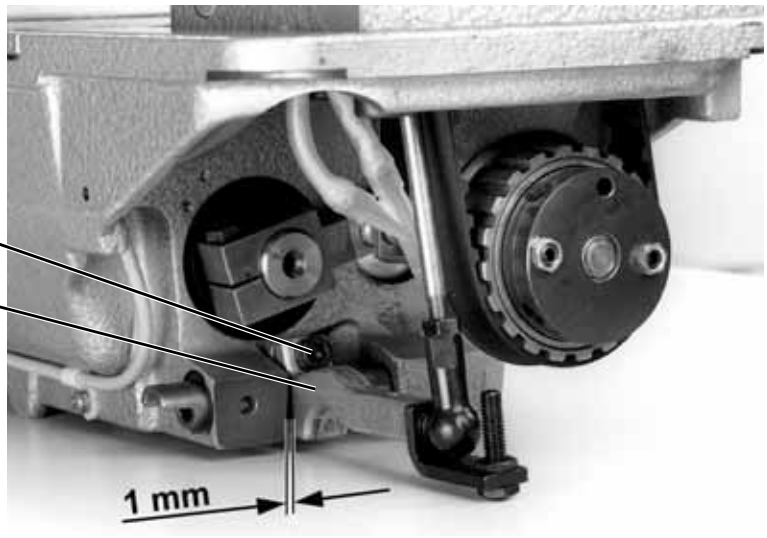

6
4
1 mm

Correction

Caution: Danger of injury !

Switch off main switch.
Adjust height of the electropneumatically lifted sewing feet only when sewing machine is switched off.

- Turn handwheel until both feet rest on the throat plate.
- Swivel machine head to the rear.
- Alter screw 7 correspondingly in order to reach the lift stroke of 16 mm.

Hint

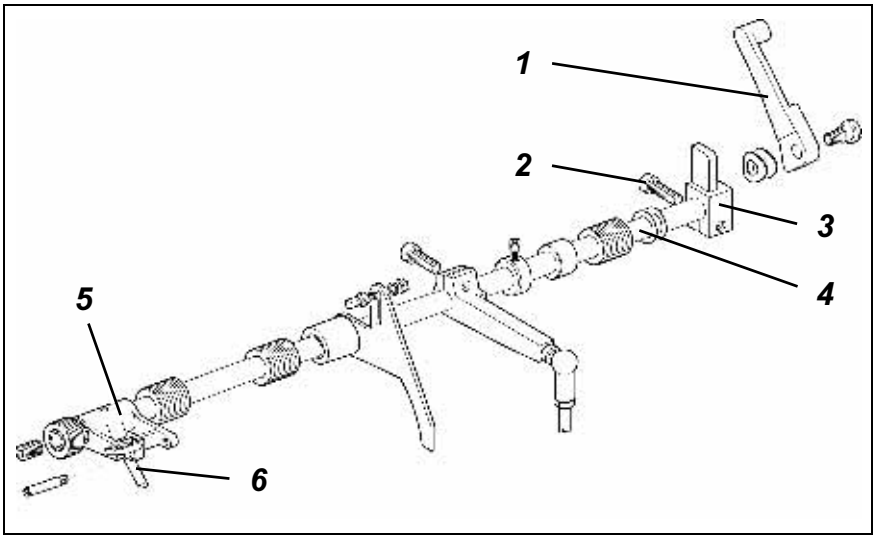
When sewing thin material feeding problems can occur if pin 2 hinders the lowering of both sewing foot to the fabric level.

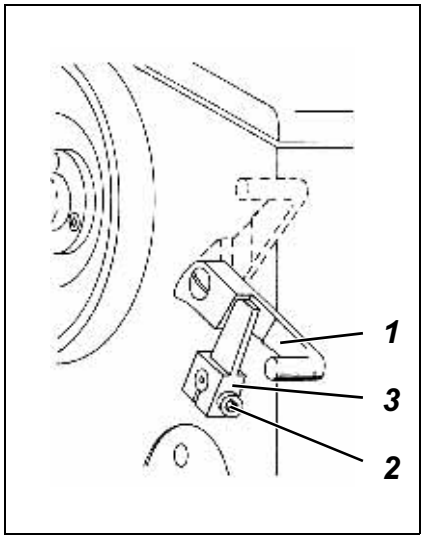
Check distance of pin 2 to the slit end and correct, if necessary.

The distance should amount to approx. 0.5 mm.

- Loosen screws 1 and 6.
- Swivel machine head in table top cutout.
- Press lever 5 downwards and press pin 2 upwards simultaneously. Pin 2 should have a distance of approx. 0.5 mm to the end of the slit.
- Tighten screw 1 again.
- Swivel machine head to the rear.
- Position lever 4.
  The lateral distance to the cast trunk should amount to 1 mm and the distance between pin 2 and the slit end should be 0.5 mm.
- Turn shaft 3 completely to the right and tighten screw 6 again.
- Check height of the pneumatically lifted feet.
  Correct adjustment, if necessary.

4.2 Sewing foot locking





The electropneumatically lifted sewing feet are locked in position "up" by lifting lever 1 (e.g. for winding the bobbin thread or for changing the sewing feet).

Caution: Danger of injury !

Switch off main switch.
Check and adjust height of the locked sewing feet only when sewing machine is switched off.

Standard checking

The distance between the sewing feet locked in position "up" by lifting lever 1 and the throat plate should amount to 8 mm.

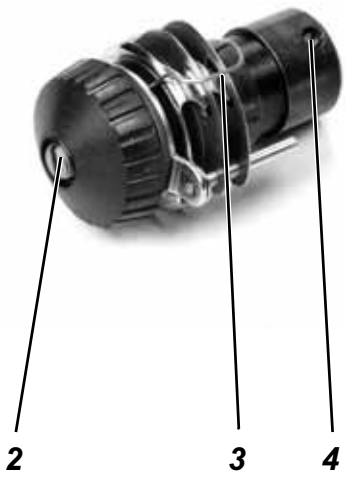
- Set minimum sewing foot stroke (setting wheel in position "**min.**").
- Move both sewing feet to the same level by handwheel.
- Lock sewing feet in position "up" by lifting lever 1.
- Check distance between locked sewing feet and throat plate.

Correction

- Place spacer (8.5 mm thick) below the locked sewing feet.
  Due to the clearance in the transmission elements the sewing foot height will be 8 mm.
- Loosen clamping screw 2 at lifting block 3.
- Take off head cover.
- Press dowel pin 6 upwards until the end of the slit in fork lever 5.
- Press lifting block 3 against the surface of lifting lever 1.
  Attention!
  Lifting block 3 must not be shifted axially because shaft 4 is axially fixed by same.
- Tighten clamping screw 2.
  Lifting lever 1 must be positioned in such a way that its surface is parallel to lifting block 3.

5. Thread tension lift

5.1 Thread controller spring



Standard checking

Spring travel:
The thread controller spring 3 must keep the needle thread under a minor tension from the raised position of the thread lever to the moment the needle's eye penetrates the material.
The thread controller spring 3 must abut on the stop not before the eye of the needle has penetrated the material.

Spring tension:
The required tension of thread controller spring 3 depends on the material to be sewn.

Caution: Danger of injury !

Switch off main switch.
Adjust thread controller spring only when sewing machine is switched off.

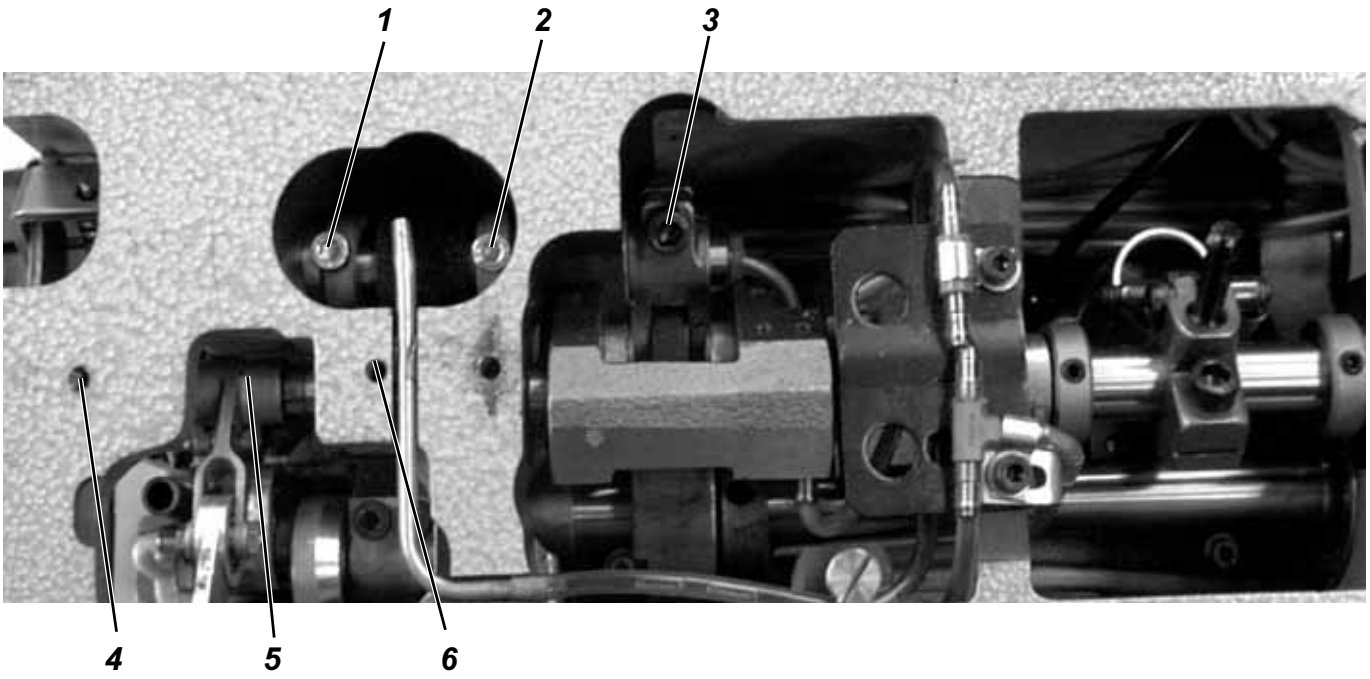
Correction

Set spring tension:

- Loosen core pin 1.
- Pull complete thread tension unit out of the machine casing.
- Loosen core pin 4.
- Twist bolt 2 until the desired spring tension is reached.
- Tighten core pin 4.
- Mount thread tension unit.
- Tighten core pin 1.

Set spring travel:

- Loosen core pin 1.
- Twist complete thread tension unit with bolt 2.
- Tighten core pin 1.
- Check whether the above-mentioned points are fulfilled.
  If not, the adjustment has to be corrected.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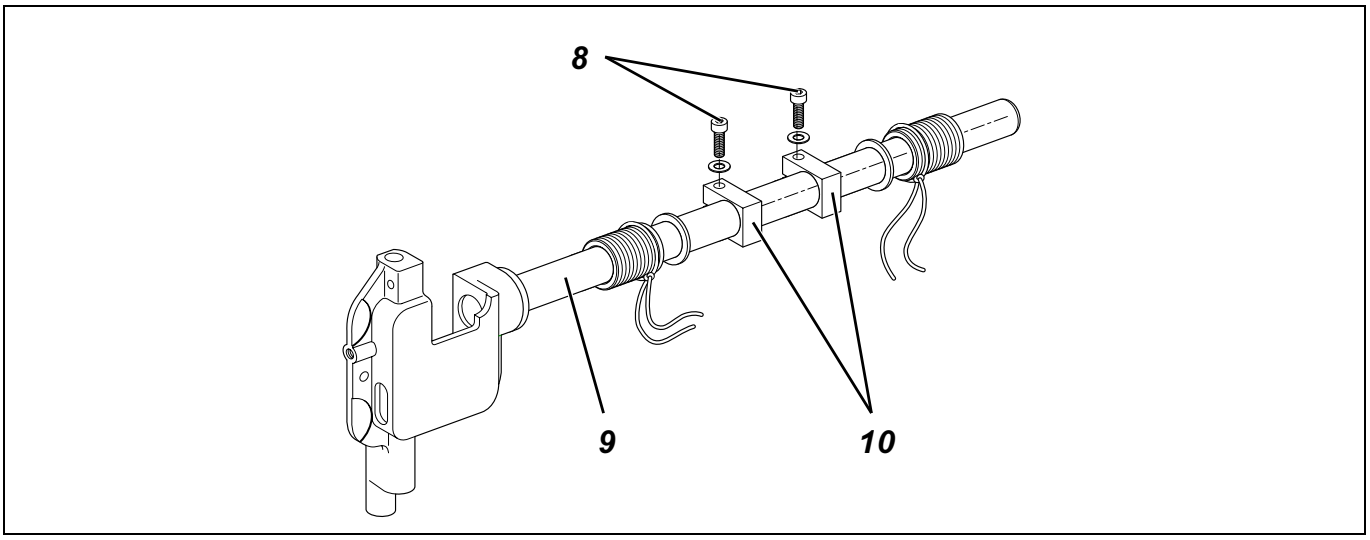
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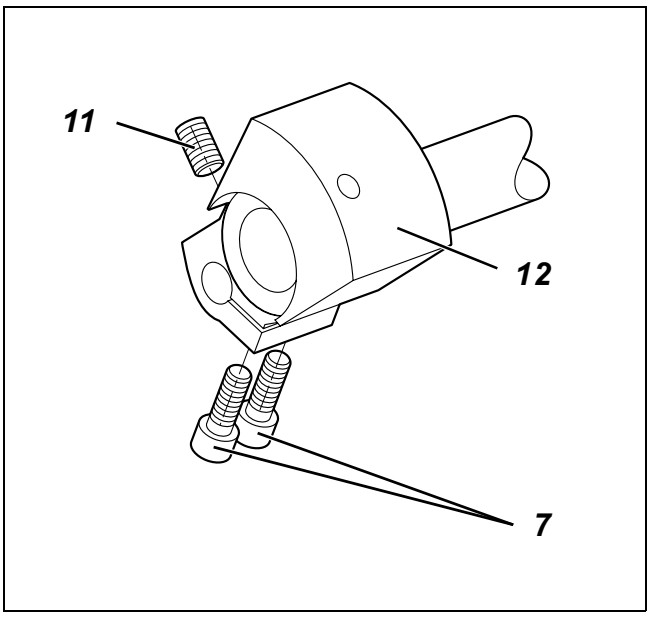
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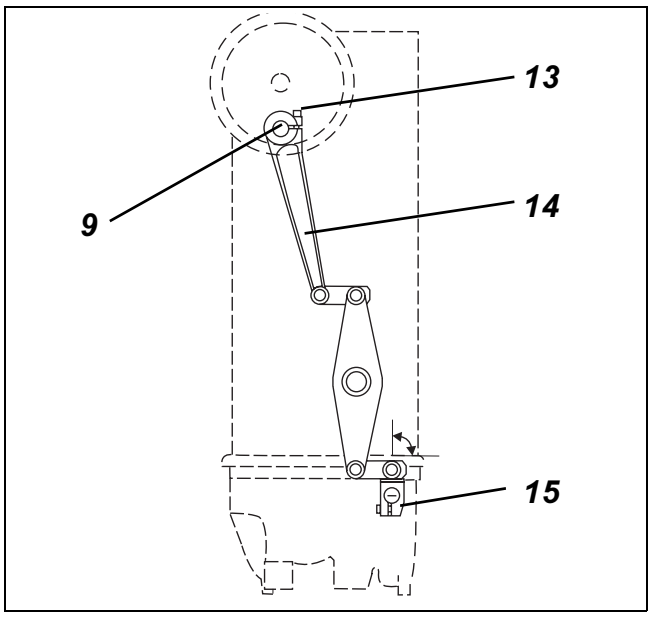
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6. Needle bar

