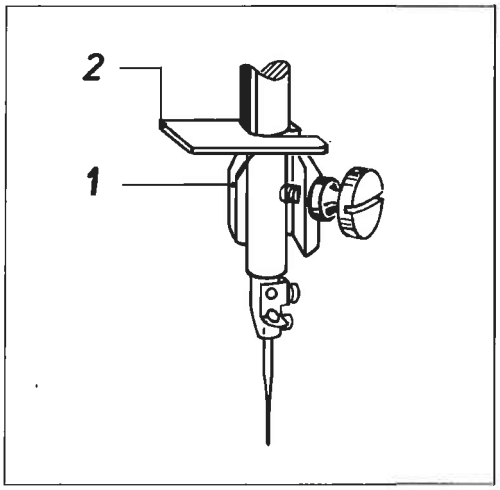
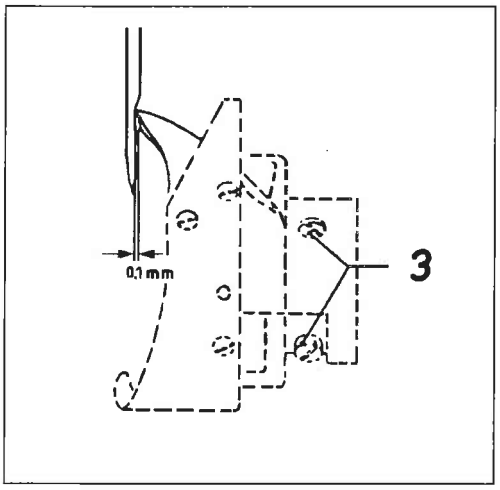
Contents: Page

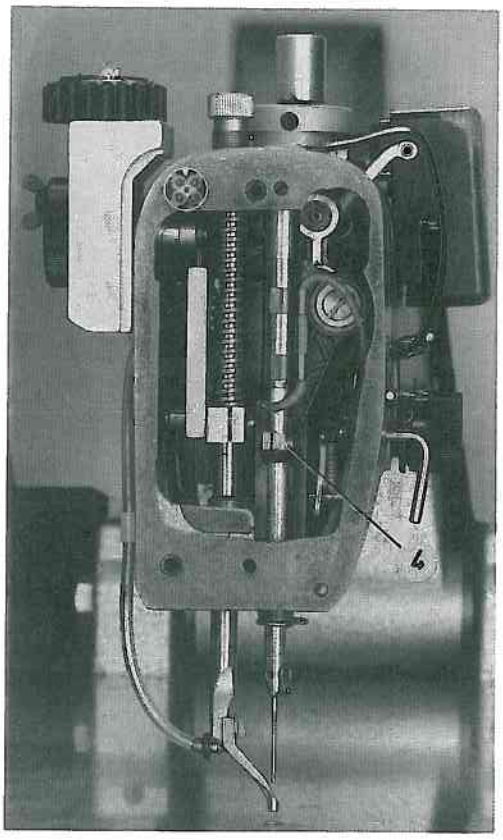
Part 3: Service manual

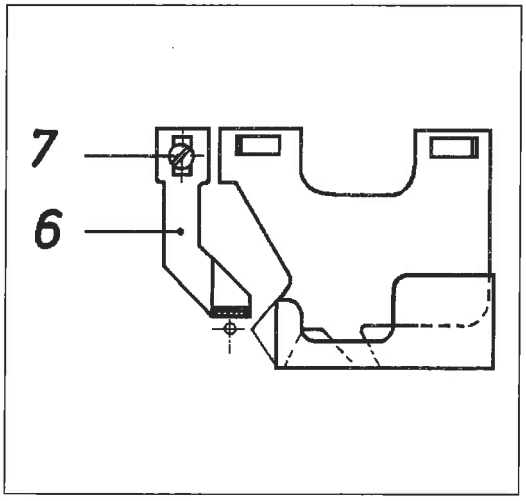
Contents **Page**

Part 3: Service Manual









1. Sewing machine (cl. 805-121)

1.1 Hook, needle bar and needle guide

1.1.1 Loop stroke

Explanation:

The loop stroke is the path of the needle bar from its lower dead point to the point, where the hook point is at the centre of the needle.

Rule:

The loop stroke should be 2 mm.

Preparing the check and correction:

Call up the menu "Moving the X-, Y- and sewing axis", select the process "Lower sewing head" and with the key "0" turn on the lamp h40 "Safety stop of motors", see 9.5.4

Check:

- Move the needle bar into its bottom position using the crank.
- With the block 1 (parts no. 981 15 000 2) press the gauge 2 (parts no. 981 15 000 1) against the needle bar bushing and tighten the screw on the block.
- Pull out the gauge and turn the crank in the arrow-indicated direction until the block rests against the needle bar bushing.
  In this position the hook point must be at the centre of the needle.

Correction:

Loosen the screws 3 and rotate the hook accordingly on the drive shaft.

1.1.2 Needle bar height

Rule:

In the loop stroke position the hook point should be located in the centre of the needle scarf.

Preparing the check and correction:

Call up the menu "Moving the X-, Y- and sewing axis", select the process "Lower sewing head" and with the key "0" turn on the lamp h40 "Safety stop of the motors", see 9.5.4.

Check:

Turn the crank accordingly.

Correction:

Loosen screw 4 and shift the needle bar accordingly.

1.1.3 Hook point - needle clearance

Rule:

In the loop stroke position the clearance between the hook point and needle scarf should be 0.1 mm.

Preparing the check and correction:

Call up the menu "Moving the X-, Y- and sewing axis", select the process "Lower sewing head" and with the key "0" turn on the lamp h40 "Safety stop of the motors", see 9.5.4.

Check:

Turn the crank accordingly.

Correction:

Loosen the screws 3 and axially shift the hook on the shaft.

1.1.4 Needle guide - needle clearance

Explanation:

When sewing in certain directions the needle guide 6 should prevent contact between the needle and hook point.

Rule:

In the loop stroke position the needle guide 6 should be located as close as possible to the needle, without touching it.

Preparing the check and correction:

Call up the menu "Moving the X-, Y- and sewing axis", select the process "Lower sewing head" and with the key "0" turn on the lamp h40 "Safety stop of the motors", see 9.5.4.

Correction:

Loosen screw 7 and change the position of the needle guide 6 accordingly.

Hint:

A wrong adjustment may result in damage to the hook point and needle breakage.

1.2 Bobbin case opener

1.2.1 General information

- The take-up lever must pull the thread between the centre part 1 and its holder 2. To assure an unhindered thread passage, the centre part must be opened at that moment by the bobbin case opener.
  The desired seam contour is thus sewn with a minimum of thread tension.
- Wrong adjustments may result in the following:
  Thread breakages
  Loops at the material underside
  High noise level.

1.2.2 Height of the finger

Rule:

The finger 8 should be at the same height with the nose of the centre part.

Preparing the check and correction:

Call up the menu "Moving the X-, Y- and sewing axis", select the process "Lower sewing head" and with the key "0" turn on the lamp h40 "Safety stop of the motors", see 9.5.4.

Check:

Turn the crank accordingly.

Correction:

Loosen screw 7 and turn the eccentric 5 accordingly.

1.2.3 Size of the opening gap - position of the finger path

Rule:

The distance X between the opened centre part and its holder should correspond to the size of the sewing thread.

Preparing the check and correction:

Call up the menu "Moving the X-, Y- and sewing axis", select the process "Lower sewing head" and with the key "0" turn on the lamp h40 "Safety stop of the motors", see 9.5.4.

Check:

Turn the crank accordingly.

Correction:

Loosen screw 6 and change the position of the finger 8 accordingly.

1.2.5 Depth of the finger

Rule:

The distance between the finger 9 and centre part 10 should be approx. 0.6 mm.

(To assure that the thread passes unhindered between the finger and centre part.)

Preparing the check and correction:

Call up the menu "Moving the X-, Y- and sewing axis", select the process "Lower sewing head" and with the key "0" turn on the lamp h40 "Safety stop of the motors", see 9.5.4.

Check:

Turn the crank accordingly.

Correction:

Loosen screw 6 and adjust the finger 8 accordingly.

(Make sure not to change the opening path.)

1.2.6 Timing the opening motion

Rule:

As the thread passes between the centre part 1 and its holder 2, the centre part should 1 be opened.

Preparing the check and correction:

Call up the menu "Moving the X-, Y- and sewing axis", select the process "Lower sewing head" and with the key "0" turn on the lamp h40 "Safety stop of the motors", see 9.5.4.

Check:

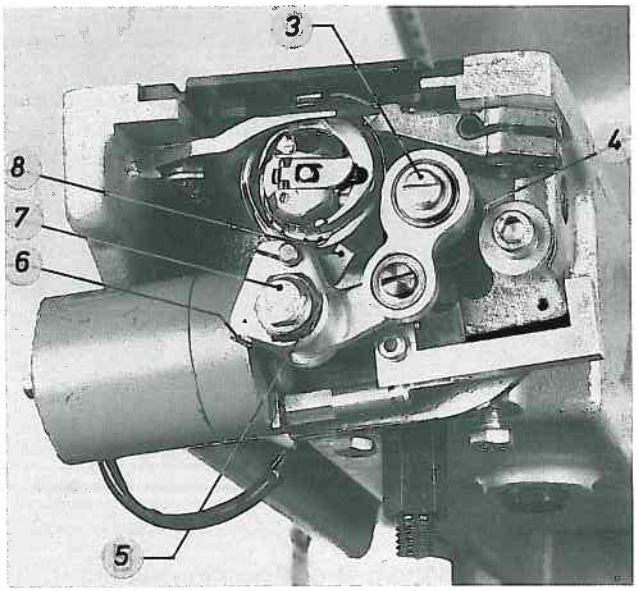
Turn the crank and watch the thread passage during sewing.

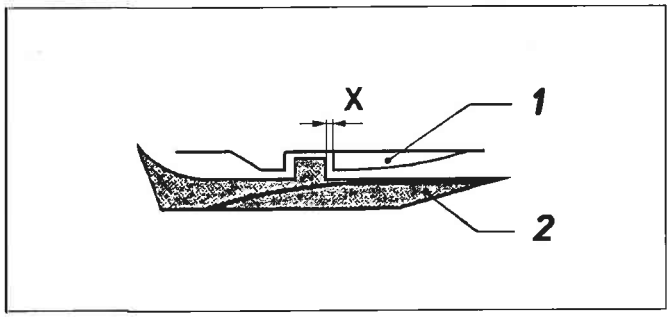
Pre-adjustment:

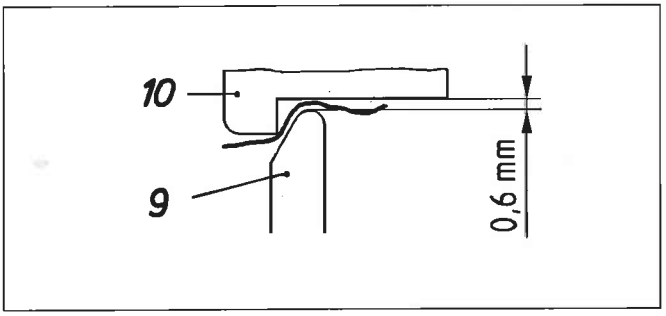
- Loosen screw 4 on the eccentric.
- Move the needle bar to 1 mm after its upper dead point using the crank (seen in direction of running).
- Turn the eccentric 3 using a screwdriver until the finger 8 is at its front turning point, where the centre part is fully opened.
- Tighten screw 4 on the eccentric.

Correction:

- Loosen screw 4 and accordingly change the position of the eccentric 3 using a screwdriver.







1.3 Sewing foot

1.3.1 Height adjustment range

Rule:

When the bottom stroke position is adjusted, the distance between the sewing foot at its lower dead point and the throat plate should be 0.7 mm.

Preparing the check and correction:

Call up the menu "Sewing axis" and select the process "Release sewing axis", see 9.2.

Check:

- Adjust the bottom stroke position via dial 1.
- Move the sewing foot into its bottom position using the crank.

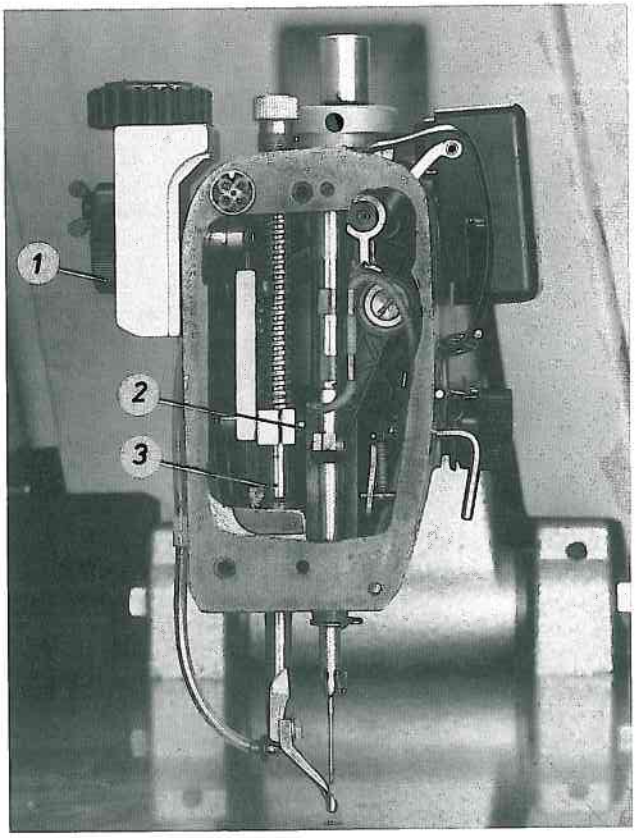
Correction:

Loosen screw 2 and shift the cloth presser bar 3 accordingly.

Hint:

When the correction is completed, check the following conditions:

When the top stroke position is adjusted, the needle bar at its lower dead point must not touch the sewing foot.



1.3.2 Timing of the sewing foot motion

Rule:

- The screw 6 on the stroke eccentric 7 should be in the vertical position, when the screw 9 of the arm shaft crank 10 is in the same position. In this case both, the sewing foot and needle bar, reach their lower dead point at the same time.
- In axial direction the distance between the collar of the eccentric 7 and the groove in the shaft should be 7.8 mm.

Preparing the check and correction:

Call up the menu "Moving the X-, Y- and sewing axis", select the process "Lower sewing head" and with the key "0" turn on the lamp h40 "Safety stop of the motors", see 9.5.4.

Check:

Turn the crank accordingly.

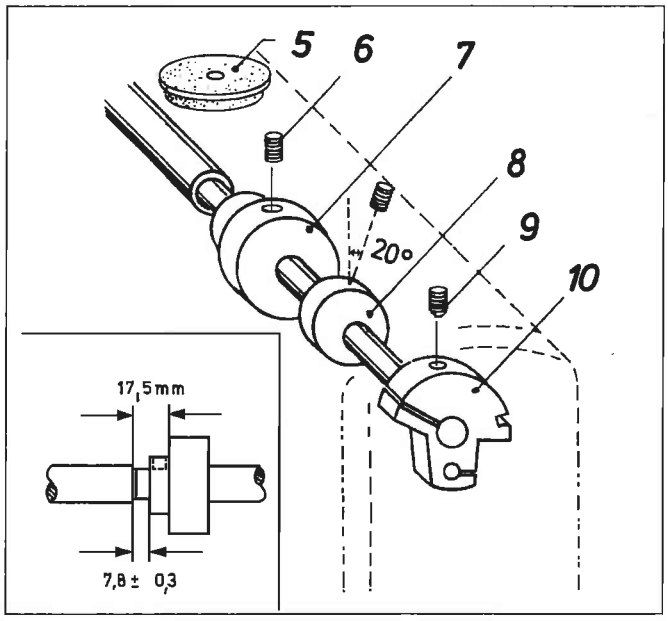
Correction:

Loosen screw 6 and change the position of the stroke eccentric 7 on the shaft accordingly.

Hint:

A wrong adjustment may have the following consequences:

- Strong vibrations of the sewing machine. (Because the stroke eccentric 7 is not in the designated position in relation to the counter weight 8, thus causing the shaft to be unbalanced.)
- Skipped stitches



1.4 Check spring

Rule:

The check spring should have just reached its bottom position, when the needle has penetrated the material up to its eye.

Check:

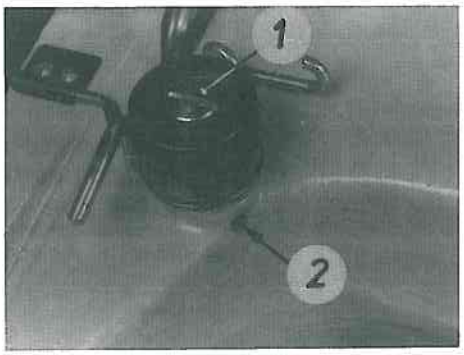
Sew with 5% of the speed in the "Automatic" cycle.

Correction of the path:

- Slightly loosen screw 2 at the arm.
- With the bolt 1 turn the entire thread tension assembly accordingly.

Correction of the tension:

- With the key "0" turn on the lamp h40 "Safety stop".
- Loosen screw 2 at the arm and pull out the thread tension assembly.
- Loosen screw 3 and turn the bolt 4 accordingly.



1.5 Thread tension release

Explanation:

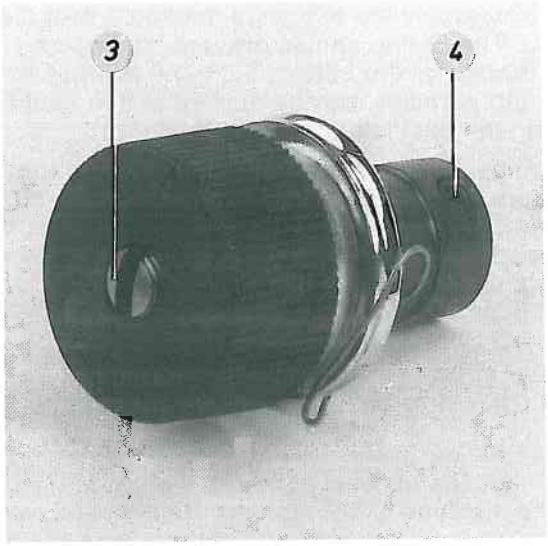
The thread tension is released magnetically during the thread trimming process.

Rule:

The thread must be pulled unhindered through the released tension.

Correction:

- With the key "0" turn on the lamp h40 "Safety stop".
- Loosen the screw 2 and change the position of the entire tension assembly.
  (To do this, do not turn the tension.)



1.6 Oil lubrication

1.6.1 Mode of operation

Oil supply to the sewing head

The hook drive shaft 5 conveys the oil from the sump via the spiral grooves through the line 4 to the sewing head. The check valve 6 in this line should prevent the oil from running back at a machine standstill. The oil check tube 2 above the line enables to check the oil supply. A certain amount of the oil that is conveyed to the sewing head is used to lubricate the mechanical parts in the sewing head. The remainder of the oil runs via line 1 to the inlet pipe 3. From here, the arm shaft bearing and the foot stroke mechanism are lubricated via the oil wicks.

Oil recirculation to the sewing head

The accumulated oil in the sewing head is collected at the bottom of the sewing head, where the suction line 14 with the metal filter is located. Via this line the pump 10 on the hook drive shaft sucks back the oil.

Oil supply for the hook

The pump 10 does not only suck in the oil from the sewing head, but also the oil from the oil sump. This oil reaches the pump via the line 9 with the O-ring. The O-ring should prevent the line end from lying directly at the bottom of the oil sump. Otherwise, dirt particles may be sucked in that could clog up the duct leading to the hook.

The pump 10 conveys the sucked in oil via the pressure line 12 into a duct. From here, the oil gets to the hook via the oil splash ring. The oil that is not needed for the hook lubrication drains before through the hole 13 in the pressure line.

1.6.2 Checking the oil level and oil supply

- Check the oil level at oil sight window 7, when the machine is not running. Refill the oil, when the oil level has dropped to the centre of the sight window (see 1.6.6).
- Check the oil supply to the sewing head at oil check tube 2, when the machine is running, eg during the automatic process in the "Automatic" menu.

1.6.3 Regulating the sewing head lubrication

Rule:

The adjusted oil quantity may be substantially larger than the actually required oil quantity.
(The pump sucks the oil from the lowest point of the sewing head back to the sump.)

Pre-adjustment:

Completely turn in the regulating screw 15 and then loosen by a 1/2 turn.

Check:

- Unscrew the front cover plate.
- Call up the menu "Moving the sewing axis". (Via "Service technician", "Adjustments", "Moving the X-, Y- and sewing axis" and "Lower sewing head").
- Select the process "Move by hand".
- With the key ↓ operate the sewing machine for about 2 minutes
- Hold a sheet of paper between the cloth presser bar and housing.
- Operate the sewing machine at intervals using key ↓
  The adjustment is correct, when a sufficient oil quantity is splashed on the paper.

Correction:

Turn the regulating screw 15 accordingly.
Increasing the oil quantity - turn the screw to the left.

Reducing the oil quantity - turn the screw to the right.

1.6.4 Regulating the hook lubrication

Explanation:

The hook can only be lubricated, when the oil splash ring is located in the hook cavity.

Rule:

The hook should be lubricated sufficiently with a minimum of oil.

(Then little oil is consumed).

Pre-adjustment:

Completely turn in the regulating screw 11 and then loosen it by a 1/8 turn.

Check:

- Call up the menu "Move sewing axis". (Via "Service technician", "Adjustments", "Moving the X-, Y- and sewing axis" and "Lower sewing head".)
- Select the process "Move by hand".
- Remove the table top.
- With the key ↓ operate the sewing machine for about 2 minute
- Hold a sheet of paper under the hook.
- Operate the sewing machine in intervals using key ↓
  The adjustment is correct, when a sufficient oil quantity is splashed on the paper.

Correction:

Turn the regulating screw 11 accordingly.
Increasing the oil quantity - turn the screw to the left.

Reducing the oil quantity - turn the screw to the right.

1.6.5 Changing the oil

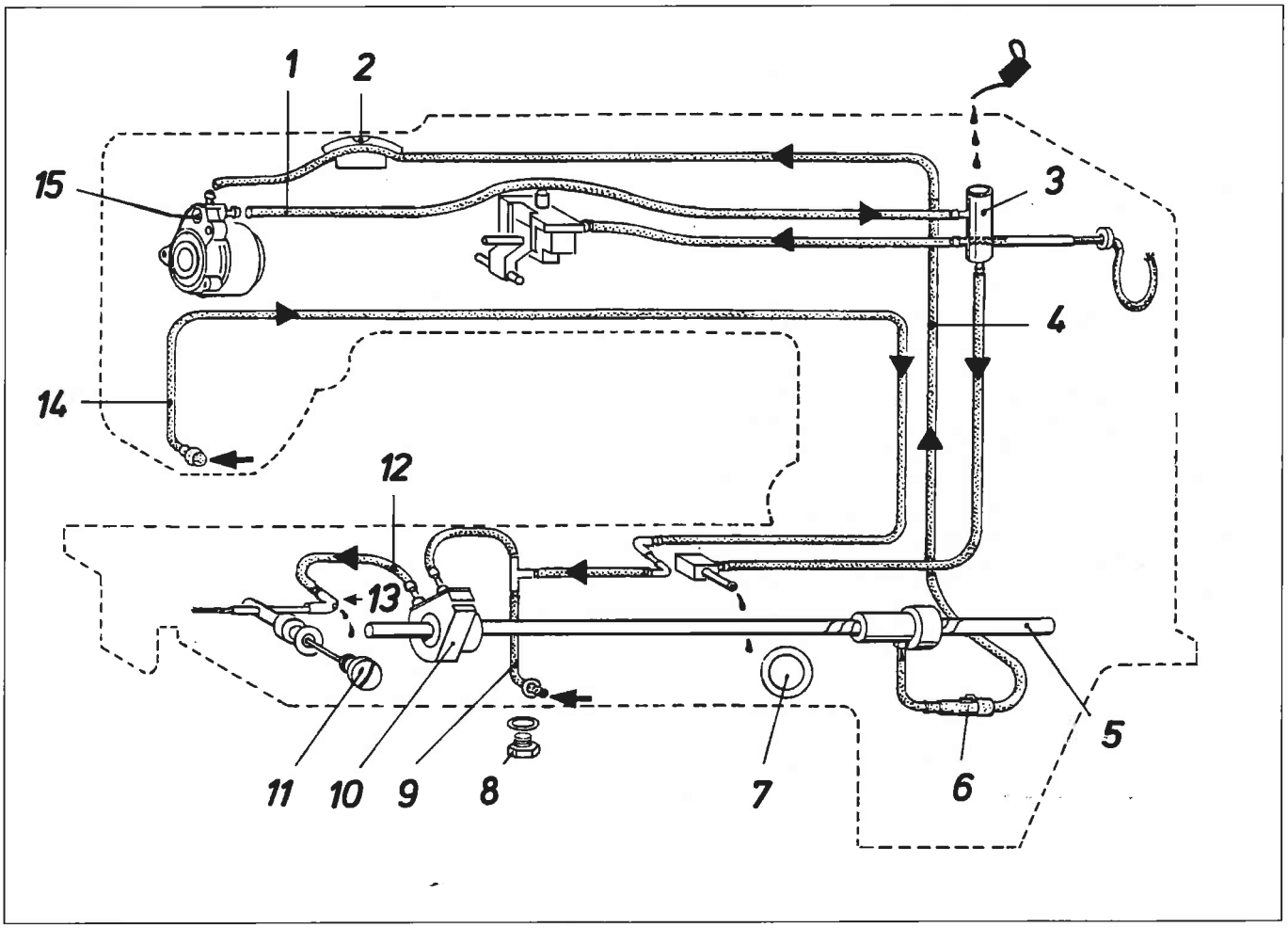
After the first 1000 hours of operation or after the first 6 months proceed as follows to change the oil:

- Turn out the drain screw 8 to drain the oil.
- Remove the oil sump cover.
- Clean the oil sump and check, whether the venting pipe is clear.
- Mount the drain screw and oil sump cover (use new seals).
- Refill "ESSO SP-NK 10" oil.

1.6.6 Refilling the oil

- The oil should be refilled, when the oil level has dropped to the centre of the oil sight window, when the machine is not running.
- Refill "ESSO SP-NK 10" oil through the inlet pipe 3 up to the upper edge of the oil sight window 7.
  It is also possible to use other oils with the following specifications:

  Viscosity at 40°C : 10 mm^2/s
  Flashpoint : 150°C



1.7 Sewing arm position

1.7.1 General information

The switches on the cylinder are activated by the magnetic core at the piston rod, when the sewing head is raised or lowered.

1.7.2 Lower position of the sewing arm

Rule:

With lowered arm the square distance gauge 5 (70.9 mm high) should fit exactly between the throat plate and sewing arm underside.

Check:

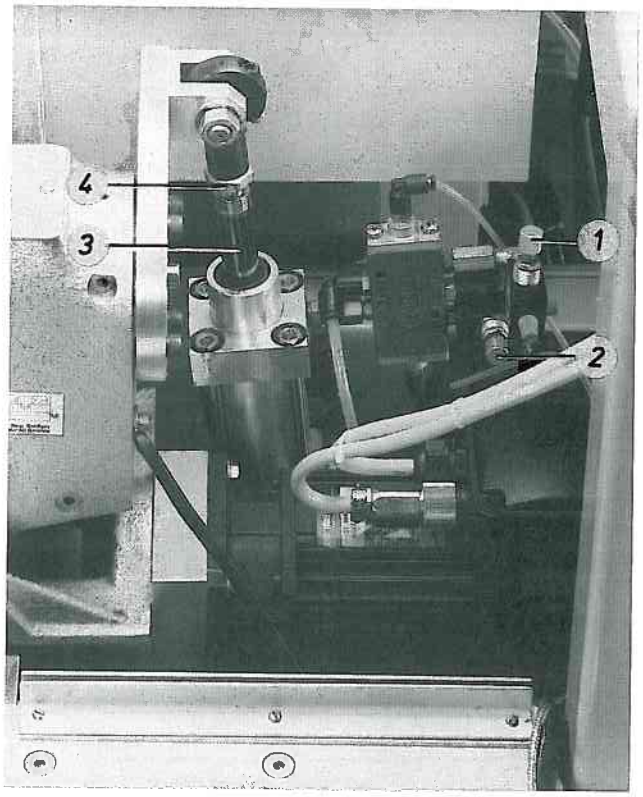
Call up the menu "Moving the X-, Y- and sewing axis", select the process "Lower sewing head" and with the key "0" turn on the lamp h40 "Safety stop of the motors", see 9.5.4.

Correction:

Loosen the lock nut 4 and turn the piston rod 3 accordingly.

Hint:

After this adjustment the upper position of the sewing arm follows from the piston rod path of the cylinder.



1.7.3 Speed "Sewing arm up and down"

Rule:

The sewing head should move fast and smoothly.

Check:

- Call up the menu "Moving the X-, Y- and sewing axis", see 9.2.
- Alternately press the key 4 for lowering the sewing arm and the menu key for raising it.

Correction:

Regulate the venting of the cylinder using the throttles 2 and 1.

1.7.4 End position damping of the cylinder

Explanation:

The speed of the piston rod is reduced approx. 10 mm before the end position to assure gentle braking of the heavy sewing head.

Rule:

The piston rod should move "gently" into the two end positions.

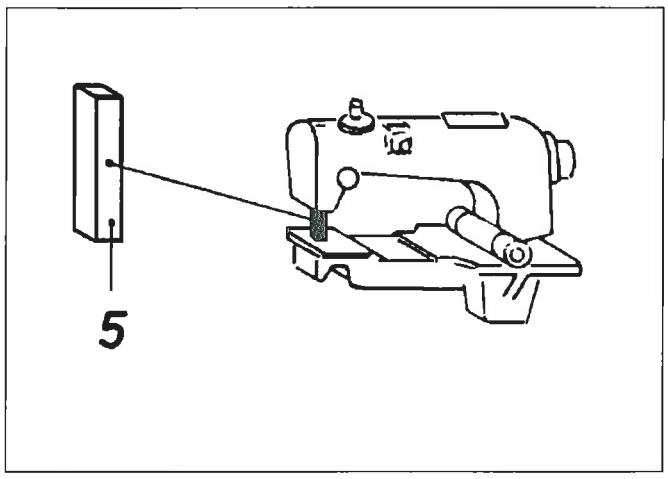
Check:

Call up the menu "Moving the X-, Y- and sewing axis", see 9.2.

Alternately press the key 4 for lowering the sewing arm and the menu key for raising it.

Correction:

Turn the throttles at the cyclinder accordingly.



2. Sewing machine (cl. 805-111)

2.1 Stitch regulator and connection lever

2.1.1. 0-position of the stitch regulator

Rule:

<u>During sewing without zigzag function the needle bar must not "oscillate".</u>

Preparing the check and correction:

Call up the menu "Moving the X-, Y- and sewing axis", select the process "Lower sewing head" and with the key "0" turn on the lamp h40 "Safety stop of the motors", see 9.5.4.

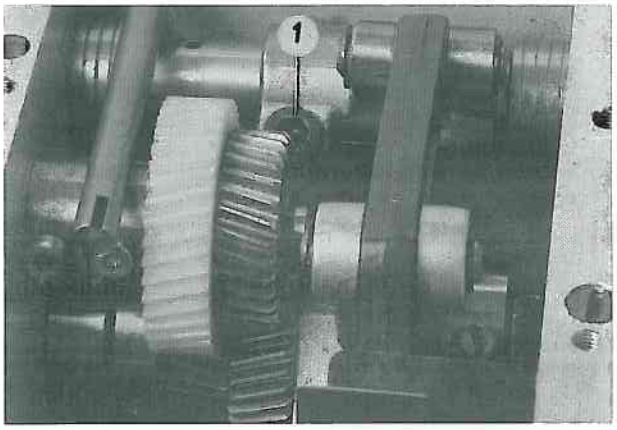
Check:

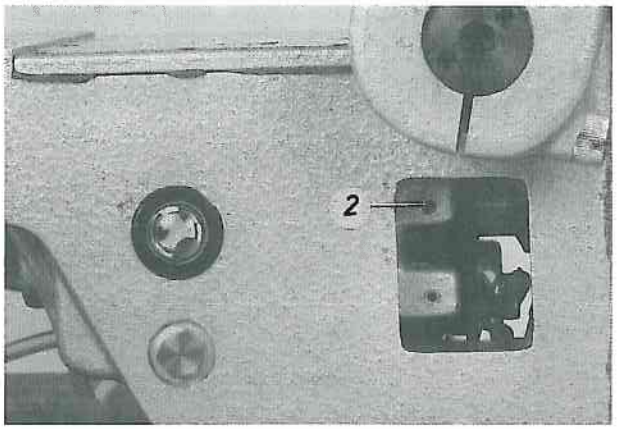
After unscrewing the oil sump cover, proceed as follows to make a precise check:

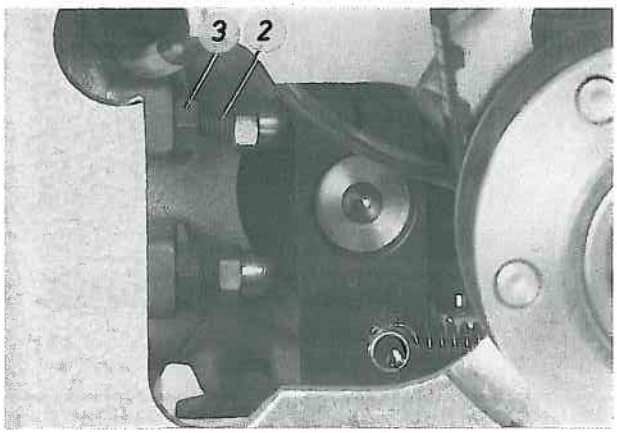
- Insert the Allen key into screw 1.
- Turn the dial.
  When the key makes the minimum possible motion, the adjustment is correct.

Correction:

- Loosen the lock nut 3.
- Turn the screw 2 accordingly.







2.1.2 Position of the connection lever

Explanation:

The lever 5 transfers the motion from the advance shaft 6 to the rocker 4.

Rule:

<u>Lever 5 should be in a vertical position, when the zigzag function is not activated.</u>

Preparing the check and correction:

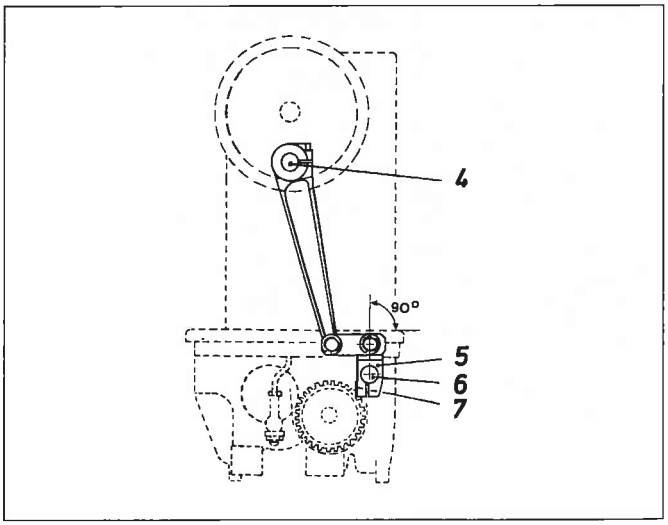
Call up the menu "Moving the X-, Y- and sewing axis", select the process "Lower sewing head" and with the key "0" turn on the lamp h40 "Safety stop of the motors", see 9.5.4.

