

**Doppelkettenstich Knopflochautomat
Einfachkettenstich Schnürlochautomat
Automatic double-chainstitch buttonholer
Automatic single-chainstitch eyelet machine**

Bedienanleitung / Operating Instructions

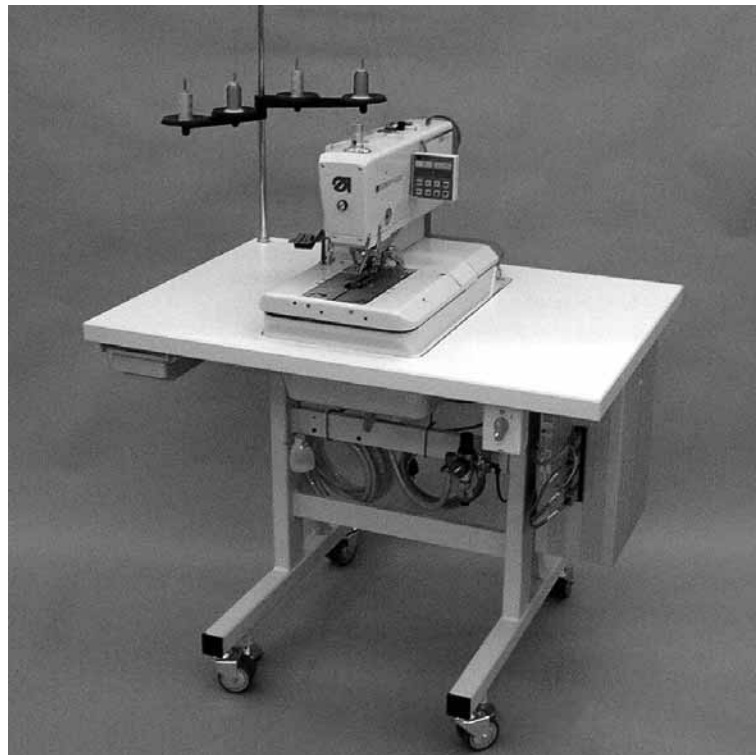
Aufstellanleitung / Installation Instructions

Serviceanleitung / [Service Instructions](#)

1

2

3



Anleitung, komplett / Manual, complete

559

Übersicht	Summary
<p>Bedienanleitung Aufstellanleitung Serviceanleitung</p>	<p>Operating Instructions Installation Instructions Service Instructions</p>
<p>Bauschaltplan 9890 580001 B</p>	<p><u>Interconnection-diagram</u> 9890 580001 B</p>
<p>Pneumatikgeräteplan 9770 559001</p>	<p><u>Pneumatic circuit plan</u> 9770 559001</p>

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Foreword

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

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

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

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

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

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

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

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

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

Never remove or disable any safety devices.

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

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

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

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

General safety instructions

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

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



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

Danger of bodily injuries !

Please note also the general safety instructions.



Part 3: Service Instructions Class 559

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1. General notes

The service manual on hand describes the adjustment of the automatic buttonholer 559 in an appropriate sequence.



ATTENTION !

Various setting positions are interdependent. Therefore it is absolutely necessary to make the individual adjustments following the described order.

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



Caution: Danger of breakage !

Before recommissioning of the automatic buttonholer after disassembly operations first carry out the necessary adjustments according to these service instructions.

Before all setting operations of parts involved in the stitch formation:

- Insert a new needle without any damage.



Caution: Danger of injury !

In case of repair, alteration and maintenance work:

- Switch the main switch off.
Exception:
Adjustments carried out with the help of test or adjusting programs.

Adjusting operations and function tests when the machine is running

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

Adjusting operation in the needle zone

- In order to avoid injuries remove the corresponding parts before carrying out adjusting operations.
Exception:
The parts are absolutely necessary for the adjusting operations.

1.1 Necessary program setting

For adjusting the automatic buttonholer the following buttonhole shape has to be set at the control panel:

- Buttonhole without bartack
- Connecting stitch = 0
- No cutting space
- Set the connecting stitch to “wide” (see chapter 9 “Setting the seam width”)

Note!

The set seam width has to be checked not only mechanically but also at the control panel!

2. Adjusting the locking positions

2.1 General notes



3

With the help of the locking positions an easy adjustment of the needle motion to the looper and spreader motions is possible.

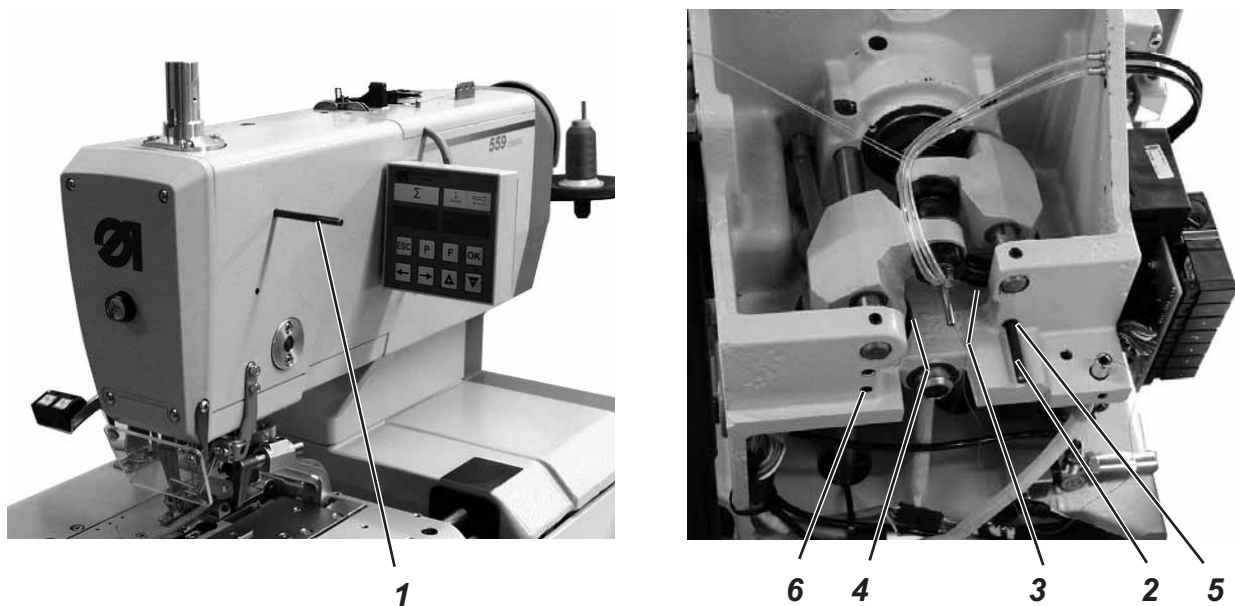
When the arm shaft is in staking-out position, the rotary thread take-up disc and the eccentrics for the spreaders, the loopers and the connecting stitch have to be in staking-out position, too.

The positions have been set by the manufacturer in such a way that standard material can be sewn with the 559.

If you want to use other needle sizes, thread sizes or materials, you may have to set positions slightly differing from the staking-out position.

The locking pegs are included in the accessories of the machine and have a diameter of 5 mm.

2.2 Looper and spreader eccentric



Caution: Danger of injury!

Switch the main switch off.

Adjust the eccentrics only with the sewing machine switched off.

3

Standard checking

When the arm shaft is staked out with arresting pin 1, it should be possible to stake out the looper eccentric 3 and the spreader eccentric 4, too.

- Stake out the arm shaft with arresting pin 1.

Important!

In this position the needle bar must be in the top dead center in front of the **left** entry point.

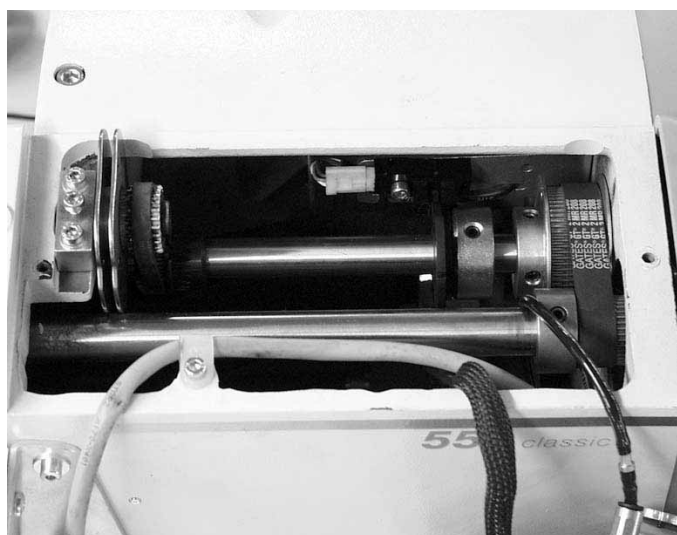
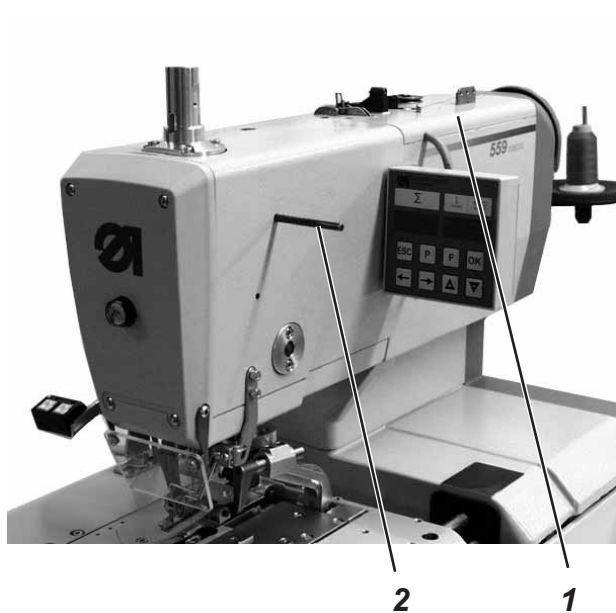
- Check with the arresting pin 2 whether the looper eccentric 5 and the spreader eccentric 6 can be staked out.

Correction

- Stake out the arm shaft with the arresting pin 1.
- Loosen the screws at the looper eccentric 3.
- Turn and stake out the eccentric.
- Tighten the screws.

- Loosen the screws at the spreader eccentric 4.
- Turn and stake out the eccentric.
- Tighten the screws.

2.3 Rotary Thread Take-up Disc



Caution: Danger of injury!

Switch the main switch off.

Adjust the rotary thread take-up disc only with the sewing machine switched off.



6 5 4 3

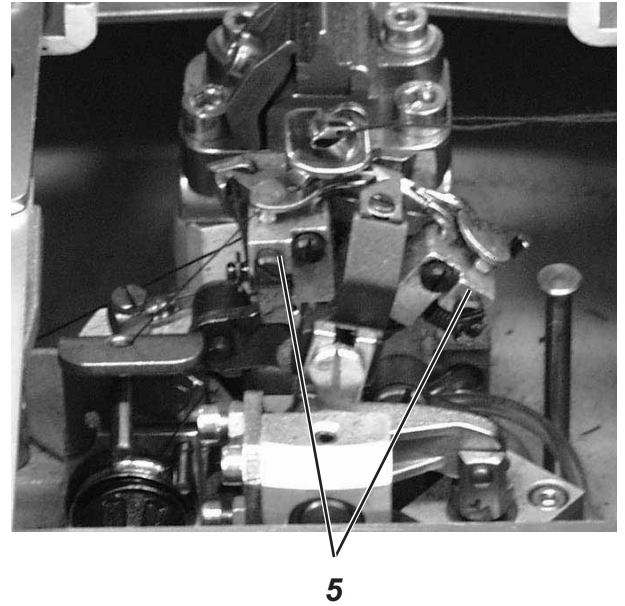
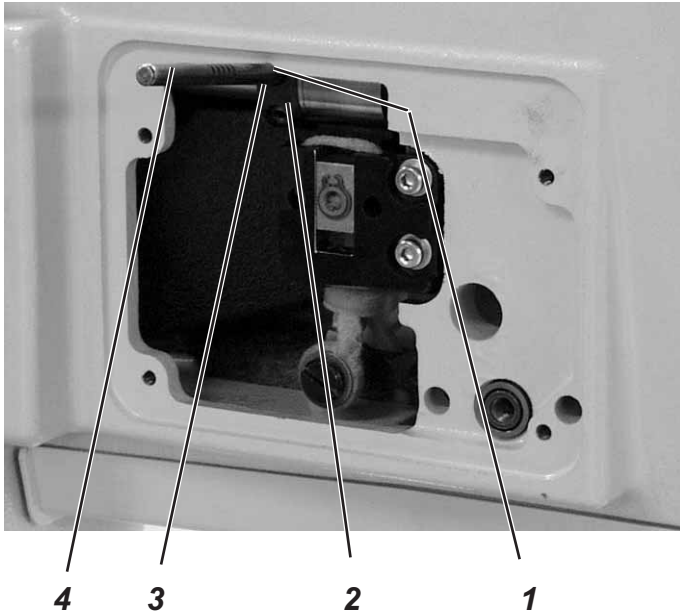
Standard checking

When the arm shaft has been arrested through the arresting pin 2, so that the looper holder is in the **left** end position (left entry point), the rotary thread take-up disc 6 should be in the right position for a needle 4 that is put on the bore hole of the rotary thread take-up disc to butt against the right surface 3.

Correction

- Remove the tension plate 1.
- Loosen the screws on the belt pulley 5.
- Push the needle 4 through the bore hole in the rotary thread take-up disc 6.
- Turn the rotary thread take-up disc until the needle 4 butts against the surface 3.
- Fix the screws on the belt pulley 5 again.

2.4 Throw eccentric



Caution: Danger of injury !

Switch the main switch off. Adjust the rotary thread take-up disc only with the machine switched off.

3

Standard checking

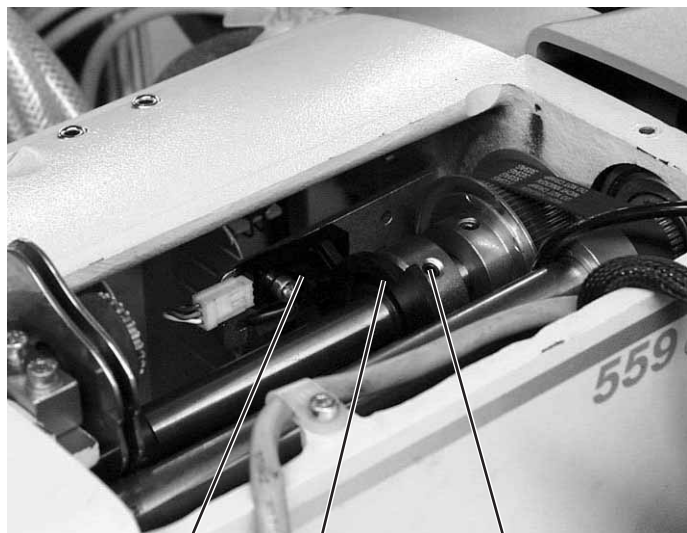
When the looper turret 5 is in its **right** end position (right entry point), the arresting pin 4 inserted in the eccentric 2 should abut in the notching 1 at the arm.

- Turn the arm shaft in such a way that the looper turret is on the **right** side (right entry point).
- Put the arresting pin 4 in the drill-hole 3 of the eccentric 2.
- Check whether the arresting pin 4 abuts in the notching 1 of the arm.

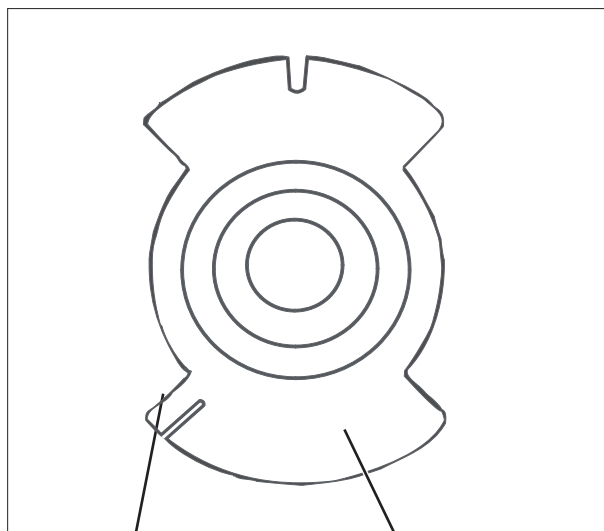
Correction

- Loosen the screws at the eccentric 2.
- Position the eccentric with the arresting pin right on top against the arm.
- Tighten the screws at the eccentric 2.

3. Needle bar positioning



3 2 1



4 2



Caution: Danger of injury!

Exercise utmost caution when making adjustments with the machine running.

Standard checking

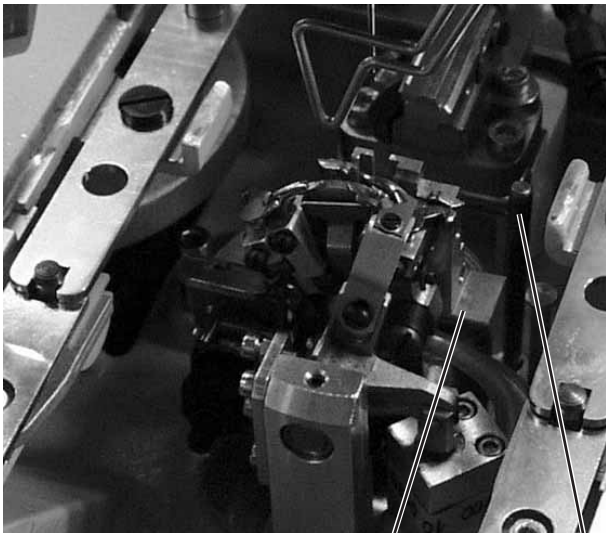
When the machine positions automatically after being switched on, the needle bar must be in the top dead center. The looper turret is in its **right** end position (**right** entry point) then.

- Switch the machine on.
The machine positions automatically.
- Check whether the needle bar is in the top dead center and whether the looper turret is in its **right** end position (**right** entry point).

Correction

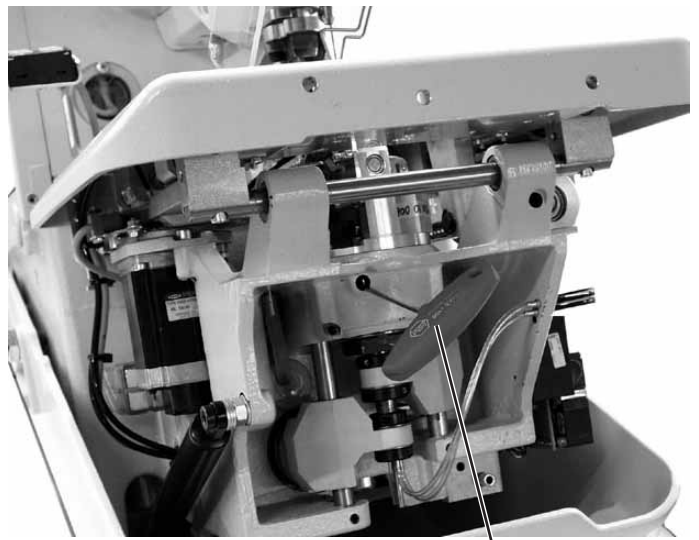
- Switch the machine on. The machine positions automatically.
- Move the needle bar in the correct position by handwheel (right entry point).
- Switch to the technician level.
For this purpose press the keys “P” and “←” simultaneously.
- Enter code “2548”.
- Press key “OK”.
The control switches to the technician level.
- Select menu “603”.
- Press key “OK”.
- Loosen screw 1 at the switching segment 2.
- Turn the segment in such a way that the light barrier 3 at the flank 4 engages.
The switching signals are indicated on the control panel (inlet r0)
- Tighten the screw 1 at the switching segment 2.
Note:
The switching segment must be in the middle of the light barrier.
- Switch the machine on and check the positioning.

4. Aligning the looper turret



2

1



3



Caution: Danger of injury!

Switch the main switch off.

Align the looper turret only with the machine switched off.

3

Note

Please observe the necessary program setting as described in chapter 1.1.

Standard checking

When the machine has reached its initial position after switching on the main switch, it must be possible to stake out the looper turret 2 with the arresting pin 1.