Preconditions for the positioning of the needle bar

- Position of feed-dog in the throat plate cutout is adjusted correctly (see chapter 3.2.1).
- Synchronous run of needle feed and bottom feed is adjusted correctly (see chapter 3.2.5).

6.1 Lateral position of the needle bar wing

Caution: Danger of injury !

Switch off main switch.
Check and adjust lateral position of the needle bar wing only when sewing machine is switched off.

Standard checking

At stitch length **"0"** the needle must stick in the centre of the needle hole of the feed-dog.

- Set stitch length "**0**".
  Turn button counter-clockwise as far as it will go.
- Move needle in position "down" by handwheel.
- Check position of the needle in the needle hole of the feed-dog.

Correction

- Screw off arm cover.
- Loosen clamping screws 8 at both clamping blocks 10.
- Loosen both clamping screws 7 and core pin 11 at the needle bar crank 12.
- Loosen core pins 4 and 6.
- Loosen screw 13 at lever 14.
- Position needle bar wing 9 laterally.
  The needle must stick in the centre of the needle hole of the feed-dog.
- If necessary, shift the shaft for the sewing foot drive axially.
  Loosen clamping screws 1 and 2 at the setting rings and clamping screw 3 at the block.
  Shift the shaft axially.
  Tighten clamping screws 1,2 and 3 again afterwards.
- Tighten all screws which had been loosened.

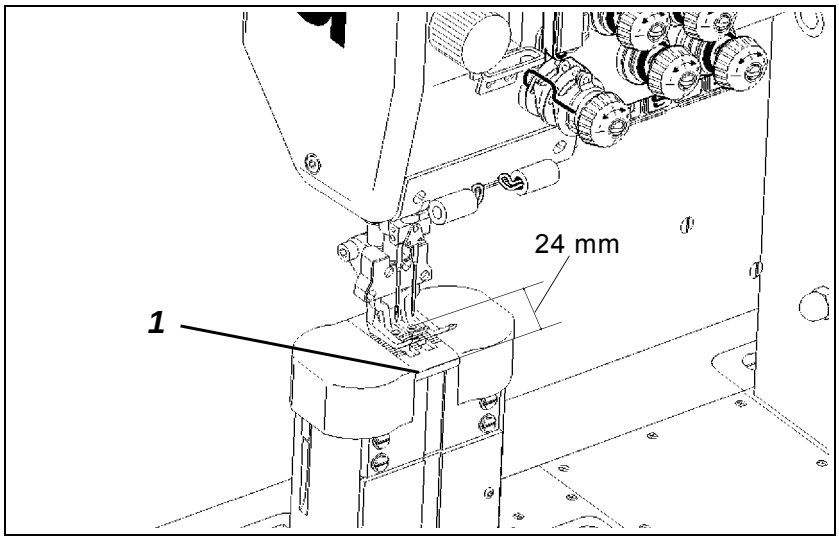
  Please observe the following:
  - Needle bar wing 9 must be fixed axially.
  - Both clamping blocks 10 must be in horizontal position.
  - Core pin 11 must be on the surface of the crank pin.
  - Lever 15 must be in perpendicular position.
  - The oil wicks must be in correct position.
  - The lateral clearance of the thread lever control 5 must be adjusted as low as possible.
  - The stroke heights of both sewing feet must be identical.

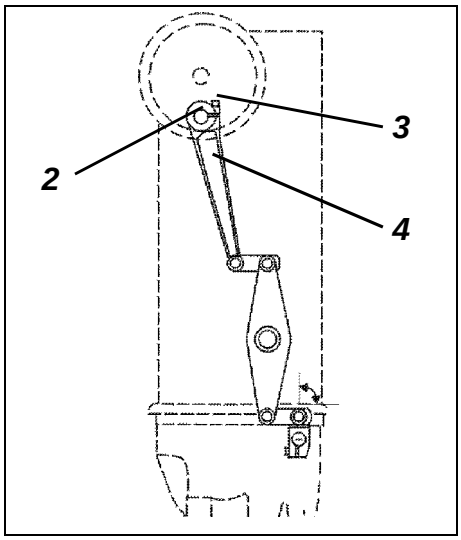
ATTENTION

After the lateral positioning of the needle bar wing:

- Check distance between hook and needle and correct, if necessary (see chapter 7.3).

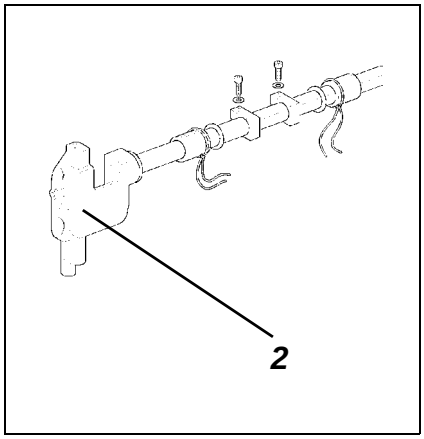
6.2 Position of the needle bar wing in feed direction





Caution: Danger of injury !

Switch off main switch.
Check and adjust position of needle bar wing in feed direction only when sewing machine is switched off.



Standard checking

At stitch length **"0"** the needle must stick in the centre of the needle hole of the feed-dog.
If the adjustment is correct, the distance between the middle of the needle and the front edge of throat plate 1 must be 24 mm.

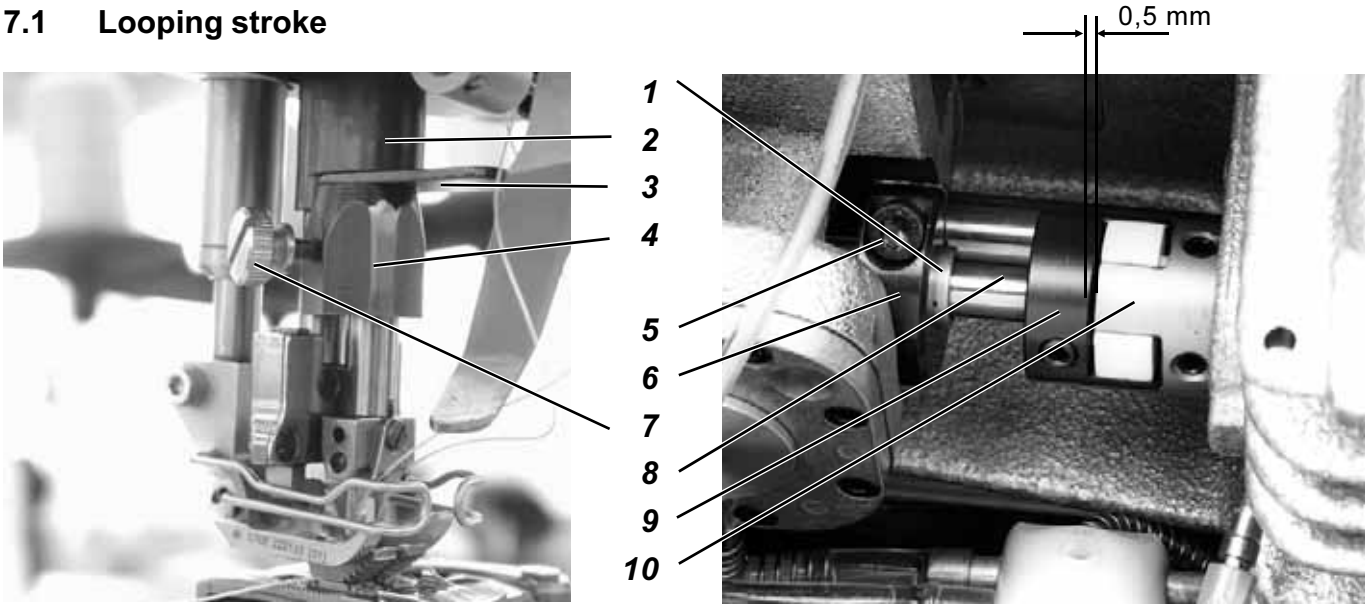
- Set stitch length "**0**".
  Turn button counter-clockwise as far as it will go.
- Move needle in position "down" by handwheel.
- Check distance between needle and front edge of throat plate 1.

Correction

- Screw off arm cover.
- Loosen clamping screw 3 at lever 4.
- Twist needle bar wing 2 until the needle is centric above the needle hole of the feed-dog.
- Tighten clamping screw 3.

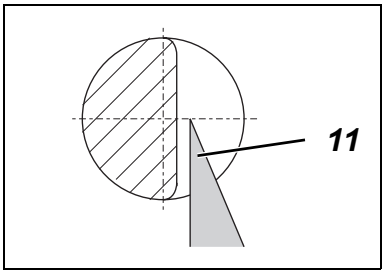
7. Hook adjustments

7.1 Looping stroke



Caution: Danger of injury !

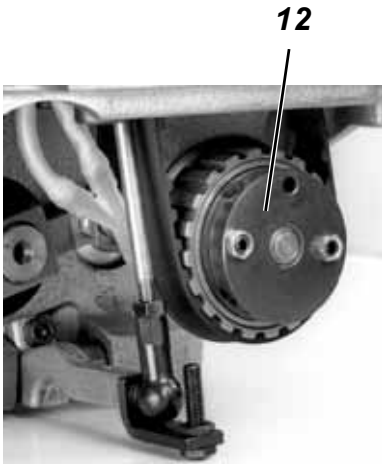
Switch off main switch.
Check and adjust looping stroke only when sewing machine is switched off.



Standard checking

The looping stroke (2 mm) is the way of the needle bar from the bottom dead centre to the point where the hook tip 11 is at the level of the middle of the needle. The looping stroke is controlled by means of setting block 4 (order No. 0981 150002) and gauge 3 (order No. 0981 150003).

- Check whether safety clutch 12 snaps in (see chapter 8.1)
- Screw off throat plate.
- Set stitch length "**0**".
- Move needle in position "down" by handwheel.
- Press gauge 3 with block 4 against wing 2.
- Tighten screw 7 and pull out gauge 3.
- Turn handwheel **in travel direction** until block 4 abuts on needle bar wing 2 (looping stroke position).
  In this position the hook tip 11 must be at the level of the middle of the needle.



Correction

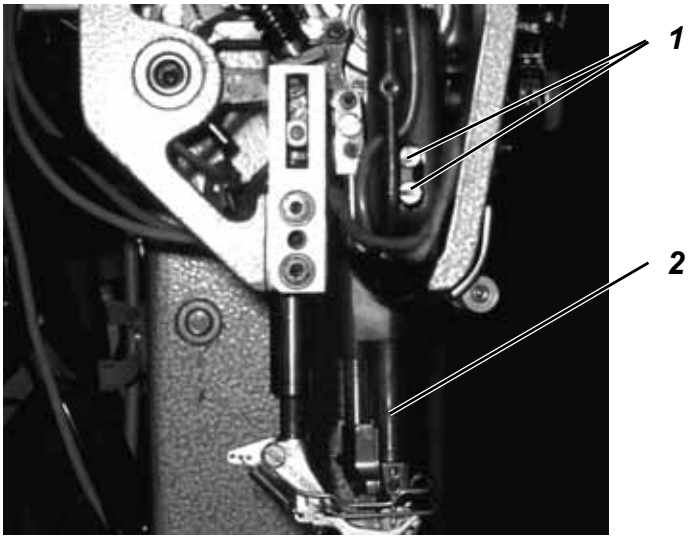
- Tilt sewing machine head back.
- Loosen screws 5 at the clamping rings 6.
- Twist hook until hook tip 11 is at the level of the middle of the needle.
- Position shaft 8 axially.
  The clearance between the clutch claws 9 and 10 must amount to 0.5 mm.
- Position clamping rings 6 flush with the steps in driving shaft 8.
- Tighten screws 5.

