

**589**

**Automatic double-chainstitch buttonholer**

[Operating instructions](#)

Installation instructions

Service instructions

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## Anleitung, komplett / Manual, complete

# 589

Übersicht	Summary
<p>Bedienanleitung Aufstellanleitung Serviceanleitung</p> <p>Bauschaltplan 9870 579020 B</p>	<p>Operating instructions Installation instructions Service instructions</p> <p>Interconnection-diagram 9870 579020 B</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.



**Preface and general safety instructions**

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# 1. Product description

## 1.1 Designated use

The **DÜRKOPP ADLER 589** is an automatic sewing machine designed for sewing buttonholes in light to medium-heavy material.

Such material, which is generally made of textile or synthetic fibres, is used in the clothing industry. This sewing machine can also be used to produce so-called technical seams. In this case, however, the operator must assess the possible dangers which may arise (with which DÜRKOPP ADLER would be happy to assist), since such applications are on the one hand relatively unusual and, on the other, they are so varied that no single set of criteria can cover them all. The outcome of this assessment may require appropriate safety measures to be taken. Generally only dry material may be sewn with this machine. The material may be no thicker than **8 mm** when compressed by the lowered upper material clamps.

The material may not contain any hard objects. The machine may only be operated with finger and eye protection. The seam is generally produced with sewing threads of gauge up to 80/2 Nm (synthetic threads with or without cotton covering). Before using any other thread the possible dangers arising must be assessed and appropriate safety measures taken if necessary. This machine may be set up and operated only in dry, well-maintained premises. If it is used in other premises which are not dry and well-maintained it may be necessary to take further precautions (which should be agreed in advance - see EN 60204-31: 1999). As manufacturers of industrial sewing machines we proceed on the assumption that personnel who work on our products will have received training at least sufficient to acquaint them with all normal operations and with any hazards which these may involve.

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## 1.2 Brief description

Depending on the subclass, the **DÜRKOPP ADLER 589** is a double-chainstitch buttonhole machine with CNC step motor for fabric feed and rotating sewing mechanism.

As a buttonhole machine it works with two chainstitch loopers, the left one carrying the thread, sewing buttonholes with or without an eye, with taper, round or cross tacks.

The various subclasses of the 589 are fitted with different thread-trimming systems.

### Technical features

The machine is driven by a positioning drive built into the machine arm.

The movements of the X, Y and Z axes are driven by a step motor. These drives are controlled by a DAC 2 electronic controller in conjunction with various pneumatic machine functions.

The BF 2A operating panel is mounted in a visible location on the machine arm and is thus easily accessible to the operator. This drive-and-controller system has the following advantages:

- Variable sewing speed depending on parameters such as the upper thread, bobbin thread, material, seam width) up to a maximum of 2200 stitches/min.
- Very quiet operation because there is no mechanical connection and disconnection.  
Additional noise reduction from the new needle-bar and looper drive.

- The use of step motors confers great versatility. No use of control cams.
- One-pedal operation for the following functions:
  - close/open clamps
  - switching on the sewing process
  - rapid halt with needle lift
- Pneumatically-operated thread-trimming system with short drive distances for precise operation.
- Pneumatic buttonhole slit.
- Central oil-wick lubrication from two oil reservoirs.
- Flexible cutting (two lengths preset, with/without eye).
- Seam-width alteration in the cross tack.
- The special design of the machine arm permits the use of a different material holder (optional extra) enabling the material to be placed lengthwise.
- Smooth design with casing. A gas-pressure spring helps to swing the machine up and ensures that the head does not swing down too quickly.
- Vertically-operating cutting-block holders mean that no finishing-off work is necessary even with different cutting-block heights.
- After the material has been released a display setting enables the cloth carrier plate to move to the starting position for the next buttonhole, which improves visibility for material positioning.

### **Controller**

- A counter, shown in the display, counts the number of buttonholes sewn.
- A number of parameters can be set on the BF 2A operating panel, depending on the subclass and buttonhole shape. These include the following:
  - with or without eye
  - speed max. 2200 rpm
  - buttonhole length, various ranges depending on the subclass
  - cut before or after sewing
  - no cutting
  - stitch count in the eye
  - stitch distance
  - taper tack overlap
  - taper tack length
  - overlap in the round tack
  - number of stitches in the round tack
  - stitch distance in the cross tack



## 1.3 Subclasses

- 589-212000** With short trimmer for the upper and bobbin threads. The bobbin-thread trimmer is located in the throat plate, enabling the thread to be severed very close to the material. Flexible cutting (two lengths preset, with/without eye). For taper, round and cross tacks. Can also be used for double-chainstitch eyelets in conjunction with appropriate sewing apparatus. Fitted as standard with an electropneumatic upper thread catcher. No lower gimp.
- 589-221000** With short trimmer for the upper thread and long trimmer (thread length ca. 30 mm) for bobbin thread and gimp. Cutting before or after sewing, not cutting, flexible cutting (two lengths preset, with/without eye), with or without taper, round or cross tack. The bobbin thread and gimp can thus be either pulled tight or passed through to sew a lockstitch tack afterwards. After the cross tack has been sewn they are short-trimmed by hand. For cut lengths up to 38 mm: fitted as standard with electropneumatic thread catcher and gimp guide. This grasps the upper thread as soon as it is severed, holds it clamped and inserts it into the right side to sew the next buttonhole. This means:
- a secure seam start, even in light, loose weaves
  - tight starting stitches
  - a clean buttonhole underside, hence no need for trimming.

## 1.4 Product structure

Equipment	Material number	Subclasses	
		589-212000	589-221000
sewing automat	0589 990002		X
sewing automat	0589 990004	X	
accessory kit	0791 579501	X	X
<b>Optional extras:</b>			
lengthways positioning kit	0579 590074	O	O
upper thread catcher	0579 590564	X	O
pneumatic connection pack	0797 003031	O	O
halogen tripod sewing lamp	9822 510000	O	O
table clamp for halogen tripod sewing lamp	9822 510011	O	O
key	9880 579001	O	O
gimp-thread advancing device	0579 590334	O	O
<b>Positioning aids</b>			
buttonhole-to-buttonhole distance stop	0579 590344	O	O
buttonhole-to-edge distance stop	0579 590104	O	O
<b>Stands</b>			
MG58-13 stand with attachment fittings and table plate 1060x750 inc. maintenance unit and rollers	MG58 400084	X*	X*
MG58-13 stand with attachment fittings and table plate 620x750 inc. maintenance unit and rollers	MG58 400094	X*	X*
support table for working standing up (inc. key 9880 579001)	0579 590134	O	O
holder for hind-trouser facings (pocket pouch open) inc. stop right and left for pocket opening	0579 590654	O	O
laser mark lamp inc. power pack	0579 590674	O	O

X = Standard equipment

O = Optional extras

\* = Narrow or wide stand supplied at purchaser's option

## 2. Technical data

<b>Head:</b>	class 589
<b>Stitch type:</b>	double chainstitch
<b>Number of needles:</b>	1
<b>Needle system:</b>	579
<b>Needle thickness:</b>	max. Nm 125 (depending on the subclass)
<b>Upper-thread thickness:</b>	max. Nm 50
<b>Bobbin-thread thickness:</b>	max. Nm 30
<b>Max. Speed:</b>	2200 rpm
<b>Stitch distance:</b>	0.5 - 2 mm
<b>Max. sewing length:</b> (depending on sewing apparatus)	32 mm (subclass 589-212000) 32 mm (subclass 589-221000)
<b>Max. cut length:</b> (depending on sewing apparatus)	32 mm (subclass 589-212000) 32 mm (subclass 589-221000)
<b>Operating pressure:</b>	6 bar ± 0.5 bar
<b>Air consumption:</b>	approx. 5 NL per working cycle
<b>Rated power:</b>	1.4 kVA
<b>Rated voltage:</b> on delivery:	1 x 190-240 V, 50/60 Hz 1 x 230 V, 50-60 Hz
<b>Dimensions:</b>	1060 x 750 x 1030 mm (L x W x H)
<b>Working height:</b>	750...895 mm (upper edge of table plate)
<b>Weight:</b>	approx. 170 kg
<b>Rated noise value:</b>	<b>Lc = 79 dB (A)</b> Workplace-related emission value in accordance with DIN 45635-48-B-1 (sewing cycle 6s ON and 1s OFF)
Stitch length:	1.2 mm
Speed:	2200 rpm
Material:	double denim 509g/m <sup>2</sup>

### 3. Operation

#### 3.1 Needles, yarns and gimps

##### Needles

Needle system: 579

Needle thicknesses: Nm 90-125  
depending on the type of thread and material and the sewing apparatus (E no.).

The needle thickness to be used for each machine and its sewing apparatus (E no.) is given on the nameplate.

##### Yarns

The appearance of the buttonhole is greatly affected by the yarn used. Synthetic-fibre yarns or even silk yarn can be used as the needle and bobbin threads.

The appearance of the buttonhole is greatly affected by

- the yarn used
- the use of different thicknesses for the needle and bobbin threads.

##### Gimps

The gimp stabilises the buttonhole and at the same time gives it a plastic shape.