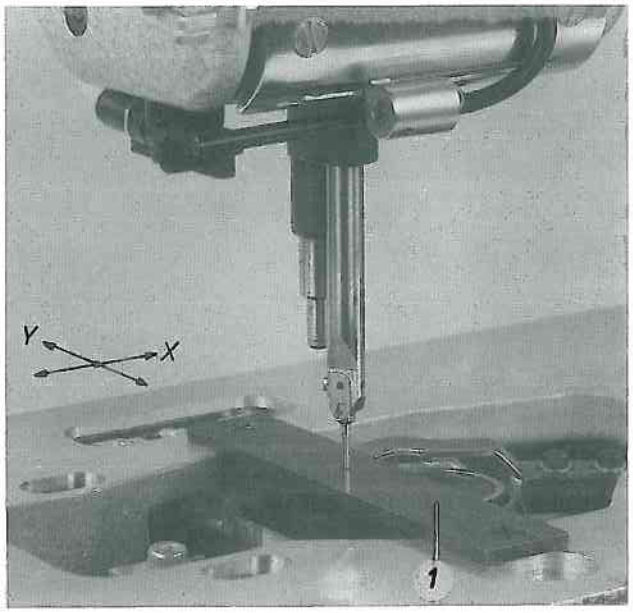
Correction:

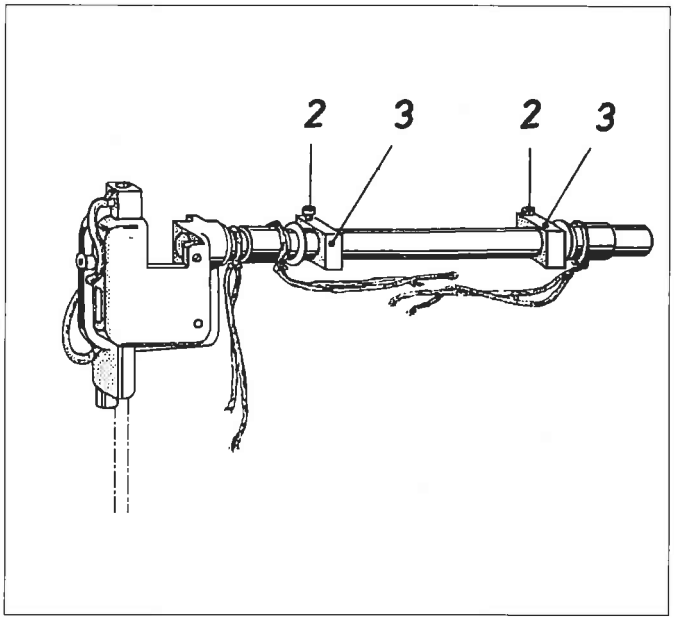
Loosen screw 7 and turn the lever on the shaft accordingly.

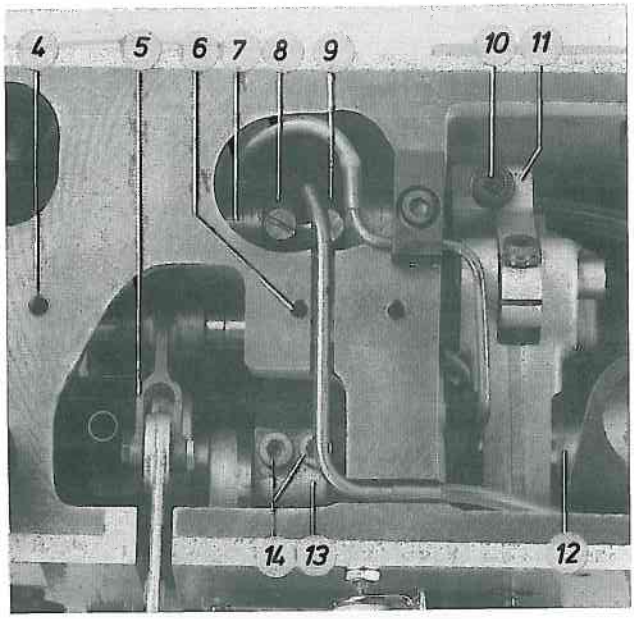
Hint:

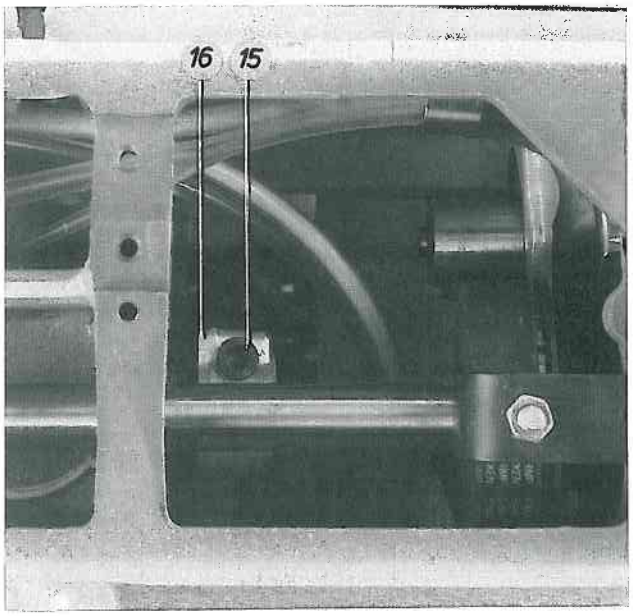
With a wrong adjustment the "oscillation motions" of the needle bar and throat plate are not synchronized during zigzag operation.

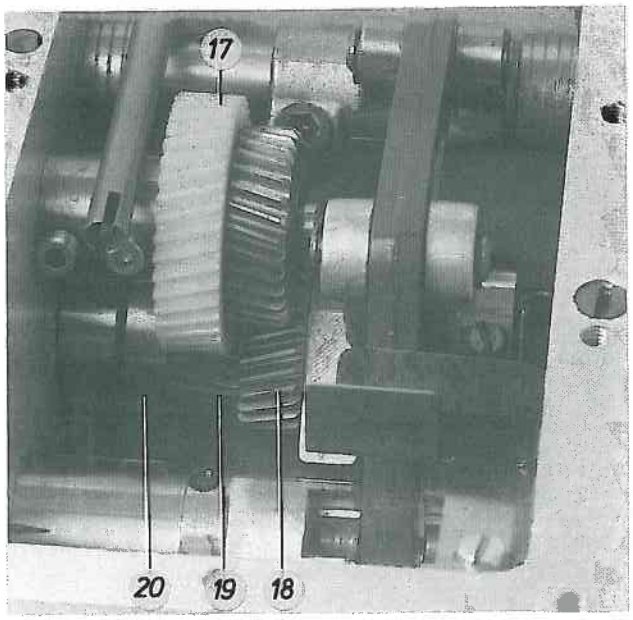


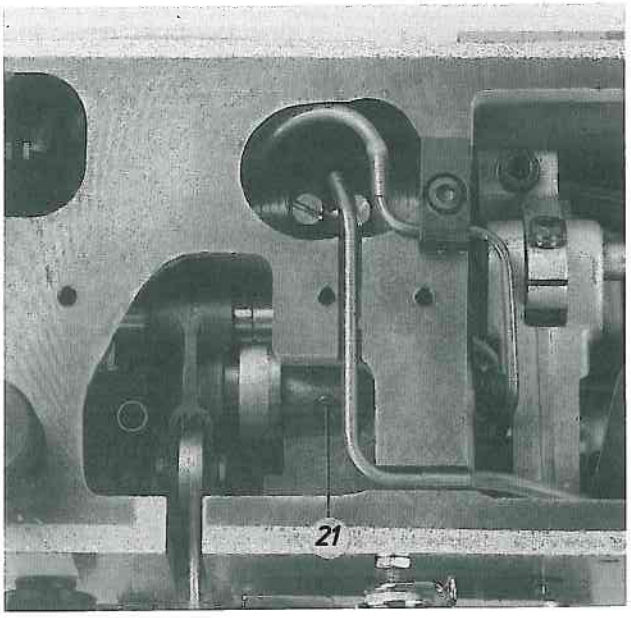

Y
X
1


2
3
2
3


4
5
6
7
8
9
10
11
14
13
12


16
15


17
20
19
18


21

2.2 Rocker and throat plate

2.2.1 General information

During a complete oscillation of the needle bar and throat plate, while the machine is in zigzag operation, the needle bar is moved up and down twice via the set of gears 17 and 19 with a transmission ratio of 1:2.

2.2.2. Position of the rocker

Rule:

The needle should penetrate at the centre of the 2-mm-hole of the gauge 1, when the sewing machine is not in zigzag operation.

Preparing the check and correction:

Call up the menu "Moving the X-, Y- and sewing axis", select the process "Lower sewing head" and with the key "0" turn on the lamp h40 "Safety stop of the motors", see 9.5.4.

Correction in X-direction:

- Loosen the screws 2 at the 2 set blocks 3.
- Loosen the clamping screw 15 at the drive lever 16.
- Loosen the 2 screws 4 and 6 at the bearing for the thread lever guide 5.
- Loosen the 2 clamping screws 14 at the arm shaft crank 13.
- Slightly loosen 1 position screw 21 at the arm shaft crank.
  (As the position screw sits on the flat of the crank pin.)
- Make the correction.
  If necessary, axially shift the stroke shaft 7 for the sewing foot after loosening the following screws:
  Screws on the two adjusting rings 8 and 9, screw 10 on block 11.
- Tighten all previously loosened screws and observe the following:
  Axial positioning of the rocker,
  horizontal position of the set blocks 3,
  correct position of the wicks,
  minimum lateral clearance of the thread lever guide 5.

Correction in Y-direction:

- Loosen the clamping screw 15 on the drive lever 16.
- Change the position of the rocker accordingly.

Hint:

After a correction in X-direction check the clearance between needle and hook and, if necessary, correct.

2.2.3 Timing of the rocker oscillation

Rule:

- In zigzag operation the needle should "drift" the same distance towards the inside, when it penetrates at the upper and lower tack point.
- Both tack penetrations should have the same distance to the "zero" stitch.

Preparing the check and correction:

Call up the menu "Moving the X-, Y- and sewing axis", select the process "Lower sewing head" and with the key "0" turn on the lamp h40 "Safety stop of the motors", see 9.5.4.

Check:

- Place a sheet of paper on the table top and hold it there.
- Turn the dial to determine the position of the "zero stitch".
- Select the process "Zigzag". (See 9.2).
- Turn the dial

Correction:

Loosen screws 20 and turn the gear 18 on the hook drive shaft accordingly.

Hint:

A wrong adjustment may lead to needle breakage.

2.2.4 Size of the needle rocker oscillation (throw width)

Rule:

During zigzag operation of the sewing machine the "upper" and "lower" needle entries should have a distance of 5 mm on a sheet of paper.

On the set pocket the throw width will then be approx. 3 mm, depending on the type of material, thread and thread tension.

Preparing the check and correction:

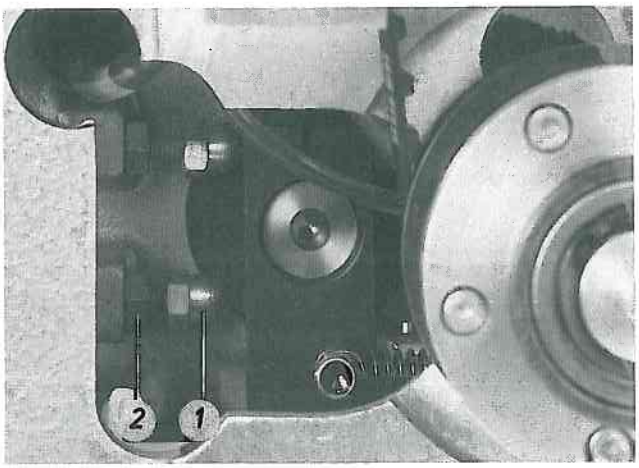
Call up the menu "Moving the X-, Y- and sewing axis", select the process "Lower sewing head" and with the key "0" turn on the lamp h40 "Safety stop of the motors", see 9.5.4.

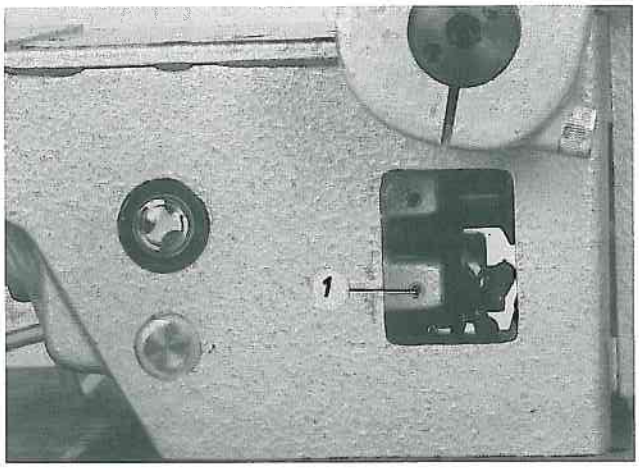
Check:

- Select the process "Zigzag". (See 9.2)
- Place a sheet of paper onto the table top and hold it there.
- Turn the dial.

Correction:

Loosen lock nut 2 and turn the stop screw 1 accordingly.





2.2.5 Horizontal position of the throat plate

Rule:

- In X-direction:
  At the loop stroke position - or a little afterwards - the distance between the needle blade and the right side of the needle hole should be 0.3 mm.
- In Y-direction:
  In this direction the needle should enter the needle hole at its centre.

Preparing the check and correction:

Call up the menu "Moving the X-, Y- and sewing axis", select the process "Lower sewing head" and with the key "0" turn on the lamp h40 "Safety stop of the motors", see 9.5.4.

Correction:

Loosen the screws and change the position of the throat plate accordingly.

2.2.6 Height of the throat plate

Rule:

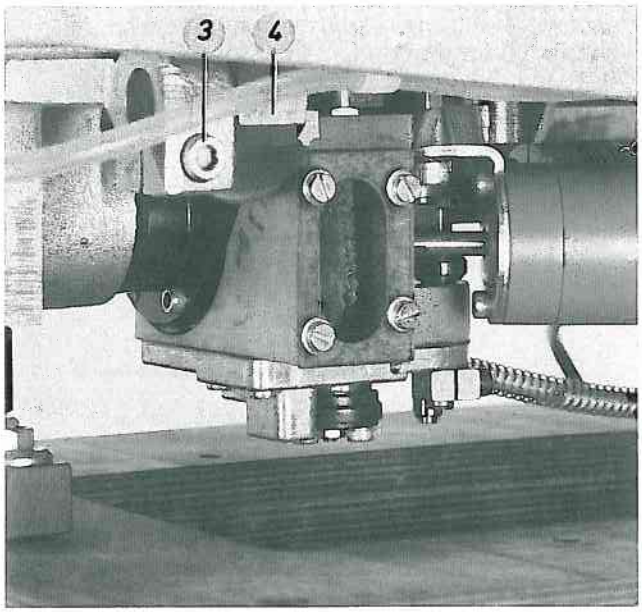
The raised needle hole should be located 0.5 mm below the upper side of the table top.

Preparing the check and correction:

Call up the menu "Moving the X-, Y- and sewing axis", select the process "Lower sewing head" and with the key "0" turn on the lamp h40 "Safety stop of the motors", see 9.5.4.

Correction:

Loosen screw 3 and turn the block 4 accordingly.



2.3 Hook, needle bar, hook guard and needle guide

2.3.1 Loop stroke

Explanation:

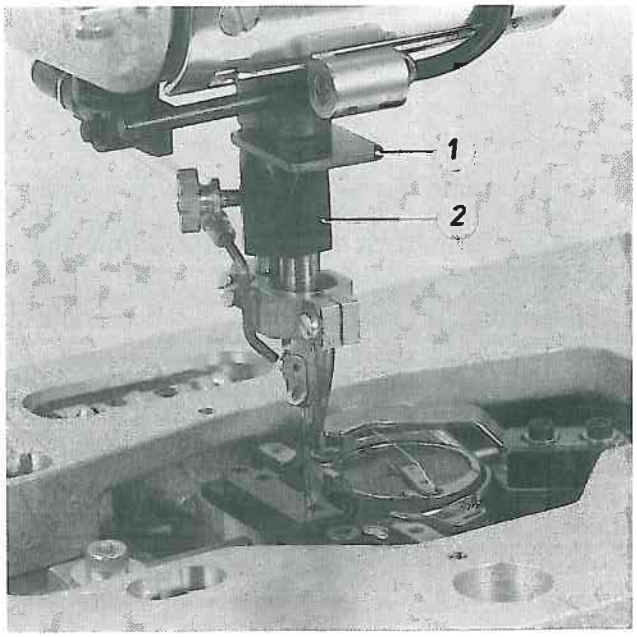
- The loop stroke is the path of the needle bar from its lower dead point to the point, where the hook point is at the centre of the needle.
- The 1st screw on the hook - seen in the direction of rotation of the hook - sits on the flat of the hook shaft.
  The hook is thus secured and can no longer turn on the shaft. When the hook is seized up, the safety clutch disengages.

Prerequisite:

Position of the rocker is correct (see 2.2.2).

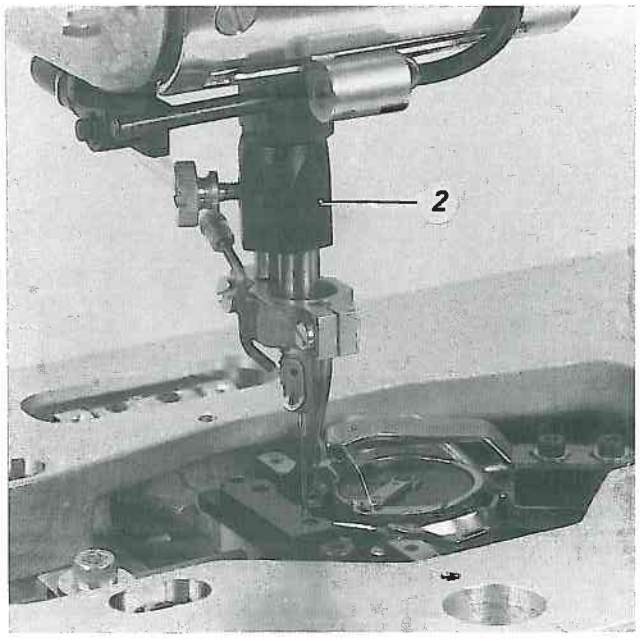
Rule:

The loop stroke should be 2 mm, when the sewing machine in not in zigzag operation.



Preparing the check and correction:

Call up the menu "Moving the X-, Y- and sewing axis", select the process "Lower sewing head" and with the key "0" turn on the lamp h40 "Safety stop of the motors", see 9.5.4.

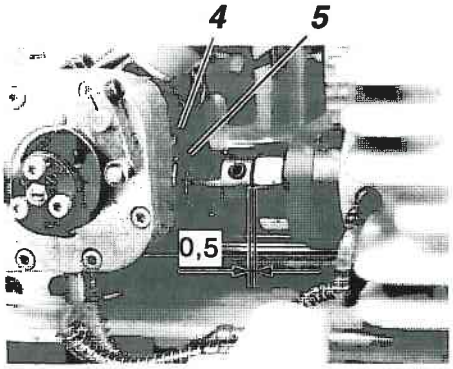


Correction:

- Check the prerequisite "Safety clutch engaged".
- Move the needle bar into its bottom position.
- Press the gauge 1 (parts no. 981 15 000 3) against the rocker using block 2 (parts no. 981 15 000 2) and tighten the screw at the block.
- Pull out the gauge and turn the dial in direction of running, until the block 2 rests against the rocker.
  In this position the hook point must be at the centre of the needle.

Correction:

- Loosen the clamping screw in the bore-hole 3 by a hexagon screwdriver (SW 5 mm). The screw is located on the setting ring 5.
- Turn the hook on the driving shaft until the hook point stands against the middle of the needle. Ensure that the air gap in the claw coupling amounts to 0,5 mm.
- Retighten the clamping screw 4 in the bore-hole 3.



Hint:

After a correction check the following adjustments:

- Timing of the opening of the bobbin case opener (see 2.4.4).
- Position of the hook guard (see 2.3.4).

2.3.2 Needle bar height

Rule:

At the loop stroke position the hook point should be located at the centre of the needle scarf, when the sewing machine is not in zigzag operation.

Preparing the check and correction:

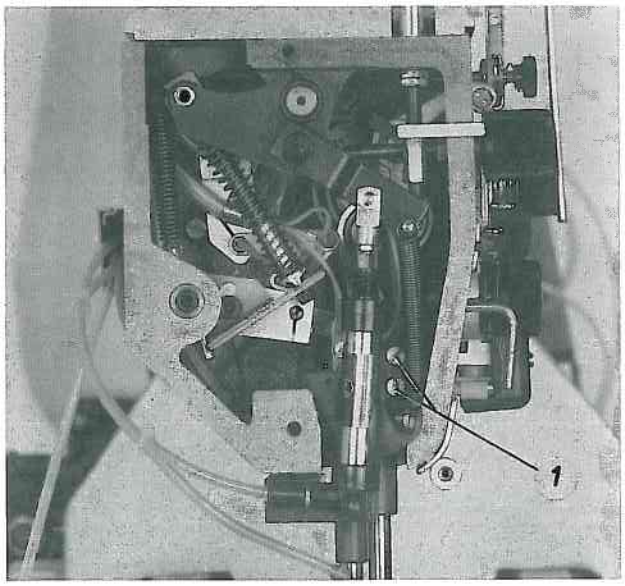
Call up the menu "Moving the X-, Y- and sewing axis", select the process "Lower sewing head" and with the key "0" turn on the lamp h40 "Safety stop of the motors", see 9.5.4.

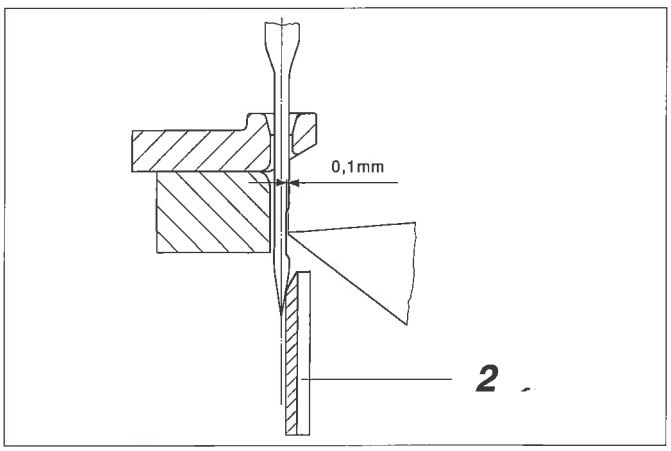
Correction:

Loosen 2 screws 1 and change the height of the needle bar accordingly.
(When doing so, do not turn the needle bar).

Hint:

After a correction check the position of the needle guide and hook guard. (See 2.3.4 and 2.3.5).





2.3.3 Hook - needle clearance

Rule:

At the loop stroke position the clearance between the hook point and needle scarf should be 0.1 mm, when the machine is not in zigzag operation.

Preparing the check and correction:

Call up the menu "Moving the X-, Y- and sewing axis", select the process "Lower sewing head" and with the key "0" turn on the lamp h40 "Safety stop of the motors", see 9.5.4.

Check:

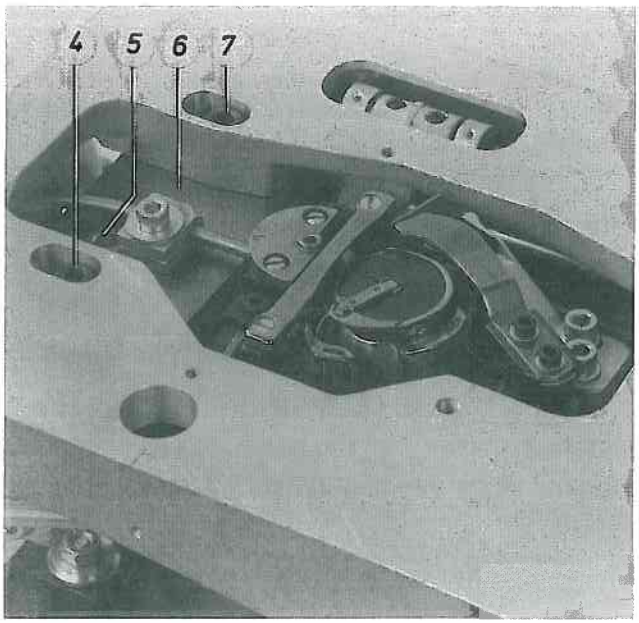
- Check, whether the needle at its loop stroke position is not deflected by the hook guard 2. Should the needle be deflected, shift the hook guard 2 accordingly.
- Check the clearance.
  To do this, you may place a piece of paper behind the hook.

Correction:

- If necessary, shift the hook guard 2.
- Loosen screws 4, 5, 7 and laterally shift the hook box 6 accordingly.

Hint:

- After a correction check the lateral distance in the claw coupling, and if necessary, correct (see 2.3.7).
- When installing a needle with another size, which belongs to another size group (80-110 or 120-140), the hook - needle clearance needs to be checked.



2.3.4 Position of the hook guard

Explanation:

- The hook guard 2 should prevent contact of the needle and hook point.
- Check the position of the hook guard after the following processes:
  Correction of the needle bar height,
  correction of the loop stroke,
  needle size change from 0.2 mm onwards.

Rule:

At the loop stroke position the needle should rest against the hook guard 2 without being deflected, when the machine is not in zigzag operation.

Preparing the check and correction:

Call up the menu "Moving the X-, Y- and sewing axis", select the process "Lower sewing head" and with the key "0" turn on the lamp h40 "Safety stop of the motors", see 9.5.4.

Correction:

Loosen the screw and change the position of the hook guard 2 accordingly.

2.3.5 Position of the needle guide

Explanation:

The needle guide 8 should guide the needle such that it is not deflected by the hook during sewing in certain directions. Otherwise, skipped stitches may result.

Rule:

At the needle bottom position the needle point should be located as close as possible to the needle guide, without touching it.

Preparing the check and correction:

Call up the menu "Moving the X-, Y- and sewing axis", select the process "Lower sewing head" and with the key "0" turn on the lamp h40 "Safety stop of the motors", see 9.5.4.

Correction:

Loosen the screw and change the position of the needle guide 8 accordingly.

Hint:

A wrong adjustment may lead to needle breakage in the scarf area.

2.3.6 Checks when using other needle sizes

- When the needle size was changed by at least 0.2 mm:
  Check the position of the hook guard.
- When the clearance between scarf and centre of the needle changes.
  This is the case, when the needle belongs to another size group (80-110 or 120-140). Within a size group the clearance is always the same:
  Check the hook - needle clearance.

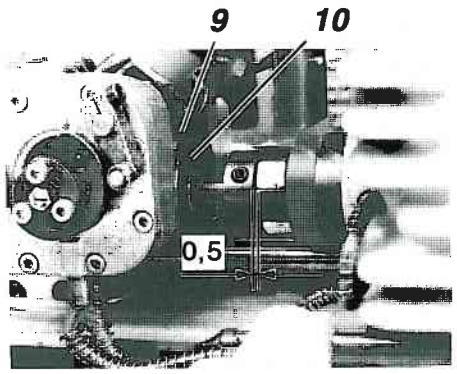
2.3.7 Lateral distance in the claw coupling

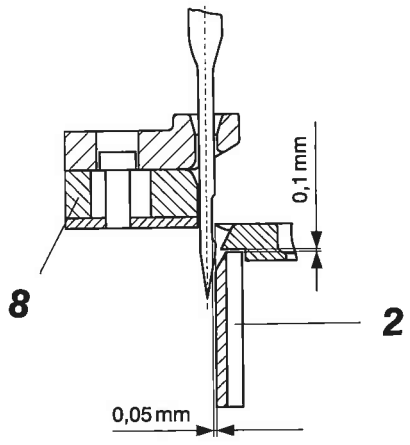
Rule:

The lateral distance in the claw coupling 3 should be 0.5 mm.

Correction:

- Loosen the clamping screw 9 through the bore-hole 3 by a hexagon screwdriver (SW 5 mm). The screw 9 is located on the setting ring 10. (see 2.3.1.)
- Change the position of the left coupling half accordingly.
  (When doing so, do not turn the shaft).





2.4 Bobbin case opener

2.4.1 General information

- The take-up lever must pull the thread between the bobbin case 4 and its holder 7. To assure unhindered thread passage, the bobbin case must be opened at that moment by the bobbin case opener. The desired seam contour is thus sewn with a minimum of thread tension.
- Wrong adjustments may have the following consequences:
  Thread breakage,
  loops at the material underside,
  high noise level.

2.4.2 Size of the finger path

Rule:

The lever 3 should be borne 3 mm out of centre. This is the case, when the nut 2 is flush with the outer edge of the shaft.

Preparing the check and correction:

Call up the menu "Moving the X-, Y- and sewing axis", select the process "Lower sewing head" and with the key "0" turn on the lamp h40 "Safety stop of the motors", see 9.5.4.

Correction:

Loosen nut 2 using the special wrench 1 and change the eccentricity accordingly.

Hint:

After a correction, check the opening path and timing of the opening.

2.4.3 Size of the opening gap - position of the finger path

Rule:

The distance X between the opened bobbin case 4 and its holder 7 should correspond to the size of the thread to be sewn.

Preparing the check and correction:

Call up the menu "Moving the X-, Y- and sewing axis", select the process "Lower sewing head" and with the key "0" turn on the lamp h40 "Safety stop of the motors", see 9.5.4.

Correction:

Loosen screw 5 and change the position of the finger 6 accordingly.

2.4.4 Timing of the bobbin case opening

Rule:

As the thread passes between the bobbin case 4 and its holder 7, the bobbin case should be open.

Preparing the check and correction:

Call up the menu "Moving the X-, Y- and sewing axis", select the process "Lower sewing head" and with the key "0" turn on the lamp h40 "Safety stop of the motors", see 9.5.4.

Check:

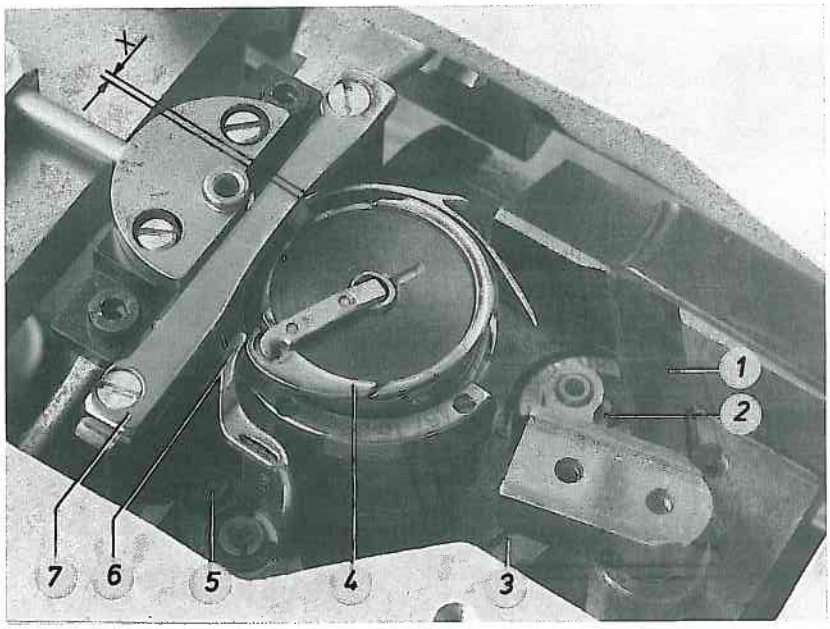
Turn the dial and watch the thread passage.

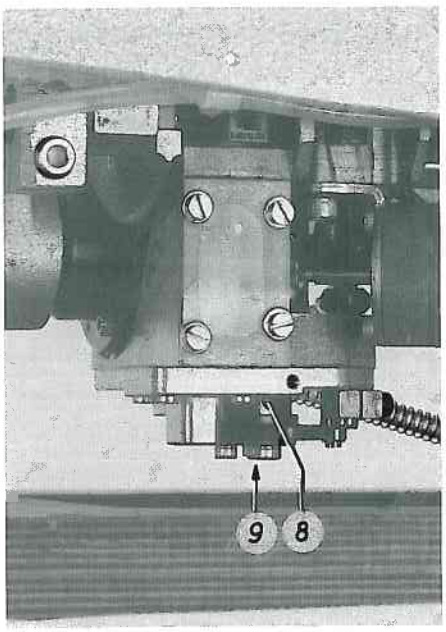
Pre-adjustment:

- Loosen the 2 screws 8.
- Turn the dial until the hook point is at the "3 o'clock position" after loop take-up.
- Turn shaft 9 using a screwdriver until the finger is at its front turning point, where the case is completely opened.
- Tighten the 2 screws 8.

Correction:

Loosen the 2 screws 8 and change the position of the shaft 9 accordingly using a screwdriver.





2.5 Sewing foot

2.5.1 General information

The adjustment of the bottom or top stroke position of the sewing foot is explained in subject 6.2.6 of the instruction manual.

2.5.2 Timing of the sewing foot motion

Rule:

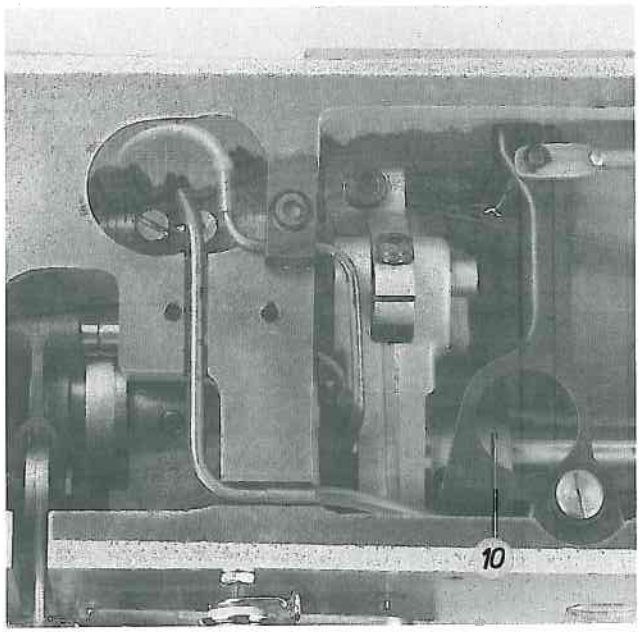
At the loop stroke position the upward motion of the sewing foot should start.

Preparing the check and correction:

Call up the menu "Moving the X-, Y- and sewing axis", select the process "Lower sewing head" and with the key "0" turn on the lamp h40 "Safety stop of the motors", see 9.5.4.

Correction:

Loosen the 2 screws and turn the eccentric on the shaft accordingly.



2.6 Check spring

Rule:

The path and tension of the check spring should be adjusted such that it has just reached its bottom position, when the needle has penetrated the material up to its eye.

Check:

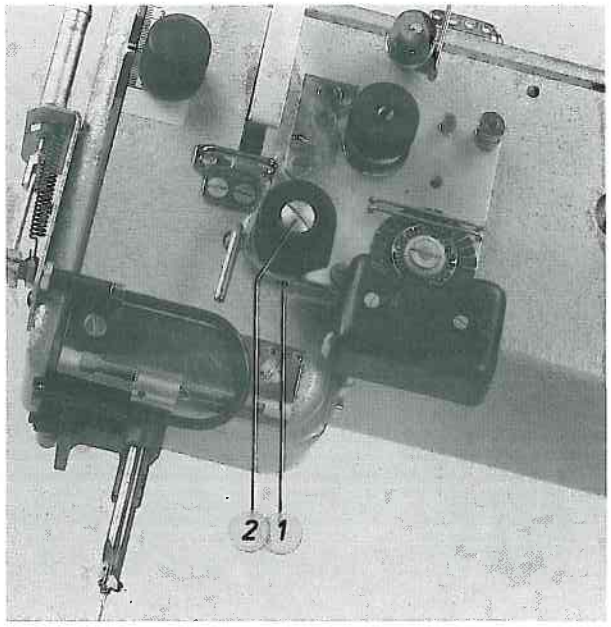
Sew with 5% of the speed in the "Automatic" cycle.

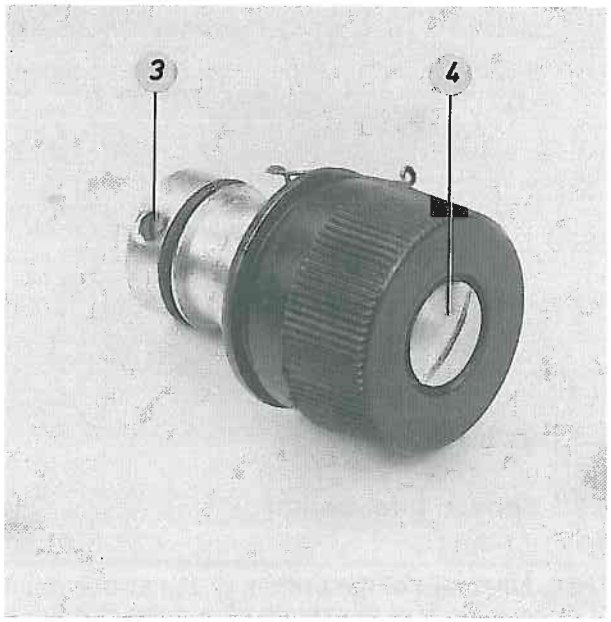
Correction of the path:

- Slightly loosen the screw 1 on the arm.
- With the bolt 2 turn the entire thread tension assembly accordingly.