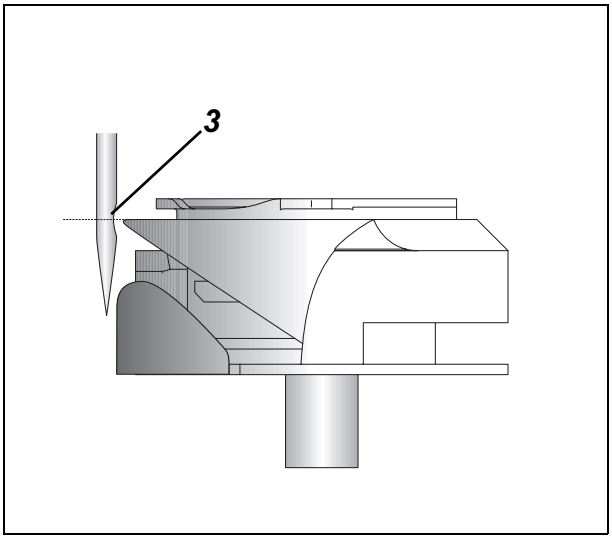
ATTENTION !

After a correction of the looping stroke the following adjustment is to be checked and corrected, if necessary:

- Position of the hook protection (see chapter 7.4)

7.2 Needle bar height





Caution: Danger of injury !

Switch off main switch.
Check and adjust needle bar height only when sewing machine is switched off.

Standard checking

In looping stroke position the hook tip must be at the level of the middle of the needle hollow groove 3.

– Move needle in looping stroke position by handwheel.
  In looping stroke position the hook tip is at the level of the middle of the needle (see chapter 7.1).
– Check position of the hook tip to the needle hollow groove 3.

Correction

– Take off head cover.
– Loosen both screws 1.
– Adjust the height of needle bar 2 in such a way that the hook tip is at the level of the middle of the needle hollow groove 3.
  Attention!
  Needle bar 2 must not be twisted when being shifted.
– Tighten screws 1.

ATTENTION !

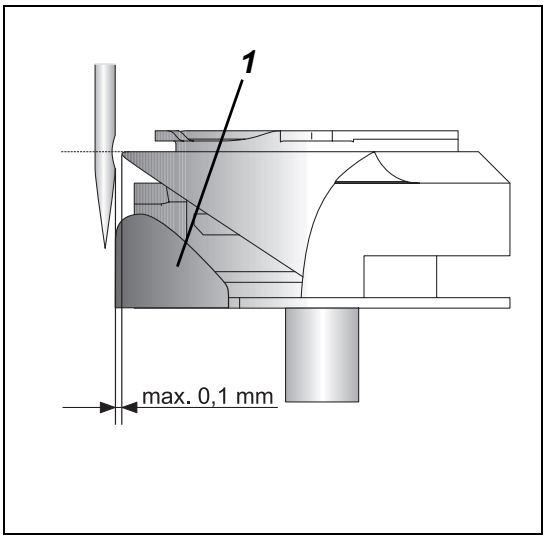
After a correction of the needle bar height:

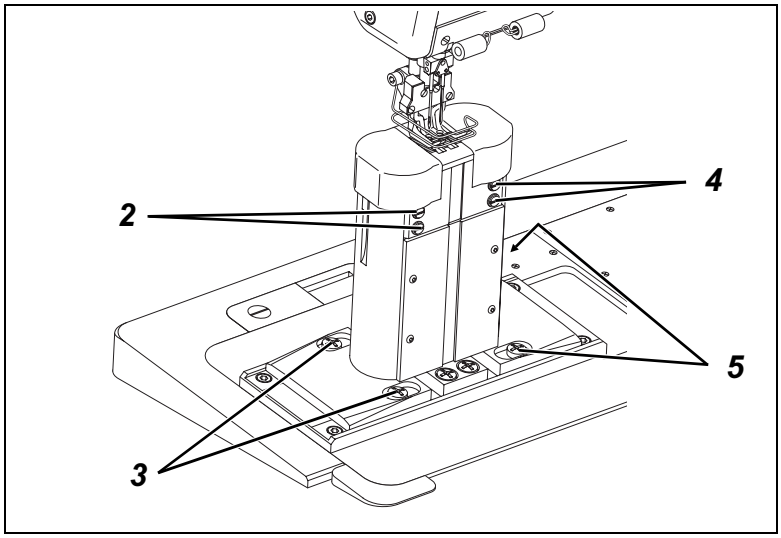
– Check position of the hook protection and correct, if necessary (see chapter 7.4)

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

– Damage to the hook tip
– Jamming of the bobbin thread between needle and needle protection
– Skipped stitches and thread breakage

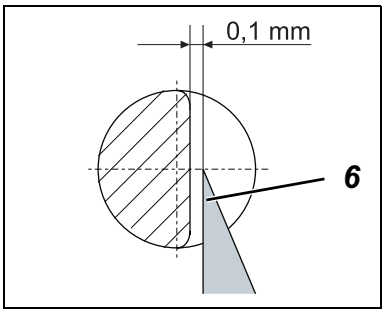
7.3 Distance between hook and needle





Caution: Danger of injury !

Switch off main switch.
Check and adjust distance between hook and needle only when sewing machine is switched off.



Standard checking

In looping stroke position the distance between hook tip 6 and the needle hollow groove must amount to max. 0.1 mm.

- Move needle in looping stroke position by handwheel.
  In looping stroke position the hook tip is at the level of the middle of the needle (see chapter 7.1.).
- Check whether the needle in looping stroke position is displaced by the hook protection 1. If this is the case, bend hook protection back carefully.
- Check distance between hook tip 6 and needle hollow groove.

Correction

- Loosen screws 2 (for left hook) resp. screws 4 (for right hook) of the bed plate of the throat plate.
- Loosen fastening screws 3 (for left hook) resp. fastening screws 5 (for right hook) of the hook support.
- Shift hook support correspondingly.
- Tighten fastening screws 3 (for left hook) resp. fastening screws 5 (for right hook).
- Tighten screws 2 (for left hook) resp. screws 4 (for right hook) of the bed plate of the throat plate.

ATTENTION !

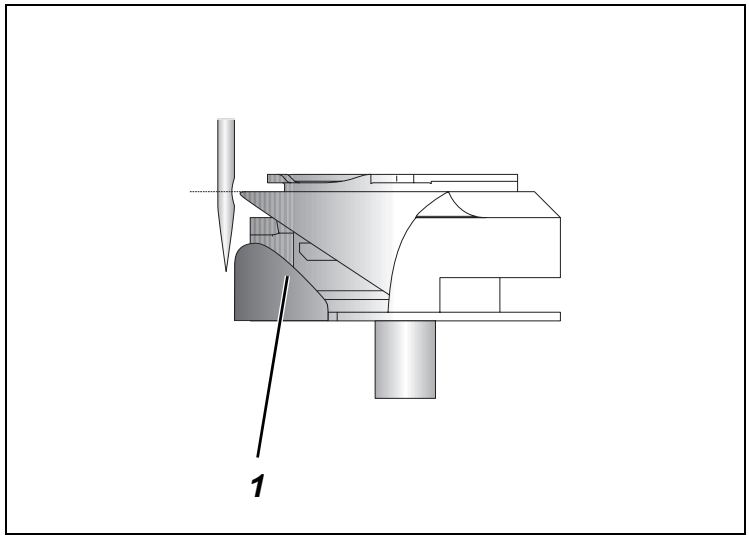
After a correction of the distance between hook and needle:

- Check clearance in the claw clutch and correct, if necessary (see chapter 7.5).

In case the needle size is changed:

- Check the distance between hook and needle and correct, if necessary.

7.4 Hook protection



The hook protection 1 avoids a contact between needle and hook tip.

Caution: Danger of injury !

Switch off main switch.
Check and adjust the position of the hook protection only when sewing machine is switched off.

Standard checking

In looping stroke position the needle must abut on the hook protection 1 without being displaced.

- Move needle in looping stroke position by handwheel.
  In looping stroke position the hook tip is at the level of the middle of the needle (see chapter 7.1.).
- Press needle against hook protection 1 manually.
  The needle must not touch the hook tip.

Correction

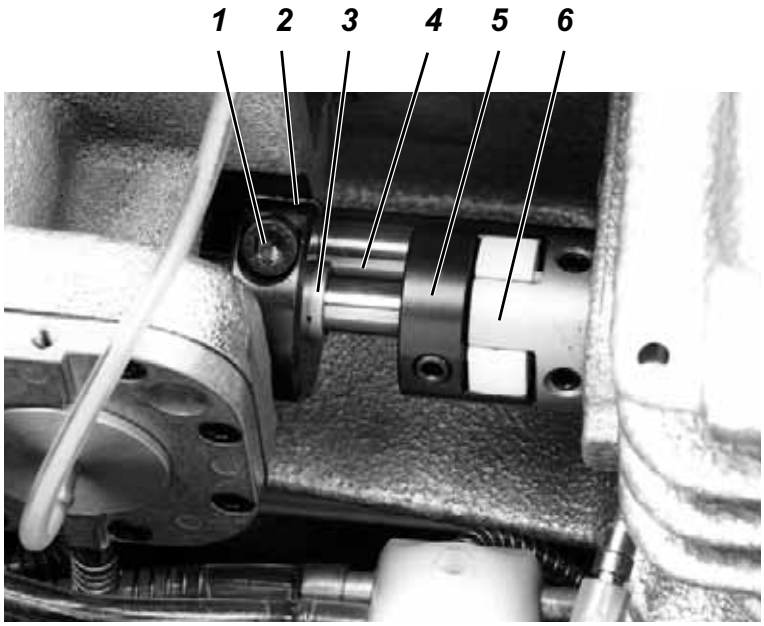
- Bend hook protection 1 carefully.

ATTENTION !

The position of the hook protection has to be checked and corrected, if necessary, according to the following adjustments:

- Correction of the needle bar height
- Correction of the looping stroke
- Alteration of the needle size by 0.2 mm or more

7.5 Clearance in the claw clutch



Caution: Danger of injury !

Switch off main switch.
Check and adjust clearance in the claw clutch only when sewing machine is switched off.

Standard checking

The lateral clearance between the clutch claws 5 and 6 must amount to 0.5 mm.

- Tilt sewing machine head back.
- Check clearance in the claw clutch.

Correction

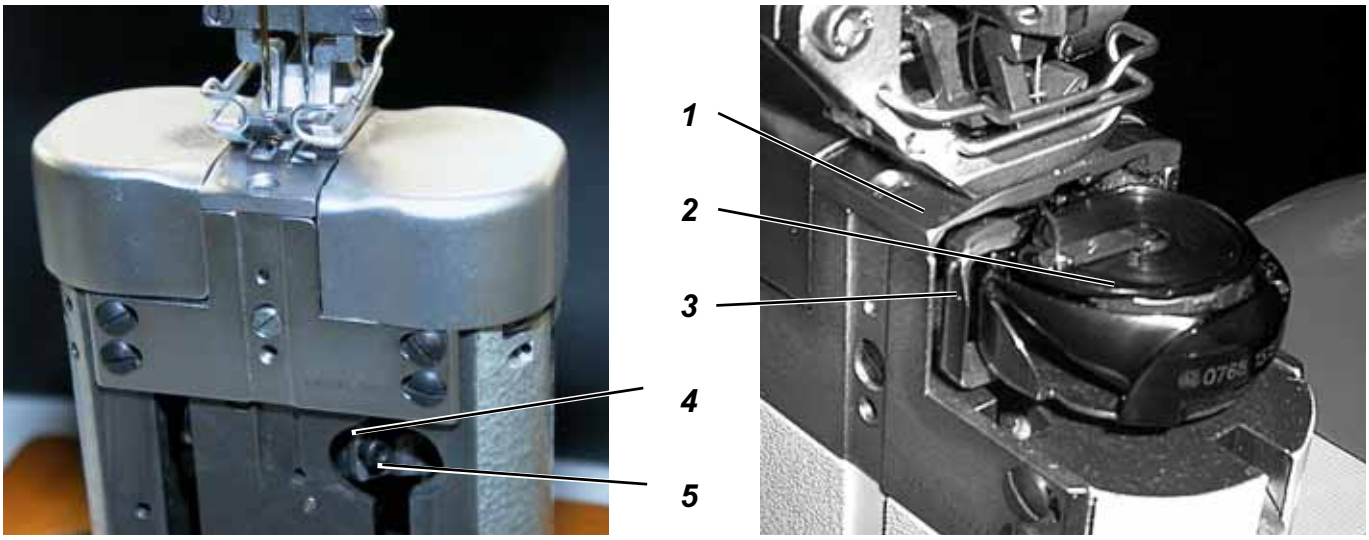
- Loosen screws 1 at the clamping rings 2.
- Adjust clearance between the clutch claws 5 and 6 by axial shifting of shaft 4.
  Attention!
  Shaft 4 must not be twisted!
- Position clamping rings 2 flush with the steps in driving shaft 3.
- Tighten screws 1.