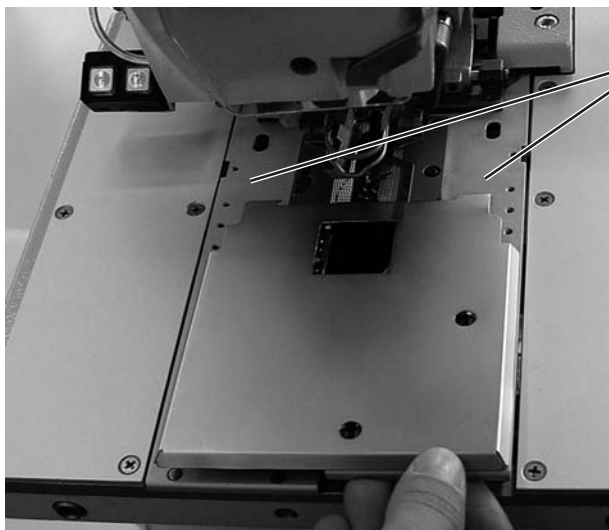
It should have the following characteristics:

- not too thick, but supple and strong
- constant diameter.

The recommended yarns in the following table are only guidelines. Other yarns and yarn thicknesses may be required, depending on the sewing apparatus (E no.) and the material.

Subclass	upper thread type and thickness	bobbin thread type and thickness	lower gimp thread type and thickness
589-212000	polyester-fibre yarn, schappe 70/3 80/2	polyester-fibre yarn schappe 70/3 80/2	not required
589-221000	poly-poly 80/2	poly-poly 80/2	poly-schappe 15/3

### 3.2 Removing and replacing the clamp plates



#### Caution: danger of injury

The clamp plates 1 must be removed and replaced with the machine switched off or in the “Safe Stop” position. Inadvertently operating the pedal with the main switch turned on may lead to damage or injury.

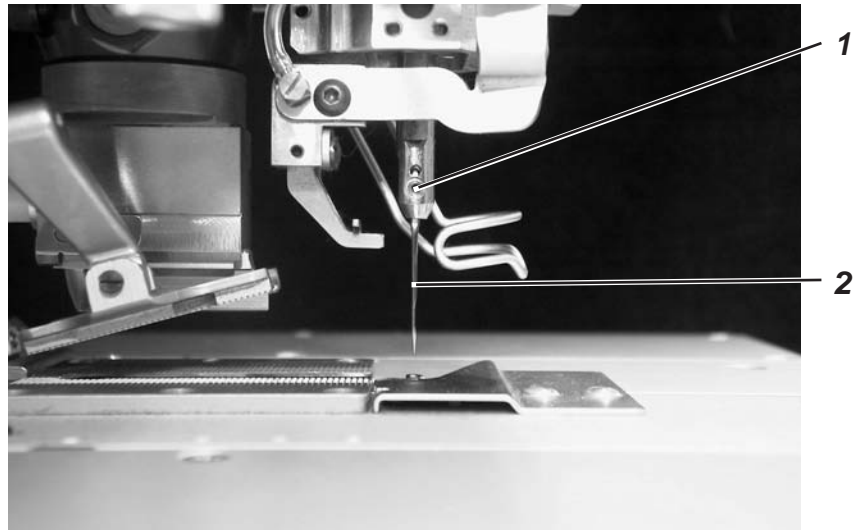
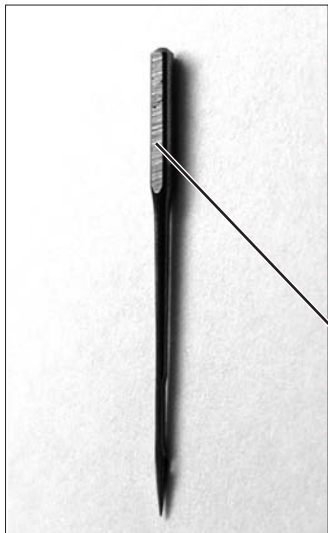
#### Removing the clamp plates

- Slightly raise the right or left (depending on the subclass) clamp plate 1 and remove it forwards.
- Slightly raise the other clamp plate 1 and remove it forwards.

#### Fitting the clamp plates

- First fit the left or right clamp plate 1.  
The pin 2 must engage in the jaws 3.
- Then fit the second clamp plate 1.  
The pin 2 must engage in the jaws 3.

### 3.3 Changing the needle

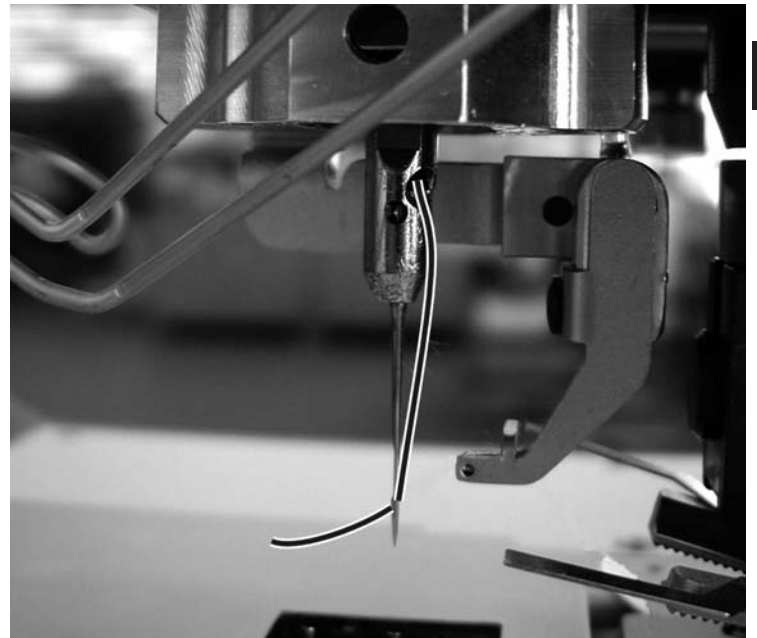
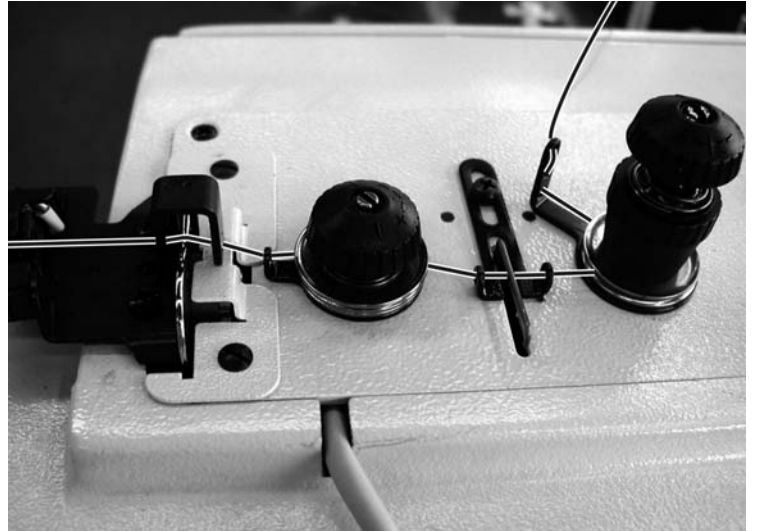


#### **Caution: danger of injury**

The needle must be changed with the machine switched off or in the "Safe Stop" position.

- Undo screw 1.
- Pull the needle 2 out of the needle bar.
- Push the new needle as far as it will go into the hole in the needle bar.
- Align the needle 2 so that its throat points forward and the surface 3 on the needle piston to the left (in the direction of the attachment screw 1).
- Tighten screw 1.

### 3.4 Threading the upper thread



1

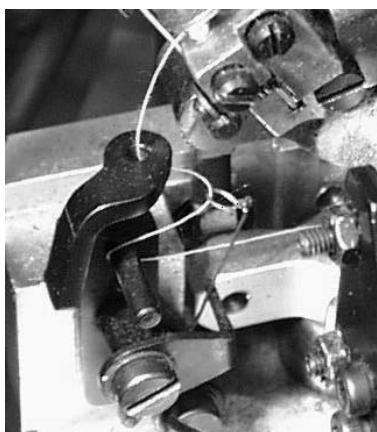
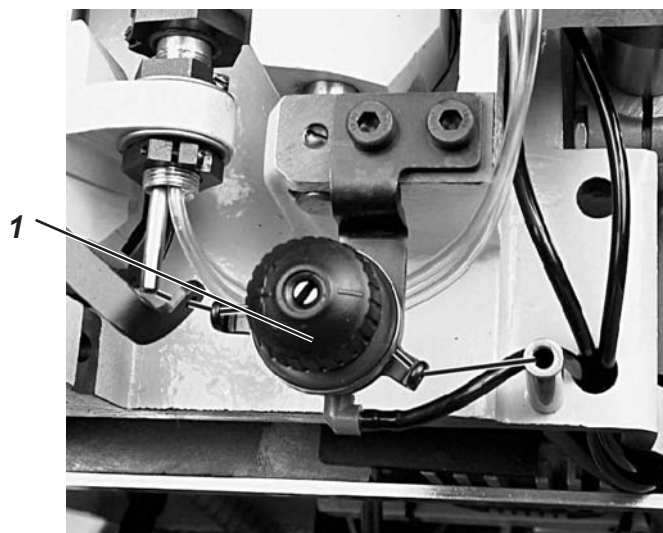
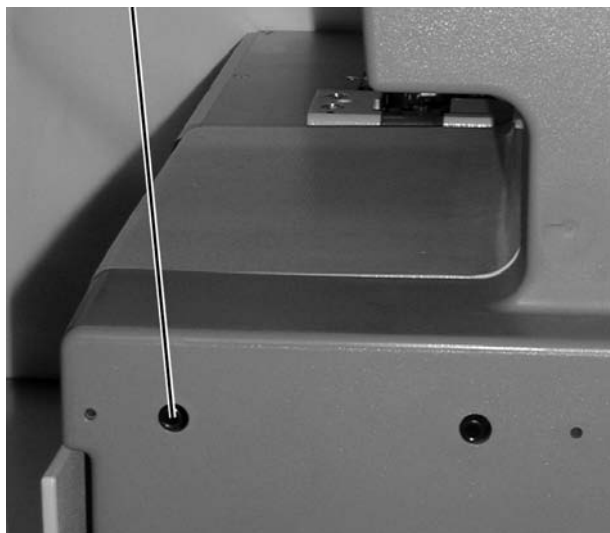


#### **Caution: danger of injury**

The upper thread may only be threaded with the machine switched off or in threading mode (see “threading mode” section).