Correction of the tension:

- With the key "0" turn on the lamp h40 "Safety stop".
- Loosen the screw 1 on the arm and pull out the thread tension assembly.
- Loosen the screw 4 and turn the bolt 3 accordingly.





2.7 Thread tension release

Explanation:

The thread tension is released during the thread trimming process or by pressing the push button 7 on the carrier plate.

Rule:

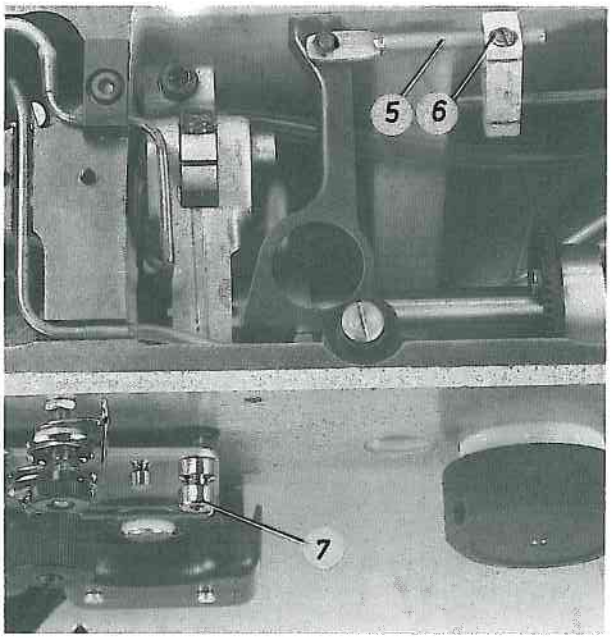
During the trimming process the thread must be pulled unhindered through the released tension.

Check:

With connecting rod 5 release the thread tension to a maximum.

Correction:

Loosen screw 6 and change the position of the connecting rod 5 accordingly.



2.8 Thread puller

Explanation:

During the thread trimming process the thread puller 4 is moved forward after loop take-up and is swung back during the 2nd motion phase of the thread pulling knife.

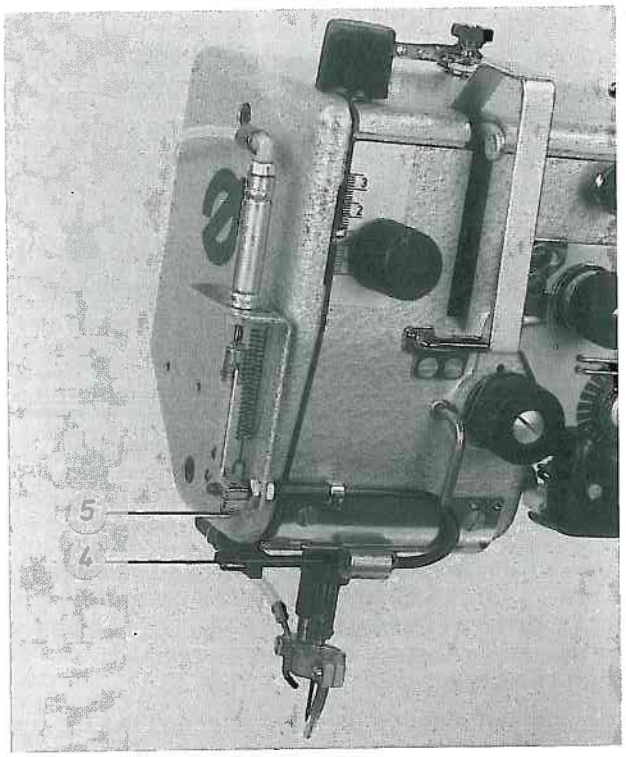
Rule:

The thread puller 4 should pull so much thread that the following conditions for the next sewing cycle are fulfilled:

- Secure first stitches.
- Thread tail is pulled to the material underside.
- No thread snarled in the hook.

Correction:

Loosen screw 5 and change the position of the thread puller 4 accordingly.



2.9 Safety clutch

2.9.1 General information

The safety clutch at the lower pulley should disengage, when the hook is seized up.
When the clutch is disengaged, re-engage it as follows:

- Turn the dial until the clutch re-engages.
- Eliminate the cause of hook seizure.

2.9.2 Size of the transferable torque

The transferable torque of the safety clutch is adjusted at our plant to a defined value.

Check the torque using a torque wrench.

2.10 Oil lubrication

2.10.1 General information

- The wicks for lubricating the relevant elements in the sewing head must not touch the recirculation wick.
- The plastic cap of the hook prevents the vacuum pump from sucking dust and lint into the hook box.
- The oil splash screw 20 assures that sufficient oil reaches the oil retainer sheet, even when the oil level is low.
- When completing the machine or after a longer machine standstill, the "dried out" wicks in the sewing head should be sprinkled with oil, before restarting to operate the machine. Otherwise, damage may result due to the fact that the lubrication is at first insufficient.
- The slotted head screw 22 under the regulating screw 21 for the oil lubrication can be turned out to remove blockages in the oil supply pipe for the hook raceway using an air pistol. Then completely turn in the screw 22.
- The sight window 15 enables to check the oil level in the hook box.

2.10.2 Mode of operation

Oil supply from the oil sump for the sewing head

The spiral grooves in the hook drive shaft 11 convey the oil from the sump to the line 7 up to the oil drain 2 in the sewing head. The check valve 8 in this line should prevent the oil from running back at a machine standstill. The oil supply in this line can be checked at sight window 4. Most of the oil coming out of the brass pipe 3 gets into the hole of the hollow shaft 1. In this hollow shaft is a wick that conveys the oil to the lubricating points of the foot stroke drive and to the sump in the sewing head. From here, the oil is conveyed via wicks to the hinges of the foot stroke mechanism and to the rocker. The foot stroke eccentric is lubricated by the wick 19, which sucks in the oil from the oil drain 2.

Oil supply from the sewing head for the hook box

The accumulated oil in the sewing head is soaked up by the felt and is then conveyed to the recirculation wick 16 underneath that conveys the oil into the hook box.

The oil dropping from the brass pipe 3 into the oil drain 2 gets into the hook box via the line 6.

The oil splashed by the foot stroke eccentric is soaked up by the felt plate 17 and conveyed to the hook box via the line 18.

Oil supply for the hook

The oil that is recirculated from the sewing head flows through the line 29 into the hook box. Here, the oil level may mount up to the level of the suction line 28.

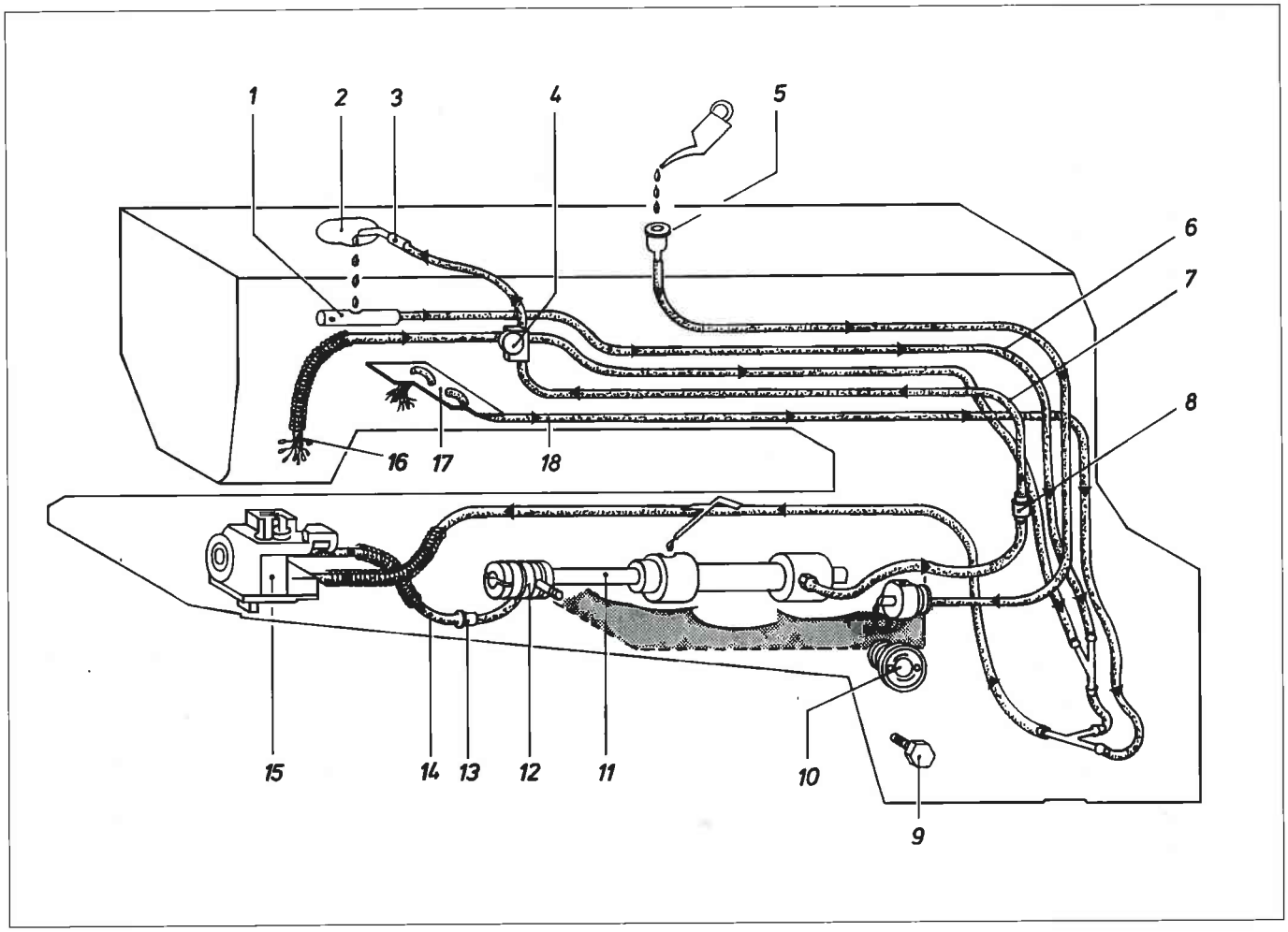
The hook hollow shaft 26 conveys the oil to the upper cavity 23 of the hook via the spiral grooves of the secured shaft 30. From here, the oil gets into the lower cavity 31 through the hole 24. The smaller amount of this oil is conveyed by centrifugal force through an oil pipe 32 to the hook raceway. The larger amount of the oil flows back downward, thereby lubricating the gears 27 and the ball bearing 25.

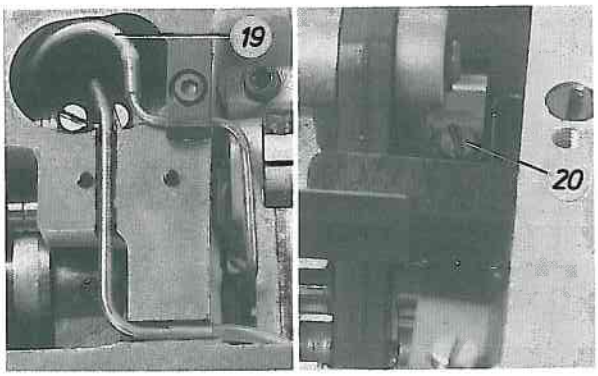
Oil recirculation from the hook box to the oil sump

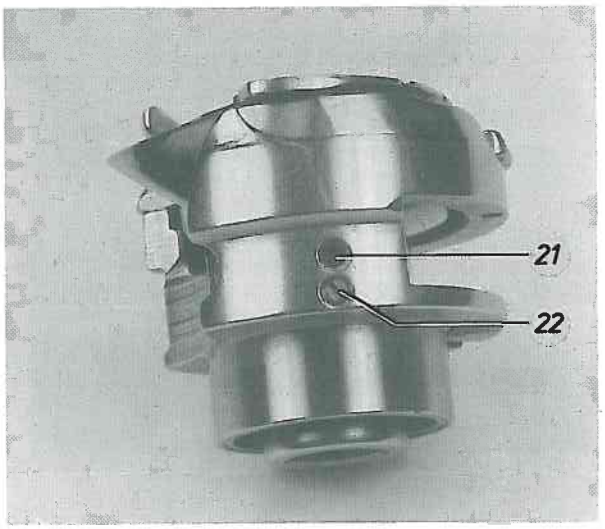
The pump 12 on the hook drive shaft sucks the oil from the hook box via the line 14 back into the oil sump. The filter 13 in this line should collect dirt particles and thus prevent malfunctioning of the pump.

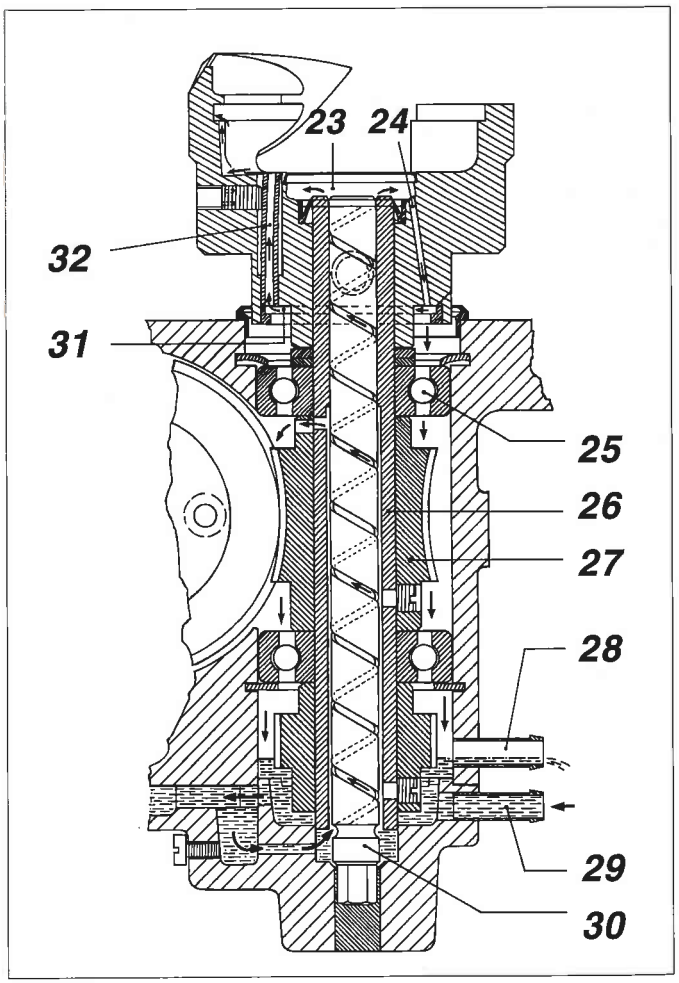
2.10.3 Checking the oil level and the oil supply

- Check the oil level in the oil sump at sight window 10, when the machine is not running. Refill the oil, when the oil level is in the bottom third of the sight window.
- Check the oil supply for the sewing head at sight window 4, when the sewing machine is running, eg during the automatic sequence in the "Automatic" menu.
- Check the oil level at sight window 15 of the hook box, when the latter is in "sewing position" and the sewing machine is not in operation.


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18


19
20


21
22


23
24
32
31
25
26
27
28
29
30

2.10.4 Regulating the hook lubrication

Rule:

The hook should be lubricated sufficiently with a minimum of oil.

Check:

- Call up the menu "Move sewing axis". Via "Service technician", "Adjustments", "Moving the X-, Y- and sewing axis" and "Lower sewing head".)
- Select the process "Move by hand".
- Remove the table top.
- Operate the machine for approx. 1 minute with the key ↓
- Hold a piece of paper beside the hook.
- Operate the sewing machine at intervals of approx. 15 seconds using key ↓
  The adjustment is correct, when sufficient oil is splashed on the paper.

Preadjustment:

- Remove the bobbin case and cover sheet to be able to see the position of the oil pipe 2.
- Turn out the screw 1 using an Allen key "SW 1.5" until the oil pipe 2 does not move any more. (Usually this is the case, when the pipe is at the centre of the hole).
- Turn in screw 1 until the pipe just starts to move and then turn the screw further 1 by a 1/8 turn.
  The further the pipe is displaced from the centre of the hole, the smaller the adjusted oil quantity.

Correction:

To reduce the oil quantity turn the screw 1 in clockwise direction using an Allen key "SW 1.5".
Turn screw 1 in anti-clockwise direction to increase the oil quantity.
Observe the following:
The range of adjustment between the maximum and minimum oil quantity is covered by approx. 1/4 turn of the screw.
The pipe 2 is compressed when the screw 1 is turned in too far.

Hint:

To assure a sufficient lubrication during the running-in period of the machine, a relatively large oil quantity is adjusted at the factory. The oil quantity should, therefore, be checked after the running-in period, and if necessary, reduced.

2.10.5 Changing the oil

The oil should be changed after the first 500 hours of operation as described in the following:

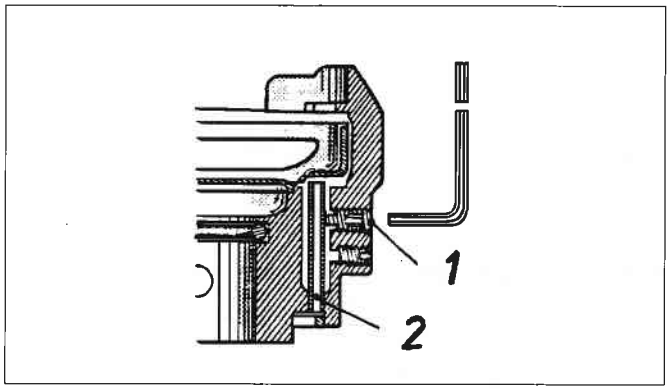
- Remove the oil sump cover.
- Loosen the drain screw 4 to drain the oil.
- Clean the oil sump and venting pipe.
- Clean the filter 13 (page 25) in the suction line between the hook box and the oil sump.
- Turn in the drain screw 4 with a new seal.
- Pour "ESSO SP-NKK 10" oil through the inlet pipe 5 (page 25), until the oil level is in the upper third of the sight window.

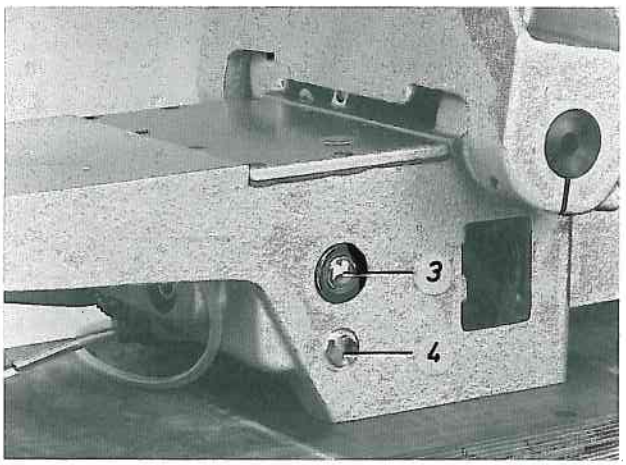
2.10.6 Refilling the oil

Oil needs to be refilled when the oil level is in the bottom third of the sight window 3, when the machine is not running.
Thus, pour the "ESSO SP-NK 10" oil through the inlet pipe 5 (page 25) until the oil level is in the upper third of the oil sight window.
Oils with the following specifications may be used as well:

Viscosity at 40°C : 10 mm^2/s

Flashpoint : 15°C





2.11 Sewing arm

2.11.1 General information

- The switches b19 and b20 at the cylinder are activated by the magnetic core at the piston rod, when the sewing head is raised or lowered.
- The pawl 5 should lock the sewing head into place in its upper position, when the pneumatic system is depressurized, as is the case after eg pressing the key "0" or after turning off the machine.

2.11.2 Lower position of the sewing arm

Rule:

With lowered arm, the hexagonal distance gauge 10 (82.8 mm high) should fit exactly between the machine bed and sewing arm underside.

Preparing the check and correction:

Call up the menu "Moving the X-, Y- and sewing axis", select the process "Lower sewing head" and with the key "0" turn on the lamp h40 "Safety stop of the motors", see 9.5.4.

Correction:

Loosen the lock nut 9 and turn the piston rod 6 accordingly.

Hint:

After this adjustment the upper position of the sewing arm follows from the piston rod path of the cylinder.

2.11.3 Speed "Sewing arm up or down"

Rule:

The sewing head should move fast and smoothly.

Check:

- Call up the menu "Moving the X-, Y- and sewing axis", see 9.2.
- Alternately press the key 4 for lowering the sewing arm and the menu key for raising it.

Correction:

Regulate the venting of the cylinder using the throttles 4.5 and 4.4.

2.11.4 End position damping of the cylinder

Explanation:

The speed of the piston rod is reduced approx. 10 mm before the end position to gently brake the heavy sewing head.

Rule:

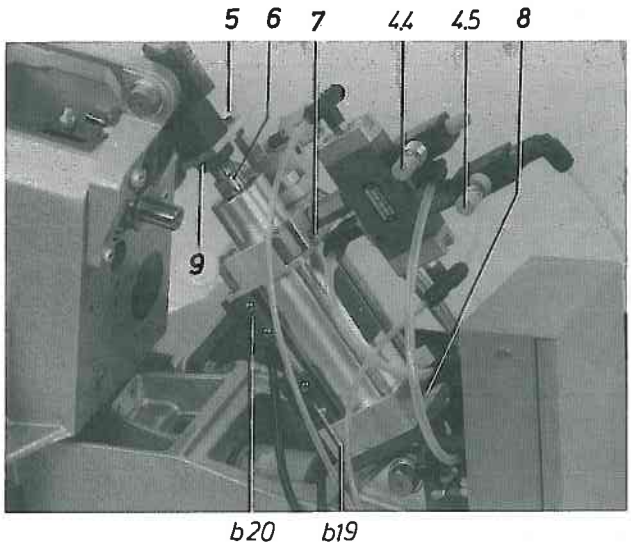
The piston rod should move "gently" into both end positions.

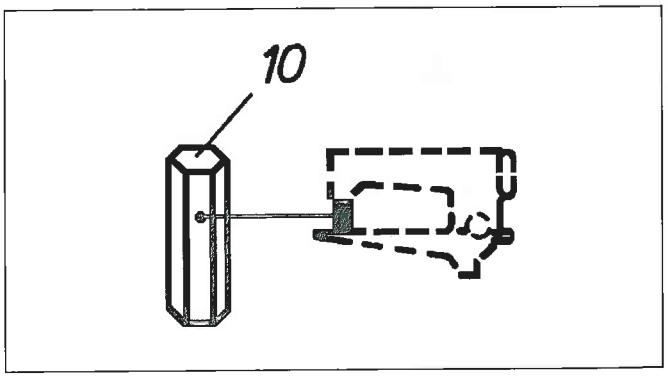
Check:

- Call up the menu "Moving the X-, Y- and sewing axis", see 9.2.
- Alternately press the key 4 for lowering the sewing arm and the menu key for raising it.

Correction:

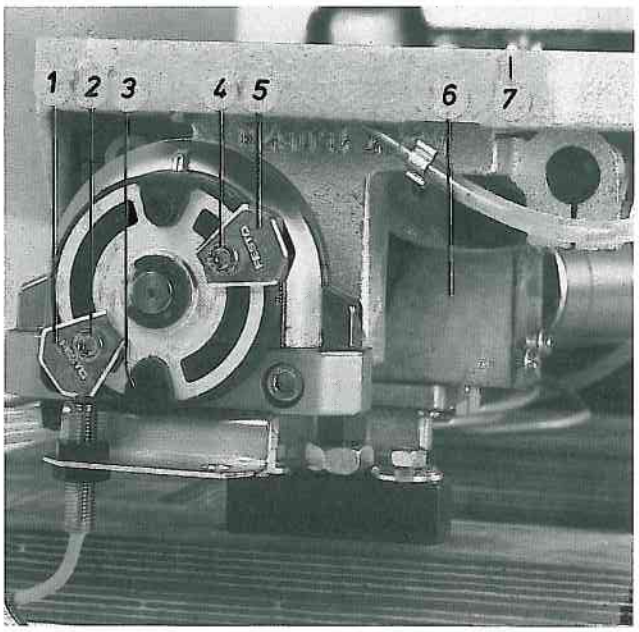
Turn the throttle valves 7 and 8 accordingly.





2.12 Turning cylinder for the hook box

2.12.1 Position of the swung in hook box



Rule:

The swung-in hook box 6 should rest against the machine bed 7.
This condition is fulfilled, when the distance between cam 1 and stopper 3 is 1 mm.

Correction:

Loosen screw 2 and change the position of the cam 1 accordingly.

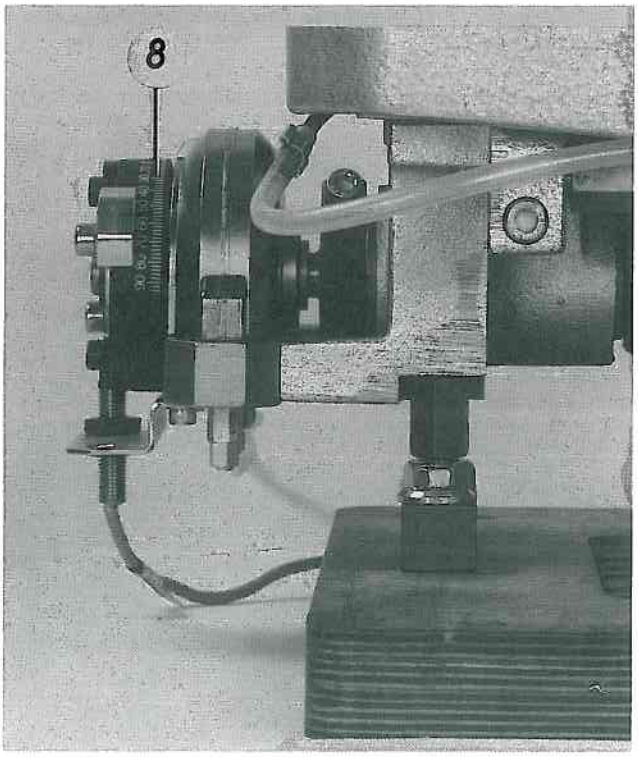
2.12.2 Position of the swung-out hook box

Rule:

The hook box 6 should reach this position after a rotation of 75°.

Check:

- Select the process "Bobbin change" in the "Automatic" menu.
- Determine the angle of rotation on scale 8.



Correction:

Loosen screw 4 and change the position of the cam 5 accordingly.

Hint:

When the hook box is swivelled out too far, oil can leak from the hook.

2.12.3 Speed "Swinging in and out the hook box"

Rule:

The hook box should be swung in and out fast and smoothly.

Check:

In the "Automatic" menu call up the process "Boobin change" to swing out the hook box and press the key "I" to swing in the hook box.

Correction:

Accordingly, regulate the venting of the cylinder with the respective throttles.

3. Thread trimmer (cl. 805-121)

3.1 Sequence of functions

In the 1st position - approx. 4 mm behind the needle bottom position:

- The thread trimmer magnet is activated and presses the drive segment against the control cam (phase 1).
- The thread tension is released.
- The machine runs at trimming speed.

When the drive segment is pulled by the magnet into the recess of the control cam: (phase 2)

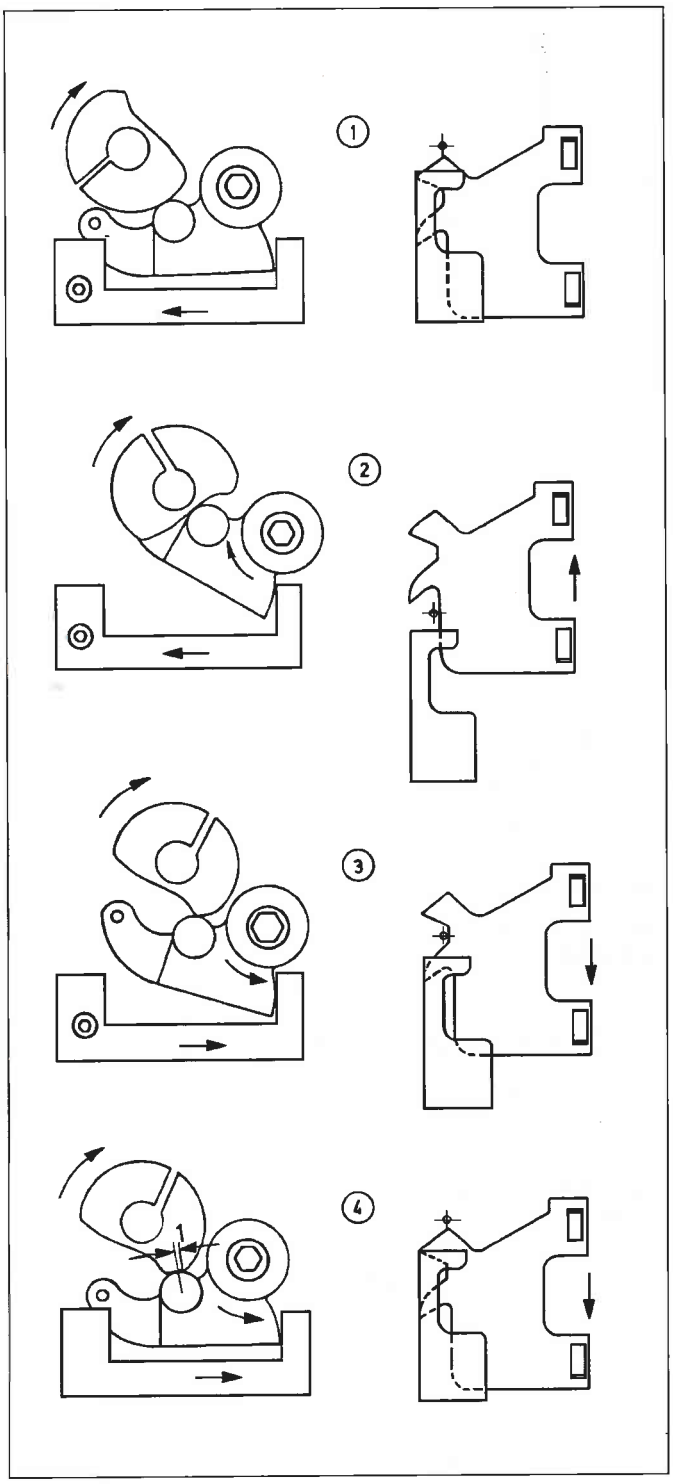
The thread pulling knife swings into the needle thread loop. During this, the needle thread and bobbin thread fall behind the catching hook of the knife.

When the drive segment is pressed out of the control cam recess: (phase 3)

The needle and bobbin thread are pulled toward the counter knife and are trimmed, when the take-up lever is in its top position.

In the 2nd position shortly behind the take-up lever top position: (phase 4)

- The motor stops.
- The magnet for the thread tension release is deactivated.
- The magnet for the thread trimmer is deactivated.



3.2 General information

- The needle thread length is influenced by the pre-tension.
- After a skipped stitch the needle thread is not trimmed.
- Exchange blunt knives in pairs.

3.3 Preparing the sewing unit for the adjustments

Call up the menu "Moving the X-, Y- and sewing axis", select the process "Lower sewing head" and with the key "0" turn on the lamp h40 "Safety stop of the motors", see 9.5.4.

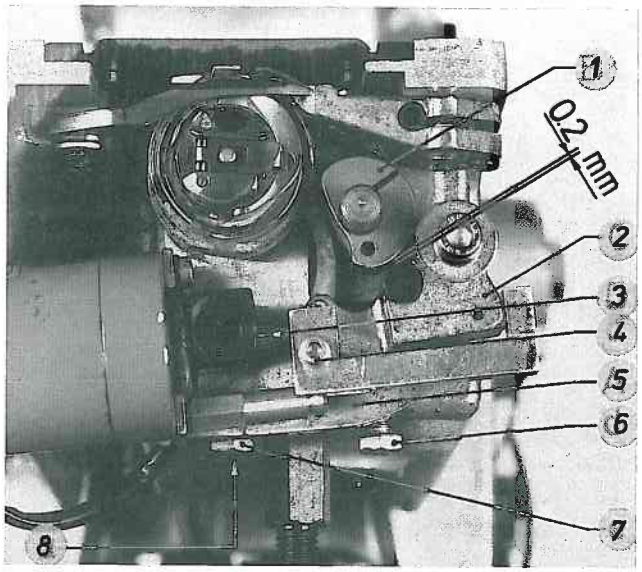
3.4 Position of the machine bed

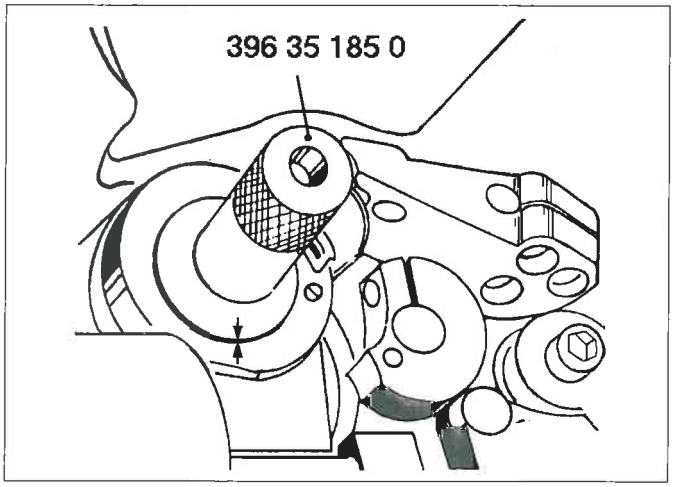
Explanation:

The height of the machine bed 5 determines the distance between the thread pulling knife and the hook.

Adjustment:

- Remove the hook.
- Loosen the nut 8.
- Loosen the hexagon head cap screw 6.
- Slip the gauge 396 35 185 0 onto the shaft.
- Tighten the nut 8 and hexagon head cap screw 6.





3.5 Position of the control cam

Explanation:

The position of the control cam 10 determines the timing of swinging in and out the thread pulling knife.

Rule:

The drive segment 12 should touch the control cam 10 in the last third of the small flat, when the drive segment is pressed against the control cam in the take-up lever top position.

Correction:

Loosen the screw and turn the control cam on the shaft accordingly.

3.6 Distance between the drive segment and control cam

Rule:

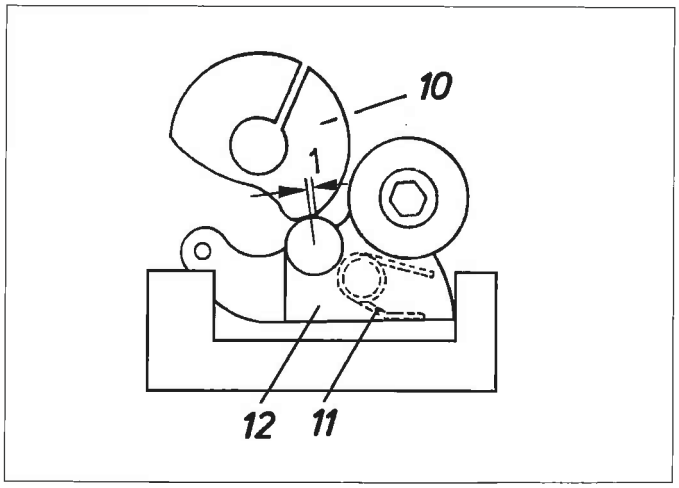
The distance should be 0.2 mm when the drive segment 2 is swung back completely.

Correction:

Loosen screw 4 and turn the armature 3 according-ly.

Hint:

- Should the clearance be too large, the thread pulling knife cannot swing far enough to the rear and cannot catch the threads.
- When this adjustment is made, check at the same time the function of the spring 11 in the drive segment and the smooth motion of the drive segment.



3.7 Lateral position of the thread pulling knife

Rule:

The point of the thread pulling knife 13 should be centred with respect to the needle.
(So that the thread pulling knife can enter at the centre of the needle thread loop.)

Correction:

Loosen the 2 screws 6 and 7 and then laterally shift the machine bed 5.

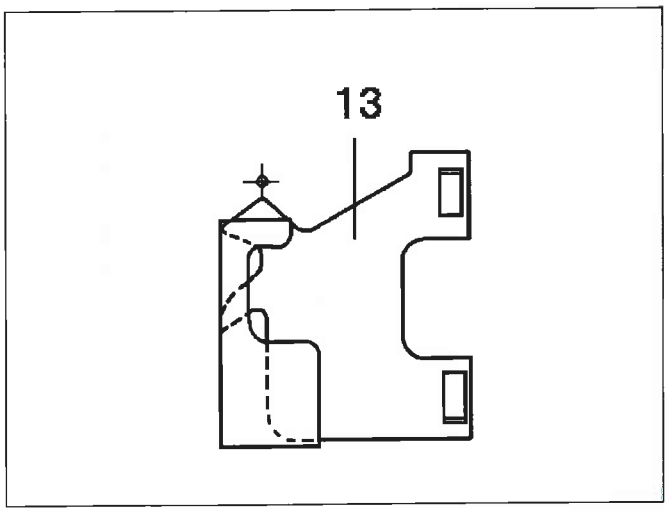
3.8 Positional relationship of the thread pulling knife and counter knife carrier

Rule:

The distance between the catching hook of the thread pulling knife and the counter knife carrier 15 should be approx. 0.3 mm, when the drive segment is completely swung back.