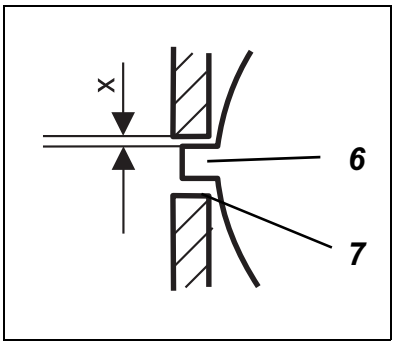
ATTENTION !

After a correction of the clearance in the claw clutch:

- Check looping stroke and correct, if necessary.

7.6 Bobbin case lifter





The thread lever must pull the needle thread over the bobbin case through gap 7 of the throat plate 1.
At the moment of the thread slipping through lifting finger 3 lifts bobbin case 2. Due to the unhindered thread passage the desired seam pattern is achieved with the lowest possible thread tension.

The lifting finger 3 is controlled via the eccentric in the hook shaft and the control block 4.

Wrong adjustments can have the following consequences:

- Thread breakage
- Loops at the bottom side of the material
- Loud noise

7.6.1 Lifting course

Caution: Danger of injury !

Switch off main switch.
Adjust lifting course only when sewing machine is switched off.

Standard checking

Lifting finger 3 must lift bobbin case 2 in such a way that the thread can slip laterally between bobbin case lug 6 and the gap of the throat plate without being hindered.
When bobbin case 2 is lifted, the distance x between holding lug 6 and the gap of the throat plate must correspond to the thickness of the sewing thread.

- Sew some stitches manually.
- Check distance x at the moment of the bobbin case lifting.

Correction

– Screw off cover of the hook support.
– Loosen clamping screw 5 at the control block 4.
– Twist lifting finger 3 in such a way that an unhindered thread passage is achieved.
– Adjust height of control block 4.
  Adjust control block 4 axially in such a way that the clearance in the lifting finger remains small.
– Tighten clamping screw 5.
– Screw on cover of the hook support.

A wrong adjustment of the lifting course can have the following consequences:

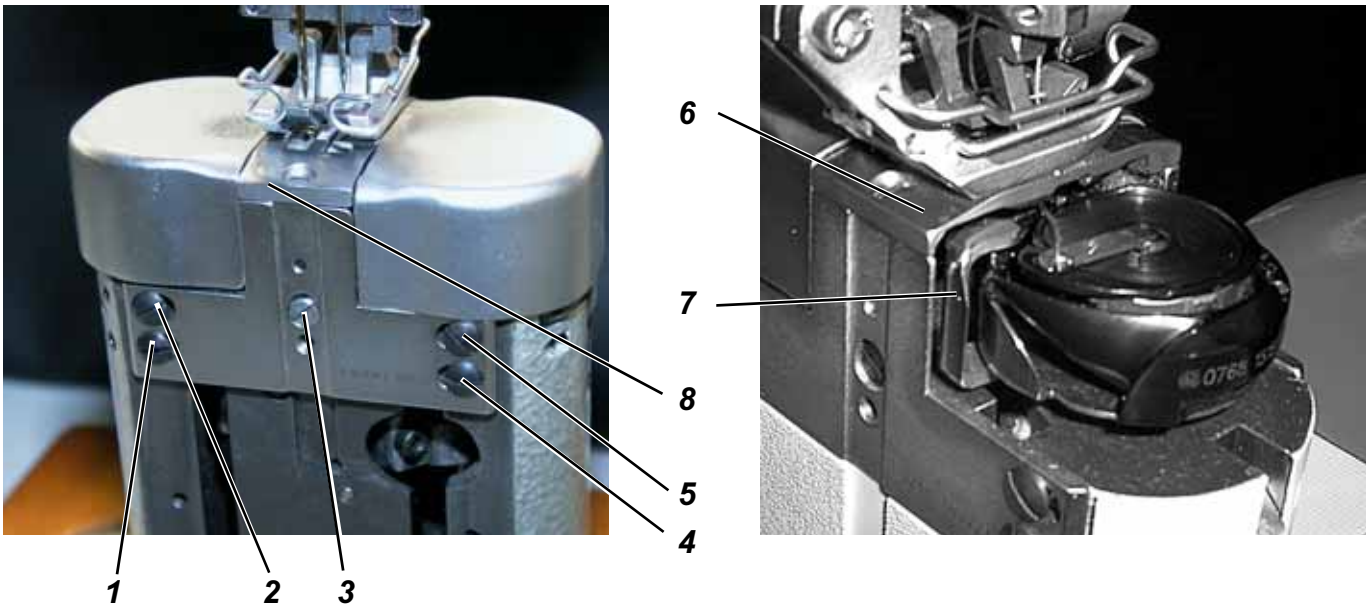
Lifting course too small:

– no unhindered thread passage

Lifting course too large:

– loud noise
– bobbin case 5 is flung against the other side of the throat plate gap 7.

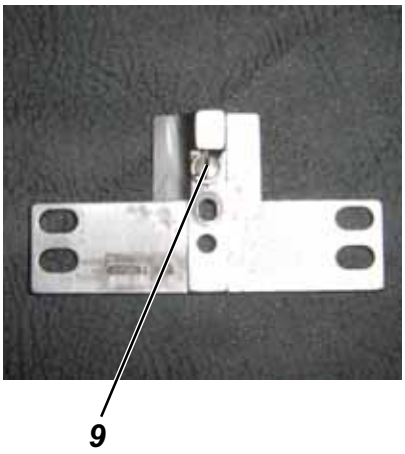
7.6.2 Throat plate height

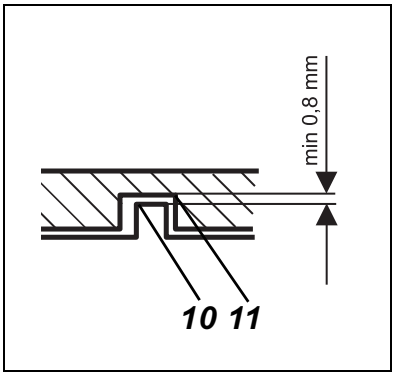


The height of throat plate 6 can be slightly altered via the setting eccentrics 9 at the throat plate supports 8.

Caution: Danger of injury !

Switch off main switch.
Check and adjust height of the throat plate only when sewing machine is switched off.





Standard checking

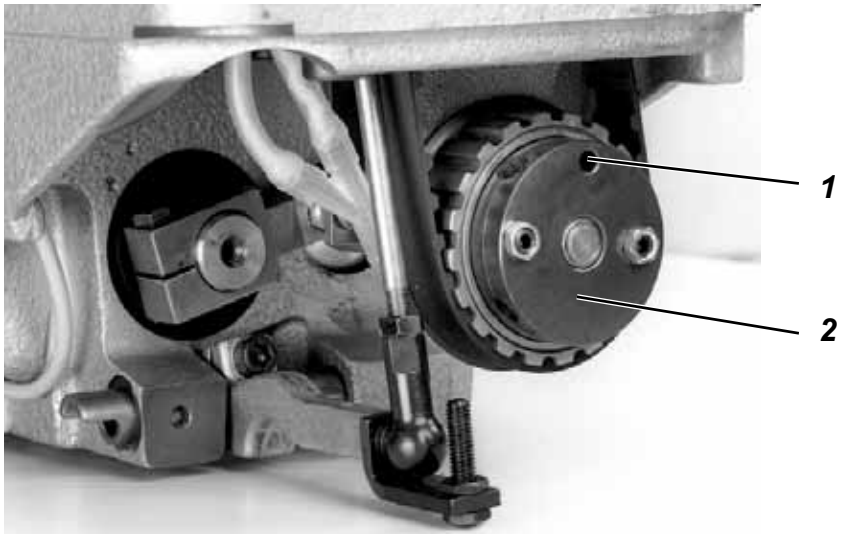
The distance between the top edge of bobbin case lug 10 and gap 11 of the throat plate must amount to 0.8 mm at least.

Correction

- Lock sewing feet in position "up".
- Unscrew fastenings screws 1, 2, 3, 4 and 5 on both throat plate supports 8.
- Remove throat plate 6 with throat plate supports 8.
- Adjust height of throat plate by adjusting the setting eccentrics.
- Insert throat plate 6 with throat plate supports 8.
- Tighten fastening screws 1, 2, 3, 4 and 5 on both throat plate supports 8.

8. Safety clutch

8.1 Engage disengaged safety clutch



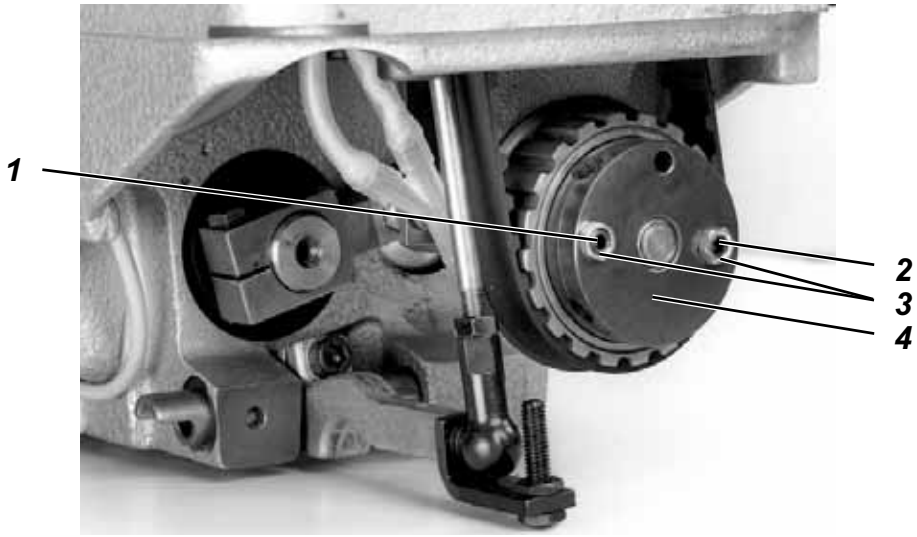
The standard safety clutch 2 in the lower toothed belt wheel protects the hook from being displaced or damaged in case of thread jamming in the hook path.
When the hook is blocked, the safety clutch 2 must come out.

Caution: Danger of injury !

Switch off main switch.
Engage safety clutch only when sewing machine is switched off.

- Set free blocked hook (eliminate fault).
- Tilt sewing machine head back.
- Stick a pin (Ø 5 mm) in drill-hole 1 of the outer clutch disc.
- Turn handwheel until the pin can be stuck in the drill-holes of **both** clutch parts.
- Turn handwheel forwards and backwards until the hook is freely movable again.
- Pull out pin.
- Hold down hook and turn handwheel until safety clutch 2 engages.

8.2 Adjust transmittable torque



Standard checking

The torque transmittable from safety clutch 4 is adjusted by the supplier by means of a torque spanner.

ATTENTION !

Increase the torque adjusted by the supplier only in case of a frequent disengagement of safety clutch 4 when processing heavy-weight material.

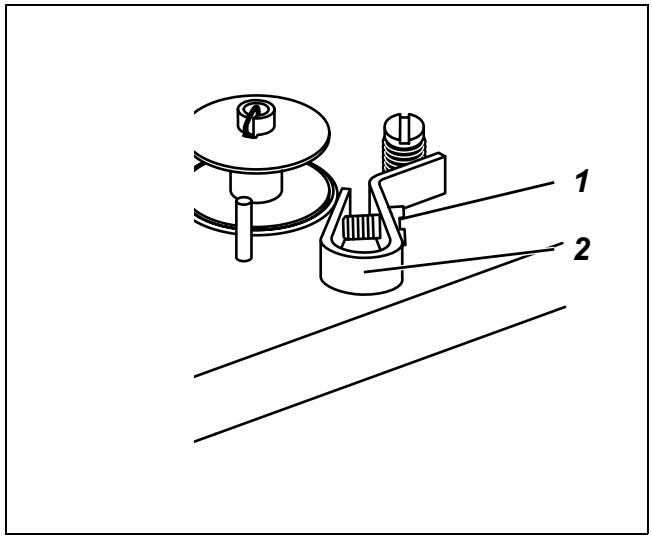
Correction

Caution: Danger of injury !

Switch off main switch.
Adjust transmittable torque of the safety clutch only when sewing machine is switched off.

- Loosen counternuts 3.
- Adjust torque:
  Screw in core pins 1 and 2 = increase torque.
  Screw out core pins 1 and 2 = reduce torque.
- Tighten counternuts 3 again.

9. Bobbin winder



Standard checking

The bobbin winder must stop automatically when the bobbin is filled up to approx. 0.5 mm from its edge.

Caution: Danger of injury !