- Thread the upper thread as shown in the illustrations.
- To thread the upper thread insert the threading wire (in the accessory kit) upwards through the hollow needle bar 1 from below.
- Place the top end of the upper thread in the hook.
- Pull the upper thread down with the wire.
- Thread the upper thread into the needle by drawing it forwards.

### 3.5 Threading the bobbin thread



#### **Caution: danger of injury**

The bobbin thread may only be threaded with the machine switched off or in threading mode (see “threading mode” section).

The machine must be in its final position, i.e. the hook turret with loopers must point forwards.

- Remove clamp plates (see section 3.2).
- Swing machine up.
- Use the threading wires in the accessory kit to thread the bobbin thread as shown in the illustrations.  
NB: The thread must be threaded above the thread tensioner 1 and behind the thread-tensioning spring 2.
- Leave about 25 mm of bobbin thread hanging out of the stitch hole in the throat plate.
- Fit the clamp plates (see section 3.2).



### 3.6 Threading the gimp thread (only 589-221000)



**Gimp**



**589-221000**

**1**



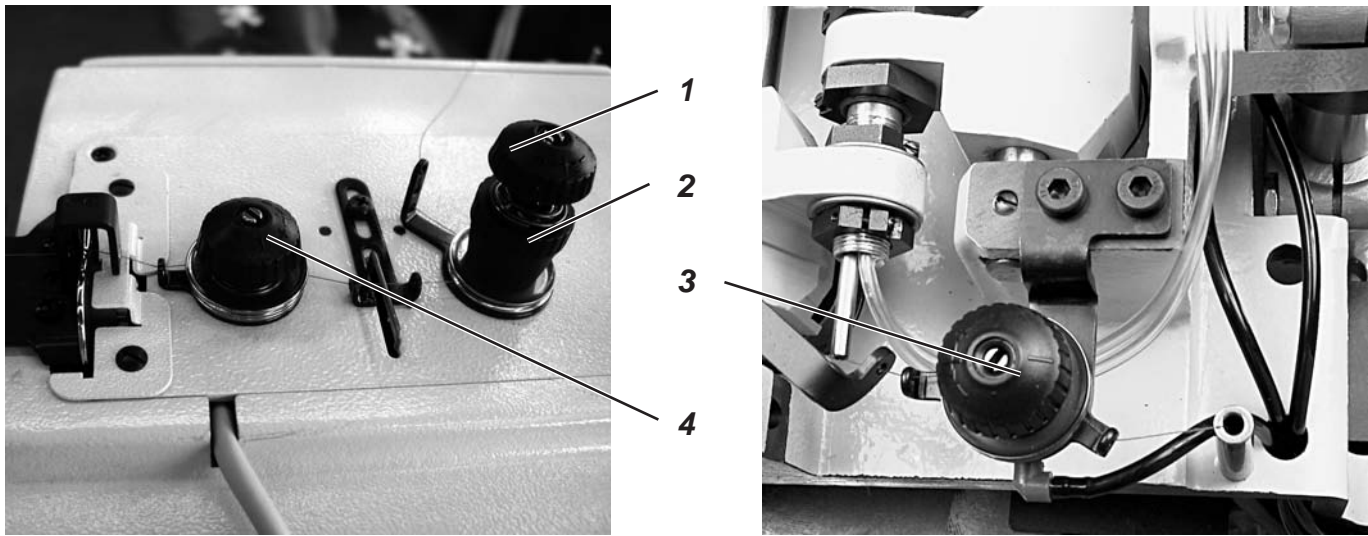
#### **Caution: danger of injury**

The gimp thread may only be threaded with the machine switched off or in threading mode (see “threading mode” section).

- Thread the gimp thread as shown in the illustrations.
- Leave about 25 mm of bobbin thread hanging out of the gimp hole in the throat plate.

## 4. Thread tension

### 4.1 Needle and bobbin-thread tension



The thread tensions depend on the type and quality of the yarn and material. The thread tension should be the minimum at which the appearance of the buttonhole is satisfactory. With thin material excessive thread tensions may cause unwanted gathering and thread breakage.

#### Upper-thread tension

The upper-thread tension must generally be set higher than the bobbin-thread tension. The upper-thread tension consist of two components the main tension for the sewing process and a residual tension to keep the upper thread taut for the cut beneath the throat plate.

The upper thread hanging out of the needle must be long enough to ensure that the first stitch is securely executed. The residual tension required to achieve this depends on the elasticity of the upper thread used.

- Adjust the main tension for the sewing process with the knurled nut 1.
- Adjust the residual tension to keep the upper thread taut when it is cut with the sleeve 2.  
If the residual tension is changed the main tension should be corrected accordingly.

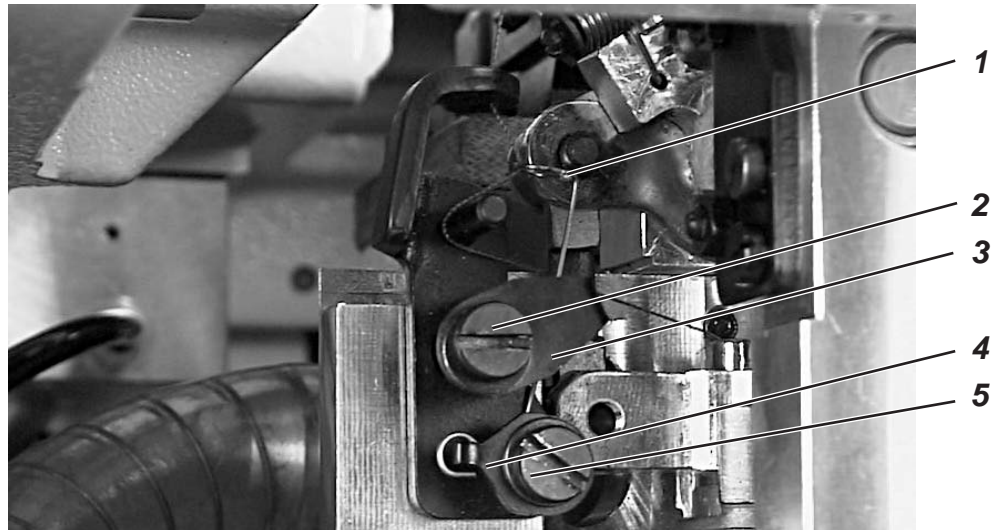
#### NB:

Adjusting the thread clamp 4 does not alter the upper-thread tension. Only the clamping force can be adjusted on the thread clamp.

#### Bobbin-thread tension

- Swing the head up.
- Adjust the bobbin-thread tension with the tensioner 3.
- Swing the head down.

## 4.2 Bobbin-thread-tensioning spring



### **Caution: danger of injury**

The thread-tensioning spring may only be adjusted with the machine switched off or in the "Safe Stop" position.

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The deflection and pre-tensioning force of the thread-tensioning spring 1 affect the bobbin-thread tension and thus the shape and purling of the buttonhole.

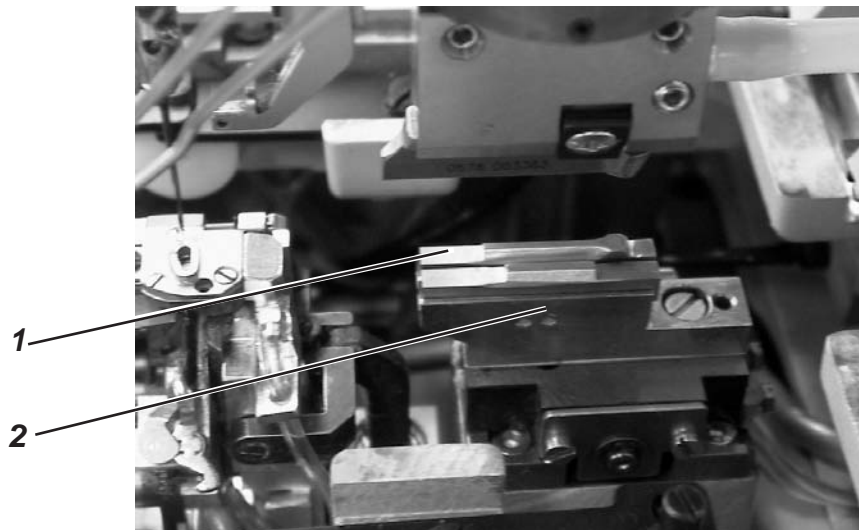
### **Adjusting the deflection:**

- Undo screw 2.
- Twist bracket 3.
- Tighten screw 2.

### **Adjusting the pre-tension:**

- Undo screw 5.
- Twist bracket 4.
- Tighten screw 5.

