

General safety instructions

Service Manual CI.195

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Appendix



1. General



ATTENTION !

The work described in the Service Manual may on be conducted by duly authorized or appropriately trained personnel !



Caution Risk of Injury !

When repairing, converting or doing maintenance work turn off the main switch and disconnect the machine from the pneumatic supply.

Adjustments and function testing on the running machine are to be conducted only by strictest adherence to all safety measures and extreme caution.

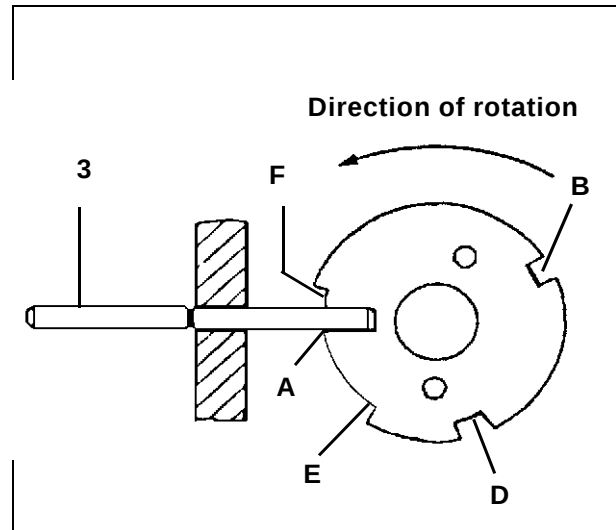
This Service Manual describes in useful order the adjustments to the sewing machine.

Here it is to be noted that various settings are interdependent. Therefore the adjustments must be conducted in the order described.

For all adjustments on stitch-building parts a new, flawless needle must be used.



1.1 Adjustment Aids



The machine head is equipped with adjustment aids which make possible a quick and precise setting of all elements.

To these adjustment aids belong the handwheel with the letters **A**, **B**, **D**, **E** and **F**, as well as the built-in adjustment disc with 5 different holes.

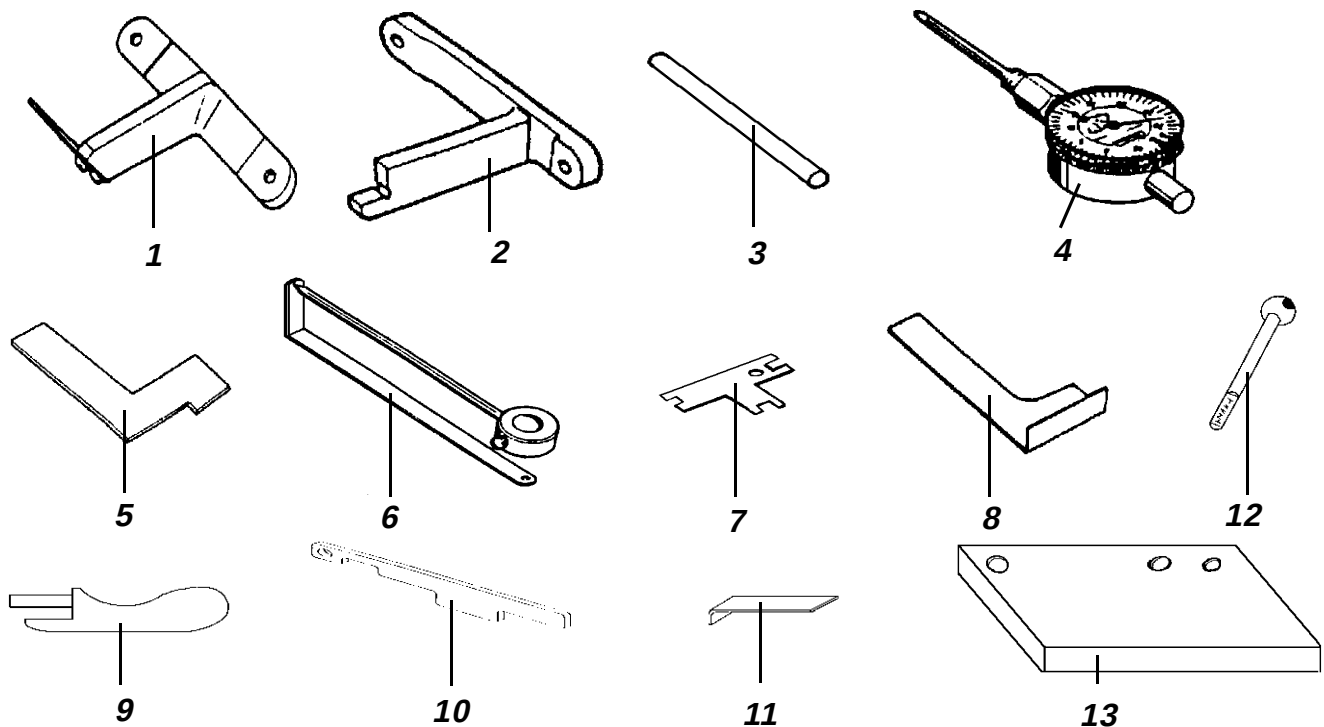
The individual setting positions are set with an timing pin. It is included in the package accompanying the machine.

- Turn the handwheel to the position described for the setting.
- Plug the timing pin 3 into the hole in the machine housing.
- Turn the handwheel a little back and forth until the pin catches in the appropriate hole.
- Slot **A** of the adjustment disc has the deepest slot. The slots **B** to **F** have the same depth.

Slot	Position	Setting
A	Needle bar 2 mm behind lower dead center	- Position of the adjustment disc on the arm shaft - Timing of the advancing movement of the transport foot - Reference point of the synchronizer
B	Needle bar at upper dead center	- Thread take-up disc - Stroke and Thrust eccentric - Clearance of the transport foot bar to the pressure foot bar - Rest for the transporter and transport foot when the hand lever is operated
D	Thread lever close in front of lower dead center	- Eccentric for the stroke drive - Timing of the stroke movement of the transport foot
F		- Setting of the lower timing belt pulley, loop stroke and needle bar height
E and F		- Symmetry of looper motion



1.2 Set of Gauges



The adjustment gauges listed as follows make a precise setting and testing of the machine possible.

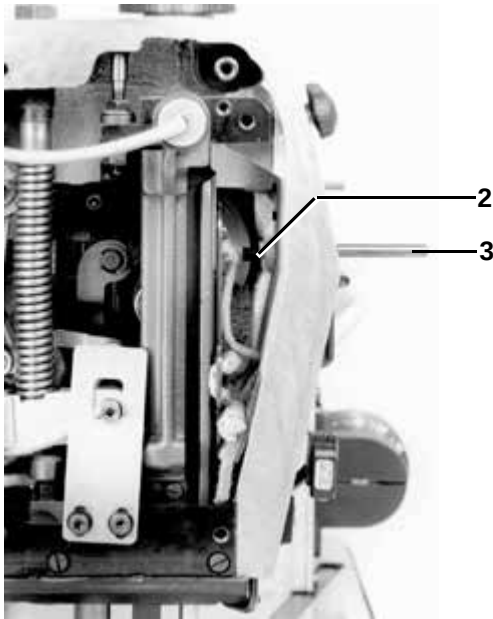
The timing pin no. 3 is included in the package accompanying every machine. It allows the handwheel positions A to F necessary for settings to be locked in.

Gauge	Order no.	Setting
1 - Gauge	195 002962	- Setting the left lower shaft bearing (optionally also 933 735 + 2 mm)
2 - Gauge	195 002966	- Setting the hook drive housing (optionally also 933 739K + 2,5 mm)
3 - Timing pin (in the enclosed package)	791 001152	- Arresting the handwheel in one of the positions A to F
4 - Dial Gauge	171 000981	- For measuring the needle avoidance movement of the hook drive.
5 - Gauge	171 000975	- Inclining the hook to $89^{\circ} 30'$
6 - Gauge	933 080192	- Equidistant symmetry of looper motion
7 - Gauge	933 000740	- Height of the thread take-up disc
8 - Gauge (in the enclosed package)	933 000758	- Thrust eccentric for the transporter
9 - Gauge	491 079997	- 0-setting of the upper stitch actuator
10 - Gauge	491 079996	- Stroke adjustment range of the pressure feet
11 - Adjustment plate	195 002980	- Stitch length limitation in the adjustment wheels.
12 - Oil dip stick	965 000871	- Checking the oil level in the hook drive housing
13 - Gauge	195 002988	- Setting gauge for the thread trimmer (Cutting trial out of the machine)



2. Setting the Machine Head

2.1 Adjustment Disc to the Arm Shaft Crank



The slot **A** in the adjustment disc must be aligned with the groove 2 in the arm shaft crank.

Only in this position are all other settings to be made with the adjustment disc correct.

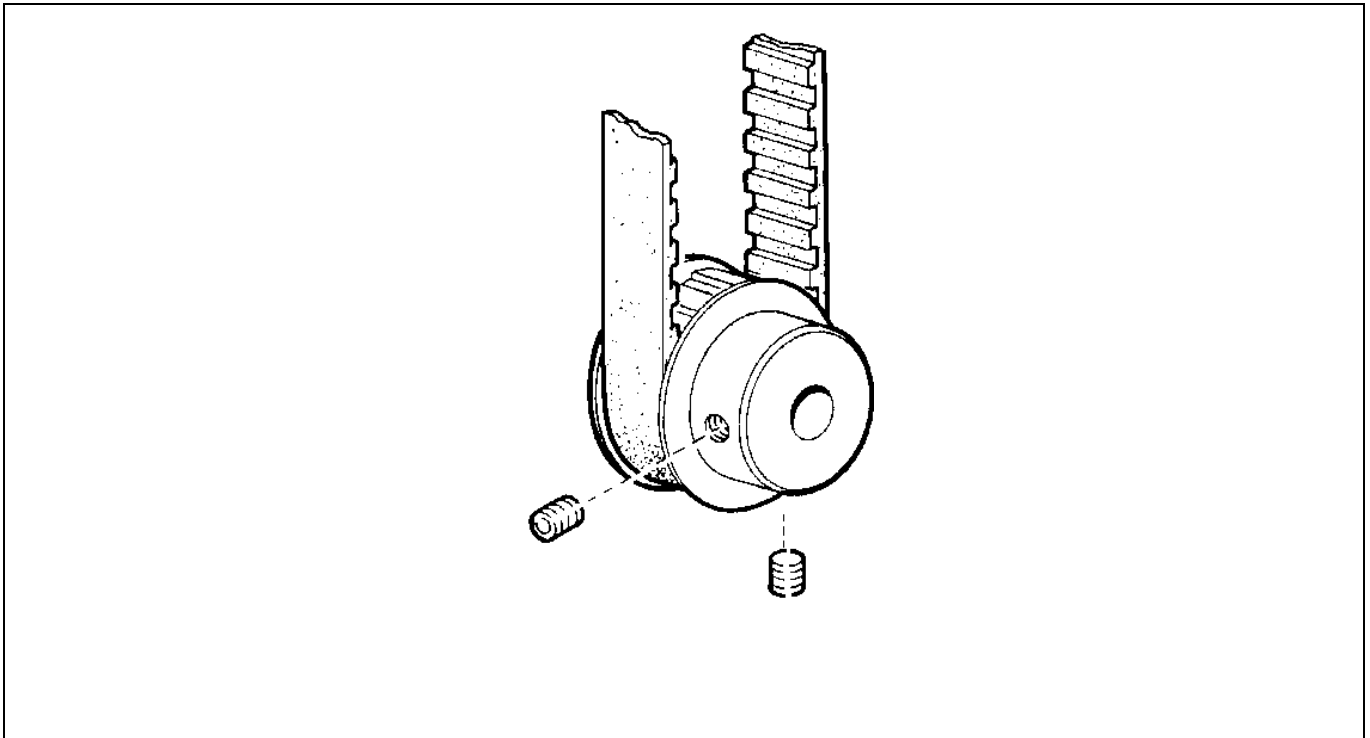


Caution Risk of Injury!

Turn off main switch before adjusting.

- Place adjusting pin 3 of the gauge set through the hole in the housing into the groove 2 in the arm shaft crank.
- With a second adjusting pin (or 5 mm drill bit) check to see if in this position adjusting pin 4 catches in position **A** of the adjustment disc.
- Screw off the arm cover.
- Slide the timing belt to the left on the belt disc and loosen the screws.
For this procedure use a round spindle and turn the handwheel.
- Place adjusting pin 3 of the gauge set through the hole in the housing into the groove 2 of the arm shaft crank.
- Arrest the adjustment disc in position **A**.
- Press the timing belt pulley to the right against the adjusting pin and tighten the screws.
- Remove the adjusting pins.
- Turn the handwheel until the timing belt again lies in the middle of the timing belt pulley.

2.2 Setting the Lower Timing Belt Pulley



The screws of the lower timing belt pulley should be in the position shown when the machine is arrested in position **F**.



Caution Risk of Injury!

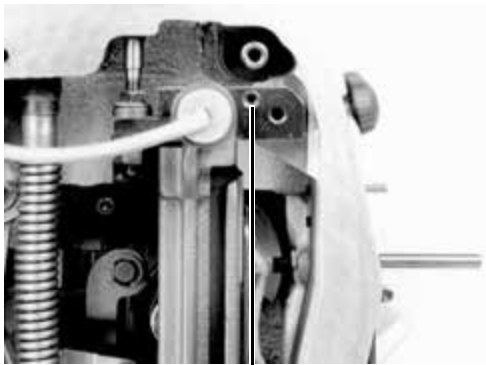
Turn off main switch before adjusting.

- Arrest the machine in position **F**.
- If the screws are out of position first set the position of the upper timing belt pulley (Chapter 2.1).
- Remove the timing belt from the upper timing belt pulley.
- Rotate the lower timing belt pulley until both screws are in the position shown.
- Refit the timing belt.
- Check all following settings or readjust.

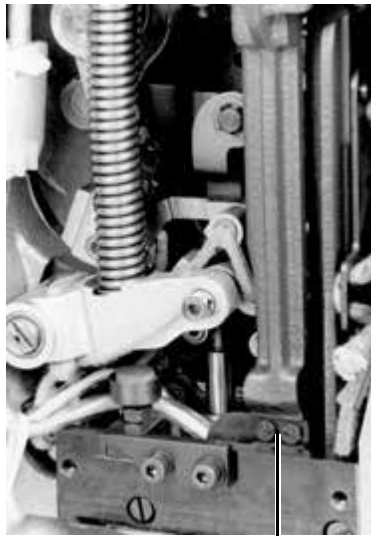


2.3 Needle Bar Link

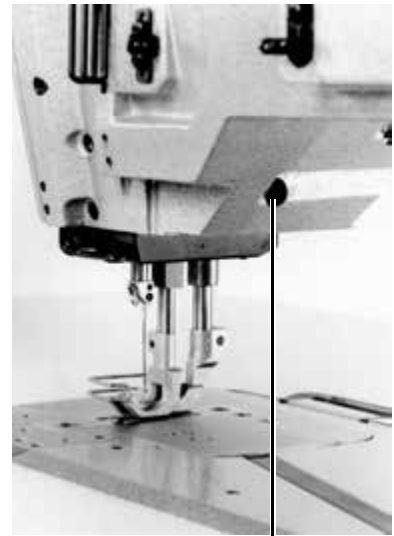
2.3.1 General Information



1



2



3

The 195 is equipped with a split needle bar link.

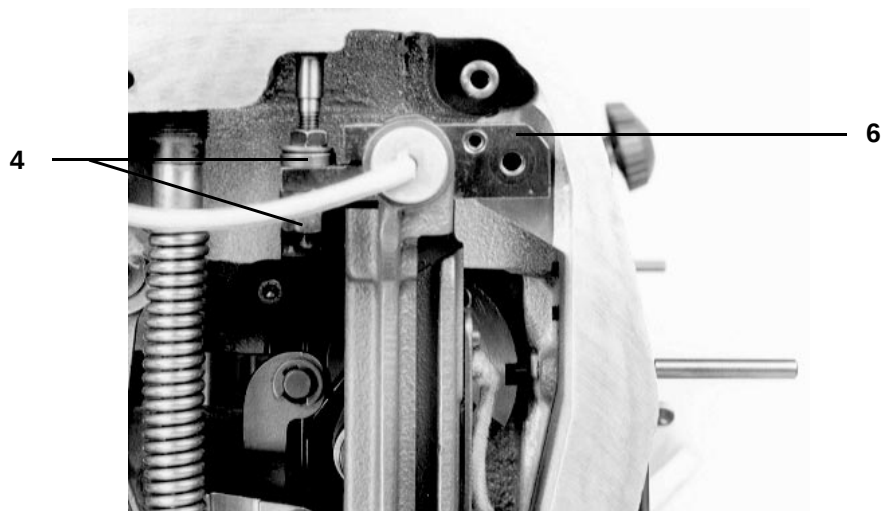
The fixed part of the needle bar is screwed directly to the cast body.
The second part with the transport foot bar is attached moveably.

The screw 1 with yellow paint and secured against turning with adhesive must lie on in the arm.

The guide bolt 2 (in the link) and the right hand guide bolt 3 in the arm have been set at the factory so that the link moves easily with no play. The positions of the two guide bolts must **not** be altered.



2.3.2 Setting the Link Holder



The link holder 6 must be parallel to the lower edge of the arm head.



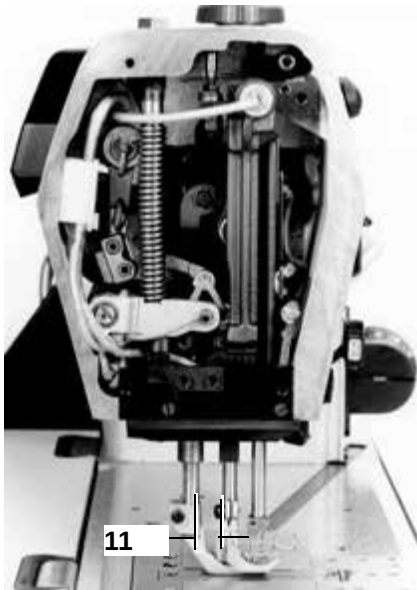
Caution Risk of Injury!

Turn off main switch before adjusting.

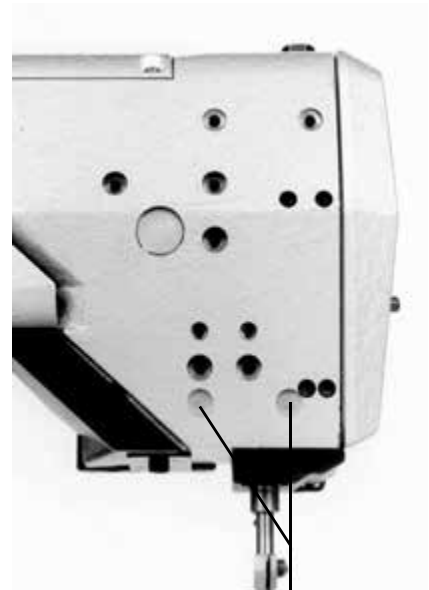
- Set the screws 4 so that the link holder is parallel to the lower edge of the arm head.



2.3.3 Clearance from the Transport Foot Bar to the Material Pressing Bar



8



9

The clearance between the transport foot and material pressing bars should be 11mm with the machine arrested in position **B**.



Caution Risk of Injury!

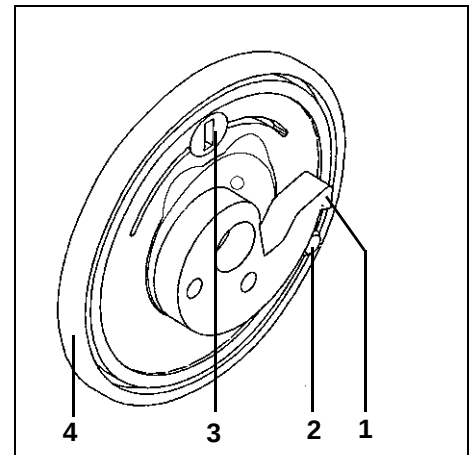
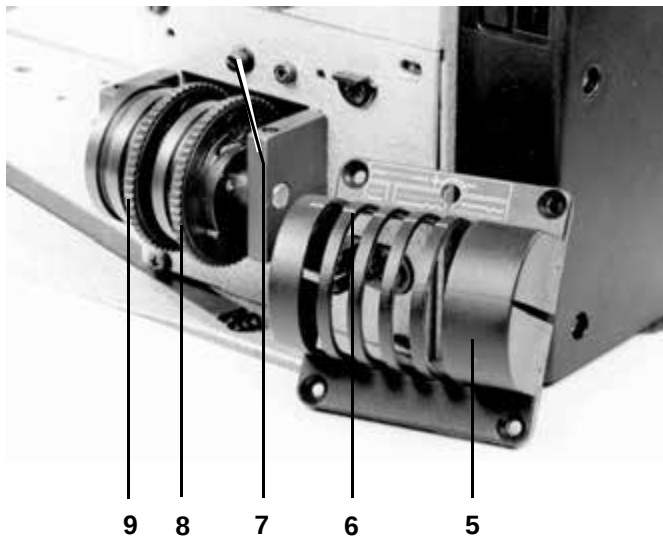
Turn off main switch before adjusting.

- Arrest the handwheel in position **B**.
- Remove the plug 9 and loosen the screws lying behind it.
- Adjust the clearance accordingly with eccentric 8.



2.4 Adjustment Wheel

2.4.1 Adjustment Wheels for the Stitch Length, Stitch Length Limitation and Stitch Condensation



The two adjustment wheels, 8 for the top transport and 9 for the bottom transport, are equipped with an eccentric disc with cams. The cams 1 and the stopper pin 2 limit the minimum and maximum stitch length.

The desired stitch condensation can be chosen with the set screw 7.

Direction " + " = Greater stitch condensation

Direction " - " = Less stitch condensation

In order to achieve a flawless sewing result, the stitch condensation may **not** lie below **2.5 mm**.



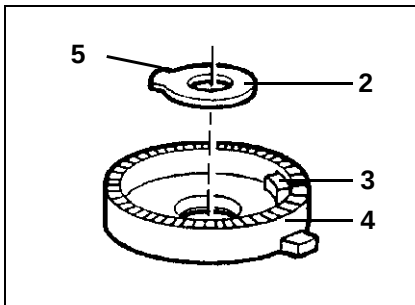
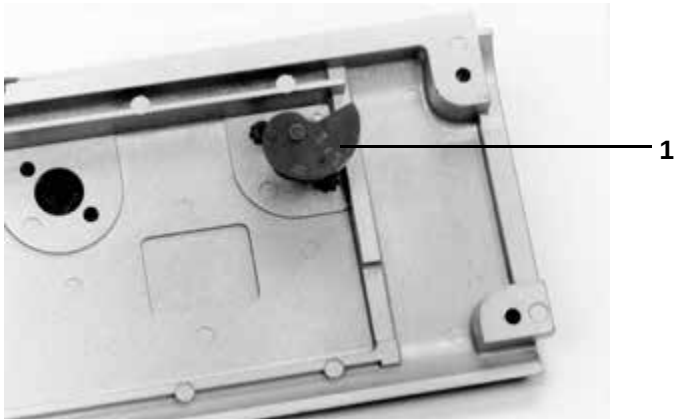
Attention!

If a device for a shorter stitch length is inserted into the machine, it is essential that the stitch length which can be set with the adjustment wheel be limited.

- Set the adjustment wheels to the greatest possible stitch length.
- Remove the covering cap 5.
- With gauge 12 bring slit 3 of the arresting disc 4 into the vertical position.
- Turn adjustment wheel 4 to the desired maximum stitch length.
- Bring the slit of the adjustment wheel 4 into the horizontal position again.
- Mount the covering cap and check the position of the wheels according to the marking 6 on the covering cap.



2.4.2 Adjustment Wheel for the Pressure Foot Stroke Height



The adjustment wheel can be turned only so far to the right or left, until the stop ring 2 lies onto the appropriate cam side of the catch ring 4.

When the adjustment wheel has been turned completely to the right:
The smallest value should be shown.
The adjustment wheel has the least play.



Caution Risk of Injury!

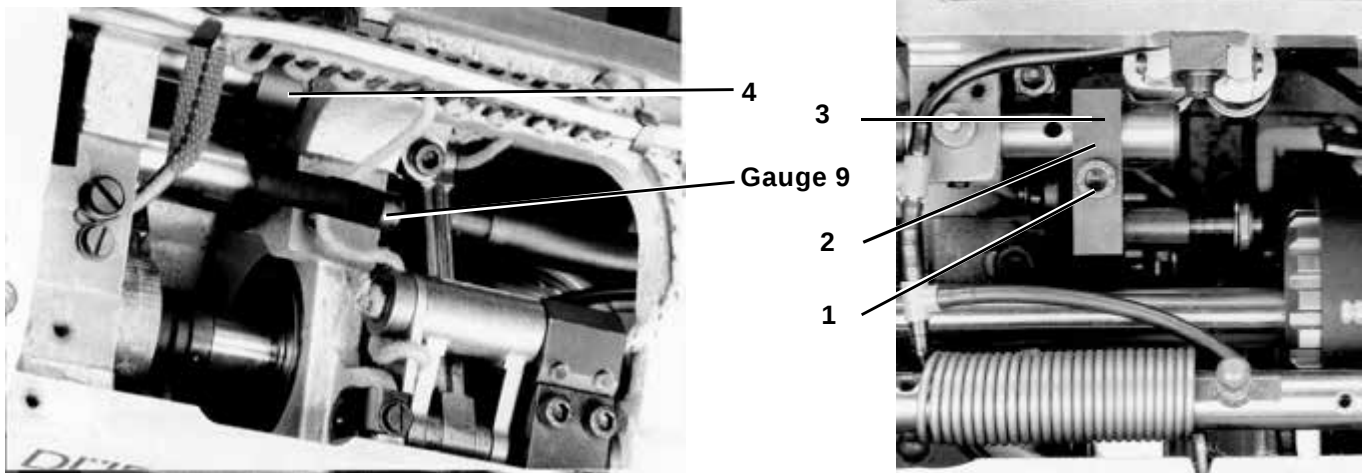
Turn off main switch before adjusting.

- Remove the tension plate.
- Unscrew the adjustment wheel.
- Reach through the opening behind the tension plate and turn the worm 1 so that the ball pin lays on.
- Align the stop ring 2 so that its right side 5 lies onto cam 3 of the catch ring 4.
- Screw on the adjustment wheel so that the smallest value is shown. (White arrow on the adjustment wheel)



2.5 Pressure Feet

2.5.1 0-Setting of the Stitch Actuator for the Top Transport



With a stitch length set at "0", the transport foot may conduct no transport movement.



Caution Risk of Injury!

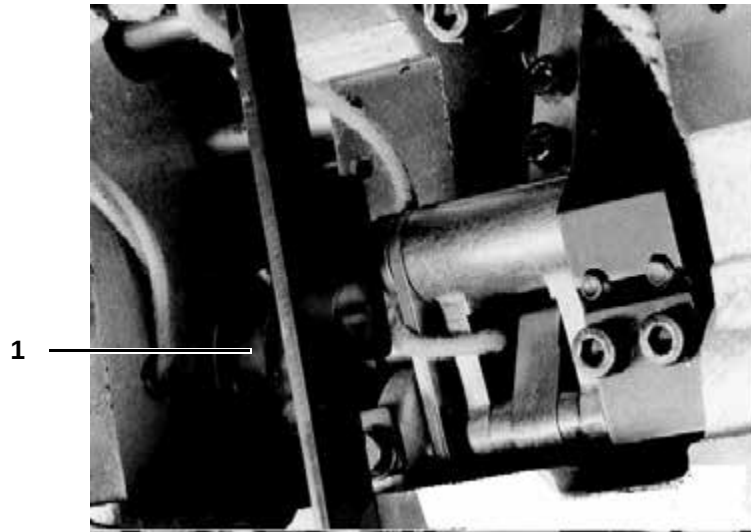
Turn off main switch before adjusting.

- Set the stitch length to " 0 ".
- Loosen screw 1 on the clamping piston 2 of the upper link 3.
- Insert gauge 9 into the hole in the link and press against the set collar 4.
- Tighten screw 1.

If movement in the transport foot is still noticeable, repeat the procedure and adjust the link so that there is, as far as possible, no advancing movement.



2.5.2 Timing of the Advancing Movement of the Transport Foot



The pressure foot should not move when the greatest possible stitch length has been set and the stitch actuator lever is operated with the machine arrested in position B.



Caution Risk of Injury!

Turn off main switch before adjusting.

Setting with the Gauge

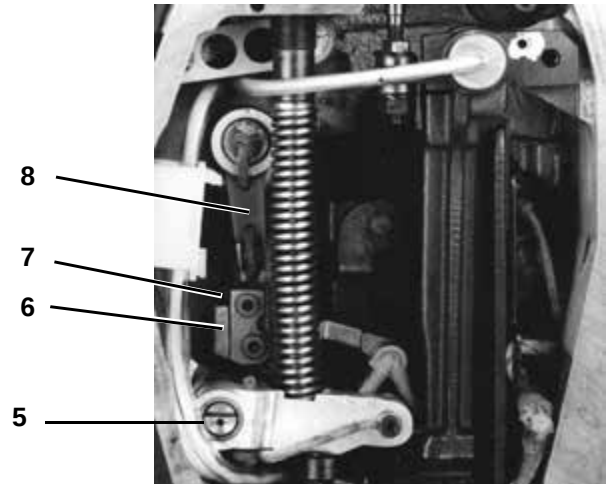
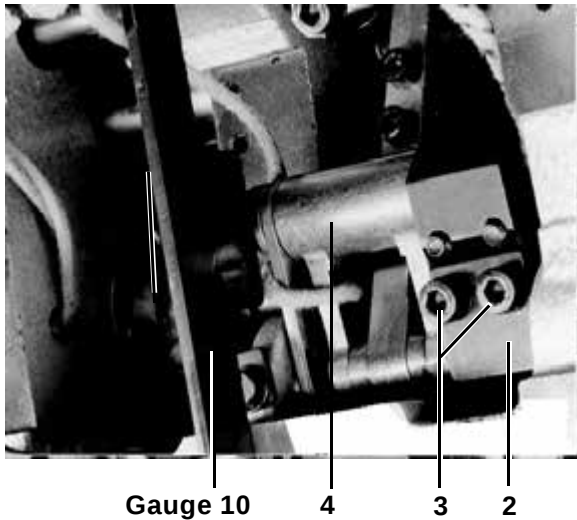
- Arrest the machine in position A.
- Loosen the screws on the thrust eccentric 1.
- Place the timing pin 3 in the tracing hole of the thrust eccentric 1 and bring into vertical position.
- Retighten the screws.

Setting without the Gauge

- Arrest the machine in position B.
- Loosen the screws on the thrust eccentric 1.
- Turn the thrust eccentric on the arm shaft so that the transport foot does not move when the stitch actuator is operated.



2.5.3 Stroke Adjustment Range and Timing of the Stroke Movement of the Transport Foot



In the "2 mm" position of the stroke height adjustment wheel both pressure feet should conduct the following strokes:

Transport Foot: 2 mm

Hopper Foot: 1,8 mm



Caution Risk of Injury!

Turn off main switch before adjusting.

Stroke Adjustment Range

- Loosen screws 3.
- Lay gauge 10 on the two cast walls of the arm.
- Swing piston 2 so far that the bolt of the stroke rocker 4 lies on the gauge 10.
- Slide the piston against the bushing for axial fixing of the shaft.
- Retighten the screws.
- Remove the gauge.



Attention!

After the setting has been made at the factory, the screws 3 are secured with yellow paint and are not to be altered again.

Stroke Timing

- Set the adjustment wheels to "0".
- Arrest the machine in slot D.
- Loosen the screws on the stroke eccentric.
- Turn the stroke eccentric on the arm shaft so that when the stroke rocker 4 is moved the stroke lever 8 remains at rest.
- Place the second timing pin in the tracing hole of the arm head. The slide pad 6 of the rocker must lay onto the tracing pin 7.

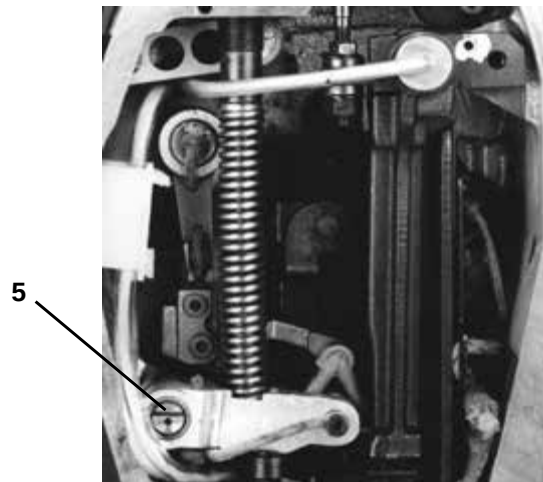


Attention!

The eccentric 5 in the arm head must be in its initial position. Its slit should be horizontal in the upper hemisphere.



2.5.4 Fine Adjustment of the Pressure Feet Alternation Timing



With the machine arrested in position D both pressure feet should rest on the stitch bed.



Caution Risk of Injury!

Turn off main switch before adjusting.

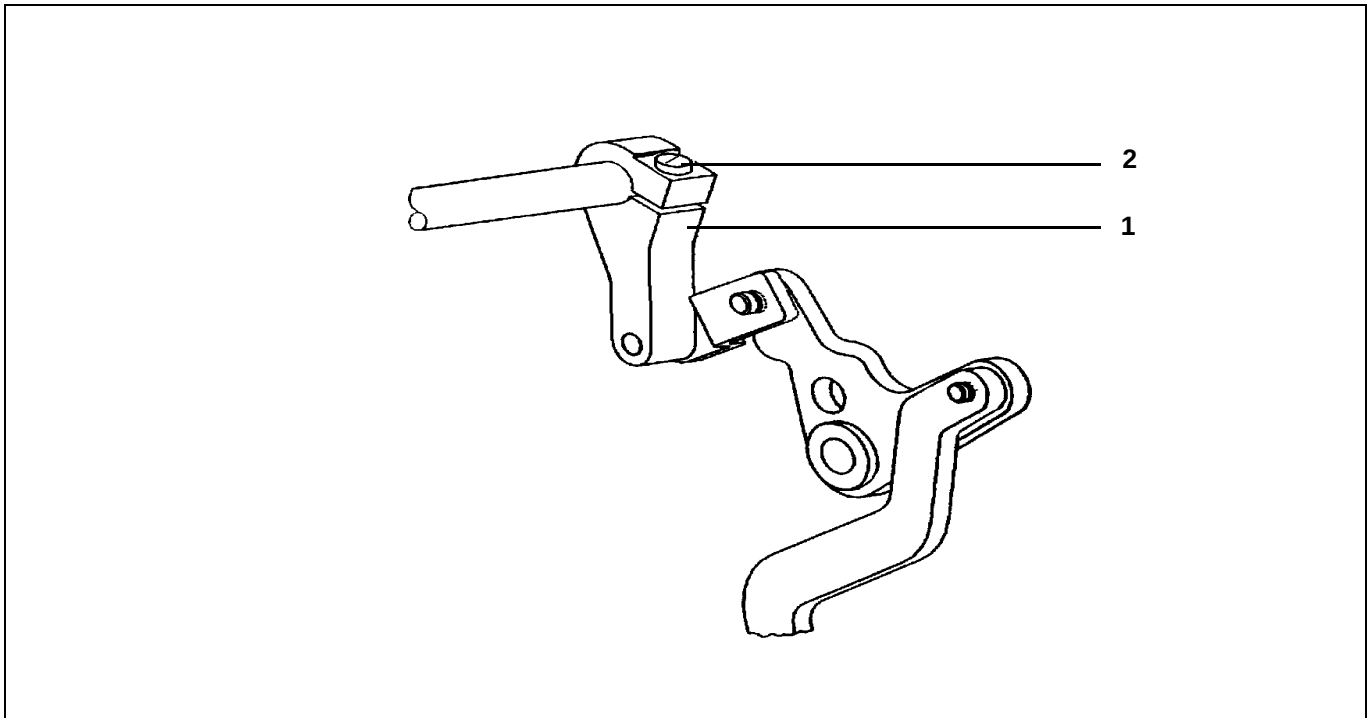
Arrest the machine in position D.

Move the eccentric 5 slightly out of its initial position (slit horizontal).



2.6 Pressure Foot Lift

2.6.1 Play in the Lift Mechanics



The play in the lift mechanics should be 1 mm when at least one of the two pressure feet lies on the stitch bed or transporter.



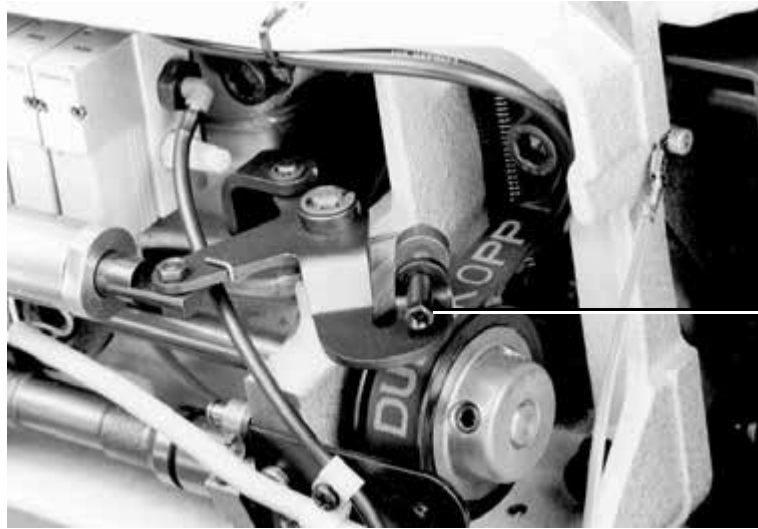
Caution Risk of Injury!

Turn off main switch before adjusting.

- Loosen screw 2 and change the position of the clamping piston 1 on the shaft appropriately.
- For axial fixing of the shaft press the clamping piston 1 to the left.
- Tighten screw 2.



2.6.2 Height of the Raised Pressure Feet, Lift Limitation



1

The pressure feet can be raised by stepping on the back of the pedal. The "free passage" between the raised pressure feet and the stitch bed can be a maximum of 17 mm. The lift height should, however, be set so that when the needle position is in upper dead center the needle point does not extend below the pressure feet. (With lift height 15 mm)

With particularly thick pressure feet (e.g. piping feet) the "free passage" must be reduced so far that a collision with the needle bar is not possible.



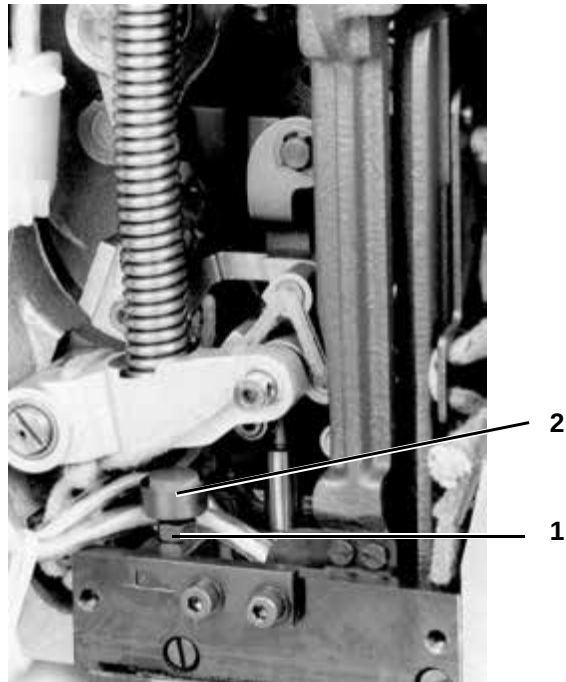
Caution Risk of Injury!

Turn off main switch before adjusting.

- Alter stop screw 1 appropriately.



2.6.3 Setting the Interception Buffer



The interception buffer 2 prevents the pressure feet from not lying directly onto the stitch bed.

The clearance between the stitch bed and the pressure feet should be 0.2 - 0.8 mm, depending on the material.



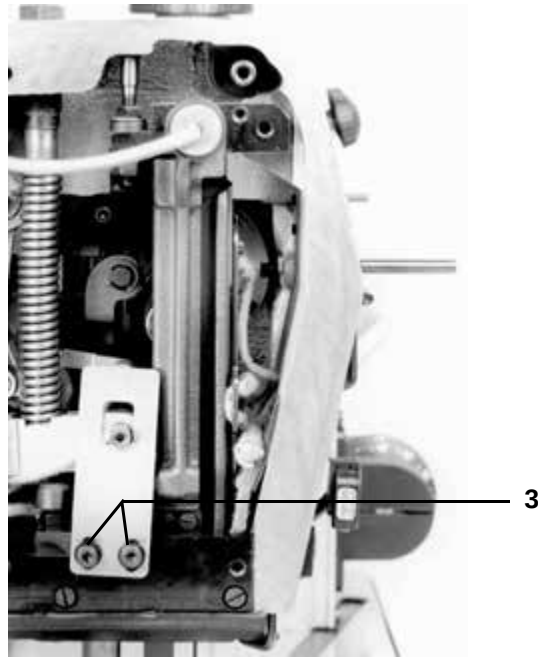
Caution Risk of Injury!

Turn off main switch before adjusting.

- Turn the handwheel until the pressure feet are at the same height.
- Check to see if a forceful transport of the material occurs.
- Loosen the lock nut 1 and adjust the interception buffer appropriately.



2.6.4 Height of the Pressure Feet arrested in the Raised Position



The pressure feet can be arrested in the raised position with the knob on the top lid.

The clearance between the pressure feet held raised and the stitch bed should be 10 mm.



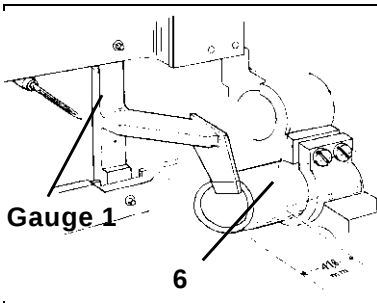
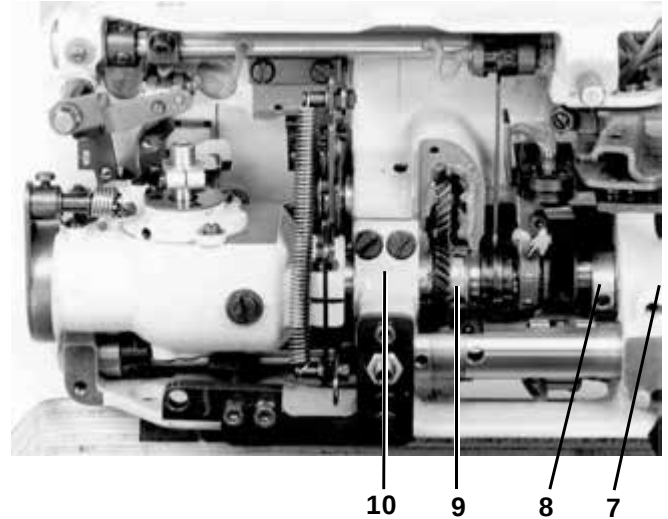
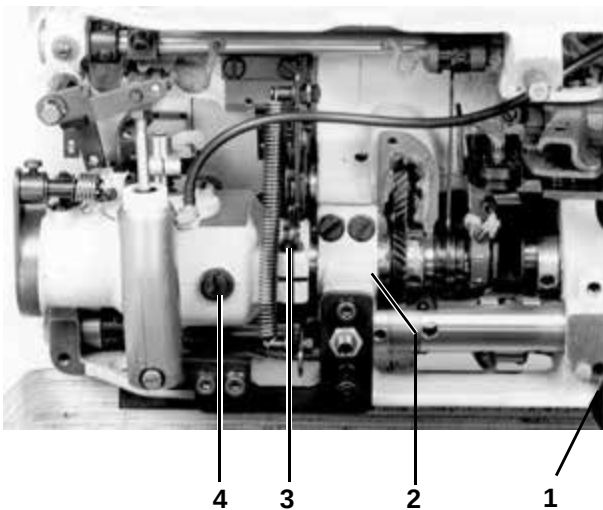
Caution Risk of Injury!

Turn off main switch before adjusting.

- Loosen screws 3 and change the position of the cover appropriately.



2.7 Rocker Bolt for the Hook Drive and the Left Lower Shaft Bearing



The distance from the middle of the needle to the beginning of the left lower shaft bearing 6 should be 41.8 mm.



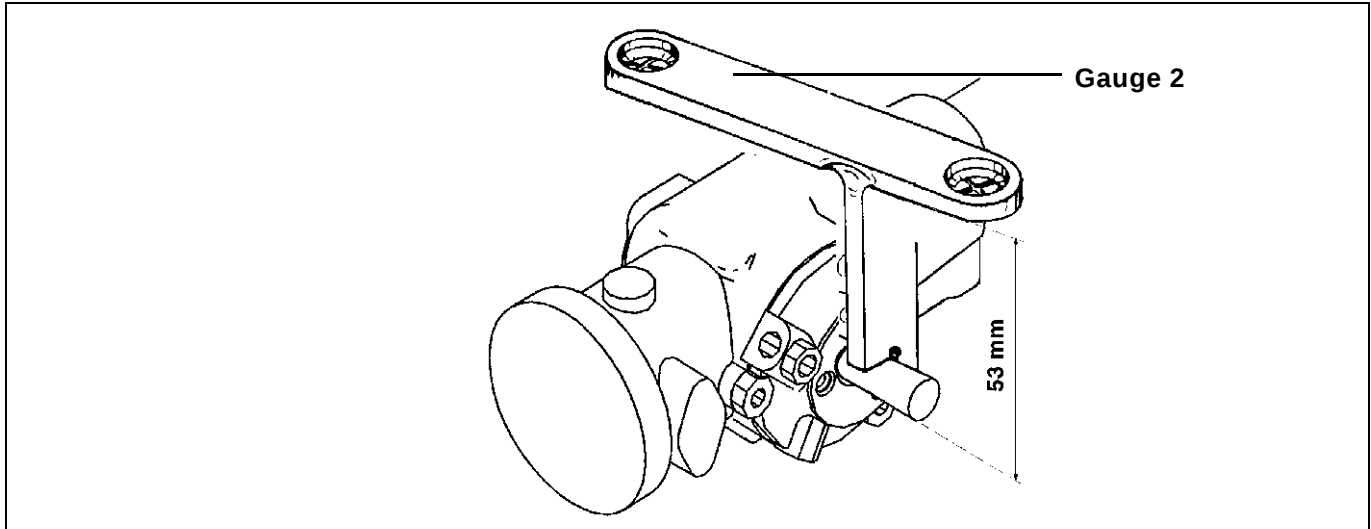
Caution Risk of Injury!

Turn off main switch before adjusting.

- Remove the stitch bed, thread trimmer, needle guard and hook with hook support.
- Screw out screw 4 and drain the oil found in the hook housing. (Set the machine upright)
- Unscrew the grease cap 2 and the oil baffle 1.
- Loosen clamping screw 3 and all elements screwed to the lower shaft and carefully draw off the hook housing together with the lower shaft.
- Screw gauge 1 onto the stitch bed rest.
- Loosen screws 10, press the lower shaft bearing onto the gauge and retighten the screws.
- Assemble the hook drive housing and lower shaft and adjust according to the setting information contained in this Service Manual.
- Fill the hook drive housing with Esso SP-NK 10 oil. Check with the oil dip stick.



2.8 Setting the Hook Drive Housing



The needle tip should point to the center of the hook shaft. The bottom edge of the hook shaft runs parallel to the underside of the stitch bed. The distance between the upper edge of the stitch bed support lower edge of the hook shaft is 53 mm.



Caution Risk of Injury!

Turn off main switch before adjusting.

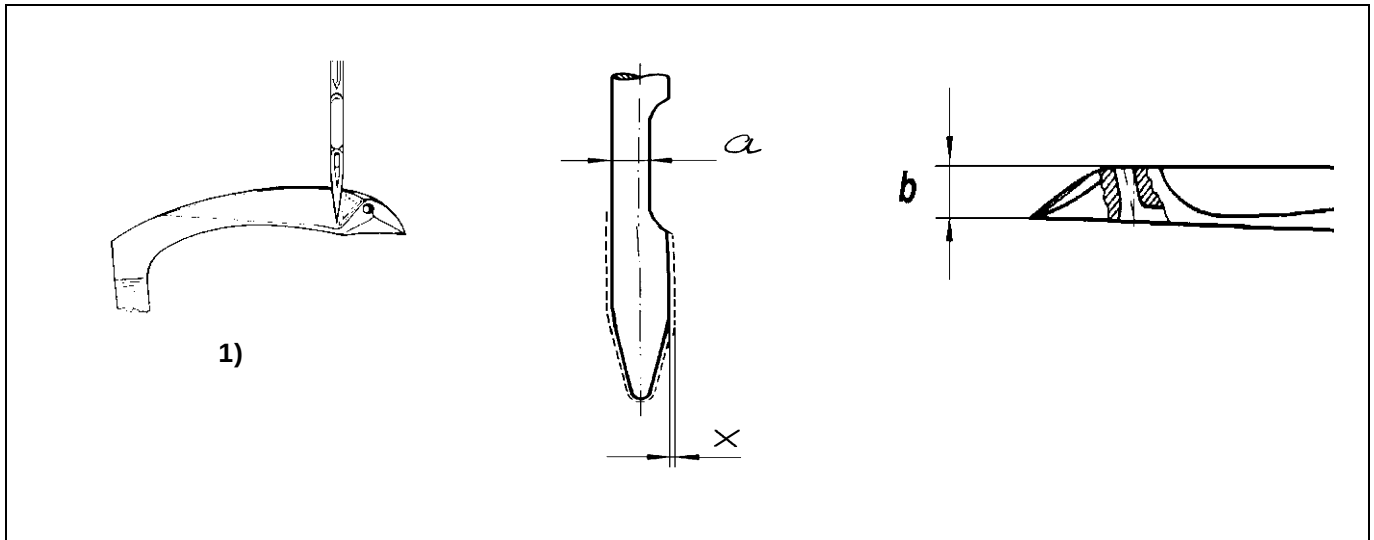
- Remove the stitch bed, thread trimmer, needle guard and hook with hook support.
- Screw gauge 2 onto the stitch bed rest.
- Press the hook shaft onto the gauge and screw the hook housing fast.
- Remount the other parts removed.

Attention!

When remounting the setting instructions contained in this Service Manual are to be observed.



2. 9 Needle Avoidance Movement of the Hook (Ellipse Width)



With needle avoidance movement (ellipse width) is meant that movement which the hook conducts in order to pass **behind** the needle in its run from right to left and in **front** of the needle from left to right.

The ellipse width is dependent on the needle system and the needle thickness.

The ellipse width is correctly set when there is a clearance of 0.1 mm from hook tip to needle with hook movement **from right to left**.

With hook movement **from left to right** the tip of the downward moving needle should touch the back of the hook at that moment when the hook and the needle are in the position shown in illustration **1)**.

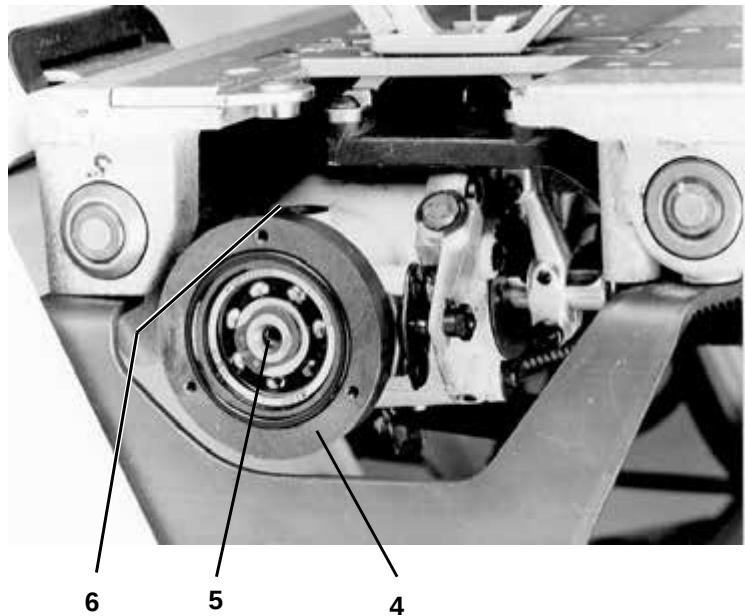
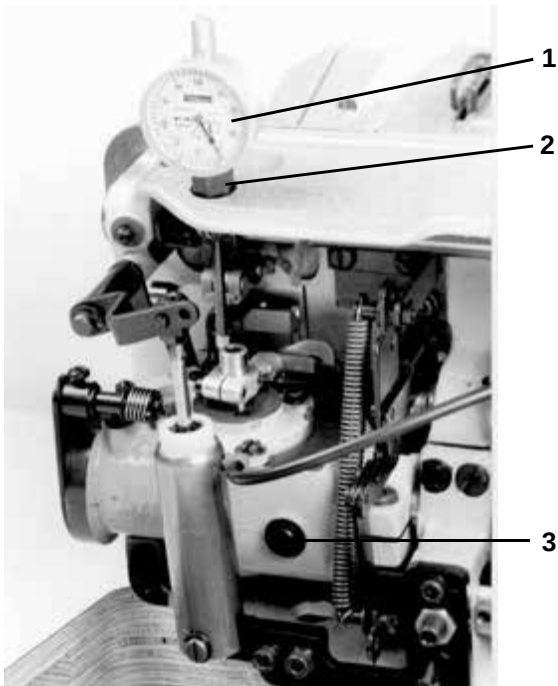
Calculating the Ellipse Width

$$E = a + b + 0,1 + x$$

E	[mm]	Ellipse Width
a	[mm]	Needle Thickness at the Flute
b	[mm]	Hook Thickness at the Thread Guide Hole in the Hook Tip
0,1	[mm]	Clearance between Hook Tip and Needle during Movement from Right to Left
x	[mm]	Value by larger Needle Thicknesses
		x = 0 for Needles up to Nm 100
		x = 0,1 for Needles up to Nm 120
		x = 0,2 for Needles over Nm 130

Example for a Needle 933 / Nm 120

$$E = 0,7 + 1,4 + 0,1 + 0,1 = \underline{2,3 \text{ mm}}$$



Caution Risk of Injury!

Turn off main switch before measuring and adjusting.

Measuring the Ellipse Width

- Insert a straight, undamaged needle.
- Screw in the clamping bush 2 and set in the dial gauge 1 (Order no 171 000981).
- Bring the hook shaft into its **lowest position** by turning the handwheel. Set the dial at "0".
- Bring the hook shaft into its **highest position** by turning the handwheel. The difference must correspond to the previously calculated ellipse width.

Setting the Ellipse Width

Slide the rocker bolt axially in the hook housing.

The ellipse width is changed by only half of the amount that the rocker bolt is displaced!

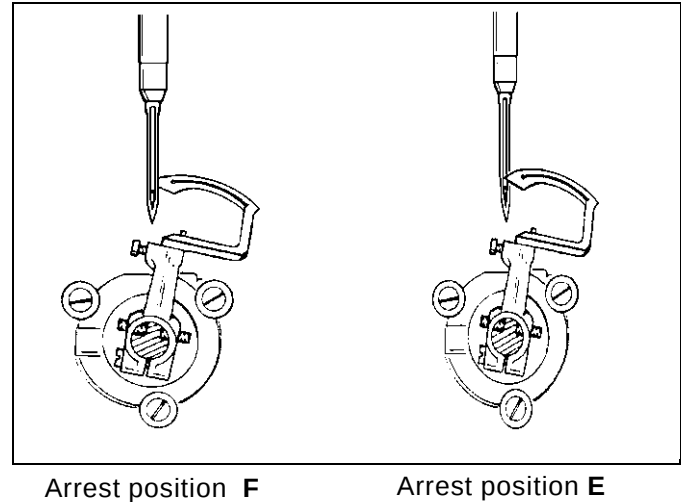
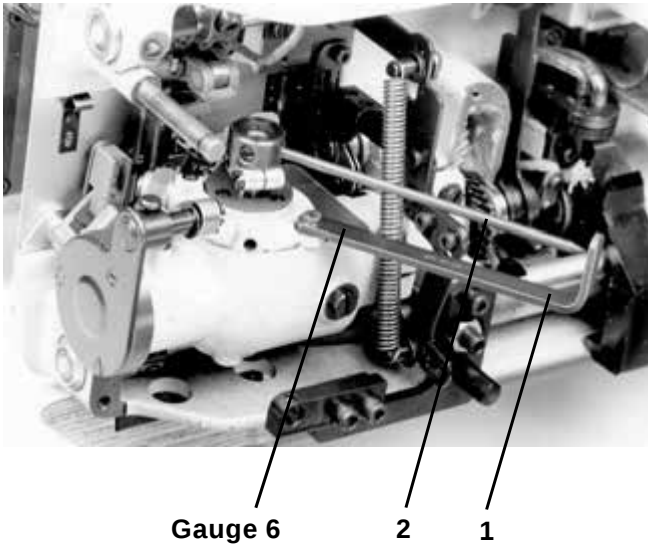
Example: Sliding the rocker bolt 0.2 mm alters the ellipse width 0.1 mm.

To the right: Ellipse width decreases
To the left: Ellipse width increases

- Screw out screw 3 and drain the oil found in the hook housing. (Stand the machine upright).
- Remove lid 4 and screw the M4 screw into the face of the rocker bolt 5.
- Loosen screw 6 and slide the rocker bolt by pushing or pulling the M4 screw accordingly.



2.10 Symmetry of Looper Motion



The setting of looper symmetry means that the hook point lies on the needle center both when the machine is arrested in slot **E** and in slot **F**. The hook should lie in front of the needle in slot **E** and behind it in slot **F**. The hook movement is set with gauge 6.



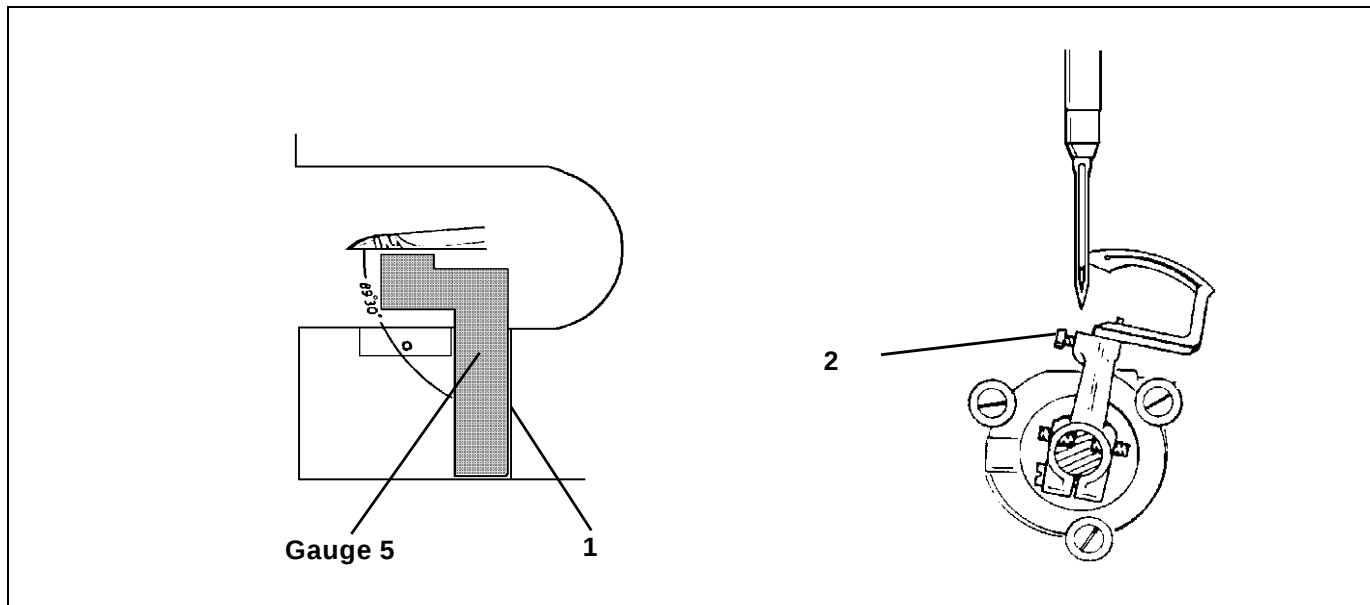
Caution Risk of Injury!

Turn off main switch before adjusting.

- Fasten angle 1 and indicator 2 as shown in the illustration. Arrest the machine in position **E**.
- Align the indicator to the line marking on the angle.
- Turn the handwheel to position **F**. The indicator should make a pendulum movement to the **left** and back to the line marking.
- Loosen the mounting screws on the timing belt.
- Turn the lower shaft so that the indicator 2 lies over the gauge line marking in both slots **E** and **F**.
- Retighten the mounting screws of the timing belt pulley.



2.11 Hook in the Hook Support



The front of the hook should lie at an angle of $89^{\circ} 30'$ to the edge 2 of the apparatus slot.



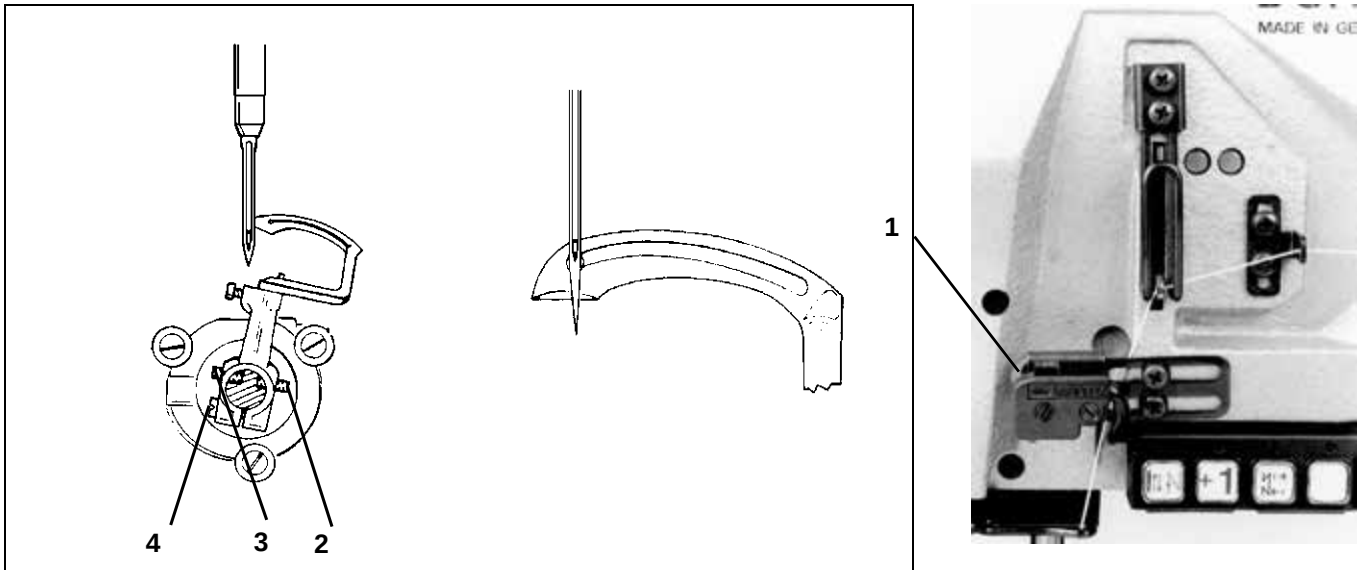
Caution Risk of Injury!

Turn off main switch before adjusting.

- Loosen screw 2 of the hook support.
- Place gauge 5 on edge 1 and bring the hook into the correct position.
- Retighten screw 2.



2.12 Looping Stroke and Needle Bar Height



The looping stroke is 3.5 mm.

This means:

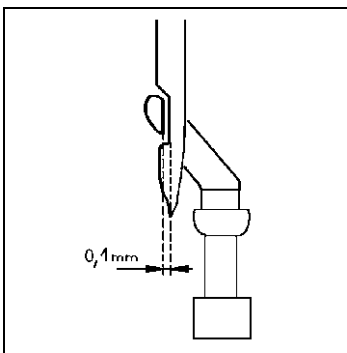
When the needle has been raised 3.5 mm from its lowest point in the direction of rotation the hook point must lie at the middle of the needle.

When the hook eye lies at the middle of the needle the lower edge of the needle eye and the upper edge of the hook eye should be at the same height.



Caution Risk of Injury!

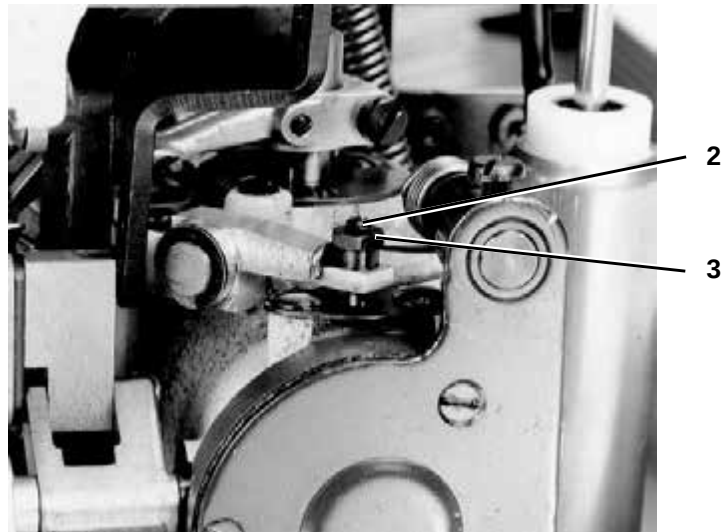
Turn off main switch before adjusting.



- Insert new needle into the needle bar.
- Position and secure the machine in position **E** with timing pin.
- Position hook tip behind the center of the needle.
For this loosen screw 4 and adjust screws 2 and 3 accordingly.
- Remove timing pin.
- Pull plug 1 out of the hole and loosen the needle bar securing screw.
- Adjust needle bar height such that the lower edge of the needle eye and the upper edge of the hook eye are at the same height.
Tighten the needle bar securing screw.
- By axial displacement of the hook carrier adjust a clearance of 0.1 mm between the hook tip and the needle scarf.
- Check hook position as shown positions E+F (Section 2.10).



2.13 Needle Guard and Needle Guard-plate



2.13.1 Needle guard

The moveable needle guard is to prevent a diversion of the needle into the path of the hook.

When the hook point moves to the left and reaches the needle, the needle guard automatically swings to the needle. In this position the needle must lie on the needle guard.

The movement timing of the needle guard can not be changed.

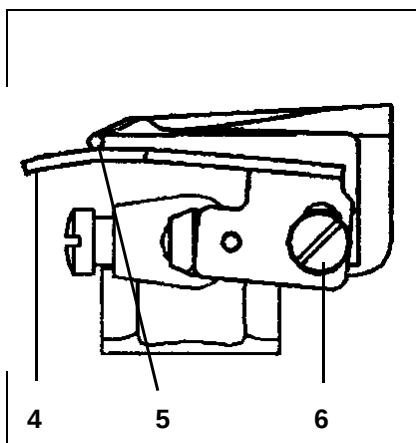


Caution Risk of Injury!

Turn off the machine before adjusting.

- Turn the machine so far in the direction of rotation that the hook moves to the left and has reached the needle.
- Loosen the lock nut 3 and, with the threaded screw 2, set the needle guard so close to the needle that it can not be pressed into the area of the hook.
The needle may not be displaced more than necessary.

2.13.2 Needle guard-plate



The needle guard-plate is to prevent a diversion of the needle at the instant of the loop pick-up.

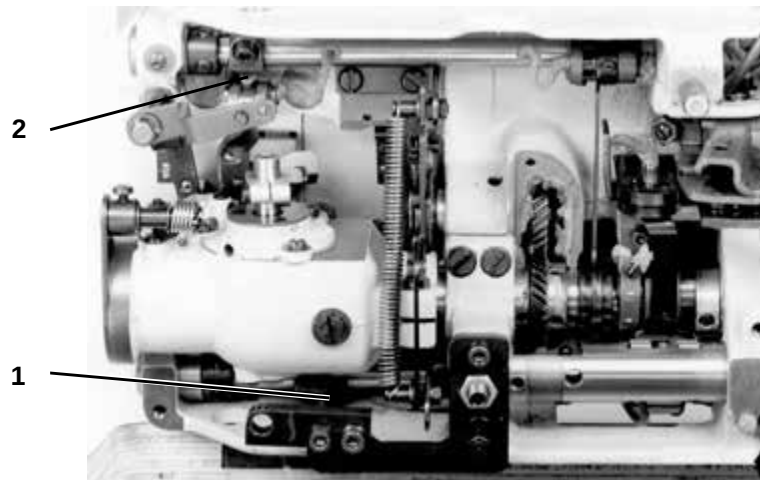
When the hook moves to the left and reaches the needle, it should be impossible for the needle to be bent in opposite to the sewing direction.

- Loosen screw 6
- Adjust needle guard-plate 4 such that needle 5 can move unobstructed between hook and needle guard-plate.
- Tighten screw 6 firmly.



2.14 Transporter

2.14.1 Position of the Transporter in the Stitch Bed Slot



The transporter should be set in such a way that with the greatest possible stitch length the transporter does not hit any side of the stitch bed.



Caution Risk of Injury!

Turn off main switch before adjusting.

Setting in the Transport Direction:

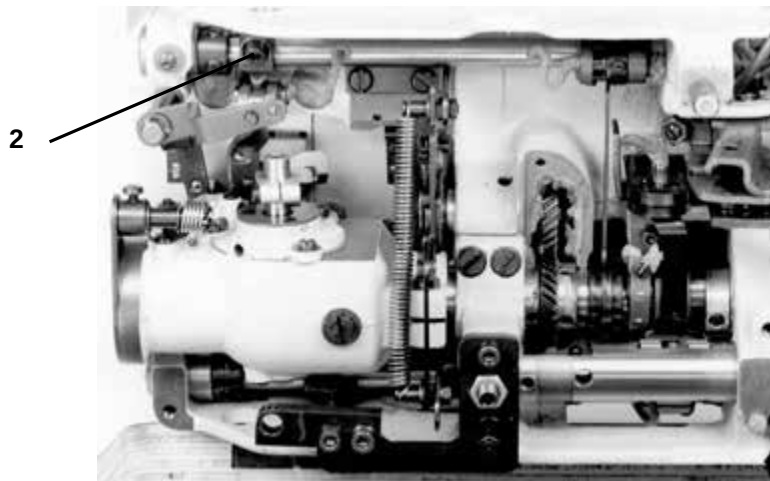
- Loosen screw 1 on the thrust lever and set the transporter support appropriately.

Setting in the Lateral Direction:

- By small deviations change the position of the transporter on its support appropriately.
- By greater deviations loosen screw 2 on the stroke lever and screw 1 on the thrust lever. Change the position of the transporter support.



2.14.2 Height of the Transporter



In its highest position the transporter should extend 0.8 mm out of the stitch bed. (Slot **B**)



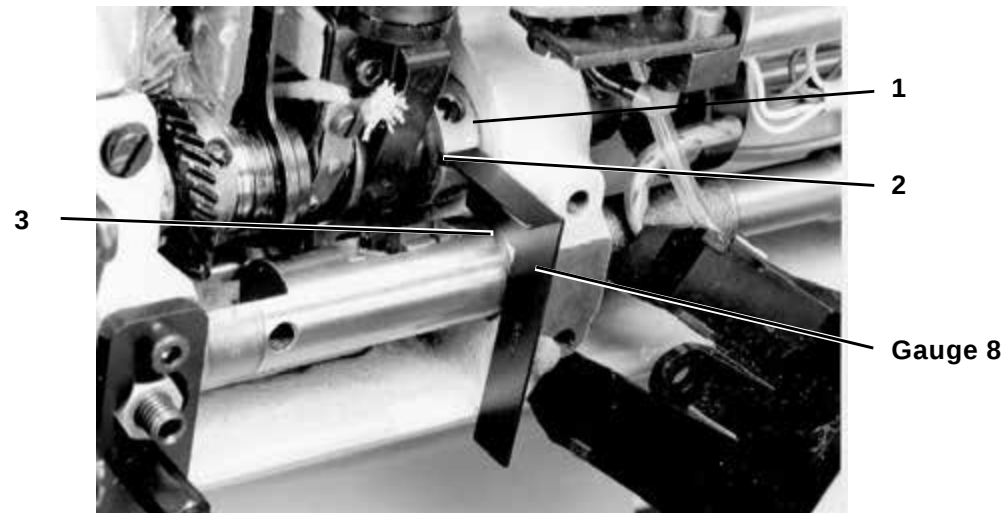
Caution Risk of Injury!

Turn off main switch before adjusting.

- Arrest the pressure feet in the raised position.
- Arrest the handwheel in slot **B**.
- Check the height with a feeler gauge.
- Loosen screw 2 on the stroke lever and change the height of the transporter support.



2.14.3 Thrust Movement of the Transporter



For a good stitch pull the transporter should conduct a little "excess travel" after passing the upper needle bar dead center.



Caution Risk of Injury!

Turn off main switch before adjusting.

- Loosen the screws of the thrust eccentric 1.
- Arrest handwheel in position **B**.
- Place gauge 8 in the slit 2 of the thrust eccentric.
- Turn the thrust eccentric so that the edges of the gauge lie on the stitch actuator link 3.
- Retighten the screws of the thrust eccentric.
- Check the axial play of the lower shaft.

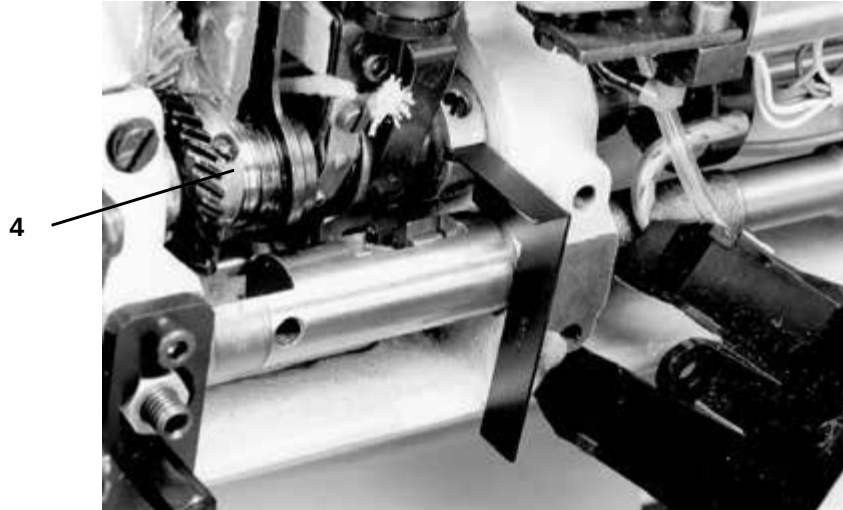


Attention!

By maximum transport distance the transporter should not hit the stitch bed slot.



2.14.4 Stroke Movement of the Transporter



When the needle point reaches the stitch hole then the downward moving tooth tip of the transporter should be at the same height as the stitch bed surface.



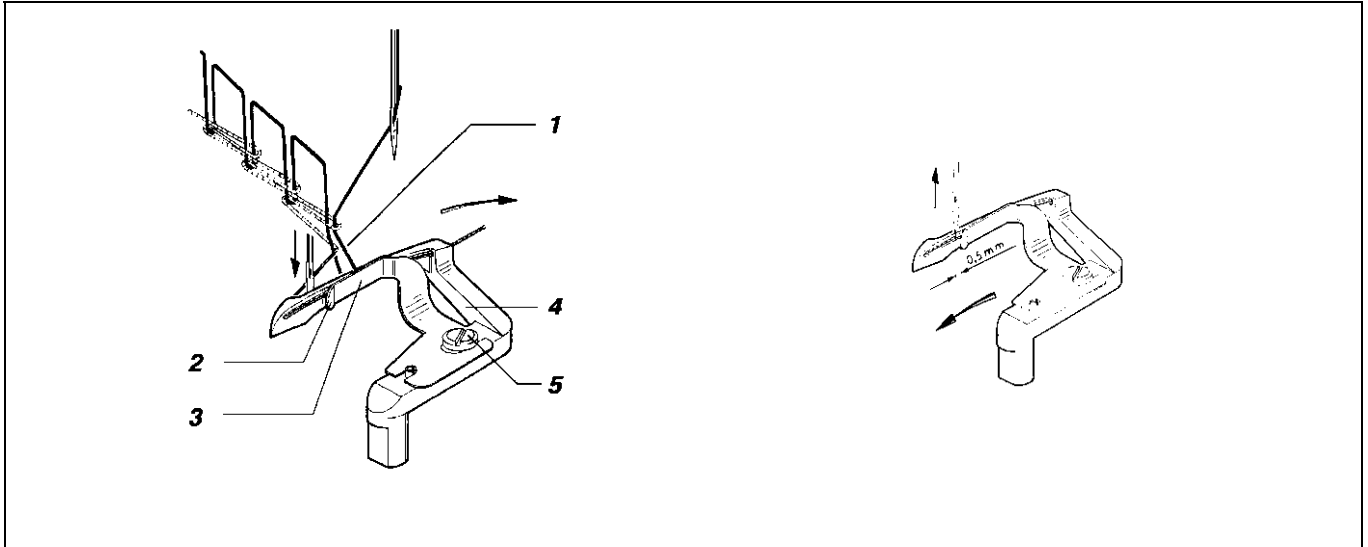
Caution Risk of Injury!

Turn off main switch before adjusting.

- Remove the grease cap and oil baffle.
- Arrest the machine in position **B**.
- Turn the stroke eccentric 4 so that, in the direction of rotation, the 1st screw is level with the 2nd screw of the thrust eccentric.



2.15 Check Spring on the Hook (only subclass with thread trimmer)



By hook movement from **right to left** the needle thread loop 1 must push beyond the stop 2 between the check spring 3 and the hook 4.

By hook movement from **left to right** the needle thread loop should be held at stop 2 until downward moving needle has made a stitch in the so-called thread delta to the left in front of the needle thread loop.

When the needle moves into its upper position and the hook into its left position, then the needle point should move past the check spring with a clearance of about 0.5 mm.



Caution Risk of Injury!

Turn off main switch before adjusting.

- Through aligning bring the check spring to lie flat on the hook. Take care that the greatest pressure occurs at stop 2.
- Loosen screw 5 and by sliding the check spring set the clearance of 0.5 mm.

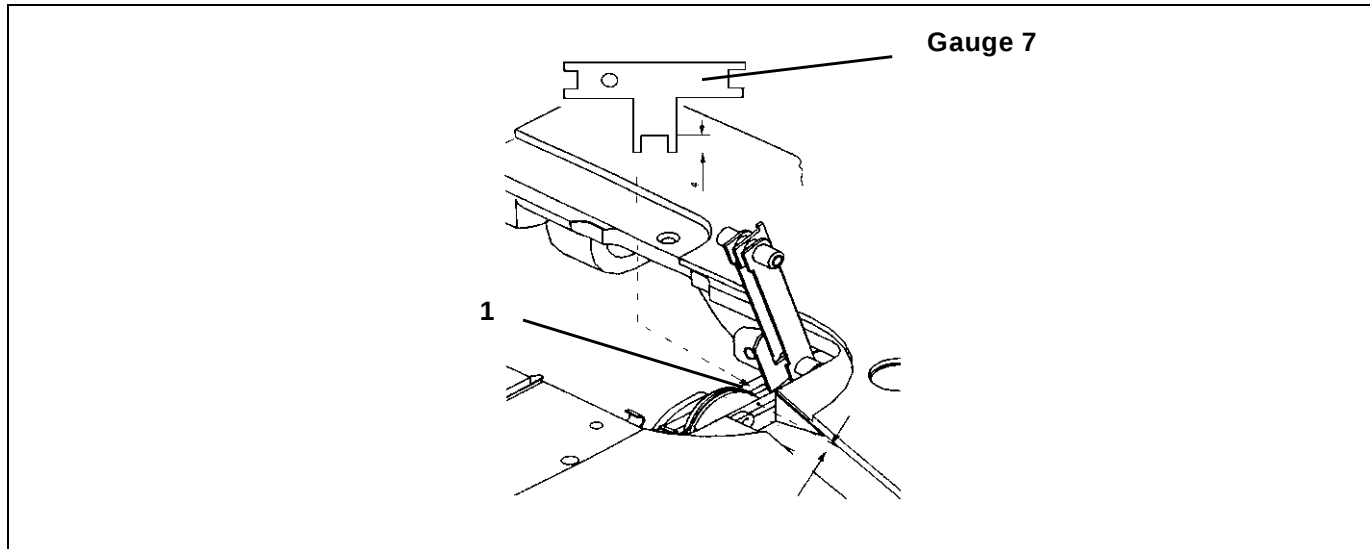
The bearing pressure on the hook must be checked by completed and threaded machine.

- Tilt the machine.
- Check the described stitch formation by hook movement from right to left and left to right.
- If necessary reduce the bearing pressure by adjusting the check spring should the needle thread loop not be pushed beyond the stop 2.

Increase the bearing pressure should the needle thread loop is not held at the stop long enough for the needle to make a stitch to the left of the needle thread loop 1 in the thread delta.



2.16 Thread Take-up Disc



With the machine arrested in slot B (upper dead center) the thread take-up disc should lie 4 mm above the support plate 1.



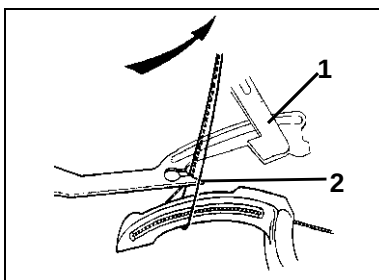
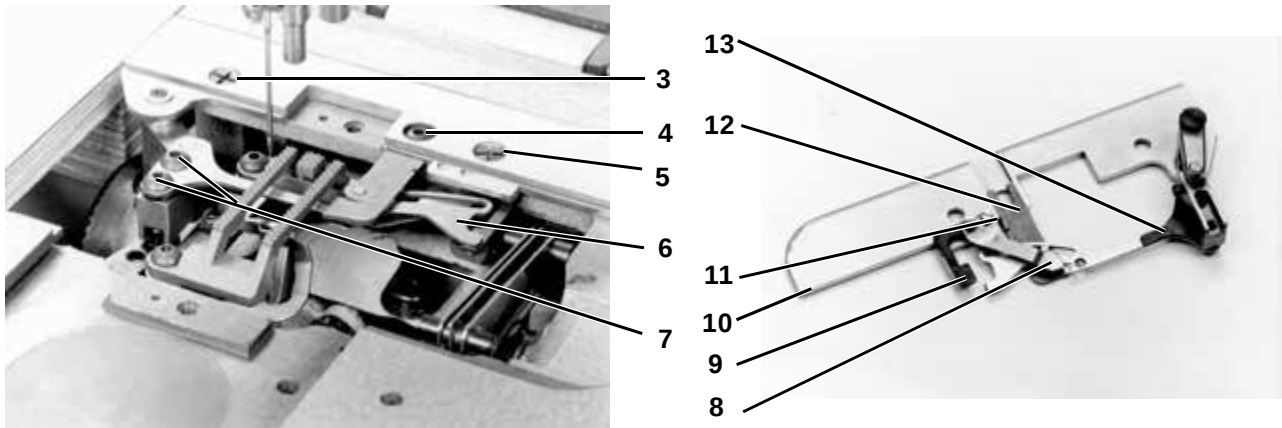
Caution Risk of Injury!

Turn off the machine before adjusting.

- Loosen screws on the thread take-up disc.
- Arrest the machine in position B.
- Turn the thread take-up disc appropriately. Set the correct measurement with gauge 7.
- Set the disc tight and tighten the screws.



2.17 Thread Trimmer



During the trimming process the bobbin thread behind the hook and the back part of the needle thread must be caught by the tip 2 of the movable knife and pulled against the counter knife 1.



Caution Risk of Injury!

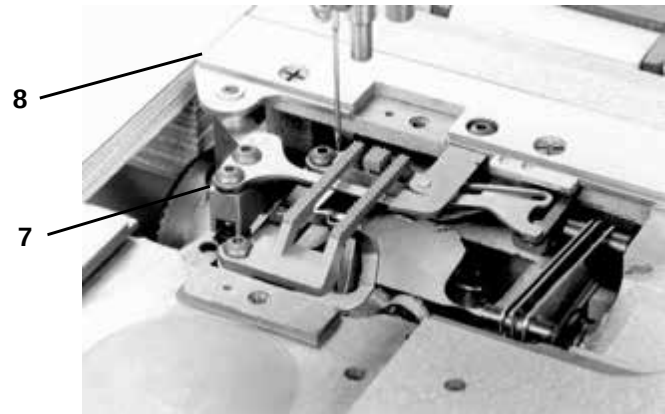
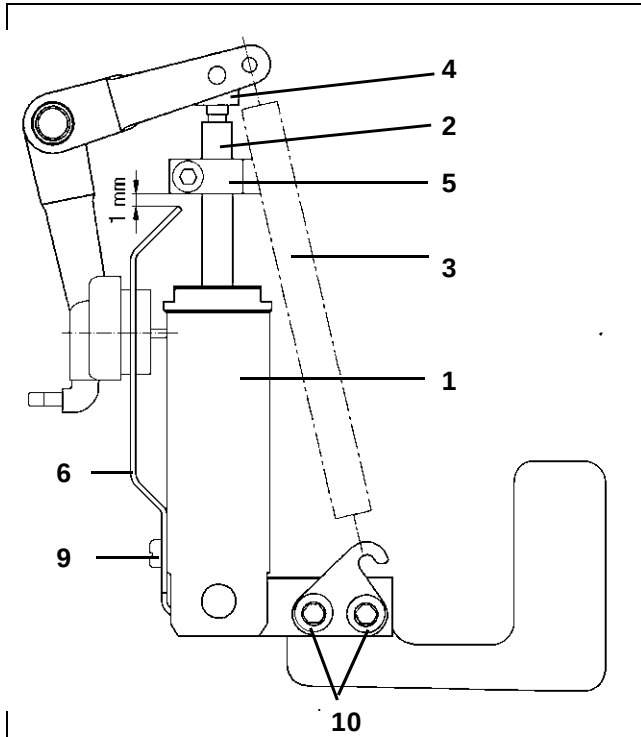
Turn off main switch before adjusting.

1. Removing the Thread Trimmer

- Remove the needle, unscrew the pressure foot and stitch bed.
- Screw out screws 3, 4 and 5 and take off the complete thread trimmer.

2. Manual Cutting Trial

- Screw the thread trimmer on gauge 14.
- Screw on counter knife 12 so that the notch 11 is at the height of edge 10 of the thread trimmer mounting plate. Put a screwdriver in the second notch and slide the counter knife.
- The thread clamping plate 8 should hold the trimmed thread end of the bobbin thread lightly clamped for a sure seam beginning. A too tightly set clamping plate can cause crimping at the beginning of the seam.
- Set the carrier plate 9 so that when trimming thick threads the movable knife is not displaced by the counter knife. Carefully align the carrier plate.
- Conduct a cutting trial with thread. If a clean cut is not achieved check the knives for sharpness (replace if necessary.)
- The movable knife 6 can be set to cut through a slight aligning of the spacer plate 13.



3. Installation and Final Settings of the Thread Trimmer.

- Re-insert the thread trimmer and screw fast.
- Insert the counter knife, align to notches and screw fast.
- Screw the piston rod 2 so far into piston 4, that it does not extend beyond the hole of the piston. Secure against turning with the lock nut.

4. Setting the end positions of the knife:

- Right end position
To unhinge draw spring 3
Loosen screw 10
The blade of the movable knife must travel approx. 1mm beyond the blade of the fixed knife.
Tighten the screw 10 again and hang in draw spring 3.
- Left end position
Set the clamping block 5 on the piston rod 2 so that edge 7 of the movable knife and edge 8 of the thread trimmer carrier lie flush.

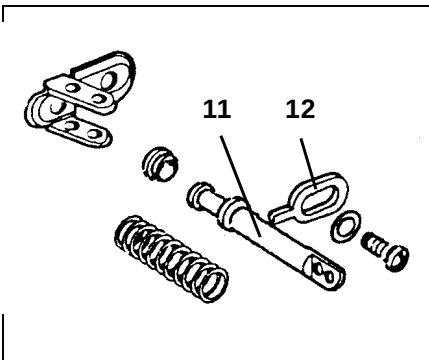
5. Setting the securing spring 6:

- Loosen screw 9
With cylinder 1 extended, there should be a clearance of approx. 1mm between spring 6 and block 5.
Test:
With a loss of air pressure in the machine (e.g. when the compressed air mains plug is pulled) spring 6 must swing under block 5 before cylinder 1 retracts.
- Tighten the screw 9
- Conduct a cutting trial in sewing operation with stitch condensing.
(Adjust the counter knife if necessary)

6. Thread Puller for Needle and Bobbin Thread.

During thread trimming the thread tensions are opened and the thread puller operated. The pulled-off, tension-free thread serves for sure stitch formation at the beginning of the seam.
No more thread than necessary should be pulled since this determines the length of the thread end remaining at the beginning of the seam.

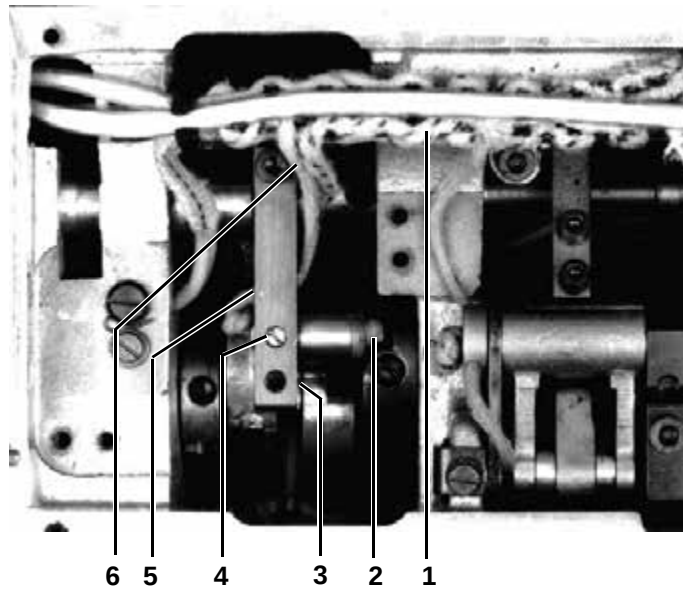
- The thread puller 11 has steps.
By adjusting the stop 12 more or less thread can be pulled.





2.18 Setting the Edge Cutter (Cl.195-671110)

2.18.1 Changing the Knife Stroke



The knife stroke is set at 8mm at the factory.

It can be changed to 6 mm. This makes the machine quieter.



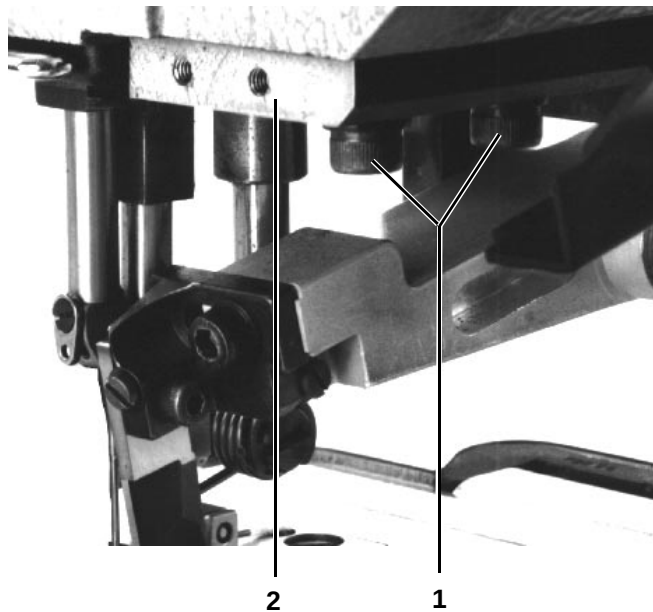
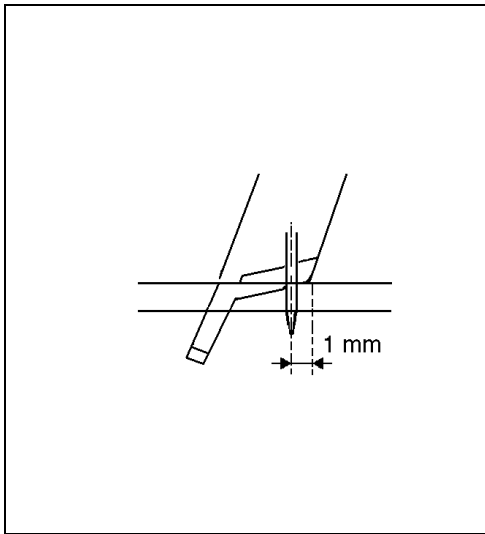
Caution Risk of Injury!

Turn the main switch off before converting.

- Remove the wick 6 from the holder 1.
- Loosen screw 4.
- Pull out the bolt 2 with the wick and insert into the hole 3.
- Tighten screw 4 again.
- Pull wick 6 through the hole 5 again and place in holder 1.



2.18.2 Setting the Upper Knife in the Direction of Sewing



When the upper knife, with the edge cutter turned on, is in its lower dead center the forward tip of the knife blade should lie about 1mm in front of the needle.



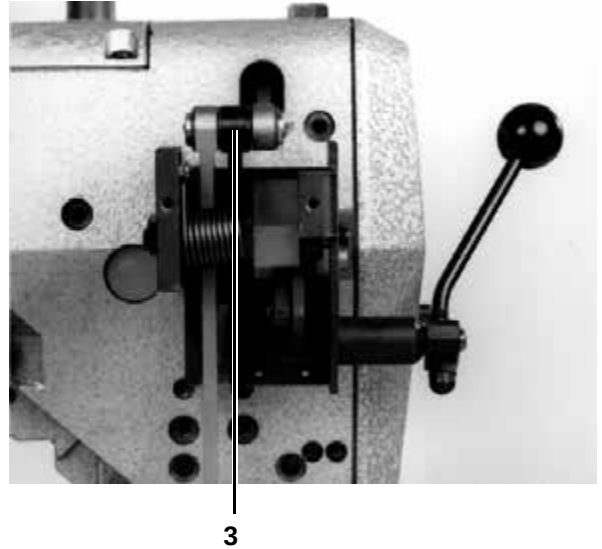
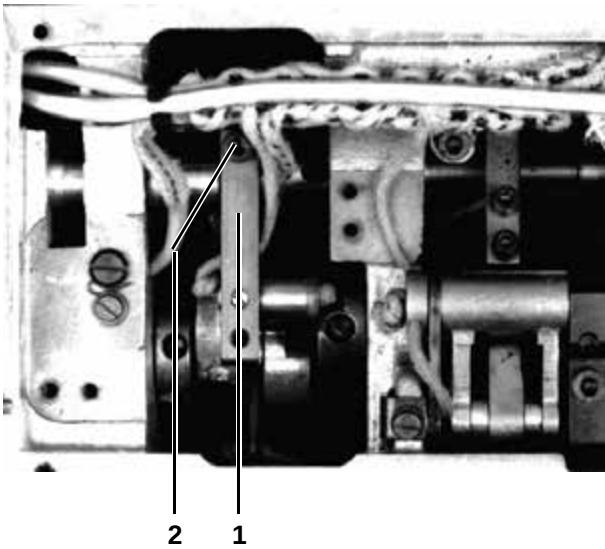
Caution Risk of Injury!

Turn the main switch off before setting.

- Turn the handwheel until the knife is at its lower dead center.
- Loosen screws 1 so far that the mounting plate 2 still lies flush on the cast body but can be slid.
- Slide the mounting plate so far forward or to the back that the forward tip of the knife blade lies about 1 mm in front of the needle.
- Tighten the screws again.



2.18.3 Stop Position of the Knife Bar When Shut Off



With the edge cutter turned off the knife bar should move as little as possible. (An absolute stop is not possible.)



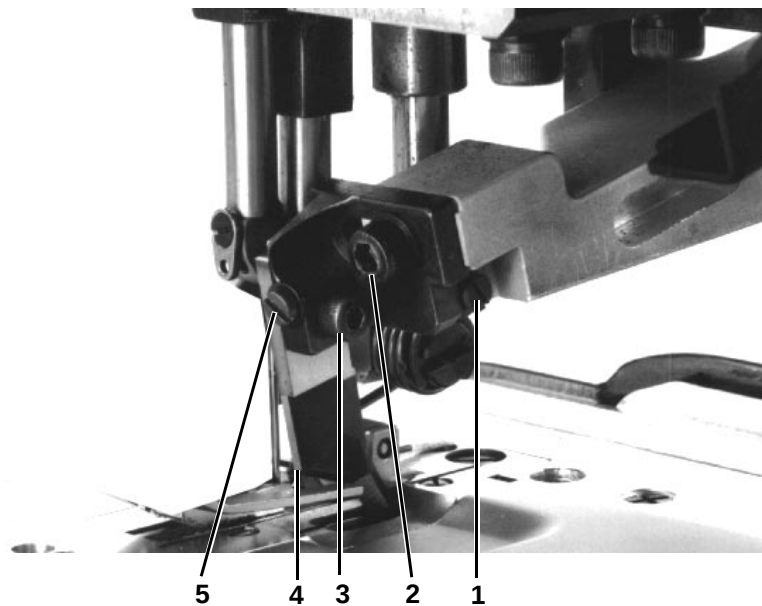
Caution Risk of Injury!

Turn the main switch off before setting.

- Loosen the clamping screw 1 on clamping piece 2.
- Adjust the tie rod 3 so that the knife bar moves as little as possible when the handwheel is turned.
- Tighten clamping screw 1 again.



2.18.4 Height Setting and Lateral Adjustment of the Upper Knife



At the lower dead center of the turned-on edge cutter the forward tip 4 of the upper knife should reach the blade of the lower knife.

The upper knife should be adjusted sideways so that the detector touches the lower knife at upper dead center.



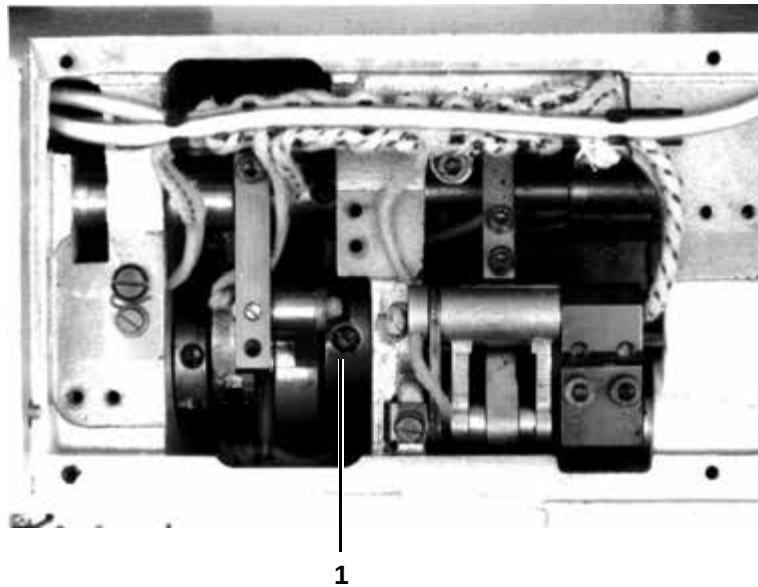
Caution Risk of Injury!

Turn the main switch off before setting.

- Turn the edge cutter on.
- Turn the handwheel so that the upper knife is at its lower dead center.
- Loosen screws 3 and 5 and adjust the upper knife so that the forward tip 4 reaches the blade of the lower knife.
- Tighten screws 3 and 5 again.
- Turn the handwheel so that the upper knife is in its upper position.
- Loosen screw 1.
- Set the knife tip with screw 1 onto the counter knife.
- Tighten screw 1 again.
- Conduct a cutting trial, readjust as required.



2.18.5 Setting the Eccentric on the Upper Shaft



In the first needle position (lower edge of the eye of the needle at the level of the upper edge of the needle plate) the 1st screw in the direction of turn of the eccentric should lie congruent with the tie rod.



Caution Risk of Injury!

Turn the main switch off before setting.

- Loosen the screws on the knife drive eccentric 1.
- Turn the handwheel until the machine lies in the first needle position.
- Adjust the eccentric so that the first screw lies congruent with the tie rod.
- Tighten the screws again.



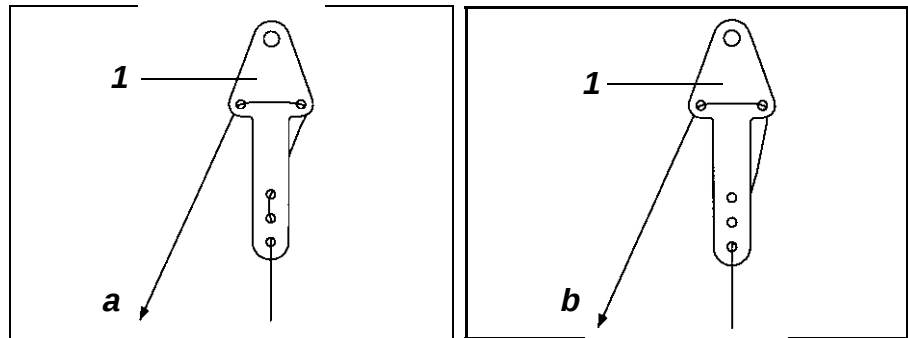
2.19 Thread Guides (Airbag)

Necessary modifications in the thread guides for sewing threads heavier than 25/3 Nm.

- Needle system: 933
- Needle thickness Nm: 160

1 needle machines

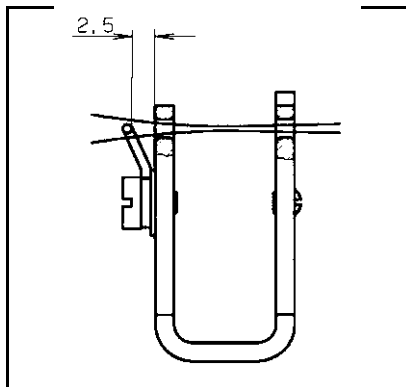
Thread the needle thread **a** and the underthread **b** at the take-off arm as shown in the illustration.



Hooker for 1 needle machines = Part-no.: = 195 004753a

Note:

Please make sure that the correct hook is installed.
(2 nd hook in beypack)



2 needle machines

With 2 needle machines the underthread must be led directly from the yarn stand to the thread tension.

Not through the additional thread guide.

- Bend the thread separator so that there is a clearance of 2.5 mm between the thread guide and the wire (see illustration).

Hooker for r/h needle = Part-no.: 195 004753a

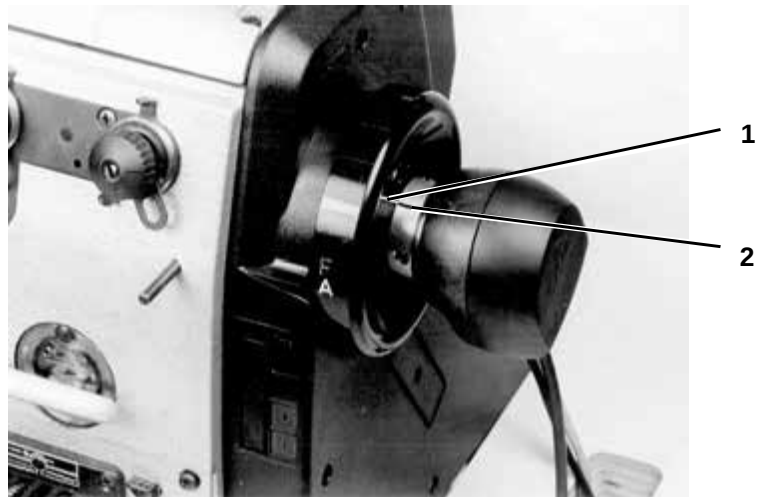
Hooker for l/h needle = Part-no.: 195 005055a

Note:

Please make sure that the correct hooks are installed.
(hooks in beypack)



2.20 Setting the Synchronizer



Before setting check to see that the synchronizer is correctly fastened. With the machine arrested at slot **A** the marking 1 must lie opposite notch 2.

The machine positions are seen by the synchronizer in steps (increments) of $0,7^\circ$ and shown in the display. A complete revolution corresponds to 512 steps.

1st Position

The machine should stop when the hook has securely taken up the loop. This means that the needle should raise above its dead center until the hook tip has moved approx. 6 mm above the needle to the left. This corresponds to the increment number 50.

2nd Position

Needle bar short upper dead center. This corresponds the increment number 190.



2.20.1 Programming the Positions:



1. Hold key **P** pressed.
2. Turn on the main switch. Code-No. C 0000 appears in the display.
3. For entry to the " Technician Level 1" enter Efka Code-No. 1907 with the keys 1 ...0.
4. Press key **E**. Parameter-No. F100 appears in the display.
5. Enter parameter-no. F170 with the keys 1 ...0.
Press key **E**. Service-Routine 1 (Sr1) appears.
Press key **F**. Position 0 appears.
6. Turn the handwheel one full rotation in the machine direction and arrest in position **A** with the enclosed timing pin.
Press key **P** twice.
7. Press key **P**. F170 appears in the display.
8. Press key **E** twice. Service -Routine 2 (Sr2) and F171 appear in the display.
9. Press key **F**. Position 1 and the set increment number appear in the display.
Using keys **+** or **-** set increment number 50.
10. Press key **E**. Position 2 and the set increment number appear in the display.
Using keys **+** or **-** set increment number 190.
11. Press key **E**. Position 1A and the set increment number appear in the display.
Using keys **+** or **-** set increment number 100.
12. Press key **E**. Position 2A and the set increment number appear in the display.
Using keys **+** or **-** set increment number 240.
13. Press key **P** twice. This completes the setting.
14. **Attention!**
It is essential that a seam be sewn with thread trimming and raising the pressure foot. This is the only way for a setting to be definitely stored in the memory. Without sewing the setting is lost when the machine is next turned off.