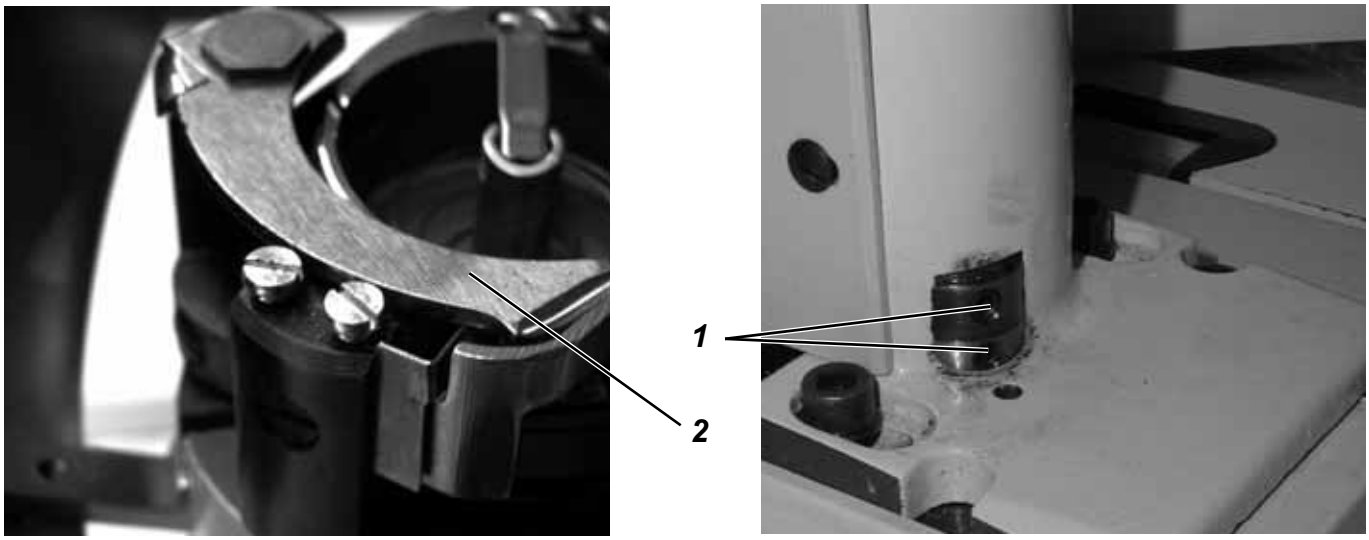
Switch off main switch.
Adjust bobbin capacity only when sewing machine is switched off.

Correction

Minor alterations of the bobbin capacity:

– Adjust setting screw 1 at the release lever 2.
  Reduce bobbin capacity: Screw in setting screw 1
  Increase bobbin capacity: Screw out setting screw 1

10. Thread trimmer



10.1 Thread pulling knife

Standard checking

In resting position the rear edge of the thread pulling knife should be flush with the front edge of the counter-knife.

The counter-knife should abut on the thread pulling knife along its total width.

The pivoting thread pulling knife should abut on the counter-knife after approx. 1/3 of its width.

The thread knife must not collide with the bobbin case.

The height of the thread pulling knife must be adjusted in such a way that it swivels across the bobbin as closely as possible without touching it.

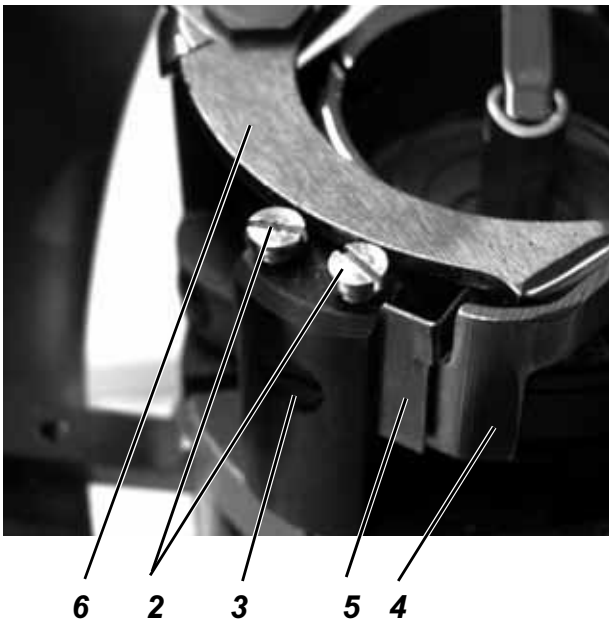
Correction

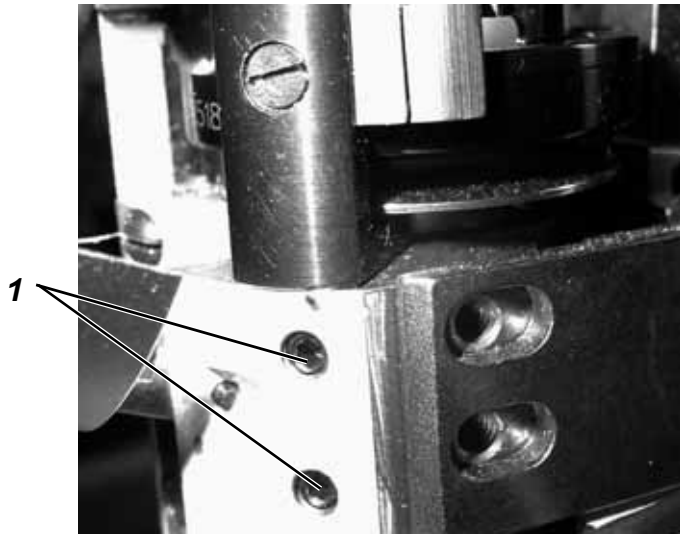
- Loosen two screws 1 for adjusting the resting position of the thread pulling knife.
- Adjust thread pulling knife according to the standard.
- Tighten screws 1.

ATTENTION !

Check the axial clearance of the knife shaft when tightening the screws 1. The thread pulling knife must be easily movable and the axial clearance as low as possible.

10.2 Counter-knife and bobbin thread clamp





Standard checking

The clamping spring 5 has the function to hold the cut bobbin thread in order to avoid skipped stitches at the seam beginning.

Counter-knife 4 and thread pulling knife 6 must be in parallel position standing under a slight cutting pressure.

Correction

Parallel position

- Loosen screw 3 slightly for adjusting the parallel position of thread pulling knife 6 and counter-knife 4.
- Change counter-knife 4 by setting the screws 2 in such a way that the edges of thread pulling knife and counter-knife are in parallel position.
- Tighten screw 3.

Cutting pressure

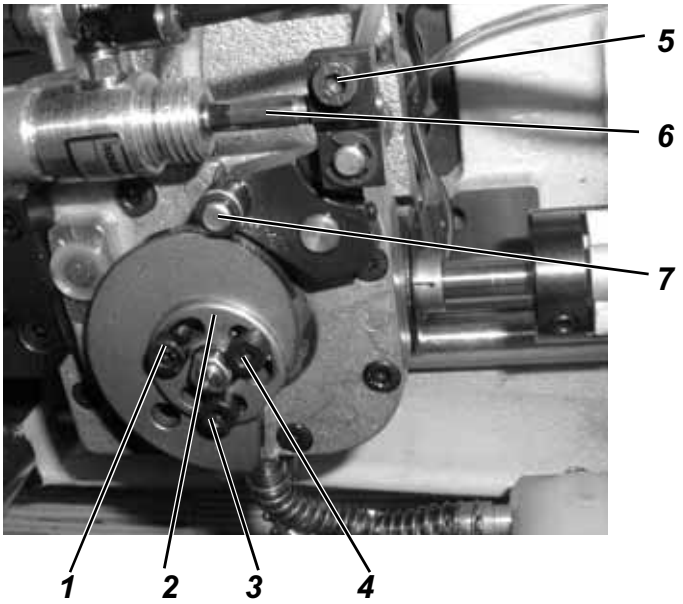
The knives should guarantee a safe cut at the lowest possible pressure of the counter-knife against the thread pulling knife. This is normally the case when the edge of the counter-knife just touches the thread pulling knife with a knife overlapping of 1/3.

- Loosen screws 1.
- Turn counter-knife support in such a way that the condition is fulfilled.
- Tighten screws 1.

Clamping

- Slightly bend the bobbin thread clamp for correcting the clamping.
- Make a test cut by hand and check the thread clamping.

10.3 Cam and roller lever



Standard checking

The moment of knife swivelling is fixed by the position of the cam.

When the thread lever is in position "up", the roller should abut on the highest point of the cam.

The roller should not touch the cam while sewing. The distance between roller and cam should amount to 0.1 mm.

Correction

Adjust roller to cam

- Loosen screw 5 for adjusting the distance between roller and cam.
- Twist piston rod 6 in order to adjust the distance.
- Tighten screw 5.

Turn cam

- Loosen screws 1, 3 and 4 at the cam.
- Twist cam 2 in such a way that the roller abuts on the highest point of the cam when the thread lever is in position "up".
- Tighten screws 1, 3 and 4 again.

10.4 Parameter adjustments for thread trimmer

see parameter sheet 9800 130014 PB52

10.5 Trimming problems in case of large stitch lengths

If large stitch lengths are set, the 768 does the thread trimming as follows:

- Cylinder 3 is actuated, which reduces the stitch length to 3 mm.
- The768 makes a 3 mm long stitch.
- The thread trimmer is actuated.
- Cylinder 3 is relieved.

Standard checking

If cylinder 3 is actuated, the stitch length must be set to 3 mm.

- Set large stitch length.
- Actuate cylinder 3 manually.
- Read off the stitch length at the stitch length graduation.
- The stitch length must be approx. 3 mm.

Correction

- Loosen counternut 1.
- Twist piston rod 2 in such a way that the condition is fulfilled.
- Tighten counternut 1.

11. Oil lubrication

The post bed sewing machine **768** is equipped with an automatic, pressure-free oil circulatory lubrication with inspection glasses for oil level and oil circuit.

The lubrication of the hook is done manually via an oil inlet.

11.1 General notes

Caution: Danger of injury !

Switch off main switch.

All operations on oil lubrication components are to be effected only when sewing machine is switched off.
Carry out adjusting operations and functional tests of the running machine only with utmost caution.

Oil can cause skin eruption.
Avoid a longer contact with the skin.
Wash yourself thoroughly after a contact.

ATTENTION!

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

Oil the special sewing machine exclusively with lubricating oil **ESSO SP-NK 10** or an equivalent oil with the following specification:

- Viscosity at 40° C : 10 mm^2/s
- Ignition point: 150 °C

ESSO SP-NK 10 can be bought at the sales points of the **DÜRKOPP-ADLER AG** under the following parts numbers:

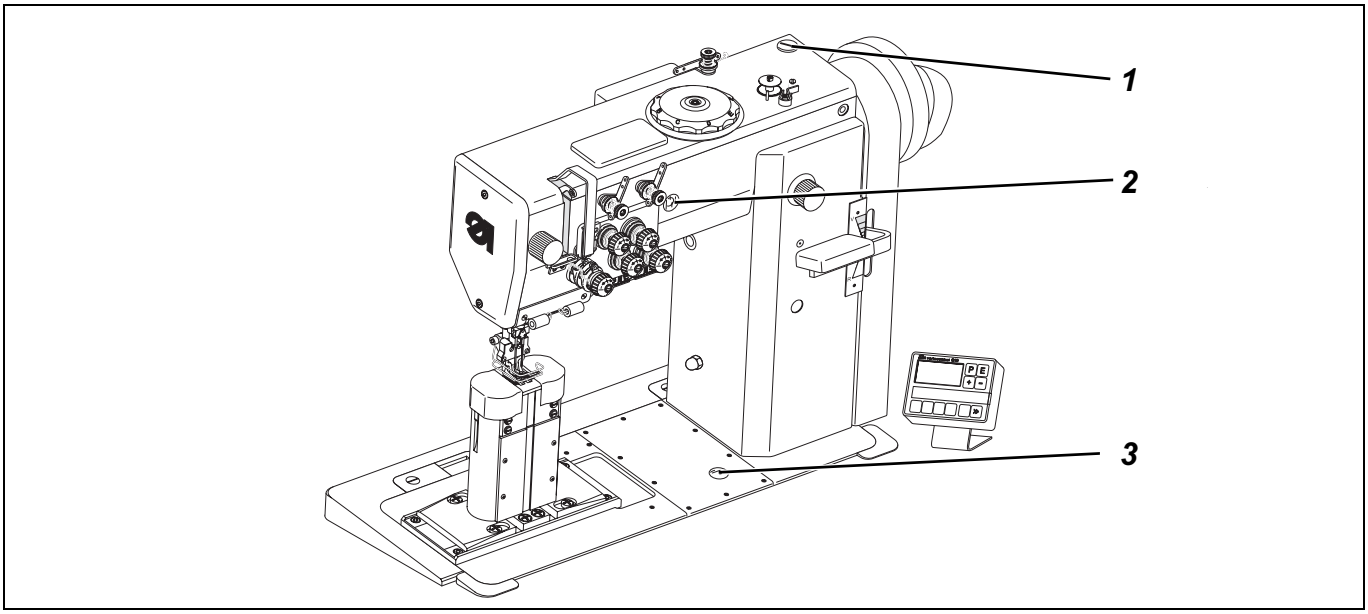
2-Litre-Container:9047 000013

5-Litre-Container:9047 000014

ATTENTION !

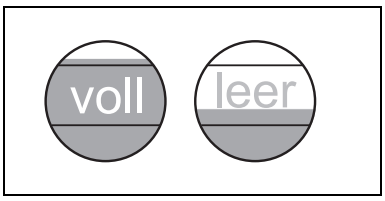
Before putting the special sewing machine into operation or after a longer stop the dried out oil wicks and the oil pad 9 (see illustration chapter 11.5) in the sewing head have to be soaked with some oil. See also part 2 (assembly instructions).

11.2 Inspection glasses for oil level and oil circuit



The oil circulatory lubrication of the post bed sewing machine **768** is equipped with standard inspection glasses for oil level and oil circut.

11.2.1 Check oil level



Standard checking

The oil level in the oil pan is indicated in inspection glass 3 of the oil pan cover.
The oil level must be between the two states shown in the illustration.

– Check oil level at inspection glass 3 when the sewing machine is **idle**.

Correction

– Unscrew locking plug 1.
– Fill up oil via charging funnel up to a level slightly above the marking **"full".**
– Screw in locking plug 1 again.