## 5. Changing the cutting blocks

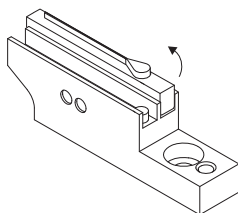


Two cutting blocks are available. The cut length can be changed by switching cutting blocks.



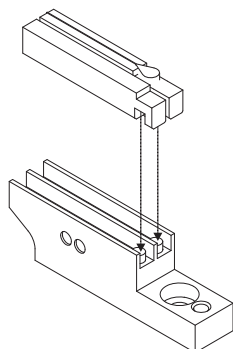
### Caution: danger of injury

Cutting blocks may only be switched with the machine switched off or in the "Safe Stop" position.



### Removing the cutting-block

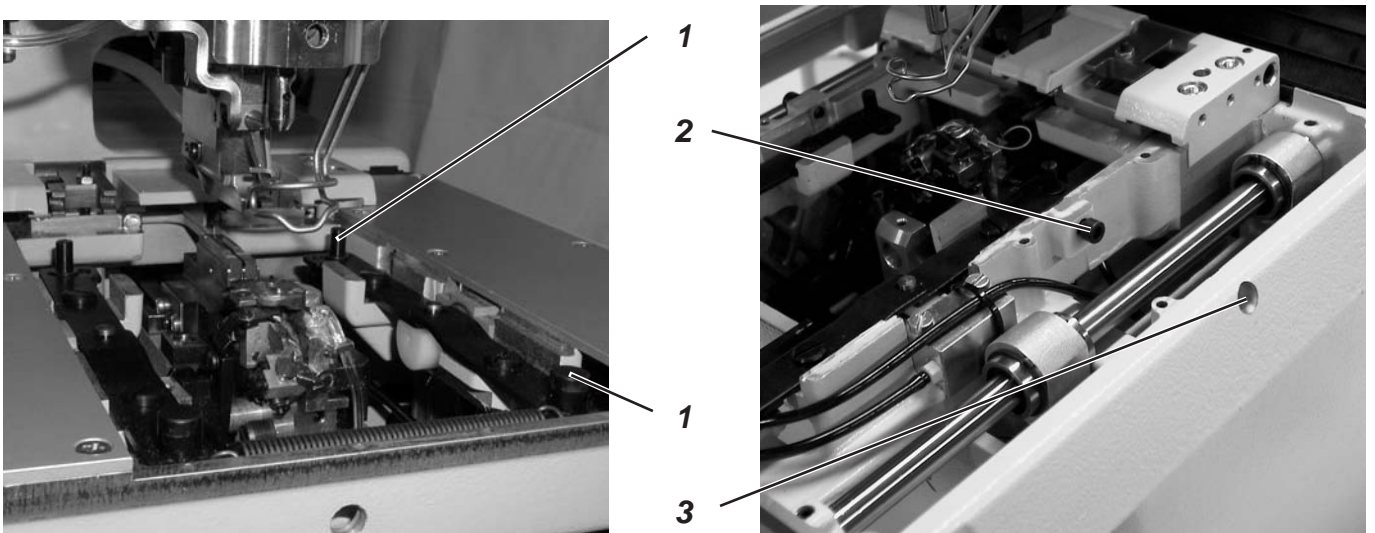
- Remove clamp plates (see section 3.2).
- Remove the cutting-block 1 by raising it at the position indicated by the arrow.



### Fitting the cutting-block

- Insert the cutting-block in the cutting-block holder 2.
- Check that the cutting-block is firmly seated in its holder 2 (make sure that the pins are properly fitted into the notches).
- Fit clamp plates (see section 3.2).

## 6. Spreading the workpiece



Where cutting precedes sewing the incision opens to enable the piercing needle to sew the left and right seam rows cleanly without piercing the cut edge of the material.

On machines where cutting follows sewing the material is kept taut for the sewing process.

A spread of 1.5 mm is normally sufficient.

The workpiece is spread just before sewing begins. The clamp plates are forced apart by the two pins 1.

The left and right sides must be evenly adjusted so that both clamp plates execute an equal lateral movement.



### Caution: danger of injury

The material spread must only be adjusted with the machine switched off or in the "Safe Stop" position.

### Adjustment

The stop screws 2 can be reached through the holes 3 on both sides of the machine with an Allen key.

- Adjust the stop screws on both sides so that the required spread is achieved.

## 7. Hand switches

The hand switch controls the clamps and initiate the sewing process. Their function depends on the service-menu setting (see Servicing instructions).



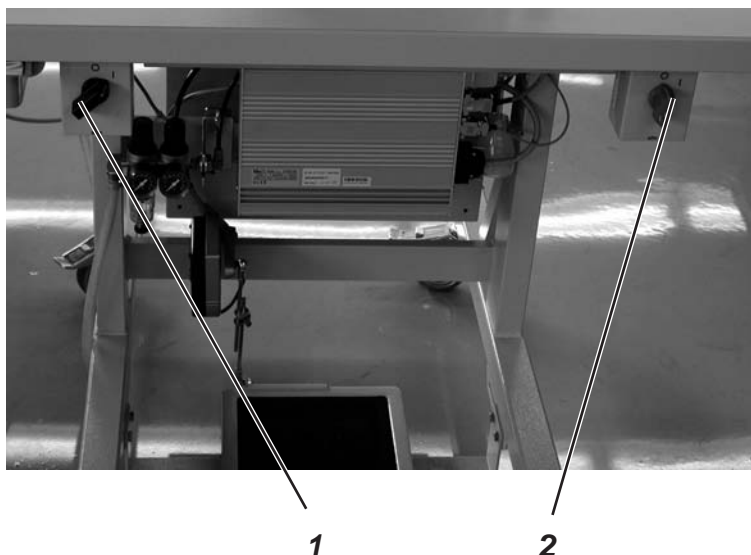
### Setting 1:

- button 1: opens and closes the clamps
- button 2: initiates the sewing process provided the clamps are closed.

### Setting 2:

- button 1: opens and closes the clamps
- button 2: lowers the clamps if they are not already lowered. The sewing process begins.

## 8. Switching on - Switching off - Safe Stop



### 8.1 Switching on

- The sewing-drive switch 1 must be in position 1.
- Turn on the main switch 2.  
The Dürkopp Adler logo briefly appears.  
The opening screen appears.

### 8.2 Switching off

- Turn off the main switch 2.  
All drives and the controller are immediately disconnected from the power supply.

### 8.3 Safe Stop



Before any work is carried out on the machine it must be switched off or the safe stop mode activated.

Push the pedal back.

- Turn switch 1 to position "0".  
The machine is in safe stop mode.  
This message appears, flashing.  
The sewing drive is disconnected from the mains.  
The buttonhole blade is switched off.
- To resume the sewing process proceed as follows:  
Turn switch 1 to position "1".  
After a short pause the machine is again ready for operation. The sewing process is resumed at the point where firm hold was activated.

If the symbol appears in reverse, firm hold was switched on before the pedal was pushed back.

To clear proceed as follows:

- Turn switch 1 to position "1".
- Push the pedal back.
- Turn switch 1 to position "0".  
The machine is in safe stop mode.

## 8.4 Switching threading mode on and off



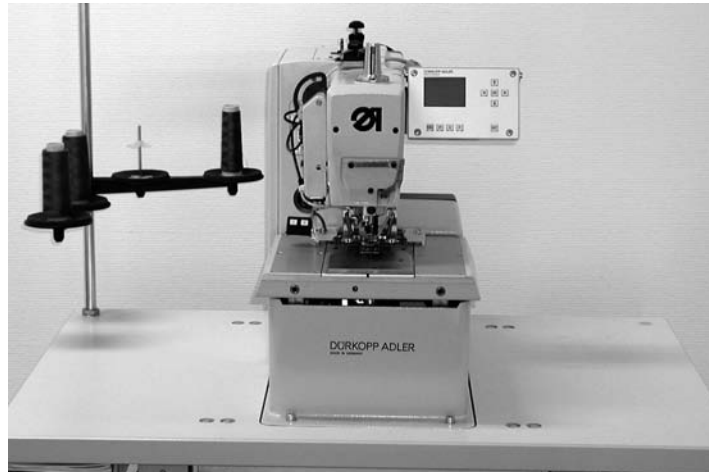
### Caution: danger of injury

For threading either the machine must be switched off or threading mode must be activated.



- Push the pedal back.  
The hook turret is rotated to the optimum threading position.  
The thread tensioners are opened.
- Turn switch 1 to position "0".  
This message appears.
- Thread the upper or bobbin thread.
- Turn switch 1 to position "1".  
After a short pause the machine switches to sewing mode.  
The machine is ready for operation.

## 9. Controller



1

### 9.1 General

The class 589 buttonhole machine is equipped with a programmable controller. Up to 50 different buttonholes can be defined. The buttonholes can be programmed in up to 25 sequences. Each sequence can contain up to 5 buttonholes. During operation the machine can switch among the programmed buttonholes either automatically or manually.