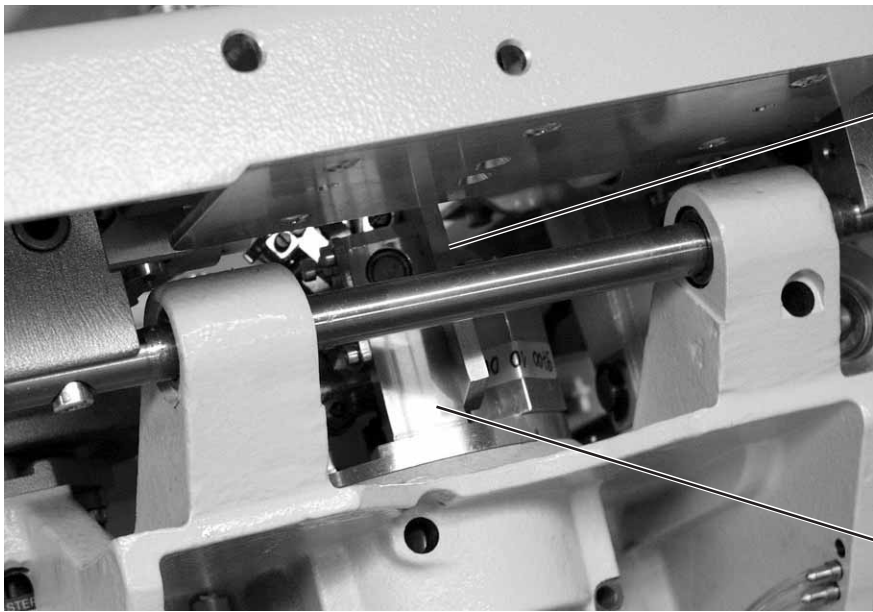
- Switch the machine on.
The machine and the fabric support plate run to their initial position.
- Switch the machine off.
- Check whether the looper turret 2 can be staked out with arresting pin 1.



4

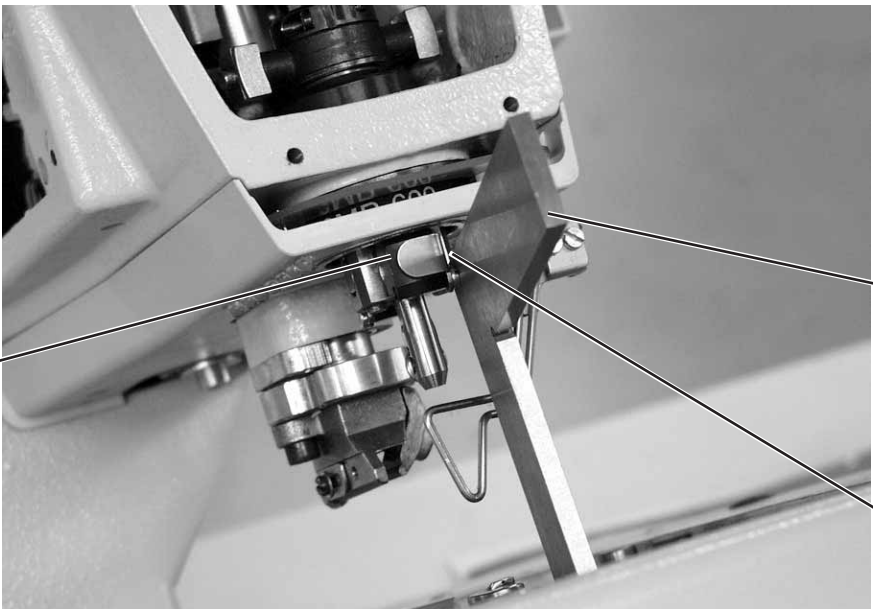
Correction

- Remove the clamping plates 4.
- Switch the machine on.
The machine runs to its initial position.
- Switch the machine off.
- Loosen the clamping screw at the toothed belt wheel with the hexagonal spanner 3.
- Turn the looper turret in such a way that it can be staked out with pin 1.
- Tighten the clamping screw with the hexagonal spanner 3.



5

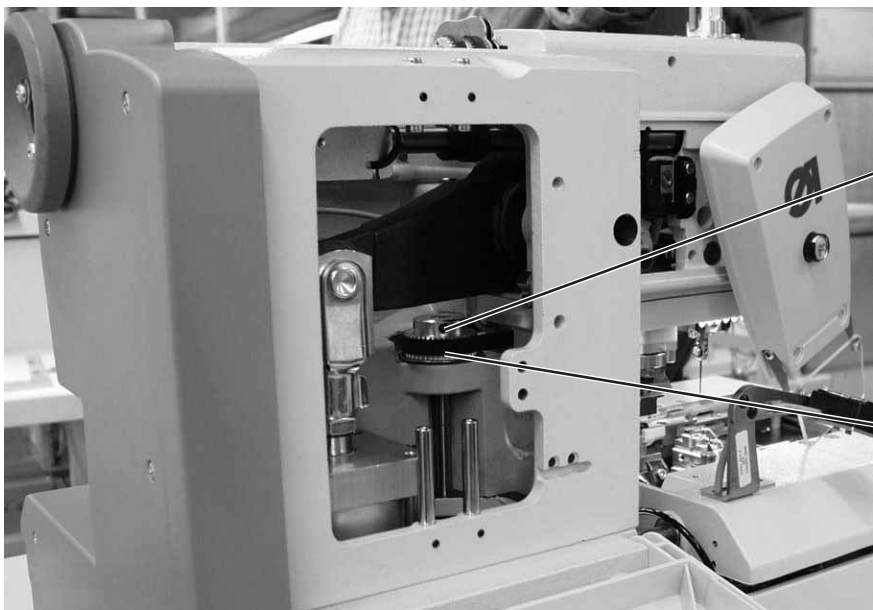
6



5

7

8



9

10

5. Aligning the needle bar parallel to the looper turret



Caution: Danger of injury!

Switch the main switch off.

Adjust the needle bar only with the main switch switched off.

Standard checking

The needle bar 1 and the looper turret 3 must be in parallel position.

- Remove the cutting block.
- Unscrew the finger protection and the head cover.

Note !

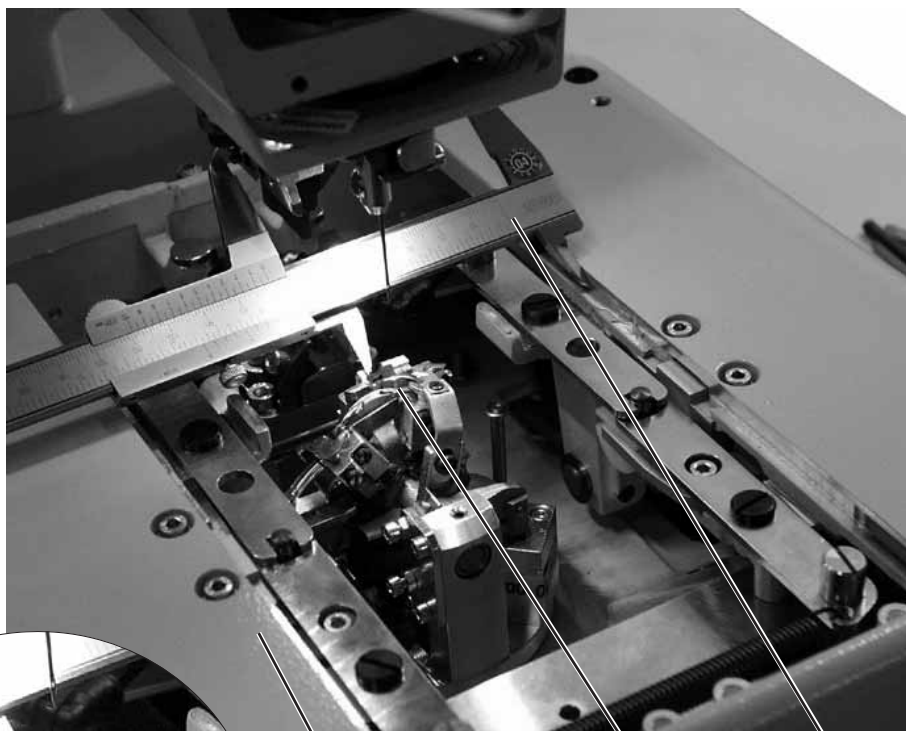
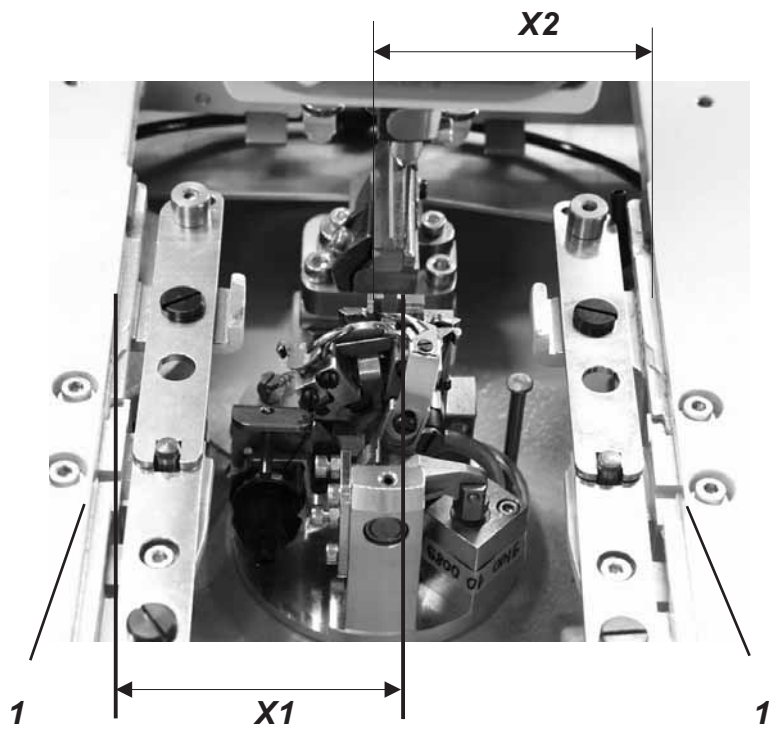
Do not separate the cable from the head cover.

- Switch the machine on.
The machine runs to its initial position.
- Switch the machine off.
- Stake out the looper turret with arresting pin 2.
- Position an angle 5 at the right side 6 of the looper turret.
- Check whether the screw 7 at the needle bar guide 8 abuts on the angle.

Correction

- Loosen the screws 9 at the toothed belt wheel 10.
- Turn the needle bar guide 4 correspondingly.
- Tighten the screws 9 at the toothed belt wheel 10.
- Switch the machine on.
- Check the needle bar position.





6. Transversal motion of the fabric support plate



Caution: Danger of injury!

Exercise utmost caution when making adjustments with the machine running.

Note

Please observe the necessary program setting as described in chapter 1.1.

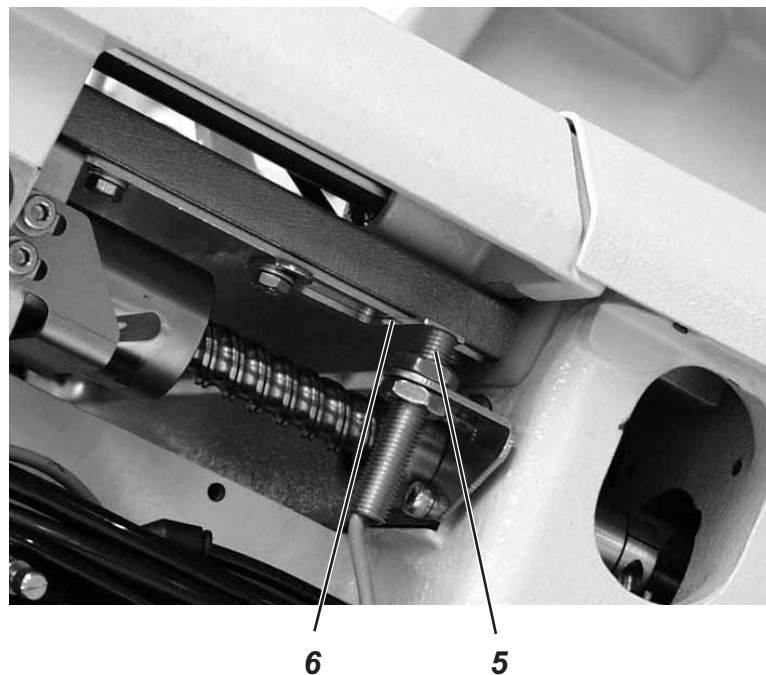
Standard checking

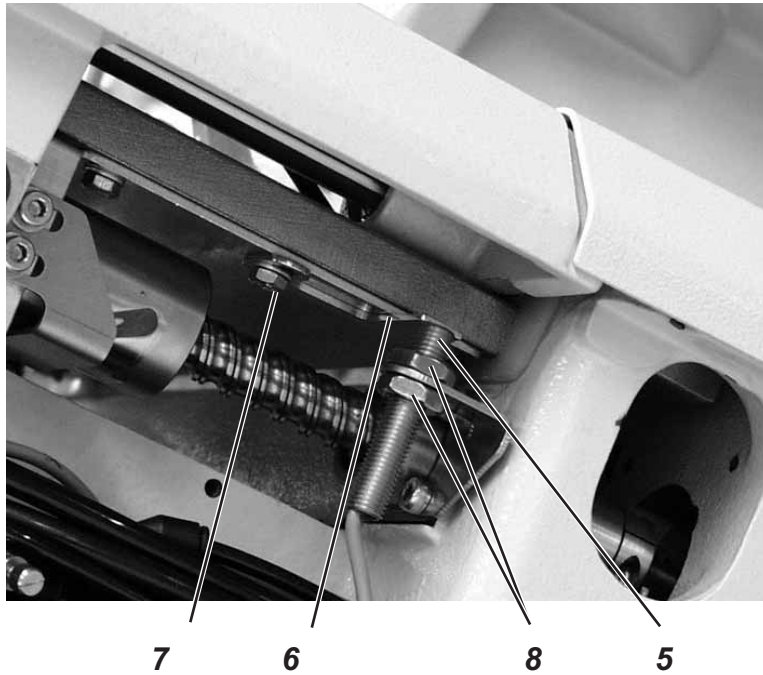
The looper turret 3 must be in the center of the fabric support plate 4.

When the automatic buttonholer is in reference position, the dimensions X1 and X2 must be equal when the fabric support plate is adjusted correctly.

The distance between reference switch 5 and switch sheet 6 must not exceed 0.5 mm.

- Switch the machine on.
- Press the keys "P" and "←" on the control panel simultaneously.
- Enter code "2548".
- Press key "OK".
The control switches to the technician level.
- Select the menu "608" with the key "+".
- Switch the menu on with key "OK".
The machine runs to its initial position.
- Switch the machine off.
- Check the dimension X1 with the slide gauge 2 (right edge of the throat plate groove to the left edge of the fabric support plate).
- Check the dimension X2 (left edge of the throat plate groove to the right edge of the fabric support plate).





Correction

- Switch the machine on and press the keys "P" and "←" on the control panel simultaneously.
- Enter code "2548".
- Press key "OK".
The control switches to the technician level.
- Select the menu "603" with the key "+".
In this mode the step motors are dead.
- Switch the menu on with key "OK".



Caution: Danger of injury!

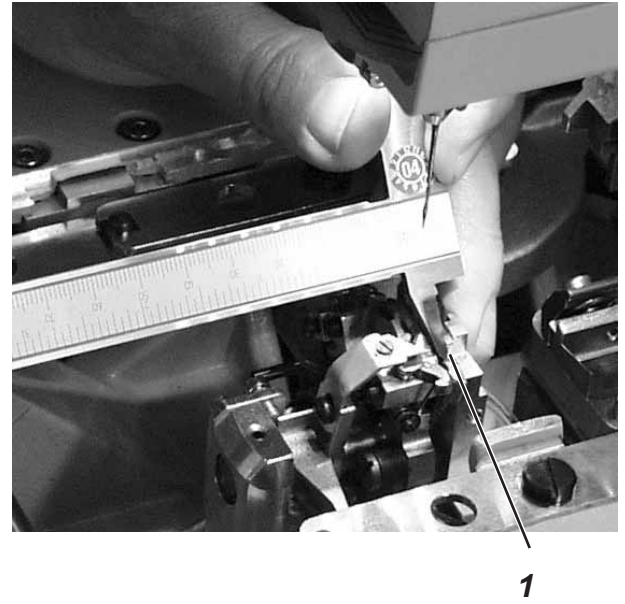
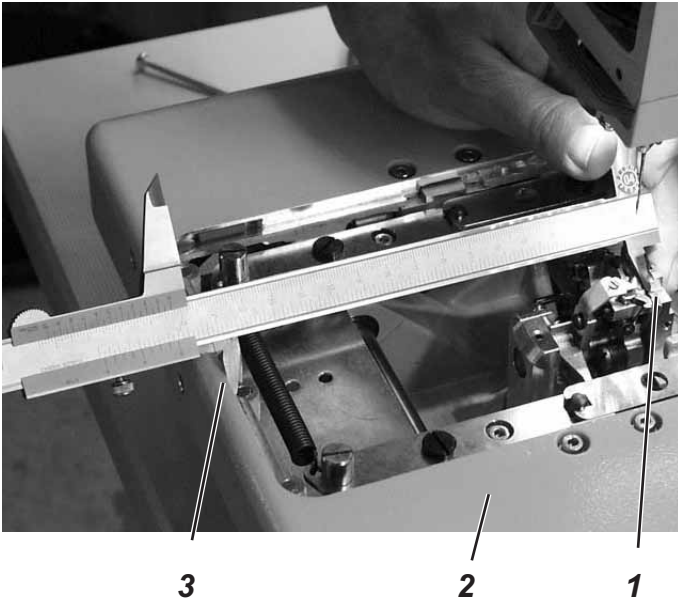
Exercise utmost caution when making adjustments with the machine running.

- Shift the fabric support plate manually in such a way that the dimensions X1 and X2 are equal.
- Loosen screw 7.
- Turn the switch sheet 6 to the switch actuation point.
When turning the switch sheet 6 the switching signals are indicated on the control panel (inlet r1).
- Tighten screw 7.
- Switch the machine off and on again.
- Let the machine move to its initial position and check the position of the fabric support plate.

Correction of the distance between reference switch and switch sheet

- Loosen the nuts 8.
- Screw the reference switch 5 out or in so that the distance between reference switch 5 and switch sheet 6 does not exceed 0.5 mm.
- Tighten the nuts 8.

7. Longitudinal motion of the fabric support plate



Caution: Danger of injury!

Exercise utmost caution when making adjustments with the machine running.

3

Note

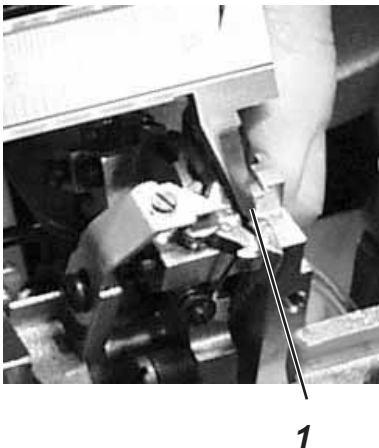
Please observe the necessary program setting as described in chapter 1.1.

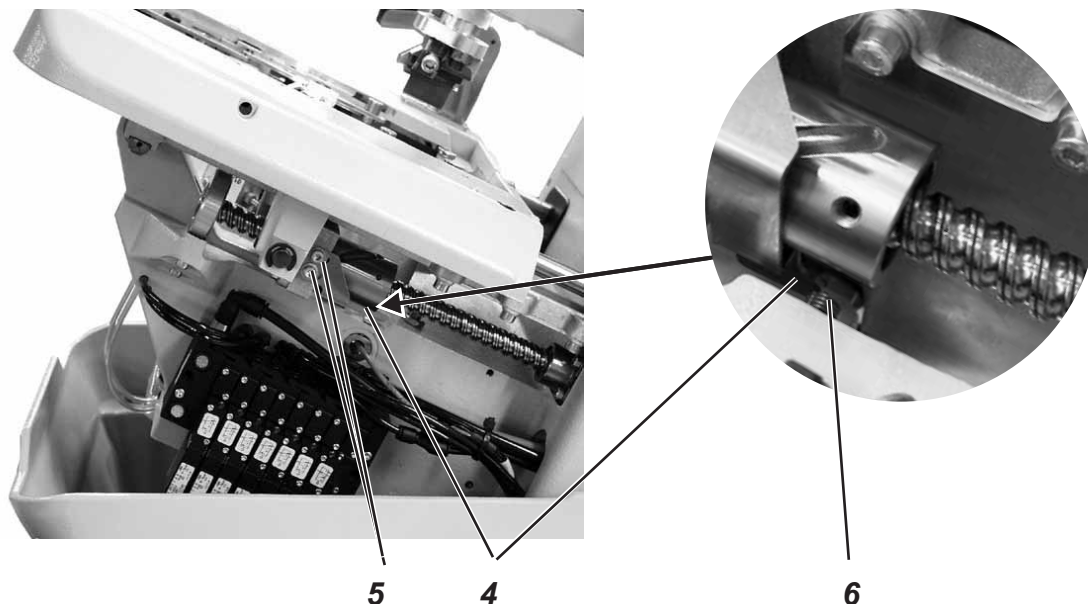
Standard checking

When the machine is in reference position, the distance between the edge 3 of the fabric support plate 2 and the front edge 1 of the throat plate support should amount to approx. 113 mm.

The distance between reference switch and switch sheet must not exceed 0.5 mm.

- Switch the machine on.
- Press the keys "P" and "←" on the control panel simultaneously.
- Enter code "2548".
- Press key "OK".
The control switches to the technician level.
- Select the menu "608" with the key "+".
- Switch on the menu with key "OK".
The machine runs to its initial position.
- Switch the machine off.
- Check the distance between the edge 3 of the fabric support plate and the front edge 1 of the throat plate support.





Correction

- Switch the machine on and press the keys "P" and "←" on the control panel simultaneously.
- Enter code "2548".
- Press key "OK".
The control switches to the technician level.
- Select the menu "603" with the key "+".
In this mode the step motors are dead.
- Switch the menu on with key "OK".



Caution: Danger of injury!

Exercise utmost caution when making adjustments with the machine running.

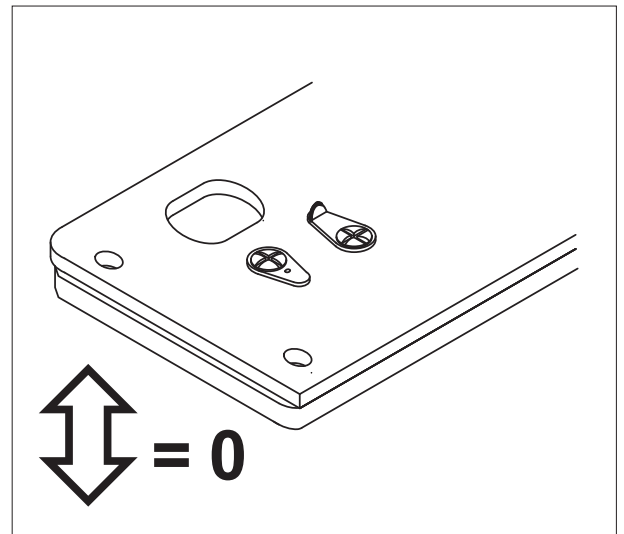
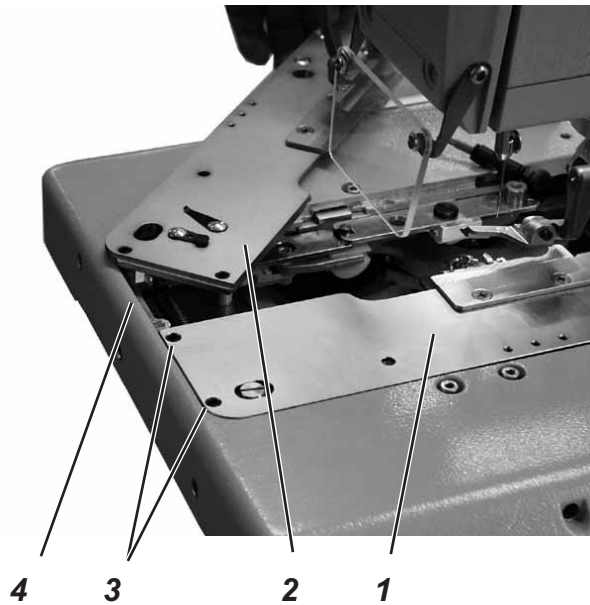
- Shift the fabric support plate manually to the desired measurement.
- Loosen the screws 5.
- Set the switch sheet 4 to the switch actuation point.
When shifting the switch sheet 4 the switching signals are indicated on the control panel (inlet r2).
- Tighten the screws 5.
- Switch the machine off and on again.
- Let the machine move to its initial position and check the measurement.

Correction of the distance between reference switch and switch sheet

- Loosen the nut.
- Screw the reference switch 6 out or in so that the distance between reference switch 6 and switch sheet 4 does not exceed 0.5 mm.
- Tighten the nut.

8. Clamping plates

8.1 Inserted clamping plates



Caution: Danger of injury!

Switch the main switch off.

Adjust the clamping plates only with the machine switched off.

3

Standard checking

The inserted clamping plates 1 and 2 should be in the holding groove 4 of the fabric support plate in parallel position and without clearance.

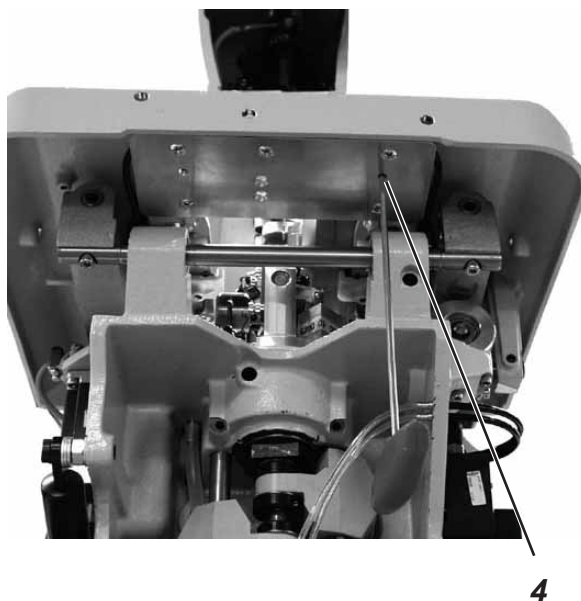
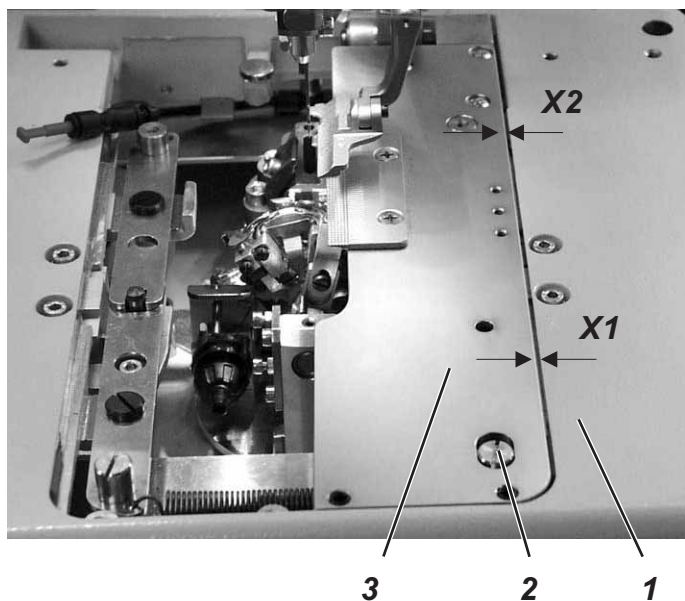
Inserting and removing must, however, be fingertip easy.

- Insert both clamping plates and check whether there is as little clearance as possible.
- Remove the clamping plates and check whether this is easily possible.

Correction

- Adjust the screws 3 correspondingly.

8.2 Aligning the clamping plates



Caution: Danger of injury!

Switch the main switch off.

Adjust the clamping plates only with the machine switched off.

Standard checking

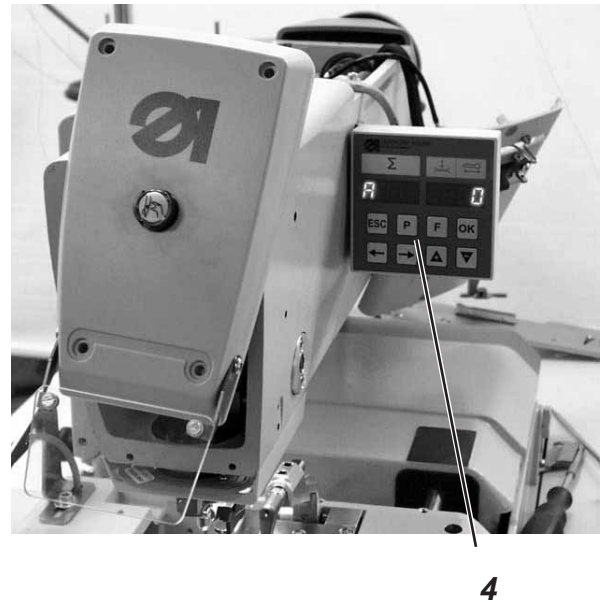
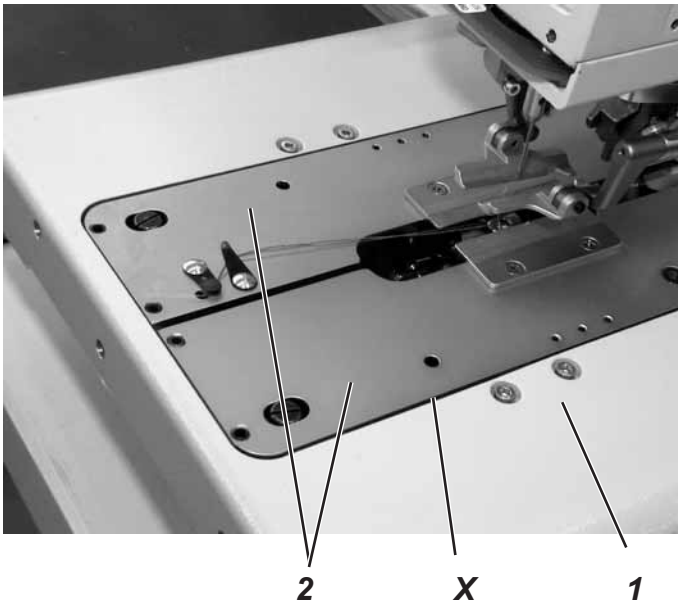
Both clamping plates 3 must be adjusted in such a way that the distance between clamping plate and fabric support plate 1 is equal everywhere (distance $X1 = \text{distance } X2$).

- Put on the right clamping plate.
- Check distance $X1$ and $X2$.

Correction

- Insert the right clamping plate.
- Loosen the screw 4 with a hexagonal spanner.
- Turn the eccentric 2 correspondingly.
- Tighten screw 4.
- Insert and adjust the left clamping plate.

8.3 Adjusting the spreading



Caution: Danger of injury!

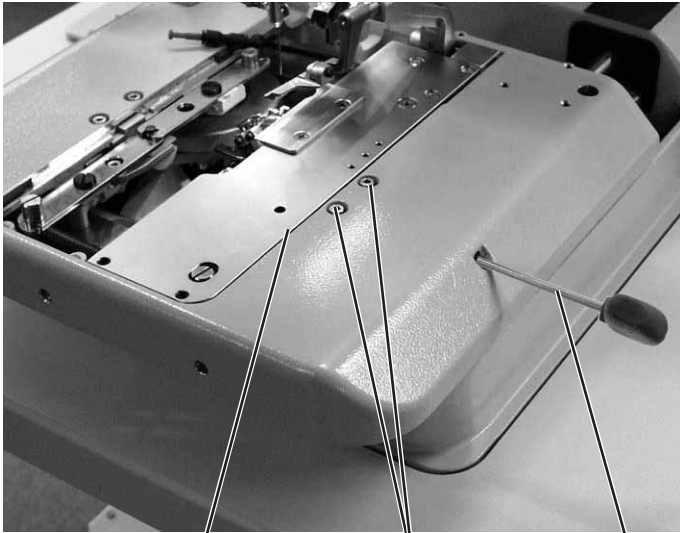
Exercise utmost caution when making adjustments with the machine running.

3

Standard checking

The distance X between the clamping plates 2 and the fabric support plate 1 should amount to 1.3 mm (non-spreaded) and to 0.3 mm (spreaded).

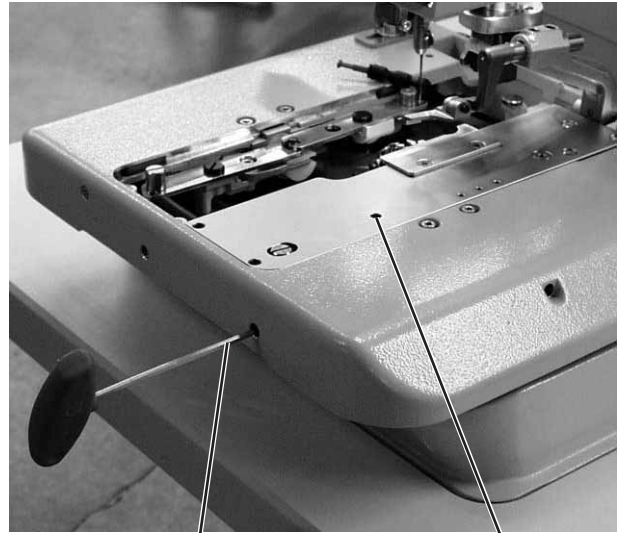
- Insert the clamping plates 2 and switch the machine on.
- Press the keys "P" and "F" on the control panel simultaneously.
- Enter code "2548".
- Press key "OK".
The control switches to the technician level.
- Select the menu "601" with the key "+".
- Switch the menu on with key "OK".
- Select the function "Y03" (closing the fabric clamp).
- Press key "OK".
The fabric clamps close.
- Check whether the distance X amounts to 1.3 mm.
- Select the function "Y04".
- Press key "OK".
The fabric clamps spread.
- Check whether the distance X amounts to 0.3 mm.



X

6

5



8

7

Correction clamping plate

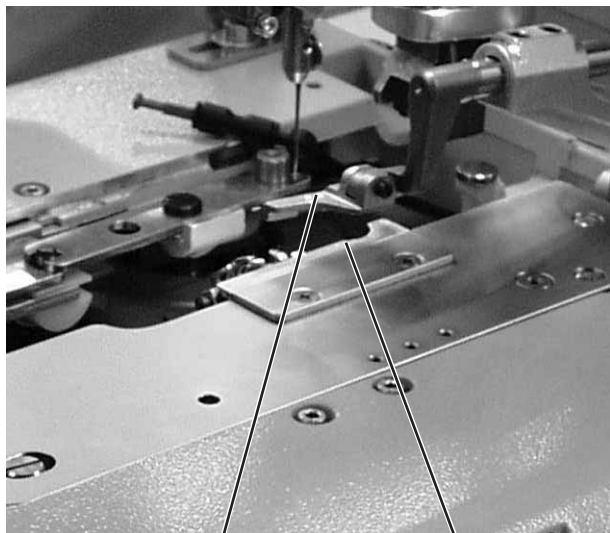
- Switch the machine on.
- Press the keys "P" and "F" on the control panel simultaneously.
- Enter code "2548".
- Press key "OK".
The control switches to the technician level.
- Select the menu "601" with the key "+".
- Switch the menu on with key "OK".
- Select the function "Y03" (closing the fabric clamp).
- Press the key "OK".
The fabric clamps close.
- Loosen the screws 6.
- Set the distance X to 1.3 mm (basic adjustment) with the hexagonal spanner 5.
- Tighten the screws 6.
- Select the function "Y04".
- Press key "OK".
The fabric clamps spread.
- Loosen screw 7.
- Set the distance X to 0.3 mm with the hexagonal spanner 8.
- Tighten screw 7.
- Adjust the left clamping plate as well.



Note!

The desired spreading must only be set with the screws 6 according to the sewing material used.

8.4 Height of the fabric clamps



3

2



Ø 12 mm

3

2

1



Caution: Danger of injury!

Switch the main switch off.

Adjust the fabric clamp height only with the machine switched off.

Standard checking

The distance between the open fabric clamps 2 and 3 should amount to 12 mm.

- Remove the clamping plates.
- Open the clamping plate and test e.g. with a twist drill Ø 12 mm whether the fabric clamps 2 and 3 have the required distance.

Correction

- Adjust the distance with core pin 1.

8.5 Adjusting the locking sheet



2

1



3



Caution: Danger of injury!

Switch the main switch off.

Adjust the locking sheets only with the machine switched off.

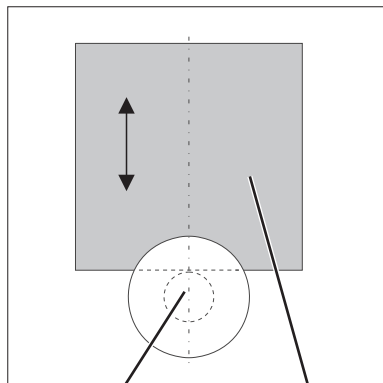
Standard checking

The locking sheets 1 must be adjusted in such a way that the stops 3 of the clamping plates abut centrally and as tight as possible.

- Insert the clamping plates.
- Check the position of the locking sheet 1 to the stop 3.

Correction

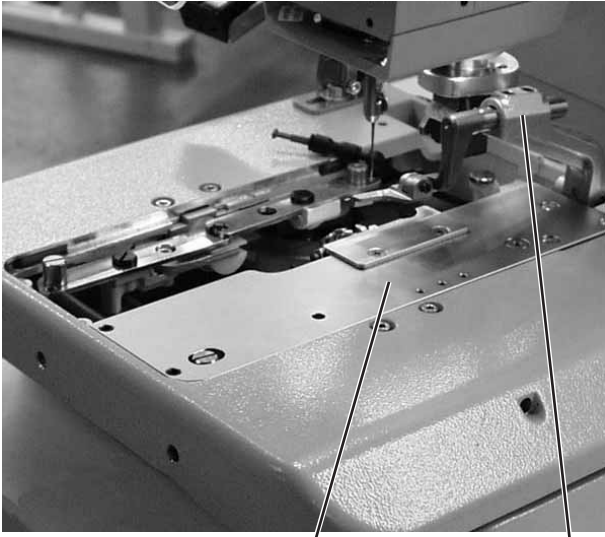
- Adjust the locking sheet 1 with the special spanner 2 (in the accessories).



3

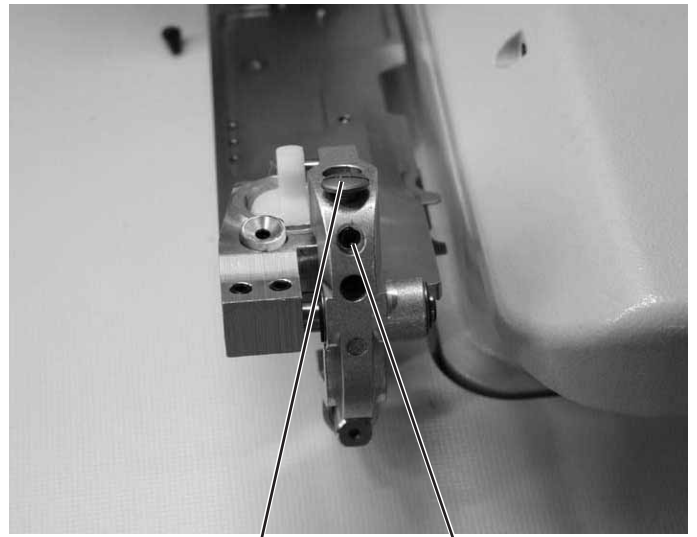
1

8.6 Arrest of the clamping plates



2

1



4

3



Caution: Danger of injury!

Exercise utmost caution when making adjustments with the machine running.

3

Standard checking

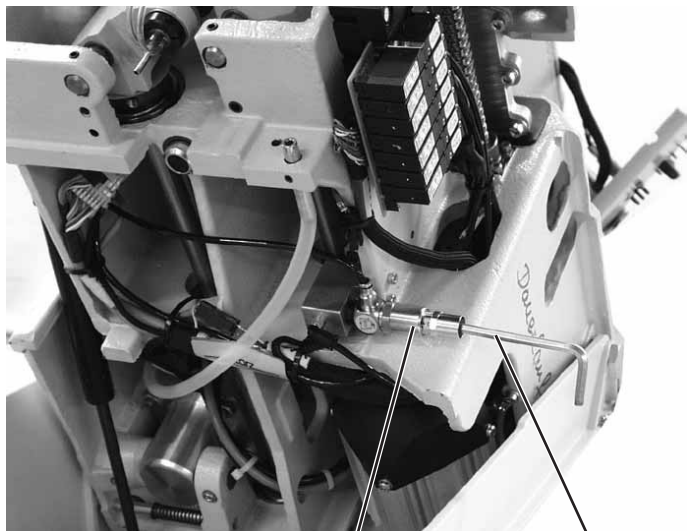
There must be a minimum clearance in the height of the inserted clamping plates 2 when:

- no material is loaded
- approx. 8 mm thick material is loaded and the clamps are closed.
 - Insert the clamping plates.
 - Switch the machine on.
 - Close the fabric clamps.
 - Check at the fabric clamp fixture 1 whether the clamping plate can be minimally lifted.
 - Load 8 mm thick material.
 - Check at the fabric clamp fixture 1 whether the clamping plate can be minimally lifted.