11.2.2 Check oil flow to the sewing head

Standard checking

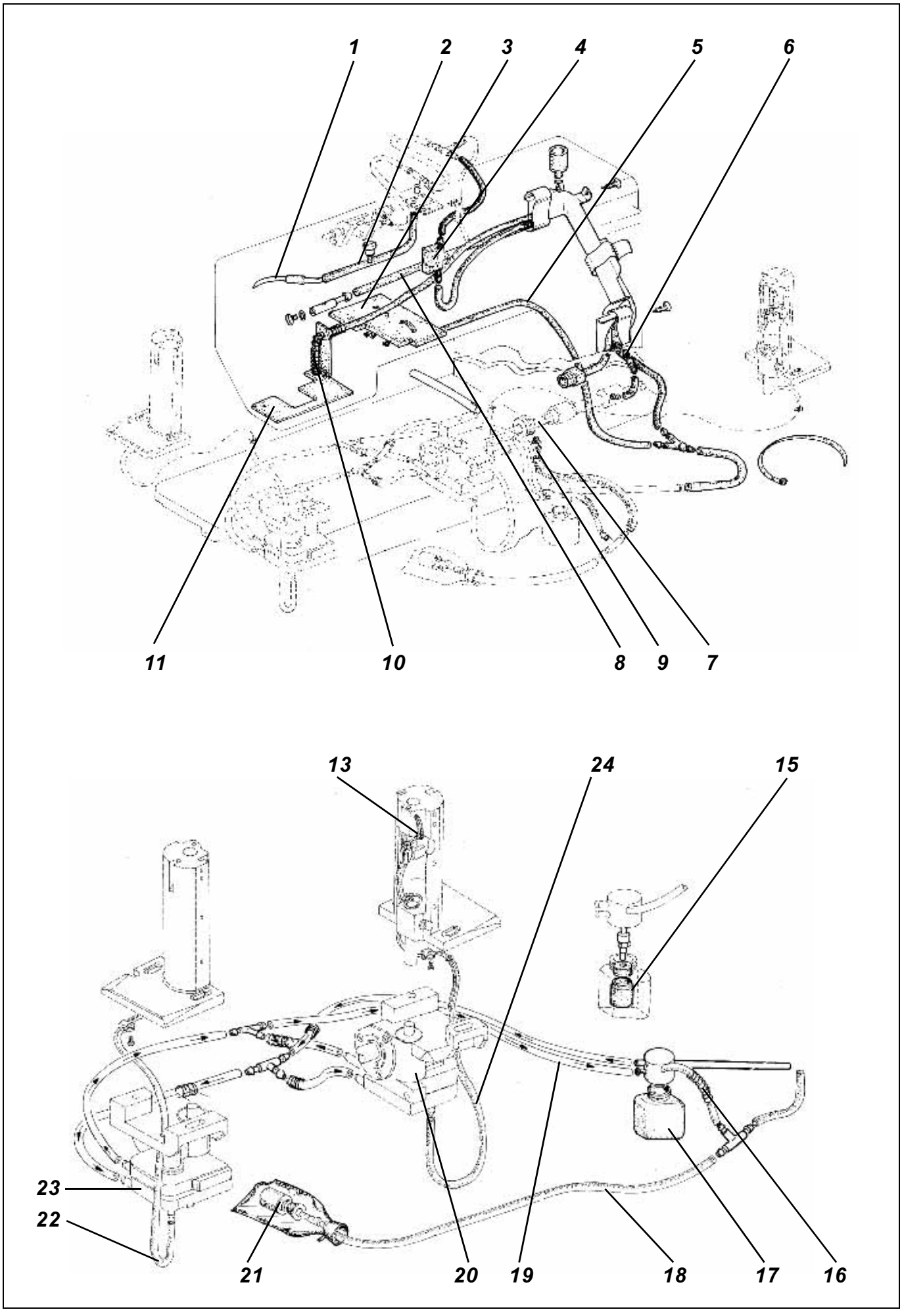
The correct oil flow to the sewing head can be checked at inspection glass 2 in the sewing machine arm.

During the operation of the sewing machine an oil flow to the sewing machine head must be visible at inspection glass 2.

– Put sewing machine into operation.
– Check oil flow to the sewing head at inspection glass 2.

Correction

– Check tubes of the oil circulatory lubrication for blockages and leakages.


1
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11.3 Function of the oil lubrication

Oil flow to the sewing head

The spiral grooves in the hook driving shaft 7 forward the oil from the pan through tube 2 up to the indentation in the sewing head. From here the articulated gear and the oil pad in the head are provided with oil. From the oil pad the oil is led directly to the joints via a wick. The back-pressure valve 6 in this tubing avoids that the oil flows back in case of a standstill of the machine. Glass sight gauge 4 allows the supervision of the oil flow.

Oil flow from the sewing head to the hook box

The oil dripping off the foamed plastic ring 1 in the indentation 3 reaches the hook box via tube 8.

The oil swirled in the sewing head is taken up by felt 11 and forwarded to the withdrawal wick 10 positioned underneath. The withdrawal wick forwards the oil into the hook box.

The oil swirled from the articulated gear is absorbed by felt mat 3 and led back to the hook box via tube 5.

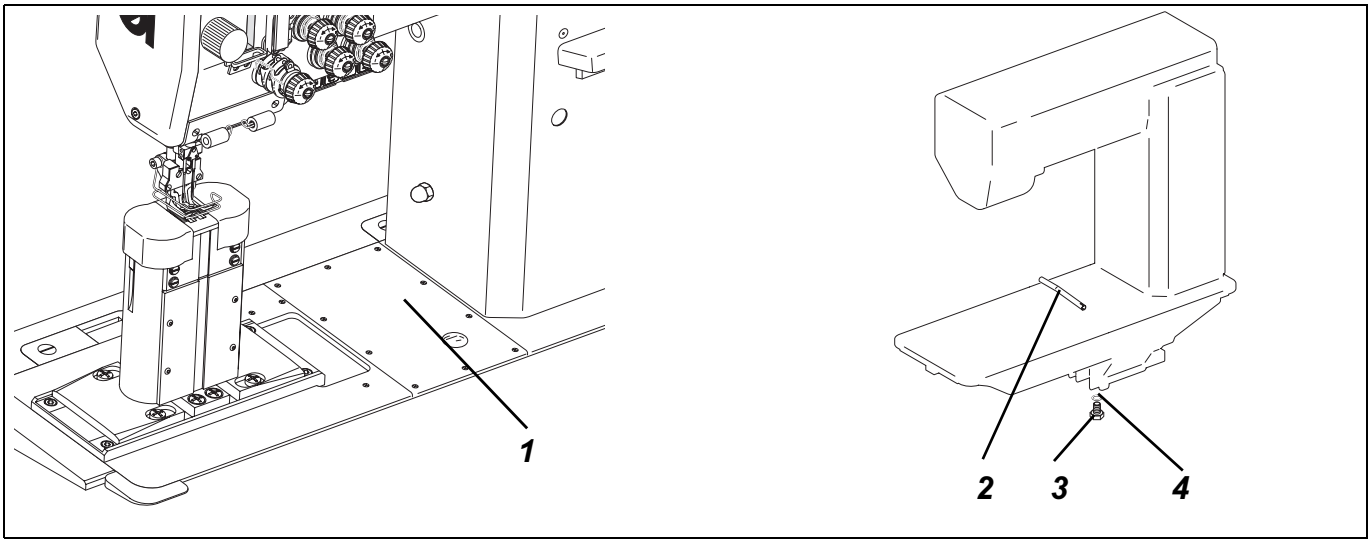
Oil return from the hook box to the oil pan

The oil is forwarded from the hook box to the fluid reservoir 17 via tube 19. Pump 9 on the hook shaft sucks the oil back into the oil pan again via tube 16 with sintered metal filter 15. At the same time the pump sucks the oil from the oil pan of the stand via oil withdrawal felt 21 as well as tube 18. It has to be observed that the oil withdrawal felt 21 is hanging at the oil pan vertically.

The oil returned from the sewing head flows into the hook box through tube 5. Here the oil can rise up to the level where it flows to the fluid reservoir 17 through outflow duct 19.

The hook shafts and the hook bearings are supplied by the hook bearings 20 and 23 via suction pipes 22 and 24.

11.4 Change oil



ATTENTION !

The oil has to be changed after the first **500 operating hours.** Thereafter it has to be changed **every two years**, independent of the number of operating hours.

Oil the special sewing machine exclusively with lubricating oil **ESSO SP-NK 10** or an equivalent oil with the following specification:

- Viscosity at 40° C : 10 mm^2/s
- Ignition point: 150 °C

ESSO SP-NK 10 can be bought at the sales points of the **DÜRKOPP-ADLER AG** under the following parts numbers:

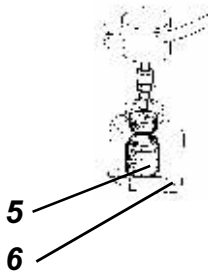
2-Litre-Container:9047 000013

5-Litre-Container:9047 000014

Caution: Danger of injury !

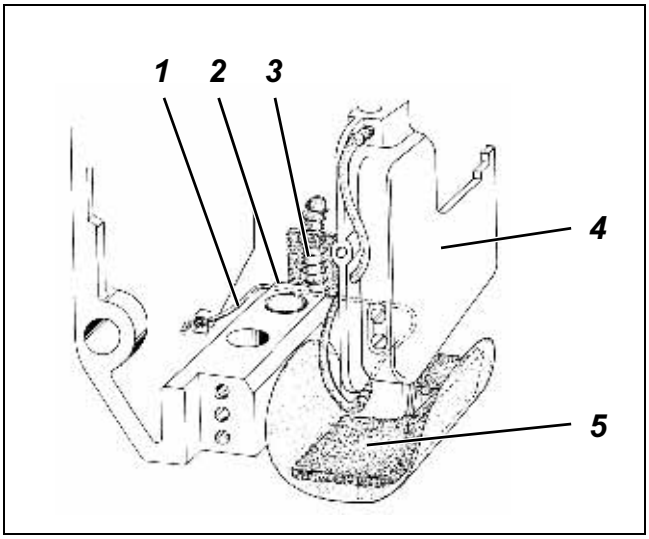
Switch off main switch.
Change oil only when sewing machine is switched off.

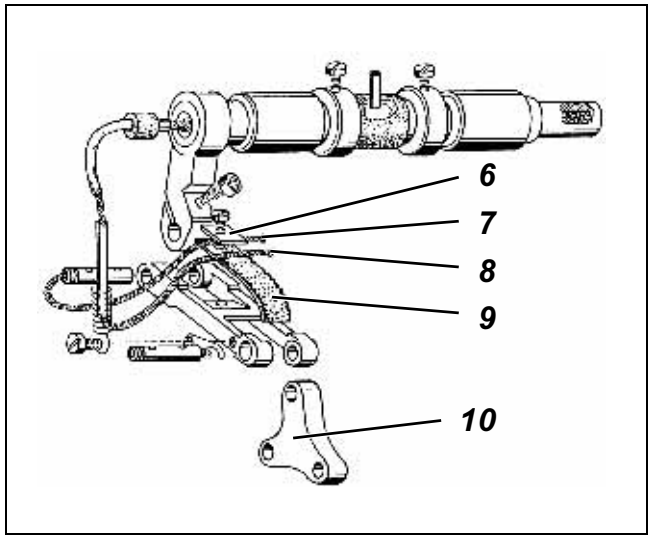
Oil can cause skin eruption.
Avoid a longer contact with the skin.
Wash yourself thoroughly after a contact.



- Screw off cover 1 of the oil pan.
- Unscrew locking screw 3 and drain off used oil. Deliver used oil to an authorized collecting station (see chapter 11.1).
- Clean oil pan and ventilation tube 2.
- Clean fluid reservoir 6 and sintered metal filter 5.
- Screw in locking screw 3 with a new sealing ring 4.
- Screw on cover 1 of the oil pan with a new gasket.
- Fill up fresh oil via charging funnel (see operating instructions).

11.5 General hints concerning the oil lubrication





Caution: Danger of injury !

Switch off main switch.

All operations on oil lubrication components are to be effected only when sewing machine is switched off.

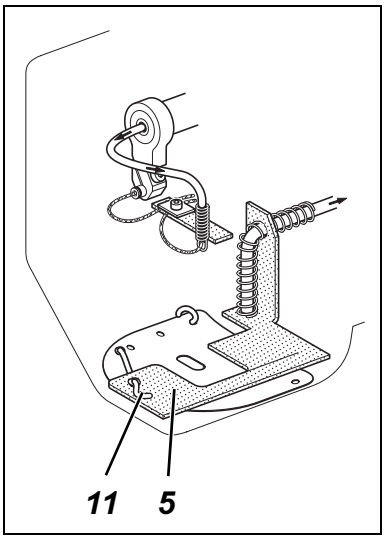
Carry out adjusting operations and functional tests of the running machine only with utmost caution.

11.5.1 Oil wicks for sewing head lubrication

– During the break-in period the bolts for the sewing foot lifting mechanism have to be intensively lubricated via the oil wicks.

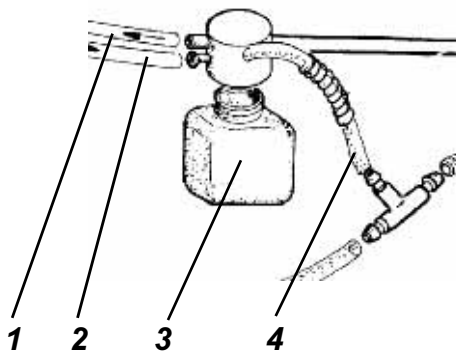
ATTENTION!