Correction:

Loosen the two screws and then change the position of the thread pulling knife accordingly.



3.9 Positional relationsship of the counter knife carrier and thread pulling knife

Rule:

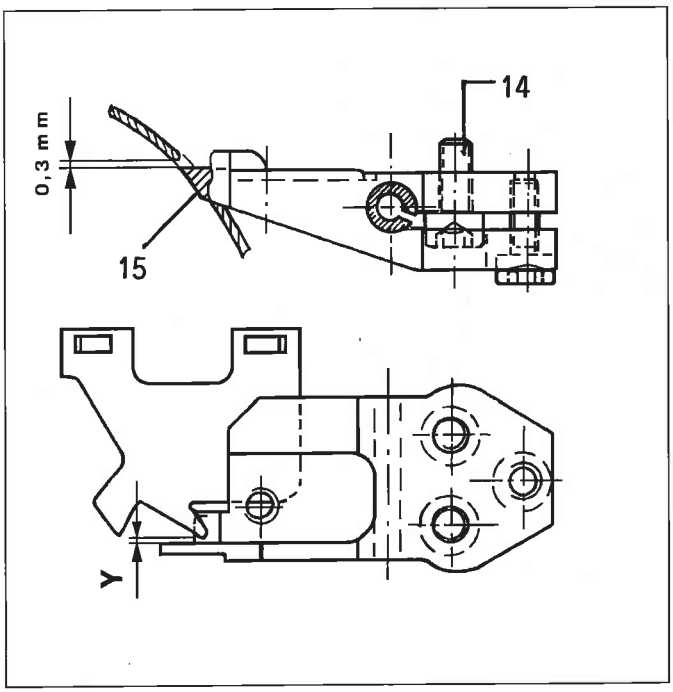
The lateral distance Y between the counter knife carrier and the catching hook of the thread pulling knife should be as small as possible.
Besides, the nose 15 of the counter knife carrier should be below the catching hook. The nose 15 may be flush with the catching hook or may protrude slightly.

Correction:

Loosen the two screws 14 and then change the position of the counter knife carrier accordingly.

Hint:

When the adjustment is wrong, the needle thread may get caught by the catching hook, thus causing thread breakage or loops.



3.10 Positional relationship of the counter knife and thread pulling knife

Explanation:

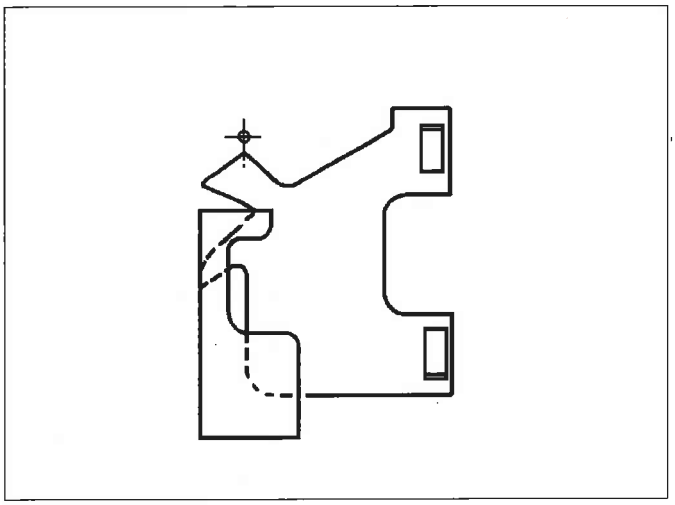
The position of the counter knife determines the overlap of the knives and the timing of trimming.

Rule:

In the take-up lever top position the blades should be positioned such that they are just before overlapping.
(Thus, the thread is only trimmed after the take-up lever top position).

Correction:

Loosen the screw and change the position of the counter knife accordingly.



3.11 Pressure of the counter knife against the thread pulling knife

Rule:

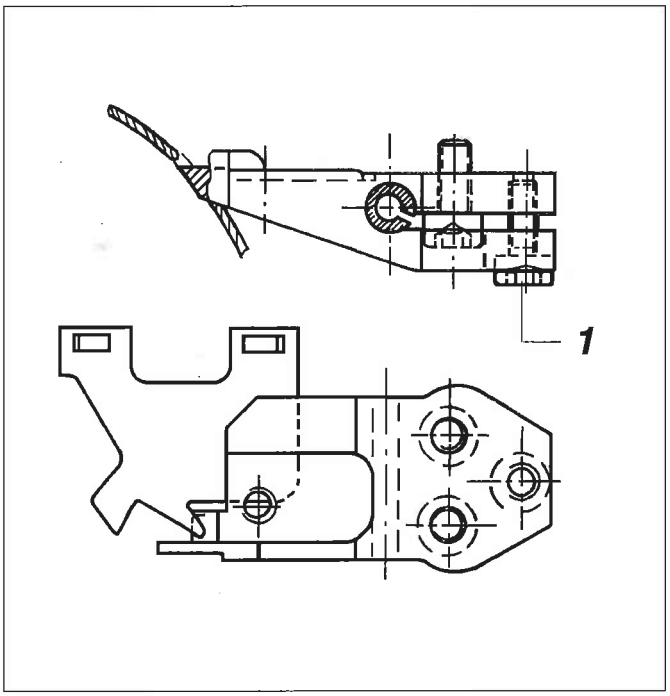
The knives should cut securely with minimum pressure.

Check:

- Lay the thread behind the catching hook of the swung back thread pulling knife.
- Swing the thread pulling knife toward the counter knife.

Correction:

Turn the screw 1 accordingly.



3.12 2nd position

Explanation:

The trimming process is completed in this position.

Rule:

In this position, just after the take-up lever top position, the blades of the knives should just overlap by ca. 0.5 mm.
(With this overlapping the drive segment does not yet rest against the highest point of the control cam.)

Preparing the check and correction:

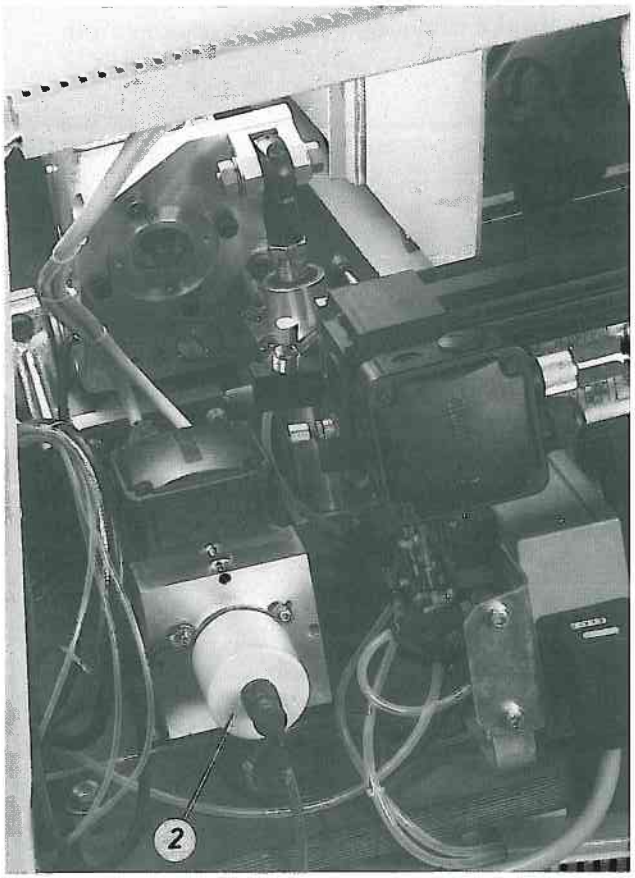
- Call up the menu "Moving the X-, Y- and sewing axis", see 9.2.
- Activate the process "Lower sewing head" and thus call up the menu "Move sewing axis", using the corresponding key.

Check:

Activate the process "Move to the take-up lever top position" using the corresponding key.

Correction:

Change the position of the encoder 2 at the dc-motor accordingly.
Make sure to change the "1st position" as well.



3.13 1st position

Explanation:

The thread trimmer is activated in this position, when the signal "Seam end" is given.

Prerequisite:

2nd position is adjusted correctly.

Rule:

In this position the needle bar should have risen from its lower dead point by 4 mm.

Preparing the check and adjustment:

Proceed as described in subject 3.12.

Check:

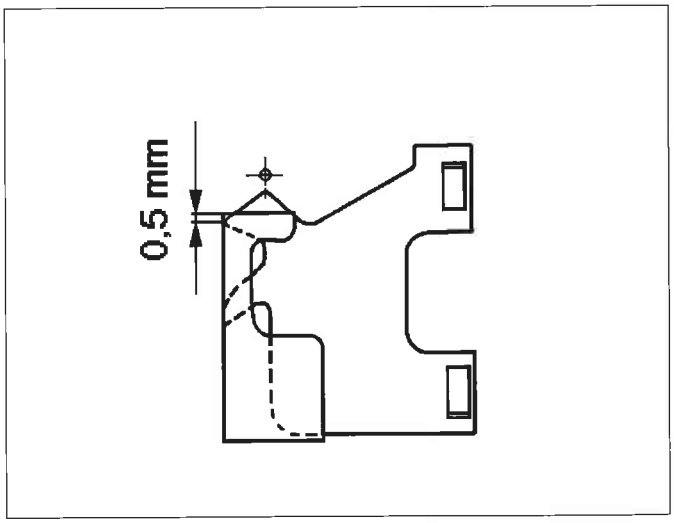
Activate the process "Move to needle bottom position" using the corresponding key.

Adjustment:

- Select the process "Adjust needle bottom position" using the corresponding key.
- Move the needle bar into the corresponding position using the crank.
- Press key "Yes" to memorize the position.

3.14 Check the function of the thread trimmer

- Preparing the function check:
  Proceed according to the description in "Preparing check and correction" of subject 3.12.
- Activate the process "Thread cutting cycle" using the corresponding key.



4. Thread trimmer (cl. 805-111)

4.1 Sequence of functions

Timing	Function
Needle just before its lower dead point (1st position)	– The magnet presses the roller lever 1 against the lowest point of the control cam 2. Thereby, the thread pulling knife 3 is swung back - phase a. – Sewing machine runs at 150 rpm
Thread pulling knife swings toward the counter knife (phase b and c)	– In phase b the thread pulling knife is swung to just before the nose of the bobbin case. (Thus, the thread pulling knife is outside the motion range of the bobbin case opener finger). – At the beginning of phase c the thread pulling knife first catches the bobbin thread and then the needle thread. – Release the thread tension. – Activate the thread puller. – Then, the thread pulling knife pulls the "loose" needle thread to the material underside and pulls the bobbin thread from the bobbin.
Just before the take-up lever top position	– Thread puller moves back to its initial position. – Bobbin thread is clamped. – Needle and bobbin thread are trimmed.
Take-up lever top position (2nd position)	– The motor stops. – The thread tension closes. – The thread trimming magnet is deactivated.

4.2 Preparing the sewing unit for the adjustments

Preparing the check and correction:

Call up the menu "Moving the X-, Y- and sewing axis", select the process "Lower sewing head" and with the key "0" turn on the lamp h40 "Safety stop of the motors", see 9.5.4.

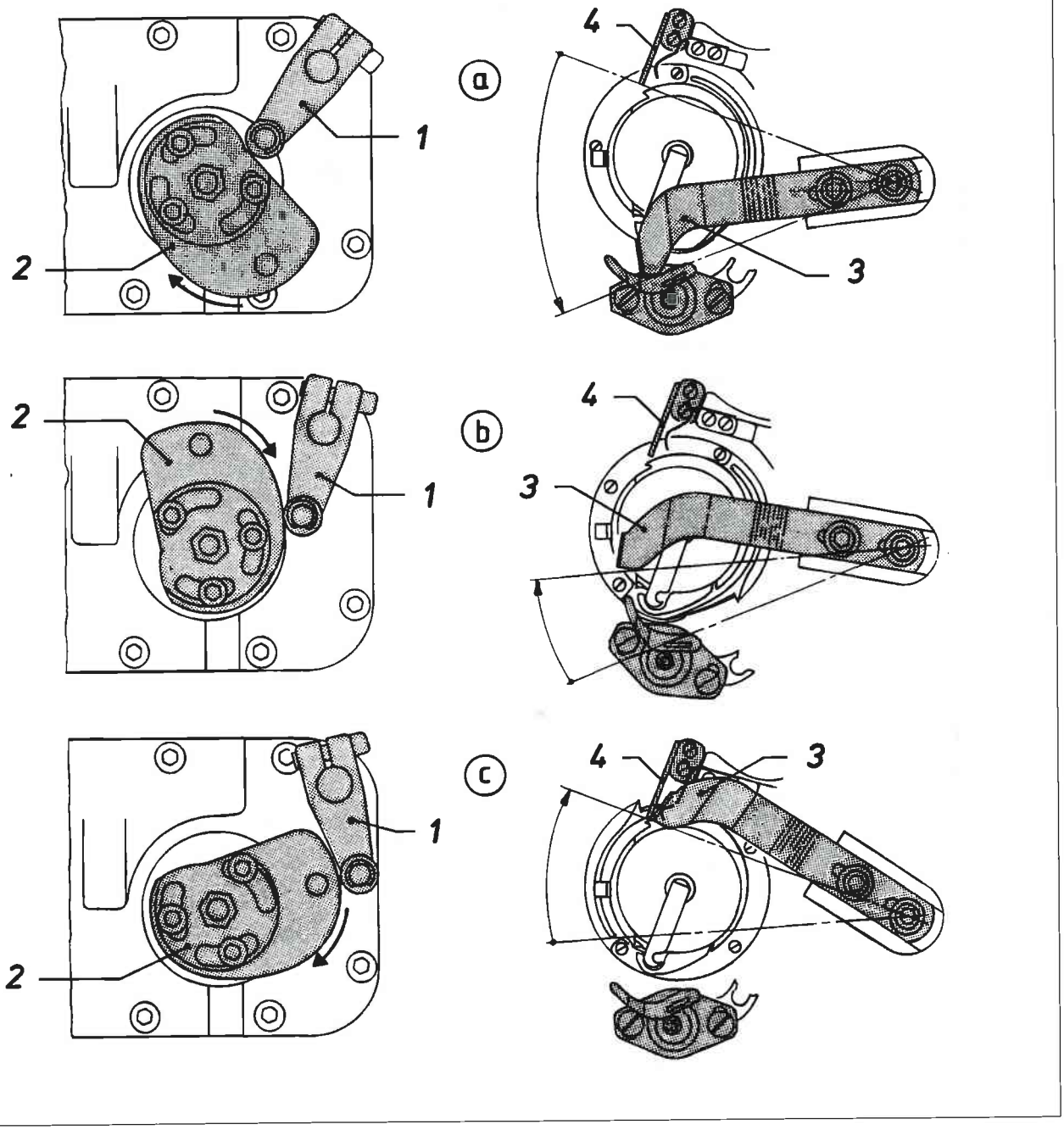
4.3 Lateral position of the thread pulling knife

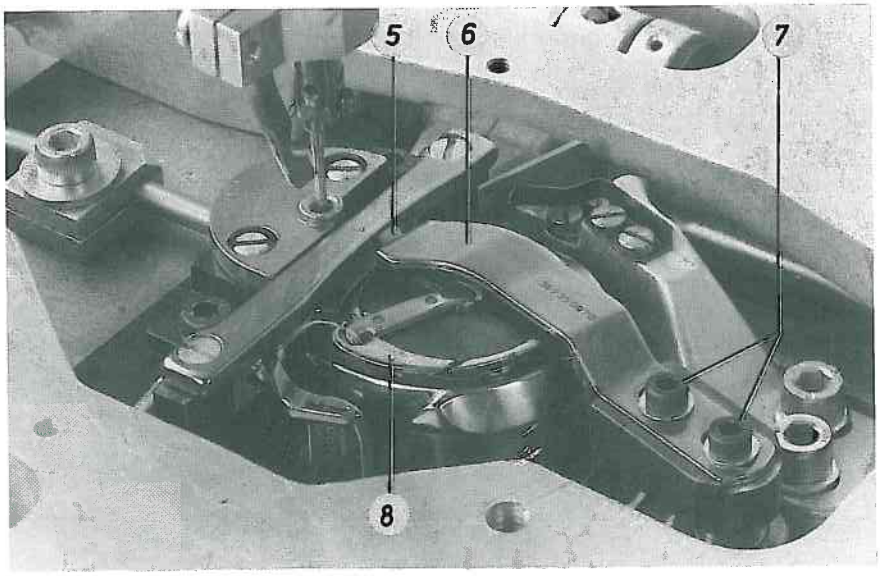
Rule:

– The thread pulling knife 6 should pass the nose 5 of the bobbin case at a "secure distance".
– The thread pulling knife 6 must not collide with the bobbin case 8.

Correction:

Loosen screws 7 and change the position of the thread pulling knife 6 accordingly.


a
1
2
4
3
b
2
1
4
3
c
1
2
4
3


5
6
7
8

4.4 Height of the thread pulling knife

Rule:

The thread pulling knife 2 should swing across the bobbin 1 as closely as possible, without touching it.

Correction:

- Loosen the screws at the 2 adjusting rings 10 and 11.
- Change the height of the thread pulling knife accordingly.
- Secure the shaft 12 with the two adjusting rings such that the thread pulling knife can be swung smoothly without any clearance.
- Tighten the screws at the 2 adjusting rings.

Hint:

A wrong adjustment may have the following consequences:

- No reliable catching of the threads.
- Contact with the table top.
- Damage to the bobbin.

4.5 Positional relationship of the counter knife and thread pulling knife

Rule:

- The counter knife carrier 8 should be located as closely as possible to the rear housing edge.
- The threads should be trimmed securely at the minimum pressure of the counter knife 8 against the thread pulling knife 3. This is usually the case, when the counter knife blade just touches the thread pulling knife, while the knife blades are half overlapped.

Correction:

Loosen the screws 9 or 6 and shift the counter knife carrier or counter knife accordingly.

Hint:

The higher the knife pressure, the higher the knife wear.

4.6 Position of the bobbin thread clamp

Explanation:

The clamp 5 should clamp the bobbin thread during the trimming process so that the bobbin thread is securely caught by the needle thread during the first stitches.

Rule:

The bobbin thread should be held securely with a minimum of pressure.

Check:

- Actuate the thread pulling knife by hand and trim the threads.
- Pull the thread out of the clamp to determine the clamping action.

Correction:

Loosen the screws 7 and shift the clamp accordingly.

Hint:

A wrong adjustment may cause faulty first stitches.

4.7 Position of the control cam

Explanation:

The control cam 21 determines the motion sequence of the thread pulling knife.

Rule:

In the take-up lever top position the hole 20 in the control cam 21 should lie on the line 18 between the shaft 22 and the roller 19 of the lever 17.

Correction:

Loosen the three screws 23 and turn the control cam accordingly.

4.8 Range of motion of the thread pulling knife

Rule:

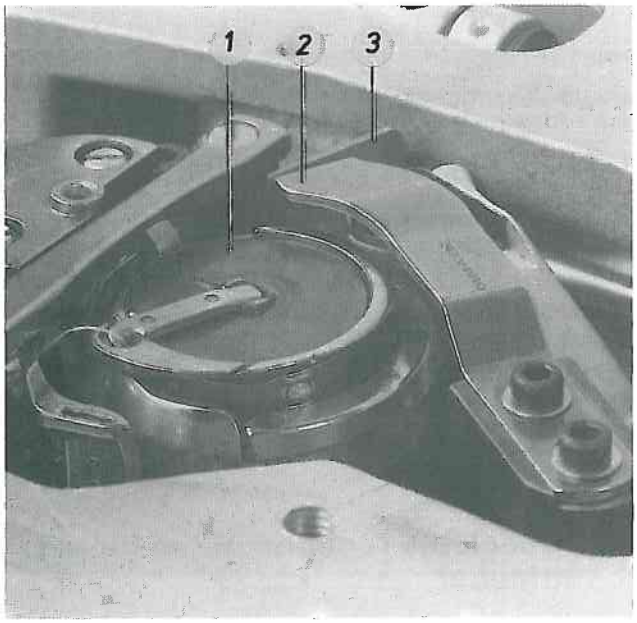
The back of the thread pulling knife 2 should be flush with the blade of the counter knife 3, when the armature 14 is fully extended.

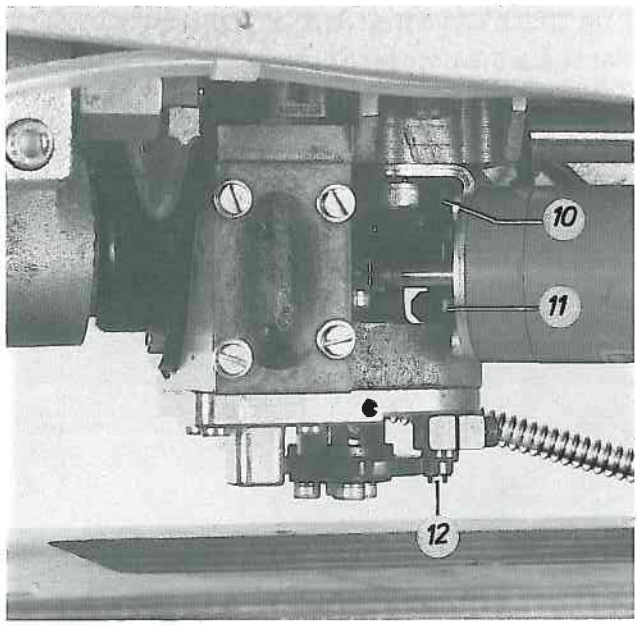
Correction:

Loosen the screw on the clamping block 13 and turn the armature 14 accordingly.

Hint:

When the roller lever 17 rests against the lowest point of the control cam 21, the thread pulling knife is fully swung out.





4.9 Positional relationship of the roller lever and control cam

Explanation:

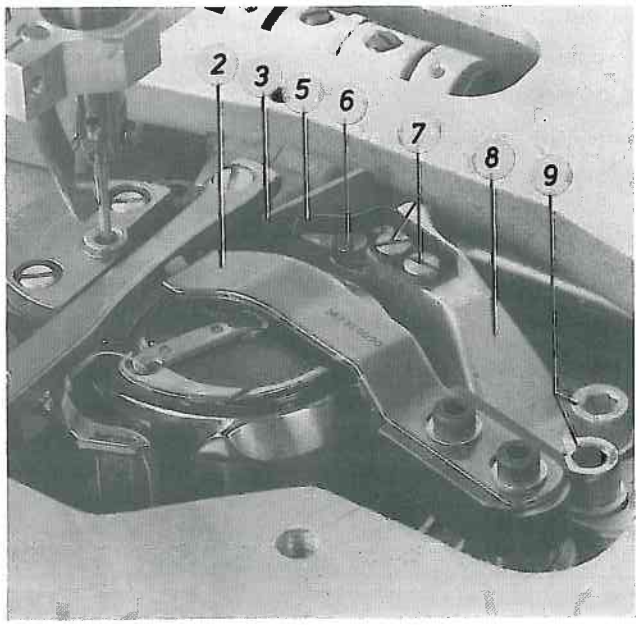
The control cam 21 must not touch the roller lever 17 during sewing.

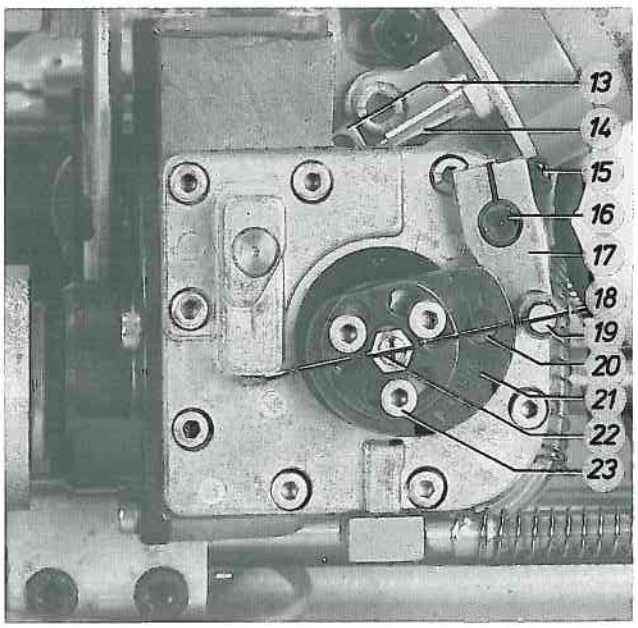
Rule:

The distance between the roller lever 17 and the highest point of the control cam 21 should be 0.1 mm, when the armature 14 is fully extended.

Correction:

Loosen the screw 15 at the roller lever 17 and turn the latter accordingly on the shaft 16. (Make sure that the roller is centred with respect to the control cam.)





4.10 2nd position

Explanation:

The trimming process is completed in this position.

Rule:

In this position the machine should be at the take-up lever top position.

Preparing the check and correction:

- Call up the menu "Moving the X-, Y- and sewing axis", see 9.2.
- Activate the process "Lower sewing head" and, thus, call up the menu "Sewing axis", using the corresponding key.

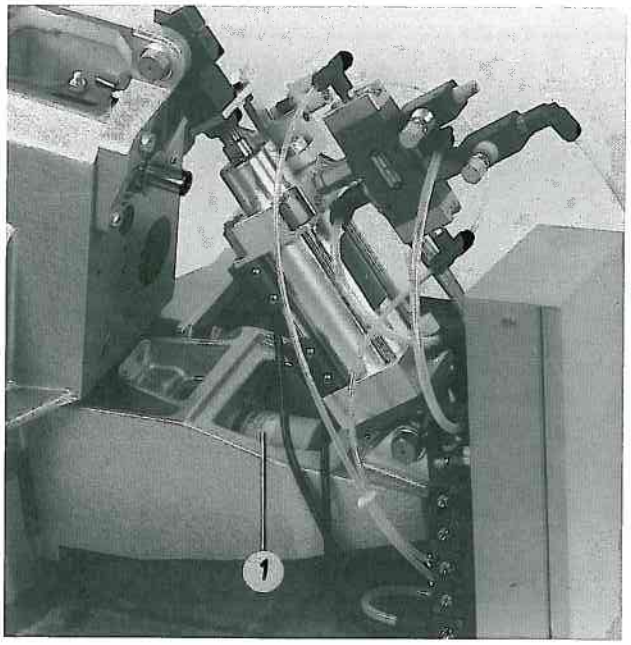
Check:

Activate the process "Move to take-up lever top position" using the corresponding key.

Correction:

Change the position of the encoder 1 accordingly.

Make sure to change the "1st position" as well.



4.11 1st position

Explanation:

The thread trimmer is activated in this position, when the signal "Seam end" is given.

Prerequisite:

2nd position is adjusted correctly.

Rule:

In this position the needle eye bottom edge of the descending needle should be flush with the hook cover ring 2.
(So that the roller lever may be swung against the lowest point of the control cam.)

Preparing the check and adjustment:

Proceed as described in subject 4.10.

Check:

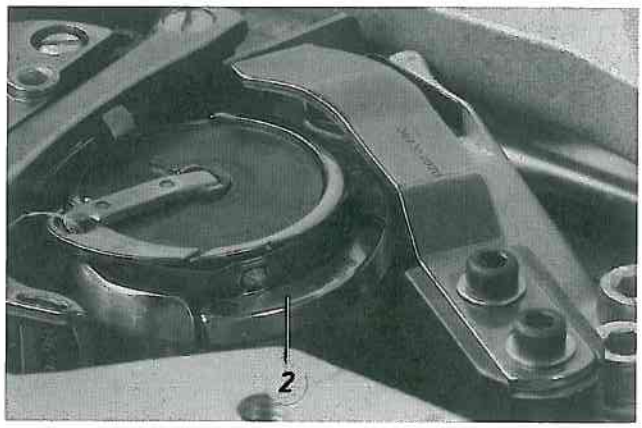
Activate the process "Move to needle bottom position" using the corresponding key.

Adjustment:

- Select the process "Adjust needle bottom position" using the corresponding key.
- Move the needle bar into the corresponding position using the dial.
- Press the key "Yes" to memorize the position.

4.12 Check the function of the thread trimmer

- Preparing the function check:
  Proceed according to the description in "Preparing check and correction" of subject 4.10.
- Activate the process "Thread cutting cycle" using the corresponding key.



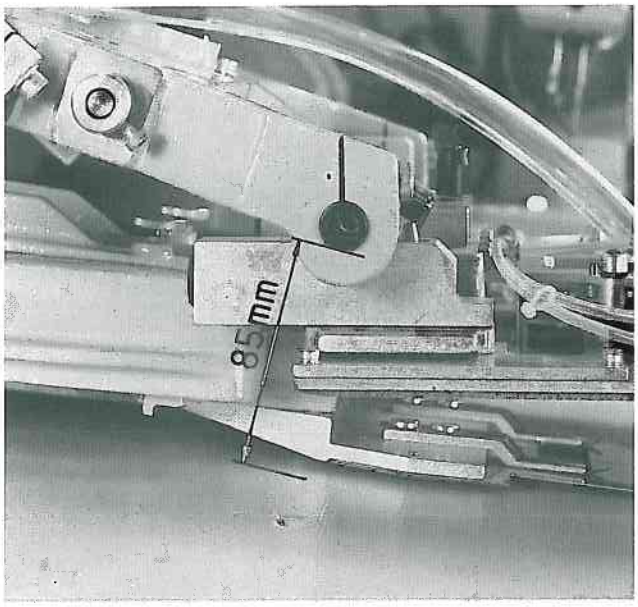
5. Folding device

5.1 Outer frame

5.1.1 General information

The outer frame carries the following functional elements:

Side slider
Front slider
Corner slider
Corner tucker
Inner frame



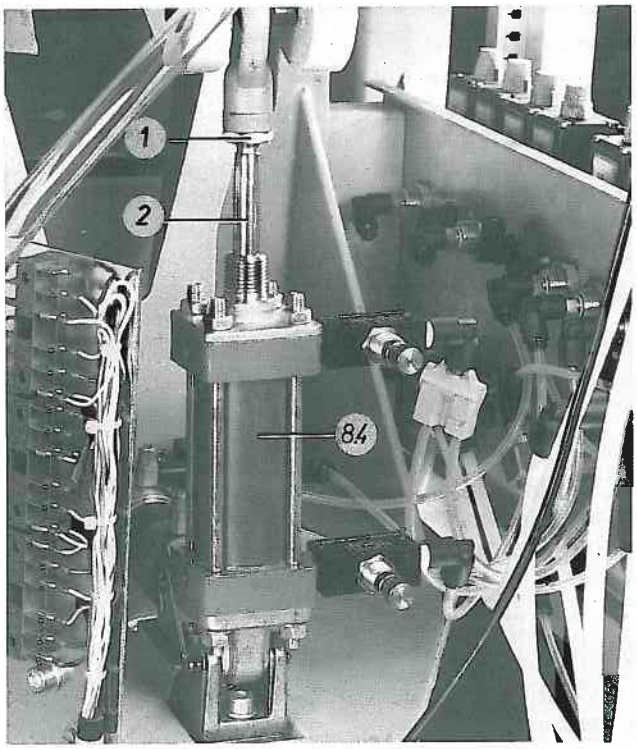
5.1.2 "Folding position" of the outer frame

Rule:

The distance between the raised outer frame in its front position and the table top should be 85 mm.

Check:

- Call up the process "Single step mode", see 9.5.5. (Via the menus "Service technician" and "Adjustments".)
- Press key b1 "Start" so often until the outer frame is in the corresponding position.



Correction:

Loosen lock nut 1 and turn the piston rod 2 accordingly.

Hint:

When the outer frame is positioned too low, it may collide with the centre slider.

5.1.3 Activation timing of the switches

Explanation:

The switch b25 "Outer frame back" is activated approx. 245 mm before the end position. This activation timing cannot be changed.

Rule:

The following switches should be activated just before the end position of the outer frame:

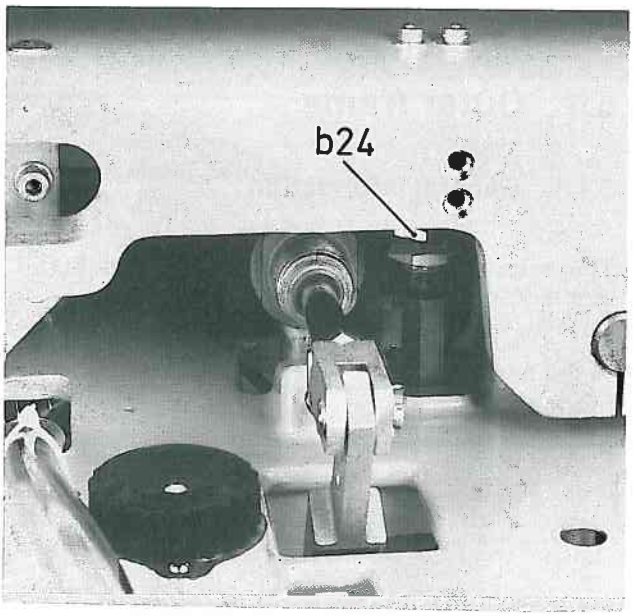
Switch b30 "Outer frame up"

Switch b28 "Outer frame down"

Switch b24 "Outer frame in front"

Correction:

Change the position of the activation element accordingly.



5.1.4 End position damping of the cylinders

Explanation:

The damping of the cylinder 8.4 (page 39) "Outer frame up and down" starts approx. 10 mm before the end positions. The damping of the cylinder 14.2 without piston rod "Outer frame to the front and back" already starts 20 mm before the end positions.

Rule:

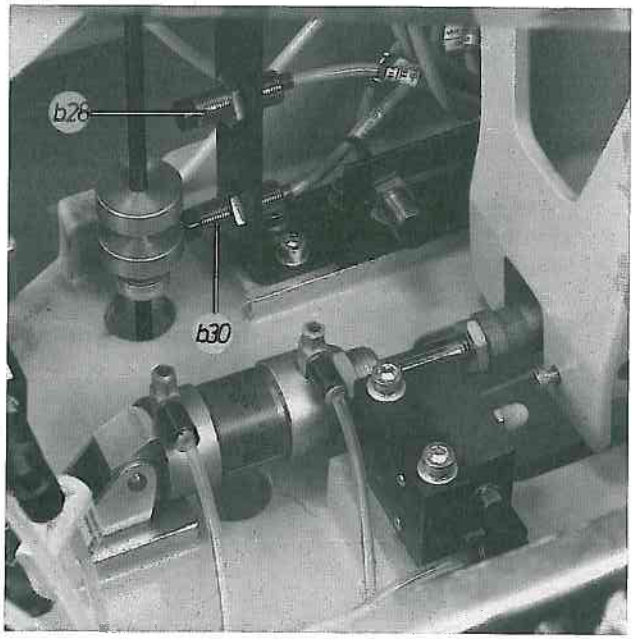
The outer frame should travel "gently" into all end positions.

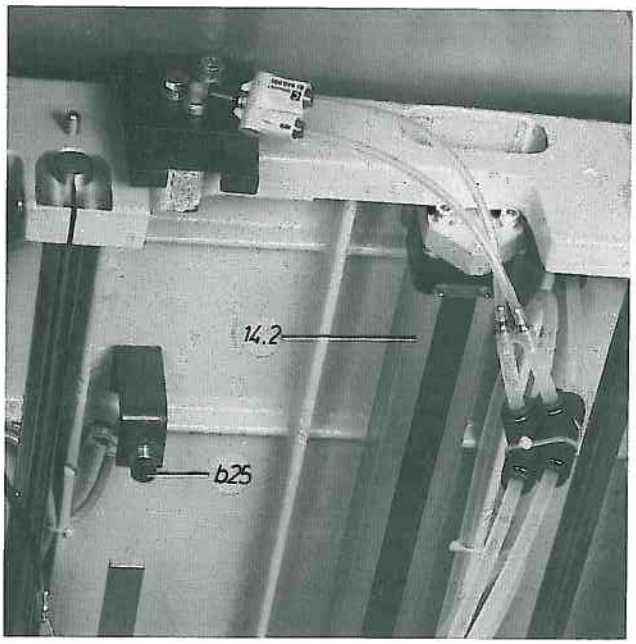
Check:

Either watch the damping during the automatic sequence in the "Automatic" cycle or during the step-by-step pressing of the key b1 during the process "Single step mode", see 9.5.5.