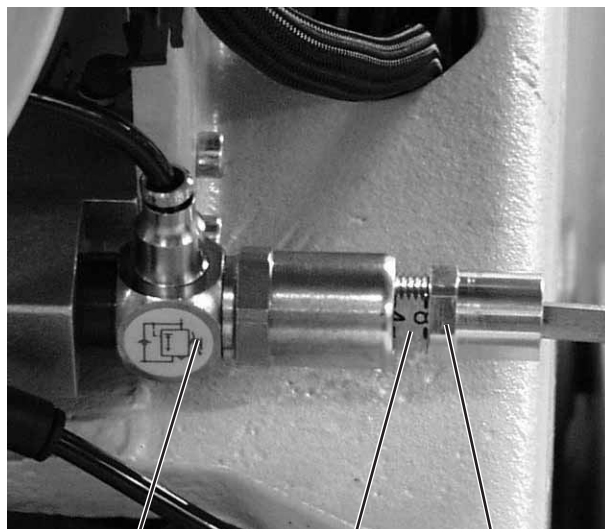
Correction

- Switch the machine off.
- Remove the clamping plates.
- Loosen the core pin 3.
- Adjust the stop 4.
- Tighten screws 3.

8.7 Adjusting the fabric clamping pressure



2 1



2 4 3



Caution: Danger of injury!

Switch the main switch off.

Adjust the fabric clamping pressure only with the machine switched off.

Standard checking

The clamping pressure should be adjusted in such a way that the sewing material is clamped safely and tightly.

Please observe that the sewing material is not damaged by a too high pressure.

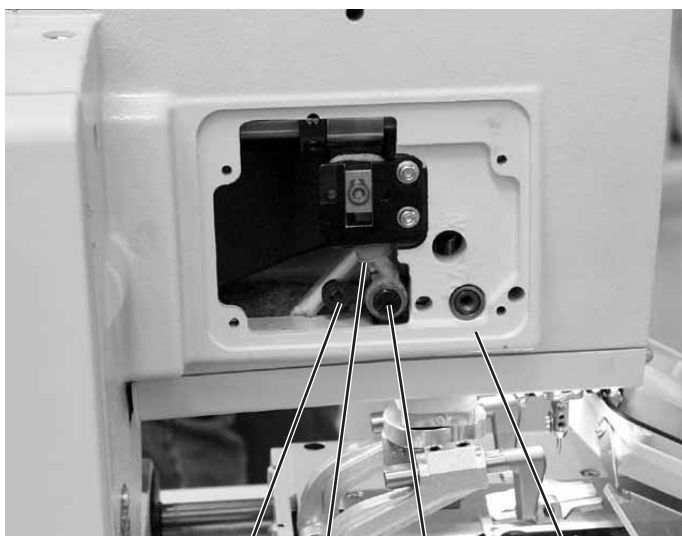
The standard pressure amounts to 4 bar.

Correction

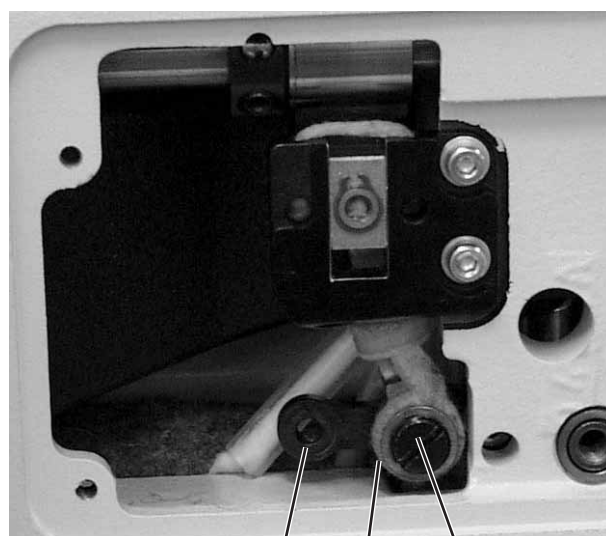
- Switch the machine off and tilt it up.
- Loosen the counter-nut 3 at the regulator 2 so that the scale 4 is visible.
- Set the pressure with the hexagonal spanner 1.
- Tighten the counter-nut 3.
- Check the clamping of the material.

9. Adjusting the seam width

9.1 Presetting the seam width



B 2 A 1



B A 3



Caution: Danger of injury!

Switch the main switch off.

Adjust the seam width only with the machine switched off.

3

Standard

You can choose among two seam widths:

- Seam width “Narrow” = Lever 2 mounted in position B
- Seam width “Wide” = Lever 2 mounted in position A

The seam width “Narrow” is 2.2 mm and “Wide” 3.3 mm.



Attention: Danger of breakage!

The mechanical components of each sewing equipment are to be used only with one seam width, and so cannot be changed or adjusted either in the sewing equipment configuration.

When the sewing equipment is changed, the sewing width will automatically match the sewing equipment.

Both sewing width - electrical and mechanical must be either both “narrow” or both “wide”.

Under the menu «502» it is possible to check the value of the electrical seam width for the sewing equipment.

When changing the configuration of the sewing equipment and the sewing width, please make sure to have the corresponding components of the sewing equipment mounted.

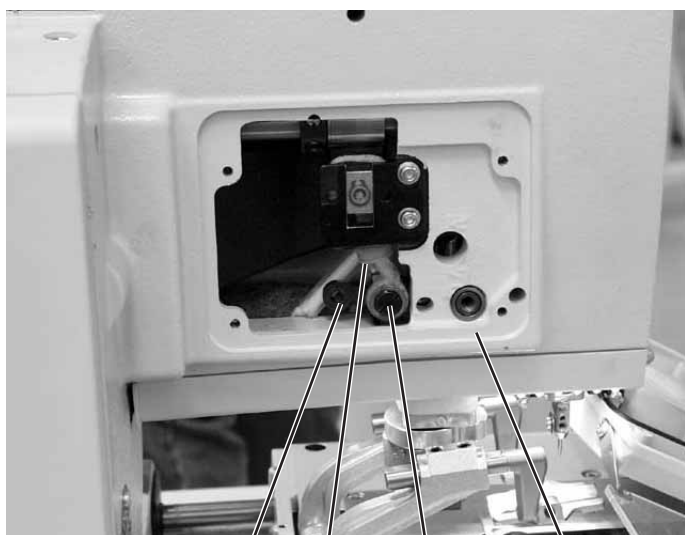
Setting the sewing equipment

- Press the keys "P" and "F" of the control panel simultaneously.
- Enter code "2548".
- Press the "OK" key.
The control switches to the technician level.
- Select the menu "500" (configuration automatic buttonholer).
- Press the "OK" key.
- Select the menu "511"
- Press the "OK" key.
- Set the sewing equipment (the seam width will then be adjusted automatically to match the sewing equipment - see table).

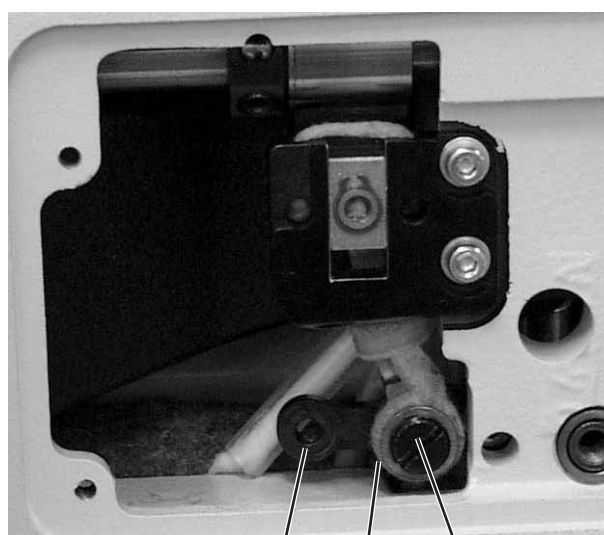
Class	Sewing equipment	
	narrow	wide
559 - 151	E1501	E1521
	E1502	E1522
	E1504	E1524
	E1551	E1571
	E1553	E1573
	E1590	E1595

Correction

- Unscrew the side cover at the arm 1.
- Screw out screw 2.
- Screw the screw in drill-hole A or B according to the desired seam width.
- Switch the machine on.



B 2 A 1



B A 3

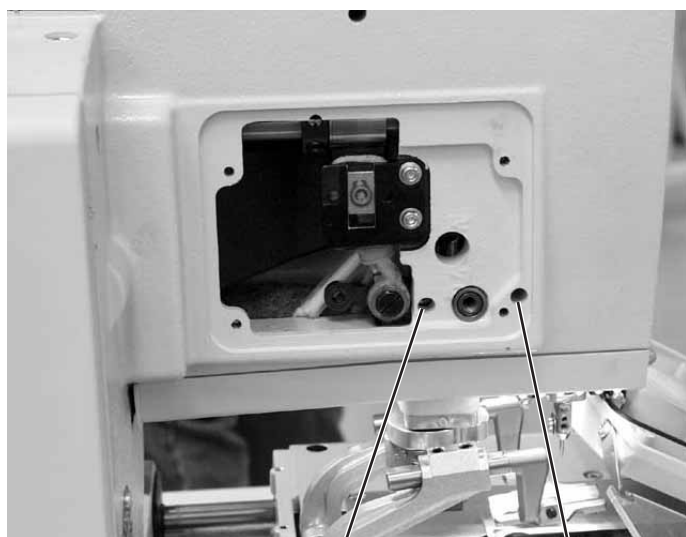


Attention: Danger of breakage!

After altering the seam width, correct the looping stroke in any case.

Notes:

9.2 Needle zero position



2

1



4

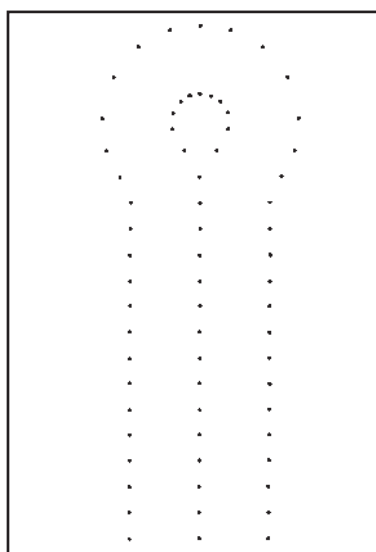
3



Caution: Danger of injury!

Switch the main switch off.

Set the needle zero position only with the machine switched off.



Standard checking

The needle bar oscillates unidirectionally from the left (inside) to the right (outside).

The needle zero position is on the left (inside).

With the needle zero position the inner stitches of the forward and backward lip must be in a line.

Note

Please observe the necessary program setting as described in chapter 1.1.

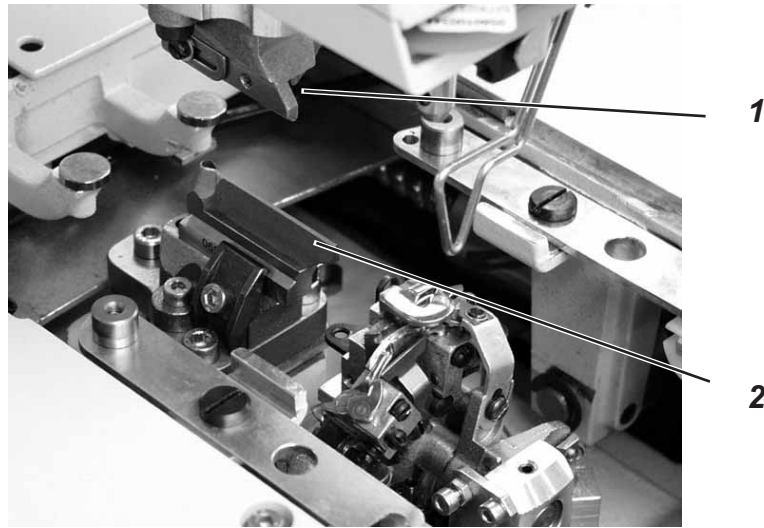
- Set the wide seam width. (See chapter 9.1)
- Insert a short needle.
Part Number 0558 006066.
- Adjust the fabric clamps right to the outside. (See chapter 20)
- Load a piece of cardboard as sewing material.
- Sew a buttonhole without cutting it open.
- In case of a wide throw the inner stitches of the lip must lie exactly one on top of the other.

Correction

- Unscrew the head and side covers.
- Loosen screws 1 and 2 with the hexagonal spanner 4.
- Shift the yoke 3 up or down.
- Tighten screws 1 and 2.
- Sew a new buttonhole and check the stitches.

10. Cutting knife (Eyelet knife)

10.1 Position of the cutting knife



Caution: Danger of injury !

Switch the main switch off.

Adjust the cutting knife only with the machine switched off.

Standard checking

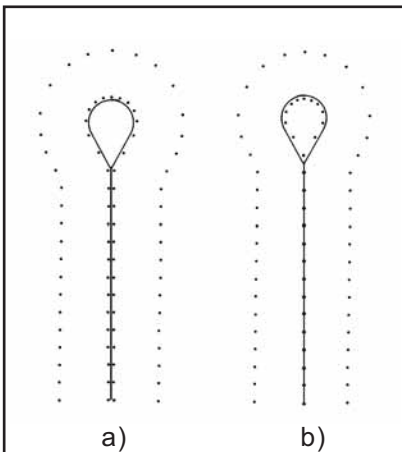
In case of automates for “cutting after sewing” the cutting knife 2 should cut exactly between the seam rows and in the center of the eyelet (see illustration a).

In case of “cutting before sewing” the cutting knife should cut exactly on the superimposed stitches and around the eyelet (see illustration b).



Attention: Danger of breakage !

Please take absolute care that the cutting knife corresponds to the subclass and to the sewing equipment.



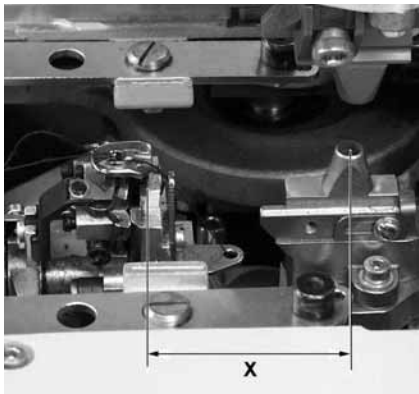
According to the sewing equipment the position of cutting knife 2 and cutting block 1 (not in use on the photo) can be different.

Please take care in any case that the correct position of cutting knife and cutting block is adjusted when the sewing equipment is changed on the control panel.

The position of the cutting knife is indicated in the table on the next page.

Furthermore, the matching clamping plates and fabric clamps must be used for the new sewing equipment.

The machine must not be operated before the cutting block, the cutting knife, the clamping plate and the fabric clamps have been adapted to the new sewing equipment.

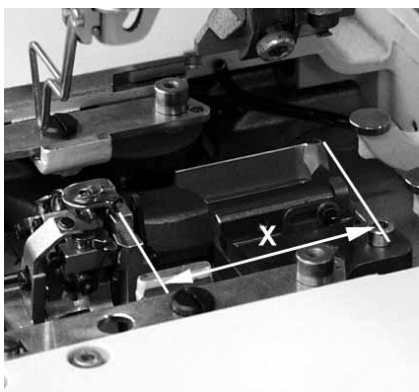


The cutting knife has to be adjusted in such a way that it cuts in the center of the sewn buttonhole shape.

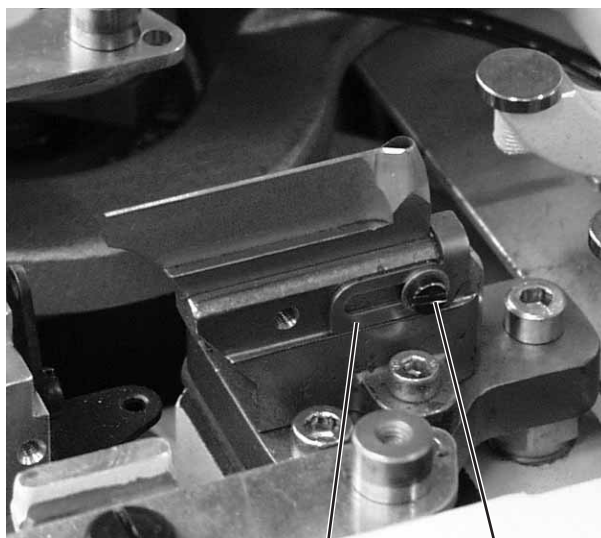
- Insert the cutting block.
- Insert a short needle.
- Load a piece of paper or cardboard as sewing material.
- Sew a buttonhole.
- Check the position of the cut.

Correction

- Loosen two screws 5 at the base plate 3.
- Correct the position of the cutting knife 2 laterally.
- Tighten the screws 5 at the base plate 3.
- Loosen screw 4.
- Shift the cutting knife 2 to the front or to the back.
As a presetting shift the cutting knife to the setting dimension X (center of buttonhole eyelet to the groove of the throat plate holder) listed in the table below.
As a fine adjustment shift the cutting knife in such a way that it cuts in the center of the buttonhole shape.
- Tighten screw 4.
- Loosen screw 6.
- Position guide 7 close to the cutting knife.
- Tighten screw 6.



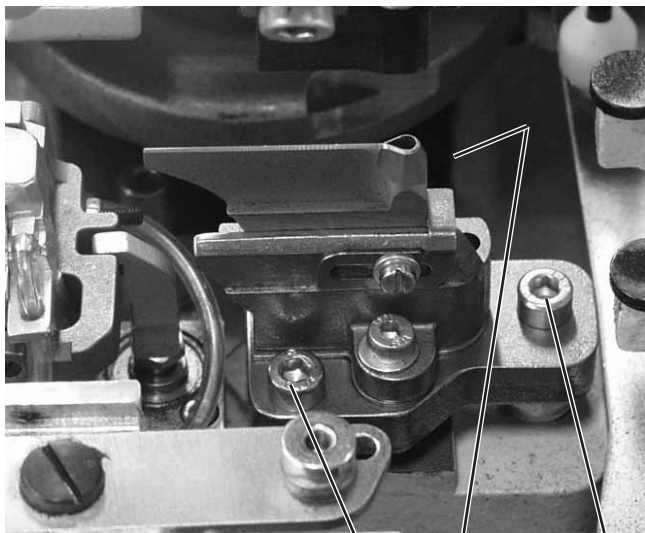
5 4 3 2



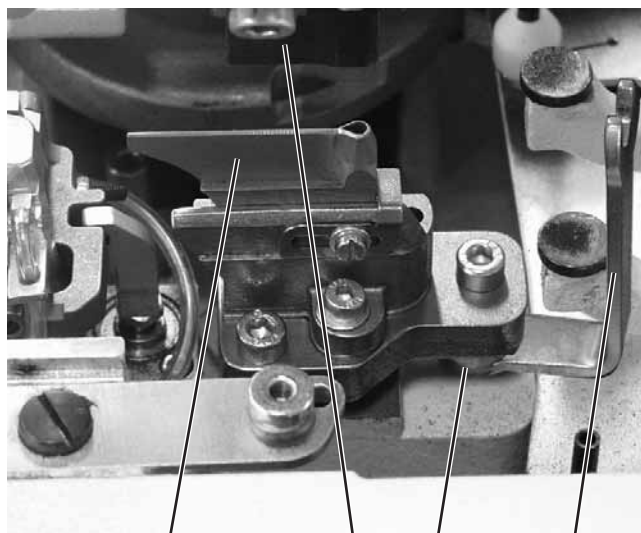
7 6

Sewing equipment	Setting dimension (X)
1501 / 1502 1521 / 1504 1524 1522	approx. 59 mm
1573 1551 1553	approx. 47 mm
1590 / 1595	approx. 49,5 mm up to center of the eyelet

10.2 Adjusting the knife parallel to the cutting block



3 2 1



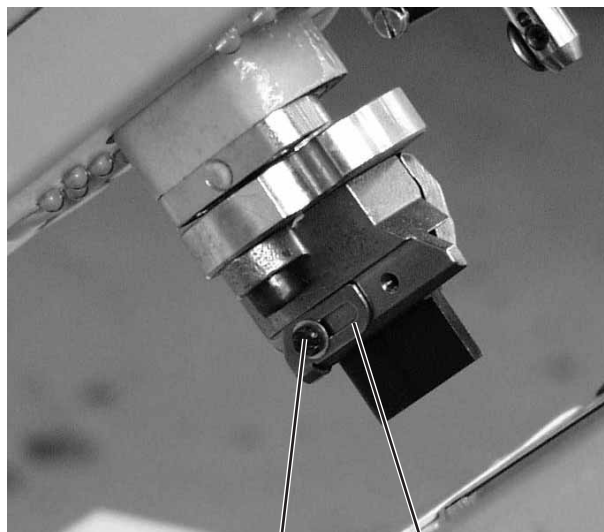
7 6 5 4

- Loosen screws 1, 2 and 3.
- Put the key 4 (in the accessories) on the hexagonal bolt 5 and twist it.
- Push the cutting block 6 downward.

10.3 Cutting block adjustment



4 3 2 1



6 5



Caution: Danger of injury !

Switch the main switch off.

Adjust the cutting block only with the machine switched off.

The cutting length can be altered by changing the cutting block.
The cutting length is determined by the cutting block length.

Standard checking

The cutting block 3 must be in parallel position to the cutting knife 4.
The cutting block stop 5 has to be adjusted so that the knife mark on the cutting block 3 reaches the indicated cutting length.

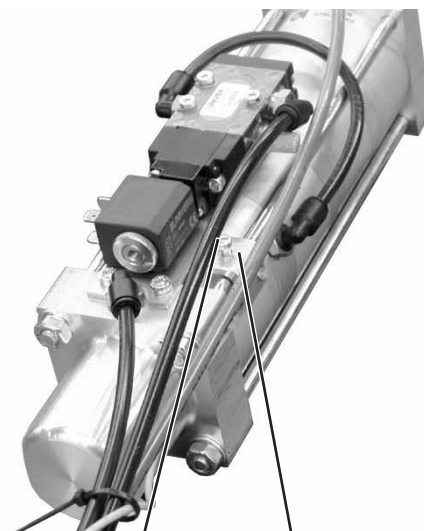
Correction

- Loosen screws 1.
- Adjust the cutting block 2 laterally to the cutting knife 4.
- Tighten screws 1.
- Loosen screw 2.
- Adjust the cutting block 3 in longitudinal direction to the cutting knife 4.
- Tighten screw 2.
- Loosen screw 6.
- Position the stop 5 close to the cutting block.
- Tighten screw 6.

10.4 Adjusting the switch for the trimming system



1



2

1



Caution: Danger of injury !

Switch the main switch off.

Adjust the trimming system only with the machine switched off.

Standard checking

Before the fabric support plate continues transporting the fabric, the cutting stamp must be in its upper position.

In order to avoid a possible collision, switch 1 checks the position of the cutting stamp.

Correcting the height of the switch

- Loosen screw 2.
- Adjust the height of switch 1 accordingly.
- Tighten screw 2.

10.5 Cutting pressure

Standard checking

The cutting pressure is adjustable in order to keep the strain of all components as low as possible and to increase the durability of the cutting knife.

According to the sewing material and the material thickness the cutting pressure should be adjusted as low as possible. However, it has to be adjusted in such a way that the material is safely cut.

The cutting pressure is coordinated to the different cutting lengths in the program.

Correction

- See menu item 601.

10.6 Cutting duration

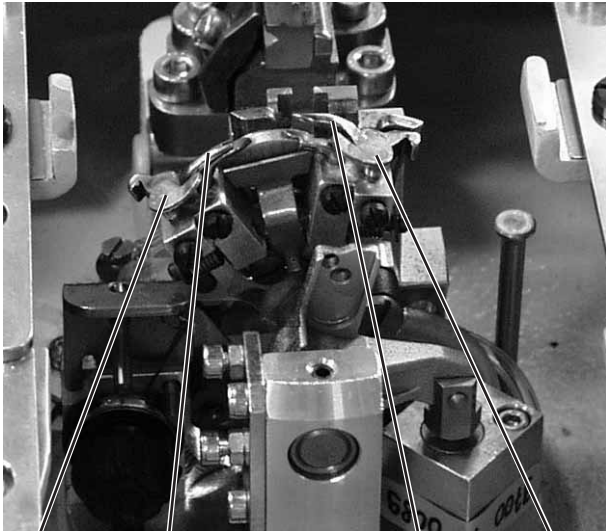
Standard checking

It is possible to set the cutting duration, to avoid an unnecessary long cut on the material to be processed thus allowing a clean result.

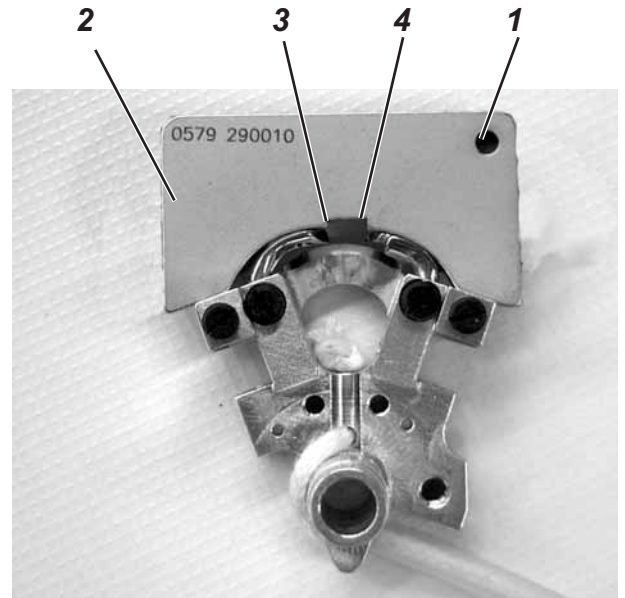
Correction

- See chapter 24.6.4 see menu item 504

11. Looper height



8 7 6 5



Before adjusting the looping stroke as well as the needle bar height and particularly after needle breakage it is necessary to check the correct looper height.

Use gauge 2 for checking the looper height.



Caution: Danger of injury !

Switch the main switch off.

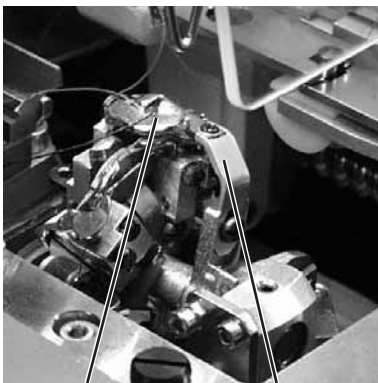
Adjust the height of the looper only with the machine switched off.

3

Standard checking

When the gauge is put on the looper turrets, please observe the following:

- The drill-hole 1 of the gauge must be on top right.
- The tip of the left looper must be under the edge 3 of the gauge.
- The tip of the right looper must be under the edge 4 of the gauge.
- The looper points must just abut on the gauge.
- Remove the thread trimmer 9, the throat plate 10, the spreader stops 5 and 8 as well as the spreaders 6 and 7 from the looper turrets.
- Bring the needle bar in position "up" by turning the handwheel.
- Put the gauge 2 on the looper turret with the loopers inserted in the looper turrets as far as it will go.
- In this position the rules mentioned above must be fulfilled.

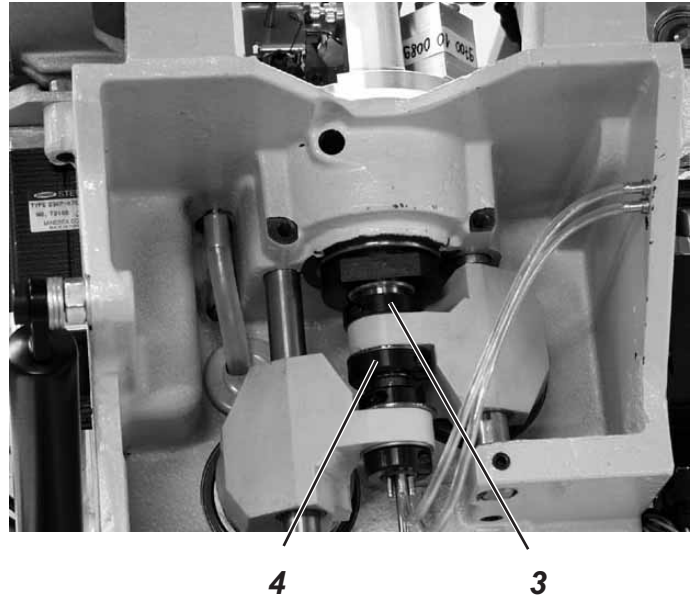
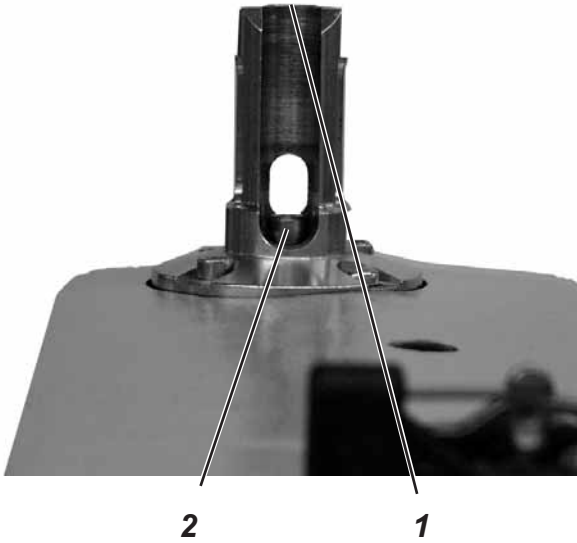


10 9

Correction

- Adjust the correct looper height by slight alignment of the loopers.

12. Adjusting the looping stroke



Caution: Danger of injury !

Switch the main switch off.

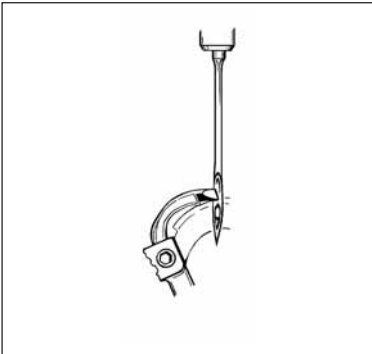
Adjust the looping stroke only with the machine switched off.

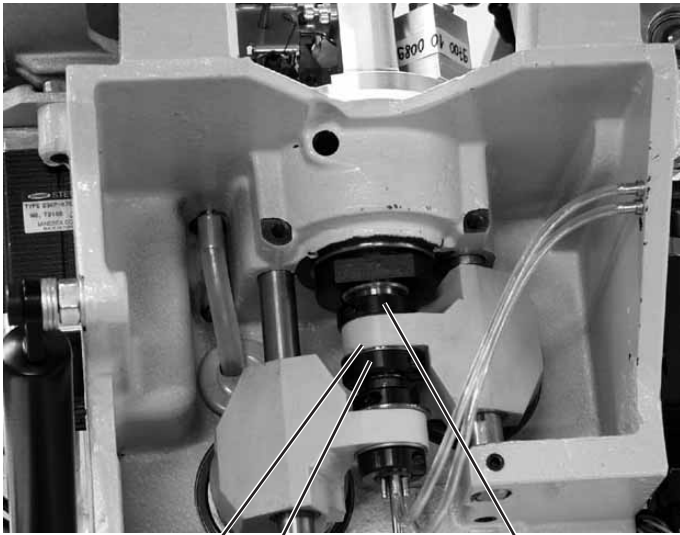
Standard checking

The looping stroke is the way of the needle bar from its lowest position up to the point where the left or right looper tip is at the level of the middle of the needle.

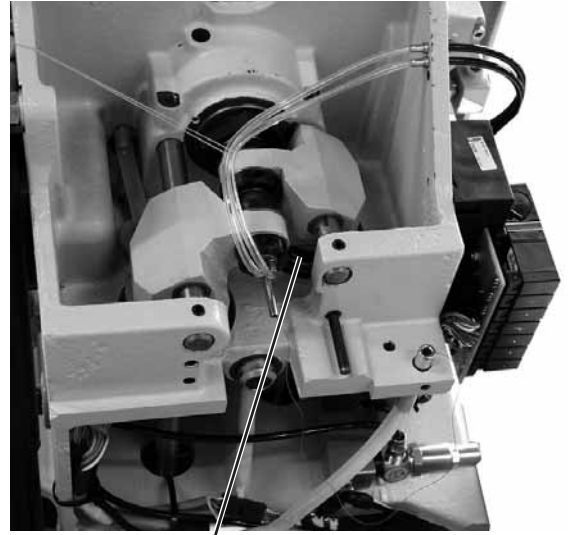
The looping stroke is 2.7 mm.

- Turn the handwheel in rotation direction until the needle is in the bottom dead center.
- Measure the distance between the edge 1 and the top edge of needle bar 2 with a slide gauge.
- Scale down the measurement on the slide gauge by 2.7 mm.
- Put the slide gauge with the scaled-down measurement on the edge 1.
- Slowly continue turning the handwheel in rotation direction until the needle bar hits the slide gauge.
The needle bar is in looping stroke position.
- Check whether the looper point is at the level of the middle of the needle (see illustration on the left).
- Repeat the same procedure with the second looper.





6 4 3



5

Correction

Shift the clamping rings 3 and 4 in such a way that both looper points have the same distance to the needle.

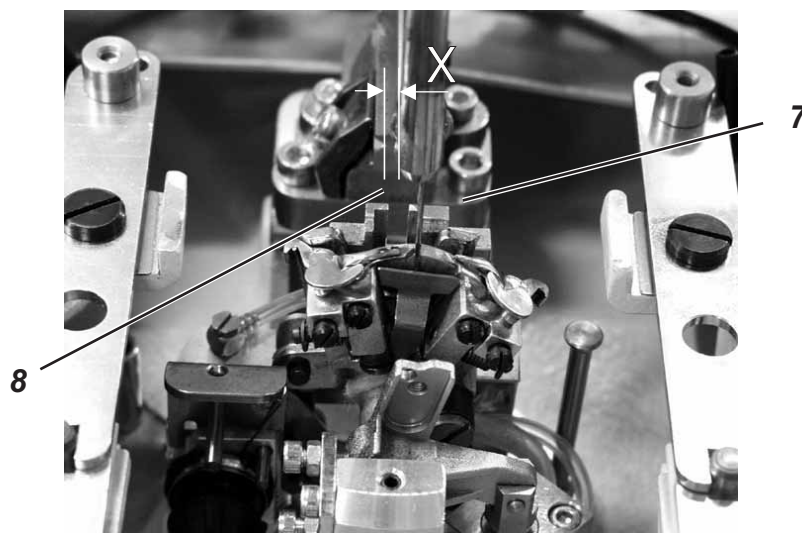
Adjust the left looper 8 and the right looper 7 so that both looper points in looping stroke position have the same position (X) to the needle. That means both looper points must be at an equal distance either before or behind the needle.

- Loosen the screws at the clamping rings 3 and 4. Adjust the looper position as described by shifting the clamping rings.
- Tighten the screws 3 and 4. It must still be possible to turn the looper turret easily after tightening the screws.
- If the looper points are not at the level of the middle of the needle, loosen the screws at the eccentric 5.
- Turn the eccentric 5 until the looper points are at the level of the middle of the needle.
- Tighten the screws at the eccentric 5.

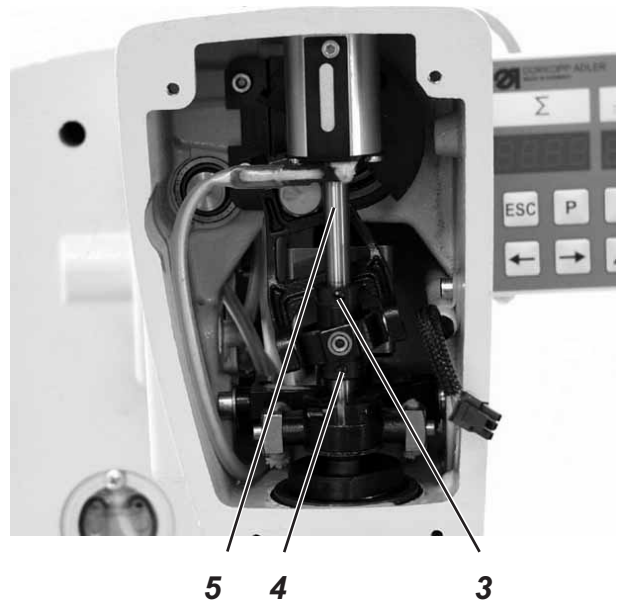
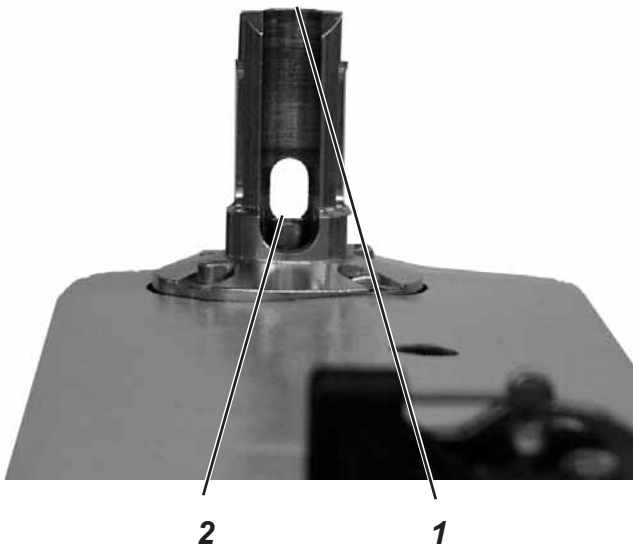
3

Note

The disc 6 must still be freely movable after tightening.



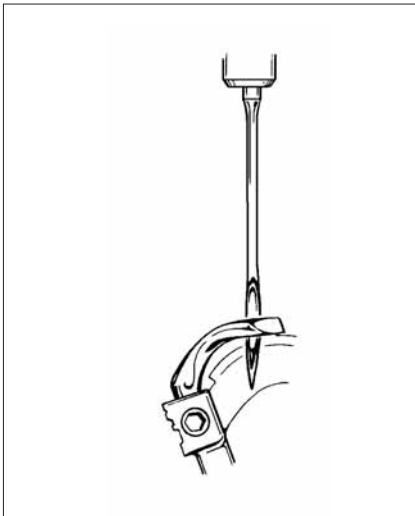
13. Needle bar height



Caution: Danger of injury !

Switch the main switch off.

Adjust the needle bars only with the machine switched off.



Standard checking

The needle bar has to be adjusted in such a way that approx. $\frac{3}{4}$ of the needle's eye 6 is to be seen under the left looper point when the needle bar has moved upward by 2.5 mm from the looping stroke position.

- Turn the handwheel until the needle is in the bottom dead center.
- Measure the distance between the edge 1 and the top edge of needle bar 2 with a slide gauge.
- Scale down the measurement on the slide gauge by the looping stroke dimension +2.5 mm.
Example:
Looping stroke = 2.7 mm +2.5 mm = Scale the measurement down by 5.2 mm
- Put the slide gauge with the scaled-down measurement on the edge 1.
- Slowly continue turning the handwheel in rotation direction until the needle bar hits the slide gauge.

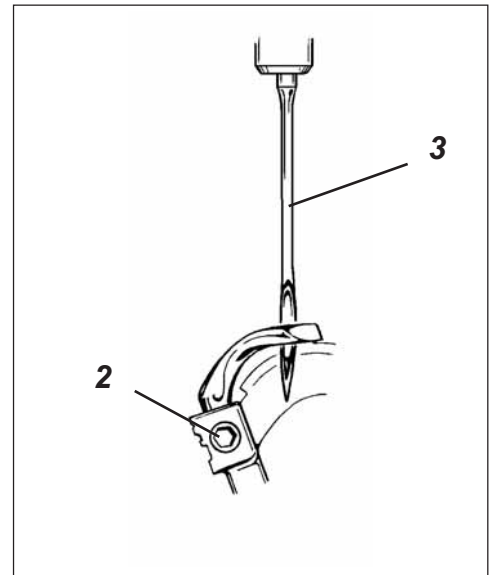
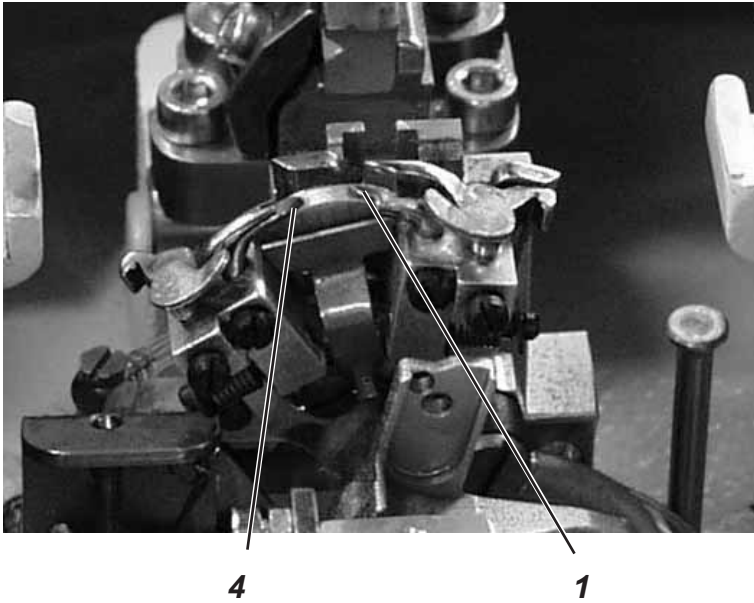
Correction

- Loosen the screws at the adjusting rings 3 and 4.
- Adjust the height of needle bar 5.
- Tighten the screws at the adjusting rings 3 and 4.

Note

It must still be possible to turn the needle bar easily after tightening the screws.

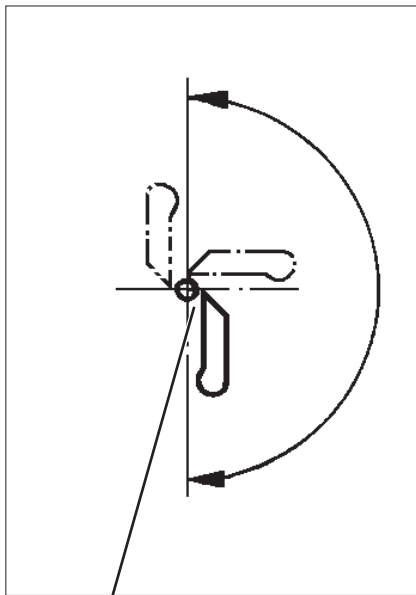
14. Distance between looper and needle



Caution: Danger of injury !

Switch the main switch off.

Adjust the needle protection only with the machine switched off.



0,1 mm

Standard checking

The looper points 1 and 4 should be in a distance of max. 0.1 mm to the needle 3. The distance between looper and needle should be equal during the whole rotary motion of the looper turret.

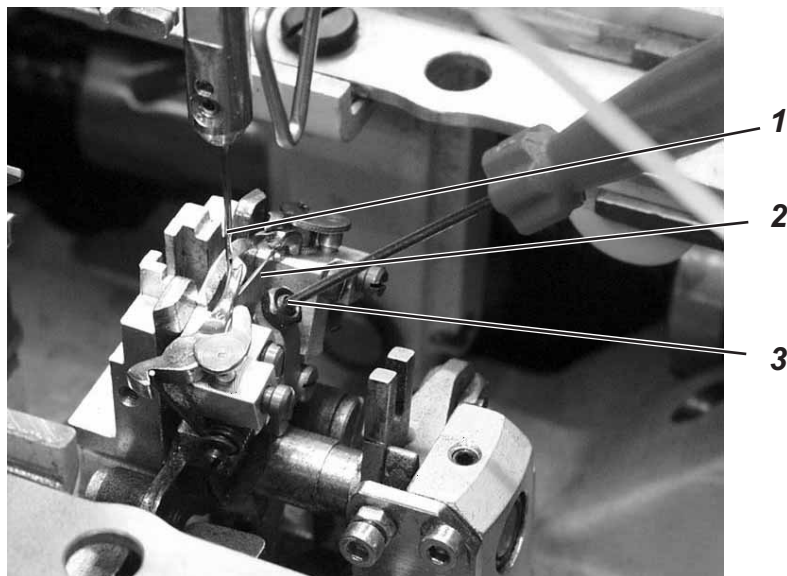
- Turn the handwheel until the left looper point is at the level of the middle of the needle. Check the distance between needle and looper point in the following positions.
 1. Looper point basic position
 2. Looper turret manually turned by 90°
 3. Looper turret manually turned by 180°

If the distance between looper point and needle is different in the three positions, first align the rotary centers of needle bar and looper turret.

Correction

- Loosen screw 2 at the corresponding looper.
- Set the distance between looper and needle accordingly.
- Tighten screws 2.

15. Needle guard



Caution: Danger of injury !

Switch the main switch off.

Adjust the needle guard only with the machine switched off.

Standard checking

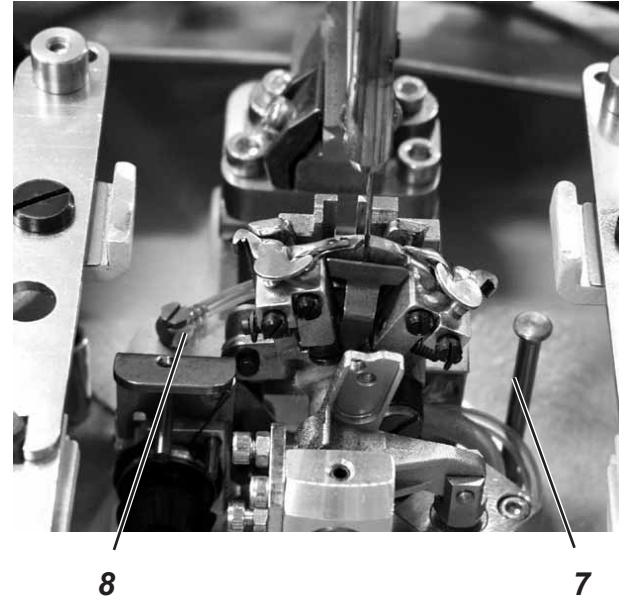
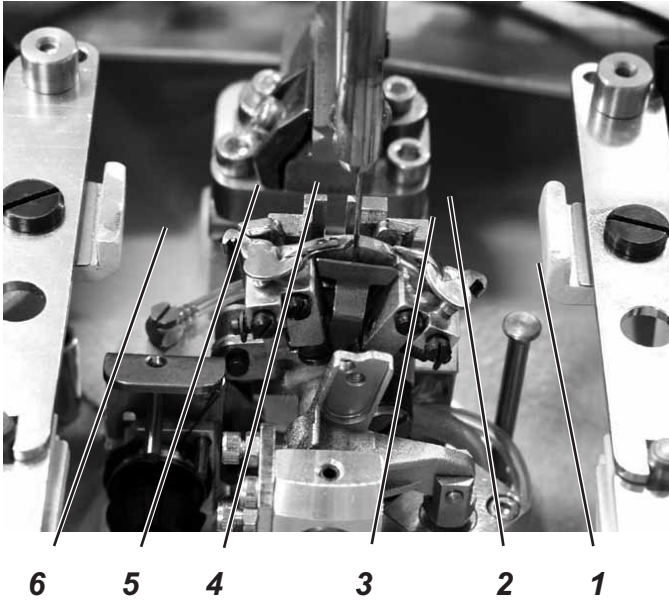
The needle 1 must slightly abut on the needle guard 2 until the looper point have reached the needle.

The distance between looper and needle must amount to 0.1 mm. The needle guard has been adjusted by the manufacturer. In general, a readjustment is not required. If the needle size changes, it may be necessary to re-adjust the needle guard correspondingly.

Correction

- Loosen the locknut.
- Twist the Allen screw 3 correspondingly.
- Tighten the locknut.

16. Spreader



Caution: Danger of injury !

Switch the main switch off.

Adjust the spreader only with the machine switched off.

3

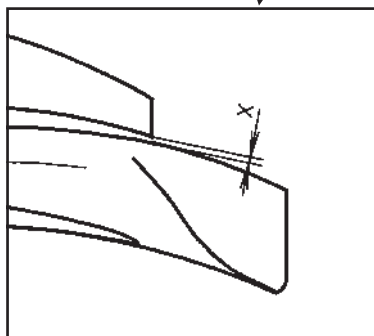
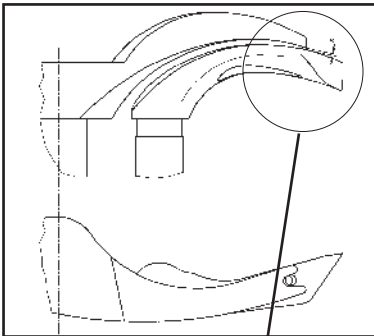
Standard checking

The distance between the fork spreader 5 and the left looper 4 must correspond to the thickness of the looper thread used (see illustration X opposite).

The right spreader 2 should move as closely as possible on the top side of the right looper 3, but without touching it.

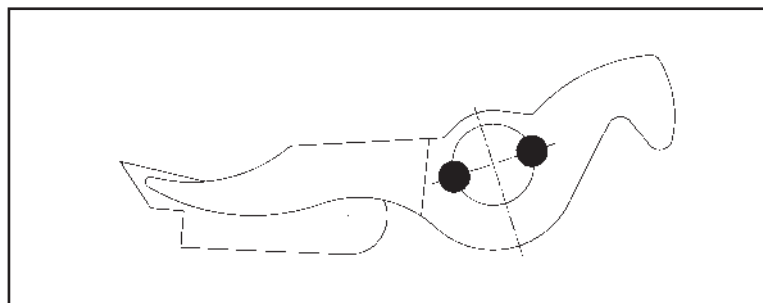
The spreaders being under spring pressure are held in their end position by the stops 1 and 6.

The fork of the left spreader 5 should be exactly above the thread hole of the left looper 4 (see illustration opposite) and the point of the right spreader 2 centrally above the tip of the right looper 3 (see illustration at the bottom of the page).

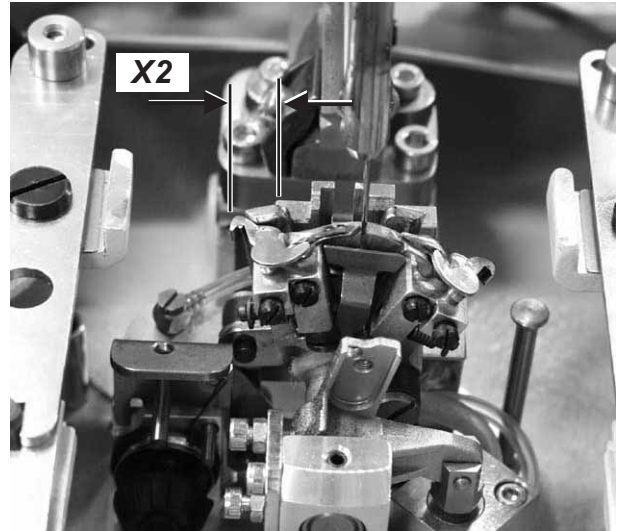
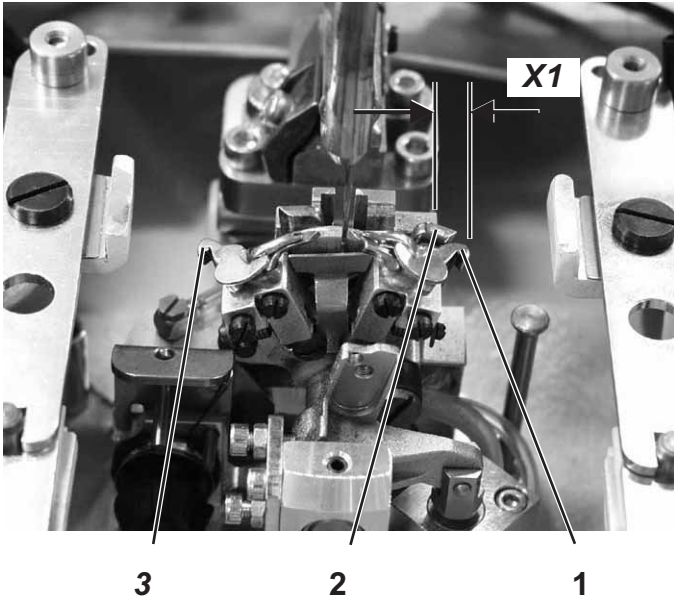


Correction

- For adjusting the distance between spreader and looper slightly align the spreaders.
- For setting the final positions of the spreaders loosen the screws 7 or 8 at the looper to be adjusted.
- Turn spreader stop 1 or 6 slightly.
- Tighten screw 7 or 8.



17. Spreader plate



Caution: Danger of injury !

Switch the main switch off.

Adjust the spreader plate only with the machine switched off.

Standard checking

The opening and closing of the spreaders is effected by the alternate motion of the spreader plate 2.

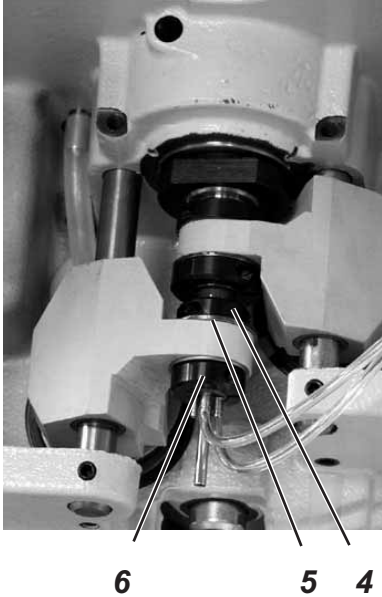
When the needle bar is in the bottom dead center for the right stitch, the distance between spreader plate 2 and spreader shank 1 must be exactly the same as that between spreader plate 2 and spreader shank 3 (dimension X1 = dimension X2), when the needle is in the bottom dead center for the left stitch.

Correction

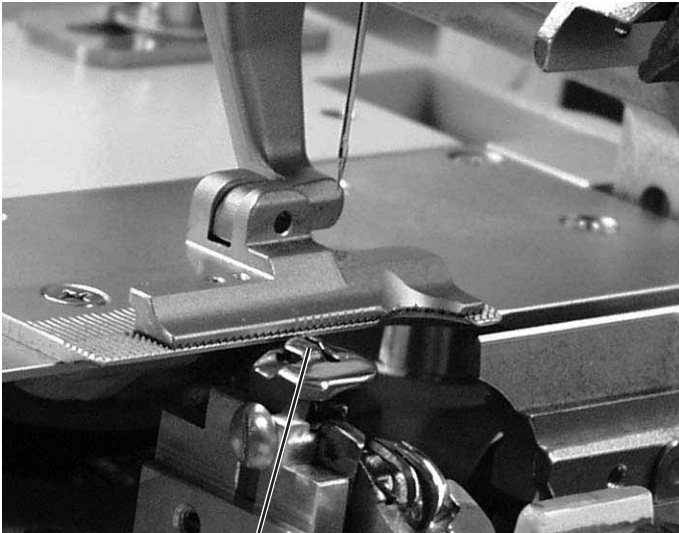
- Loosen the screws at the clamping rings 4 and 6.
- Turn the clamping rings in such a way that there is an equal distance of the spreader plates to the spreader shanks.
- Tighten the screws at the clamping rings 4 and 6.

Note

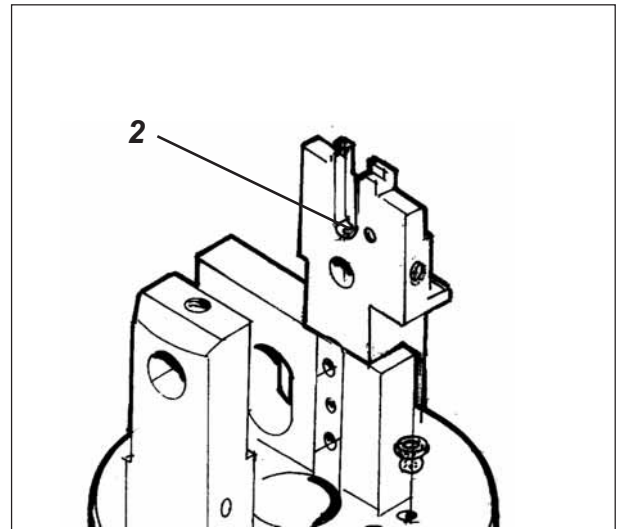
The disc 5 must still be freely movable after tightening.



18. Throat plate



1



Caution: Danger of injury !

Switch the main switch off.

Adjust the throat plate only with the machine switched off.

3

Standard checking

The needle should penetrate the needle hole of the throat plate on one side at the edge 1.

The throat plate has to be positioned as high as possible.

Thus it is avoided that the material is pressed down too much at the moment of the needle penetration.

During the sewing process there must be a small distance to the throat plate at the following points:

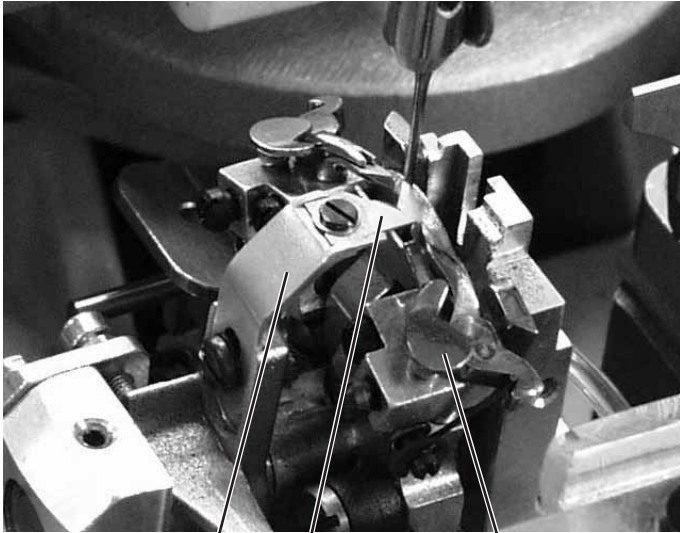
- Under the sewing material or the closed upper fabric clamps.
It must be possible for the sewing material to move over the throat plate unhindered.
- Under the lower fabric clamps.
- Above the needle thread knife.
The needle thread knife must move as closely as possible under the throat plate, but without touching it.

Correction

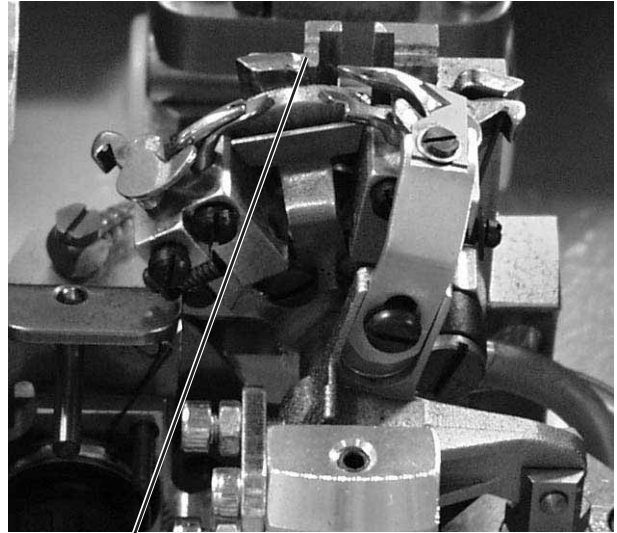
- Adjust the height of the throat plate at the stop screw 2 in the throat plate guide.

By means of the stop screw the adjustment is maintained when inserting the throat plate anew.

19. Adjusting the needle thread knife



3 2 1



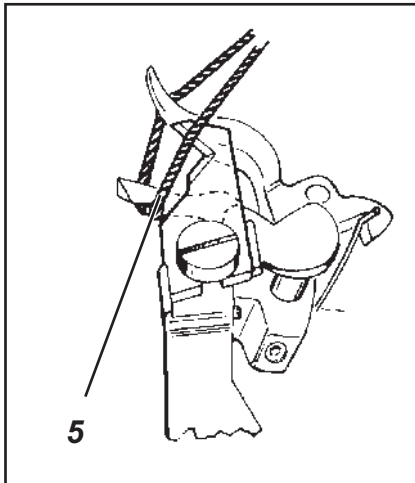
4



Caution: Danger of injury !

Switch the main switch off.

Adjust the needle thread knife only with the machine switched off.



5

Standard checking

The cutting motion of the needle thread knife 2 is effected after sewing. The exact cutting moment is fixed in the control.

When in final position the knife holder 3 must not touch the spreader stop 1.

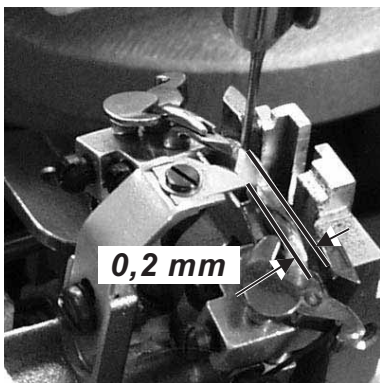
The needle thread knife should cut through the needle thread loop taken up from the right looper at the looper front 5 only. If the needle thread loop is cut through on both sides, this results in a too short thread end and thus in skipped stitches at the seam beginning.

In the right final position the needle thread knife must neither be in the thread zone nor touch the spreader stop.

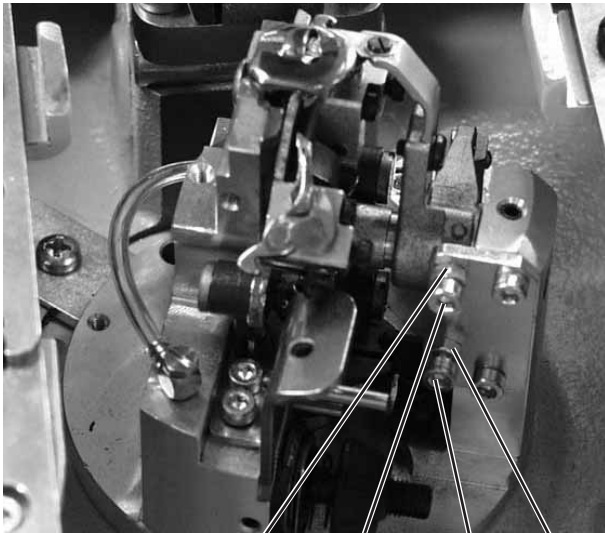
There must be a distance of approx. 0.2 mm between needle and knife.

In cut-off position the knife must move approx. 1 mm beyond the edge 4.

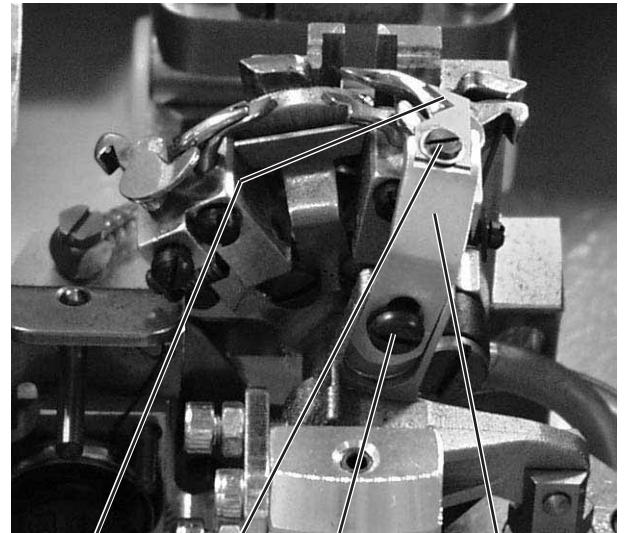
- Move the knife manually and check whether all rules mentioned above are kept.



0,2 mm



8 7 6 5



12 11 10 9

Correction of the knife motion

- Loosen the counter-nuts 5 and 8.
- Adjust the stop screws 6 and 7 according to the rule.
- Tighten the counter-nuts 5 and 8.

Adjusting the height of the knife

- Loosen screw 10.
- Adjust the height of the knife holder 9 correspondingly.
Swing the knife holder 9 manually to check the free movement.
- Tighten screw 10 again.

Adjusting the distance to the needle

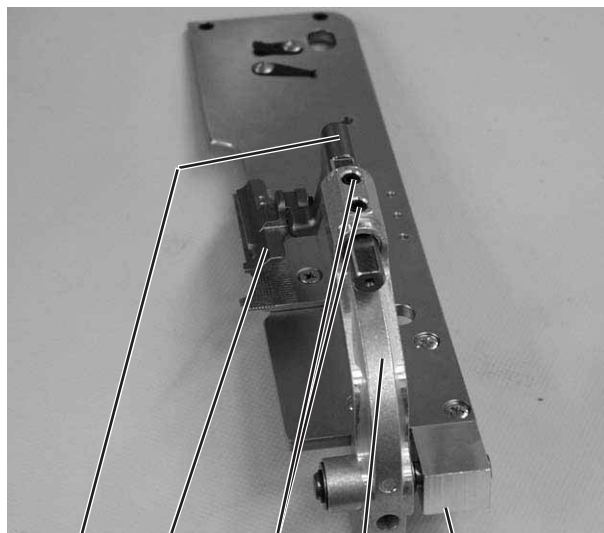
- Loosen screw 11.
- Shift knife 12.
- Tighten screw 11.

20. Adjusting the fabric clamps



2

1



6

5

4

7

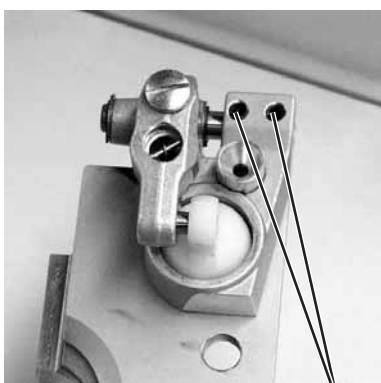
3



Caution: Danger of injury !

Switch the main switch off.

Adjust the fabric clamps only with the machine switched off.



3

Standard checking

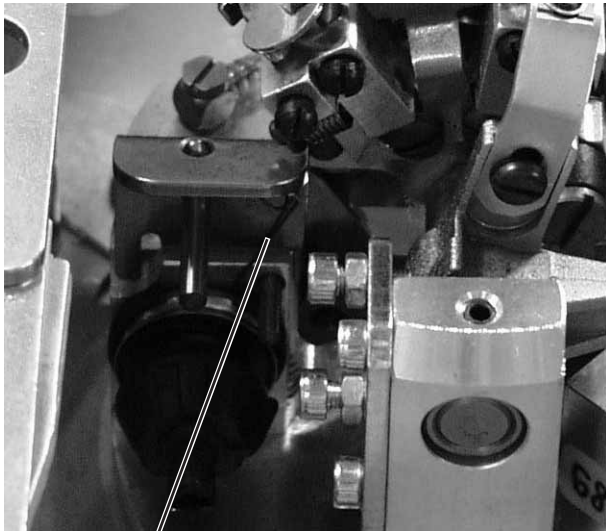
Between the needle 2 and the upper fabric clamp 1 there should be a distance of 1 mm over the whole length and in the eyelet.

- Press key "P".
- Select the menu "150".
- Enter "+ 0.5".
- Select the menu "162".
- Set the cutting area to "0.7".
- Insert the clamping plates.
- Insert a new needle.
- Check the distance between the upper fabric clamp 1 and the needle 2.

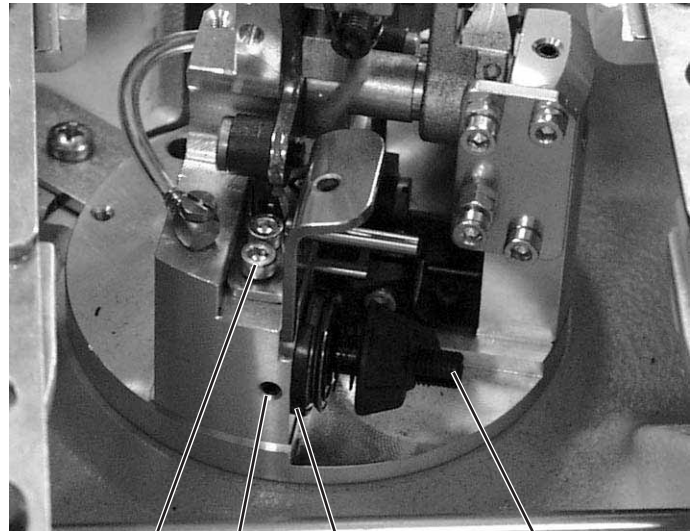
Correction

- Loosen screws 3 (underside).
- Align the clamp bow 7 with fabric clamp 5 laterally to the needle.
- Tighten screws 3.
- Loosen screws 4.
- Align the clamp arm 6 with fabric clamp 5 in the eyelet as to the needle.
- Tighten screw 5.

21. Thread controller spring



1



5

4

3

2



Caution: Danger of injury !

Switch the main switch off.

Adjust the thread controller spring only with the machine switched off.

3

Standard checking

The thread controller spring 1 must hold the looper thread tensioned until the needle with the needle thread has accurately penetrated the triangle formed by the spreader.

- Insert and clamp the material.
- Turn the machine manually and check whether the thread controller spring tightens the looper thread firmly and long enough.

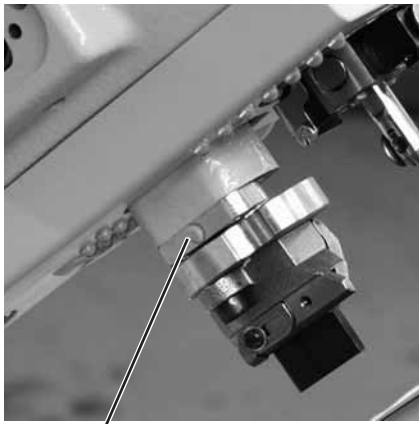
Correction of the spring travel

- Loosen screw 4.
- Adjust the stop disc 3.
Disc to the right = longer spring travel
Disc to the left = shorter spring travel
- Tighten screw 4.

Correction of the spring tension

- Loosen screw 5.
- Adjust the tension bolt 2.
Bolt to the right = higher tension
Bolt to the left = lower tension
- Tighten screw 5.

22. Maintenance



1



6



3

2



Caution: Danger of injury !

Switch the main switch off.

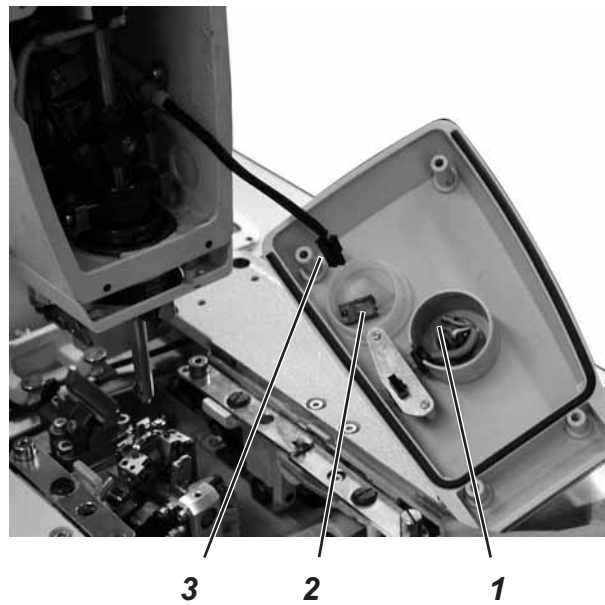
Maintenance work of the automatic buttonholer must only be carried out with the machine switched off.

The daily or weekly maintenance work (cleaning and oiling) to be carried out by the operators of the automatic buttonholer is described in Part 1: Operating Instructions. This is only listed in the following table to complete the picture.

Maintenance work to be carried out	Operating hours			
	8	40	160	500
Automatic buttonholer				
Remove the sewing dust from the area under the throat plate	X			
Check the oil level	X			
Check and clean the toothed belt			X	
Oil the cutting stamp 1			X	
Oil the clamp arms 3 at the felt 2			X	
Oil felt 6 at the cam			X	
Pneumatic system				
Check the water level in the pressure regulator	X			
Clean the filter insert in the maintenance unit		X		
Make leak test of the system			X	

23. Annex

23.1 Adjusting operations without head cover



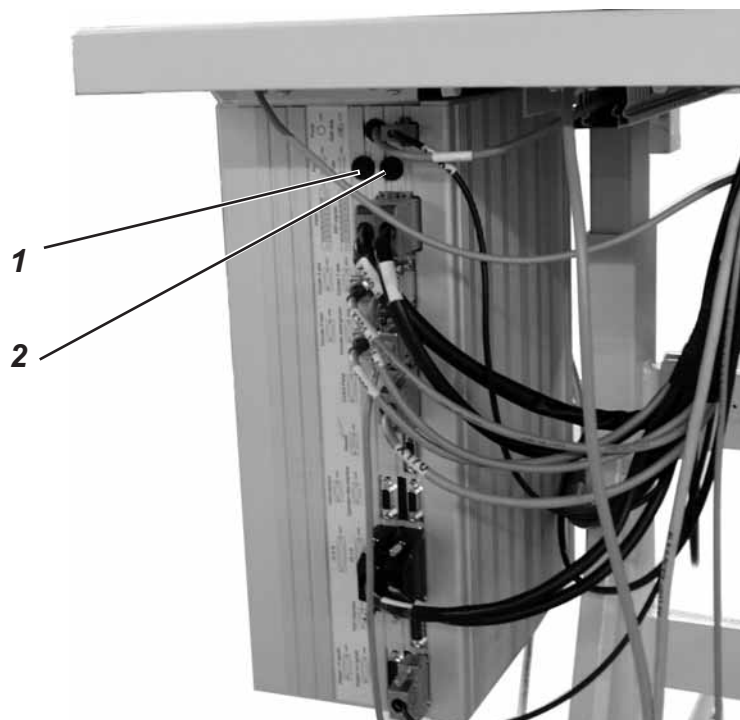
When the head cover is taken off, the machine is secured against unintentional starting.
If you want to operate the machine without head cover for adjusting purposes, the plug 2 can be put on the connecting cable 3.
The plug is in the switch casing 1.



Caution: Danger of injury !

Remove the head cover for adjustment work only.
Exercise utmost caution when making adjustments with the machine running.

23.2 Fuses in the control box



The fuses 1 and 2 for the control are on the back of the control box. Only insert the fuses indicated in the circuit diagram.

23.3 Exchange of the control

See:

Part 2: Installation Instructions.

- “Assembly of the main switch”
- “Assembly of the control”
- “Potential equalization”
- “Installing the sewing software”

24. Service menu (technician level)

In the service menu of the 559 various basic adjustments and test programs can be executed.

24.1 Activating the service menu

- Press the keys “**P**” and “**F**” simultaneously on the control panel. A code query appears.
- Enter the code “**2548**” with the cursor keys.
- Press key “**OK**”.
The menu item “500” (configuration of the automate) appears.

24.2 Selection of a menu item/submenu item

- Select the desired menu item with the keys “**↑**” or “**↓**”.
Example: 550
- Press key “**OK**”.
The menu item is activated.

- Select the desired submenu item with the keys “**↑**” or “**↓**”.
Example: 551
- Press key “**OK**”.
The submenu item is activated.

- Press key “**←**”.
Switch back to the level before in the menu.

24.3 Multitest

The functions of the Multitest menu (input test etc.) can be reached as described under 28.2.

However, some functions require that the motors are dead.

- Press the keys “**P**” and “**←**” simultaneously on the control panel and switch the main switch on.
- Select the desired submenu item with the keys “**↑**” or “**↓**”.
Example: 601
- Press key “**OK**”.
The submenu item is activated.

24.4 Quitting the service menu

- Press key “**ESC**”.
The control switches back to the main menu.

24.5 List of menu and submenu items

Menu item	Description
500	Configuration automatic buttonholer
501	Loading position
502	Throw width
503	Thread monitor
504	Duty cycle of the cutting block
511	Sewing equipment
520	Tension data for the needle thread calibration
521	Value 1
522	Value 2
523	Value 3
524	Value 4
525	Value 5
526	Value 6
550	Configuration operation
551	Push button
552	Brightness of sewing lamp
553	Brightness of the display
554	Keyboard signal
600	Multitest
601	Output test
602	Manual input test
603	Automatic input test
604	Sewing motor test
605	Step motor test
606	ROM or flash test
607	RAM test
608	Running to the reference position
609	Starting continuous operation
610	Checking the setting of the sewing instruments
611	Breakpoint
612	Cycle time to the loading position
613	Cycle time to "clamp open"

24.6 Menu items 500 (Configuration automatic buttonholer)

24.6.1 Menu item 501 (Loading position)

Via this menu item the desired loading position can be set.

Input: 0 ... 68 (mm)

Standard: 68

The value entered corresponds to the distance from the cutting point.

The value "0" corresponds to the cutting-open position.

The standard value is identical with the seam beginning position.

- Quit the menu item with key "**ESC**".

24.6.2 Menu item 502 (Throw width)

In this menu the throw width is adjusted between "wide" and "narrow".



Attention: Danger of breakage !

The throw width must match the mechanical position of the throw eccentric.

See chapter 2.3

Input: 1 = Narrow
2 = Wide

- Quit the menu item with the "**ESC**" key .

24.6.3 Menu item 503 (Thread monitor)

In this menu the needle thread monitor is set.

The set value means:

0 = Thread monitor off

1 ... 10 = Number of stitches after which the sewing process is aborted because of thread breakage

Input: 0 ... 14

Standard: 7

- Quit the menu item with the "**ESC**" key .

24.6.4 Menu item 504 (Duty cycle of the cutting block)

The duration of the incision can be set individually so that the material to be processed is cut open accurately and no longer than required.

Input: 200 ... 600

Standard: 200

- Quit the menu item with the "**ESC**" key.

24.6.5 Menu item 511 (Sewing equipment)

Various sewing equipment can be used with the automatic buttonholer 559.

The selected sewing equipment is entered via this menu item.

Input: 1501, 1502, 1504, 1521, 1522, 1524, 1551, 1553 or
1573, 1590, 1595.

- Quit the menu item with key “**ESC**”.

24.7 Menu item 520 (Tension data for the needle thread calibration)

In this menu are set the characteristic values 1 to 6 for the solenoid of the needle thread.



ATTENTION!

The characteristic values may only be altered when a new solenoid is mounted.

The respective values are included with the delivery of a new solenoid.

24.8 Menu items 550 (Configuration operation)

24.8.1 Menu item 551 (Push button)

In this menu the function of the push button is converted.

1st adjustment = 1 (Standard)

- Key 1: The clamping plates are opened or closed.
- Key 2: The sewing process only starts with the clamping plates closed.

2nd adjustment = 2

- Key 1: The clamping plates are opened or closed.
- Key 2: The sewing process starts.
The clamping plates are closed automatically.
- Quit the menu item with key “**ESC**”.

24.8.2 Menu item 552 (Brightness of the sewing lamp)

In this menu the brightness of the incorporated sewing lamp is set.

The set value means:

0 = Sewing lamp off

100 = Sewing lamp very bright

Standard: 100

- Quit the menu item with key “**ESC**”.

24.8.3 Menu item 553 (Brightness of the display)

In this menu the brightness of the display is set.

The set value means:

Input: 0 ... 3

Standard: 2

- Quit the menu item with key **“ESC”**.

24.8.4 Menu item 554 (Keyboard signal)

In this menu the keyboard signal is switched on and off.

The set value means:

0 = Keyboard signal off

1 .. 50 = Keyboard signal in milli-seconds

Standard: 0

- Quit the menu item with key **“ESC”**.

24.9 Menu item 600 (Multitest)

24.9.1 Menu item 601 (output test)



Attention: Danger of breakage !

The switching of output elements can lead to collisions with other machine elements as well as to damages to the automatic buttonholer. Before switching on an output element make sure that this cannot collide with other components.



Caution: Danger of injury !

Exercise utmost caution when making the output test with the machine running.

In this menu the individual output elements can be switched.

- Select the desired output element with the keys “↑” or “↓”.
The current status is shown in the display:
0 = output inactive
1 = output active
- Press key “OK”.
The output is converted.

Output	Designation
Y01	Needle thread trimmer
Y02	Bobbin thread tension
Y03	Fabric clamp
Y04	Spreading
Y05	Needle thread puller
Y06	Cutter
Y07	Cutter
Y15	Cutter

- Quit the menu item with key “ESC”.

24.9.2 Menu item 602 (manual input test)



Caution: Danger of injury!

Exercise utmost caution when making the input test with the machine running.

In this menu individual input elements can be tested.

- Select the desired input element with the keys “↑” or “↓”.
The current status is indicated in the display:
0 = input inactive
1 = input active

Input	Designation
S09	Push button 1
S10	Push button 2
S11	Foot pedal 1
S12	Foot pedal 2
S13	Foot pedal 3
R0	Sewing motor
R1	X-axis
R2	Y-axis
R3	Z-axis

- Quit the menu item with key “ESC”.

24.9.3 Menu item 603 (automatic input test)



Caution: Danger of injury !

Exercise utmost caution when making the input test with the machine running.

With this menu item the function of all input elements is checked.

If the status of an input is altered, this input is automatically indicated in the display.

- Quit the menu item with key “ESC”.

24.9.4 Menu item 604 (sewing motor test)

With this menu item the sewing motor can be checked.
During the test the speed can be increased in steps of 100.



Caution: Danger of breakage !

Before starting the sewing motor test remove the clamping plates in any case.



Caution: Danger of injury !

Exercise utmost caution when making the sewing motor test.

- Increase the speed with the key “↑”.
- Reduce the speed with the key “↓”.
- Quit the menu item with key “**ESC**”.

24.9.5 Menu item 605 (step motor test)

With this menu the step motors can be checked.
The step motors are checked with the related reference switches.



Attention: Danger of breakage!

Before starting the step motor test remove the clamping plates in any case.



Caution: Danger of injury!

Exercise utmost caution when making the step motor test.

- Select the corresponding step motor A1...A3 with the keys “←” or “→”.
- With the keys “↑” or “↓” the step motor runs each 20 steps forwards or backwards.
On the right of the display the steps done from the start position are indicated. The switching status of the pertaining reference switch appears in the center.

A 2 1/0	Steps
----------------	--------------

A1 = X-direction (transversal motion of the fabric support plate)
A2 = Y-direction (longitudinal motion of the fabric support plate)
A3 = Z-direction (rotary motion of the sewing works)

- Quit the menu item with key “**ESC**”.

24.9.6 Menu item 606 (ROM or flash test)

In this menu item the read-only memory (ROM) and the flash memory are checked.

Display:

on the left: Calculated checksum

on the right: 1 = Memory OK
 0 = Memory not OK

- Quit the menu item with key "**ESC**".

24.9.7 Menu item 607 (RAM-Test)

In this menu item the working memory (RAM) is checked.

r1 or r2 = 1 = Working memory works faultlessly

r1 or r2 = 0 = Error in the working memory

- Quit the menu item with key "**ESC**".

24.9.8 Menu item 608 (Moving to the reference position)

In this menu the it is possible to start a reference run.

This testing program is particularly helpful for the setting of the sewing machine.



Caution: Danger of injury !

Exercise utmost caution when setting the machine.

24.9.9 Menu item 609 (Starting continuous operation)

In this menu item it is possible to start a continuous operation. Before the sewing starts, a safety check with the message INFO 609 will appear first. It can be confirmed by pressing the "OK" key or be cancelled by pressing the "ESC" key.



Caution: Danger of injury !

Exercise utmost caution when running the machine on continuous operation.

24.9.10 Menu item 610 (Checking the setting of the sewing instruments)

In this menu item the settings of the sewing instruments can be checked.

In order to do so, the sewing motor drives to the staking-out position UDC (Upper Dead Center) for calibration and then to the different positions for the checking of the looping stroke, needle stroke, needle guard and spreader position



Caution: Danger of injury !

Exercise utmost caution when setting the machine.

- Select the menu item 610 by using the key “↑” or “↓” .
- Press the “OK” key.
The machine references.
The display reads

6 1 0	0 0
-------	-----



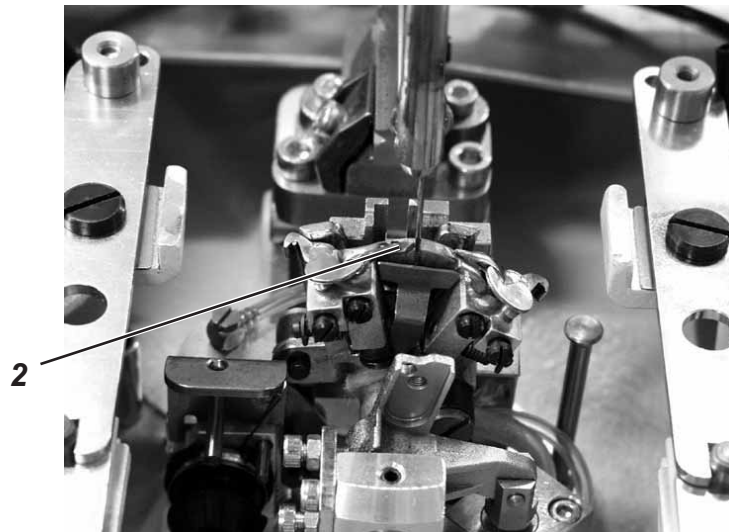
- Insert the locking peg 1 and check whether the peg engages in the groove of the arm shaft.
In this position the needle bar should be positioned in the upper dead center.
- Press the “OK” key.
The display reads:

6 1 0	0 1
-------	-----

- Remove the locking peg 1.

- Press the "OK" key.
The sewing motor drives to testing position 2 (left looping stroke).
The display reads:

6 1 0	0 2
-------	-----



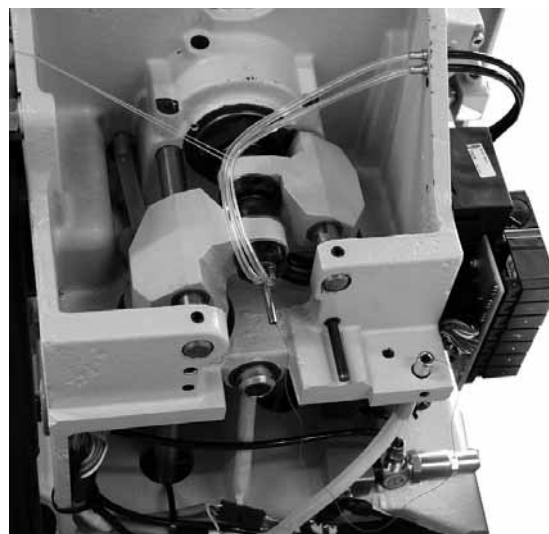
- Check, whether the tip of the left looper 2 points to the middle of the needle.

If the looper's position needs adjustment, proceed as follows:

- Press the "F" key.
The machine drives back to position "0".
The display reads:

6 1 0	9 9
-------	-----

- Lift up the sewing machine.
The screws for the looper setting are now accessible.



- Adjust the looper’s position.
- Put the sewing machine down.
- Press the “**OK**” key.
The sewing motor drives back to testing position 2.
- Check the looper’s position.

- Press the “**OK**” key.
The sewing motor drives to testing position 3 (right looping stroke).
The display reads:

6 1 0	0 2
--------------	------------

- Check the looper’s position and, if needed, adjust according to the above mentioned description.

With each further pressing the “**OK**” key, the next sewing instrument’s testing position appears.

- Select the positions one after the other and check their settings.

Position Setting

- 1 Setting the locking positions (see chapter 2)
- 2 Left looper to the needle’s middle (see chapter 12)
- 3 Right looping stroke (see chapter 12)
- 4 Needle bar height (see chapter 13)

ATTENTION!

Contrary to chapter 13, with this setting a position is selected, so that the complete needle’s eye is to be seen under the left looper tip.

- 5 Left needle guard (see chapter 15)
- 6 Right needle guard (see chapter 15)
- 7 Left spreader opened (see chapter 16)
- 8 Left spreader closed (see chapter 16)
- 9 Right spreader opened (see chapter 16)
- 10 Right spreader closed (see chapter 16)

24.9.9 Menu item 611 (Breakpoint)

With the aid of the testing program, the switching order of the valves can be checked.

This testing program is particularly helpful for the setting of the thread catcher and the thread trimming systems because one can see precisely how the individual components lie in regard to the needle thread, looper thread and the gimp.



Caution: Risk of injury !

The testing program serves only for the checking of cycles and functions. Maintenance and setting work should not be conducted when running the testing program.

The following is the meaning values set:

0= normal sewing cycle, the testing program is turned off.

1= the sewing cycle is stopped after switching the valves of the thread catcher on.

2= the sewing cycle is stopped after switching the valve of the respective thread trimming system on.

3= the sewing cycle is stopped after switching each valve on.

- Select the desired item with the keys “↑” or “↓”.
- Press the “OK” key.
The breakpoint mode will be turned on.
- Press the “ESC” key.
The control unit switches back to the main menu.
- Start the testing program through the control panel, hand switches, or the foot pedal.
- The machine moves to the first breakpoint and stops.
- The control panel will display an Info-No.
The information is intended for the DA Service.
- Press the “OK” key two times.
- The machine moves to the next breakpoint.
- You can exit the breakpoint mode by switching off the main switch.

3

24.8.10 Menu item 612 (cycle time)

In this menu item the “**cycle time from the sewing start back to the loading position**” can be ascertained.

- Quit the menu item with key “ESC”.

24.8.11 Menu item 613 (cycle time)

In this menu item the “**cycle time from the sewing start to “clamp open”**” can be ascertained.

- Quit the menu item with key “ESC”.

25. Error messages

Error	Info/Description	Remedy
1051	Sewing motor timeout · Cable to the sewing motor reference switch faulty · Reference switch defective	· Replace the cable · Replace the reference switch
1052	Sewing motor excess current · Cable of sewing motor faulty · Sewing motor defective · Control defective	· Replace the sewing motor cable · Replace the sewing motor · Replace the control
1053	Too high mains voltage	Check mains voltage
1055	Sewing motor overcharge · Sewing motor blocked/moves too heavy · Sewing motor defective · Control defective	· Eliminate the blocking/rough running · Replace the sewing motor · Replace the control
1056	Sewing motor excess temperature · Sewing motor moves too heavy · Sewing motor defective · Control defective	· Eliminate the rough running · Replace the sewing motor · Replace the control
1058	Sewing motor speed Sewing motor defective	· Replace the sewing motor
1062	Sewing motor IDMA Autoincrement Malfunction	Switch the machine off and on again
1302	Sewing motor: current supply fault Encoder cable not connected / defective Encoder defective	· Eliminate the blocking · Check / Replace the encoder cable · Replace the sewing motor
1342 - 1344	Sewing motor fault Internal fault	· Switch the machine off and on again · Software update · Inform DA-Service
2101	Step motor X-axis timeout reference · Cable to the reference switch faulty · Reference switch defective	· Replace the cable · Replace the reference switch
2152	Step motor X-axis excess current	· Replace step motor X-axis · Replace the control
2153	Step motor X-axis excess voltage Too high mains voltage	Check the mains voltage

Error	Info/Description	Remedy
2155	<ul style="list-style-type: none"> · Step motor X-axis overcharge · Step motor X-axis blocked/moves too heavy · Step motor X-axis defective · Control defective 	<ul style="list-style-type: none"> · Eliminate the blocking/rough running · Replace step motor X-axis · Replace the control
2156	<ul style="list-style-type: none"> · Step motor X-axis excess temperature · Step motor X-axis moves too heavy · Step motor X-axis defective · Control defective 	<ul style="list-style-type: none"> · Eliminate rough running · Replace step motor X-axis · Replace the control
2162	<ul style="list-style-type: none"> · Step motor X-axis IDMA Autoincrement · Malfunction 	<ul style="list-style-type: none"> · Switch the machine off and on again
2201	<ul style="list-style-type: none"> · Step motor Y-axis timeout reference · Cable to the reference switch faulty · Reference switch defective 	<ul style="list-style-type: none"> · Replace the cable · Replace the reference switch
2202	<ul style="list-style-type: none"> · Step motor Y-axis Current supply fault · Step motor Y-axis blocked · Encoder cable not connected/defective · Encoder defective 	<ul style="list-style-type: none"> · Eliminate the blocking · Check / Replace the encoder cable · Replace step motor Y-axis
2252	<ul style="list-style-type: none"> · Step motor Y-axis excess current · Step motor Y-axis defective · Control defective 	<ul style="list-style-type: none"> · Replace step motor Y-axis · Replace the control
2253	<ul style="list-style-type: none"> · Step motor Y-axis excess voltage · Too high mains voltage 	<ul style="list-style-type: none"> · Check the mains voltage
2255	<ul style="list-style-type: none"> · Step motor Y-axis overcharge · Step motor Y-axis blocked/moves too heavy · Step motor Y-axis defective · Control defective 	<ul style="list-style-type: none"> · Eliminate the blocking/rough running · Replace step motor Y-axis · Replace the control
2256	<ul style="list-style-type: none"> · Step motor Y-axis excess temperature · Step motor Y-axis blocked/moves too heavy · Step motor Y-axis defective · Control defective 	<ul style="list-style-type: none"> · Eliminate the blocking/rough running · Replace step motor Y-axis · Replace the control
2262	<ul style="list-style-type: none"> · Step motor Y-axis IDMA Autoincrement · Malfunction 	<ul style="list-style-type: none"> · Switch the machine off and on again

Error	Info/Description	Remedy
2301	<ul style="list-style-type: none"> · Step motor Z-axis timeout reference · Cable to the reference switch faulty · Reference switch defective 	<ul style="list-style-type: none"> · Replace the cable · Replace the reference switch
2302	<ul style="list-style-type: none"> · Step motor Z-axis Current supply fault · Step motor Z-axis blocked · Encoder cable not connected/defective · Encoder defective 	<ul style="list-style-type: none"> · Eliminate the blocking · Check/Replace the encoder cable · Replace step motor Z-axis
2352	<ul style="list-style-type: none"> · Step motor Z-axis excess current · Step motor Z-axis defective · Control defective 	<ul style="list-style-type: none"> · Replace step motor Z-axis · Replace the control
2353	<ul style="list-style-type: none"> · Step motor Z-axis excess voltage · Too high mains voltage 	<ul style="list-style-type: none"> · Check the mains voltage
2355	<ul style="list-style-type: none"> · Step motor Z-axis overcharge · Step motor Z-axis blocked/moves too heavy · Step motor Z-axis defective · Control defective 	<ul style="list-style-type: none"> · Eliminate the blocking/rough running · Replace step motor Z-axis · Replace the control
2356	<ul style="list-style-type: none"> · Step motor Z-axis excess temperature · Step motor Z-axis moves too heavy · Step motor Z-axis defective · Control defective 	<ul style="list-style-type: none"> · Eliminate the rough running · Replace step motor Z-axis · Replace the control
2362	<ul style="list-style-type: none"> · Step motor Z-axis IDMA Autoincrement · Malfunction 	<ul style="list-style-type: none"> · Switch the machine off and on again
2911 - 2914	<ul style="list-style-type: none"> · Step motor fault · Internal fault 	<ul style="list-style-type: none"> · Switch the machine off and on again. · Software update · Inform DA-Service
3100 - 3103	<ul style="list-style-type: none"> · Machine voltage fault · Short-term mains voltage dip 	<ul style="list-style-type: none"> · Check the mains voltage and stabilize, if necessary
3107	<ul style="list-style-type: none"> · Machine temperature · Ventilation openings closed · Ventilation grids soiled · Too high ambient temperature 	<ul style="list-style-type: none"> · Check the ventilation openings · Clean the ventilation grids · Let the machine cool down
3221 - 3222	<ul style="list-style-type: none"> · Machine thread tension regulator · Internal fault 	<ul style="list-style-type: none"> · Switch the machine off and on again · Software update · Inform DA-Service

Error	Info/Description	Remedy
3300 - 3724	· Fault in the machine control · Internal fault	· Switch the machine off and on again · Software update · Inform DA-Service
4460 - 4468	· Operation BF-4 · Malfunction	· Switch the machine off and on again · Inform DA-Service
4500 - 4503	· Menu system fault · Internal fault	· Switch the machine off and on again · Software update · Inform DA-Service
6000 - 6299	· Driver fault · Internal fault	· Switch the machine off and on again · Software update · Inform DA-Service
6351 - 6354	· I ² C fault · Control defective	· Replace the control
6400 - 6999	· Driver fault · Internal fault	· Switch the machine off and on again · Software update · Inform DA-Service
7451 7453 7454	· Communication test interface · Internal fault	· Switch the machine off and on again
7452 7455	· Communication test interface · Line fault · Cable test interface defective · Internal fault	· Eliminate the cause of the fault · Replace the cable · Switch the machine off and on again
7551 - 7555 7558 7559	· Communication control panel interface · Internal fault	· Switch the machine off and on again · Software update · Inform DA-Service
7556 7557	· Communication control panel interface · Line fault · Cable control panel interface defective	· Eliminate the cause of the fault · Replace the cable
8151 8156 - 8159	· IDMA fault · Malfunction · Control defective	· Switch the machine off and on again · Replace the control
8152 - 8154	· IDMA fault · Internal fault	· Switch the machine off and on again · Software update · Inform DA-Service

Error	Info/Description	Remedy
8251 8255	· ADSP Boot / Boot failure · Internal fault	· Switch the machine off and on again · Software update · Inform DA-Service
8252 - 8254 8256 - 8258	· Boot failure · Malfunction	· Switch the machine off and on again
8351 8801 - 8805 8806 8890 8891	· Infrastructure fault · Internal fault	· Switch the machine off and on again · Software update · Inform DA-Service
9000 - 9099	· Seam description fault · Internal fault	· Switch the machine off and on again · Software update · Inform DA-Service

26. Troubleshooting



Caution: Danger of injury!

Exercise utmost caution when eliminating defects with the machine switched on.

Description of fault	Possible cause	Error elimination
	The display shows a message indicating the possible cause.	
The automate does not start up.	Display: Info 200 Before sewing start the needle is in front of the wrong stitch or not in the position "up" respectively. Correct position: The needle is in front of the left stitch.	Turn the handwheel in the direction of rotation so that the needle is in front of the left stitch.
	Display: Info 210 Too low air pressure for the pneumatic components.	<ul style="list-style-type: none"> - Check the air pressure at the manometer - Has the compressed air hose been connected? - Check compressed air fluctuations - Check all compressed air hoses and connections
	Display: Info 220 Thread breakage	Activate the threading mode and thread the sewing thread anew.
	Display: Info 500 Threading mode is active.	Deactivate the threading mode
	Display: Err 501	Deactivate the threading mode.
	Display: Err 502.	Put on head cover or bridge
Skipped stitches	The needle is blunt, bent or incorrectly inserted in the needle bar.	Insert a new needle Insert the needle in the needle bar correctly.
	Needle and looper thread are threaded incorrectly.	Check threading of needle and looper thread (See Operating Instructions)
	The thread reel holder is mounted wrongly.	Check the thread reel holder (See Assembly Instructions)
	Too tight thread tension.	Check the thread tension (See Operating Instructions)
	The fabric is incorrectly held.	Check the fabric clamping pressure (see chapter "Fabric clamping pressure").

Description of fault	Possible cause	Error elimination
Skipped stitches	The material is not spread or spread too little.	Check the spreading (see chapter "Spreading").
	The matching needle size has to be chosen according to the material, the material thickness and the thread used.	Change the needle size. (See Operating Instructions) Attention! After changing the needle size the distance needle-looper has to be checked.
	Throat plate, loopers or spreaders have possibly been damaged by the needle.	Have the parts reworked by the service personnel.
	Possibly parts have been inserted which do not match the sewing equipment, as e.g. throat plate, looper, spreader, clamping plates, upper/lower fabric clamps.	Check the sewing equipment parts according to the equipment sheet.
	When converting the seam width the looping stroke has not been readjusted.	Adjust the looping stroke (see chapter "Looping stroke").
Thread breakage	Needle and looper thread are threaded incorrectly.	Check threading of needle and looper thread (see Operating Instructions "Thread the needle thread"/ "Thread the looper thread").
	The needle is bent, sharp-edged or incorrectly inserted in the needle bar.	Insert a new needle. Insert the needle in the needle bar correctly.
	The thread used is knotty, hard or too thick and thus unsuitable.	Use recommended threads only (see Operating Instructions: Needles, threads and gimps).
	The thread tensions are too tight for the thread used.	Check the thread tensions (see Operating Instructions "Thread tensions")

Description of fault	Possible cause	Error elimination
Thread breakage	Thread-guiding parts as e.g. thread pipes, thread guides or the rotary thread take-up disc have sharp edges.	Check whether thread-guiding parts are sharp-edged.
	Check whether the throat plate, the loopers or the spreaders have been damaged by the needle.	Have the parts reworked by the service personnel.
Loose stitches	The thread tensions are not adapted to the material, the material thickness or the threads used.	Check the thread tensions (see Operating Instructions "Thread tensions").
	Needle and looper thread are threaded incorrectly.	Check the threading of needle and looper thread (see Operating Instructions "Thread the needle thread", "Thread the looper thread").
The buttonhole is cut open inaccurately	The set cutting pressure is too low.	Increase the cutting pressure (see chapter "Cutting pressure")
	Too short duty cycle of the cutting stamp	Increase the duty cycle (See menu item 504)
	The knife edge is blunt or chipped.	Insert a new knife (see chapter "Cutting knife / Eyelet knife").
	The knife works on a non-matching cutting block. No matter whether buttonholes are cut open before or after sewing or buttonholes with or without eyelet are sewn, always insert the matching cutting block. Cutting blocks with two knife marks lead to an inaccurate cut.	Rework the cutting block or insert a new one. (see chapter "Adapting the cutting blocks").

Description of fault	Possible cause	Error elimination
Needle breakage	The needle size is unsuitable for the material or the thread.	Change the needle size.
	The needle hits the fabric clamps	Check the subclass on the control panel.
	When changing the seam width the upper fabric clamps have not been set apart or not wide enough.	Set the upper fabric clamps apart as far as required.
	When changing the seam width the lower fabric clamps have not been exchanged.	Insert lower fabric clamps matching the sewing equipment.
No reliable seam beginning or unthreading respectively	The remaining tension is too tight for the needle thread so that the thread at the seam beginning is too short for the next sewing start.	Readjust the remaining tension (see Operating Instructions "Thread tension").
Faulty feed of the fabric support plate	The fabric support plates collides with other components.	Check the motion of the fabric support plate at low speed to find possible collisions.
	The fabric support plate is only heavily movable when the machine is switched off.	Check all components belonging to the drive of the fabric support plate.
Faulty rotation of the sewing works	The toothed belts are insufficiently tightened.	Retighten toothed belts or replace them, if necessary.
	Toothed belts and toothed lock washers are soiled.	Clean the toothed belts and toothed lock washers. Replace the toothed belts, if necessary.
	The sewing works collides with other components.	Check the motion of the sewing works rotation at low speed to find possible collisions.
	The sewing works is only heavily rotatable when the machine is switched off. The adjustable rings at the looper support drive or at the needle bar drive are pressed too tight against the driving levers or the yoke.	Check the adjusting rings at the looper support drive and at the needle bar drive and set a slight clearance, if required (see chapter "Adjusting the looping stroke", "Needle bar height", "Spreader plate").

Description of fault	Possible cause	Error elimination
Faulty rotation of the sewing works	Possible rough running of individual components	<p>Check all components belonging to the sewing works rotation. If neither faulty components nor rough running are found, the problem can in some cases be solved by altering the following parameters:</p> <ul style="list-style-type: none"> - Speed reduction - Increase of the stitches in the eyelet - Reduction of the stitch distance - Reduction of overlapping - Increase of the stitches in the round tack - Reduction of the stitch distance in the straight bartack - Reduction of the throw width in the straight bartack <p>(see Operating Instructions "Altering the buttonhole program"): Inform the service personnel, if required.</p>