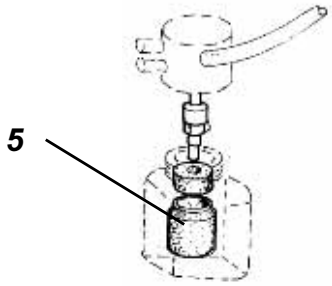
Before putting the special sewing machine into operation or after a longer stop the dried out oil wicks and the oil pad 9 in the sewing head have to be soaked with some oil. See also part 2 (assembly instructions).



– The oil wicks in the sewing head must not touch the withdrawal wick 11.
– The end of withdrawal wick 11 must lie in the oil sump of oil pad 5 over its whole length (approx. 10 - 15 mm). This ensures an optimum return of the oil from the sewing head.
– The oil wick 1 leading to the needle bar wing 4 must be fixed between nut 2 in the cast and support spring 3 of the withdrawal wick. Oil wick 1 must not have any contact with oil pad 5.
– When exchanging the oil pad 9 please observe that the "porous" side is facing the guide 10.
The two oil wicks 7 and 8 leading to the oil pad 9 must be safely fixed under sheet 6.

11.5.2 Oil level in the fluid reservoir





A considerable rise of the oil level in the fluid reservoir 3 or an oil overflow can be caused by the following:

- Wrong position of the fluid reservoir 3
- Blockage of the sintered metal filter 5
- Leakage of tube 1 or 2
- Malfunction of the oil pump

Please find hereafter how to proceed for finding out the cause of the oil rise and how to eliminate the fault:

Caution: Danger of injury !

Switch off main switch.
Eliminate cause of the oil rise in the fluid reservoir only when sewing machine is switched off.

1. Wrong position of the fluid reservoir 3

In case of a vertical position of the sewing machine head the fluid reservoir 3 must also be in a vertical position.

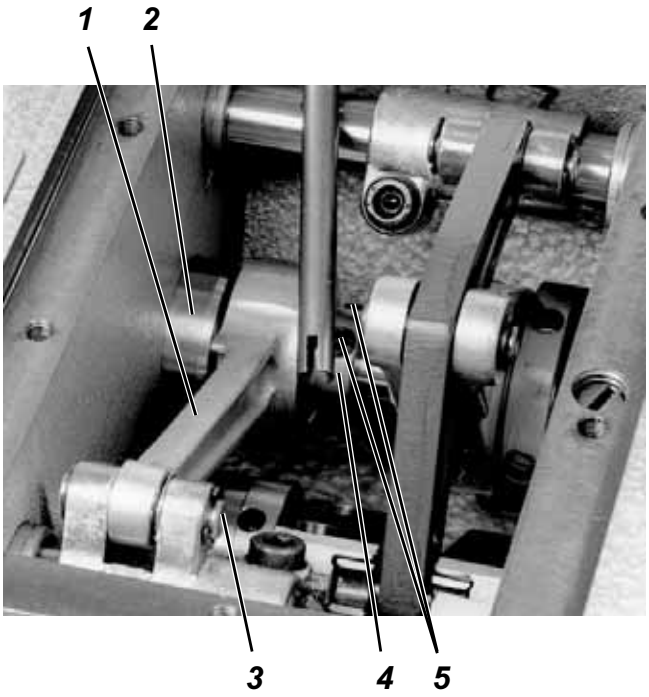
- Position fluid reservoir 3 correspondingly.

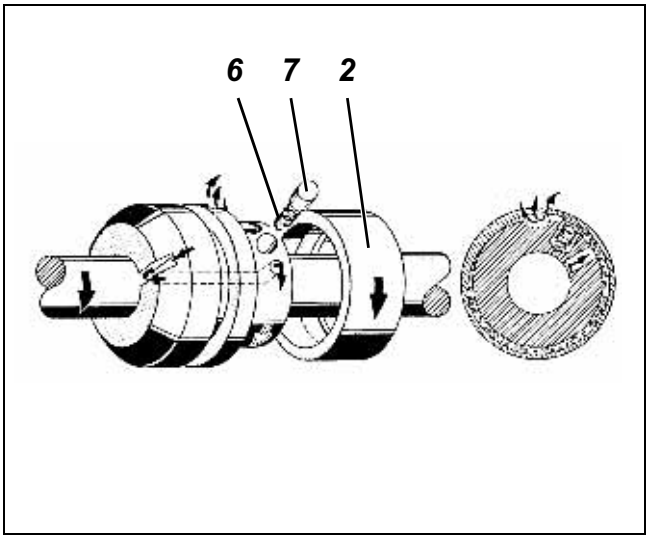
2. Blockage of the sintered metal filter 5

- Remove sintered metal filter 5.
- Blow through sintered metal filter 5 with compressed air pistol **from the inside to the outside.**

3. Leakage of the tube

- Exchange tube 1 or 2 between sintered metal filter and oil pump.





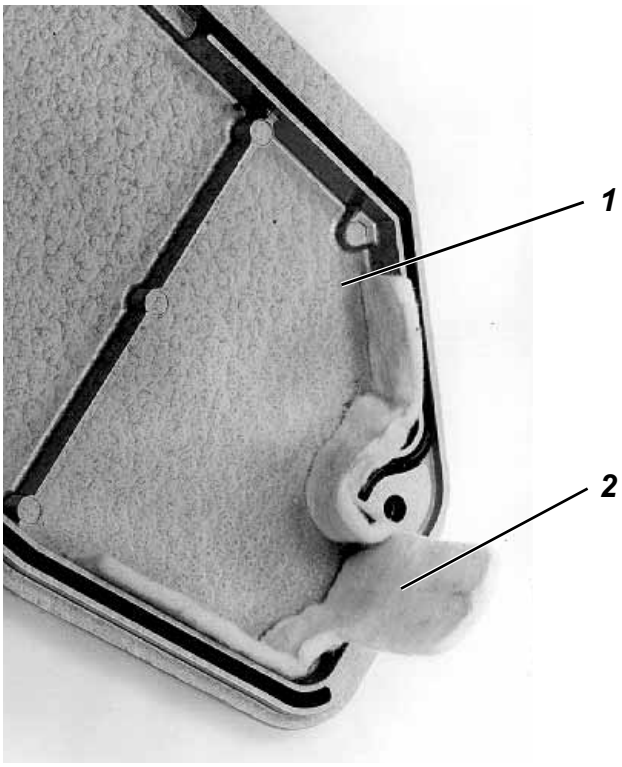
4. Malfunction of the pump

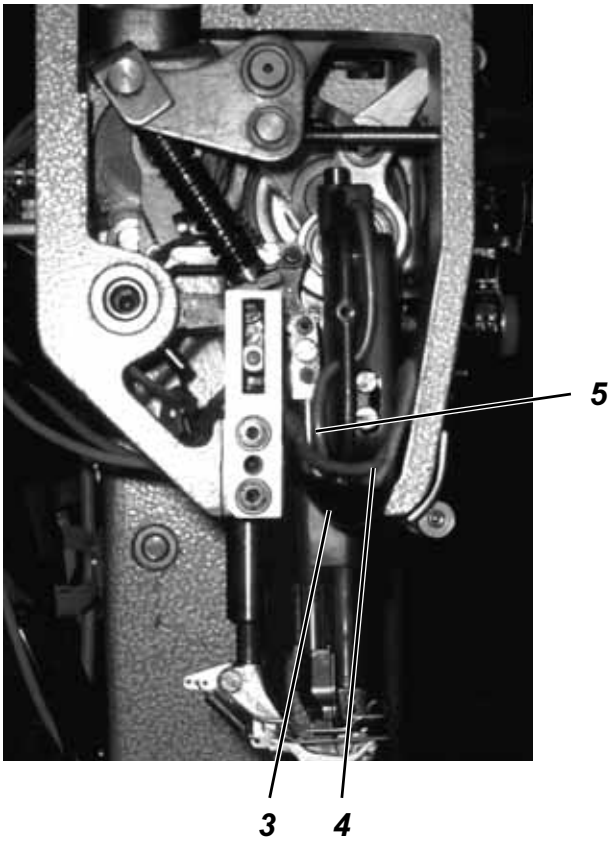
- Remove one locking ring at bolt 3.
- Pull out bolt 3.
- Loosen both core pins 5 at the stroke eccentric.
- Push stroke eccentric 4 to the right.
- Swivel tie rod 1 upwards and push it to the right.
- Pull off pump ring 2 to the right.
  The pump ring can only be pulled off in a certain position. Turn pump ring 2 before pulling it off.
- Take off piston 7 and spring 6.
  Exchange damaged or worn parts, if necessary.

ATTENTION !

When cleaning the oil pump 2 the position of the stroke eccentric 1 is changed.
After cleaning the oil pump the stroke motion of the feed-dog has to be readjusted (see chapter 3.2.3).

11.5.3 Assembly of the head cover





During the operation of the sewing machine oil is swirled against the inner side of head cover 1.

The oil pad 2 glued on head cover 1 forwards the oil to the withdrawal wick 5.

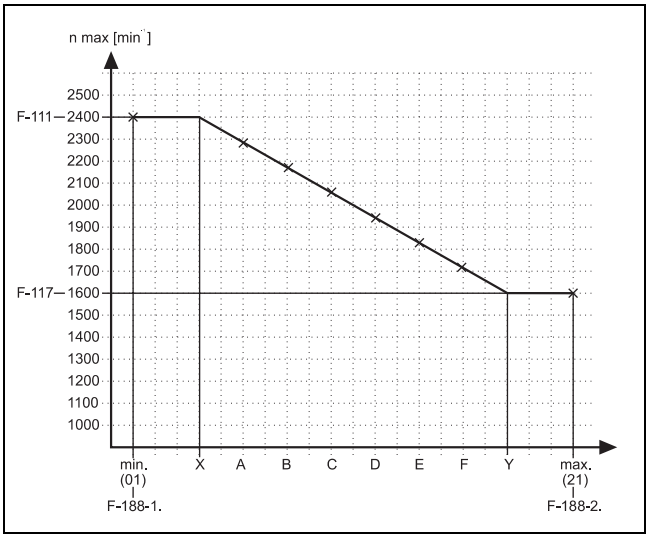
Caution: Danger of injury !

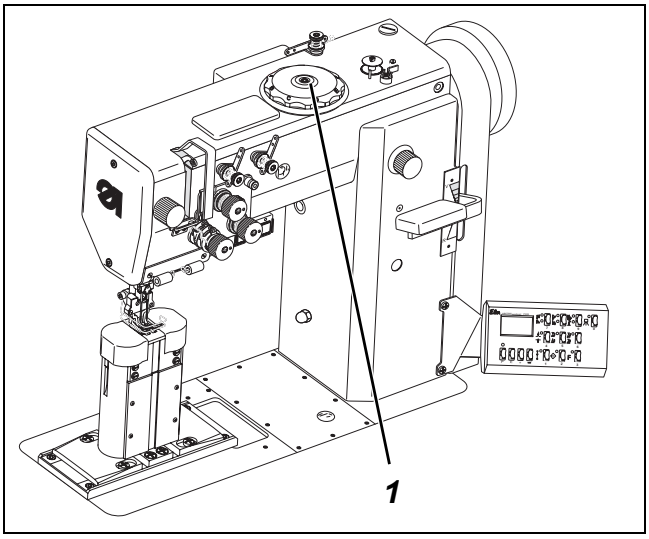
Switch off main switch.
Assemble and disassemble head cover only when sewing machine is switched off.

– Place on head cover 1 and screw tight.
  Clamp tongue 2 of the oil pad at the head cover between oil pad 4 and the nipple of withdrawal wick 5.
  Foil 3 must rest on the inner side of head cover 1.

12. Control and control panel EFKA

12.1 Automatic speed adaptation





12.1.1 General notes

The "Speedomat" function allows a speed limitation dependent on the set stroke height (at setting wheel 1) up to 21 steps. The current stroke height value is indicated to the sewing drive control by the position of the potentiometer (10k Ohm with 60° angle of rotation), which is connected to the lifting shaft in the sewing machine arm. The maximum angle of rotation of the lifting shaft amounts to 48° and adjusts the potentiometer from 9k Ohm (= 4,5V at bushing A.3 = nmax) to 1k Ohm (= 0,5V at bushing A.3 = nmin).

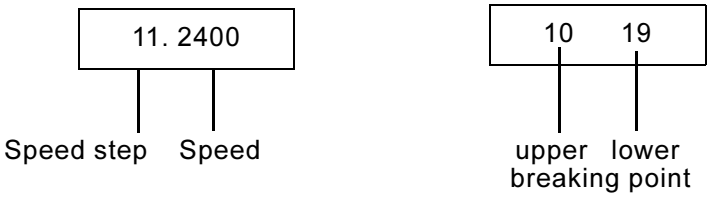
See chapter 3.3.7 and wiring diagram 9890 768003 B for connection of potentiometer.

Stitch lengths [mm]	**Setting eccentric** [Position]	**Sewing foot stroke** [mm]	**Max. number of stitches** [min^{-1}]
0 - 8	**min.**		2400
	A	1,5	
	B	2,4	
	C	3,3	
	D	4,2	
	E	5,1	
	F	6,0	
	max.		1600
8 - 12	**min. - max.**		1600

12.1.2 Setting the "Speedomat" function

For the "Speedomat" function the following values must be set.

- The **maximum speed** of the machine at minimum stroke height is set with the parameter F-111 (n2 - see parameter sheet).
- The **speed at maximum stroke height** is set with the parameter F-117 eingestellt (n10 - see parameter sheet).
- The **upper "speed breaking point"** is the Speedomat step up to which the maximum speed F-111 is effective. The speed limitation begins with the next step. The adjustment is effected with the parameter F-188.
- The **lower "speed breaking point"** is the Speedomat step from which the speed is limited to F-117 (n10). The adjustment is effected with the parameter F-188.