Correction:

Turn the throttle screws on the cylinders 8.4 or 14.2 accordingly.
(Never close the throttle screws completely.)

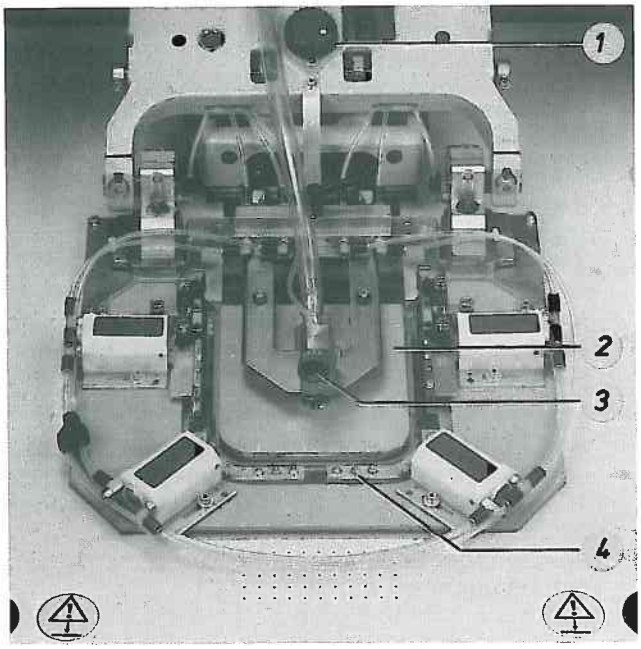




5.2 Inner frame

5.2.1 General information

- The inner frame 2 is spring-connected to 3 points of its holder.
- The vacuum field under the inner frame 2 sucks the centre slider and enables the centre slider to be pulled up into the "Folding position".



5.2.2 Setting range of the dial 3

Explanation:

The "Folding position" of the inner frame 2 and thus of the centre slider can be determined via the dial 3. The adhesive label on the transfer plate shows the position of the dial, which is required for folding the respective fabric type. When the adjustment is made with the dial 3, make sure that the "Folding position" is mainly changed in the "lower" pocket area. Greater change in the "upper" pocket area can be set with the dial 1.

Rule:

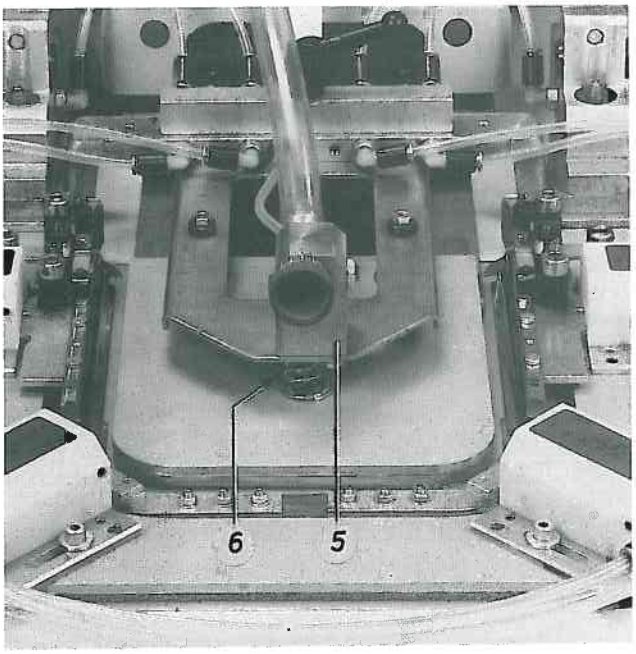
It must be possible to push the front sliders 4 under the centre slider with a minimum clearance, when the two dials 1 and 3 are set at "0" and the inner frame 2 is in the "Folding position".

Check:

- Set both dials 1 and 3 at "0".
- Call up the process "Single step mode", see 9.5.5.
- Repeat pressing key b1 until the front sliders 4 can be moved to the front by hand.

Correction:

Loosen the lock nut 6 and turn the piston rod of the adjustment element 5 accordingly.



5.3 Centre slider

5.3.1 General information

- The centre slider 1 determines the outer contour of the pocket to be set.
- The lower sheet of the centre slider 1 should fix the folded sides, when the side, front or corner sliders move back into their initial position. They, however, can only fulfil this function, when the cut pocket has a determined minimum size. This is the case for a minimum size allowance of 10 mm as compared to the outer pocket edge.
- The centre slider is sucked against the underside of the inner frame by the activated vacuum field 6. The cylinder in the adjustment element 10 pulls the inner frame and, thus, the sucked centre slider up into the "Folding position". This position that depends on the fabric thickness can be changed with the dial 11.

5.3.2 Setting range of the dial 9

Prerequisite:

Setting range of the dial 11 is correct.

Explanation:

The setting of dial 9 determines the "Folding position" in the "rear" area of the centre slider. The "Folding position" in the "front" area depends on the position of the dial 11.

Rule:

It must be possible to push the side sliders 12 under the centre slider with a minimum clearance, when the two dials 9 and 11 are set at "0" and the inner frame is in the "Folding position".

Check:

- Call up the process "Single step mode", see 9.5.5.
- Set both dials at "0".
- Repeat pressing the key b1 until the inner frame is in its "Folding position" and the two side sliders can be pushed to the front by hand.

Correction:

Change the position of the stop screws 8 accordingly. Make sure that the levers 7 rest on both stop screws 8.

5.3.3 Limitation of the motion "Centre slider up"

Rule:

The upward motion of the centre slider must be limited by the levers 7 at the outer frame and not by the cylinder 9.3 "Centre slider up".

Check:

- Set the dial 9 at "11".
- Call up the process "Single step mode", see 9.5.5.
- With the key b1 call up the corresponding step.

Correction:

Loosen the lock nut 3 and turn the piston rod 2 accordingly.

5.3.4 "Alignment position" of the centre slider

Explanation:

When the cut pocket is positioned on the centre slider, the slider can be lowered by pressing key b2 until the lower material piece can be aligned "according to the pattern".

Rule:

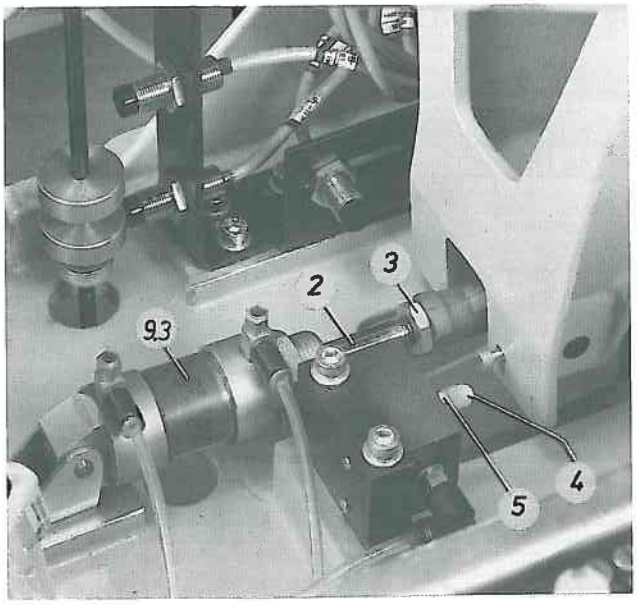
In this position the thickest lower material piece must still be movable freely under the centre slider.

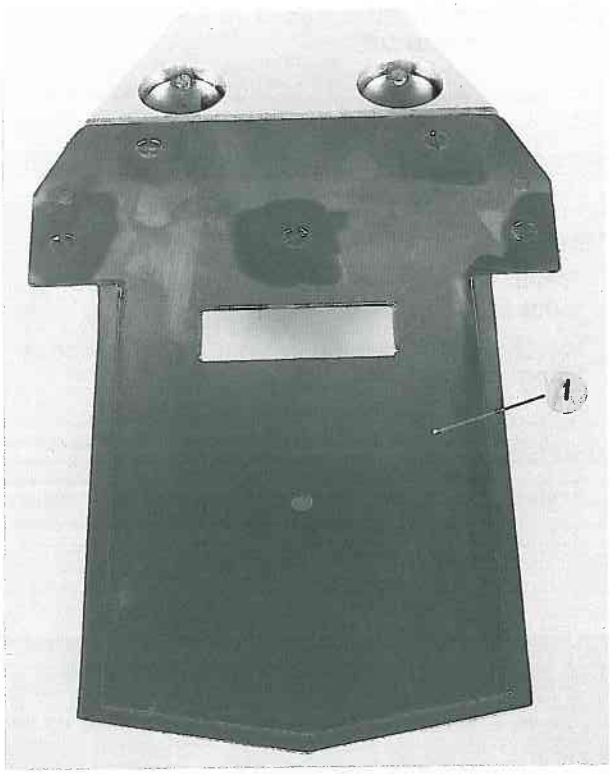
Check:

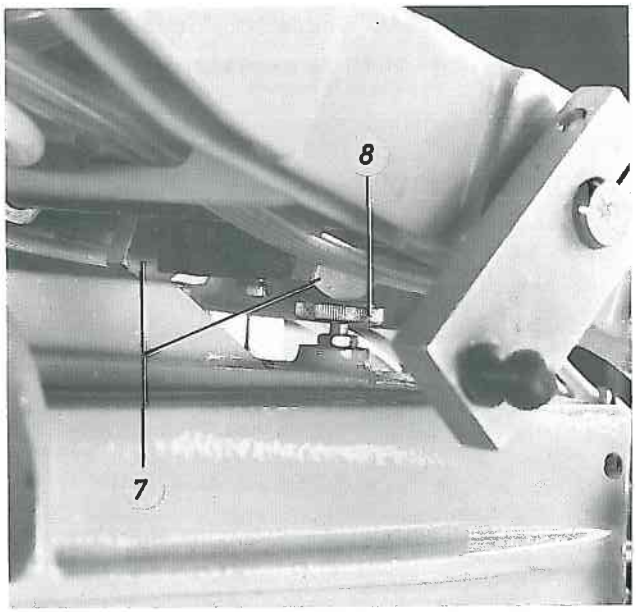
With the key b2 lower the centre slider down to the "alignment position".

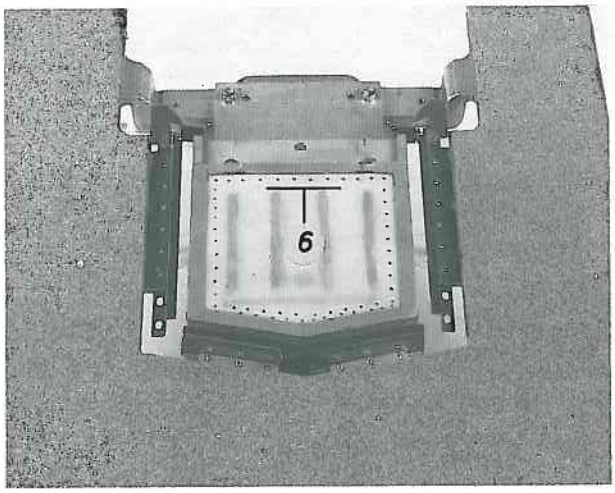
Correction:

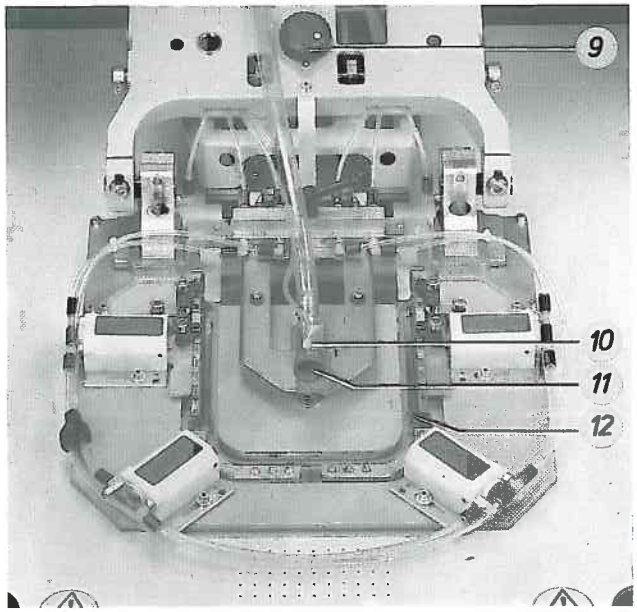
Loosen the lock nut 5 and turn the plastic cap 4 accordingly.


2
3
9.3
4
5


1


8
7


6


9
10
11
12

5.3.5 Speed "Centre slider to the front, down and up"

Rule:

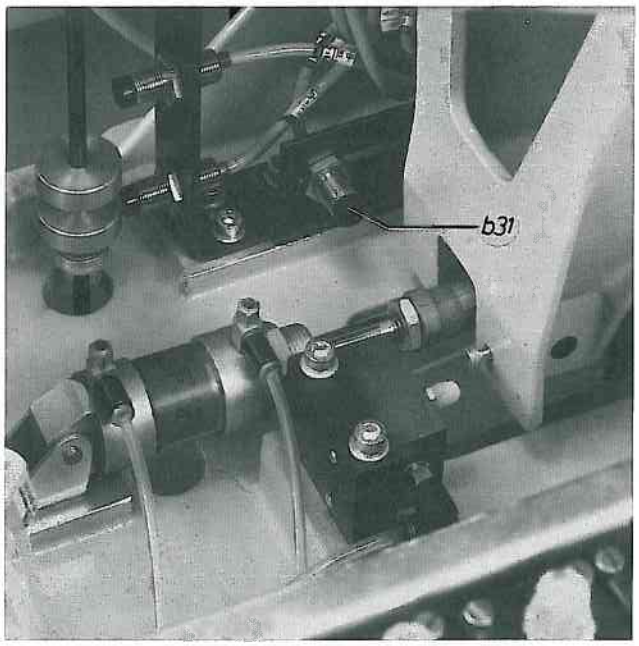
The centre slider should move fast and smoothly.

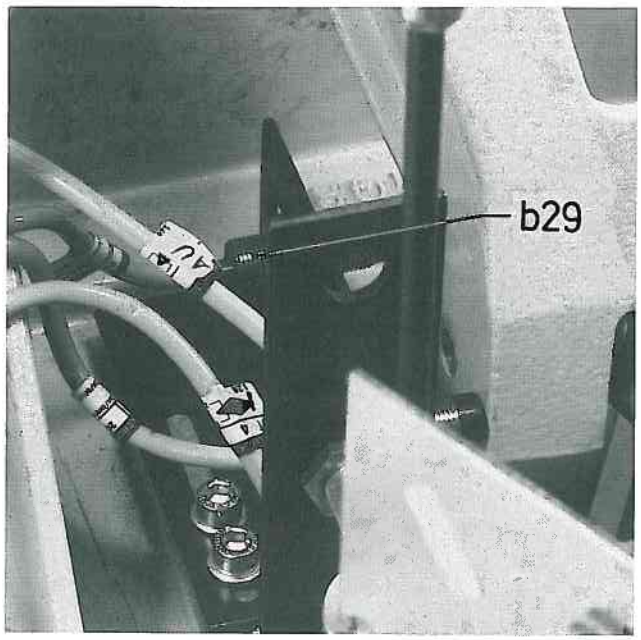
Check:

- Watch the forward motion during the folding process.
- Watch the vertical motion during the process "Single step mode", see 9.5.5.

Correction:

Accordingly regulate the venting with the throttles.





5.3.6 Activation timing of the switches

Rule:

The signals triggered by the switches should be timed as follows:

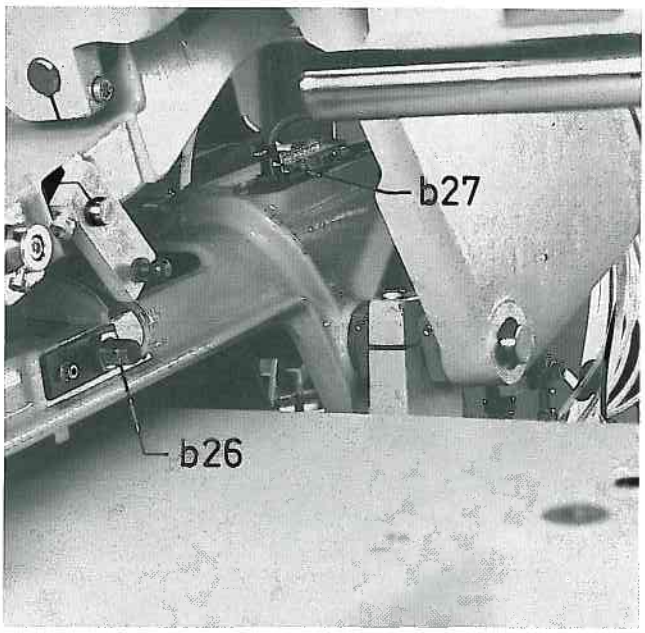
Switch	Timing
b27	Switch activated when the centre slider is approx. 80 mm before the rear end position.
b26	Deactivation of the switch in the front position of the centre slider.
b31	Activation of the switch in the bottom position of the centre slider.
b29	Activation of the switch in the "Folding position" of the centre slider.

Check:

- Call up the process "Single step", see 9.5.5.
- Press key b1 as often as necessary.

Correction:

Change the position of the activating element or switch.



5.4 Side sliders, front sliders and corner sliders

5.4.1 General information

These sliders fold the cut pocket around the centre slider, when the latter was moved into the folding position by the inner frame.

5.4.2 Front position of the sliders

Rule:

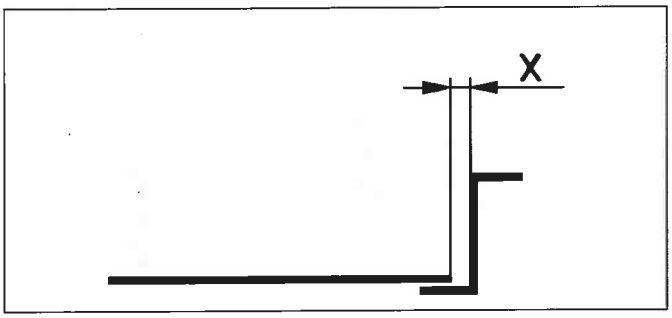
The lateral distance X between the sliders and the centre slider should correspond to the average material thickness.

Check:

- Call up the process "Single step mode", see 9.5.5.
- Press key b1 as often as necessary.

Correction:

Change the position of the slider accordingly.

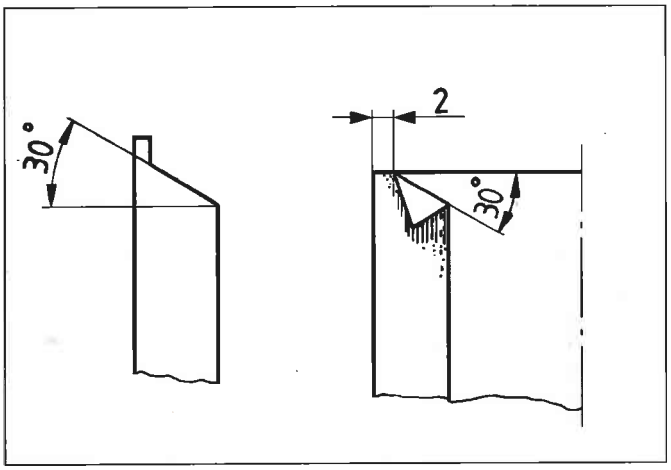


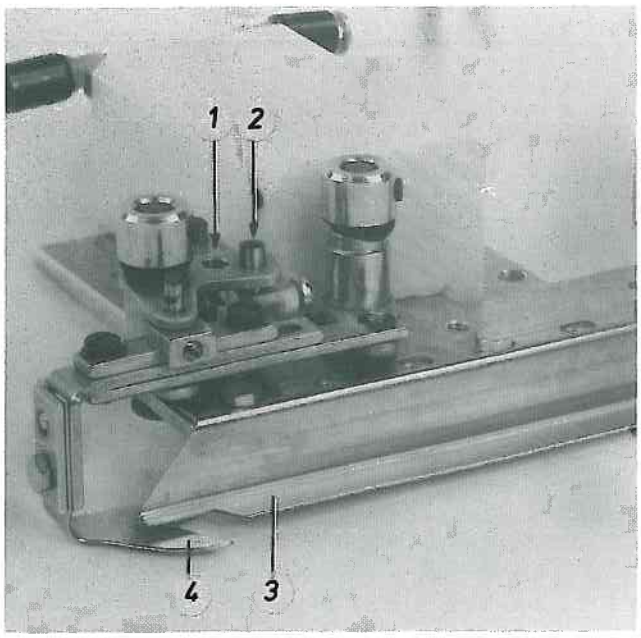
5.5 Corner tuckers

5.5.1 General information

- The corner tucker 4 should place the fabric under the 30°-edge of the side slider 3 so that the folded fabric does not show at the pocket opening.

- With corner tuckers for the cl. 805-111 make sure to observe the defined turning point level.
  Double seam: Pin in hole 2 for a longer stroke
  Single seam: Pin in hole 1 for a shorter stroke





5.5.2 Position of the swung-in corner tucker

Rule:

The swung-in corner tucker 4 and the side slider sheet 3 should overlap 1-2 mm depending on the type of fabric.

Check:

- Call up the process "Single step mode", see 9.5.5.
- Press key b1 as often as necessary.

Correction:

Loosen the 2 screws 1 and 2 and change the position of the slider sheet 4 accordingly.

5.5.3 Height of the corner tucker

Rule:

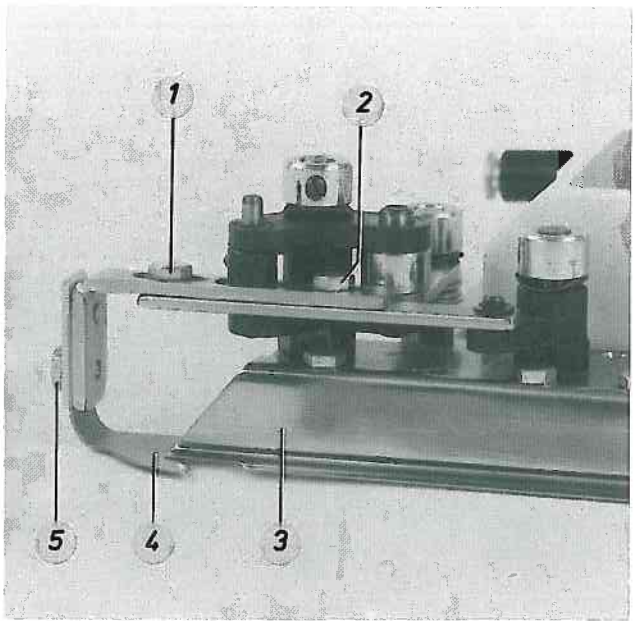
The distance between the swung-in corner tucker 4 and the side slider sheet 3 should correspond to the average fabric thickness.

Check:

- Call up the process "Single step mode", see 9.5.5.
- Press key b1 as often as necessary.

Correction:

Loosen the screw 5 and change the height of the slider sheet 4 accordingly.



5.5.4 Position of the eccentric (only cl. 805-121)

Rule:

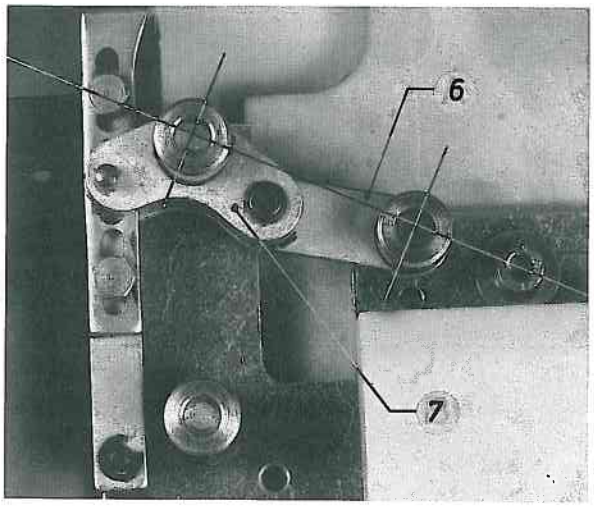
The two levers 6 and 7 of the hinge must not be fully extended, when the side slider is swung in.

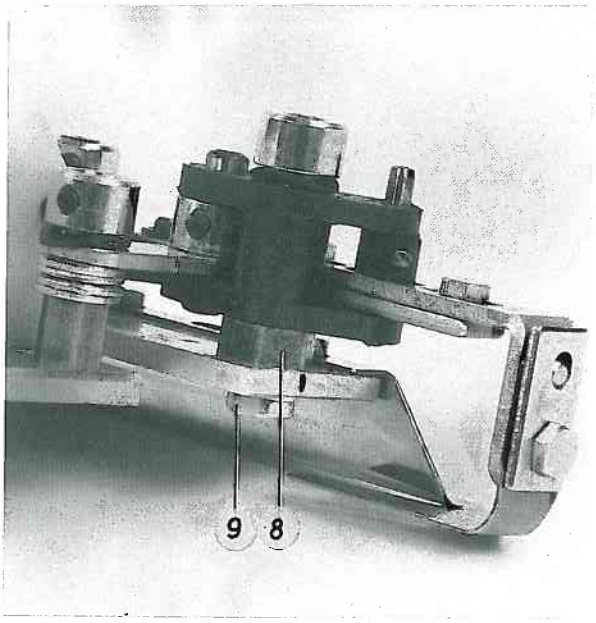
Check:

- Call up the process "Single step mode", see 9.5.5.
- Press key b1 as often as necessary.

Correction:

Loosen the nut 9 and change the position of the eccentric 8 accordingly.





5.5.5 Position of the "folding edge" of the side slider

Rule:

After "corner tucking" the cut piece should have the position shown on page 45.

Check:

- Call up the process "Single step mode", see 9.5.5.
- Position the cut pocket on the centre slider.
- Press key b1 so often, until the side sliders are depressurized.
- Push the side slider forward by hand.

Correction:

Change the position of the side slider sheet 3 accordingly.

5.6 Setting of the two dials

5.6.1 Setting of dial 10

Explanation:

The setting of this dial determines the "Folding position" of the centre slider "rear" area. The dial setting required for the respective fabric type is indicated on the adhesive label of the transfer plate, provided it has already been determined.

Rule:

To obtain an optimum folding result, the dial must be set according to the respective fabric thickness.

Check:

- Call up the process "Single step mode", see 9.5.5.
- Press key b1 as often as necessary.

Correction:

Turn the dial accordingly.

(The thicker the fabric, the greater the adjusted value must be.)

5.6.2 Setting of dial 11

Explanation:

The setting of this dial determines the "Folding position" of the centre slider "front" area. The dial setting that has proven ideal for the respective fabric type is indicated on the adhesive label of the transfer plate.

Rule:

To obtain an optimum folding result, the dial must be set according to the respective fabric thickness.

Check:

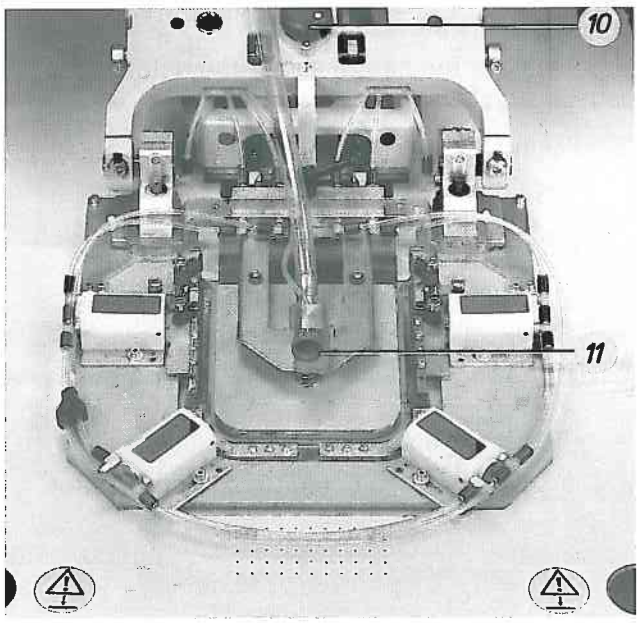
- Call up the process "Single step mode", see 9.5.5.
- Press key b1 as often as necessary.

Correction:

Turn the dial accordingly.
(The thicker the fabric, the greater the adjusted value must be.)

Hint:

A wrong adjustment may lead to different seam margins.



6. Transfer carriages

6.1 General information

The transfer carriages, which are moved by 2 motors in X- and Y-direction have the following tasks:

- Transporting the material by means of the transfer plate from the folding station to the sewing station.
- Moving the material during the sewing cycle according to the seam contour.
- Moving the functional elements of the style kit during the milling process according to the milling contour.

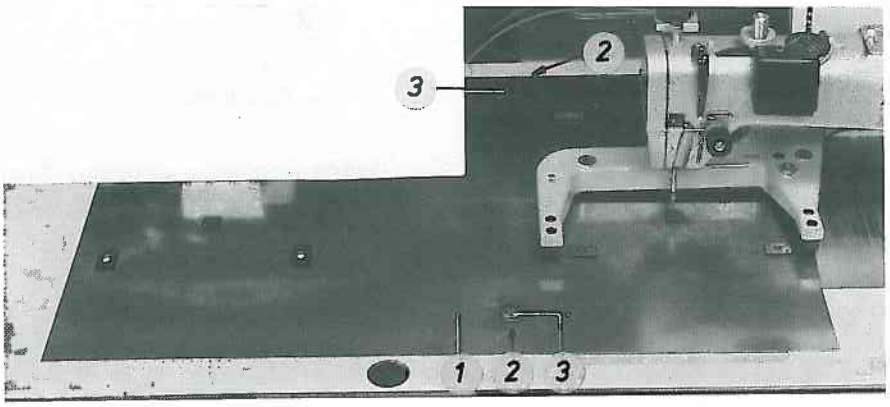
6.2 Equalizing the transfer distances of the carriages

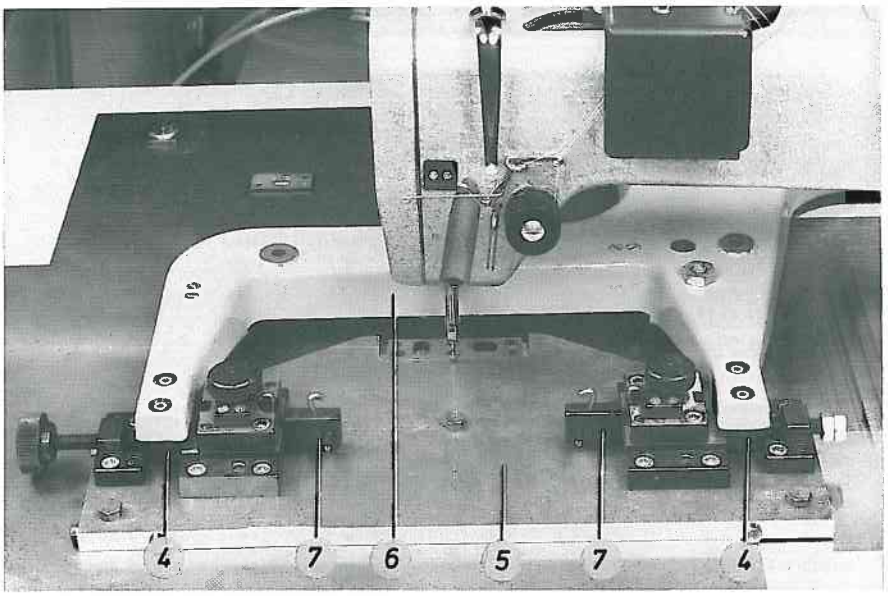
Due to the manufacturing tolerances of the pulleys and belts, the actually travelled distances of the carriages mostly deviate from the defined distances. At our factory, the "actual values" are, therefore, adapted to the "desired values" by equalizing the transfer distances of the carriages in the X- and Y-direction.

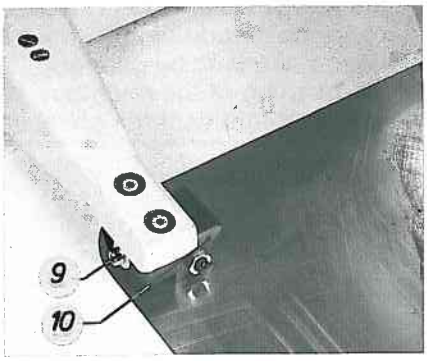
After delivery of the machine, the Dürkopp Adler technician needs to equalize the transfer distances in the following cases only:

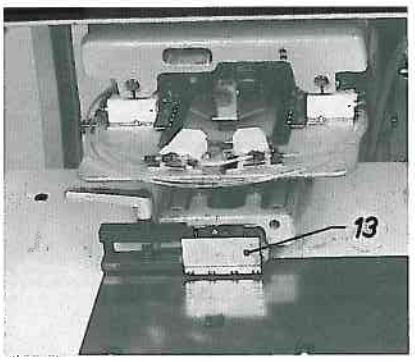
1. Change of the belt,
2. Change in the belt tension.

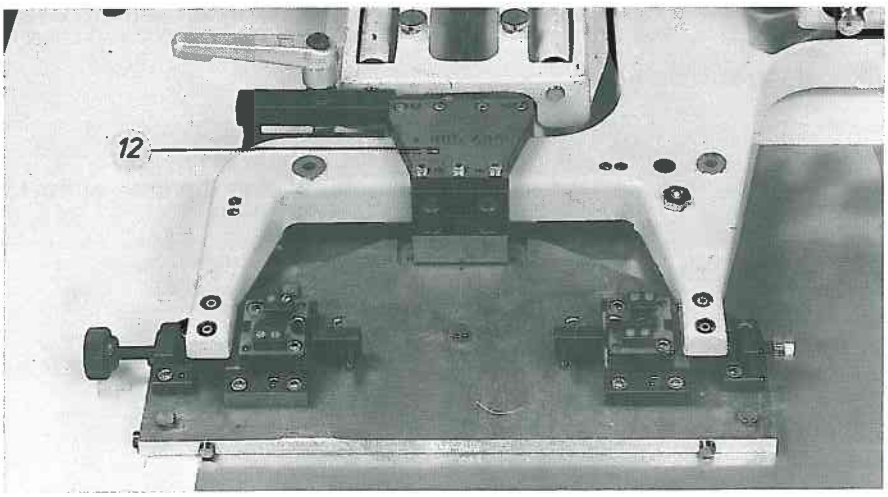
Process	**Remarks/On-screen text (BT)**
Prerequisites: – Gauges 1, 5, 12 exist – No needle inserted – Gauge holder 13 separated from the gauge 12	
1. <u>Removing the parts of the style kit:</u> – Call up the "Service" menu – Select "Style change" – Remove the vacuum hose from the inner frame – Separate the coupling bar – Remove the centre slider and outer frame – Press key "I" – Remove the transfer plate	– To move the folding station into the 0-position
2. <u>Connecting the gauges with the table top and transfer lever:</u> – Turn out the screws 2 in the table top – Screw the gauge 1 onto the table top – Remove the holding blocks 10 for the transfer plate – Remove the springs – Insert the gauge 5 into the transfer lever 6	– Using 2 screws 3 – To do this, screw out the screws 9 – To do this, press the two slides 7 of the gauge outwards into the slots of the guide blocks 4 at the transfer lever 6


2
3
1
2
3


4
7
6
5
7
4


9
10


13


12

3. Selecting the process "Transfer distance":

- Call up the menu "Service technician"
  - When the text "Please enter code" appears, enter the no. 9762
- Call up the menu "Adjustments"
- Call up the menu "Moving the X-, Y- and sewing axis"
  - Transfer carriages to the rear
  - Centre slider down
- Select the process "Transfer distance"
  - BT:
    Transfer distance
    Confirm with Yes

4. Moving the carriages toward the sewing machine, lowering the transfer lever and sewing machine:

- Press key "Yes"
  - Transfer carriages to the sewing machine (Point 1)
  - Transfer lever down
  - BT:
    Proceed with Enter
- Press key "Enter"
  - Sewing head lowers

5. Checking the position of the transfer plate holder and the transfer carriages, and, if necessary, correcting:

- Make checks
  - The position of the carriages and the guide blocks 6 is correct, when these rest laterally against the gauge 8 and the 2 bolts 7 can be slid through the holes of the two gauges 8 and 9.
- If necessary, make corrections
  - Loosen the screws 4 on the guide blocks, press the guide blocks against the gauge using the knurled screws 5 and change the position of the gauge 8 accordingly. When the correction cannot be made by this, the position of the carriages needs to be changed. To do this, change the position of the encoders 10 and 11 at the X- and Y-motors accordingly.
- Remove the bolt 7

6. Checking the sewing head position and, if necessary, correcting:

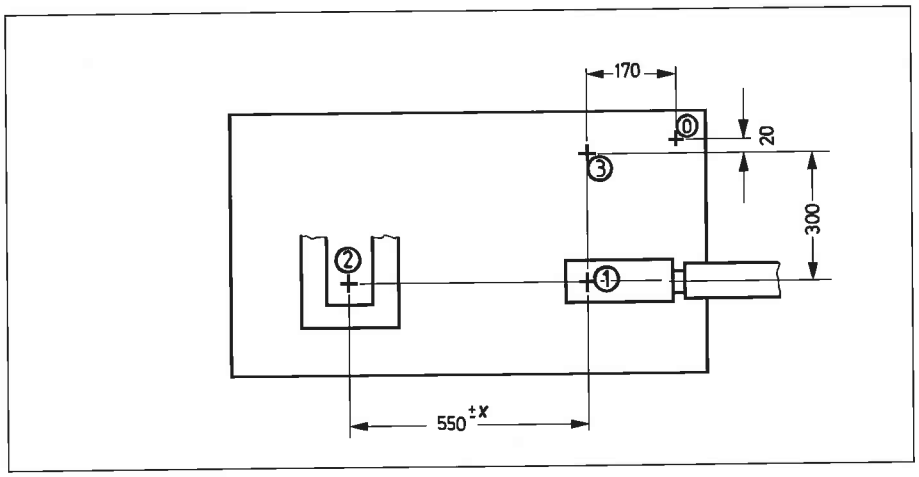
- Slip the 2-mm-pin 9 into the needle bar
- Turn the crank
  - The pin must enter the hole of the gauge 8 at the transfer lever without being deflected
- If a correction is necessary:
  Change the position of the sewing head

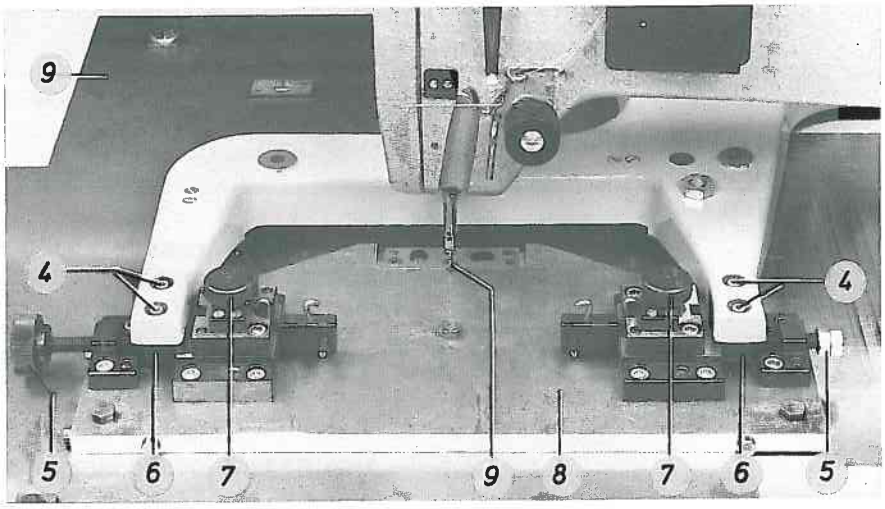
7. Moving the transfer carriage to the X-equalizing point:
  - This equalizing point (point 2) is in the area of the folding station
- Press key "Enter"
  - BT:
    Remove the needle
    Proceed with Enter
- Remove the 2-mm-pin from the needle bar
- If necessary, press key "I"
  - When the lamp in this key is no longer turned on

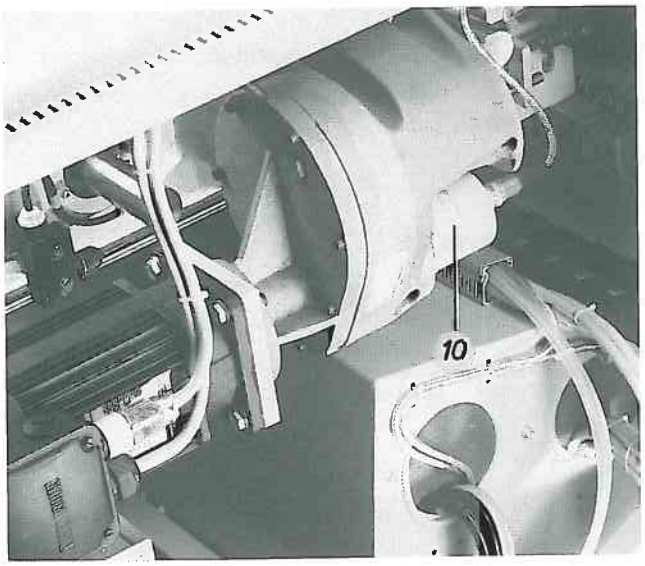
– Press key "Enter"

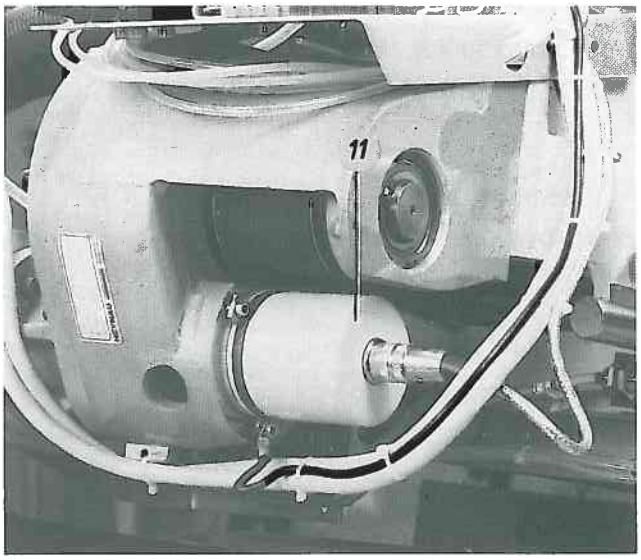
– Press key "Enter"

– Sewing head up
– Transfer lever up
– BT:
  Proceed with Enter
– Transfer carriages move to the folding station
– X-motor disengaged
– Transfer lever down
– BT:
  Confirm the adjustment with "Yes"









8. Checking the position of the X-transfer carriage and, if necessary correcting:

- Make the check
  - It should be possible to slide the bolts 2 through the holes in the "top" gauge 1 right into the elongated holes of the "bottom" gauge 3
- If a correction is necessary:
  Shift the X-carriage accordingly by hand
  Press key "Yes"
  - "X-equalizing data" are memorized
  - X-carriage is locked into position
  - BT:
    Proceed with Enter
- If no correction is necessary:
  - X-carriage is locked into position
- Press key "No"
  - BT:
    Proceed with Enter
- Remove the bolt
- Press key "Enter"
  - Transfer lever up
  - BT:
    Proceed with Enter

9. Moving the transfer carriage to the Y-equalizing point:

- This point is 300 mm above the sewing machine
- Press key "Enter"
  - X-carriage to the right to the sewing machine
  - Y-carriage to the rear
  - Y-motor disengaged
  - Transfer lever down
  - BT:
    Confirm the adjustment with Yes

10. Checking the position of the Y-carriage and, if necessary correcting:

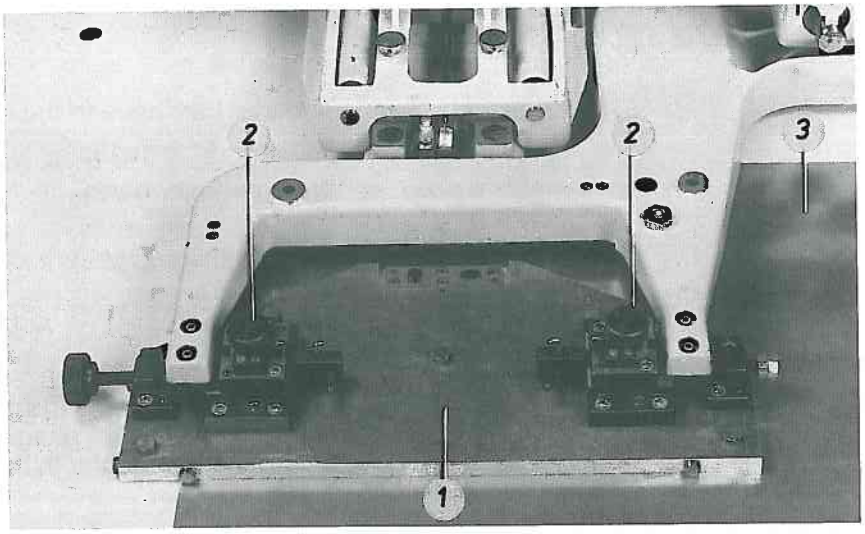
- Make the check
  - It should be possible to slide the bolts 4 through the holes in the "top" gauge right into the elongated holes in the "bottom" gauge
- If a correction is necessary:
  Shift the Y-carriage accordingly by hand
  Press key "Yes"
  - "Y-equalizing data" are memorized
  - Y-carriage is locked into position
  - BT:
    Proceed with Enter
- If no correction is necessary:
  Press the key "No"
  - Y-carriage is locked into position
  - BT:
    Proceed with Enter
- Remove the bolt
- Press key "Enter"
  - Transfer lever up
  - BT:
    Turn off the machine
- Turn off the machine

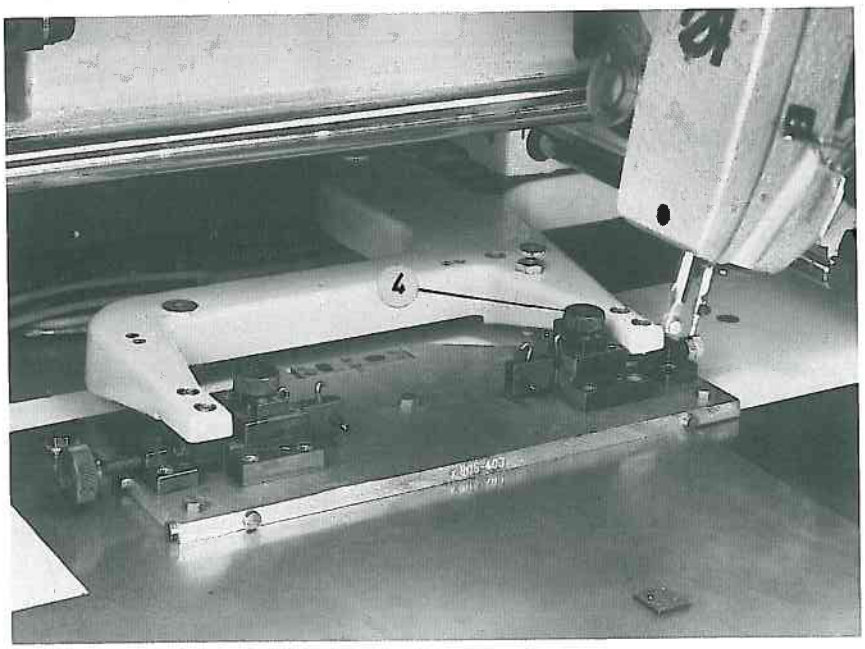
11. Selecting the process "Equalization of position":

- Call up the menu "Service technician"
- When the text "Please enter code" appears, enter the no. 9762
- Call up the menu "Adjustments"
- Call up the menu "Moving the X-, Y- and sewing axis"
- Transfer carriages to the rear
- Centre slider down
- Select the process "Equalization of position"
- BT: Confirm with Yes

12. Moving the transfer carriages to the sewing machine and lowering the sewing head:

- Press key "Yes"
- Transfer carriages to the sewing head
- Transfer lever down
- Outer frame to the front and down
- BT: Proceed with Enter
- Press key "Enter"
- Sewing head lowers





13. Checking the position of the transfer carriages and, if necessary, correcting:

- Insert the 2-mm-pin into the needle bar
- Turn the crank
- If necessary, make corrections

- This process is necessary, because the lengths of the distances starting from the reference point 0 (page 51) did change after equalizing the transfer distance
- The pin 9 (page 51) must be free to enter the hole of the gauge at the transfer lever without being deflected
- Change the position of the encoders 10 and 11 (page 51) at the X- and Y-motors

14. Moving the transfer carriages to the folding station and inserting the gauge holder:

- Press key "Enter"
- Remove the 2-mm-pin from the needle bar
- Press key "Enter"
- Press key "Enter"
- Connect the gauge holder 2 with the centre slider take-up
- Press key "Enter"

- BT:
  Remove the needle
  Proceed with "Enter
- Outer frame to the rear and up
- Sewing head up
- Transfer lever up
- BT:
  Proceed with Enter
- Transfer carriages to the folding station
- X-motor disengaged
- Transfer lever down
- BT:
  Confirm the adjustment with "Yes"

15. Checking the position of the X-transfer carriage and, if necessary, correcting:

- Screw the gauge 3 to its holder 2
- Make a check
- If a correction is necessary:
- Shift the X-carriage accordingly by hand
  Press key "Yes"
- If no correction is necessary:
  Press key "No"
- Remove the bolt 4

- It should be possible to slide the bolt 4 through the hole of the "top" gauge right into the elongated hole of the gauge in the transfer lever
- The "X-position data" are memorized
- X-carriage is locked into position
- BT:
  Proceed with Enter
- X-carriage is locked into position
- BT:
  Proceed with Enter

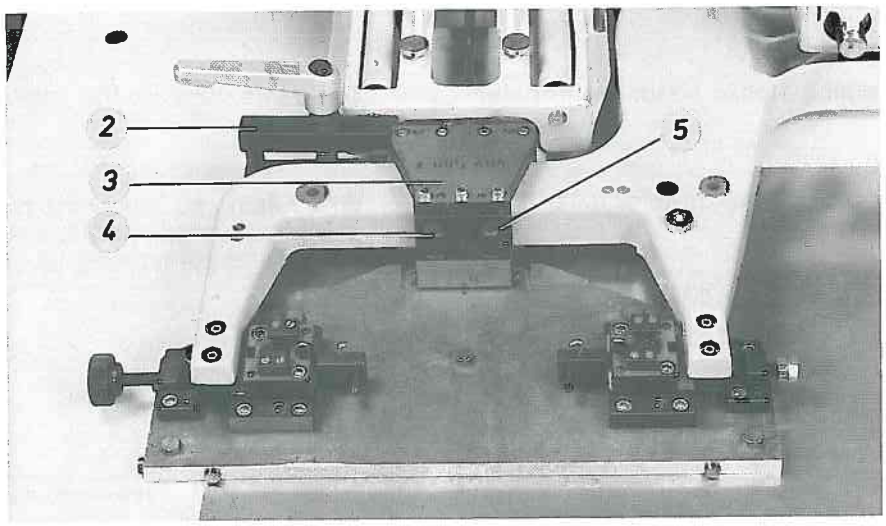
16. Checking the position of the centre slider holder in Y-direction and, if necessary, correcting:

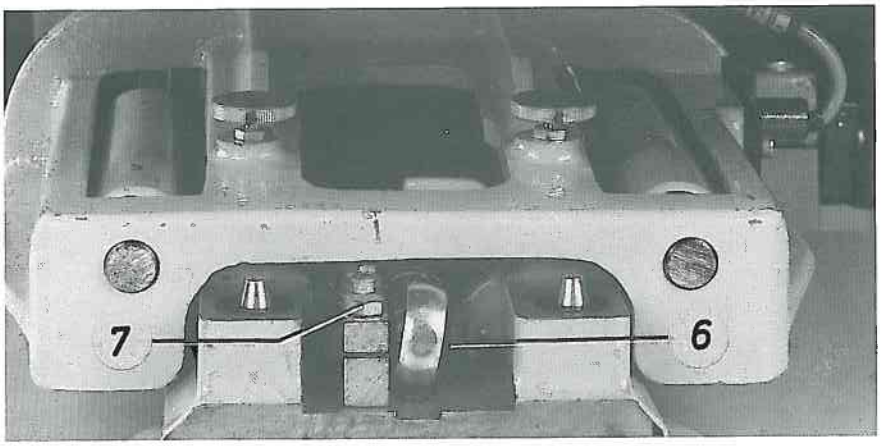
- Make the check
- If necessary, make the corrections

- It should be possible to slide the bolt 5 through the hole of the "top" gauge right into the elongated hole of the gauge in the transfer lever
- Loosen the clamping screw 7 and turn the eccentric 6 accordingly

17. Removing all gauges and inserting the parts of the style kit:

- Separate the gauge 3 from its holder 2
- Press the key "Enter"
- Remove the gauge from the transfer lever
- Screw on the holding blocks for the transfer plate
- Press key "Enter"
- Transfer lever up
- Transfer carriages move back into their initial position
- BT:
  Remove gauge
  Proceed with "Enter"
- Separate the gauge holder 2 from the centre slider take-up
- Unscrew the gauge from the table top
- Turn the screws into the table top
- Press key "Enter"
- Insert the centre slider, outer frame and transfer plate
- Outer frame holder to the front





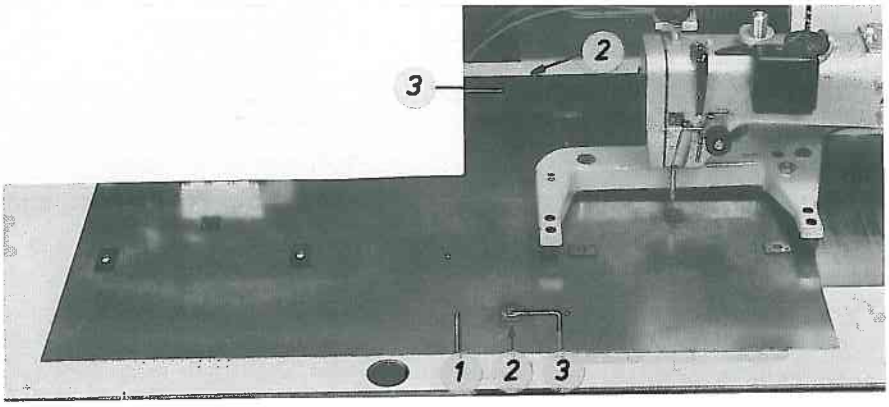
6.3 Equalization of position of the carriages to the sewing and folding station

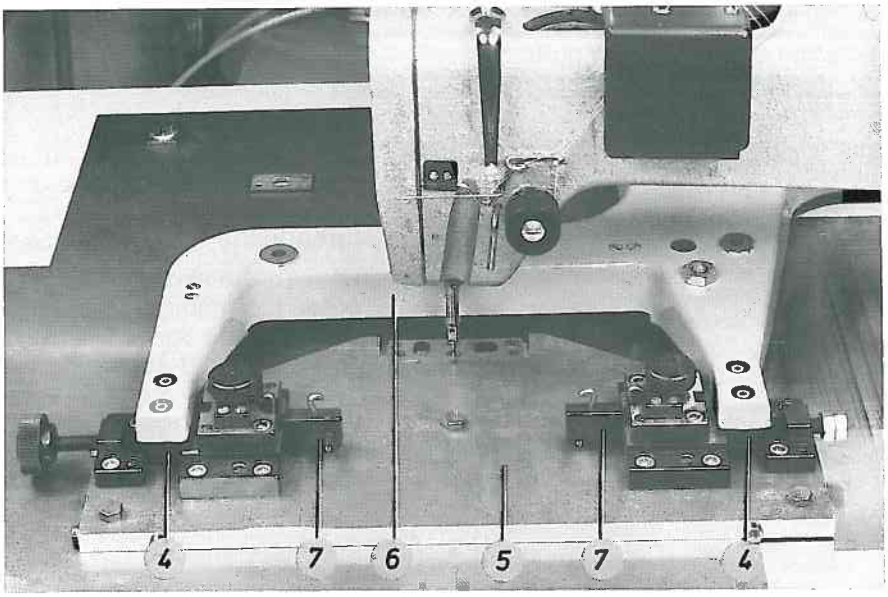
- This subject does not only describe the equalization of position, but also checking and correction of the following adjustments:

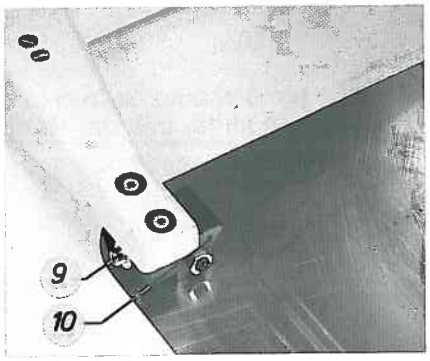
  1. Position of the transfer plate holder
  2. Position of the sewing machine with respect to the table top
  3. Position of the centre slider holder in Y-direction

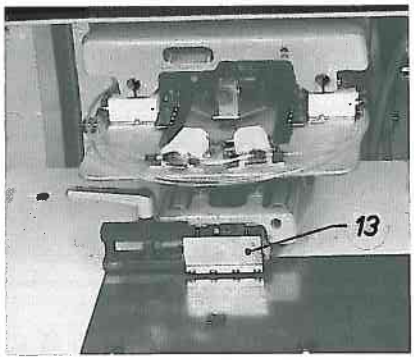
- Ignore the specifications that appear in the "outlined" field of the screen during the equalization of position.

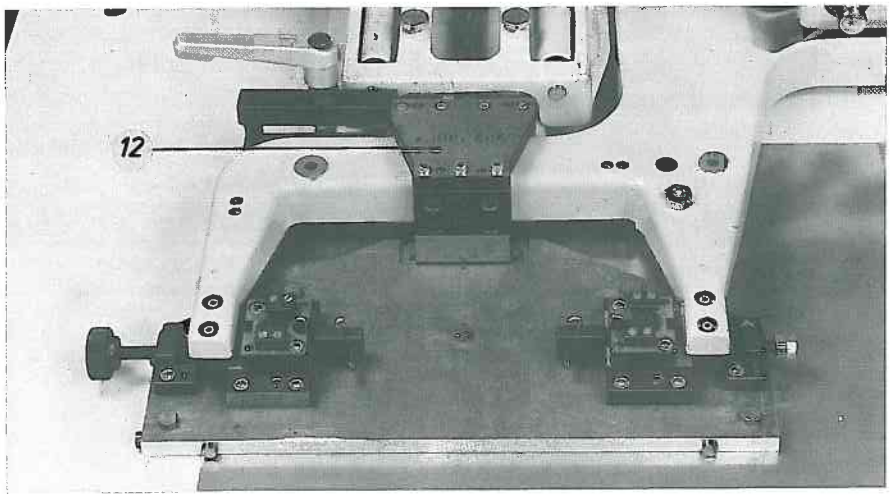
Process	**Remarks / On-screen text (BT)**
Prerequisites:	
– Gauges 1, 5, 12 exist	
– No needle inserted	
– Gauge holder 13 separated from the gauge 12	
1. <u>Connecting the gauges with the table top and transfer lever:</u>	
– Call up the menu "Adjustments" - see 9.2	
– Remove the transfer plate	
– Remove the holding blocks 10 for the transfer plate	– To do this, turn out the screws 9
– Remove the springs	
– Insert the gauge 5 into the transfer lever 6	– When doing so, press the two slides 7 of the gauge outwards into the slots of the guide blocks 4 at the transfer lever 6
– Unscrew the screws 2 in the table top	
– Screw the gauge 1 on the table top	– With the 2 screws 3
2. <u>Selecting the process "Equalization of position":</u>	
– Call up the menu "Service technician"	– When the text "Please enter code" appears, enter the no. 9762
– Call up the menu "Adjustments"	
– Call up the menu "Moving the X-, Y- and sewing axis	– Transfer carriages to the rear
	– Centre slider down
– Select the process "Equalization of position"	– BT: Equalization of position Confirm with Yes


2
3
1
2
3


4
7
6
5
7
4


9
10


13


12

3. Moving the transfer carriages to the sewing head, lowering the sewing head and removing the folding kit:

- Press key "Yes"
  - Transfer carriages to the sewing head
  - Transfer lever down
  - Outer frame to the front and down
  - BT:
    Proceed with Enter
- Remove the vacuum hose from the inner frame
- Separate the coupling bar
- Remove the centre slider and outer frame
- Press key "Enter"
  - Sewing head lowers

4. Checking the position of the transfer plate holder and transfer carriages and, if necessary, correcting:

- Make the checks
  - The position of the carriages and guide blocks 6 is correct, when these rest laterally against the gauge 8 and the 2 bolts 7 can be slid through the holes of the two gauges 8 and 9
- If necessary, make corrections
  - Loosen the screws 4 at the guide blocks 6, press the guide blocks against the gauge using the knurled screws 5 and change the position of the gauge 8 accordingly. When the correction cannot be made this way, the position of the carriages needs to be changed. To do this, change the position of the encoders 10 and 11 at the X- and Y-motors accordingly.
- Remove the bolt 7

5. Checking the sewing head position and, if necessary, correcting:

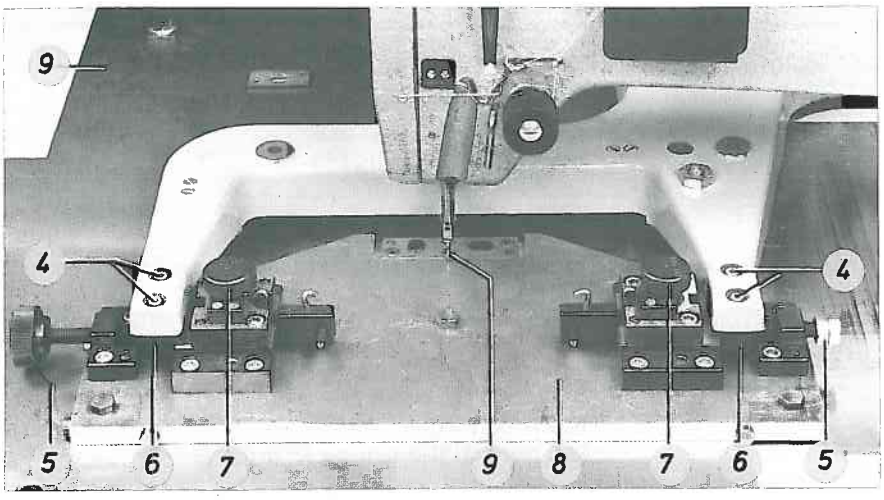
- Insert the 2-mm-pin 9 into the needle bar
- Turn the crank
  - The pin 9 should be free to enter the hole of gauge 8 at the transfer lever without being deflected
- If a correction is necessary:
  Change the position of the sewing head

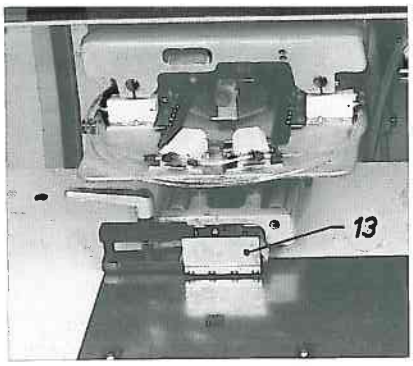
6. Moving the transfer carriages to the folding station and connecting the gauge holder:

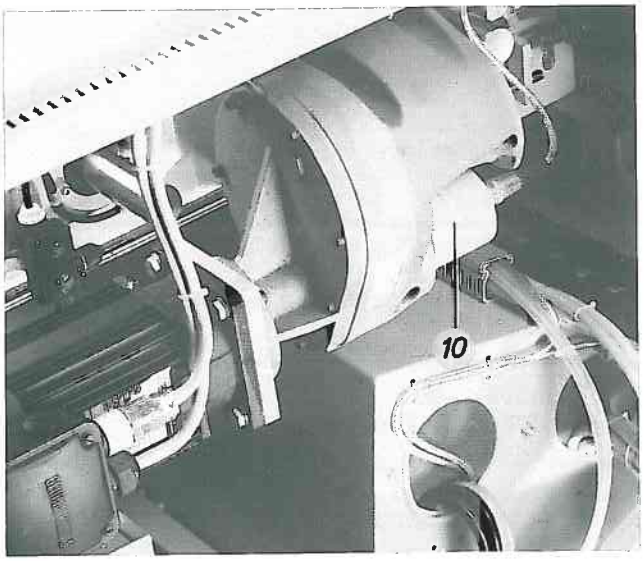
- Press key "Enter"
  - BT:
    Remove needle
    Proceed with Enter
- Remove the 2-mm-pin from the needle bar
- Press key "Enter"
  - Outer frame holder to the rear and up
- Press key "Enter"
  - Sewing head up
  - Transfer lever up
  - BT:
    Proceed with Enter

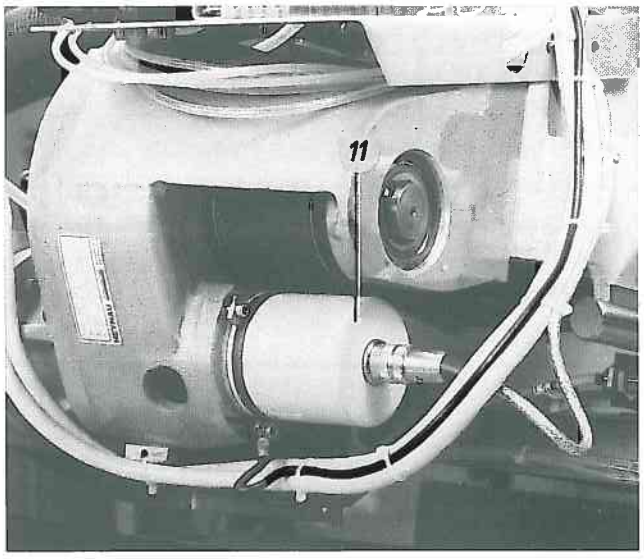
- Connect the gauge holder 13 with the centre slider take-up
- Press key "Enter"

- Transfer carriages to the folding station
- X-motor disengaged
- Transfer lever down
- BT:
  Confirm the adjustment with "Yes"









7. Checking the position of the X-transfer carriage, and if neccessary, correcting:

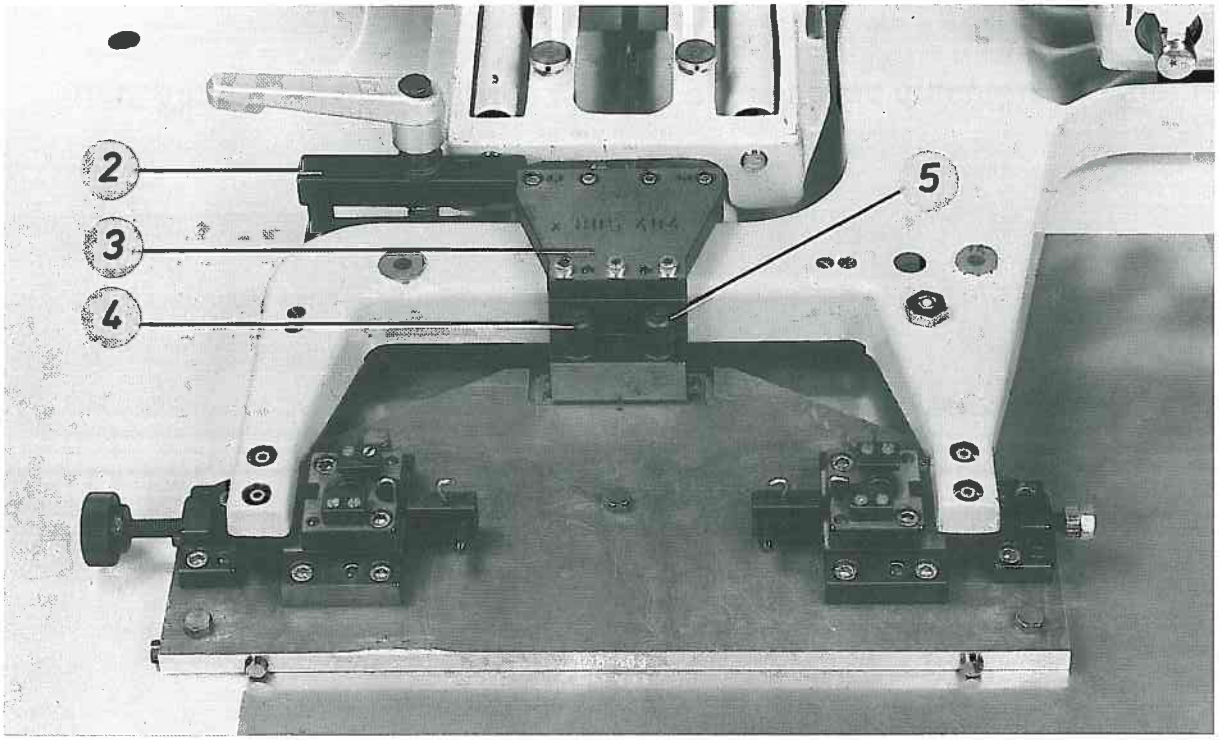
- Screw the gauge 3 to its holder 2
- Make a check
  - It should be possible to slide the bolt 4 through the hole in the "top" gauge right into the elongated hole of the gauge in the transfer lever
- If a correction is necessary:
  Shift the X-carriage accordingly by hand
  Press key "Yes"
  - The "X-position data" are memorized
  - The X-carriage is locked into position
  - BT:
    Proceed with Enter
- If no correction is necessary:
- Press key "No"
  - The X-carriage is locked into position
  - BT:
    Proceed with Enter
- Remove the bolt 4

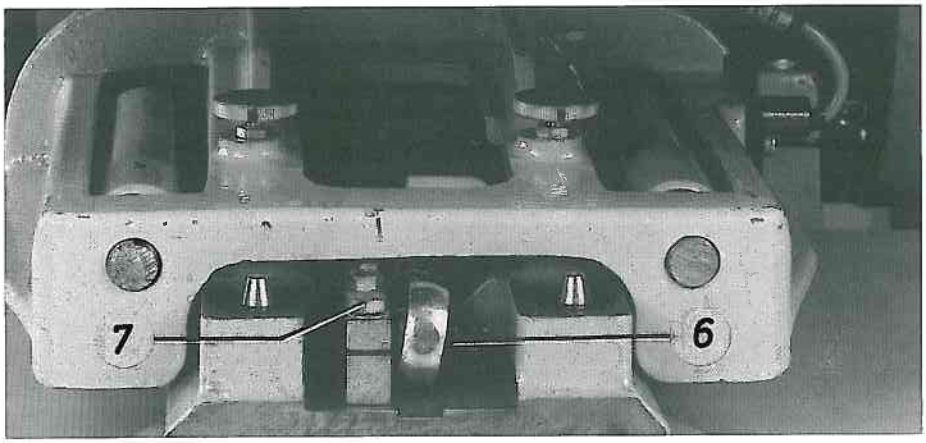
8. Checking the position of the centre slider holder in Y-direction, and, if necessary, correcting:

- Make the check
  - It should be possible to slide the bolt 5 through the hole of the "top" gauge right into the elongated hole of the gauge in the transfer lever
- If necessary, make corrections
  - Loosen the clamping screw 7 and turn the eccentric 6 accordingly

9. Removing all gauges and inserting the parts of the style kit:

- Separate gauge 3 from its holder 2
- Press key "Enter"
  - The transfer lever moves up
- Remove the gauge from the transfer lever
- Screw on the holding blocks for the transfer plate
- Press key "Enter"
  - Transfer carriages move back into their initial position
  - BT:
    Remove gauge
    Proceed with Enter
- Separate the gauge holder 2 from the centre slider take-up
- Unscrew the gauge from the table top
- Turn the screws into the table top
- Press key "Enter"
  - The outer frame holder moves to the front
- Insert the centre slider, outer frame and transfer plate


2
3
4
5


7
6

6.4 Positional relationship between the transfer carriage and the milling station

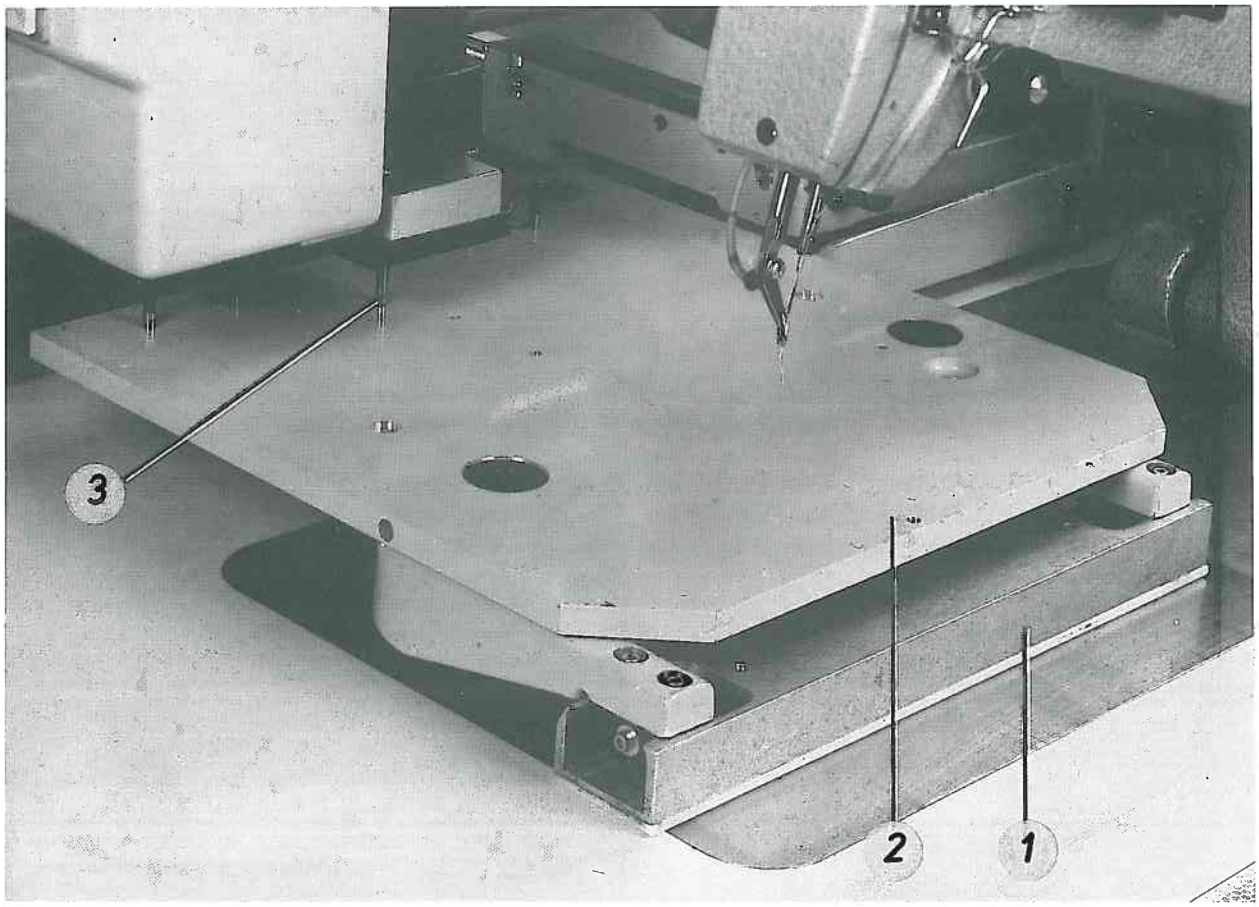
Process	Remarks
Prerequisite:	
– Menu "Moving the X-, Y- and sewing axis is called up	– Via the menus "Service technician" and "Adjustments"
1. Calling up the process "Adjust zero point of milling"	
– Press the corresponding key	– The carriages move into the "Mounting position" – BT: Mount milling plate Proceed with Enter
2. Mounting the aids:	
– Remove the transfer plate	
– Insert the support bar 1 into the transfer lever	
– Screw the milling plate 2 on the transfer lever	
– Separate the suction head from the milling machine	– To do this, actuate the respective lever
– Insert the 6-mm-pin 3 into the milling machine	– The pin must jut out approx. 25 mm from the clamping sleeve
3. Moving the transfer carriages to the milling unit and swinging the milling device downward	
– Press the key "Enter"	– BT: Proceed with Enter
4. Disengaging the X- and Y-axis:	
– Press key "Enter"	– BT: Adjustment: Move milling plate by hand Confirm adjustment with "Yes"
5. Making the check:	
– Pull the milling machine downward	– The zero point is correct, when pin 3 in the milling machine is free to enter the hole of the milling plate 2
6. If a correction is necessary:	
– Shift the transfer carriages accordingly	
7. Memorizing the zero point data, locking the Y-X axes into place and swinging up the milling device:	
– Press key "Yes"	– After the milling machine has been raised, the transfer plate moves into the "Mounting position" – BT: Dismount milling plate Proceed with Enter

8. Removing the aids:

- Remove the milling plate, support bar and pin
- If necessary, insert the transfer plate

9. Moving the transfer carriages into the initial position:

- Press key "Enter"
- The transfer plate is raised
- Calling up the menu "Moving X- and Y-axis"



6.5 Zero point position of the carriages

6.5.1 General information

- The zero point position of the carriages is determined during the equalization of position with respect to the folding and sewing station.
- During one revolution of both motors the carriages travel a distance of 16 mm.
- The encoder at the motor produces 500 signals per revolution and a 0-pulse.

6.5.2 Sequence of functions when zeroing the carriages

If the keys "I" and "Enter" are activated after turning on the machine:

The X-motor moves the carriage in the +X-direction.

If the X-proximity switch is activated by the carriage:

The X-motor stops and then moves the carriage in the opposite direction.

If the encoder produces a 0-signal at the X-motor:

The X-motor stops the carriage.

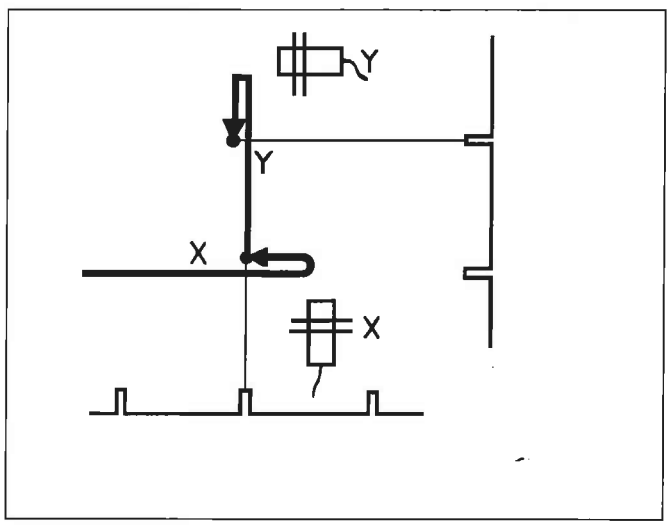
The Y-motor moves the other carriage in +Y-direction.

If the Y-proximity switch is activated by the carriage:

The Y-motor stops and then moves the carriage in the opposite direction.

If the encoder produces a 0-signal at the Y-motor:

The Y-motor stops the carriage.



6.5.3 Activation timing of the proximity switch during zeroing

Rule:

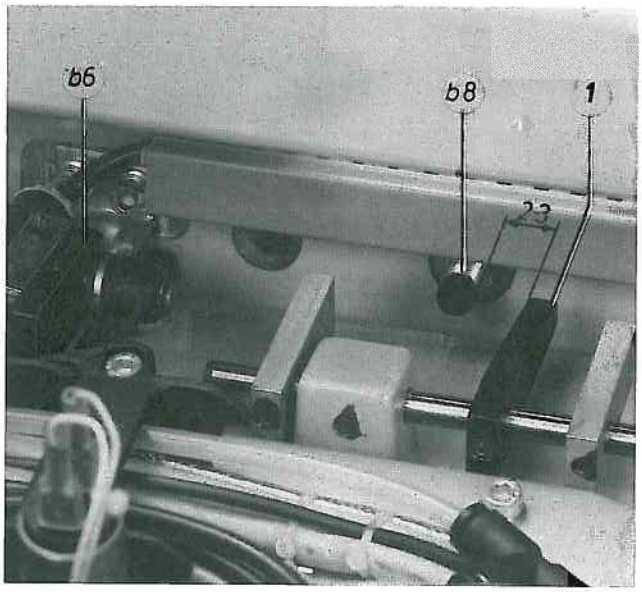
After zeroing, the distance between the cam 1 or 2 and the X- or Y-proximity switch b8 or b17 should be 2-3 mm.

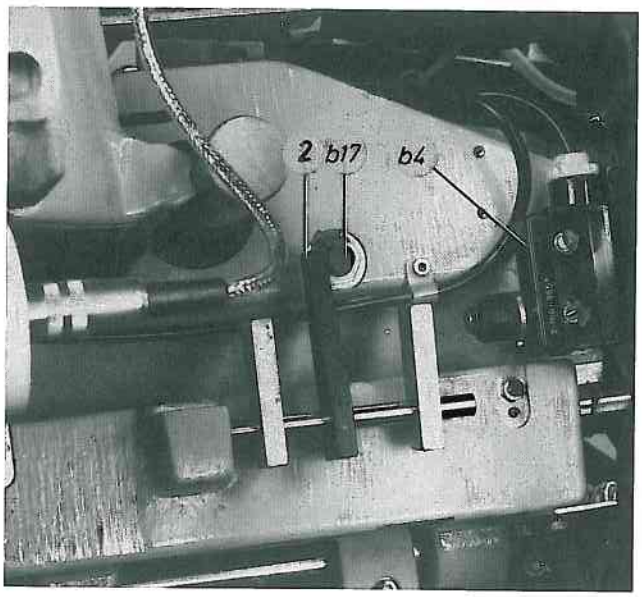
Correction:

Change the position of the cam accordingly.

Hint:

During zeroing the carriage is constantly moved to and fro, when the proximity switch was activated at the wrong moment.





6.6 Activation timing of the limit switches

Explanation:

If the control does not detect when the carriage exceeds the motion range, the switches b4, b5 and b7 should immediatly stop and turn off the two motors.

Rule:

The switches should be activated approx. 5 mm before the mechanical end position.

Check:

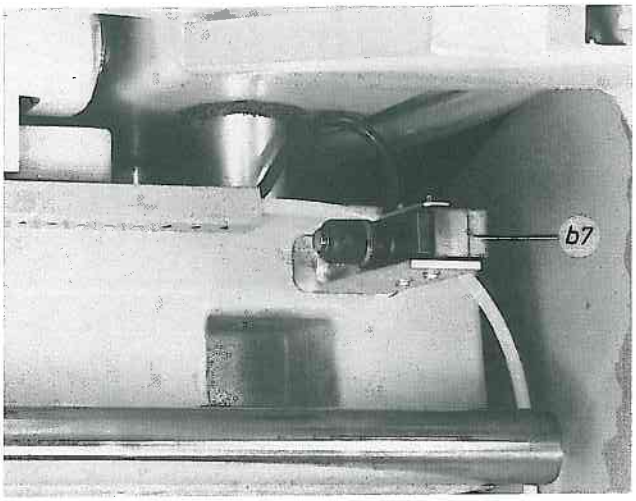
With turned off machine push the carriages into the 4 end positions.

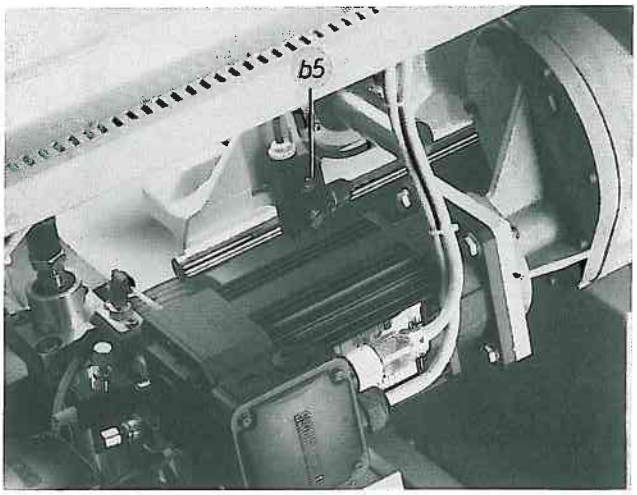
Correction:

Change the position of the switches accordingly.

Hint:

When turning on the sewing unit with the main switch, all limit switches must be deactivated.





6.7 Position of the stop pin

Explanation:

The stop pin 5 determines the position of the transfer plate at the moment of material take-over.

Rule:

When the transfer plate lowers, the entire surface of its underside should "touch" the table top.

Check:

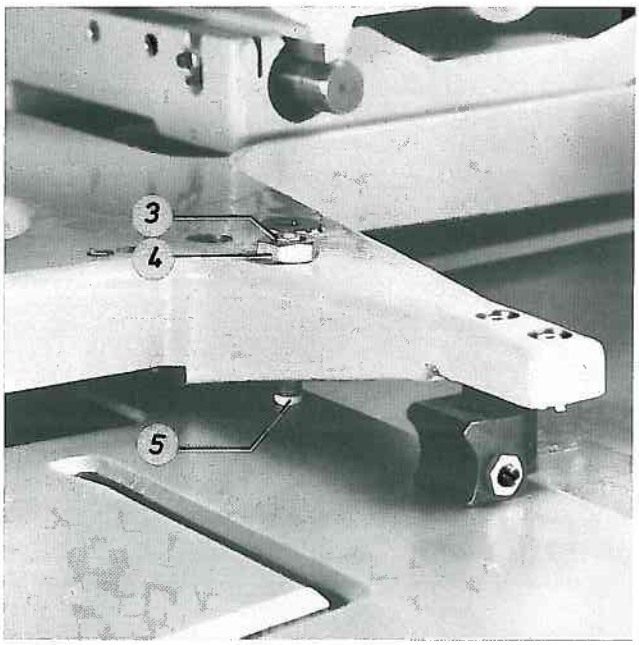
In the initial position of the machine press the transfer lever down.

Correction:

Loosen the lock nut 4 and turn the sleeve 3 accordingly.

Hint:

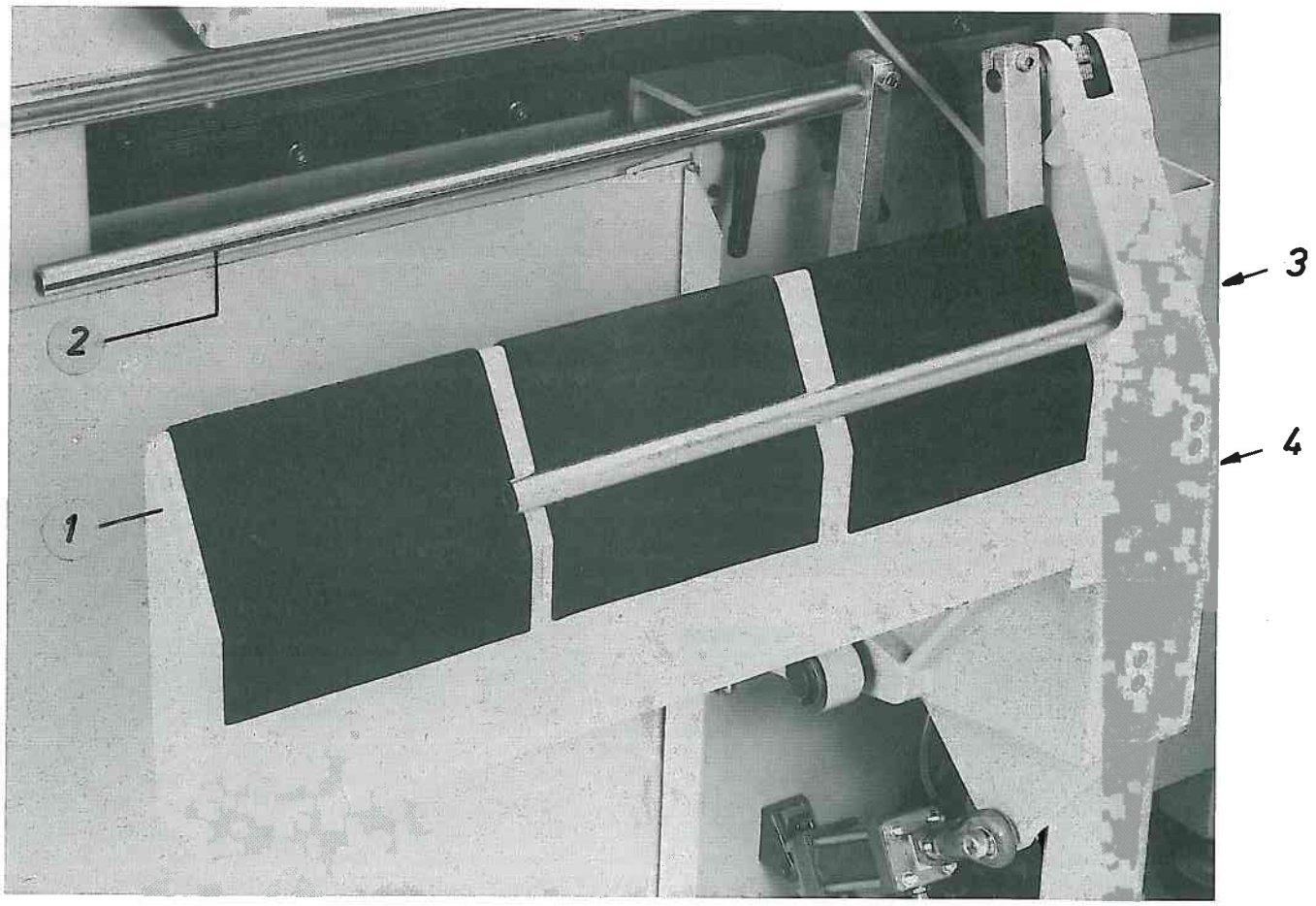
In the case of a wrong adjustment the material is being "shifted" during take-over.



7. Stacker

7.1 General information

- The stacker version with one pair of ejector rollers enables to stack pieces, where the minimum distance between the bottom edge and the seam end is 310 mm. These conditions are usually fulfilled by all trouser and shirt pieces. The stacker version with an additional pair of ejector rollers also enables to stack pieces, where the distance between the bottom edge and the seam end is between 100 and 310 mm.
- The stacker can also be disabled by a corresponding entry in the "Automatic" menu, in order to eg remove the material with the sewn on pocket by hand.
- The cases, where another stacker system or another advance length need to be entered, are described in subject 4.7 of the operation manual.
- The support 1 is usually in its lower position. If necessary, the support can be raised. To correct, loosen the screws 3, 4 to move the support into the two other positions.
- The support 1 with the recess is intended for stacking shirts with button front. For all other pieces the segment without the recess can be screwed on.
- The switch b34 is activated, when the inner bracket 2 is open. In its initial position the support 1 activates the switch b33.

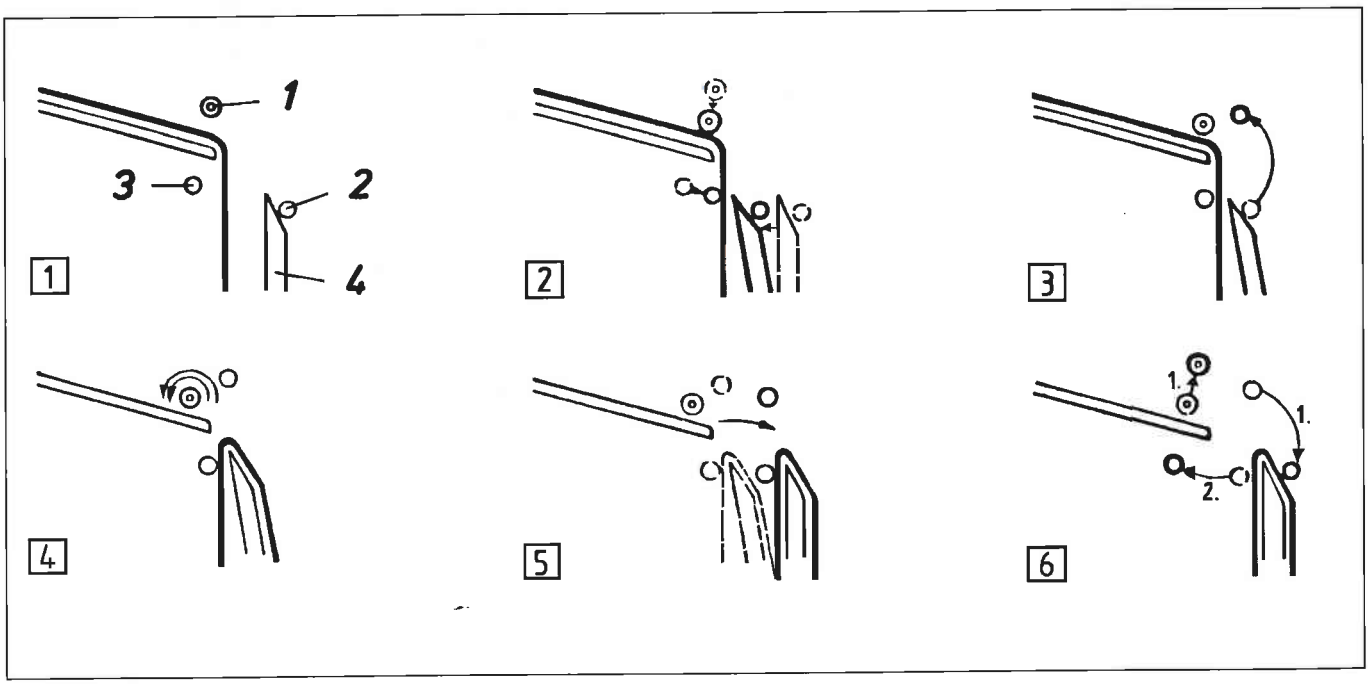


7.2 Function sequence of the stacker

7.2.1 Function sequence of the stacker in mode "Stacker system 1"

- The "stacker system 1" enables to stack eg trousers.
- Before the stacker is activated the functional elements have the following position:
  Ejector roller 1 up
  Outer bracket 2 closed
  Inner bracket 3 open
  Support 4 swung back.

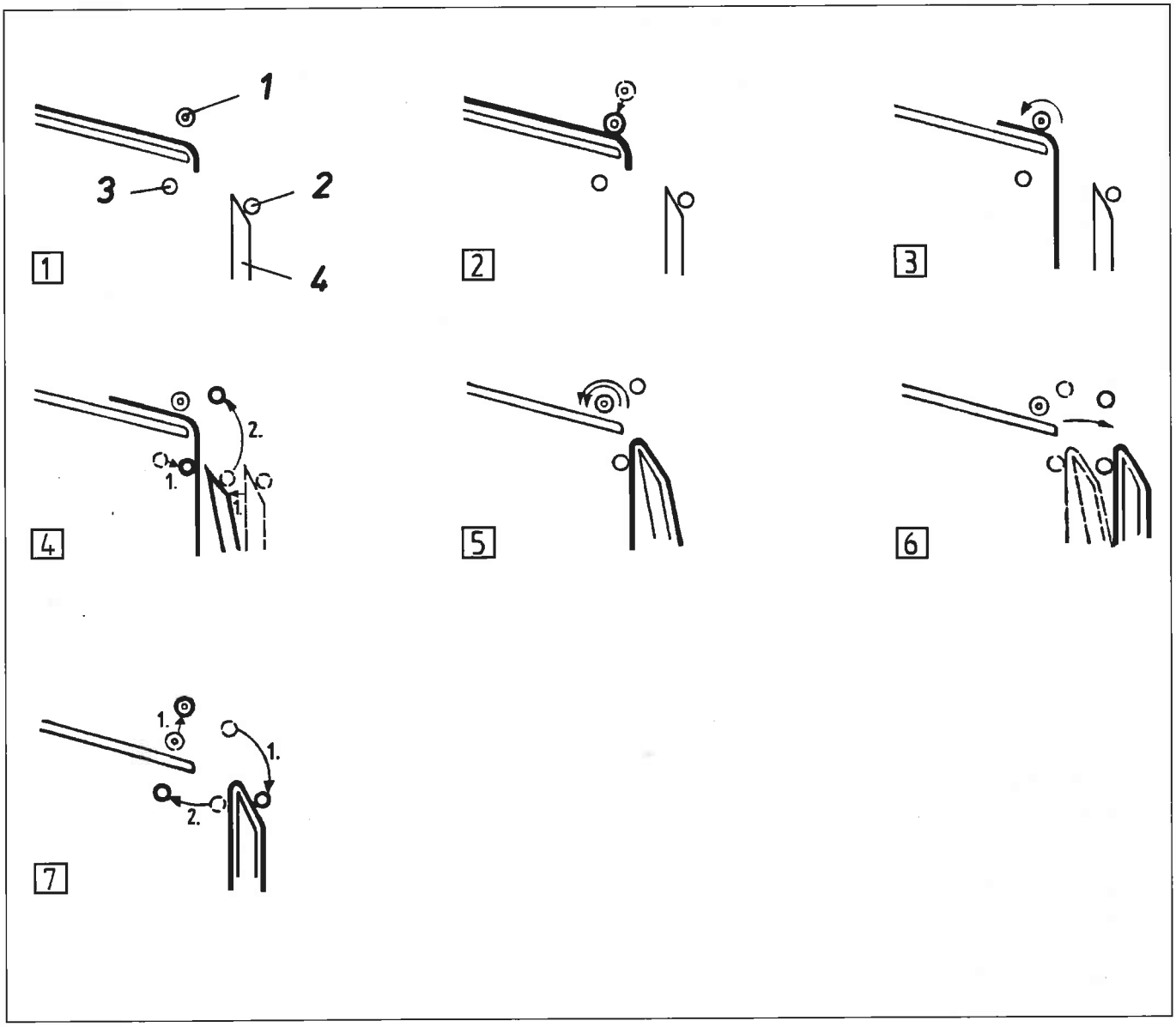
Function sequence	Remarks
1. When the thread trimmer is activated:	
– Ejector roller down	– Phase 2
– The support swings forward	– Phase 2
– Inner bracket closes	– The material is fixed - phase 2
– After a delay: Outer bracket opens	– Phase 3
2. When the transfer plate is raised:	
– Ejector rollers turn fast	– The material is flipped over the support - Phase 4
– The support swings back	– Phase 5
3. When the light barrier is cleared:	
– Ejector roller up	– Phase 6
– Outer bracket closes	– Phase 6
– After a delay: Inner bracket opens	– Phase 6
– Ejector roller stops turning	



7.2.2 Function sequence of the stacker in the mode "Stacker system 2"

- The "Stacker system 2" enables to stack eg shirts.
- Before the stacker is activated the functional elements have the following position:
  Ejector roller 1 up
  Outer bracket 2 closed
  Inner bracket 3 open
  Support 4 swung back.

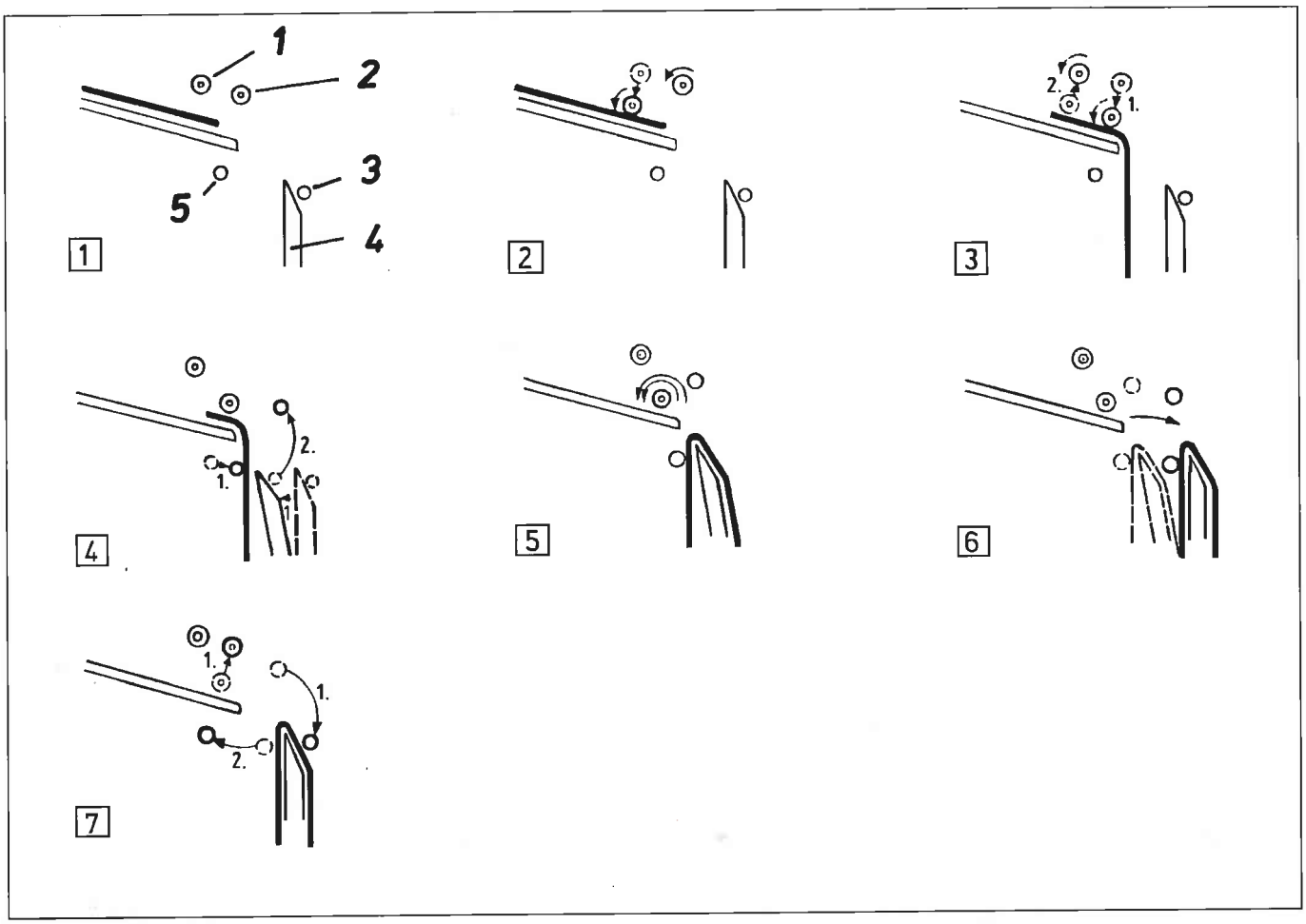
Function sequence	Remarks
1. When the thread trimmer is activated:	
– Ejector rollers down	– Phase 2
2. When the transfer plate is raised:	
– Ejector rollers turn slowly	– The bottom end of the material falls between the inner bracket and rest - Phase 3
3. When the slow turning is completed:	– After the programmed "Advance length", see 4.7 in the operation manual
– Inner bracket closes	– Phase 4
– Support swings forward	– The material is fixed - Phase 4
4. When the inner bracket is closed:	
– Outer bracket opens	– Phase 4
5. When the outer bracket is open:	
– Ejector rollers turn fast	– The material is flipped over the support - Phase 5
– Support swings back	– Phase 6
6. When the light barrier is cleared:	
– Ejector roller up	– Phase 7
– Outer bracket closes	– Phase 7
– After a delay:	
Inner bracket opens	– Phase 7
Fast turning of the ejector rollers is completed	


1
3
2
4
1
2
3
2.
1.
4
5
6
1.
1.
2.
7

7.2.3 Function sequence of the stacker in the mode "Stacker system 3"

- This system enables to stack "short pieces", when the stacker is equipped with an additional advance roller.
- Before the stacker is activated the functional elements have the following position:
  Ejector rollers 1 and 2 up
  Outer bracket 3 closed
  Inner bracket 5 open
  Support 4 swung back.

Function sequence	Remarks
1. When the transfer plate is no longer in the area of the sewing station:	
– Advance roller and ejector rollers turn slowly	– Phase 2
– Advance roller down	– The piece is being spread - Phase 2
2. When the light barrier is interrupted by the piece:	
– After a delay: Ejector rollers down	– The ejector rollers take the piece from the advance roller and spread it between the inner bracket and support - phase 3
– After another delay: Advance roller up	– Phase 3
3. When the slow turning is completed:	– After the programmed "Advance length", see 4.7 in the operation manual
– Inner bracket closes	– Phase 4
– Support swings forward	– Phase 4
4. When the inner bracket is closed: Outer bracket opens	– Phase 4
5. When the outer bracket is open:	
– Ejector rollers turn fast	– The material is flipped over the support - phase 5
– Support swings back	– Phase 6
6. When the light barrier is cleared:	
– Ejector roller up	– Phase 7
– Outer bracket closes	– Phase 7
– After a delay: Inner bracket opens Fast turning of the ejector rollers is completed	– Phase 7


1
2
3
4
5
1
2
3
1.
2.
4
1.
2.
5
6
1.
2.
1.
7

7.3 Lateral position of the ejector and stacker

7.3.1 Lateral position of the ejector

Rule:

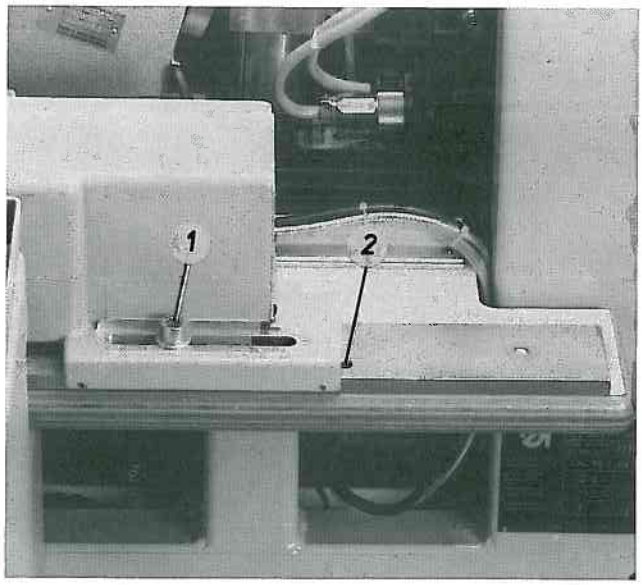
- Shirts with button front:
  The left roller should be located above the button front.
- All other pieces:
  The rollers should be centered with respect to the lower material piece.

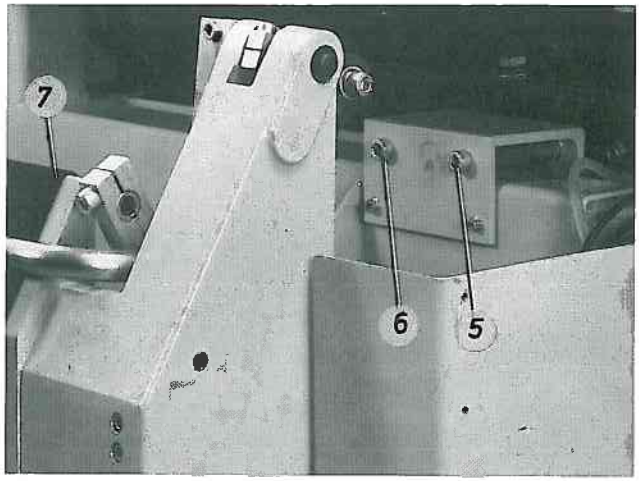
Check:

Start the automatic sequence and determine the position of the rollers.

Correction:

Loosen the screw 1 and change the lateral position of the ejector accordingly.
Should the range of adjustment be too small, the screw can be screwed into the other threaded hole 2.





7.3.2 Lateral position of the stacker

Rule:

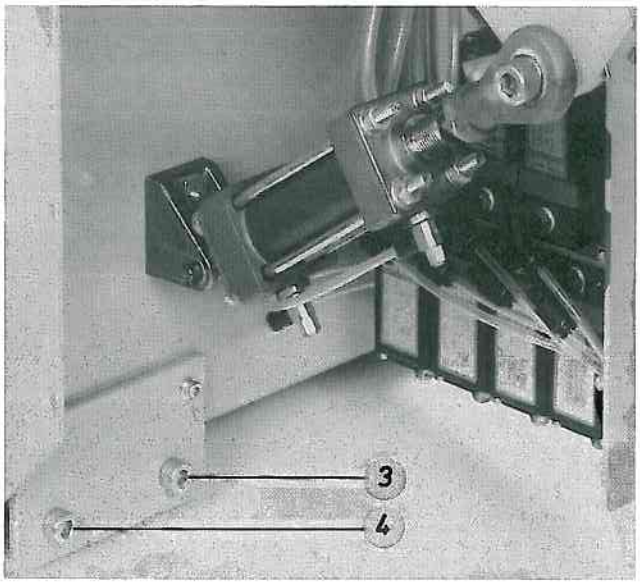
- Shirts with button front:
  The button front of the stacked piece should be in the recess of the segment in the support 7.
- All other pieces:
  The entire width of the stacked piece should lie on the support.

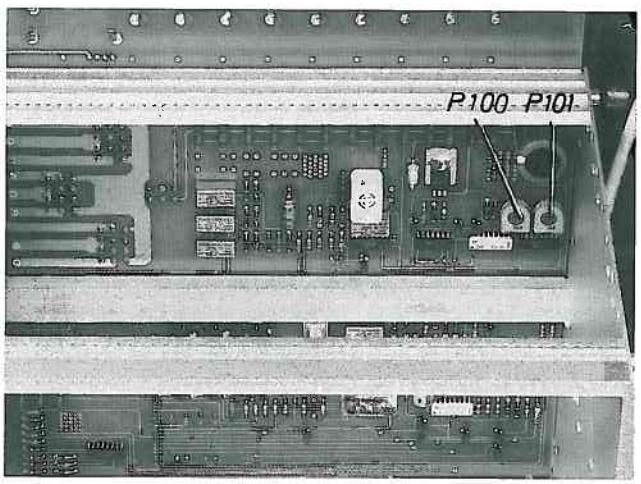
Check:

Start the automatic sequence and determine the position of the material to the stacker.

Correction:

Loosen the 4 screws 3, 4, 5 and 6 and change the lateral position of the stacker accordingly.





7.4 Low and high speed of the ejector roller

Before the sewn piece is ejected at high speed, it must have been caught by the inner bracket. "Shorter" pieces (eg shirts) must, therefore, at first be "advanced" at low speed up to the open inner bracket. Longer pieces (eg trousers) are already between the open inner bracket and the support, while they are being sewn.

Entry sequence	**Remarks/On-screen text (BT)**
Prerequisite:	
– Menu "Service technician" is called up	– See subject 9.1 – BT: 3: Adjustments
1. Call up menu "3":	
– Press key "3"	– BT: 4: Advance roller speed
2. Select process "4":	
– Press key "4"	– BT: Advance roller speed 1: Low speed 2: High speed
3. Operate the ejector roller at low speed:	
– Press key "1"	
4. Check the low speed and, if necessary, correct:	
– Make the check using a revolution counter	– The speed should be approx. 400 rpm
– Make the correction using the potentiometer P100	
5. Operate the ejector roller at high speed:	
– Press the menu key	– The ejector roller stops
– Press key "2"	
6. Check the high speed, and if necessary, correct:	
– Make the check using a revolution counter	– The speed should have the maximum possible value of 1500 rpm
– Make the correction using the potentiometer P101	
7. Deactivate the ejector roller:	
– Press the menu key	

7.5 Position of the open inner bracket

Rule:

In horizontal direction the distance between the open inner bracket 1 and the table top should be approx. 10 mm.

Check:

Check the position when the machine is in its initial position.

Correction:

Loosen the screw and change the position of the bracket accordingly.

7.6 Position of the open outer bracket

Rule:

When the support 11 is swung forward, the distance between the open outer bracket 10 and the cover of the raised ejector rollers 9 should be approx. 3 mm.

Check:

- Select the process "Single step mode", see 9.5.5
- Press key b1 as often as necessary.

Correction:

Loosen the screw and change the position of the bracket accordingly.

7.7 Sensitivity of the light barrier

Explanation:

The light barrier u8 should continue the stacker sequence by the signal "piece spread".

Rule:

- The LED should not be luminous, when a material piece is under the light barrier.
- The LED should be luminous, when no material piece is under the light barrier.

Correction:

Turn the potentiometer 4 accordingly.

7.8 Lower position of the ejector roller

Rule:

In this position the foam material ring on roller 7 should be slightly compressed.

Check:

Press the ejector roller down when the machine is turned off.

Correction:

Loosen the screws 5 and 6 and change the position of the cylinder and thus of the rollers accordingly.

7.9 Speed of the outer bracket, inner bracket and support

Rule:

- All elements should move fast and smoothly.
- The outer bracket 2 should be opened completely, when the piece is being ejected.
- The moving forward support 3 should reach the piece that is hanging down from the table top at the same time with the inner bracket 1. (To assure that the piece is not being distorted.)

Check:

Start the automatic sequence and watch the motions.

Correction:

The speed is regulated by throttling the venting.

Depending on the function adjust the following throttles shown in the pneumatic plan:

Function	Throttle
Opening the outer bracket	20.4
Closing the outer bracket	20.2
Opening the inner bracket	21.4
Closing the inner bracket	21.2
Swinging forward the support	22.4
Swinging back the support	22.2

7.10 Speed "Ejector rollers up and down"

Rule:

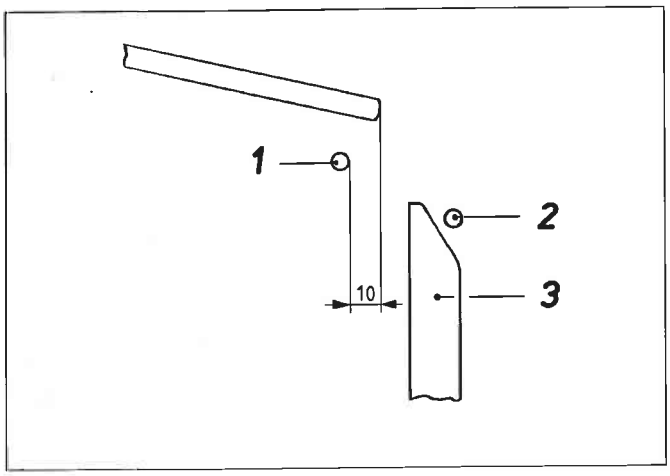
The ejector rollers 7 should move fast and smoothly.

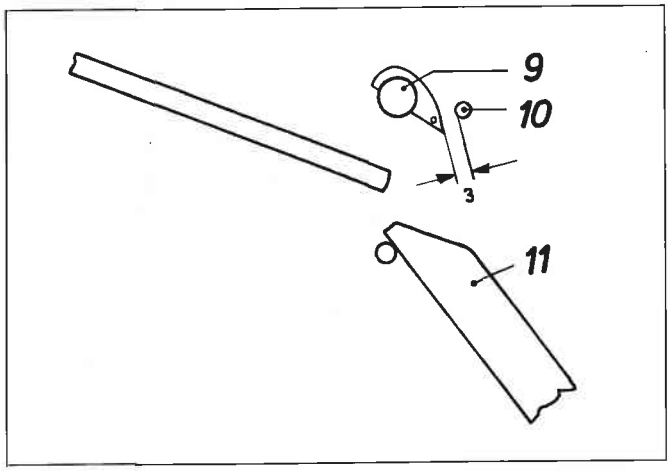
Check:

Start the automatic sequence and watch the motions.

Correction:

With the throttles 23.4 and 23.2 regulate the venting accordingly.





7.11 Air jet intensity and blowing direction of the nozzle

Explanation:

The nozzle 8 should blow down the piece rolled down from the table top, so that the piece can get between the support 3 and inner bracket 1.

Rule:

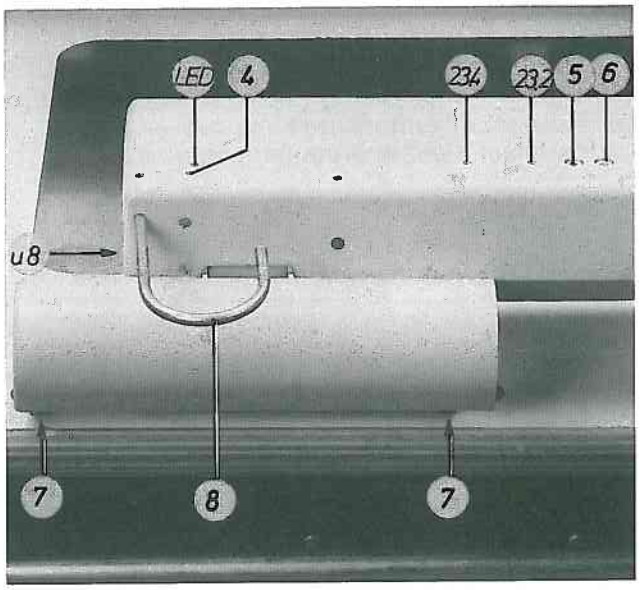
- The air jet should be directed vertically downward.
- The nozzle should fulfill its function with the minimum air jet intensity.

Check:

Watch the air jet intensity and blowing direction during the automatic sequence.

Correction:

- Change the position of the blower 8 accordingly.
- Adjust the throttle accordingly.



8. Milling device

8.1 General information

- This device enables to mill all shape-related parts of the style kit.
- The pawl 10 should keep the milling device in its upper position, when its cylinder 11 is depressurized. This is the case, when the machine is turned off or the process "milling" is not activated.
- The screws 2 for the height adjustment of the milling plate are secured with "Loctite 620" at the factory.
- For further information see subject 2 of the programming manual.

8.2 Speed "Swinging the milling device down and up"

Rule:

The milling device 6 should be swung down and up fast and smoothly.

Check:

Call up the menu "Milling", activate the milling process and shortly afterwards interrupt.
(See subject 2 of the programming manual).

Correction:

Regulate the venting with the throttles at cylinder 11 accordingly.

8.3 Speed "Milling machine up and down"

Rule:

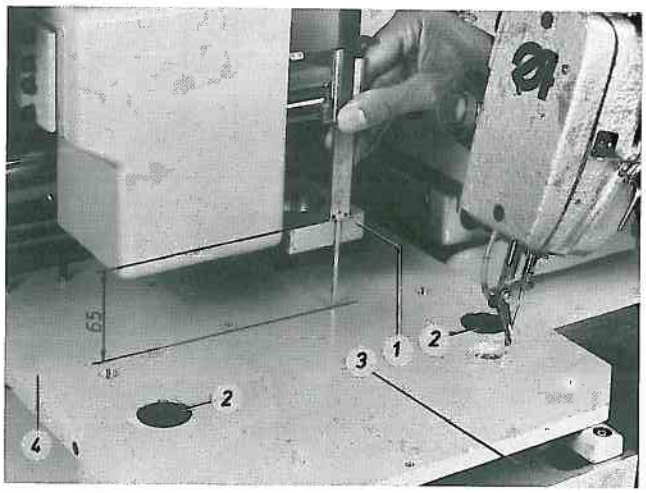
- The milling machine 7 should move up fast and smoothly.
- The milling machine 7 should move down "slowly" and smoothly.

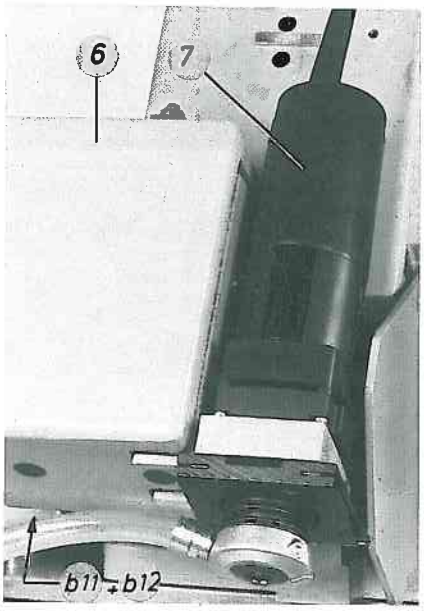
Check:

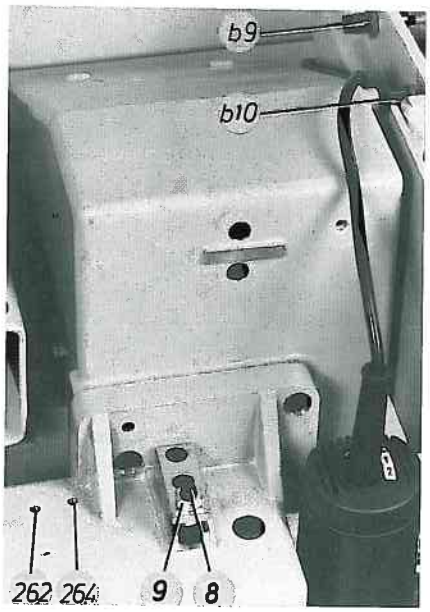
- Call up the menu "Milling" and select and activate the process "Centering the holes of the outer frame". (See subject 2 of the programming manual).
- Watch the speed.

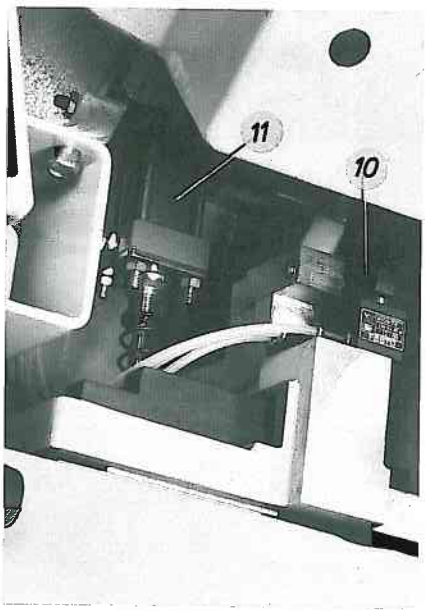
Correction:

Regulate the venting of the cylinder with the throttles 26.2 and 26.4 accordingly.









8.4 Activation timings of the switches

Rule:

The timing for activating the switches should be as follows:

Switch	Activation timing
b9	Milling device swung up
b10	Milling device swung down
b11	Milling machine up
b12	Milling machine right down

Correction:

Shift the activation element or switch accordingly.

Hint:

When the switch b12 is activated too early, the milling advance starts already before the milling machine has reached its lower position.

8.5 Height of the milling device to the milling plate

Rule:

The distance between the holder 1 and milling plate should be 65 mm, when the milling cycle is activated.

Check:

- Call up the menu "Milling" (see 9.2)
- Select the process "Outer frame"
- Select the process "Contour milling"
- Mount the support bar 3 and the milling plate 4
- Press key "Enter":
  Transfer carriages move to the milling device
  Milling device swings down
- Press key "Enter" to activate the milling cycle.
- Press key "0" after the advance motion has started.

Correction:

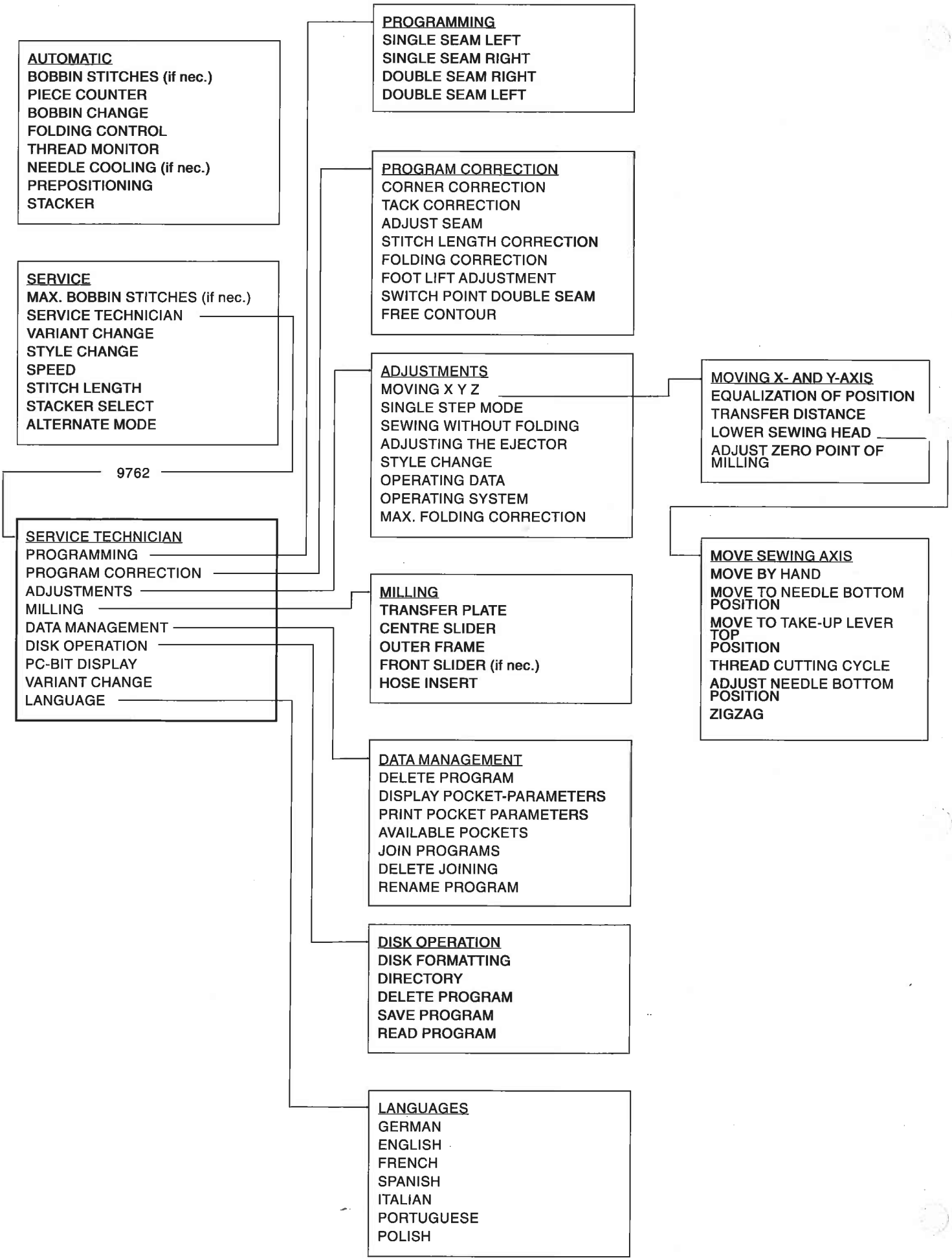
- Loosen lock nut 9.
- Turn the set screw 8 accordingly.

9. Menu "Service technician"

9.1 Calling up the menu "Service technician"

Entry sequence	Remarks / On-screen text (BT)
Prerequisite: – Menu "Service" called up	
1. Press key "2"	– BT: Please enter code
2. Enter code 9762 and press key "Enter"	– BT: Service technician 1. Programming 2. Program correction 3. Adjustments 4. Milling 5. Data management 6. Disk operation 7. PC-Bit-display 8. Variant change 9. Language

9.2 Structure of the menu "Service technician"



9.3 Processes in the menu "Programming"

Process	Function / Remarks
"Single seam left"	– This mode enables to program a single seam contour with the sewing start on the left side. There are the following possibilities: 1. Choice between 16 basic pocket styles 2. Choice between 6 tack versions 3. Determining the parameter values for the selected pocket style and tack version
"Single seam right"	– Same as "Single seam left" - but with the sewing start on the right side
"Double seam right"	– This mode enables to program a double seam contour with the sewing start on the right side. There are the following possibilities: 1. Choice between 16 pocket styles 2. Choice between 6 tack versions on cl. 805-111 (For cl. 805-121 only 1 tack version is available) 3. Determining the parameter values for the selected pocket style and tack version
"Double seam left"	– Same as "Double seam right" - but with the sewing start on the left side

9.4 Processes in the menu "Program correction"

Process	Function / Remarks
"Corner correction"	– Changing the position of the corner stitches in the lower pocket area in X- and Y-direction by up to 0.8 mm. This does not influence the position of the seam sections. – A correction can only be made in the basic program "00", but has an effect on all belonging program variants. See subject 4.2 of the programming manual.
"Tack correction"	– Changing the position of the two corner stitches in the tack area in X- and Y-direction by up to 0.8 mm. This does not influence the position of the seam sections. – Corrections can only be made in the basic program "00", but have an effect on all belonging program variants. See subject 4.2 of the programming manual.
"Adjust seam"	– Changing the position of the entire seam contour in X- and Y-direction by up to 0.5 mm. – Corrections can be made in the basic program and all belonging variants. See subject 4.4 of the programming manual.
"Stitch length correction"	– Changing the stitch length within the determined range for the entire seam section. – A correction can only be made in the basic program "00", but has also an effect on all belonging program variants. See subject 4.3 of the programming manual.
"Folding correction"	– Changing the position of the seam sections by shifting their end points. The points can be "shifted" by up to 0.5 mm in X- and Y-direction. – Enter an "additional seam", which is parallel to the left and right side seam. – These corrections or entries form a program variant of the basic program. See subject 4.5 of the programming manual.
"Foot lift adjustment"	– Enter "Top stroke position of the sewing foot" for the desired seam sections. – This entry forms a special program variant of the basic program or of another program variant. See subject 4.6 of the programming manual.

9.5 Processes in the menu "Adjustments"

9.5.1 Processes on the 1st level of the menu

Process	Function / Remarks
"Moving X-, Y- and sewing axis	– Subject 9.5.2 describes the processes in this menu.
"Single step mode"	– To check the function, activate the folding process step by step, and start, if required, the sewing and stacking process. The sewing speed can be changed in steps of 5%. See subject 9.5.5.
"Sewing without folding"	– Place the lower material piece under the transfer plate and start the sewing cycle, eg to enable a function check. The sewing speed can be changed in steps of 5%. See subject 9.5.6.
"Adjusting the ejector"	– Operate the ejector roller at "low" or "high" speed to enable an adjustment of the speeds using the potentiometer. See subject 7.4.
"Style change"	– Exchange the parts of the style kit. See subject 4.4 of the operation manual.
"Operating data"	– Call up the operating data and correct some data. See subject 9.5.7.
"Operating system"	– Enabling to change the operating system. See subject 11.
"Max. folding correction"	– Enabling corrections in the mode "Folding correction" exceeding the measure 0.5 mm up to 20 mm. This is eg necessary for slanted pocket openings.

9.5.2 Processes in the menu "Moving the X-, Y- and sewing axis"

Process	Function / Remarks
"Equalization of position"	– To "equalize" the position of the transfer carriages with respect to the folding and sewing station using special gauges. See subject 6.3.
"Transfer distance"	– "Equalizing" the paths travelled by the carriages in X- and Y-direction using special gauges. See subject 6.2.
"Lower sewing head"	– Lowering the sewing head and thus calling up the menu "Move sewing axis". See subject 9.5.3.
"Adjust zero point of milling"	– Checking the position of the transfer carriages with respect to the milling station, and, if necessary, correcting. See subject 6.4.

9.5.3 Processes in the menu "Move sewing axis"

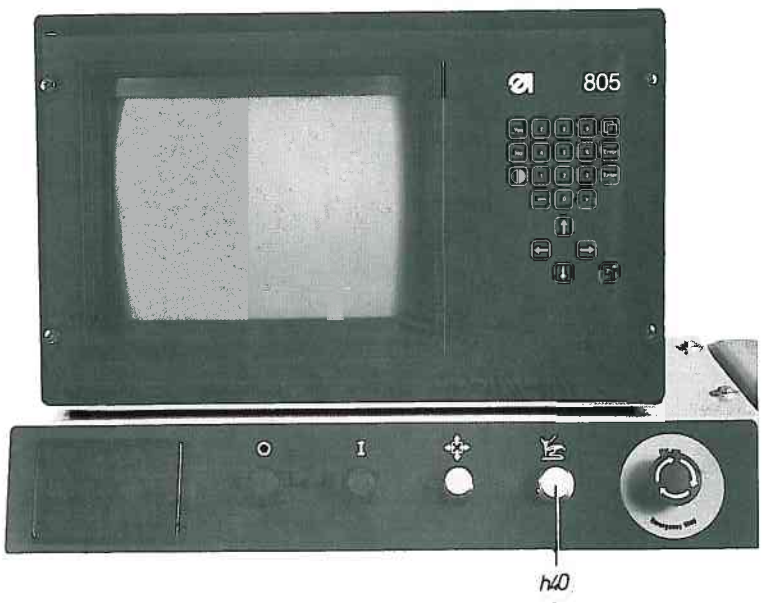
Process	Function / Remarks
"Move by hand"	– Operate the sewing machine by pressing key ↓ to adjust eg the sewing head lubrication. The speed, displayed on the screen in %-values can be adjusted in steps of 5% using the keys ← →
"Adjust needle bottom position"	– Turn the arm shaft in the sewing machine to the "1st position" to enable to check it.
"Move to take-up lever top position"	– Turn the arm shaft in the sewing machine to the "2nd position" to enable to check it.
"Thread cutting cycle"	– Activating the thread trimmer to check its function.
"Adjust needle bottom position"	– Determining the activation timing of the thread trimmer and thus the "1st position".
"Zigzag"	– On the sewing machine for cl. 805-111: Move the stitch regulator into the position for zigzag operation to be able to correct certain adjustments.

9.5.4 To make adjustments on the sewing machine make sure the motors are in "Safety stop"

Check and correct the adjustments on the sewing machine and thread trimmer only, when all motors are disabled using key "0" and are thus in "Safety stop".
Safety stop is reached when the lamp h40 "Safety stop" is luminous.

The non-observance of this regulation may result in personal injury!

Entry sequence	Remarks / On-screen text (BT)
Prerequisite:	
– Menu "Service technician" called up	– BT: 3: Adjustments
1. Call up menu "3":	
– Press key 3	– BT: 1: Moving X-, Y- and sewing axis
2. Call up menu "1":	
– Press key 1	– Transfer plate to the rear BT: Lower sewing head
3. Call up the process "Lower sewing head":	
– Press the corresponding key	– Menu "Moving sewing axis" called up
4. Motors to "Safety stop": Turn on lamp h40 using key "0".	
5. If necessary, remove the table top	– For adjustment below the table top
6. Make the adjustments	– See respective subjects



9.5.5 Operating sequence with the process "Single step mode"

Entry sequence	Remarks / On-screen text (BT)
Prerequisites:	
– Menu "Service technician" called up	– BT: 3: Adjustments
– Lamp in key "I" on	
1. Call up menu "3":	
– Press key 3	– BT: 2: Single step mode
2. Select process "2":	
– Press key 2	– BT: Start and next step: "Start"
3. Call up steps:	
– Press key b1 as often as necessary	– When the folding process is completed, the following BT appears: Start and next step: "Start" Folding: "Repetition" Sewing: "Enable start"
4. To repeat the folding process:	
– Press key b23	– The parts of the folding kit move back into their initial position. – BT: Start and next step: "Start"
– Press key b1 as often as necessary	
5. To continue the cycle:	
– Press key "I"	
– Press key b1 as often as necessary	

9.5.6 Operating sequence in the process "Sewing without folding"

Entry sequence	Remarks / On-screen text (BT)
Voraussetzung:	
– Menu "Service technician" called up	– BT: 3: Adjustments
1. Call up menu "3":	
– Press key 3	– BT: 3: Sewing without folding
2. Select process "3":	
– Press key 3	– BT: Change speed with ← → – Centre slider down
3. Place the material under the transfer plate:	
4. Start the sewing cycle:	
– Press key b1	

9.5.7 Calling up the operating data and, if necessary, changing them

Operating sequence	Remarks / On-screen text (BT)
Prerequisite:	
– Menu "Service technician" called up	
1. Call up menu "3":	
– Press key 3	– BT: 6: Operating data
2. Select process "6":	
– Press key "6"	– BT: 1: Starting revolution (400): 400 2: Stitches with start. rev. (1): 1 Operating time: Sewing time: Number of pieces: Style change: After modification: Turn off machine
	– Only the values of the data marked with"1" and "2" can be changed. The initial values are deduced from the figures in brackets "400" and "1"
3. To change the values of "1" and "2":	
– Press key "1" or "2"	
– Change the value accordingly	
– Turn off the machine	

9.6 Processes in the menu "Milling"

For more information see subject 2 of the programming manual.

Process	Function / Remarks
"Transfer plate"	– Milling the "sewing groove" – Milling the bevel at both sides of the sewing groove – Double seams: Milling the 4 grooves that guide the inner slider
"Centre slider"	– Milling the outer contour of the upper and lower slider plate – Milling the "sight windows" in the two slider plates
"Outer frame"	– Milling the centering holes in the outer and inner frame plate – Milling the inner contour of the outer frame and outer contour of the inner frame
"Front slider"	– Milling the contour of the front slider for the "round" pocket styles "1000" and "1500"
"Hose insert"	– Milling the groove for the hose in this insert

9.7 Processes in the menu "Data management"

For more information see the subject 7 of the programming manual

Process	Function/Remarks
"Delete program"	– Erasing the program in the memory. For this process it is necessary to enter the counting number of the respective program. Should this be the number of a basic program, all the belonging program variants will also be erased.
"Display pocket parameters"	– Display of the following dimensions or data: Pocket geometry Parameter values of the pocket and tack Transfer plate code
"Print pocket parameters"	– Printing the displayed parameter values of the called up pocket program. This process is, however, only possible, if a corresponding interface exists on the machine and a printer is available.
"Available pockets"	– Listing of all programs in the memory
"Join programs"	– Joining 2 or more pocket programs that only slightly differ as regards their geometry, so that they can be folded with one folding kit and sewn
"Delete joining"	– Re-deleting the joining of pocket programs

9.8 Processes in the menu "Disk operation"

For more information see the subject 6 of the programming manual.

Process	Function / Remarks
"Disk formatting"	– "Preparing" a brand-new disk so that data can be stored.
"Directory"	– Listing of all programs memorized on the disk.
"Delete program"	– Erasing the desired program from the disk. For this process it is necessary to enter the number of the respective program. Should this be the number of a basic program, all the belonging program variants will also be erased.
"Save program"	– Transferring the desired program from the machine memory to the disk in the disk drive and store it on the disk.
"Read program"	– Transferring the desired program from the disk in the disk drive to the machine memory. – A program formed on a machine can thus be transferred to another machinevia the processes "Save program" and "Read program".

9.9 Processes "PC-Bit-display", "Variant change" and "Languages"

Process	Function / Remarks
"PC-Bit display"	– Questioning input and output signals. See subject 10.
"Variant change"	– Selecting another variant of the respective basic program.
"Languages"	– Selecting German, English, French, Spanish, Portuguese, Polish or Italian on-screen texts.

10. Questioning input and output signals

Entry sequence	Remarks / On-screen text (BT)

Prerequisite:

Menu "Service technician" called up

– BT:
7: SPC-Bit display

1. Call up process "7":

– Press key "7"

– BT:

XXX XXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX

– Explanation of the details in the "outlined field":
The 3-digit number in the first line represents the address selected with the keys ← →. To question the output signals, eg call up the address "064".
In the two lower rows of figures with 32 digits each, 0 represents "signal not available" and 1 represents "signal available". The wiring diagrams show which signals are displayed where.

– The signals are displayed in each menu and during each function step.

2. To question input signals:

– Call up the address "000" using the keys ← →

– Determine the position of the display

– See listing in the wiring diagrams.
The position designation "0.3" for the signal "Sewing head down" eg gives the following information:
0 = First 8-digit row of figures
3 = 4th digit in the respective row of figures

– Check the display.

3. To question output signals:

– Call up the address "064" using the keys ← →

– Determine the position of the display

– See listing in the wiring diagrams.

– Check the display

4. To delete the signal display:

– Call up the "Service" menu

– Call up the menu "Service technician"

– Call up the process "PC-Bit display"

11. Changing the operating system

The Eproms on the PC-board contain the data of the operating system.

The RAM area does not only contain the machine specifications, which are written on the inside of the cover for the insertion of the disk drive, but also the data of all pocket programs. As all data in the RAM-area are deleted, when the operating system is changed, it is advisable to question all pocket program data or to print them with a printer. If a disk drive is available, the data can also be transferred to a disk.

Operating sequence	**Remarks / On-screen text (BT)**
Prerequisites:	
– Menu "Service technician" selected	– BT: 3: Adjustments
– Data of the pocket programs either questioned or printed or transferred to a disk	– As described in subjects 7.2, 7.3 and 6.4 of the programming manual
1. Select menu "3":	
– Press key "3"	– BT: 5: Operating system
2. Select process "5":	
– Press key "5"	– Besides the listing of the machine specifications the following BT appears: "Have all programs been saved to disk"
3. Compare the machine specifications on the adhesive label with the on-screen data, and, if necessary, correct:	– The adhesive label is on the inside of the cover 2 (page 90) for the insertion of the disk drive
– Compare the data	
– If necessary, correct the specifications	– Should the data differ, the specifications on the adhesive label should be corrected
4. Answer questions and turn off the machine:	
– Press key "Yes"	– BT: Should the OS be changed now
– Press key "Yes"	– BT: Turn off machine
– Turn off the main switch	

5. Change the Eproms:

- Pull out the control unit
- Pull out the "old" Eproms from the PC-board 1
- Insert the "new" Eproms

- To do this, press down the stop plate

- Note the following:
- Insert the Eproms with the numbers 1-15 into the respective sockets
- The notches of the Eproms and sockets must be matched

- Insert the control unit

6. Turn on the machine and select the language:

- Turn on the main switch

- BT:
  Languages
  1: German
  2: English
  3: French
  4: Spanish
  5: Italian

- Select the desired language with the respective key

7. Enter the machine specifications:

- Call up the data using the menu key

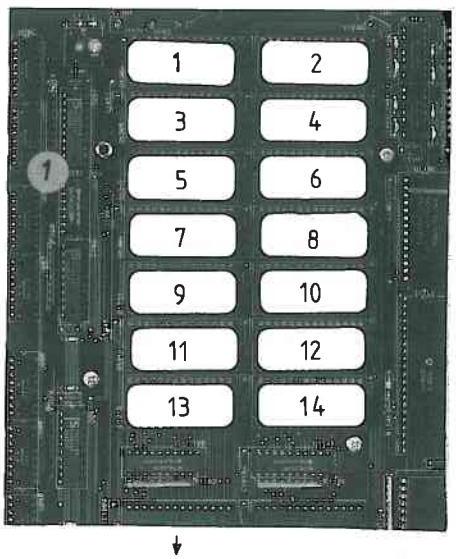
- BT:
  Q 1050
  1051
  Q 2050
  2051
  R 7
  R 8
  R 12
  R 51

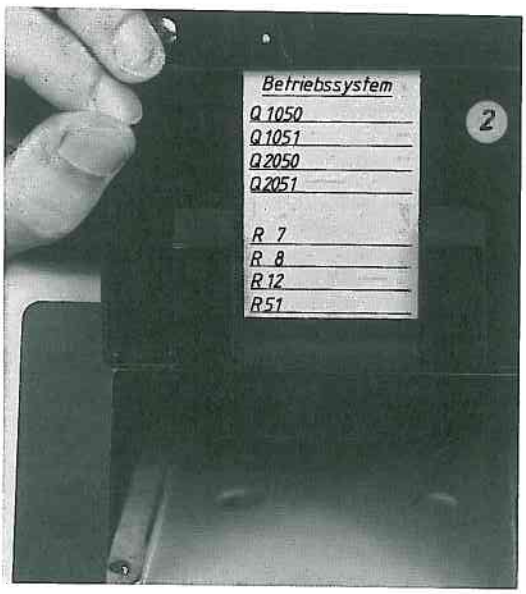
- Enter the data

- As specified on the inside of the cover for the insertion of the disk drive
- After entering the last value the following BT appears:
  Turn off machine

8. Turn off the machine

- After turning on the machine again, either re-form all programs or read all programs from the disk into the machine





12. Pneumatic maintenance unit

12.1 Air filter and water separator

Explanation:

This unit 0.2 should separate dirt particles and water to eliminate blockages and rust formation in the pneumatic system.
The plastic container is blow-cleaned automatically via a floating valve, when a certain water level has been reached.

Maintenance:

The filter insert should be cleaned every three months with benzine or petroleum, before the air pressure drops.

- Interrupt the compressed air supply with shut-off valve
- Vent the pneumatic system
- Unscrew the plastic container
- Unscrew the filter insert

12.2 Pressure reducing valve

Explanation:

The pressure reducing valve 0.3 should reduce the line pressure of 7-10 bar to the operating pressure of 6 bar to obtain constant piston speeds and cylinder forces.
In the case of a line pressure of more than 10 bar another pressure reducing valve must be "installed".

Rule:

The operating pressure should be 6 bar.

Check:

Read the adjusted pressure on the manometer.

Correction:

Turn the button accordingly.

12.3 Mist lubricator

Explanation:

The mist lubricator 0.4 should supply all movable parts of the pneumatic system with oil to reduce wear and friction forces and to prevent corrosion.

Rule:

- After every 5th machine cycle 1 drop should fall into the air jet.
- The nozzle must be in the position A.
- The oil level must be above the opening of the suction pipe.

Correction:

To increase the supply quantity turn the screw in the direction "+". To reduce the supply quantity turn the screw in the direction "-".

Refilling:

- Interrupt the compressed air supply with the shut-off valve
- Vent the pneumatic system
- Turn out the screw
- Refill the hydraulic oil "ESSO Nuto H 68" or any other oil with the following specifications up to the mark "max.":

  Viscosity at 40C: 66 mm^2/s
  Flashpoint : 236 °C

Maintenance:

Check the oil level at intervals of three months.