The following buttonhole shapes are available for selection:

- buttonholes with taper tack
- buttonholes with round tack
- buttonholes with cross tack
- buttonholes without tack

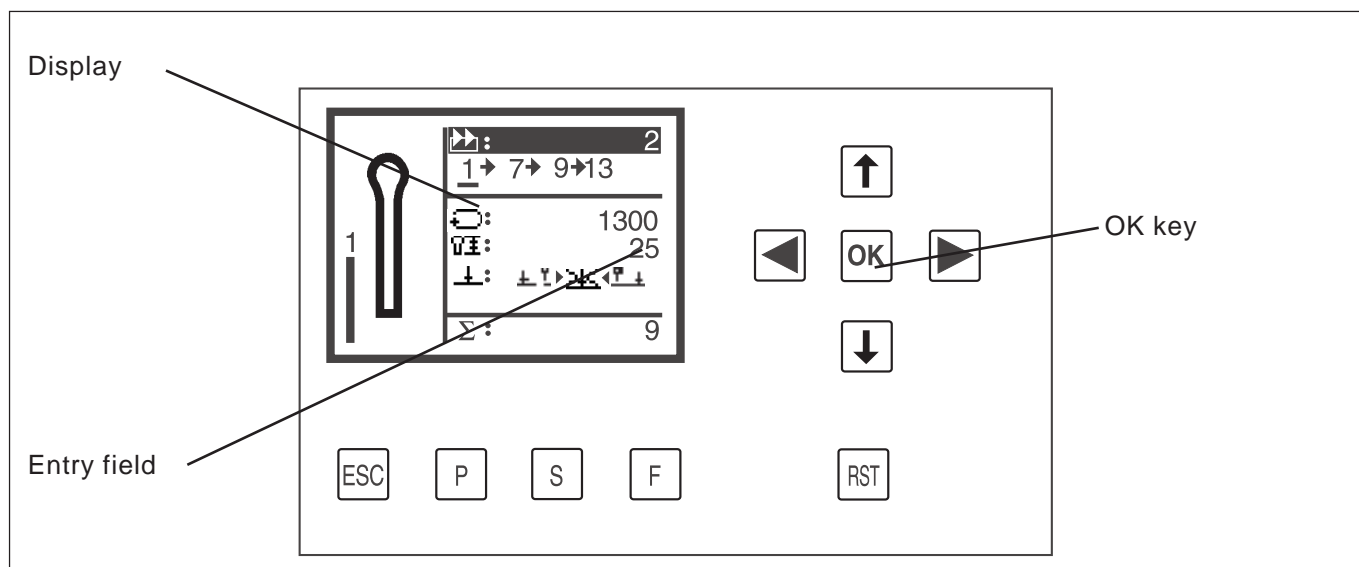
The various buttonhole properties such as length and eye shape can be set for all shapes.



### CAUTION:

Not all buttonhole shapes and variants can be sewn on every subclass and with every sewing apparatus.

## 9.2 Operating the controller



### key function



In the main menu: switch from one buttonhole program to another

**If an entry field is activated:**

switch from one position to another.

Where functions have a number of selection possibilities: switch from one to another, e.g. from “cut before sewing” to “cut after sewing” or “no cut”.



**If no entry field is activated:**

switch from one menu line to another. The selected line appears on a dark background.

If an entry field is activated:

Increase or reduce the value of the selected position.

**OK-key**

**If no entry field is activated:**

activate the entry field. The value can be changed with the “↑” and “↓” keys.

**If an entry field is activated:**

the value set is accepted.

**ESC**

**If an entry field is activated:**

an entry is abandoned. The previous value is retained.

**If no entry field is activated:**

the menu is closed or the clamp opened.

**P**

The controller switches to buttonhole-programming mode. Buttonhole parameters can be changed in this mode.

**S**

The controller switches to buttonhole sequence mode. Buttonhole sequences can be changed in this mode.

**F**

The controller switches to the service menu. Access to the service menu requires the entry of a code number.

**RST**

Close clamps and initiate the sewing process.

**During operation:**

stop and re-start the sewing process.



## 9.3 Changing parameter values

### 9.3.1 Numerical values

Numerical values can be changed in the following way:

- Use the ↑ and ↓ cursor keys to select the line containing the value you wish to change.
- Press the enter key.  
The cursor flashes under one digit of the numerical value.
- Use the ← and → cursor keys to move from one digit to another. Use the ↑ and ↓ cursor keys to increase or reduce the value of the selected digit.  
Where parameters are limited to certain values (e.g. eye shape), pressing the ↑ and ↓ cursor keys displays another possible parameter value.
- Press OK.  
The set value is accepted.
- If the set value is not to be accepted, press “ESC”.  
The original value is restored.

### 9.3.2 Selecting a parameter

Some parameters allow selection among a number of possibilities. These parameters can be changed in the following way:

- Use the ↑ and ↓ cursor keys to select the line containing the parameter or value to be changed.
- Press OK.
- Use the ↑ and ↓ cursor keys to switch from one possibility to another.

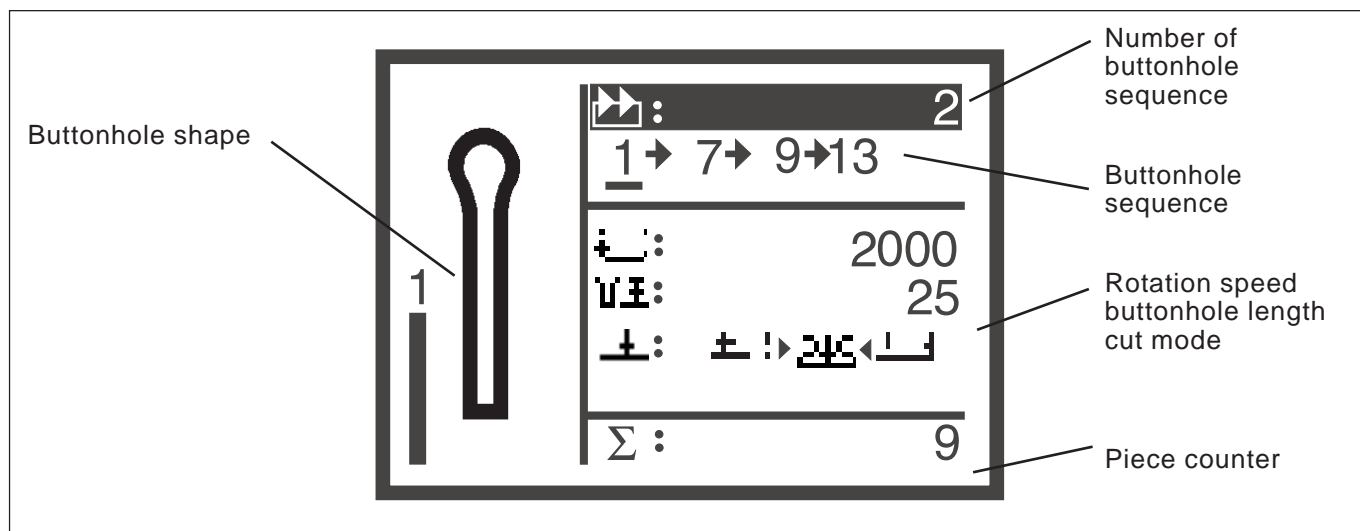
The selected symbol appears in the display.

Exception:  
to switch cut mode use the ← and → cursor keys.

- Press the enter key.  
The set parameter or value is accepted.
- If the set parameter or value is not to be accepted, press “ESC”.  
The original parameter or value is restored.

## 9.4 Sewing process

### 9.4.1 Switching on



- Turn on the main switch .  
The Dürkopp Adler logo briefly appears..
- The main screen appears.
- Press the “RST” key on the operating panel.  
The machine moves to the insertion position and is ready for operation.  
A sketch of the buttonhole to be sewn first appears in the left half of the display.

### 9.4.2 Sequence mode and single-button mode

Depending on the service-menu setting either sequence mode or single-button mode is available.

#### 9.4.2.1 Selecting a sequence (sequence mode)

After switch-on the top line in the display appears on a dark background. The last sewing sequence used is selected.

##### Selecting a different sequence

- Press OK.
- Use the ↑ and ↓ cursor keys to switch from one sequence to another.

#### 9.4.2.2 Selecting a buttonhole (single-buttonhole mode)

If single-button mode is set in the service menu, no sequence can be activated.

After switch-on the top line in the display appears on a dark background. The last buttonhole sewn is displayed.

##### Selecting other buttonholes

- Press OK.
- Use the ↑ and ↓ cursor keys to switch from one buttonhole to another.

### 9.4.3 Changing buttonhole parameters

The main parameters of the buttonhole are displayed on the main screen.

#### Changing the parameters

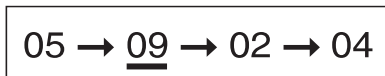
- Use the  $\uparrow$  and  $\downarrow$  cursor keys to select the line containing the parameter to be changed.
- Press OK.
- Change the parameter value.
- Press enter to accept the changed value.
- If the new value is not to be accepted, press "ESC".

### 9.4.4 Automatic or manual operation (can only be set in sequence mode)

Depending on the setting the machine operates either manually or automatically.

#### Automatic operation

Arrows are displayed between the buttonhole shapes in the sequence displayed.



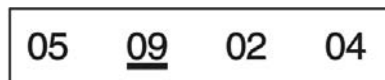
05 → 09 → 02 → 04

After a buttonhole has been completed the controller switches automatically to the next shape. After the last buttonhole has been completed the controller switches back to the first buttonhole in the sequence.

The current buttonhole is marked with a bar.

#### Manual operation

No arrows are displayed between the buttonhole shapes in the sequence displayed.



05 09 02 04

The controller does not switch automatically between the buttonhole shapes.

The current buttonhole is marked with a bar.

#### Switching between automatic and manual operation

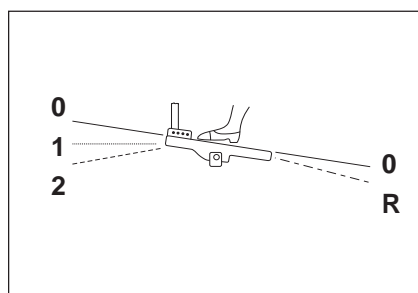
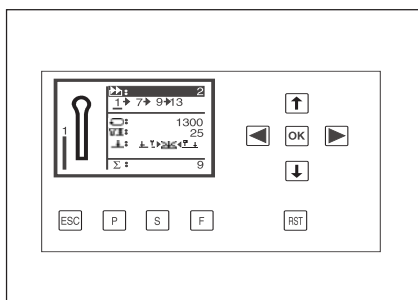
- Use the  $\uparrow$  and  $\downarrow$  cursor keys to select the line containing the current sequence.
- Press OK.
- Use the  $\uparrow$  and  $\downarrow$  cursor keys to switch between the two operating modes.  
The arrows between the buttonhole shapes appear and disappear accordingly.

#### Selecting the next buttonhole to be sewn in a sequence

If the sewing menu is shown in the display, you can switch from one programmed buttonhole to another at any time.

- Press the  $\leftarrow$  or  $\rightarrow$  cursor key.  
The next or previous buttonhole shape in the sequence displayed is selected.

## 9.5 Sewing



The sewing process can be controlled with the pedal, the hand switches or the “**RST**” and “**ESC**” keys on the operating panel.

In automatic operation the machine moves to the new insertion position after each sewing process (sequence mode).

In manual operation it moves to the insertion position of the current buttonhole (sequence and single-button mode).

### Sewing with the pedal

- Push the pedal back.  
The machine moves to the insertion position.
- Insert the material.
- Push the pedal forwards to position 1.  
The clamps close.  
Releasing the pedal opens them again.  
The pedal moves to its rest position.
- Push the pedal down to position 2  
The sewing process is initiated.
- To carry out another sewing process the pedal must be returned to its starting (rest) position.

### Sewing with the operating-panel keys

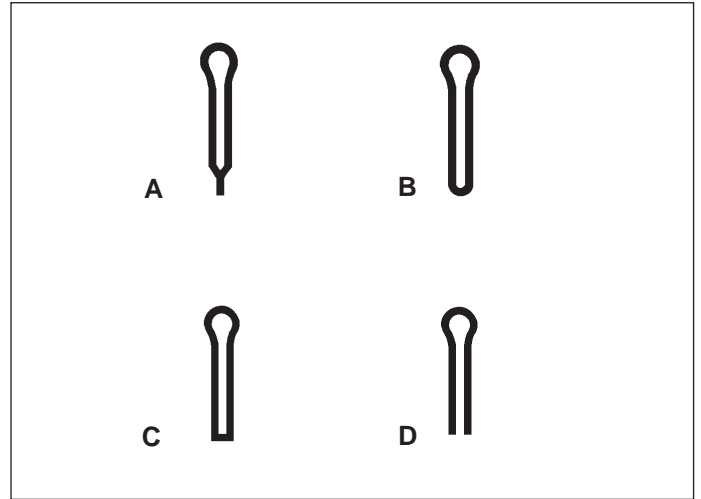
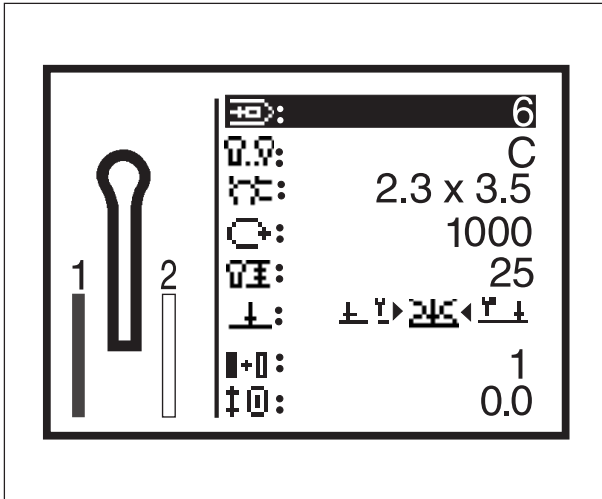
- For the first operation after switch-on press the “**RST**” key if any parameters have been changed or another buttonhole shape has been selected manually.  
The machine moves to its starting position and from there to the insertion position.
- If you wish the machine to move to its starting position, press the “**ESC**” key.
- Insert the material.
- Press the “**RST**” key once.  
The clamps close.
- If you wish the clamps to re-open, Press the “**ESC**” key.
- If you wish the sewing process to be initiated, press the “**RST**” key again.  
After the sewing process the machine returns to the insertion position.

### 9.5.1 Fast switch-off

The comprehensive safety system on the 589 contains various features enabling it to be halted immediately in the event of incorrect operation, needle breakage, thread breakage etc.

- Push the pedal backwards beyond the rest position, press the “**RST**” key or press button 1 or 2 on the hand switches.  
The machine halts with the needle raised.
- If you wish sewing to be resumed, push the pedal forwards, press the “**RST**” key again or press button 2 on the hand switches.  
The sewing process resumes.
- If you wish to remove the material, push the pedal back, press the “**ESC**” key on the operating panel or press button 1 on the hand switches.

## 9.6 Changing a buttonhole program



Up to 50 different buttonholes can be programmed in the buttonhole programming menu.

The various parameters of each buttonhole shape can be changed.

A sketch of the current buttonhole shape is shown in the left half of the display. If the  $\uparrow$  and  $\downarrow$  cursor keys are pressed to switch from one buttonhole parameter to another in the right half, the current measurement is always highlighted in the sketch.

If not all adjustable parameters fit in the display, the content can be shifted up or down by pressing the cursor keys at the top or bottom of the display.

- Press "P".  
The controller switches to the buttonhole programming menu.
- Press "S" to program or alter a sequence.
- To leave the menu press the "ESC" key.

The following buttonholes with their parameters can be programmed in the buttonhole programming menu.

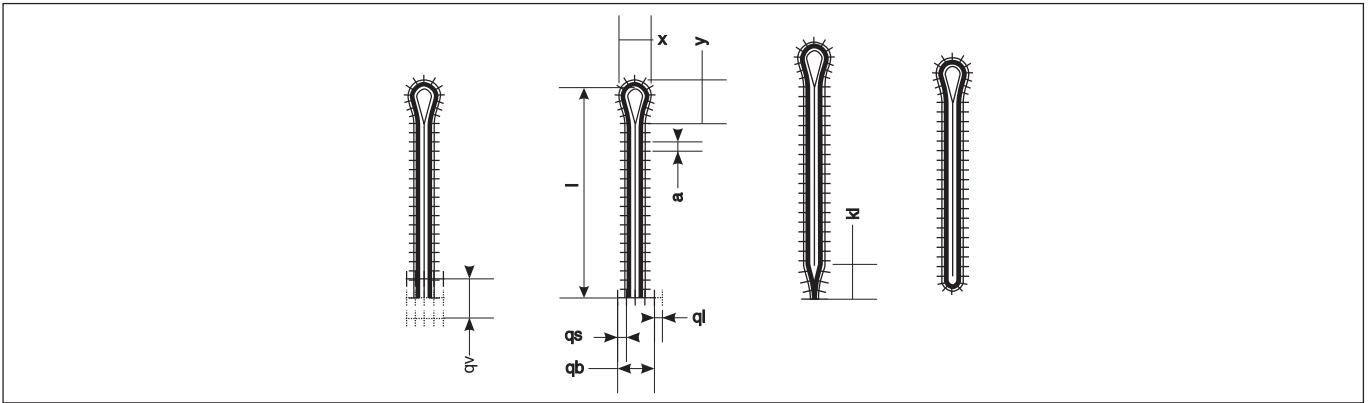
Type	Buttonhole shape	Adjustable parameters
A	taper tack	eye shape, speed, buttonhole length, cut, cut-position correction, speed in the eye, stitch distance, throw width in the eye, intermediate fabric taper tack overlap, taper tack length
B	round tack	eye shape, speed, buttonhole length, cut, cut-position correction, stitch count in the eye, stitch distance, throw width in the eye, intermediate fabric overlap, number of stitches in the round tack
C	cross tack	eye shape, speed, buttonhole length, cut, cut-position correction, stitch count in the eye, stitch distance, throw width in the eye, intermediate fabric cross tack length, stitch distance in the cross tack, lateral cross tack length, seam extension
D	without tack	eye shape, speed, buttonhole length, cut, cut-position correction, stitch count in the eye, stitch distance, throw width in the eye, intermediate fabric

meas.	designation	
a	stitch distance	
kl	taper tack length	
l	length	
qb	cross tack length	
ql	lateral cross tack position	
qs	stitch distance in the cross tack	
qv	seam extension	
x	eye shape	
y	eye shape	

**NB:**

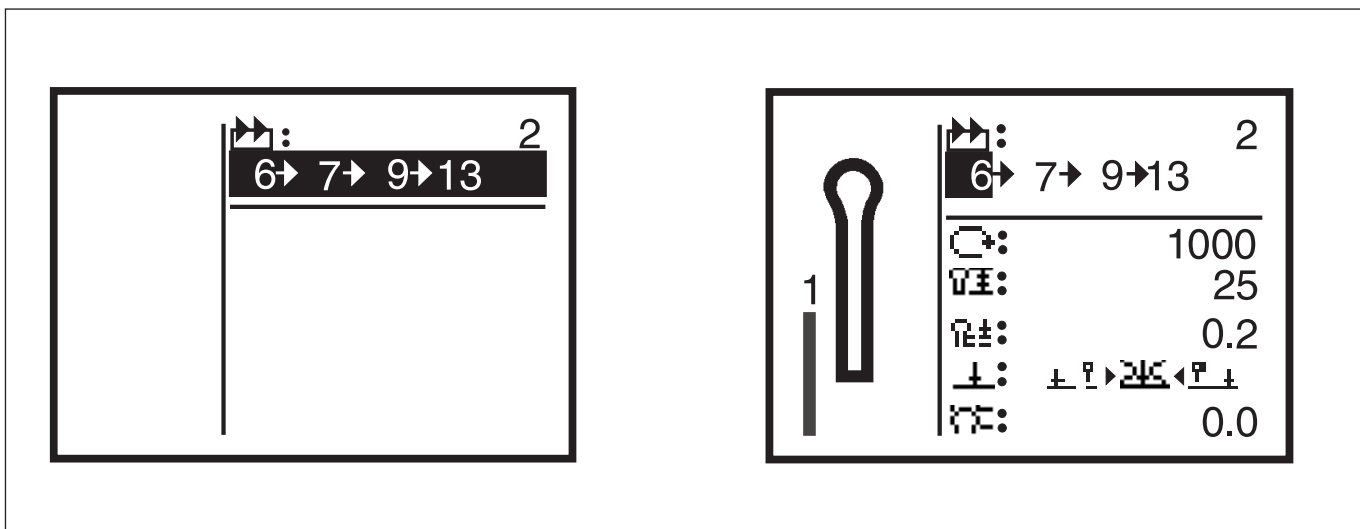
Not all symbols are displayed, only the ones that are important for the pertinent buttonhole type.

Symbol	Parameter	Meaning
	<b>Buttonhole number</b>	The number of the buttonhole to be processed. If a new buttonhole is selected, a * appears before its number.
	<b>Buttonhole type</b>	Buttonhole types A to E are available, depending on the subclass (see also page 27).
	<b>Eye shape</b>	The external dimensions (x, y) of the eye. Buttonholes without eyes have dimensions 0.0x0.0. Which buttonhole shapes are possible depends on the cutting mode set. When switching from buttonholes with eyes to buttonholes without eyes the stitch count in the eye is set to 7. When switching from buttonholes without eyes to buttonholes with eyes the stitch count in the eye is set to 10. The buttonhole display in the left half of the display alters accordingly.
	<b>Speed</b>	The speed of the machine.
	<b>Length</b>	The buttonhole length from the upper end of the eye up to the beginning of the tack (measurement l).
	<b>Cut</b>	The following parameters are available: - cut before sewing (item 1) - no cut (item 2) - cut after sewing (item 3).
	<b>Cut-position correction</b>	The distance by which the cut of the blade is moved lengthwise. Values from -0.3 to +0.3 can be set.
	<b>Change the cutting block</b>	The following parameters are available: - Cutting block left (pos. 1) - Cutting block right (pos. 2)



Symbol	Parameter	Meaning
	<b>Intermediate fabric</b>	This parameter changes the intermediate-fabric type.
	<b>Taper tack length</b>	In buttonholes with taper tacks, the length from the tip of the taper to the end of the taper (measurement kl). The minimum taper tack length is 2 mm. When changing the buttonhole length please ensure that the maximum sewing length is not exceeded. This can occur with taper-tack buttonholes as the length of the taper tack forms part of the sewing length. When the buttonhole length is increased the taper tack length is thus automatically adjusted accordingly.
	<b>Taper tack overlap</b>	The distance between the two sides in the straight section of the taper tack. When it is 0.0 mm one side is directly above the other.
	<b>Overlap</b>	In round tacks and eyelets the overlap can be adjusted.
	<b>Number of stitches in the round tack</b>	In round tack buttonholes, the number of stitches in the round tack. 4, 6, 8 or 10 stitches are possible.
	<b>Throw width in the cross tack</b>	This parameter changes the throw width in the cross tack.
	<b>Cross tack length</b>	In buttonholes with cross tacks, the overall length of the cross tack (measurement qb).
	<b>Stitch distance in the cross tack</b>	In buttonholes with cross tacks, the gap between stitches in the cross tack (measurement qs).
	<b>Lateral cross tack position</b>	In buttonholes with cross tacks, the position of the cross tack with respect to the centre (measurement ql). - = cross tack left + = cross tack right
	<b>Stitch count in the eye</b>	The number of stitches sewn by the machine in the eye.
	<b>Stitch distance</b>	The distance between stitches within the side of the buttonhole (measurement a). The value must be between 0.5 and 2 mm.
	<b>Throw width in the side</b>	This parameter changes the throw width in the side of the buttonhole.

## 9.7 Buttonhole sequence



The 589 controller can be programmed with up to 25 sequences of buttonhole shapes. Each sequence can contain up to 5 buttonholes.

- Press “S”.  
The controller switches to the buttonhole-sequence programming menu.
- To program or alter a buttonhole shape press “P”.
- To leave this menu press the “ESC” key.

### 9.7.1 Selecting a buttonhole sequence



- The number of the selected sequence is displayed behind this symbol.  
The sequence belonging to the sequence number is displayed in the line below.
- To switch to another sequence select the top menu line.
- Press the enter key.
- Use the ↑ and ↓ cursor keys to select a different sequence.
- When a new sequence is created a “\*” appears before the sequence number (setting for buttonhole shape of sequence: 1)

### 9.7.2 Changing the buttonhole sequence

#### Appending a buttonhole

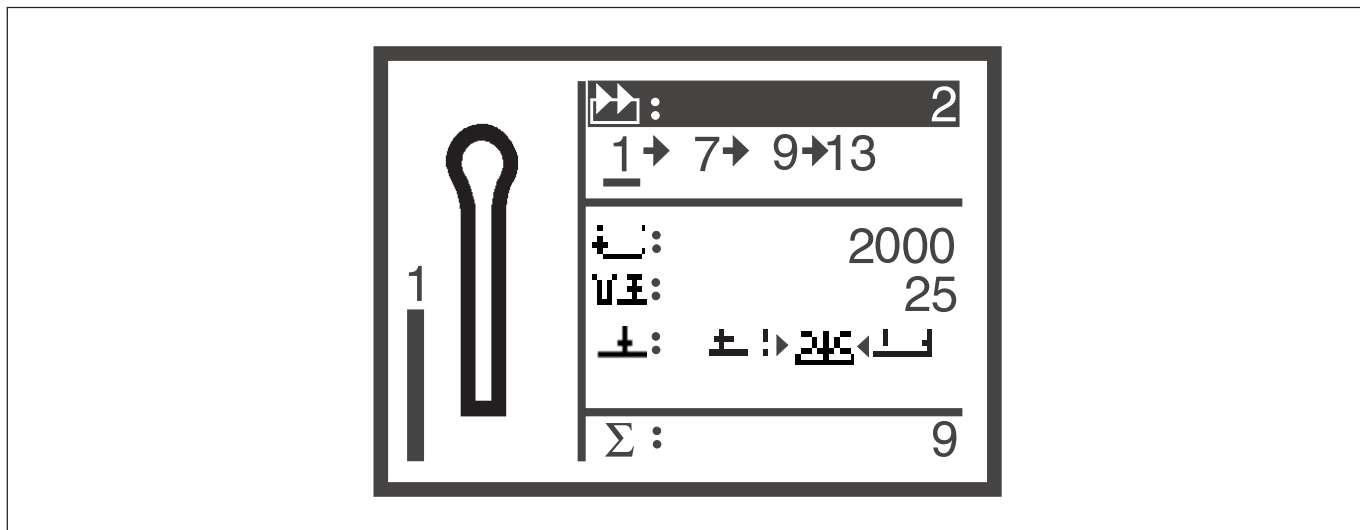
- Use the ↑ and ↓ cursor keys to select a buttonhole sequence.
- Press the enter key.
- Within the buttonhole sequence use the ⇒ cursor key to select the point behind the last buttonhole.  
“0” appears as the buttonhole shape.
- Use the ↑ and ↓ cursor keys to select the number of the required buttonhole shape.

#### Deleting a buttonhole

- Use the ↑ and ↓ cursor keys to select a buttonhole sequence.
- Press the enter key.
- Within the buttonhole sequence use the ⇐ and ⇒ cursor keys to select the buttonhole to be deleted.
- Use the ↑ and ↓ cursor keys to set buttonhole shape “0”.
- Press the enter key.  
The selected buttonhole is deleted. Any subsequent buttonholes move up one place.



## 9.8 Piece counter



### General

The 589 machine is equipped with a piece counter.

The piece counter counts the number of buttonholes sewn, not the number of buttonhole sequences sewn. The current piece-counter value is displayed behind the “Σ” symbol.

Switching the machine off does not affect the piece-counter value. The piece counter counts up to a maximum of 65000 buttonholes. When this value is exceeded, counting begins again at 0.

### Resetting the piece counter

- In the sewing menu use the ↑ and ↓ cursor keys to select the bottom line.
- Press enter twice.  
The piece-counter value is reset to 0.

## 9.9 Buttonhole and sequence programming: a brief description

### 9.9.1 Selecting a buttonhole number

- Push the pedal back:  
the cloth carrier plate and hook turret move to their starting positions
- Press “P”:  
The display switches from sewing mode to buttonhole programming mode.  
In this mode the buttonhole parameters can be changed.
- The buttonhole number line appears on a dark background.
- If you wish to change the buttonhole displayed, skip to section 9.9.2.
- If you wish to change a buttonhole that is not displayed or program a new buttonhole, press OK.
- Use the ↑ and ↓ keys to display buttonholes already programmed.
- If a new buttonhole is selected, a “\*” appears before the buttonhole number.
- Select a buttonhole number and press OK to confirm.

### 9.9.2 Entering parameters

- Use the ↑ and ↓ keys to select the parameter to be changed.
- The line containing the selected parameter appears on a dark background.
- Press OK.  
The cursor flashes under the value of the selected parameter and only the symbol appears on a dark background.
- Use the ↑ and ↓ keys to set the required value.
- Use the ⇐ and ⇒ keys to change the cutting mode.
- Press OK.  
The set value is accepted.
- If you do not wish to accept the changed value, press the “ESC” key.  
The original value is restored.
- Use the ↑ and ↓ keys to select and change further parameters.
- Press the “ESC” key to leave buttonhole programming mode.  
The machine is now in sewing mode and thus ready for operation.

## 9.10 Setting buttonhole sequences: a brief description

### 9.10.1 Selecting a buttonhole sequence

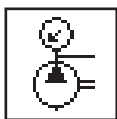
- Push the pedal back:  
the cloth carrier plate and hook turret move to their starting positions.
- Press “**S**”.  
The display switches from sewing mode to sequence mode:  
in this mode sequences can be programmed.  
The line sequence number appears on a dark background.
- If you wish to change the sequence displayed, skip to section 9.10.2.
- If you wish to change a sequence that is not displayed or program a new sequence, press OK.
- Use the ↑ and ↓ keys to display sequences already programmed.
- If a new sequence is selected a \* appears before the sequence number.
- Select a sequence number and press OK.

### 9.10.2 Changing a sequence

- Use the ↓ key to select the line containing the buttonhole sequence and press OK.  
Now the buttonhole sequence can be changed.
- Use the ↑ and ↓ keys to select the buttonhole number be changed.  
If you wish to delete a buttonhole from the sequence, select buttonhole number 0.
- Use the ⇐ and ⇒ keys to select the column containing the buttonhole number to be changed.
- When programming is complete press OK.
- If the changed sequence is not to be saved, press the “**ESC**” key.  
The original sequence is restored.
- Pressing the “**ESC**” key leaves sequence mode. The machine is now in sewing mode and thus ready for operation.

## 10. Error messages

### 10.1 Pressure monitor



The pressure monitor monitors the pressure of the air supply. If the pressure is inadequate this warning message appears in the display.

#### **Fault rectification**

- Switch the machine off.
- Ensure that the air pressure is adequate.
- Switch the machine on again.

### 10.2 Firm hold

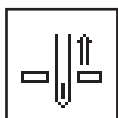


When the machine is in firm hold mode this warning message appears in the display.

### 10.3 Error messages

If an error or fault occurs, a window containing an error code appears. Error messages are described in the Servicing instructions.

### 10.4 Needle not in starting position

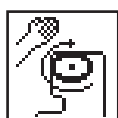


If the needle is not in its upper starting position when sewing begins, appears this message.

#### **Rectification**

- Turn the handwheel until the message disappears.

### 10.5 Handwheel turned manually



If the machine is halted during operation and the handwheel turned, this symbol appears when it is restarted. The current sewing process must be abandoned.

### 10.6 Sewing-start not correct



If when sewing begins the needle is about to execute the right needle insertion on subclass 221 (or the left needle insertion on subclass 212), this warning message appears.

To clear the error turn the handwheel until the message disappears.

If the warning message appears straight after switch-on, the RST key must be pressed when the message has disappeared. The machine moves to the starting position.

## 11. Maintenance



### Caution: danger of injury

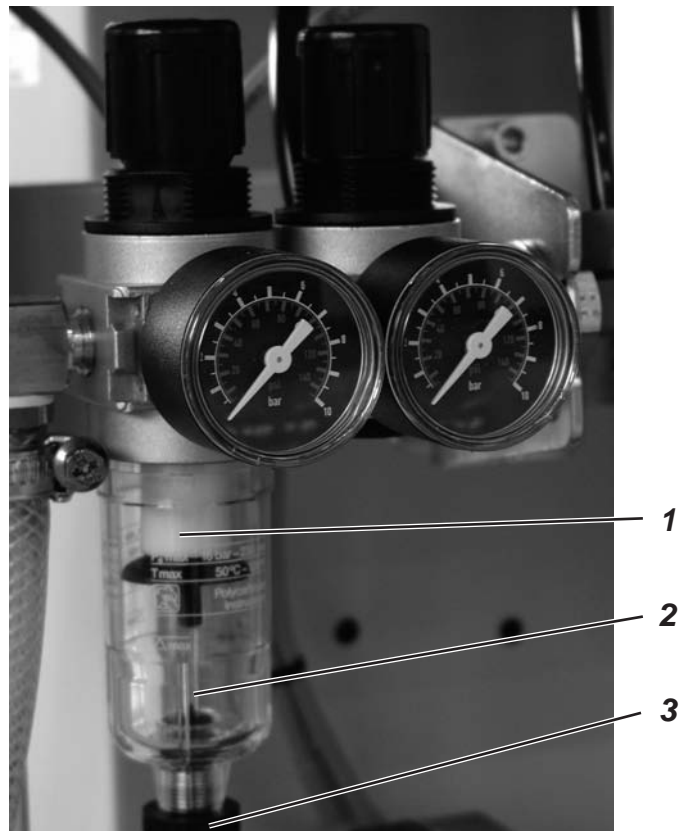
Maintenance work may only be carried out with the machine switched off. The utmost care must be taken when carrying out maintenance work that requires the machine to be running.

### 11.1 Cleaning

A clean machine is a trouble-free machine.

#### Daily cleaning:

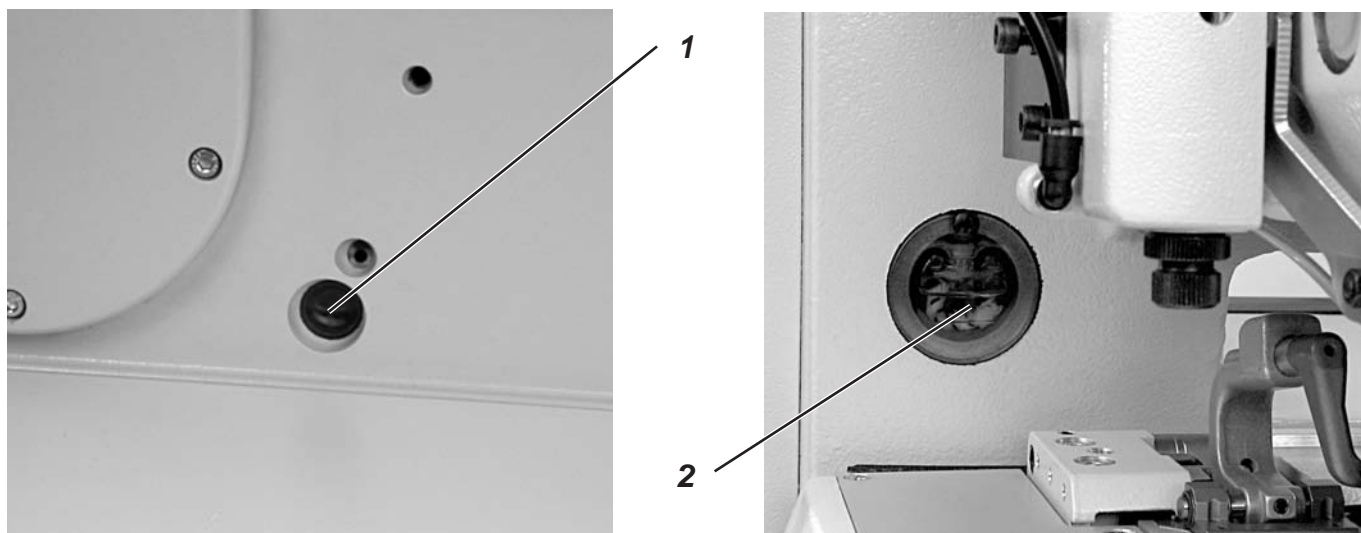
- The looper, thread trimmer, throat plate and sewing head areas must be cleansed daily of lint, pieces of thread and other debris.



1

- Check the water level in the pressure regulator every day. The water level must not rise to the level of the filter cartridge 2. After screwing in the drain screw 3 blast water under pressure out of the water separator.

## 11.2 Lubrication



Check the oil level in oil reservoirs 1 and 2 every week.



**Caution: danger of injury**

Oil can cause skin eruptions.  
Avoid protracted contact with the skin.  
In the event of contact, thoroughly wash the affected area.



**CAUTION:**

The handling and disposal of mineral oil is subject to legal regulation.  
Deliver used oil to an authorised collection point.  
Protect your environment. Take care not to spill oil.

Top up the reservoirs exclusively with lubricating oil **ESSO SP-NK 10** or an equivalent oil of the following specification:

- Viscosity at 40°C: 10 mm<sup>2</sup>/s
- Ignition point: 150° C

The oil can be bought at the sales points of **DÜRKOPP ADLER AG** under the following part numbers:

- 2-litre container: 9047 000013
- 5-litre container: 9047 000014

**General**

All the machine's moving parts are lubricated by two oil reservoirs via an oil-wick system.

No lubrication work is thus required, except checking and topping up the oil reservoirs.