Minimum sewing foot stroke = no speed limitation = maximum speed n2
Maximum sewing foot stroke = maximum speed limitation = speed n10

The difference between maximum speed and speed at maximum stroke adjustment is automatically and regularly distributed to the remaining steps between the upper and the lower speed breaking point by the control.

12.1.3 Setting the "Speedomat" function by means of control panel V810

The programming of the automatic speed adaptation is done by the competent technicians (see chapter 11.1).

The adjustment of the upper and the lower speed breaking point is effected with the parameter F-188.

- Set maximum speed with parameter 111.
- Set stroke adjustment speed with parameter 117.
- Input of parameter F-188.

11. 2400

- Press key "**E**".
  The current Speedomat step (e.g. 11) and the matching speed limitation (e.g. 2400) are indicated.

10 19

- Press key "**>>**".
  The current values for the upper speed breaking point (e.g. 10) and the lower speed breaking point (e.g. 19) are indicated.

11. 2400

- Press key "**>>**".
  The current Speedomat step (e.g. 11) and the matching speed limitation (e.g. 2400) are indicated.

12. 2220

- Set new value for the upper speed breaking point (e.g. 12) by means of the potentiometer, e.g. by turning the setting wheel.

10 19

- Press key "**>>**".
  The current values for the upper speed breaking point (e.g. 10) and the lower speed breaking point (e.g. 19) are indicated.

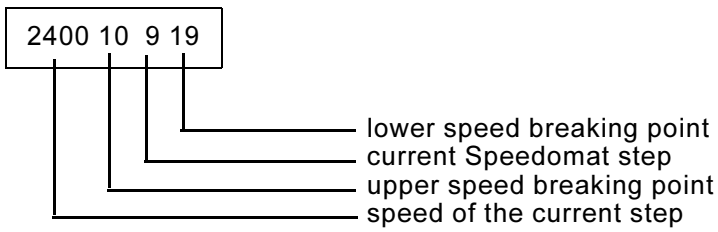
12 19

- Press key "**E**".
  The new value (e.g. 12) for the upper speed breaking point is taken over.

12. 2220	– Press key "**>>**". The current Speedomat step (e.g. 12) and the matching speed limitation (e.g. 2220) are indicated.
17. 1800	– Set new value for the lower speed breaking point (e.g. 17) by means of the potentiometer, e.g. by turning the setting wheel.
12 19	– Press key "**>>**". The memorized values for the upper speed breaking point (12 new) and the lower speed breaking point (17 old) are indicated.
08 17	– Press key "**E**". The new value (e.g. 17) for the lower speed breaking point is taken over.
F - 189	– Press key "**P**" - the current parameter number is indicated or press key **"P"** twice - the programming ends.
DA 82 GA	

12.1.4 Setting the "Speedomat" function by means of control panel V820

	– Set maximum speed with parameter 111.
	– Set stroke adjustment speed with parameter 117.
	– Input of parameter F-188 (see assembly instructions)
2400 10 9 19	– Press key "**E**"; the display shows e.g.: 2400 10 9 19 2400 = current speed limitation of current step 11 19 = lower speed breaking point 11 = current Speedomat step 10 = upper speed breaking point
2220 10 12 19	– Set new value for the upper speed breaking point (e.g. 12) by means of the potentiometer, e.g. by turning the setting wheel.
2220 12 12 19	– Press key "**E**". The new value of the upper speed breaking point (e.g. 12) is taken over.
1800 12 17 19	– Set new value for the upper speed breaking point (e.g. 17) by means of the potentiometer, e.g. by turning the setting wheel.
1800 12 17 17	– Press key "**E**". The new value of the upper speed breaking point (e.g. 08) is taken over.
F - 189	– Press key "**P**" - the current parameter number is indicated - or press key **"P"** twice - the programming ends.
2400 DA82GA	



13. Maintenance

Caution: Danger of injury !

Switch off main switch.
The maintenance of the special sewing machine must only be carried out when the machine is switched off.

The daily or weekly maintenance work to be done by the operators of the special sewing machine (cleaning and oiling) is described in the operating instructions. It is only listed in the following table to complete the picture.

Maintenance work to be carried out	**Operating hours**			
	8	40	160	500
Sewing machine head				
Remove sewing dust, thread tails and cutting waste Spots to be cleaned very thoroughly: - area beneath the throat plate - feed-dog - area around the hook - bobbin case - needle thread tension	**X**			
Clean oil pan	**X**			
Lubricate sewing machine head and hook	**X**			
Lubricate sewing machine bottom part		**X**		
Check function of the safety clutch				**X**
Check condition of the toothed belt				**X**
Sewing drive				
Check condition and tension of the V-belt		**X**		
Pneumatic system				
Check water level in the pressure regulator of the maintenance unit	**X**			
Clean filter insert of the maintenance unit				**X**
Carry out leak test				**X**

ATTENTION !

The oil has to be changed after the first **500 operating hours.**
Thereafter it has to be changed **every two years**, independent of the number of operating hours.

14. Summary of all sewing machine adjustments

ATTENTION !

The complete adjustment of the special sewing machine has to be carried out following the indicated sequence.

No.	Subject	Chapter	Correct adjustment	Correction
	Toothed belt wheel			
1	Position of the lower toothed belt wheel	2.	The first core pin in direction of rotation can be screwed in the shaft.	Position toothed belt anew
	Zero position, feed with equipment			
2	Zero position adjustment (position of the stitch regulator link)	3.1	If stitch length "**0**" is set, feed-dog and needle make no feeding motion.	Twist stitch regulator shaft.
	Bottom feed			
3	Position of the feed-dog in the throat plate cutout	3.2.1	Lateral position: Feed-dog is in the centre of the throat plate cutout. Position in feed direction: In case of maximum stitch length the distance of the feed-dog to the front and back edge of the throat plate cutout is equal.	Shift feed bar on feeding shaft axially. Twist feed bar on feeding shaft.
4	Height of the feed-dog	3.2.2	The highest position of the feed-dog is 1.2 mm above the throat plate level.	Twist lifting shaft
5	Lifting motion of the feed-dog	3.2.3	The feed-dog moving upwards and the needle moving downwards reach the throat plate level simultaneously.	Twist stroke eccentric.
6	Feeding motion of the feed-dog	3.2.4	If the maximum stitch length is set and the needle position is 0.5 mm after the bottom dead centre, the needle makes no feeding motion when actuating the stitch regulator lever.	Twist feeding eccentric.
7	Synchronous run of needle feed and bottom feed	3.2.5	During the feed the needle does not move in the needle hole. If stitch length "**0**" is set, the block is in vertical position.	Twist block on feeding shaft.
	Needle feed			
8	Laterial position of the lever for transmitting the setting wheel motion	3.3.1	The ball stud at the lever must move in the centre of the slit.	Shift lever on shaft.

9	Setting range of the sewing foot stroke adjustment	3.3.2	If the setting wheel for the sewing foot stroke adjustment is in position "**min.**", the minimum sewing foot stroke of 1 mm or 1.6 mm respectively must be effective.	Readjust stop sheet.
10	Position of the lever for transmitting the setting wheel motion	3.3.3	The distance of the ball stud to the exterior surface of the casing wall must amount to 44 mm.	Twist lever on the shaft.
11	Feeding foot and pressure foot stroke	3.3.4	If the minimum sewing foot stroke is set, the strokes of the feeding foot and the presser foot are equally high.	Loosen block and set sewing feet on the same level.
12	Stroke motion of the feeding foot	3.3.6	The feeding foot reaches the throat plate level simultaneously with the feed-dog moving upwards and the needle moving downwards.	Twist eccentric for the sewing foot stroke.
13	Potentiometer for automatic speed limitation	3.3.7	Resistance of the potentiometer at minimum foot stroke approx. 9 kOhm. Resistance of the potentiometer at maximum foot stroke approx. 1kOhm.	Readjust shaft of the potentiometer.
14	Limitation of maximum stitch length	3.4.1	The stitch length adjustment is limited to the maximum stitch length (standard 12 mm, machines with thread trimmer 9 mm).	Shift clamping block on threaded spindle. verschieben.
15	Automatic speed limitation (stitch lengths of more than 8 mm)	3.4.2	Turn button slowly from the shortest stitch length up to stitch length 8 mm, until the spring bow actuates the switch (slightly audible click).	Shift holding sheet laterally or set switch 1 by turning of nut 5 and knurled nut 2 respectively.
	Sewing foot height and sewing foot lift			
16	Electropneumatic sewing foot lift	4.1	The distance of the lifted sewing feet to the throat plate is 16 mm. If the sewing feet are lowered, the stop screw at the lever must not rest on the pestle of the piston rod (distance 0.5 mm).	Twist stop screw.
17	Sewing foot locking	4.2	The distance between the sewing feet locked in position "up" and the throat plate is 8 mm.	Twist lifting block.
	Thread tension			
18	Thread controller spring	5.1	Spring travel: The needle thread is under tension from the raised position of the thread lever to the moment the needle's eye penetrates the material.	Twist complete thread tension unit.
			Spring tension: Dependent of the material to be sewn.	Twist bolt of the thread tension unit.

	Needle bar			
19	Lateral position of the needle bar wing	6.1	At stitch length "**0**" the needle sticks in the centre of the needle hole of the feed-dog.	Shift needle bar wing laterally.
20	Position of the needle bar wing in feed direction	6.2	At stitch length "**0**" the needle sticks in the centre of the needle hole of the feed-dog.	Twist needle bar wing.
	Hook adjustments		**Make all adjustments at stitch length "0".**	
21	Looping stroke	7.1	The looping stroke is 2 mm. In looping stroke position the hook tip is at the level of the middle of the needle. Check with gauge and block.	Twist hook.
22	Needle bar height	7.2	In looping stroke position the hook tip is at the level of the middle of the needle hollow groove.	Adjust the height of the needle bar.
23	Distance between hook and needle	7.3	In looping stroke position the distance between the hook tip and the needle hollow groove is 0.1 mm max.	Shift hook support laterally.
24	Hook protection	7.4	In looping stroke position the needle abuts on the needle protection without being displaced.	Adjust needle protection.
25	Clearance in the claw clutch	7.5	The lateral clearance between the clutch claws is 0.5 mm.	Shift shaft axially.
			Bobbin case lifter	
26	Lifting course	7.6.1	The distance between the lug of the lifted bobbin case and the gap of the throat plate corresponds to the thickness of the sewing thread.	Set position of the lifting finger.
27	Throat plate height	7.6.2	The distance between the top edge of the bobbin case lug and the gap of the throat plate must amount to approx. 0.8 - 0.9 mm.	Set throat plate height by adjusting the setting eccentric.
	Safety clutch			
28	Engage disengaged safety clutch	8.1	Stick a pin in the drill-holes of both clutch parts. Turn handwheel forwards and backwards until the hook is freely movable. Pull out pin. Hold down hook and turn handwheel until safety clutch engages.	
29	Adjust transmittable torque	8.2	Safety clutch disengages in case of hook blockage. Presetting: The bolt heads of the core pins are flush with the counternuts.	Twist core pins.
	Bobbin winder			
30	Bobbin capacity	9.	The bobbin winder stops automatically when the bobbin is filled up to approx. 0.5 mm from its edge.	Minor corrections: Adjust setting screw at the release lever.

	Thread trimmer			
31	Thread pulling knife	10.1	In resting position the rear edge of the thread pulling knife should be flush with the front edge of the counter-knife.	Loosen two screws at the bottom edge of the support. Adjust thread pulling knife
32	Counter-knife and bobbin thread clamp	10.2	Counter-knife and thread pulling knife must be in parallel position. The clamping spring must hold the cut bobbin thread.	Position counter-knife by loosening the corresponding screws. Align clamping spring a little.
33	Cam and roller lever	10.3	When the thread lever is in position "up", the roller must abut on the highest point of the cam. The roller should not touch the cam while sewing.	Twist cam after loosening the screws. Twist piston rod at the cylinder.
	Oil lubrication			
34	Oil level	11.2.1	Oil level gauge in the oil pan cover: The oil level is between the red markings **"empty"** and **"full".**	Fill up oil up to a level slightly above the marking **"full".**
	Oil lubrication			
35	Oil change	11.4	First oil change after 500 operating hours. Thereafter change oil every two years.	Change oil.
36	Assembly of the head cover	11.5.3	The tongue of the oil pad at the head cover is clamped between the oil pad in the sewing head and the nipple of the withdrawal wick.	Screw off head cover and place on anew.

15. Sewing drives

For informations about the sewing drives of class 768 please refer to chapter 4 of the assembly instructions cl. 768.

15.1 Control DA82GA and control panel of the sewing drive

For informations about the control DA82GA of the sewing drive please refer to chapter 8 of the operating instructions cl. 768 and to chapter 6.6 of the assembly instructions cl. 768.

15.2 Positioning

For informations about the positioning of the needle bar please refer to chapter 6.10 of the assembly instructions cl. 768.

15.3 Set machine-specific parameters.

For informations about the setting of the machine-specific parameters please refer to chapter 6.11 of the assembly instructions cl. 768.

The table of the machine-specific parameters of the control DA82GA is included in chapter 6.11.3 of the assembly instructions cl. 768 and the setting values can be taken from the parameter sheet 9800 130014 PB52 (in the accessories).

15.4 Master reset

For informations about the Master reset please refer to chapter 6.12 of the assembly instructions cl. 768.

15.5 List of parameters

The complete list of parameters is included in the operating instructions EFKA DA82GA belonging to the delivery volume of the sewing drive.

Note: