DÜRKOPP ADLER

581

Service Instructions

1 About these instructions

These instructions for the 581 have been compiled with the utmost care. They contain information and notes to make long-term and reliable operation possible.

Should you notice any discrepancies or if you have improvement requests, then we would be glad to receive your feedback (📖 *10.1 Customer service*, p. 180).

Please regard these instructions as part of the product and keep them in a safe place where they can be easily accessed. Read the instructions completely prior to using the machine for the first time. Only pass the product on to third parties together with the instructions.

These instructions describe the setting and maintenance of the 581.

1.1 For whom are these instructions intended?

These instructions are intended for:

- Specialists:
  This group of employees has the appropriate technical training allowing them to perform maintenance or to repair faults.

Operating instructions are supplied separately.

With regard to minimum qualification and other requirements to be met by the personnel, please also refer to 📖 *2 Safety*, p. 6.

1.2 Representational conventions – Symbols and characters

Various items of information are depicted or highlighted in these instructions by the following characters to make them easier to understand:

Correct setting

Indicates the correct setting.

Faults

Indicates faults that can occur due to an incorrect setting.

Cover

Indicates which covers must be removed in order to access the components to be set.

Steps to be performed when operating the machine (sewing and equipping)

Steps to be performed for servicing, maintenance and installation

Steps to be performed via the software control panel

The individual steps are numbered:

1.	1.	First step
2.	2.	Second step
…		The sequence of the steps must always be followed.

• Lists are identified by bullet points.

⇪ **Result of performing an operation**
Change to the machine or on the display/control panel

⚠ **Important**
Special attention must be paid to this point when performing a step.

ℹ **Information**
Additional information, e.g. on alternative operating possibilities.

⚙ **Sequence**
Specifies the work to be performed before or after a setting.

References
📖 A reference is provided to another place in the text.

Safety
Important warnings for the user of the machine are specifically marked. Since safety constitutes an area of major importance, hazard symbols, levels of risk, and their signal words are described separately in 📖 *2 Safety*, p. 6.

Location information
Information on where something is positioned using the terms **right** or **left** must always be regarded from the operator's viewpoint if the figure gives no other obvious indication for determining the location.

1.3 Other documents

The machine contains built-in components from other manufacturers. The respective manufacturers have carried out hazard assessments for these purchased parts and confirmed compliance of the design with the applicable European and national regulations. The intended use of the built-in components is described in the corresponding manuals of the manufacturers.

1.4 Liability

All information and notes in these instructions have been compiled in accordance with the latest technology and the applicable standards and regulations.

Dürkopp Adler cannot be held liable for any damage due to:

- Damage during transport
- Failure to observe these instructions
- Improper use
- Unauthorized modifications to the machine
- The deployment of untrained personnel
- Using unapproved spare parts

1.4.1 Transportation

Dürkopp Adler cannot be held liable for any damage during transport. Check the delivered product immediately after receiving it. Report any damage to the last transport carrier. This also applies if the packaging is not damaged.

Keep the machines, devices and packaging material in the condition they were in at the time when the damage was identified. This secures any claims against the transport company.

Report all other complaints to Dürkopp Adler immediately after receiving the product.

1.4.2 Intended use

The 581 is a sewing machine (hereinafter referred to as a machine), which is designed to be used to sew buttonholes or eyelets in light to moderately heavy material.

The range comprises 7 subclasses.

The machine is only intended for processing dry material. The sewing material may not be thicker than 8 mm when it is pressed together by the lowered upper fabric clamps. The sewing material must not contain any hard objects.

The seam must be created with a sewing thread with a requirements profile corresponding to the intended application.

The machine is intended for industrial use.

The machine may only be set up and operated in dry conditions on well-maintained premises. If the machine is operated on premises that are not dry and well-maintained, then further measures may be required which must be compatible with EN 60204-31.

Only authorized persons may work on the machine.

Dürkopp Adler will not be held liable for damage resulting from improper use.

WARNING
Risk of injury from live, moving, cutting and pointed parts. Improper use could result in electric shock, crushing, cutting and puncture wounds. Follow all instructions provided.

NOTICE
Property damage due to non-compliance. Improper use could result in damage to the machine. Follow all instructions provided.

2 Safety

This section contains basic instructions for your safety. Read the instructions carefully before setting up or operating the machine.
Make sure to follow the information included in the safety instructions.
Failure to do this can result in serious injury and damage to the machine.

2.1 Basic safety instructions

The machine may only be used as described in these instructions.

These instructions must be available at the machine's location at all times.

Work on live components and equipment is prohibited. Exceptions are defined in DIN VDE 0105.

For the following work, the machine must be switched off at the main switch or by disconnecting the power plug:

- Replacing the needle or other sewing tools
- Leaving the workplace
- Performing maintenance work and repairs
- Threading

Missing or faulty spare parts could impair safety and damage the machine. Use only original spare parts from the manufacturer.

Transportation Use a lifting carriage or forklift to transport the machine. Raise the machine max. 20 mm and secure it against slipping off.

Setup The connecting cable must have a power plug approved in the relevant country. The power plug may only be fitted to the power cable by a qualified specialist.

Operator's obligations Observe the country-specific safety and accident prevention regulations and the legal regulations concerning industrial safety and the protection of the environment.

All warnings and safety signs on the machine must always be in legible condition. Do not remove!

Replace missing or damaged warnings and safety signs immediately.

Requirements to be met by the personnel Only qualified specialists may:

- set up the machine
- perform maintenance work and repairs
- perform work on electrical equipment

Only authorized persons may work on the machine and must first have understood these instructions.

Operation Inspect the machine while in use for any externally visible damage. Interrupt your work if you notice any changes to the machine. Report any changes to your supervisor. Do not use a damaged machine any further.

Safety equipment Do not remove safety equipment nor put it out of service. If this cannot be avoided for a repair operation, refit the safety equipment and put it back into service immediately afterward.

2.2 Signal words and icons used in warnings

Warnings in the text are distinguished by color bars. The color scheme is oriented towards the severity of the danger. Signal words specify the severity of a danger.

Signal words Signal words and the hazard they describe:

Signal word	Meaning
DANGER	(with hazard symbol) Non-compliance will result in death or serious injury
WARNING	(with hazard symbol) Non-compliance can result in death or serious injury
CAUTION	(with hazard symbol) Non-compliance can result in moderate or minor injury
NOTICE	(without hazard symbol) Non-compliance can result in property damage.

Symbols In the case of danger to personnel, the following symbols indicate the type of hazard:

Symbol	Type of danger
	General
	Electric shock
	Puncture wound
	Crushing
	Environmental damage

Examples   Examples of the layout of the warnings in the text:

> ### DANGER
>
> **Type and source of the danger!**
>
> Consequences in the event of noncompliance.
>
> Measures for avoiding the danger.

✍ This is what a warning looks like for a hazard that will result in serious injury or even death if the warning is not complied with.

> ### WARNING
>
> **Type and source of the danger!**
>
> Consequences in the event of noncompliance.
>
> Measures for avoiding the danger.

✍ This is what a warning looks like for a hazard that could result in serious injury or even death if the warning is not complied with.

> ### CAUTION
>
> **Type and source of the danger!**
>
> Consequences in the event of noncompliance.
>
> Measures for avoiding the danger.

✍ This is what a warning looks like for a hazard that could result in moderate or minor injury if the warning is not complied with.

> ### ATTENTION
>
> **Type and source of the danger!**
>
> Consequences in the event of noncompliance.
>
> Measures for avoiding the danger.

✍ This is what a warning looks like for a hazard that could result in environmental damage if the warning is not complied with.

NOTICE

Type and source of the danger!

Consequences in the event of noncompliance.

Measures for avoiding the danger.

ᗒ This is what a warning looks like for a hazard that could result in property damage if the warning is not complied with.

3 Individual settings

Different setting positions are dependent on one another. It is essential therefore that the individual settings be performed in accordance with the described sequence. Before you start making settings, please note chapter **Programming** (📕 *S. 110*).

	WARNING
⚠	**Risk of injury from moving, cutting and pointed parts.** Crushing, cutting and puncture wounds possible. Switch off the main switch. Wherever possible, only perform settings when the machine is switched off.

! **Important**

Insert new, faultless needles before all setting works on stitching parts.

There are settings that you can only perform when the machine is running, such as reference points (📕 *S. 16*).

3.1 Pinning points

With the aid of the pinning points, it is easy to adjust the needle movement to the movements of the looper and spreader.

When the arm shaft is in the pinning position, the thread take-up disk and the cams for the spreader, the looper and the zigzag stitch must also be in the pinning position.

The positions are set in the factory such that the standard sewing material can be sewn with the 581. If you want to use other needle strengths, sewing thread thicknesses or sewing materials, you may have to set positions that differ somewhat from the pinning position.

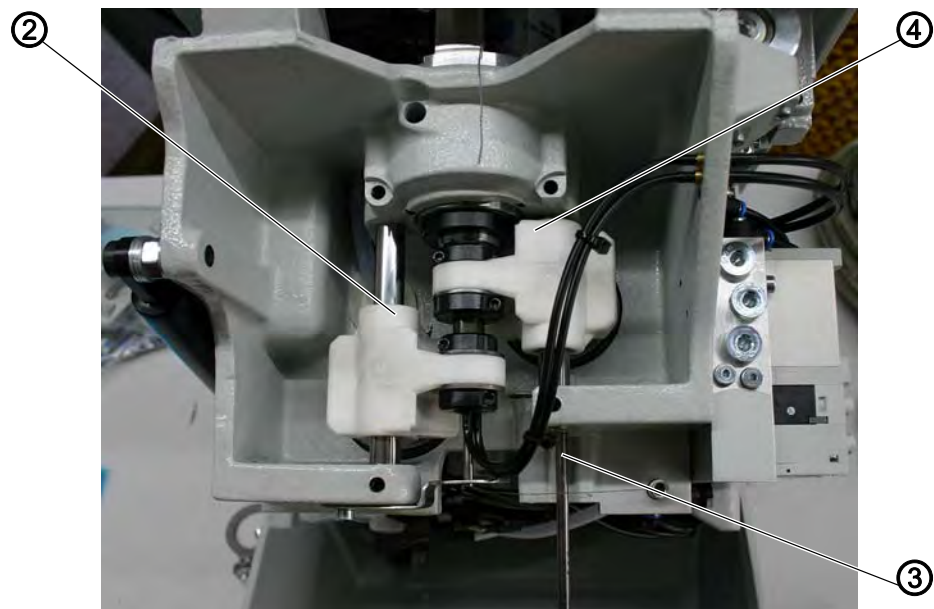The locking pins are in the machine's accessory pack and have a diameter of 5 mm.

3.1.1 Setting the looper and spreader cams

Fig. 1: Setting the looper and spreader cams (1)

(1) - Locking pin

Fig. 2: Setting the looper and spreader cams (2)

(2) - Spreader cam   *(4) - Looper cam*
(3) - Locking pin

Correct setting

When the arm shaft is pinned using a locking pin (1), it should also be possible to pin the looper cam (4) and the spreader cam (2).

To check that the setting is correct:

Step
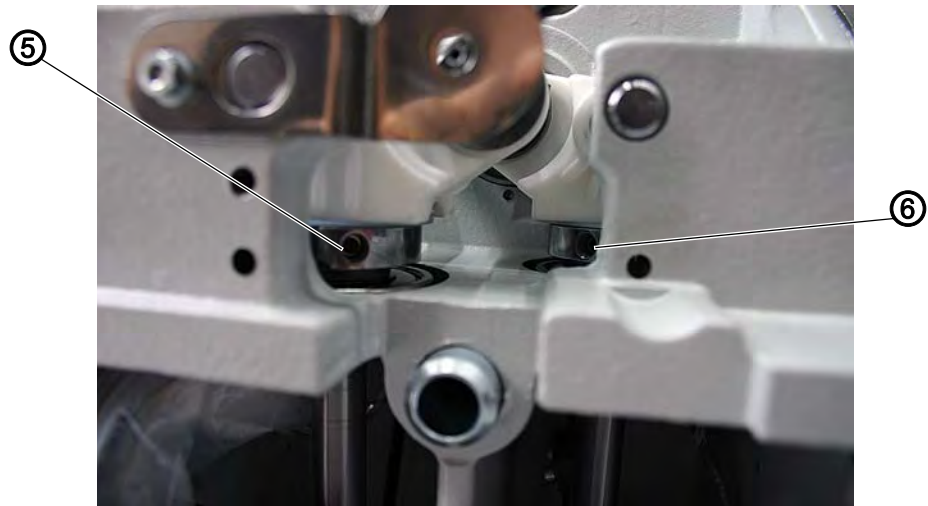
1. Pin arm shaft with locking pin (1).

Important

In the pinning position, the needle bar must be at top dead center before the left point of penetration.

2. Check using the locking pin (3), whether the looper cam (4) and spreader cam (2) can be pinned.

Correction

Fig. 3: Setting the looper and spreader cams (3)


(5) - Screws   (6) - Screws

Step

1. Pin the arm shaft using the locking pin (1).
2. Loosen the screws (6) on the looper cam (4).
3. Turn the looper cam and pin.
4. Tighten the screws (6).
5. Loosen the screws (5) on the spreader cam (2).
6. Turn the spreader cam and pin.
7. Tighten the screws (5).

3.1.2 Setting the thread take-up disk

Fig. 4: Setting the thread take-up disk (1)

(1) - Thread take-up disk   (3) - Drill
(2) - Toothed belt wheel   (4) - Flat surface
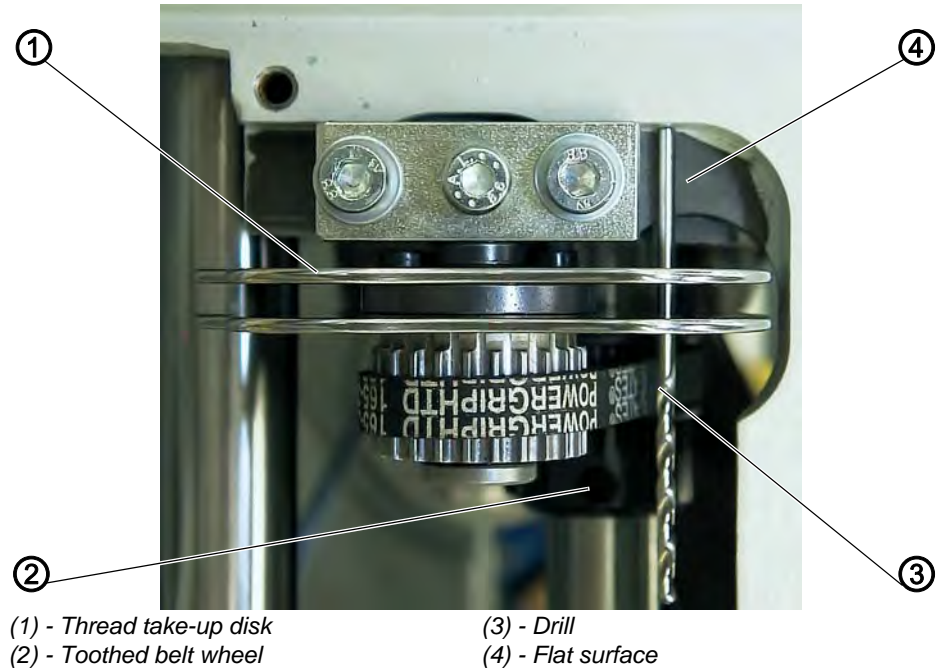
✓ Correct setting

If the arm shaft is pinned with the locking pin such that the looper mounting is in the left end position (left point of penetration), the thread take-up disk (1) should be positioned such that a drill (3), ⌀ 2 mm, inserted through the borehole of the thread take-up disk should lie against the right flat surface (4).

Correction

Fig. 5: Setting the thread take-up disk (2)
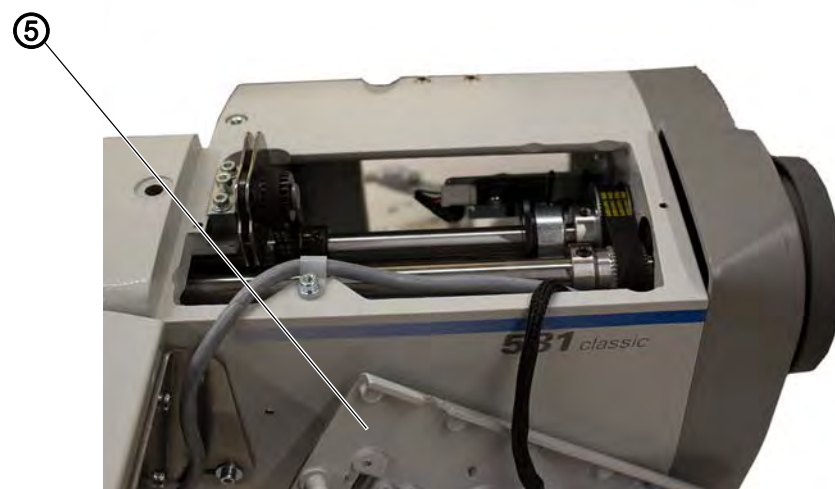
(5) - Tensioning plate

Step

1. Loosen the tensioning plate (5).
2. Loosen the screws on the toothed belt wheel (6).
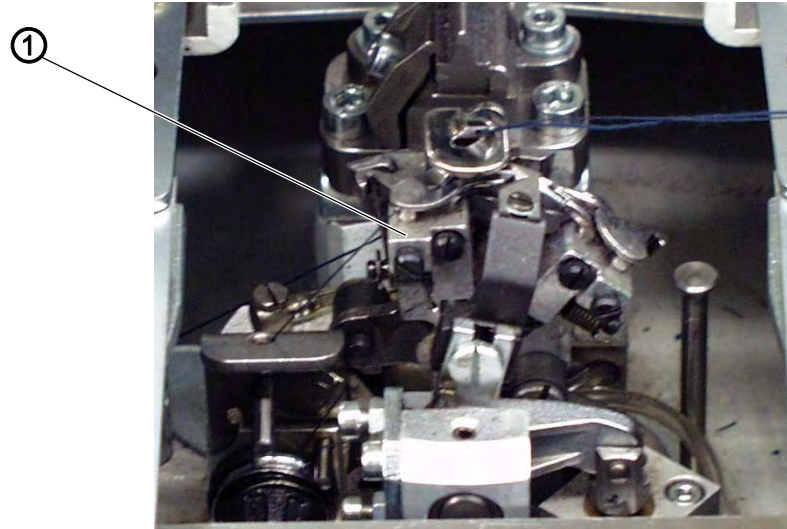
Fig. 6: Setting the thread take-up disk (3)

(6) - Toothed belt wheel

3. Insert the drill (4) through the borehole in the thread take-up disk (1).
4. Turn the thread take-up disk (1), until the drill (3) lies flat against the flat surface (4).
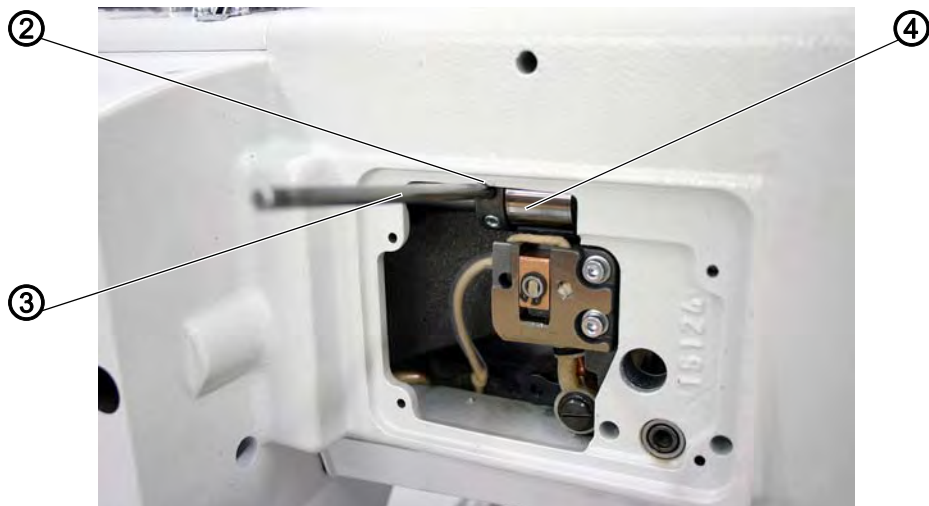5. Tighten the screws on the toothed belt wheel (6).

3.1.3 Setting the zigzag stitch cam

Fig. 7: Setting the zigzag stitch cam (1)

(1) - Looper mounting, right end position

Fig. 8: Setting the zigzag stitch cam (2)

(2) - Notch   *(4) - Cam*
(3) - Locking pin

Correct setting

When the looper mounting (1) is in the right end position (right point of penetration), the locking pin (3) inserted in the cam (4) must be positioned in the notch (2) on the machine arm.

To check that the setting is correct:

Step

1. Turn the arm shaft so that the looper mounting is on the right-hand side (right point of penetration).
2. Insert the locking pin (3) in the borehole of the cam (4).

3. Check whether the locking pin (3) is in the notch (2) of the arm.

Correction

Step

1. Loosen the screws on the cam (4).
2. Position the cam with the locking pin right at the top against the machine arm.
3. Tighten the screws on the cam (4).

3.2 Reference points

Using the reference points, prepare the machine for the sewing process. Only perform the settings when the machine is switched off.

WARNING
Risk of injury from moving, cutting and pointed parts. Crushing, cutting and puncture wounds possible. Switch off the main switch. When performing settings on the running machine, do so with great caution.

Cover

• Remove the head cover

3.2.1 Positioning the needle bar

Fig. 9: Positioning the needle bar (1)
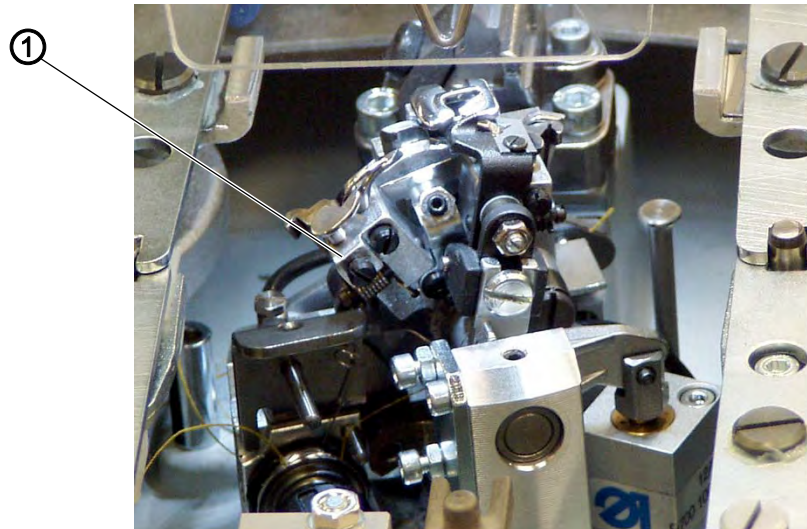
(1) - Looper mounting, left end position

Correct setting

When the machine automatically positions itself after switching on, the needle bar must be at top dead center. The looper mounting (1) is then in the left end position (on the 581-112 and 581-312, it is in the right end position).

Correction

Fig. 10: Positioning the needle bar (2)
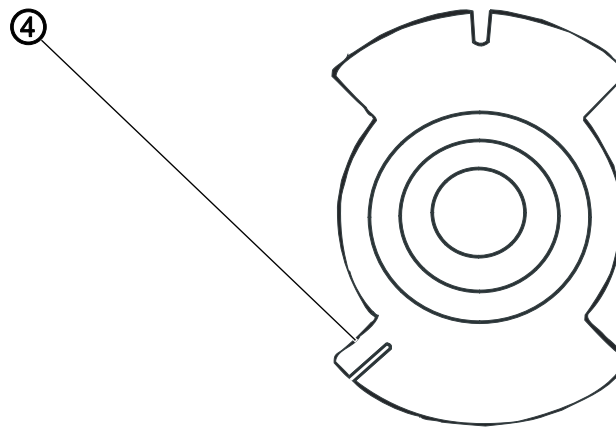

(1) - Light barrier   (3) - Screw
(2) - Shift segment

Step

1. Switch on the machine.

   ↳ The machine positions itself automatically.

2. Turn the needle bar into the correct position using the handwheel (right point of penetration).

3. Start an input test on the control panel (📕 *5.10.6 Multitest*, p. 149).

4. Select *RefN*.

5. Press the OK key.

6. Loosen the screw (3) on the shift segment (2).

7. Turn the shift segment with the handwheel so that the light barrier (1) switches on the edge (4).

   ↳ The switching signals are displayed on the control panel.

Fig. 11: Positioning the needle bar (3)

(4) - Edge

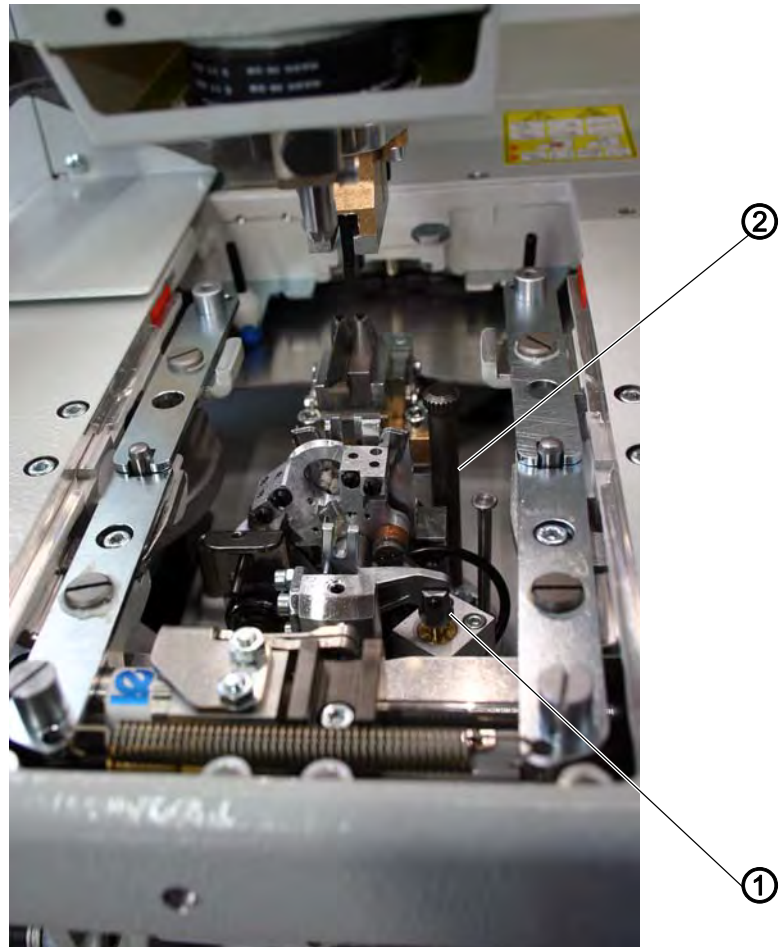8. Tighten the screw (3) on the shift segment (2).

    Important

    The shift segment must be in the center of the light barrier.

9. Switch off the machine.

10. Switch on the machine and check the position of the needle bar.

3.2.2 Aligning the looper turret

Fig. 12: Aligning the looper turret (1)

(1) - Looper turret   (2) - Locking pin

✓ Correct setting

If after switching on the main switch, the machine has referenced, it must be possible to pin the looper turret (1) with the locking pin (2).

To check that the setting is correct:

Step

1. Check whether the looper turret (1) can be pinned with the locking pin (2).

Correction

Step

1. Swivel the machine up (📖 *Operating Instructions*).

Fig. 13: Aligning the looper turret (2)

(3) - Toothed belt wheel

2. Release the screw (3) on the toothed belt wheel using an Allen key, 2.5 mm.

3. Start reference run (*S. 155*).

4. Turn the looper turret such that it can be pinned with the locking pin (2).

Important

If pinning is not possible, start again at step 3.

5. Position the stop angle (4) (NOT included in the scope of delivery!) such that it is parallel to the fabric support plate.

Fig. 14: Aligning the looper turret (3)

(4) - Stop angle

Fig. 15: Aligning the looper turret (4)

(4) - Stop angle

6. Tighten the screw using the Allen key.

3.2.3 Aligning the needle bar parallel to the looper turret

Fig. 16: Aligning the needle bar parallel to the looper turret (1)

(1) - Looper turret   (3) - Needle bar
(2) - Locking pin

Correct setting

The needle bar (3) and the looper turret (1) must be parallel to one another.

To check that the setting is correct:

Step

1. Remove the cutting block.

2. Remove the finger protection.

3. Start reference run (📖 *S. 155*).

4. Switch off the machine.

5. Pin the looper turret (1) using the locking pin (2).

Fig. 17: Aligning the needle bar parallel to the looper turret (2)

(4) - Bracket

6. Tighten the bracket (4) (NOT included in the scope of delivery!) to the needle bar guide.

7. Insert the stop angle (6) (NOT included in the scope of delivery!) on the right side of the looper turret.

Fig. 18: Aligning the needle bar parallel to the looper turret (3)
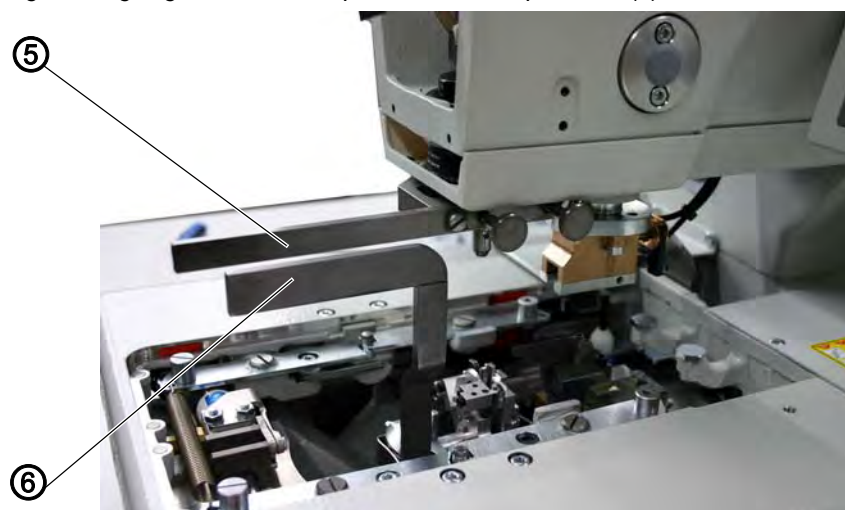
(5) - Bracket　　　　　　　　*(6) - Stop angle*

8. Check whether the stop angle (6) is positioned parallel to the bracket (5).

Correction

Fig. 19: Aligning the needle bar parallel to the looper turret (4)

(7) - Screw   (8) - Toothed belt wheel

Step

1. Loosen the screw (7) on the toothed belt wheel (8).
2. Turn the needle bar guide accordingly.
3. Tighten the screw (7) on the toothed belt wheel (8).
4. Switch on the machine.
5. Check the needle bar position.

3.3 Fabric support plate

You must make the following settings to the fabric support plate:

- Transverse movement (📖 *S. 25*)
- Longitudinal movement (📖 *S. 27*)

3.3.1 Setting the transverse movement

Fig. 20: Fabric support plate, setting the transverse movement (1)

(1) - Measuring slide   (3) - Looper turret
(2) - Fabric support plate   (4) - Throat plate carrier
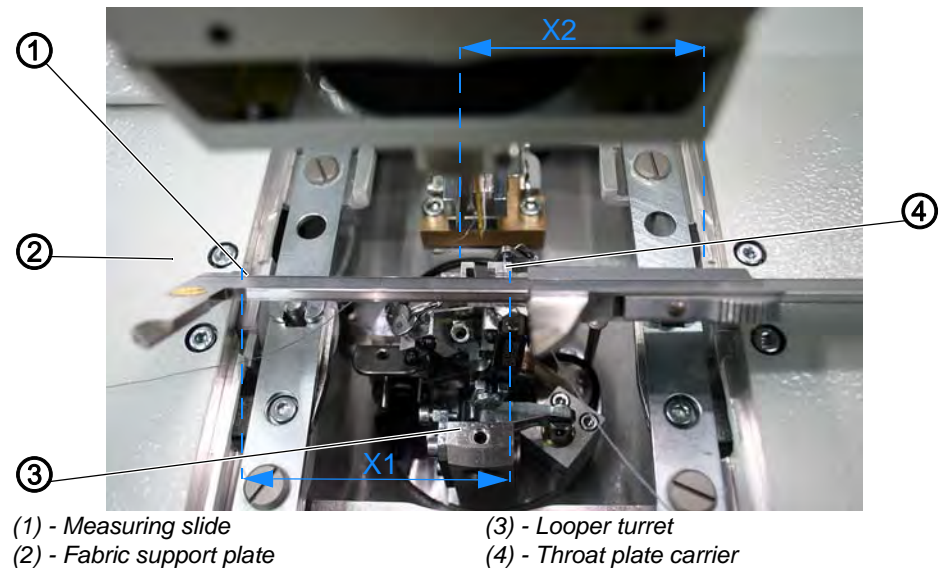
Correct setting

The looper turret (3) must be in the center of the fabric support plate (2).

When the machine is in the reference position and the fabric support plate is correctly set, the dimensions X1 and X2 must be the same size.

The distance between the reference switch and the switch plate may not exceed 0.5 mm.

To check that the setting is correct:

Step

1. Start reference run (*S. 155*).

2. Using the measuring slide (1), check the dimension X1 (right edge of the throat plate groove to the left edge of the fabric support plate).

3. Using the measuring slide (1), check the dimension X2 (left edge of the throat plate groove to the right edge of the fabric support plate).

Correction of the distance from the reference switch to the switch plate

Fig. 21: Fabric support plate, setting the transverse movement (2)

(5) - Screw   (7) - Nut
(6) - Switch plate   (8) - Reference switch

Step

1. Loosen the nuts (7).

2. Adjust the reference switch (8), by tightening or loosening it as required, such that the distance between the reference switch (8) and the switch plate (6) is maximum 0.5 mm.

3. Tighten the nuts (7).

Correction of the transverse movement of the fabric support plate

Step

1. Push the fabric support plate (2) by hand until the dimensions X1 and X2 are the same size.

2. Loosen the screw (5).

3. Turn the switch plate (6) to the switching point.

   ✎ When turning the switch plate (6) the switching signals are displayed on the control panel (input R1).

4. Tighten the screw (5).

5. Let the machine reference and check the position of the fabric support plate.

3.3.2 Setting the longitudinal movement

Fig. 22: Fabric support plate, setting the longitudinal movement (1)
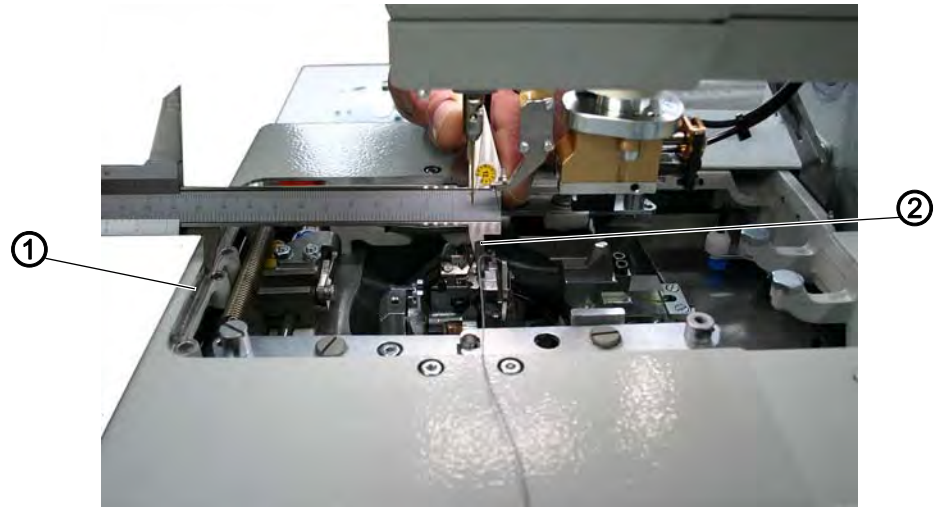
(1) - Fabric support plate   (2) - Throat plate carrier

Correct setting

When the machine is in the reference position, the distance between the edge of the fabric support plate (1) and the front edge of the throat plate carrier (2) should be maximum 113 mm.

Fig. 23: Fabric support plate, setting the longitudinal movement (2)
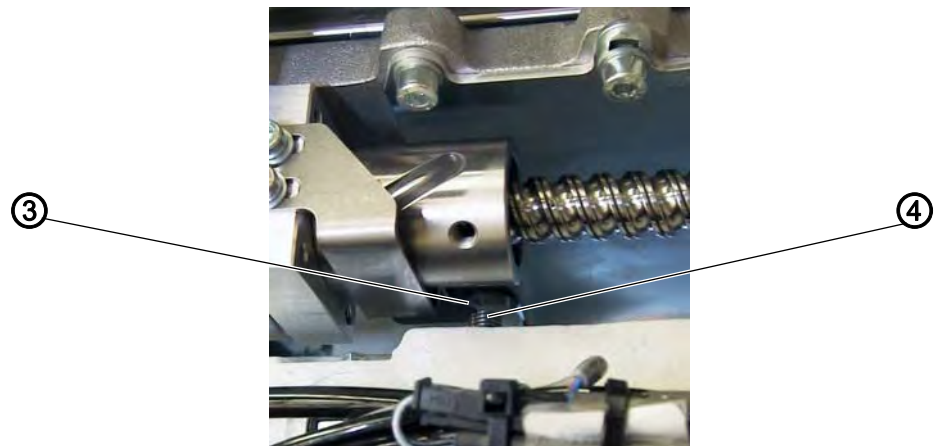
(3) - Switch plate   (4) - Reference switch

The distance between the reference switch (4) and the switch plate (3) may not exceed 0.5 mm.

To check that the setting is correct:

Step

1. Start reference run (*S. 155*).
2. Switch off the machine.

3. Check the dimension between the edge of the fabric support plate (1) and the front plate of the throat plate carrier (2).

Correction of the distance from the reference switch to the switch plate

Step

1. Loosen the nut.
2. Adjust the reference switch (4), by tightening or loosening it as required, such that the distance between the reference switch (4) and the switch plate (3) is maximum 0.5 mm.
3. Tighten the nut.

Correction of the longitudinal movement of the fabric support plate

Fig. 24: Fabric support plate, setting the longitudinal movement (3)

(5) - Screws   (6) - Switch plate

Step

1. Start reference run (📖 *S. 155*).
2. Push the fabric support plate by hand to the desired dimension.
3. Loosen the screws (5).
4. Set the switch plate (6) to the switching point.
   ✋ When moving the switch plate (6) the switching signals are displayed on the control panel (input R2).
5. Tighten the screws (5).
6. Let the machine reference and check the dimension.

3.4 Clamping plates

3.4.1 Setting the height of the fabric clamps

Fig. 25: Setting the height of the fabric clamps (1)
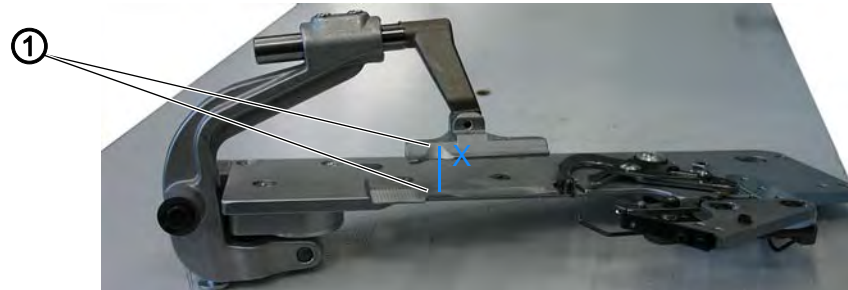
(1) - Fabric clamps

✓ **Correct setting**

The distance between the opened fabric clamps (1) should be 12 mm.

To check that the setting is correct:

1. Remove the clamping plates.
2. Open the clamping plate and using e.g. a drill, ∅ 12 mm, check whether the fabric clamps (1) have the required distance X.

Correction

Fig. 26: Setting the height of the fabric clamps (2)
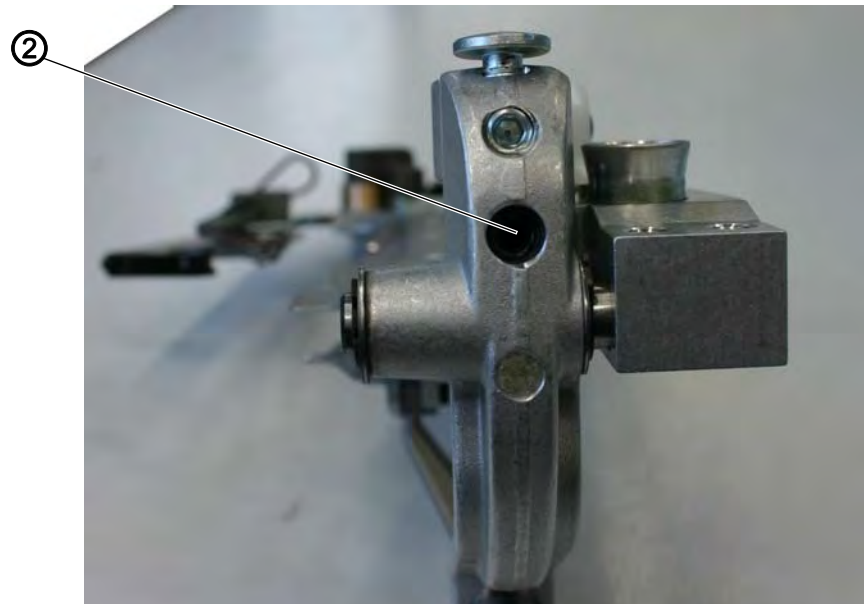
(2) - Grub screw

Step

1. Set the distance with the grub screw (2).

3.4.2 Inserting clamping plates

Fig. 27: Inserting clamping plates

(1) - Clamping plate   (3) - Screws
(2) - Retaining groove   (4) - Clamping plate
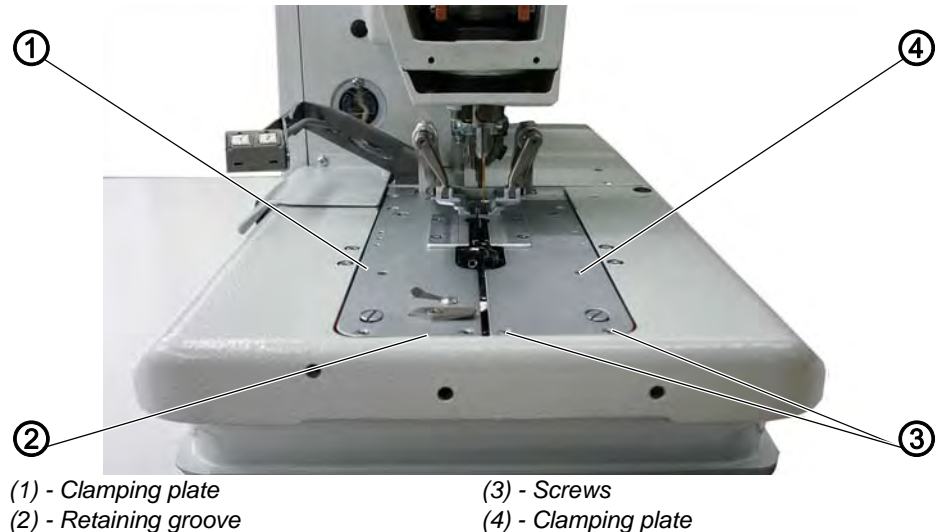
Correct setting

When inserted, the clamping plates (1) and (4) should be as parallel as possible and sit in the retaining groove (2) of the fabric support plate without any play.

It must however be possible to insert and remove them smoothly.

To check that the setting is correct:

Step

1. Insert the clamping plates and check that there is as little play as possible present.
2. Remove the clamping plates and check that this can be done without resistance.

Correction

Step

1. Adjust the screws (3) accordingly.

3.4.3 Aligning the clamping plates

Correct setting

Both clamping plates must be set such that the distance between the clamping plate and the fabric support plate is completely even.

To check that the setting is correct:

⚒ **Step**

1. Insert the right clamping plate.
2. Check the distance.
3. Insert the left clamping plate.
4. Check the distance.

Correction

Fig. 28: Aligning the clamping plates (1)
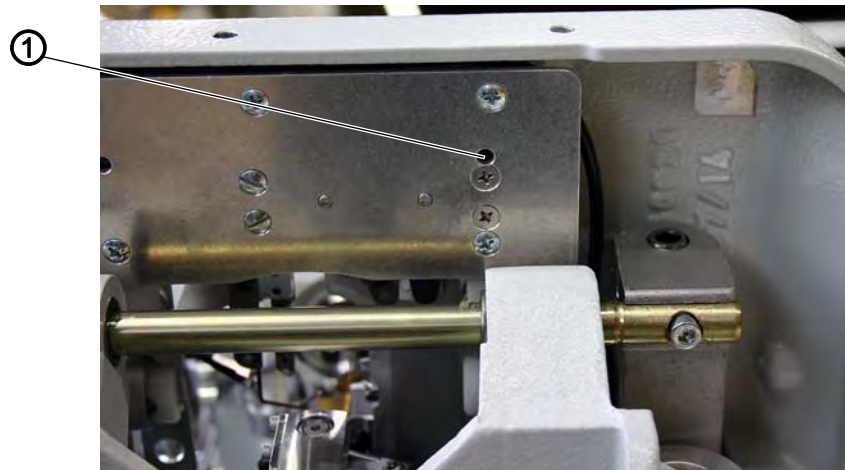
(1) - Screw

⚒ **Step**

1. Insert the right clamping plate.
2. Release the screw (1) in the borehole using an Allen key.
3. Turn the cam (2) accordingly.

Fig. 29: Aligning the clamping plates (2)

(2) - Cam

4. Tighten the screw (1).
5. Insert the left clamping plate.
6. Set the left clamping plate.

3.4.4 Setting the spread

Fig. 30: Clamping plates, setting the spread (1)

(1) - Fabric support plate   *(2) - Clamping plate*

Correct setting

The distance X between the clamping plates (2) and the fabric support plate (1) should be 1.3 mm when not spread and 0.3 mm when spread.

To check that the setting is correct:

Step

1. Switch on the machine.

2. Start an output test on the control panel (📖 *5.10.6 Multitest*, p. 149).

3. Select the function *Y03*.

4. Press the 🆗 key.

↳ The fabric clamps close.

5. Check whether the distance X is 1.3 mm.

6. Select the function *Y04*.

7. Press the 🆗 key.

↳ The clamping plates spread apart.

8. Check whether the distance X is 0.3 mm.

Correction

The following correction refers both to the left and the right clamping plate.

NOTICE
Property damage due to incorrect installation and setting!
Risk of breaking due to incorrectly set spread.
Only set the desired spread using the screws, depending on the sewing material used.

Step

1. Switch on the machine.

↳ The machine positions itself automatically.

2. Turn the needle bar into the correct position using the handwheel (right point of penetration).

3. Start an output test on the control panel (📖 *5.10.6 Multitest*, p. 149).

4. Select the function *Y03*.

5. Press the 🆗 key.

↳ The fabric clamps close.

6. Loosen the screws (3).

7. Set the distance X to 1.3 mm (basic setting) by adjusting the screw (6) using an Allen key.

Fig. 31: Clamping plates, setting the spread (2)

(3) - Screws	*(5) - Screw*
(4) - Screw	*(6) - Screw*
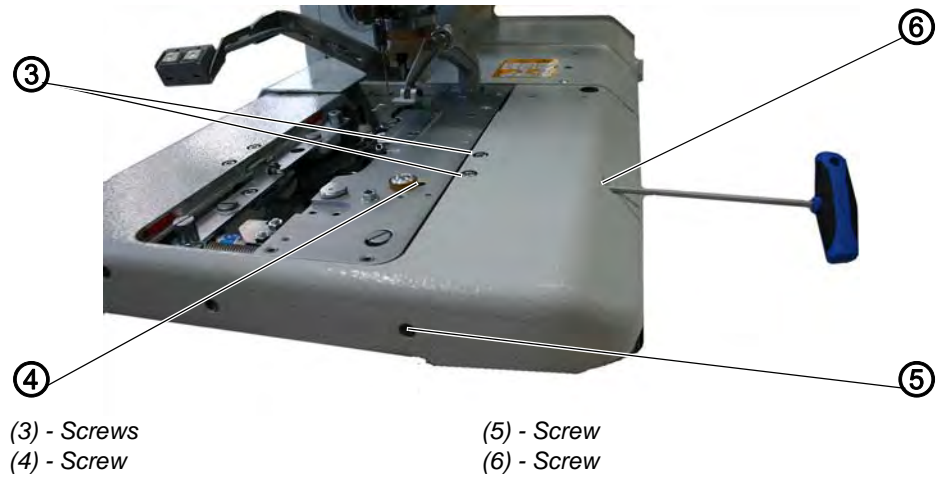
8. Tighten the screws (3).

9. Select the function `Y04`.

10. Press the 🆗 key.

↳ The fabric clamps spread apart.

11. Loosen the screw (4).

12. Set the distance X to 0.3 mm by adjusting the screw (5) using an Allen key.

13. Tighten the screw (4).

Repeat the process for the other clamping plate.

3.4.5 Setting the locking plate

Fig. 32: Clamping plates, setting the locking plate (1)
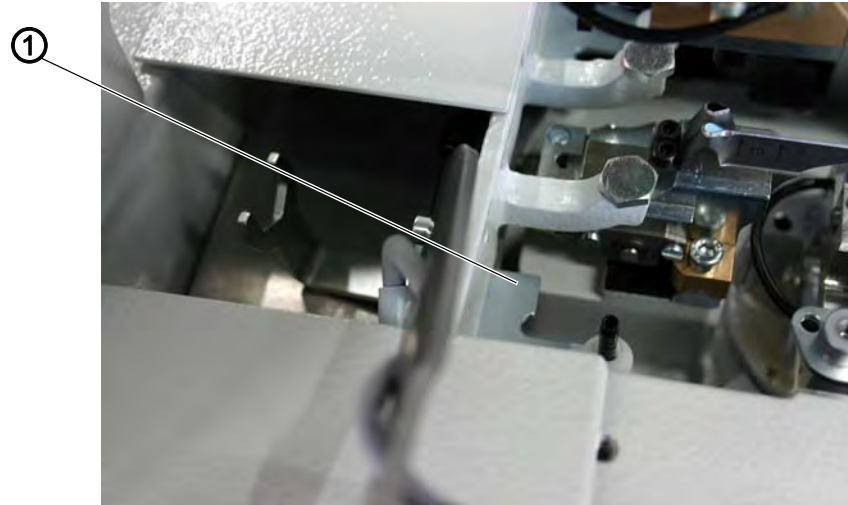
(1) - Locking plate

✓ **Correct setting**

The locking plates (1) must be set such that the end stops (2) of the screws lie centered on the clamping plates and as close to the clamping plates as possible.

Fig. 33: Clamping plates, setting the locking plate (2)
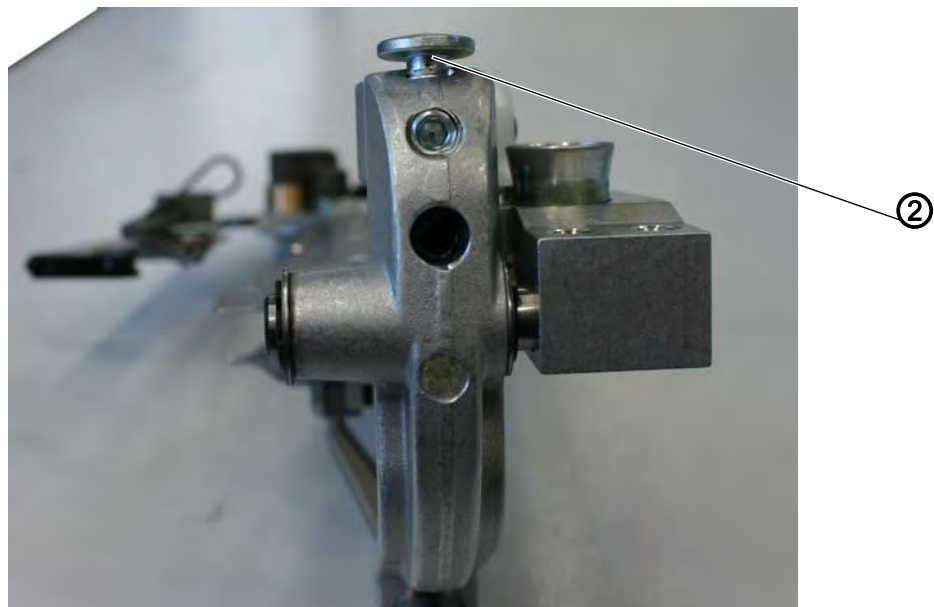
(2) - End stop of the screw

To check that the setting is correct:

Step

1. Check the position of the locking plate (1) with respect to the end stop of the screw (2).

Correction

Fig. 34: Clamping plates, setting the locking plate (3)
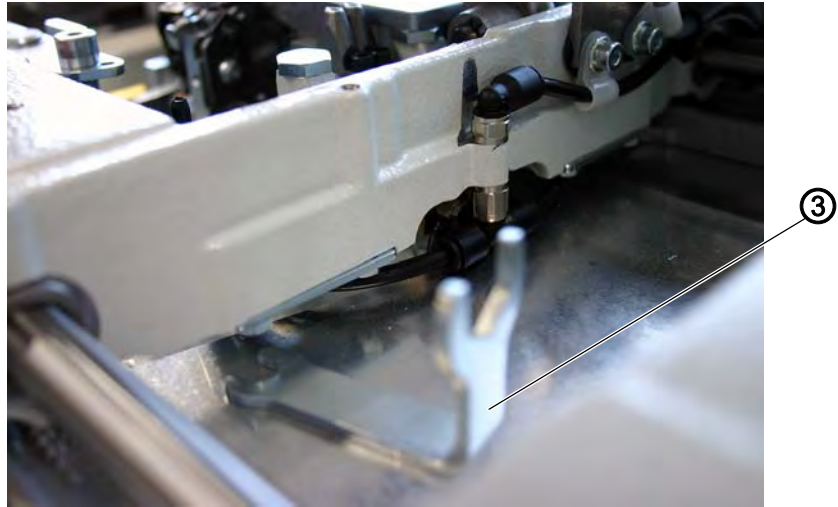
(3) - Special wrench

Step

1. Adjust the locking plate (1) using the special wrench (3) from the accessory pack.

3.4.6 Latching the clamping plates

Correct setting

The inserted clamping plates must have minimal clearance in terms of their height, when:

- no sewing material is inserted
- approx. 8 mm thick sewing material is inserted and the clamps are closed

To check that the setting is correct:

Step

1. Insert the clamping plates.
2. Switch on the machine.
3. Close the fabric clamps.

Fig. 35: Latching the clamping plates (1)

(1) - Clamping plate   (2) - Fabric clamp holder

4. Check on the fabric clamp holder (2) whether the clamping plate (1) can be raised a little in the lock.

5. Insert 8 mm thick sewing material.

6. Check on the fabric clamp holder (2) whether the clamping plate (1) can be raised a little in the lock.

Correction

Step

1. Switch off the machine.

2. Remove the clamping plates.

Fig. 36: Latching the clamping plates (2)
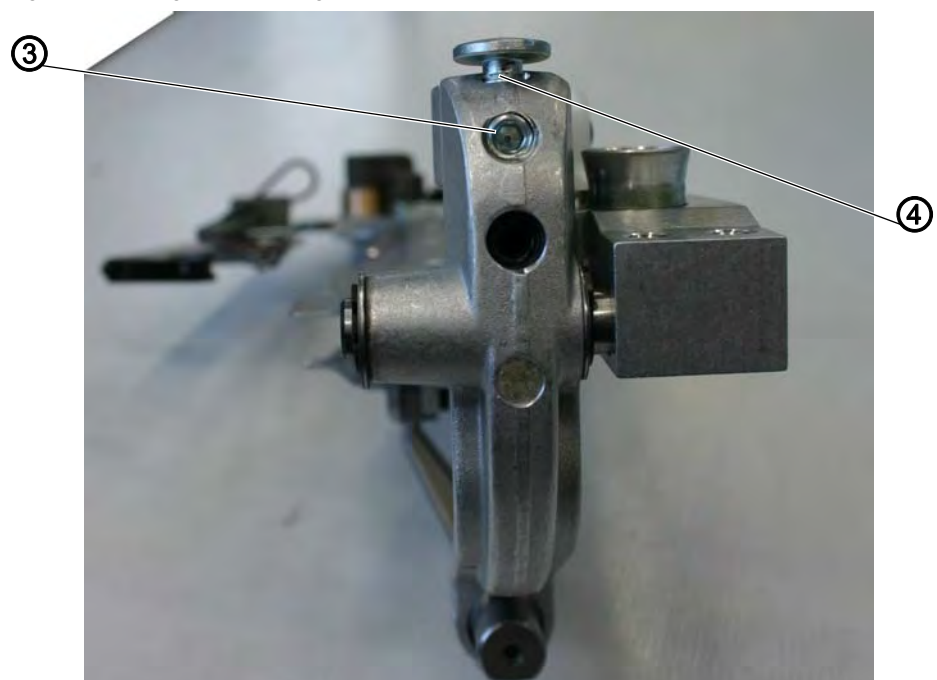
(3) - Grub screw   (4) - End stop of the screw

3. Loosen grub screw (3).
4. Set the end stop (4).
5. Tighten the grub screw (3).

3.5 Setting the clamping pressure

Correct setting

The clamping pressure is set such that the sewing material is clamped securely and firmly. The standard pressure is 5 bar.

> *NOTICE*
>
> **Property damage due to incorrect operating pressure!**
>
> The sewing material can be damaged if the clamping pressure is too high.
>
> Correct the clamping pressure as described.

Correction

Fig. 37: Setting the clamping pressure
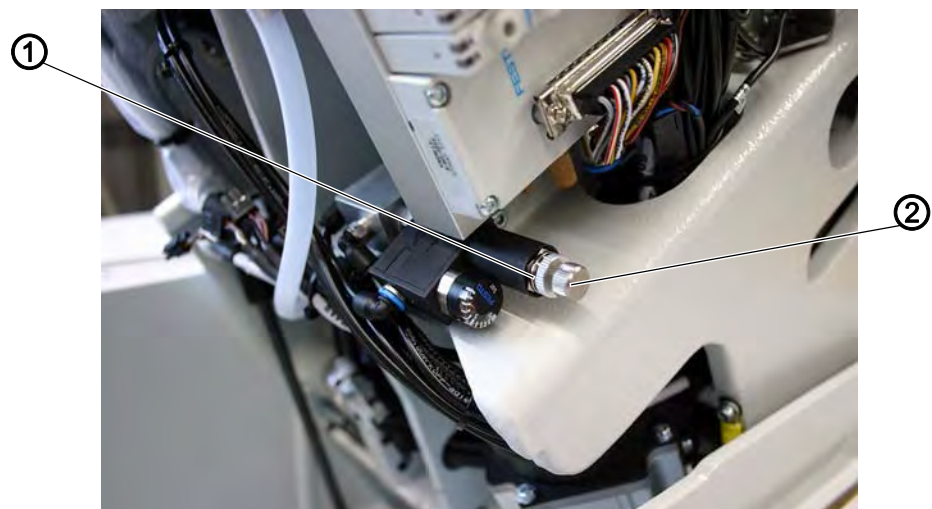
(1) - Nut   (2) - Knurled nut

Step

1. Switch off the machine.
2. Swivel the machine up.
3. Release the self-locking nut (1) on the controller.
4. Set the pressure using the knurled nut (2).
5. Tighten the self-locking nut (1).
6. Check the sewing material clamping.

3.6 Setting the symmetry of the needle

Correct setting

When you turn the looper turret (📖 *S. 22*) in 4 steps of 90°, there must be a small distance between the looper tip and the center of the needle.

Fig. 38: Setting the symmetry of the needle (1)
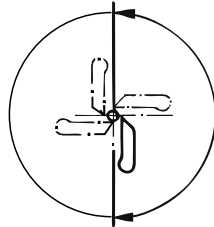
Correction

Fig. 39: Setting the symmetry of the needle (2)

(1) - Screws

Step

1. Slightly loosen the screws (1) on the needle bar protection.

Important

If you loosen the wrong screws, you could throw off the home setting of the needle bar!

2. Check all 4 angles.
3. Tighten the screws (1).

3.7 Seam appearance

Correct setting

The inner lips of the forward and return seams must be on the same line when the needle is in the neutral position.

Fig. 40: Seam appearance
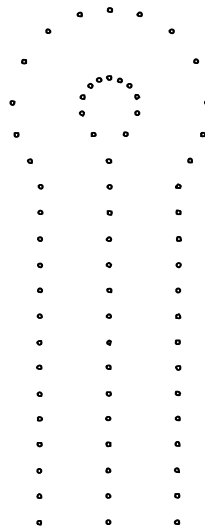
To check that the setting is correct:

Step

1. Insert short needle.
2. Switch on the machine.
3. Insert a piece of cardboard as sewing material.
4. Sew a buttonhole without cutting the buttonhole
   (📖 *Operating Instructions, Adjusting the cutting mode*).
5. Switch off the machine.

Correction

For the seam pattern, you must set the following:

- mechanical and electronic zigzag stitch width
- neutral position of the needle
- zigzag stitch offset, if required (📖 *S. 143*)

Cover

- Remove the head and side covers.

Sequence

1. Set the mechanical zigzag stitch width to **Wide**.
2. Set wide sewing equipment on the control panel (📖 *S. 137*).
3. Set the neutral position of the needle.
4. Set the mechanical zigzag stitch width to **Narrow**.
5. Set narrow sewing equipment on the control panel (📖 *S. 137*).
6. Set the neutral position of the needle.

For machines with wide sewing equipment as standard, repeat steps 1-3.

3.7.1 Setting the zigzag stitch width

Fig. 41: Setting the zigzag stitch width

(1) - Lever position B   (2) - Lever position A
(3) - Screw
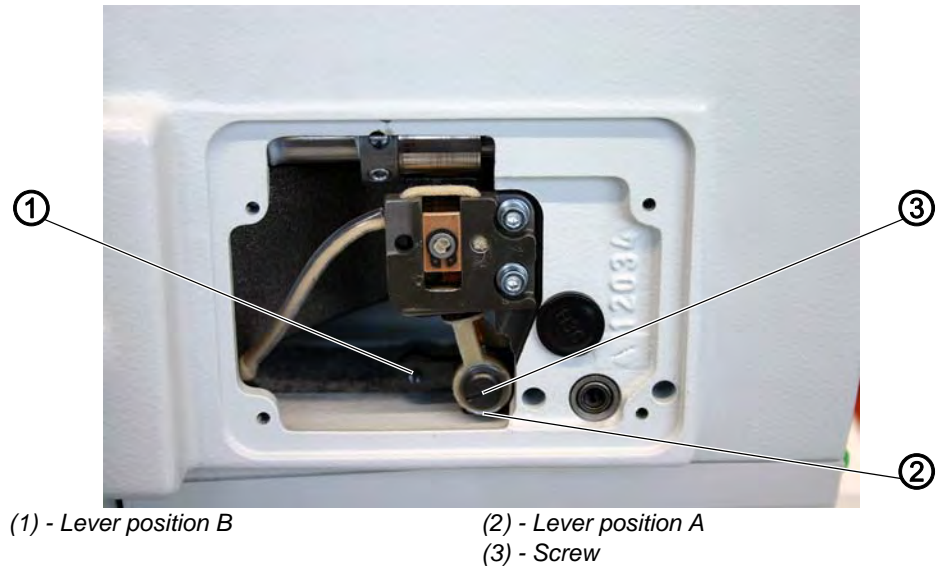
☑ **Correct setting**

- Zigzag stitch width **Narrow** = lever fitted in position B (1) = 2.1 mm
- Zigzag stitch width **Wide** = lever fitted in position A (2) = 3.4 mm

> *NOTICE*
>
> **Property damage due to incorrect installation and setting!**
>
> There is a risk of breaking when there are different zigzag stitch widths set within the sewing equipment.
>
> Set both the electronic and mechanical zigzag stitch widths to **narrow** or both to **wide**.
> Under the menu item `Zig-zag` check the electronic zigzag stitch width of the set sewing equipment.
> Fit the appropriate equipment parts.

Correction

Step

1. Unscrew the screw (3).

2. Tighten the screw into borehole A or B depending on the desired zigzag stitch width.

> **NOTICE**
>
> **Property damage due to incorrect installation and setting!**
>
> Risk of breaking due to incorrectly set looping stroke.
>
> It is essential that you correct the looping stroke after resetting the zigzag stitch width.

3.7.2   Setting the neutral position of the needle

✓ **Correct setting**

The oscillation of the needle bar is one-sided and works from left (inside) to right (outside).

The neutral position of the needle is on the left (inside).

Correction

Fig. 42: Setting the neutral position of the needle (1)

(1) - Screw   (2) - Screw

Step

1.   Switch off the machine.
2.   Loosen screw (1) and (2) using a Torx screwdriver.

Fig. 43: Setting the neutral position of the needle (2)
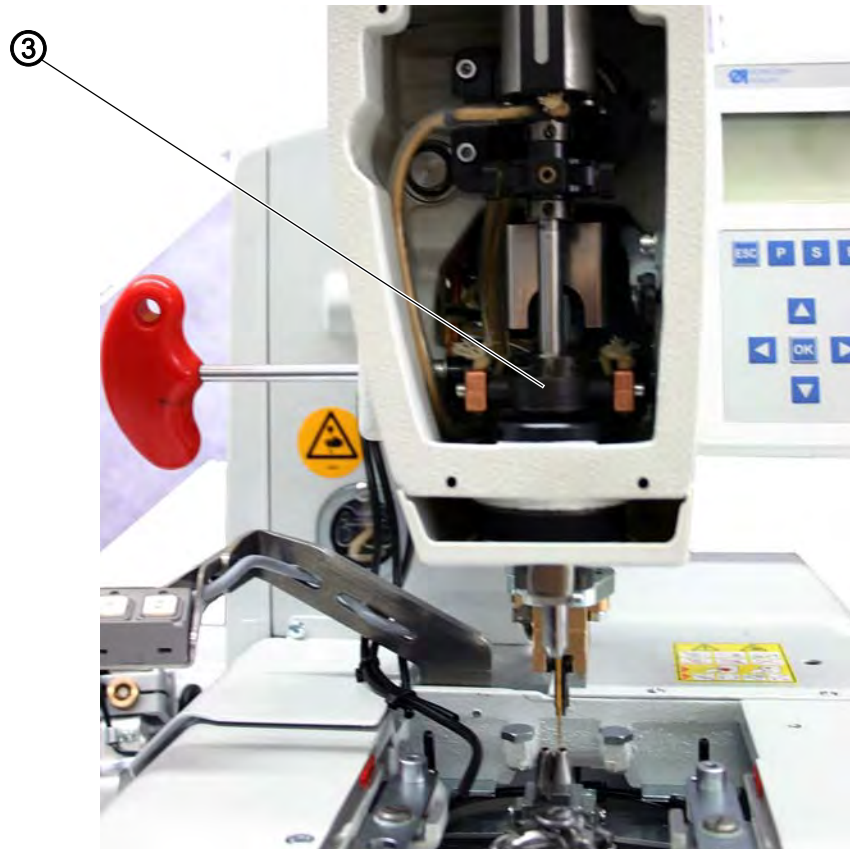
(3) - Crosshead

3. Move the crosshead (3) upward or downward.
4. Tighten the screws (1) and (2).
5. Switch on the machine.

3.8 Cross section

3.8.1 Setting the blade

Correct setting

On the setting **Cut after sewing** the blade should cut precisely between the seam rows and in the center of the eye.

Fig. 44: Setting the blade, cut after sewing
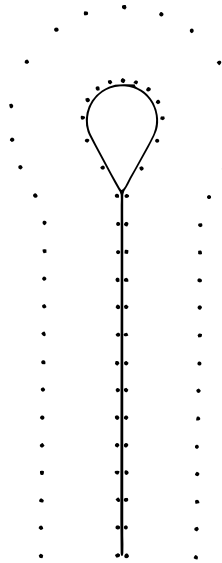
On the setting **Cut before sewing** the blade should cut precisely along the overlapping points of penetration and around the eye.

Fig. 45: Setting the blade, cut before sewing
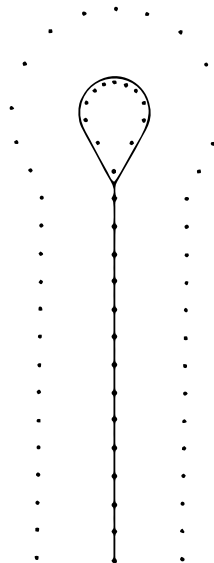
NOTICE

Property damage due to incorrect installation and setting!

Risk of breaking due to incorrect installation.

It is essential to ensure that the blade is appropriate for the subclass and the sewing equipment.

Depending on the sewing equipment, the position of the blade (2) and the cutting block (1) may differ.

Important

It is absolutely essential to ensure that the blade and cutting block are correctly positioned if the sewing equipment is changed on the control panel (see *Table, Setting dimensions*)! In addition, the appropriate clamping plates and fabric clamps must be fitted for the new sewing equipment.

Do not run the machine before the cutting block, blade, clamping plates and fabric clamps have been set for the new sewing equipment.

The blade must be set such that it cuts along the center line of the sewn buttonhole shape.

To check that the setting is correct:

Step

1. Insert cutting block.
2. Insert short needle.
3. Insert a piece of cardboard as sewing material.
4. Sew a buttonhole.
5. Check the position of the cut.

Correction

Fig. 46: Setting the blade (1)
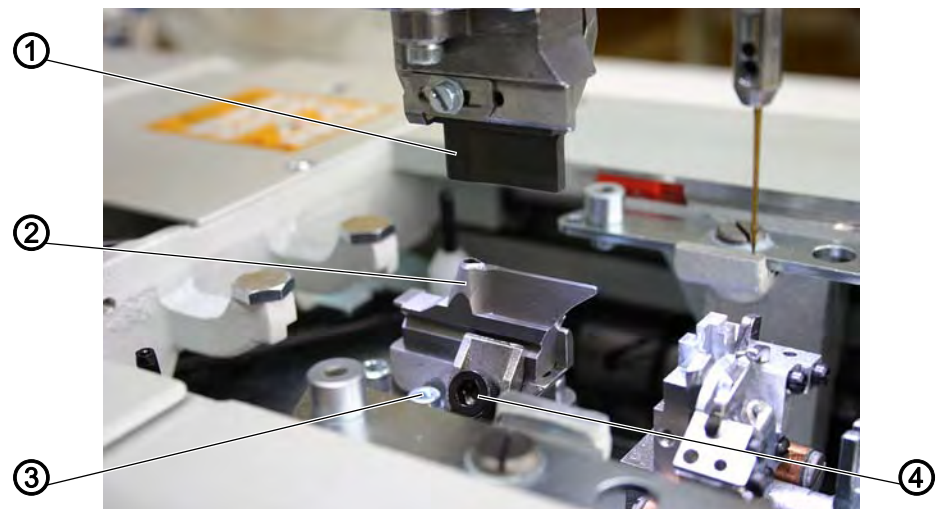
(1) - Cutting block   (3) - Screw
(2) - Blade   (4) - Screw

Step

1. Loosen the screw (3) on the base plate.

2. Correct the lateral position of the blade (2) accordingly.

3. Tighten the screw (3) on the base plate.

4. Loosen the screw (4).

5. Move the blade (2) forward or backward.
   As a presetting, move the blade such that the setting dimension X results as listed in the following table.
   As a fine setting, move the blade such that it cuts along the center line of the buttonhole shape.

6. Tighten the screw (4).

Fig. 47: Setting the blade (2)

(5) - Screw   (6) - End stop

7. Loosen the screw (5).

8. Bring the end stop (6) towards the blade.

9. Tighten the screw (5).

Individual settings

Setting dimensions

Subclass	Sewing equipment	Setting dimension
112		
	E 1101/E 1121	approx. 59 mm
	E 1151/E 1171	approx. 47 mm
	E 1190/E 1195	approx. 49.5 mm
121		
	E 1201/E 1221	approx. 59 mm
	E 1202/E 1222	
	E 1204/E 1224	
141		
	E 1401/E 1421	approx. 47 mm
	E 1403/E 1423	
151		
	E 1501/E 1521	approx. 59 mm
	E 1502/E 1522	
	E 1504/E 1524	
	E 1551/E 1571	approx. 47 mm
	E 1553/E 1573	
	E 1590/E 1595	approx. 49.5 mm

The setting dimension is measured from the center of the eye (8) of the blade to the groove of the throat plate carrier (7).

Fig. 48: Setting the blade (3)
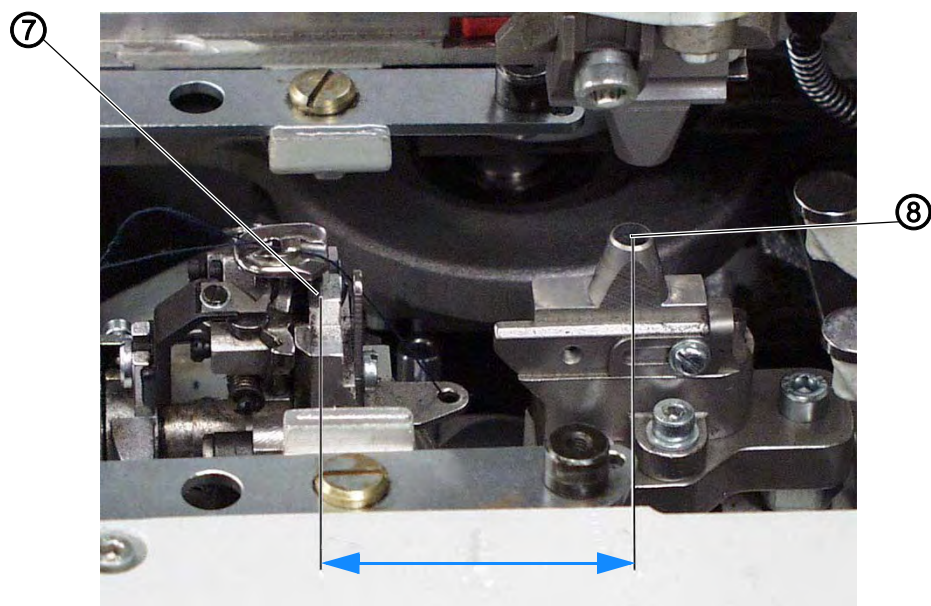
(7) - Throat plate carrier   *(8) - Blade with eye*

47

Service Instructions 581 - 01.0 - 05/2016

3.8.2 Setting the blade parallel to the cutting block

Subclass without multiflex

Fig. 49: Setting the blade, classic (1)

(1) - Screw   (3) - Screw (covered)
(2) - Screw

Step

1. Disconnect the machine from the compressed air supply.
2. Loosen the screws (1), (2) and (3).
3. Set the special wrench from the accessory pack onto the hexagonal nut and turn.

Fig. 50: Setting the blade, classic (2)
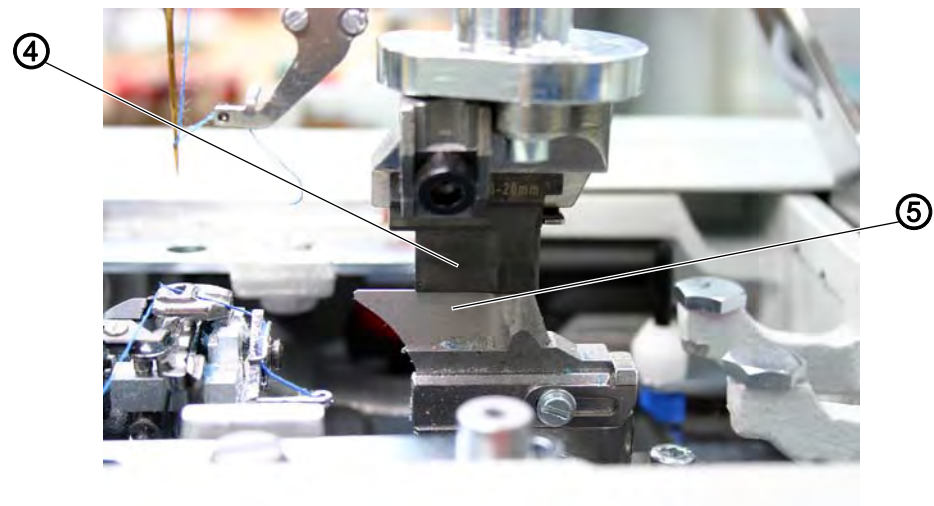
(4) - Cutting block   (5) - Blade

4. Press the cutting block (4) downward.
5. Check whether the cutting block (4) and blade (5) are parallel to one another.
6. Retighten the screws (1), (2) and (3).

---

i	**Information**

You can also check via the software whether the cutting block is parallel to the blade (📖 *5.10.6 Multitest*, p. 149).

Subclass with multiflex

Fig. 51: Setting the blade, multiflex (1)
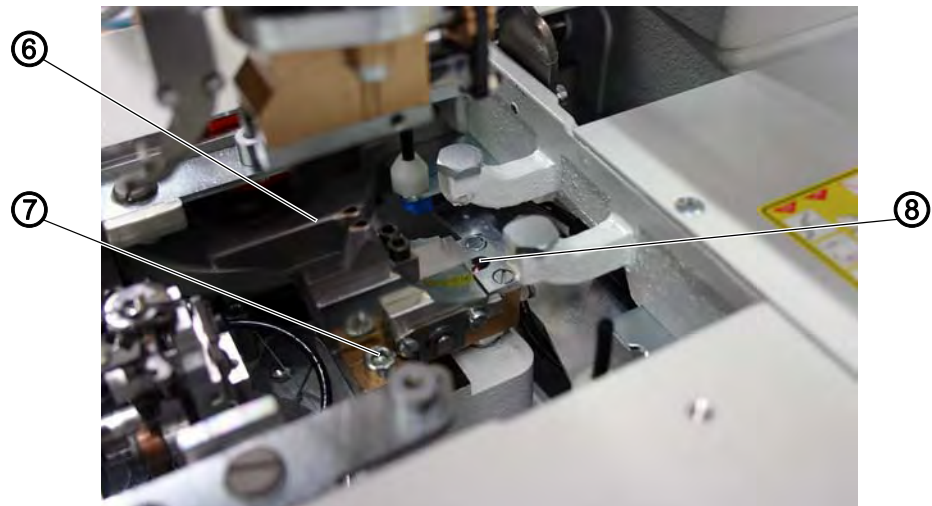
(6) - Screw (covered)   (8) - Screw
(7) - Screw

🔧	**Step**

1. Disconnect the compressed air hose from the compressed air supply.
2. Move the carriage so that the screw (8) can be released using an Allen key, 2 mm.
3. Loosen the screws (6), (7) and (8).

Fig. 52: Setting the blade, multiflex (2)

(9) - Cutting block   (11) - Special wrench
(10) - Blade

4. Set the special wrench (11) from the accessory pack onto the hexagonal nut and turn.

5. Press the cutting block (9) downward.

6. Check whether the cutting block (9) and blade (10) are parallel to one another.

7. Retighten the screws (6), (7) and (8).

8. Reconnect the compressed air.

3.8.3 Setting the cutting block

You can change the cutting length by changing the cutting block.
The cutting length is determined by the length of the cutting block.

Subclass without multiflex

Fig. 53: Setting the cutting block, classic

(1) - Screw	(4) - Blade
(2) - Screw	(5) - End stop
(3) - Cutting block	
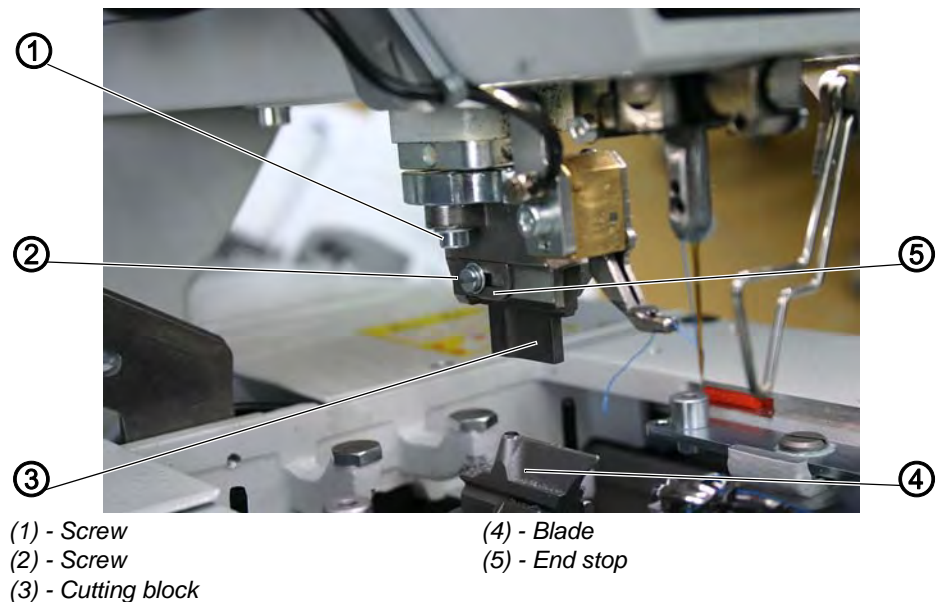
✓ **Correct setting**

The cutting block (3) must be parallel to the blade (4).

The end stop (5) must be set such that the blade impression on the cutting block (3) achieves the specified cutting length.

Correction

Step

1. Loosen the screw (1).

2. Set the cutting block (3) laterally to the blade (4).

3. Tighten the screw (1).

4. Loosen the screw (2).

5. Set the cutting block (3) in the longitudinal direction to the blade (4).

6. Tighten the screw (2).

7. Loosen the screw (2).

8. Bring the end stop (5) towards the cutting block.

9. Tighten the screw (2).

Subclass with multiflex

The blade is inscribed with 2 markings and a number on both sides.
On one side, the setting positions for a 10 mm cutting block are marked, on the other those for a 17 mm cutting block. Here, the setting is explained using a 17 mm cutting block.

Correct setting

Sequence

1. Check the right end position.

2. Check the left end position.

Fig. 54: Setting the cutting block, multiflex (1)

(6) - Cutting block, right end position   (8) - Cutting block holder
(7) - Blade

When the cutting block (6) is in the right end position, its left edge must be on the right line of the blade (7).

Fig. 55: Setting the cutting block, multiflex (2)
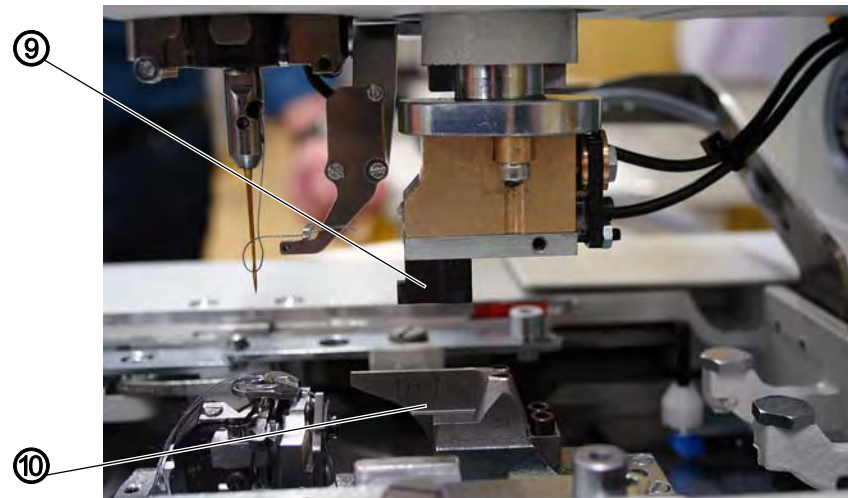
(9) - Cutting block, left end position   *(10) - Blade*

When the cutting block (9) is in the left end position, its left edge must be on the left line of the blade (10).

Correction

Step

1. Disconnect the compressed air hose from the compressed air supply.
2. Press the cutting block holder (8) downward until the cutting block is lying on the blade.
3. Push the cutting block into the right end position (6). The left edge of the cutting block must be on the right-hand mark of the blade.

Fig. 56: Setting the cutting block, multiflex (3)

(11) - Screw   *(13) - Nut*
(12) - Screw

4. Loosen the screw (11).
5. Using the screw (12), set the position of the left cutting block edge.

6. Retighten the screw (11).

7. Push the cutting block into the left end position (9).
   The left edge of the cutting block must be on the left-hand mark of the blade.

8. Loosen the nut (13).

9. Set the position of the cutting block using the screw (12).

10. Retighten the nut (13).

11. Reconnect the compressed air hose.

☟ When the compressed air is connected, the cutting block holder (8) moves back upward and the cutting block moves into its right end position.

Fine setting (right end position)

Before you can check the fine setting, set the length of the buttonhole on the control panel.

To set the length of the buttonhole:

Step

1. On the control panel for a 17 mm cutting block set a 16 mm long buttonhole and for a 10 mm cutting block set a 9 mm long buttonhole without bartack.

To check that the setting is correct:

Step

1. Insert short needle.

2. Insert a piece of cardboard as sewing material.

3. Sew a buttonhole.

4. Measure the cutting length. The cutting length must be precisely 16 mm or 9 mm.

Correction

Fig. 57: Setting the cutting block, multiflex (4)
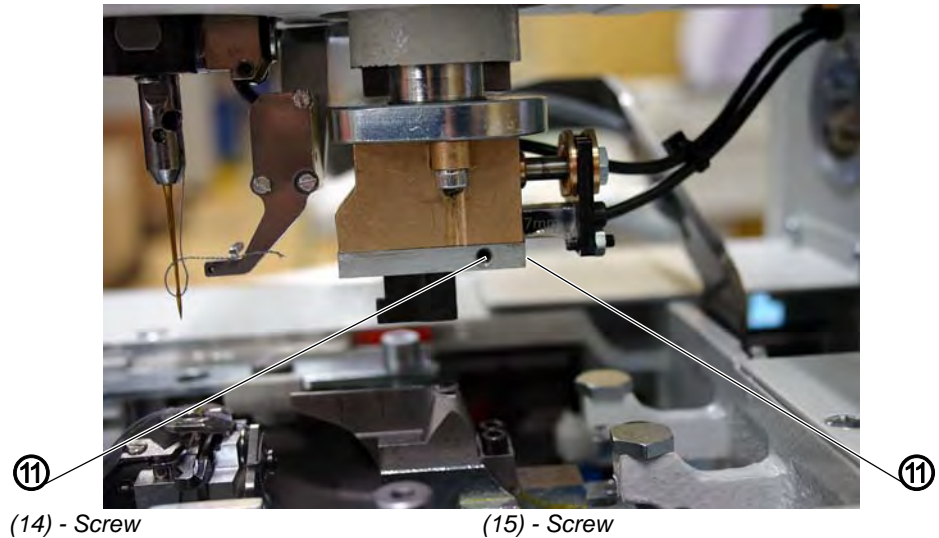
(14) - Screw   (15) - Screw

Step

1. Loosen the screw (14).
2. Using the screw (15), set the correct end position of the cutting block:
   • Turn the screw clockwise = cutting length is increased
   • Turn the screw counter-clockwise = cutting length is reduced
3. Retighten the screw (11).

Fine setting (left end position)

Before you can check the fine setting, set the length of the buttonhole on the control panel.

To set the length of the buttonhole:

Step

1. On the control panel for a 17 mm cutting block set a 20 mm long buttonhole and for a 10 mm cutting block set a 14 mm long buttonhole without bartack.

To check that the setting is correct:

Step

1. Insert short needle.
2. Insert a piece of cardboard as sewing material.

3. Sew a buttonhole.

4. Measure the cutting length.
   The cutting length must be precisely 20 mm or 14 mm.

Correction

Fig. 58: Setting the cutting block, multiflex (5)
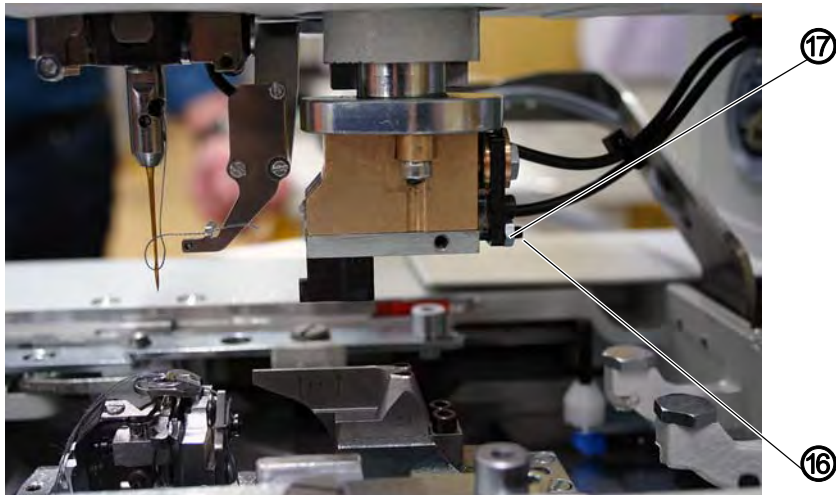
(16) - Screw   (17) - Nut

Step

1. Loosen the nut (17).
2. Using the screw (16), set the left end position of the cutting block:
   - Turn screw clockwise = cutting length is reduced
   - Turn screw counter-clockwise = cutting length is increased
3. Retighten the nut (14).

3.8.4 Setting the switch for the cutting system

Fig. 59: Setting the switch for the cutting system (1)
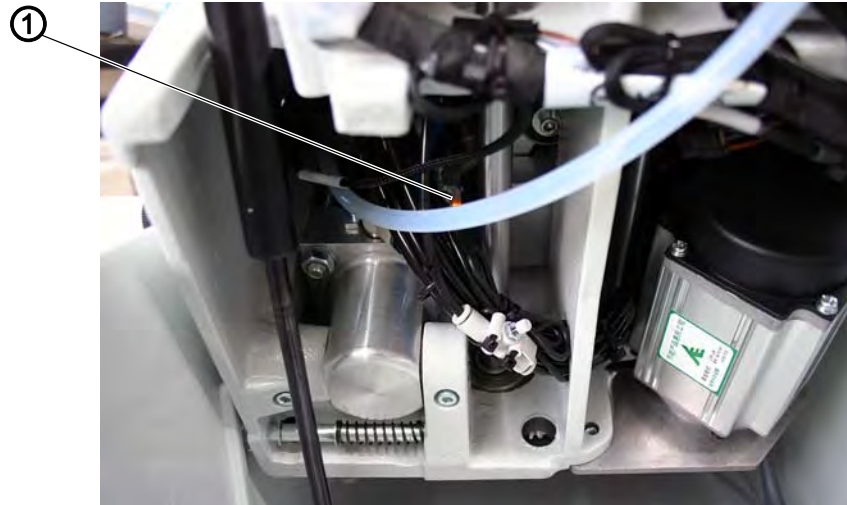
(1) - Switch

Correct setting

Before the fabric support plate transports the sewing material further, the cutting punch must be in its top position.

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

Correction of the height of the switch

Fig. 60: Setting the switch for the cutting system (2)
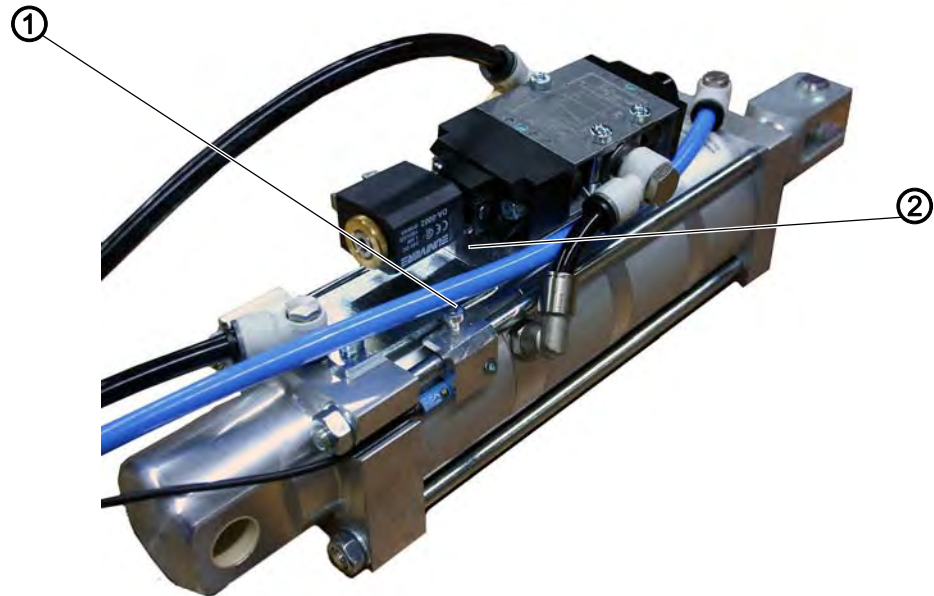
(1) - Switch   (2) - Screw

Step

1. Loosen the screw (2).
2. Move the switch (1) upwards accordingly.
3. Tighten the screw (2).

3.8.5 Setting the cutting pressure

To ensure that all components are loaded as little as possible, and to increase the service life of the blade, you can set the cutting pressure.

Correct setting

Depending on the sewing material and the thickness thereof, the cutting pressure should be set as low as possible. It must however be set so that it is sufficiently strong that the sewing material can be still be cut reliably.

The cutting pressure is assigned for the different cutting lengths in the program.

Correction

See *Operating Instructions, Buttonhole programming.*

3.8.6 Setting the cutting duration

The switch-on time of the cutting block can be set.

Correct setting

The sewing material to be worked on is cut cleanly and such that it is not unnecessarily long.

Correction

See chapter **Cut time** (S. 136).

3.9 Setting the fabric clamps

Fig. 61: Setting the fabric clamps (1)

(1) - Fabric clamp   (2) - Needle

Correct setting

Between the needle (2) and top fabric clamp (1) there should be a distance of 1 mm along the entire length and in the eye.

To check that the setting is correct:

Step

1. Insert the clamping plate.
2. Insert the new needle.
3. Switch on the machine.
4. Start an output test on the control panel (*5.10.6 Multitest*, p. 149).
5. Select the function *Y03*.

6. Press the key.
    The fabric clamps close.
7. Select the function *Y04*.

8. Press the key.
    The clamping plates spread apart.

9. Check the distance between the top fabric clamp (1) and the needle (2).

Correction

Fig. 62: Setting the fabric clamps (2)
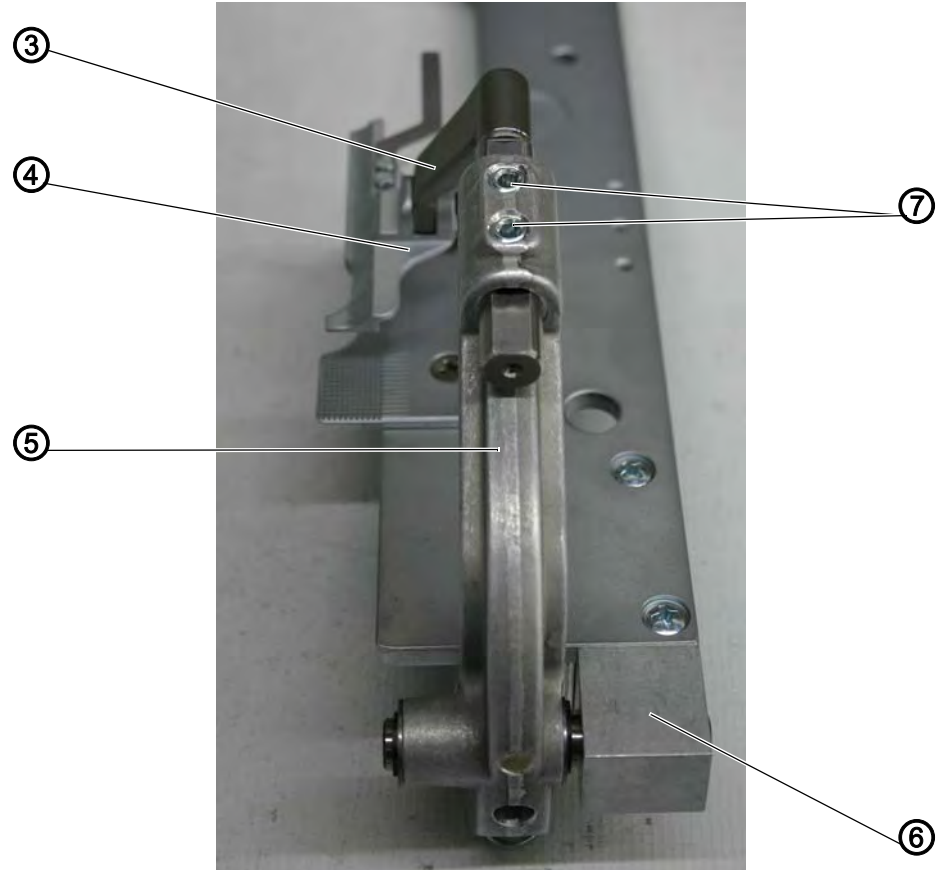
(3) - Clamping arm   (6) - Screws
(4) - Fabric clamp   (7) - Screws
(5) - Clamp bracket

Step

1. Loosen screws (6) (covered).
2. Align the clamp bracket (5) with the fabric clamp (4) laterally to the needle.
3. Tighten the screws (6).
4. Loosen the screws (7).
5. Align the clamping arm (3) with the fabric clamp (4) in the eye to the needle.
6. Tighten the screws (7).

3.10 Setting the looper height

It is important to check that the looper height is correct before setting the looper stroke and the needle bar height and, in particular, after a needle breaks.

Use the gauge (1) to check the looper height.

Fig. 63: Setting the looper height

(1) - Gauge   (3) - Hole
(2) - Left looper

Correct setting

When the gauge (1) is set on the looper mounting, the following conditions must be satisfied:

- the hole (3) of the gauge must be on the top, right
- the tip of the left looper (2) must be under the edge of the gauge (1)
- the tip of the right looper must be under the edge of the gauge (1)
- the looper tips must just touch the gauge

To check that the setting is correct:

Step

1. Remove the needle thread blade (📖 *S. 72*), throat plate (📖 *S. 76*), spreader end stops and spreader (📖 *S. 69*) from the looper mountings.

2. Bring the needle bar to top dead center, by turning the handwheel.

3. Where the looper is inserted into the looper mounting all the way through to the end stop, place the gauge (1) on the looper mounting.

4. In this position, the conditions listed above must be satisfied.

Correction

Step

1. Set the correct looper height by bending the looper a little.

3.11 Setting the looping stroke

The looping stroke is the distance that the needle bar travels from the bottom dead center to the point where the left or right looper tip is on the center line of the needle.

Correct setting

The looping stroke should be 2.7 mm.

To check that the setting is correct:

Step

1. Turn the handwheel in the direction of the throat plate, until the needle is at bottom dead center.

Fig. 64: Setting the looping stroke (1)

(1) - Edge   *(2) - Needle bar top edge*

2. With a measuring slide, measure the distance from the edge (1) to the top edge, needle bar (2).
3. Reduce dimension on the measuring slide by 2.7 mm.

Fig. 65: Setting the looping stroke (2)
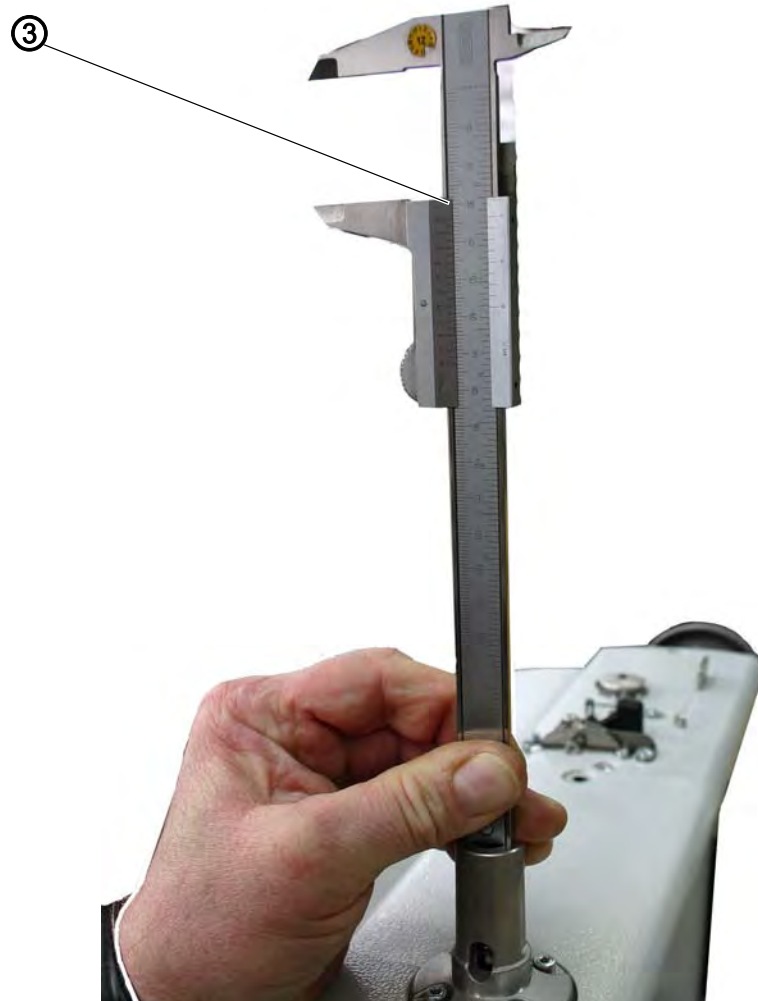
(3) - Measuring slide

4. Set the measuring slide (3) with the reduced dimension on the edge (1).

5. Turn the handwheel slowly further in the direction of the throat plate, until the needle bar strikes the measuring slide.

✎ The needle bar is in looping stroke position.

Fig. 66: Setting the looping stroke (3)
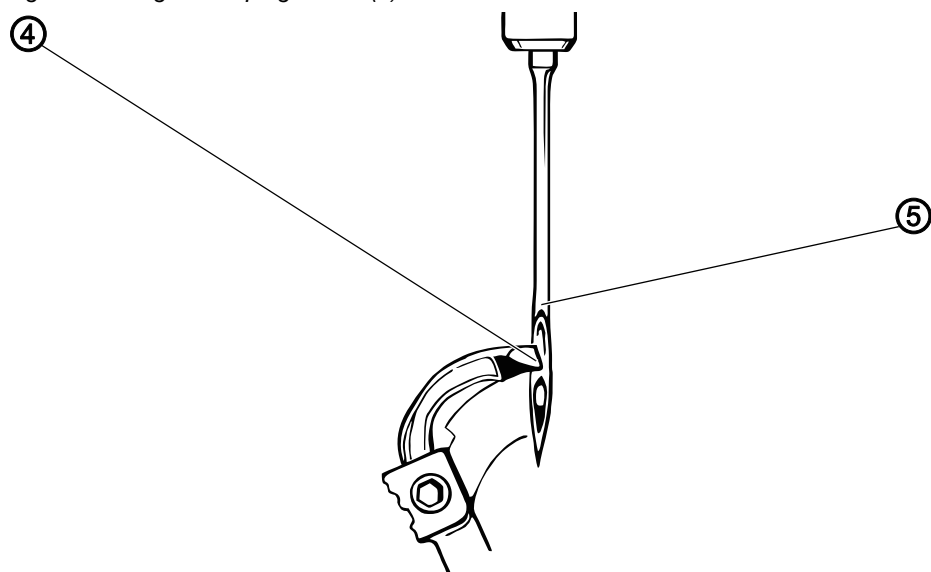
(4) - Looper   (5) - Needle

6. Check whether the looper tip (4) is on the center line of the needle (5) in the lower third of the groove.

Repeat the same process for the second looper as well.

Correction

Fig. 67: Setting the looping stroke (4)

(6) - Left looper   (7) - Right looper

Step

1. Set the left looper (6) and the right looper (7) such that both looper tips in the looping stroke position are in the same position with respect to the needle.

↳ Both looper tips must be the same distance either in front of or behind the needle.

Fig. 68: Setting the looping stroke (5)
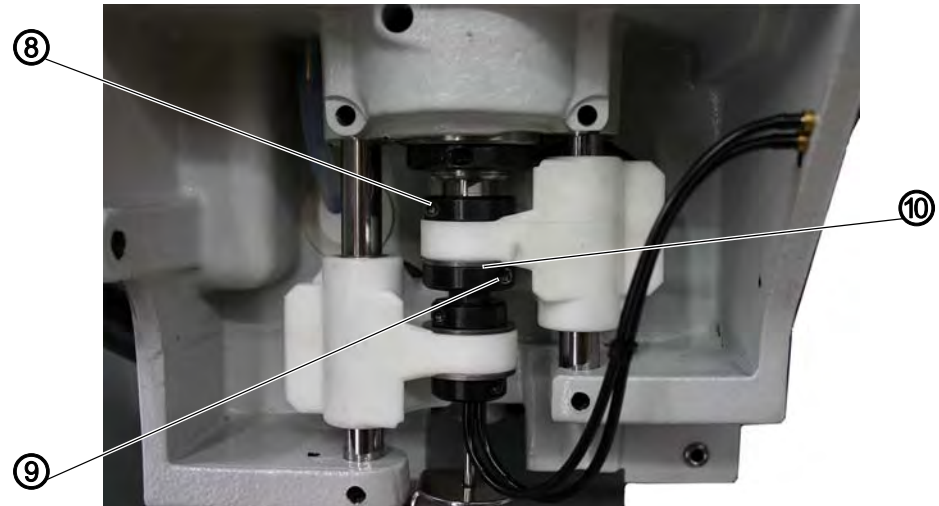
(8) - Clamping ring   (10) - Disk
(9) - Clamping ring

2. Loosen the screws on the clamping rings (8) and (9).
3. Move the clamping rings such that both looper tips are equidistant to the needle.
4. Tighten the screws on the clamping rings (8) and (9). The looper turret must still be able to turn easily after the screws have been tightened.
5. If the looper tips are not on the needle center, loosen the screw on the looper cam (📖 *S. 11*).
6. Turn the looper cam until the looper tips are on the needle center.
7. Tighten the screw on the looper cam.

Important

The disk (10) must still move smoothly after tightening!

3.12 Setting the needle bar height

Fig. 69: Setting the needle bar height (1)
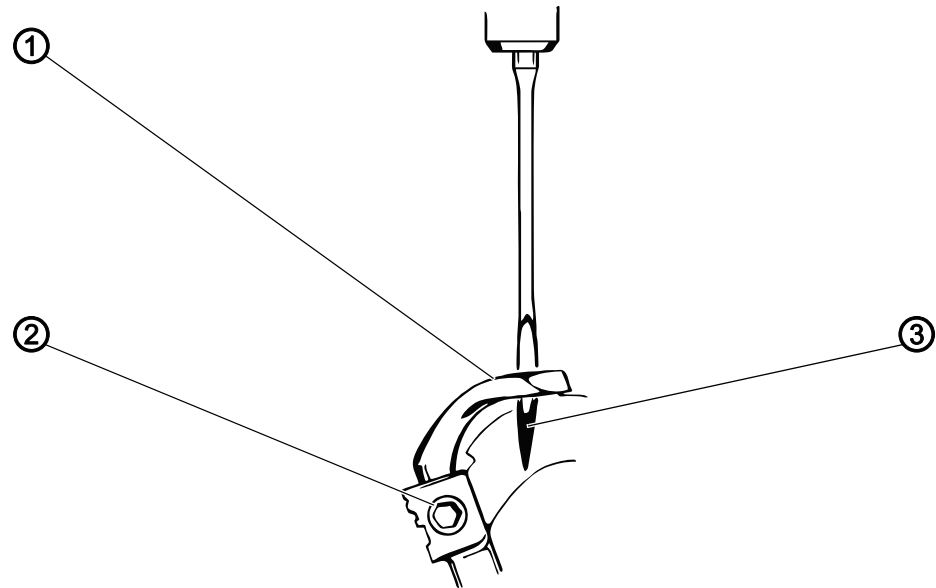
(1) - Looper   (3) - Needle eye
(2) - Screw

Correct setting

The needle bar must be set such that the needle eye (3) can be seen under the left looper tip (1) when the needle bar has moved upward from the looping stroke position by 2.5 mm.

To check that the setting is correct:

Step

1. Turn the handwheel in the direction of the throat plate, until the needle is at bottom dead center.

2. With a measuring slide, measure the distance from the edge to the top edge of the needle bar.

3. Reduce dimension on the measuring slide by 5.2 mm (looping stroke dimension + 2.5 mm).

4. Set the measuring slide with the reduced dimension on the edge.

5. Turn the handwheel slowly further, until the needle bar strikes the measuring slide.

Correction

Fig. 70: Setting the needle bar height (2)
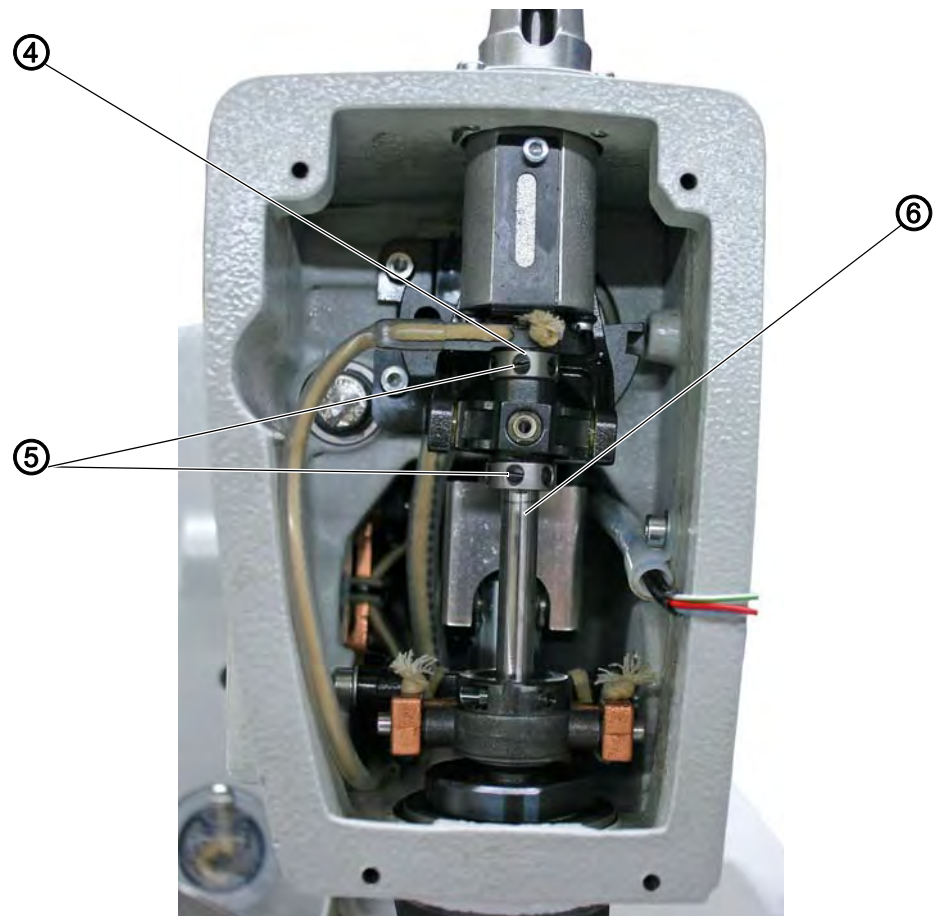
(4) - Set collar
(5) - Screws

(6) - Needle bar

Step

1. Release the screws (5) on the set collars (4).
2. Set the needle bar (6) upwards.
3. Tighten the screws (5) on the set collars (4).

Important

The needle bar must still be able to turn easily when the screws are tight.

3.13 Setting the needle guard

The needle guard setting is critical for the seam pattern.

Fig. 71: Setting the needle guard

(1) - Needle   (3) - Screw
(2) - Needle guard
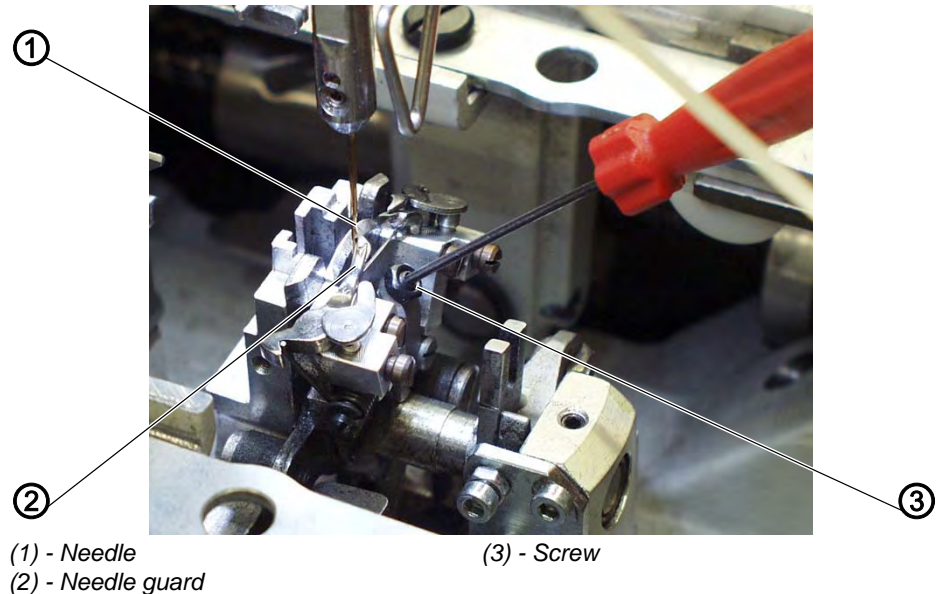
✔ **Correct setting**

The needle (1) must rest lightly against the needle guard (2) after turning the arm shaft, until the looper tips have reached the needle. The distance between the looper and needle must be 0.1 mm.

The needle guard is set in the factory and normally does not need to be adjusted. For other needle strengths, the needle guard may have to be adjusted.

To check that the setting is correct:

Step

1. Press gently against the back of the needle and check that the looper does not scratch against the needle.

Correction

Step

1. Loosen the nut.
2. Turn the screw (3) accordingly.
3. Tighten the nut.

3.14 Setting the looper gauge to the needle

Correct setting

The looper tips should be as close as possible to the needle.

To check that the setting is correct:

Step

1. Turn the handwheel until the left looper tip (1) is on the center line of the needle (3).

Correction

Fig. 72: Setting the looper gauge to the needle
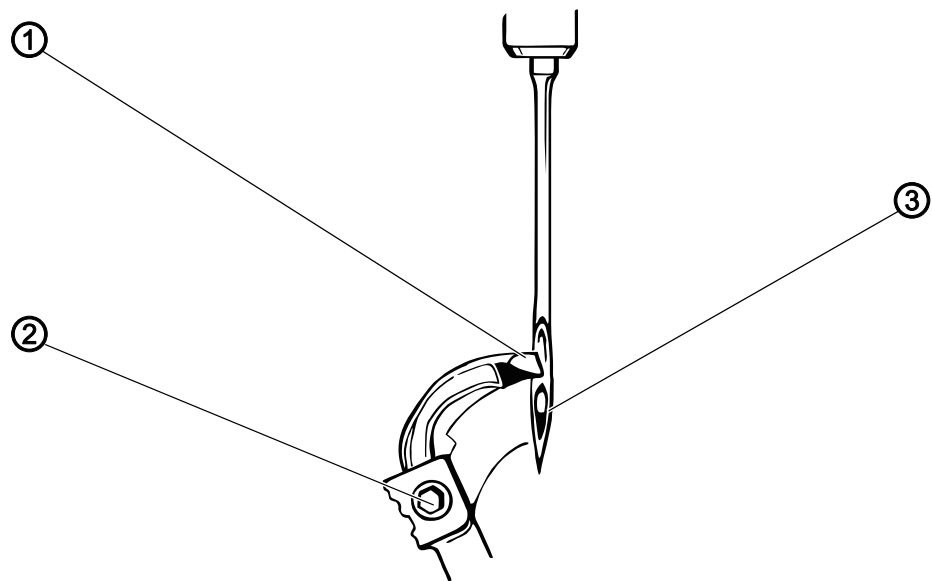
(1) - Looper   (3) - Needle
(2) - Screw

Step

1. Loosen the screw (2) on the corresponding looper.
2. Set the distance of the looper (1) to the needle (3) by touch.
3. Tighten the screw (2).

3.15 Setting the spreader

Fig. 73: Setting the spreader (1)
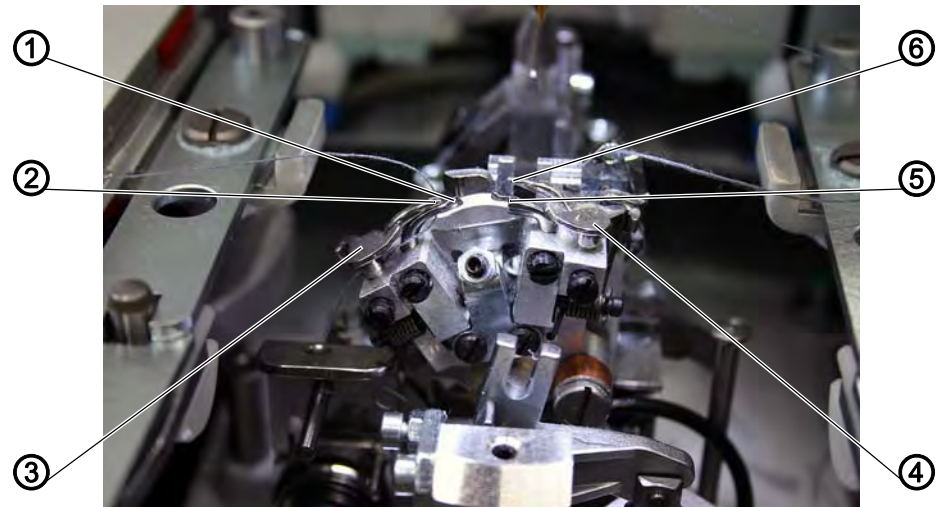
(1) - Left looper
(2) - Left spreader
(3) - Left spreader end stop

(4) - Right spreader end stop
(5) - Right looper
(6) - Right spreader

Correct setting

Fig. 74: Setting the spreader (2)
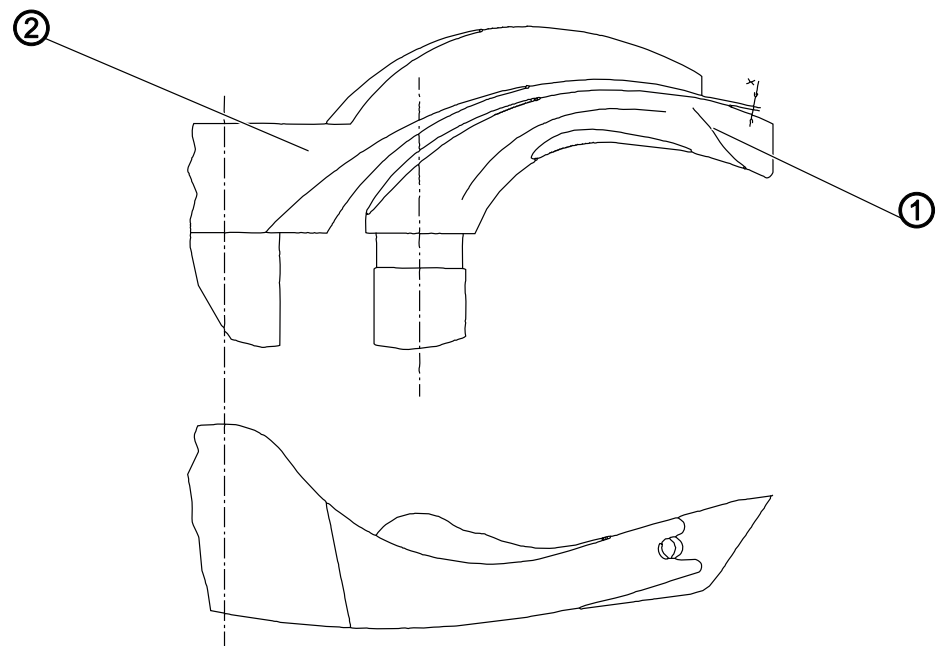
(1) - Looper

(2) - Spreader

Between the left spreader (2) and the left looper (1) there must be a distance X, corresponding to the thickness of the sewing thread used.

The right spreader (6) should be as close as possible to, but should not touch, the upper side of the right looper (5).

The spreaders which are under spring pressure are held in their end position by the end stops (3) and (4).

The fork of the left spreader (2) must align precisely above the thread hole of the left looper (1) and the tip of the right spreader (6) should be positioned centrally over the tip of the right looper (5).

Fig. 75: Setting the spreader (3)

(5) - Looper   (6) - Spreader
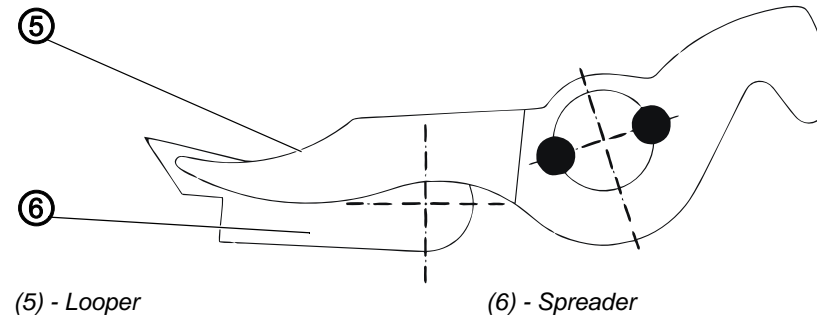
Correction

Fig. 76: Setting the spreader (4)

(7) - Screw   (8) - Screw
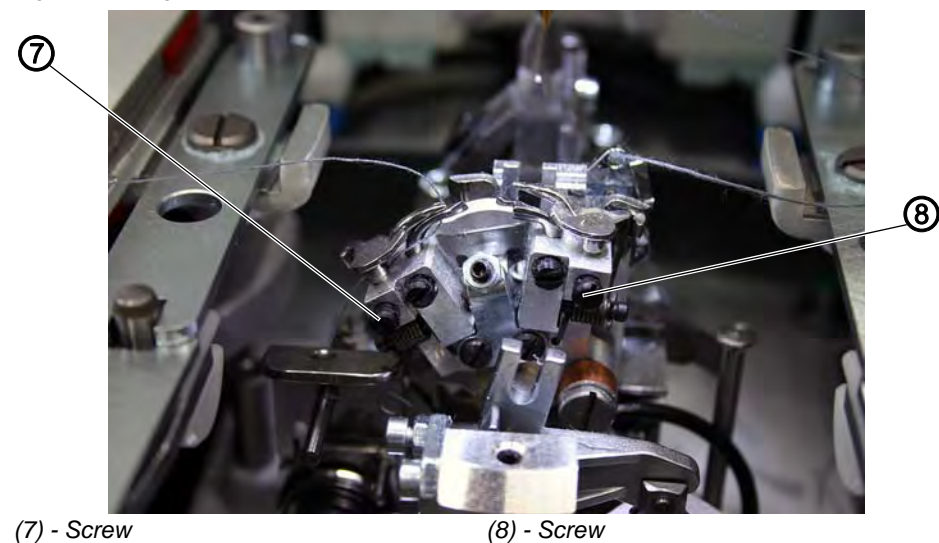
Step

1. Bend the spreader (2) or (5) slightly.
2. Loosen the screw (7) or (8) at the end stop of the spreader to be set, in order to set the end positions of the spreader.
3. Turn the spreader end stop (3) or (4) slightly.
4. Tighten the screw (7) or (8).

3.16 Setting the spreader plate

Fig. 77: Setting the spreader plate (1)
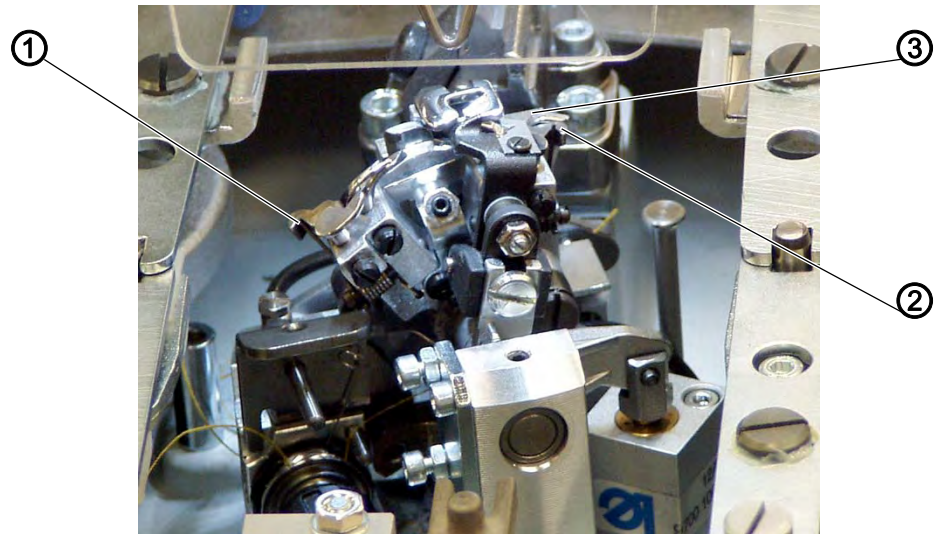
(1) - Left spreader leg   (3) - Spreader plate
(2) - Right spreader leg

✓ **Correct setting**

The spreaders open or close via the alternating movement of the spreader plate (3).

If the needle bar is in the bottom dead center for the right point of penetration, the distance from the spreader plate (3) to the spreader leg (1) should be precisely as large as the distance from the spreader plate (3) to the spreader leg (2) (dimension X1 = dimension X2), when the needle is in the bottom dead center for the left point of penetration.

Correction

Fig. 78: Setting the spreader plate (2)
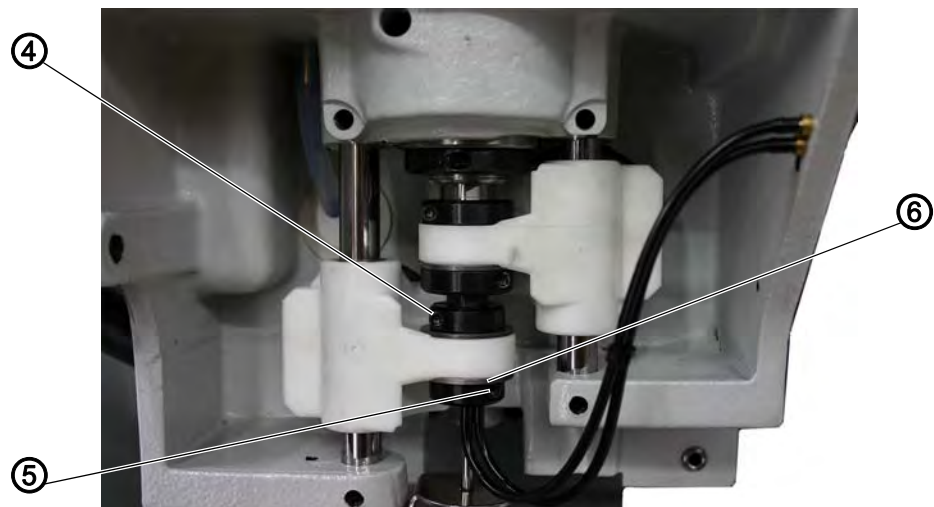
(4) - Clamping ring   (6) - Disk
(5) - Clamping ring

Step

1. Loosen the screws on the clamping rings (4) and (5).

2. Move the clamping rings such that the distance from the spreader plate to the spreader legs is the same.

3. Tighten the screws on the clamping rings (4) and (5).

! **Important**

Disk (6) must still move smoothly after tightening!

3.17 Setting the needle thread blade

Fig. 79: Setting the needle thread blade (1)
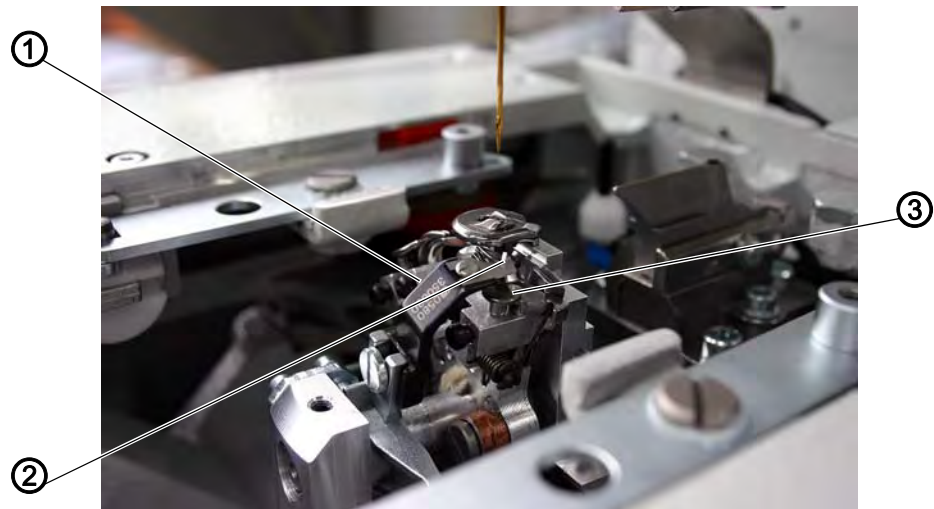
(1) - Blade holder   (3) - Spreader end stop
(2) - Needle thread blade

✓ **Correct setting**

Sewing is followed by the cutting movement of the needle thread blade (2). The thread cutting length is determined in the software (*Operating Instructions, Buttonhole programming*).

In its end position, the blade holder (1) may not touch the spreader end stop (3). The looper mounting must be able to work freely.

Fig. 80: Setting the needle thread blade (2)
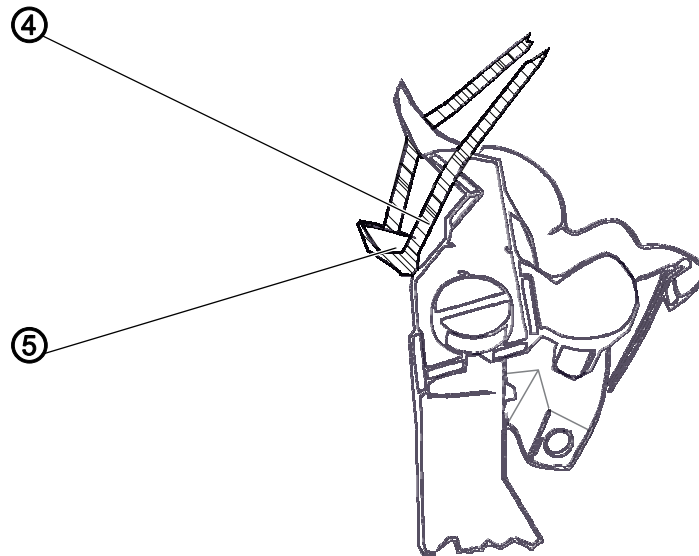
(4) - Needle thread loop   *(5) - Looper*

The needle thread blade should cut through the needle thread loop (4) caught by the right-hand looper (5) only on the front side. Cutting on both sides of the needle thread loop leads to thread ends that are too short and so to missed stitches at the beginning of the seam.

When in the right-hand end position, the needle thread blade may not be in the thread area and may not touch the spreader end stop.

Fig. 81: Setting the needle thread blade (3)

(6) - Edge

The distance between the needle and the needle thread blade must be approx. 0.2 mm. In the cutting position, the needle thread blade must move approx. 1 mm beyond the edge (6).

To check the cutting position:

Step

1. Move the needle thread blade by hand and check whether all the above listed conditions have been satisfied.

Or:

1. Switch on the machine.

2. Start an output test on the control panel (*5.10.6 Multitest*, p. 149).

3. Select the function *Y01*.

4. Press the OK key.

Correction of the blade movement

Fig. 82: Setting the needle thread blade (4)
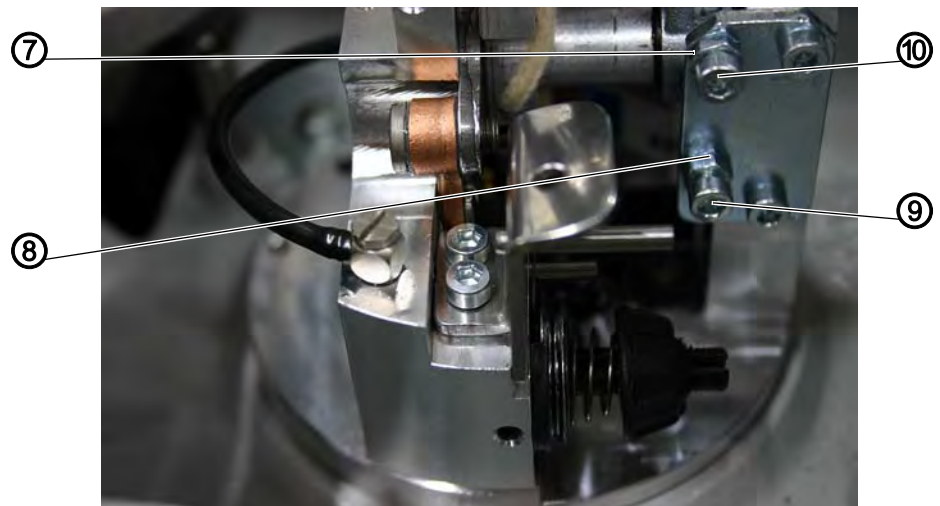
(7) - Nut	*(9) - Screw*
(8) - Nut	*(10) - Screw*

Step

1. Loosen the nuts (7) and (8).

2. Set screws (9) and (10) in accordance with the conditions.

3. Tighten the nuts (7) and (8).

Correction of the blade height

Fig. 83: Setting the needle thread blade (5)

(11) - Screw　　　　　　　　　　　　(13) - Screw
(12) - Blade holder　　　　　　　　　 (14) - Needle thread blade
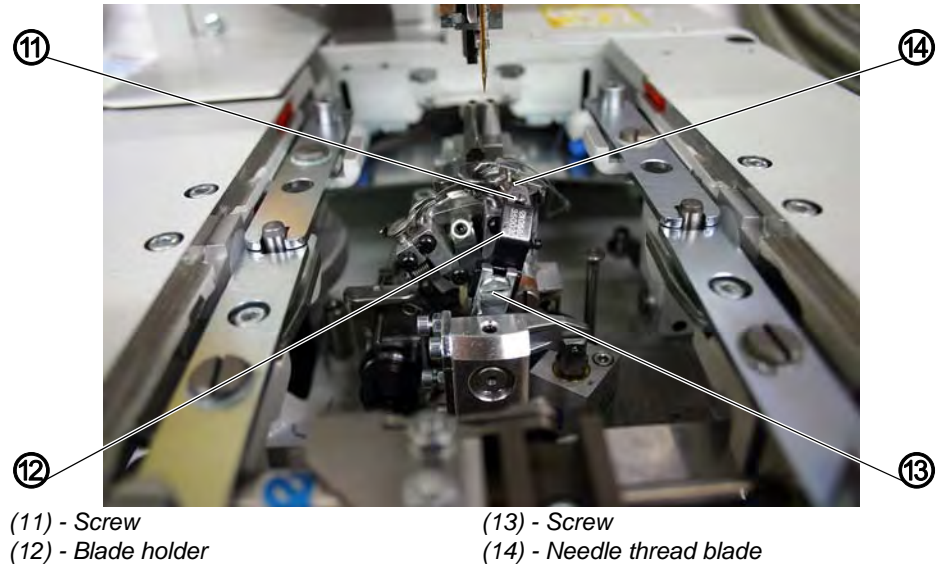
Step

1. Loosen the screw (13).
2. Set the blade holder (12) in accordance with the desired height. Swivel the blade holder by hand to check that it is moving smoothly.
3. Retighten the screw (13).

Distance to the needle

Step

1. Loosen the screw (11).
2. Move the needle thread blade (12).
3. Tighten the screw (11).

3.18 Setting the throat plate

Fig. 84: Setting the throat plate (1)

(1) - Edge of the throat plate

Correct setting

The point of penetration of the needle in the hole of the throat plate should be as close as possible to the edge (1).

The throat plate must be set as high as possible. This prevents the sewing material from being pushed too far downwards as the needle penetrates it.

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

- under the sewing material or the closed, upper material clamps;
  the sewing material must be able to move unhindered over the throat plate
- under the bottom fabric clamps
- above the needle thread blade;
  the needle thread blade must move as closely as possible under the throat plate without touching it.

Correction

Fig. 85: Setting the throat plate (2)
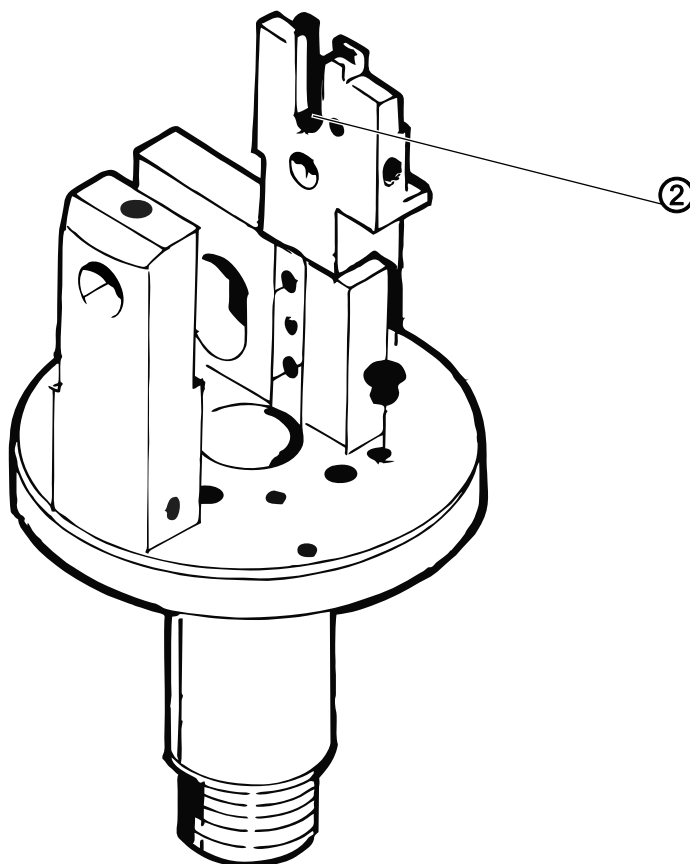
(2) - Screw

1. Set the height of the throat plate at the screw (2) in the throat plate holder.
    The screw keeps the setting in place when the throat plate is inserted again.
2. Align the throat plate using the small hammer and peg.

3.19 Setting the thread tensioning spring

Fig. 86: Setting the thread tensioning spring (1)
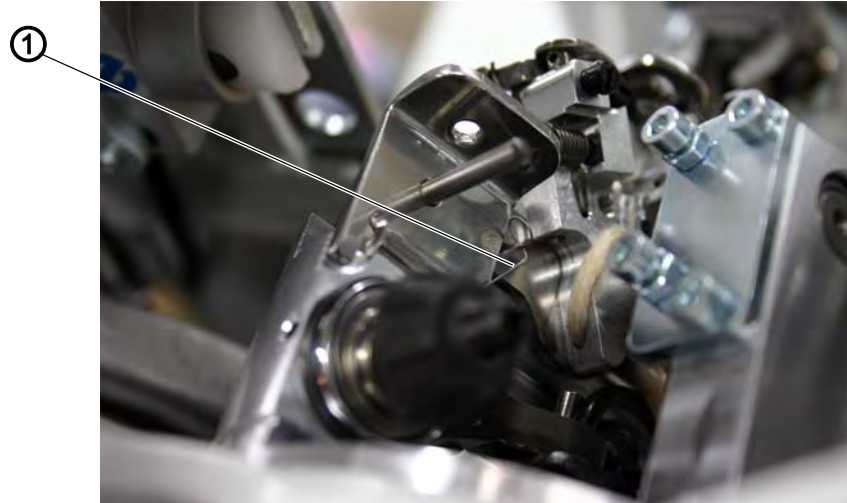
(1) - Thread tensioning spring

Correct setting

The thread tensioning spring (1) must hold the looper thread under tension until the needle with the needle thread has inserted cleanly into the triangle formed by the spreader.

To check that the setting is correct:

Step

1. Insert sewing material and close fabric clamps.
2. Start an output test on the control panel (📖 *5.10.6 Multitest*, p. 149).
3. Select the function *Y02*.
4. Press the OK key.
5. Observe whether the thread tensioning spring holds the looper thread tightly and for long enough.

Fig. 87: Setting the thread tensioning spring (2)

(2) - Screw	(4) - Disk
(3) - Screw	(5) - Tensioner element
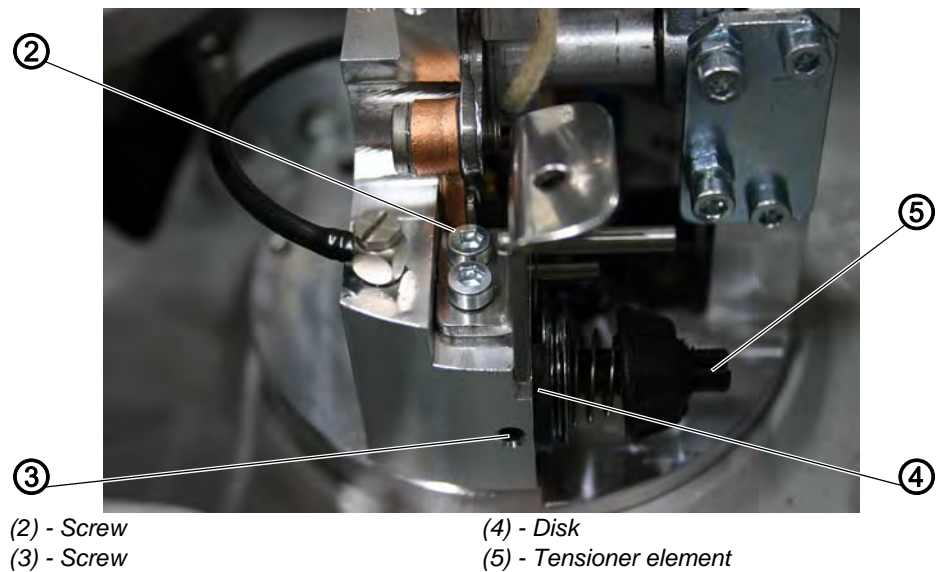
Correction of the spring travel

Step

1. Loosen the screw (3).
2. Set the disk (4):
   - Disk to the right = spring travel is longer
   - Disk to the left = spring travel is shorter
3. Tighten the screw (3).

Correction of the spring tension

Step

1. Loosen the screw (2).
2. Set the tensioner element (5):
   - Bolt to the right = tension is higher
   - Bolt to the left = tension is lower
3. Tighten the screw (2).

3.20 Setting the needle thread catcher

The needle thread catcher grasps the needle thread immediately after the sewing thread is cut, holds it clamped and inserts it when sewing the next buttonhole into the right-hand seam.

This offers the following advantages:

- Secure seam beginning, even in light, loose fabrics
- Firmly tightened starting stitches

• Serging of the needle thread is omitted as the buttonhole seam is sewn over the starting thread

To operate the needle thread catcher:

1. After switching on, the needle thread catcher lowers, with the needle thread firmly held, down onto the sewing material.

2. In accordance with the specified sewing length, the sewing process switches on and starts with the right-hand buttonhole seam.

✎ Here, the needle thread end presented by the needle thread catcher is overstitched and sewn in.

3. After a point stipulated in the controller, the needle thread catcher is raised and moves back into the upper position.

4. Shortly before the seam end, the clamp of the needle thread catcher is opened, and the needle thread catcher moves downward.

5. After the end of the left buttonhole seam, the needle positions itself in the top dead center.

✎ The needle thread is cut.

6. The needle thread catcher swivels forward.

✎ The clamp is closed. The needle thread is caught.

7. The needle thread catcher swivels backward.

8. The needle thread catcher moves upward.

NOTICE

Property damage due to incorrect installation and setting!

Risk of breaking if the needle thread catcher is set incorrectly.

Observe the correct setting.

Correct setting

Fig. 88: Setting the needle thread catcher (1)
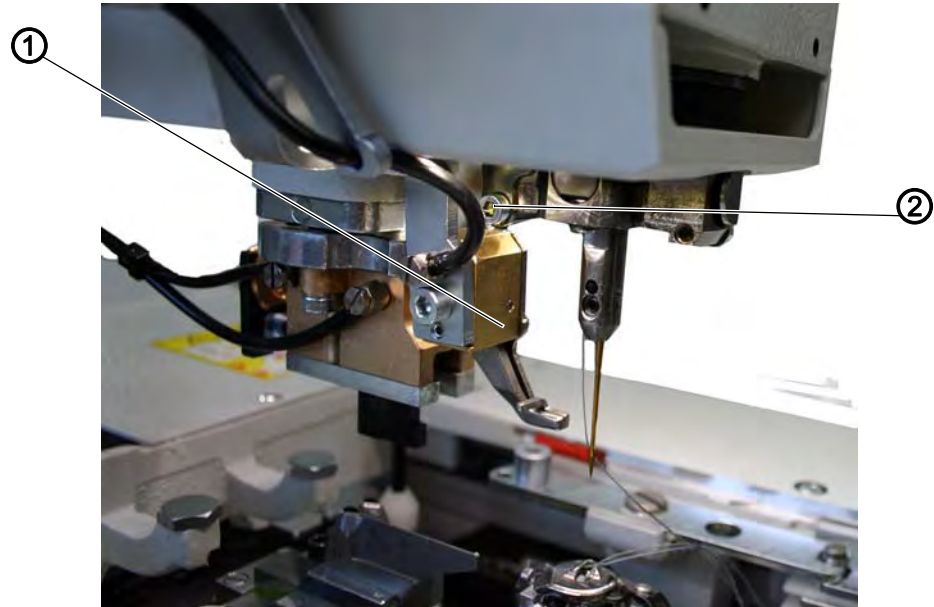
(1) - Needle thread catcher   (2) - Screw

If the needle thread catcher is in the home position, the following conditions must be satisfied:

• The needle thread catcher (1) must securely catch the needle thread after sewing a buttonhole.
• The needle thread catcher (1) must insert the needle thread into the right-hand buttonhole seam.
• The needle thread catcher (1) may not collide with the clamping plates.
• The needle thread catcher (1) may not strike against the screw (2).
• The distance from the top edge of the needle thread catcher (4) to the needle (3) should be approx. 8 mm.
• At the side, the needle (3) and the left edge of the thread clamp of the needle thread catcher must be in line.

Fig. 89: Setting the needle thread catcher (2)

(3) - Needle   (4) - Front edge
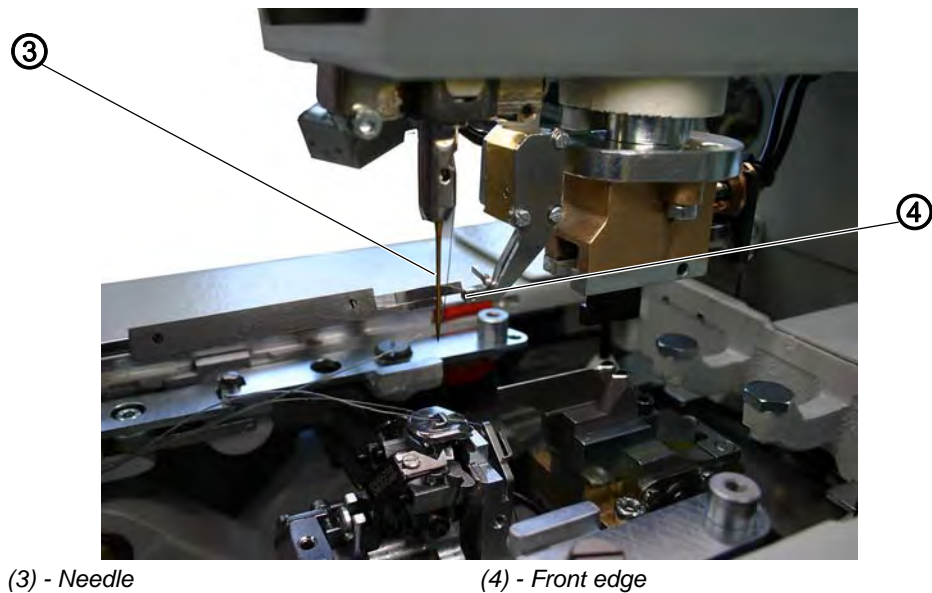
You must set the bottom position to suit the thickness of the sewing material. When the needle thread catcher is lowered, there must still be a distance of approx. 3 mm between the bottom edge and the sewing material.

When the needle thread catcher is lowered and moved forward, the left edge of the thread clamp must be approximately in line with the middle of the needle.

To check that the setting is correct:

Step

1. Sew a buttonhole.

    ↳ The needle thread catcher may not collide with the clamping plates during the sewing process. The needle thread must be securely caught after the sewing process.

2. Check whether the needle thread was sewn in the center of the right-hand buttonhole seam.

Fig. 90: Setting the needle thread catcher (3)
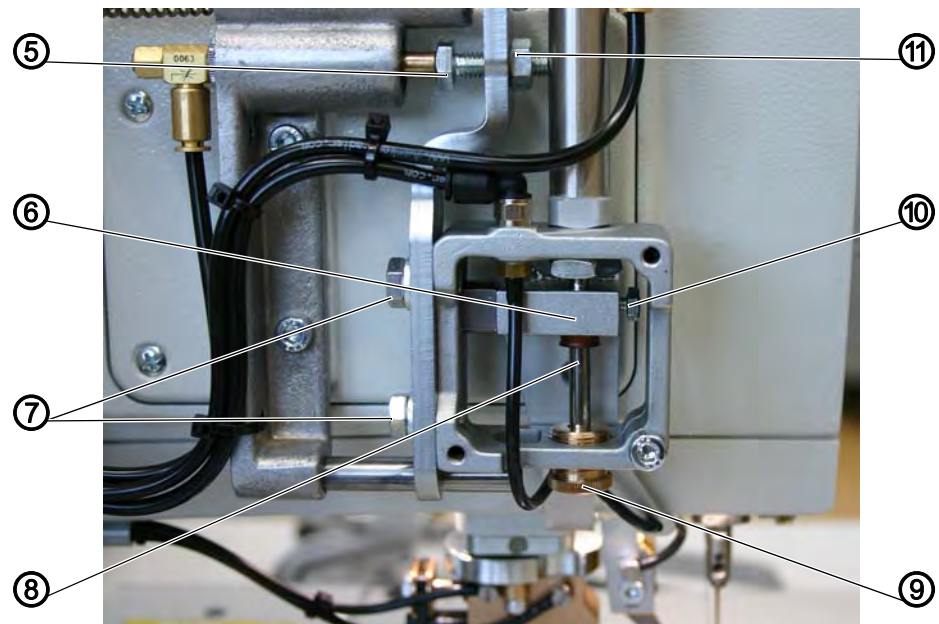
(5) - Screw
(6) - Block
(7) - Screws
(8) - Piston rod

(9) - Knurled nut
(10) - Screw
(11) - Nut

Correction of the height of the needle thread catcher

Step

1. Remove the cover.
2. Loosen the screw (10), holding the piston rod (8) firmly.
3. Move the block (6) upwards.
4. Tighten the screw (10).
5. Install the cover.

Correction of the distance between the needle thread catcher and the needle

Step

1. Loosen the nut (11).
2. Set the distance to the needle using the end stop screw (5).
3. Tighten the nut (11).

Correction of the bottom position of the needle thread catcher

Step

1. Using the knurled nut (9) set the bottom position of the needle thread catcher.
   The distance between the needle thread catcher and the sewing material must be approx. 3 mm.
2. Manually press down the needle thread catcher and check its position.

Correction of the side position of the needle thread catcher

Step

1. Loosen the screws (7).
2. Set the distance at the side of the needle thread catcher.
3. Tighten the screws (7).

Correction of the clamping force of the needle thread catcher

Fig. 91: Setting the needle thread catcher (4)
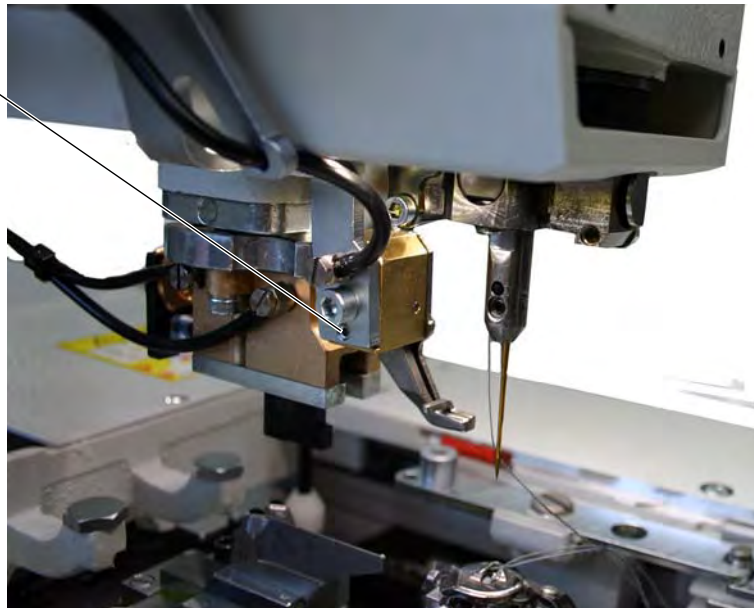
(12) - Screw

Step

1. Loosen the screw (12).
↳ The clamping force is reduced.

3.21 Performing setting works without the head cover

When the head cover is disassembled, the machine is secured against starting unintentionally. You can operate the machine during setting works even without the head cover.

Fig. 92: Performing setting works without the head cover

(1) - Switch housing   (3) - Connector
(2) - Cable
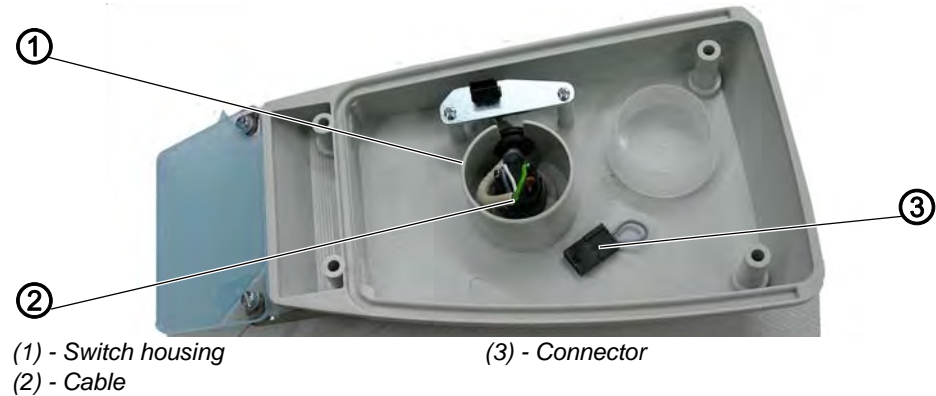
To perform setting works without the head cover:

Step

1. Plug the connector (3) from the switch housing (1) in the head cover into the cable (2).

3.22 Replacing the controller

See 📖 *Operating Instructions, Fitting the controller.*

3.23 Setting the brightness and contrast of the control panel

You can set the brightness and contrast in two ways:

- with self-test
- without self-test

To set the control panel using a self-test:

Step

1. Press the 🔲 key during switching on.

🖎 In addition, the function of the inputs BOOT and RESET are checked.

To set the control panel without a self-test:

Step

1. Press the 🔲 key during switching on.

4 Special machines

4.1 Long cutter for looper thread and gimp thread

Only for the 581-121 and 581-321!

4.1.1 Setting the cutting pressure and cutting movement

Fig. 93: Long cutter, setting the cutting pressure and cutting movement (1)

(1) - Thread deflector   (3) - Thread catcher, back side
(2) - Blade
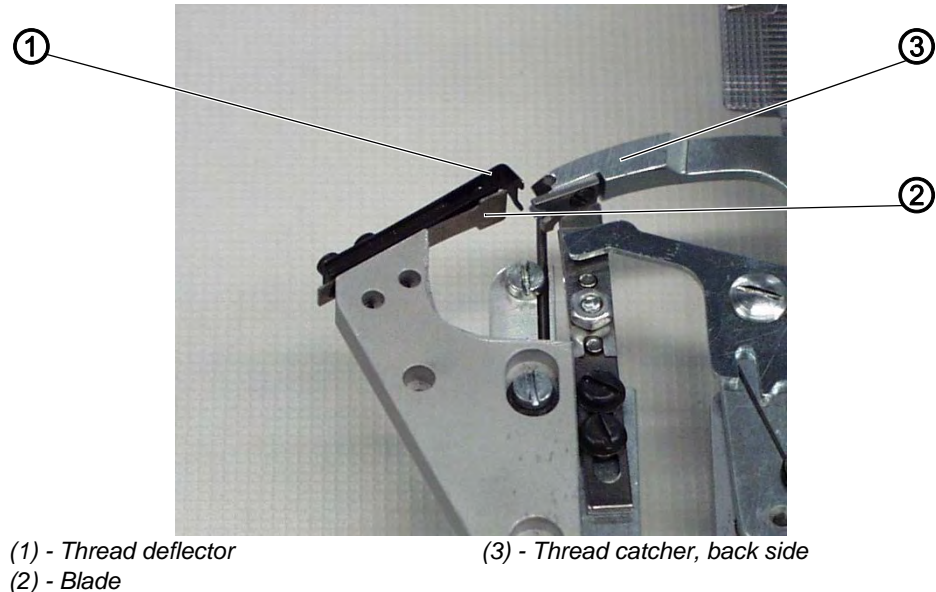
The thread deflector (1) is positioned above the stationary blade (2).
It prevents the gimp and looper thread ends from lying between the blade (2) and the back of the thread catcher (3). Instead, they are guided next to or into the thread catcher.
If this does not happen, the blade can be pushed away and will not cut.

Correct setting

The cutting pressure may only be set as high as is required for reliable cutting of the threads.

The thread catcher must move past the thread clamps as closely as possible, but must not touch them.

Correction

Fig. 94: Long cutter, setting the cutting pressure and cutting movement (2)
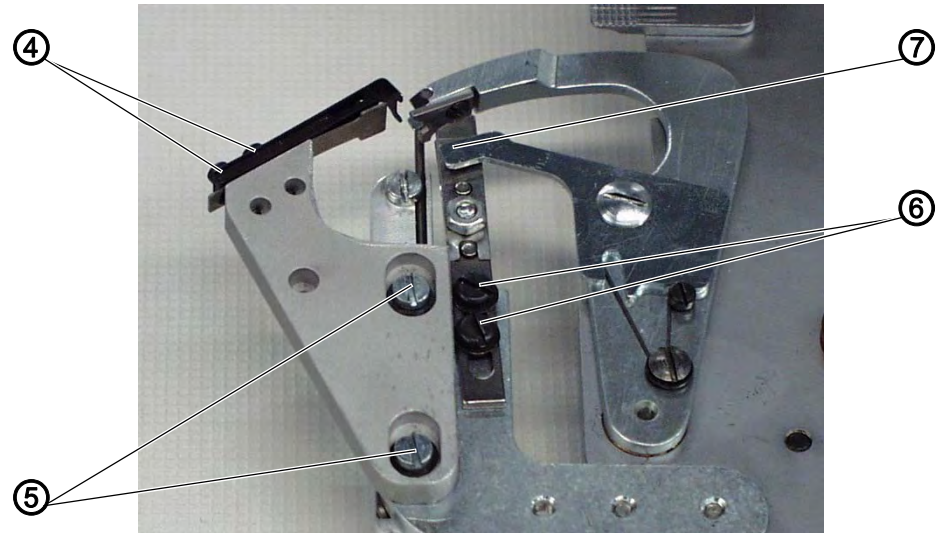
(4) - Screws
(5) - Screws

(6) - Screws
(7) - Thread clamp

Thread deflector

Step

1. Loosen the screws (4).
2. Align the side of the thread deflector (1) such that the function described above is achieved.
3. Retighten the screws (4).

Cutting pressure

Step

1. Loosen the screws (5).
2. Move the stationary blade (2) such that the looper and gimp threads are cut reliably.
3. Retighten the screws (5).

Distance from the thread clamps to the thread catcher

Step

1. Loosen the screws (6).
2. Move the thread clamp (7).
3. Retighten the screws (6).

4.1.2 Setting the blade overlap

Fig. 95: Long cutter, setting the blade overlap (1)
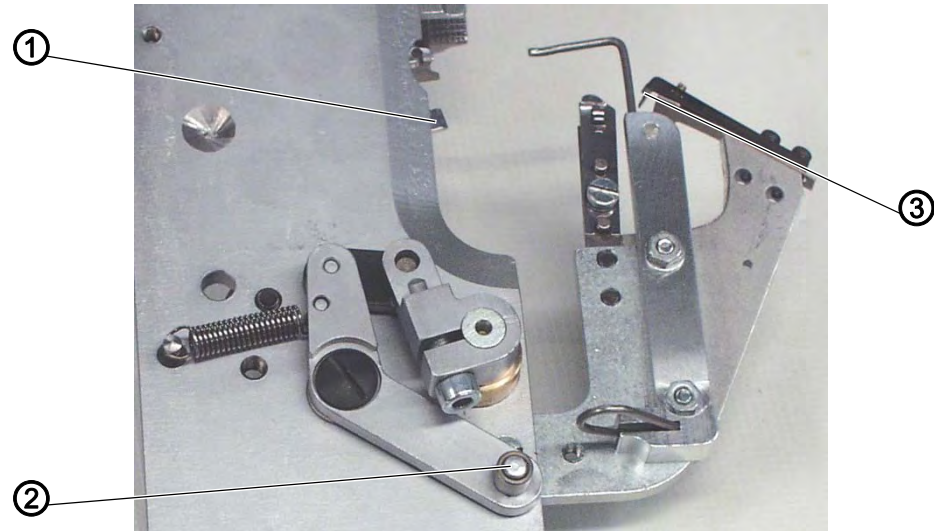
(1) - Cutting edge   (3) - Cutting edge
(2) - Roller

Correct setting

Cutting edges (1) and (3) must move 1 mm above one another.

It must be possible to insert the clamping plates without them becoming stuck.

The roller (2) must extend into the groove of the guide.

To check that the setting is correct:

Step

1. Remove the right-hand clamping plate.
2. Re-insert the right-hand clamping plate. It must be possible to insert the clamping plates without them becoming stuck.

Correction

You can correct the blade overlap by setting the guide.

Fig. 96: Long cutter, setting the blade overlap (2)

(4) - Guide   *(5) - Screw*
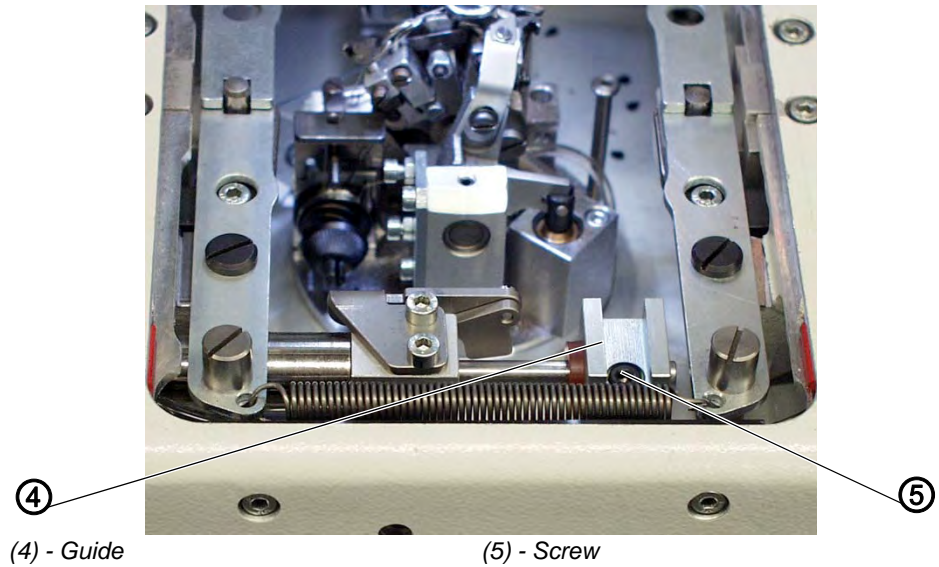
To set the guide:

Step

1. Loosen the screw (5).

2. Move the guide (4) onto the piston rod. The dimension X should be 39 mm.

3. Tighten the screw (5).

To set the overlap:

Step

1. Loosen the screw (7).

Fig. 97: Long cutter, setting the blade overlap (3)

(6) - Lever   *(7) - Screw*
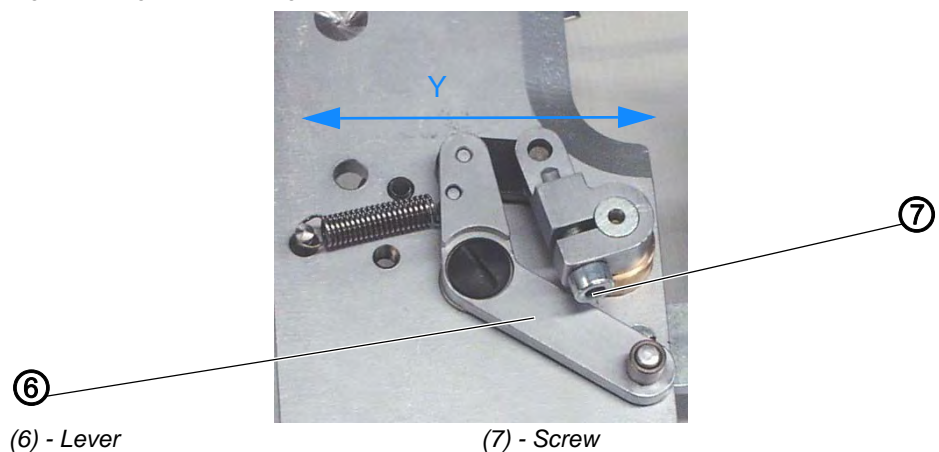
2. Turn the lever (6).
   Set the dimension Y to 61 mm.

3. Tighten the screw (7).

4. Insert the clamping plates.

5.   Switch on the machine.

6.   Check the size of the overlap.

7.   Switch off the machine.

4.1.3   Setting the looper and gimp thread clamp

Correct setting

The long cutter clamps the looper thread and the gimp thread together under a clamping plate. The looper thread and gimp thread must be held so securely that a reliable and firmly tightened seam beginning is ensured.

Before the cutting process starts at the stationary blade, the looper and gimp threads must be drawn between the lower clamping spring (2) and the clamping piece (1).

Fig. 98: Setting the looper and gimp thread clamp (1)
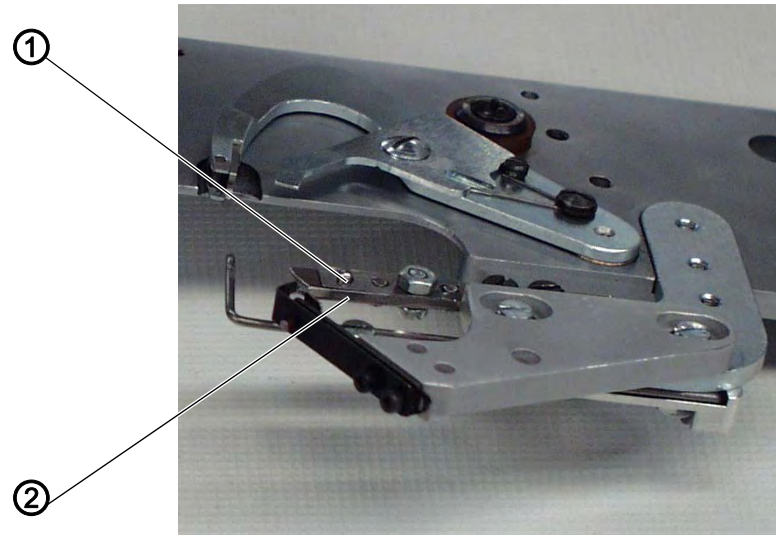
(1) - Clamping piece   *(2) - Clamping spring*

So that the looper thread and the gimp thread are reliably drawn between the clamping spring (2) and the clamping piece (1) before cutting, the clamping spring is opened from the trigger plate (3) via the pin (4).

Fig. 99: Setting the looper and gimp thread clamp (2)
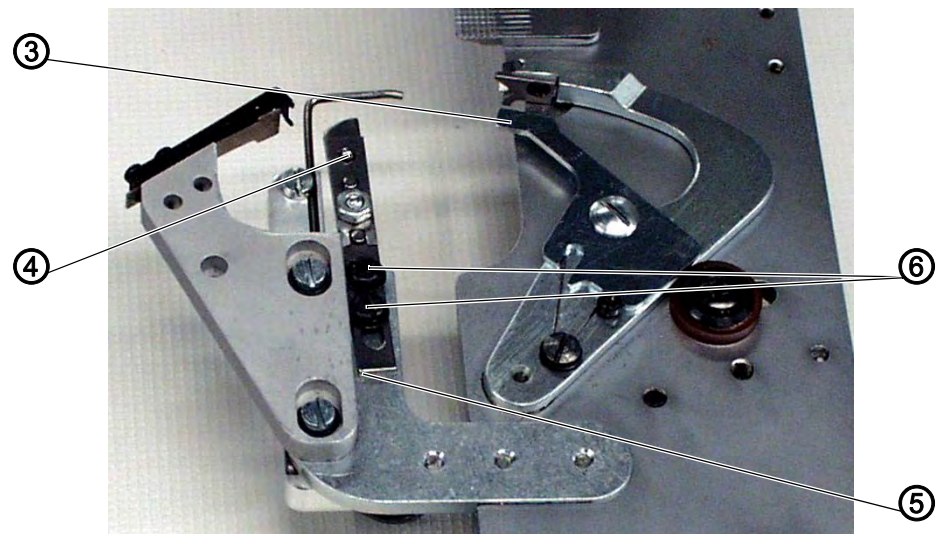
(3) - Trigger plate   (5) - Thread clamp
(4) - Pin   (6) - Screws

The width of the opening depends on the thickness of the looper and gimp threads used.

The thread clamp (5) must be opened at least so wide that the sewing threads are securely drawn in front of the pin (4) and after the thread is cut are not pulled out of the thread clamp (5).

Fig. 100: Setting the looper and gimp thread clamp (3)
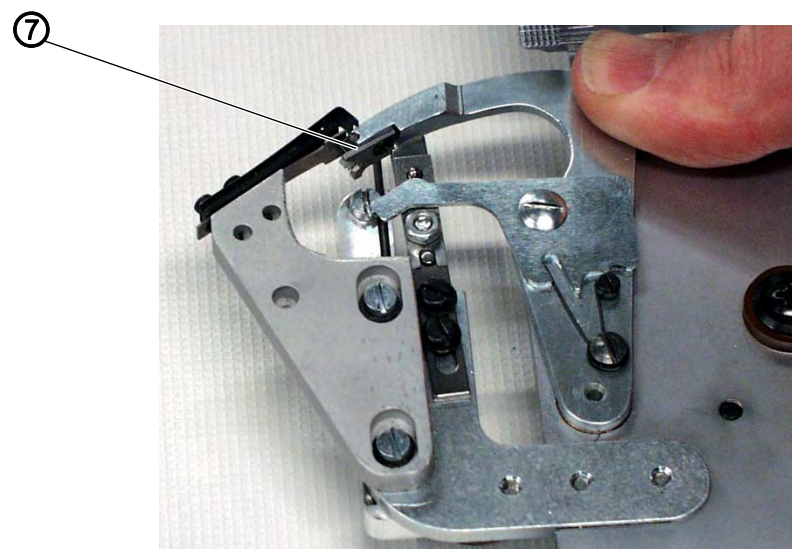
(7) - Cutting edge

When the cutting edge (7) of the thread catcher is approx. 1 mm in front of the blade, the trigger plate (3) must close the thread clamp again.
The pin (4) must then be free again.
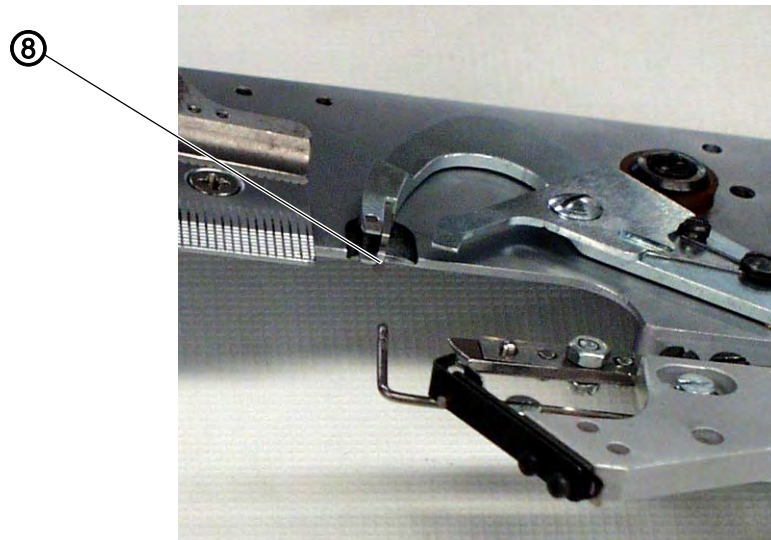
(8) - Thread catcher

The tip of the thread catcher (8) must push under the looper thread and gimp thread.

The clamping force must be set such that the looper thread is gently clamped after cutting and does not jump back.

Correction

Opening width

Step

1. Position the trigger plate (3) in terms of its height, such that the clamping spring for the looper thread and gimp thread is opened.

Point in time

Step

1. Loosen the screws (5) slightly.

2. Turn the thread clamp such that it is closed when the cutting edge of the thread catcher is 1 mm in front of the blade.

3. Retighten the screws (5).

Clamping force

Step

1. Align the pressure of the clamping spring (2).

4.1.4 Thread deflector

The thread deflector (1) ensures that the starting thread is cut too.
This means there is no more cutting waste.

Fig. 102: Checking the thread deflector
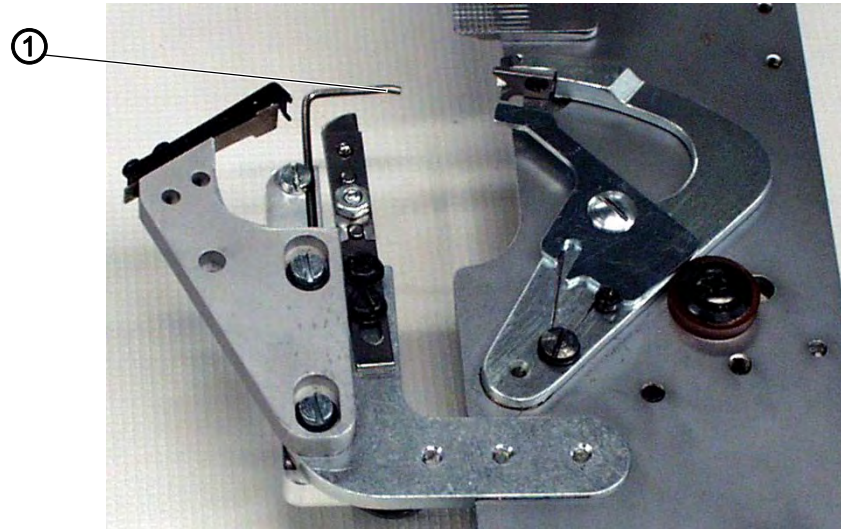
(1) - Thread deflector

The thread deflector (1) cannot be set.

When cutting waste occurs:

Step

1. Insert a new thread deflector.

4.2 Short cutter for looper thread and gimp thread

Only for the 581-141 and 581-341!

4.2.1 Setting the cutting pressure and cutting movement

Fig. 103: Short cutter, setting the cutting movement (1)
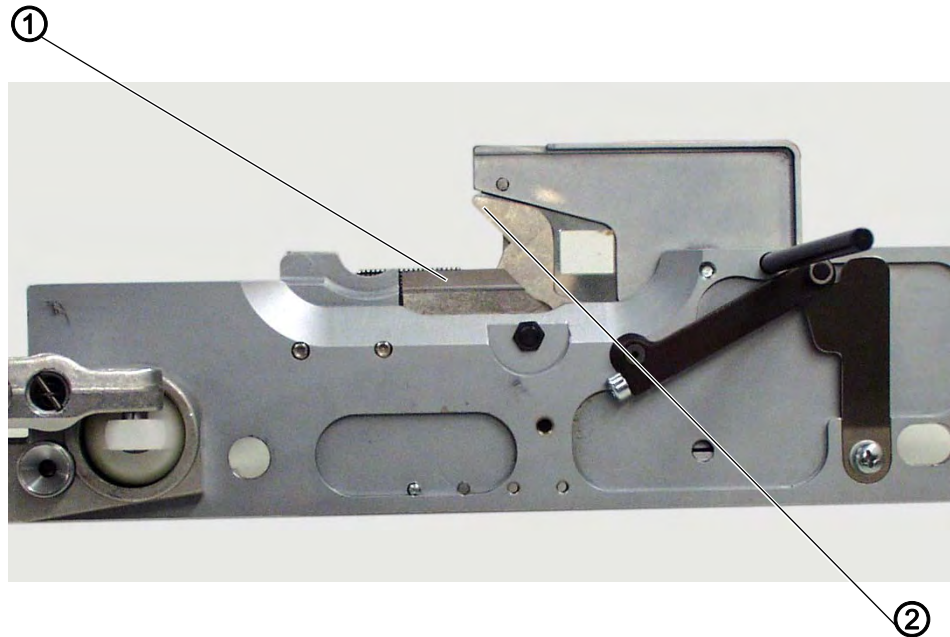
(1) - Scissor blade   *(2) - Scissor blade*

✓ **Correct setting**

The cutting pressure must be set such that the looper thread and the gimp thread are reliably cut. The scissor blades (2) must not move stiffly and must not stick.

Fig. 104: Short cutter, setting the cutting movement (2)
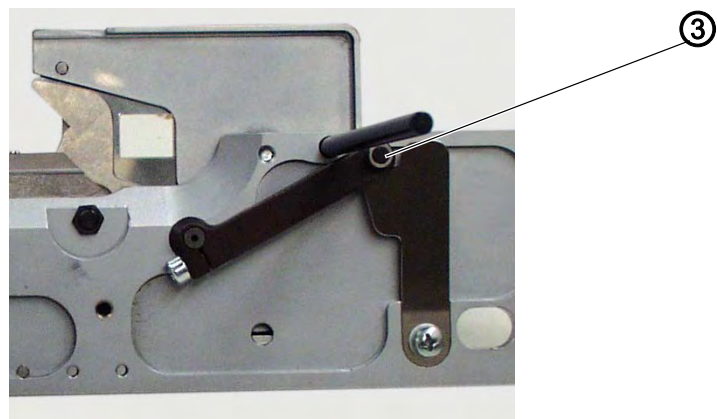
(3) - Roller

The roller (3) must extend into the jaws of the guide (4).

Fig. 105: Short cutter, setting the cutting movement (3)
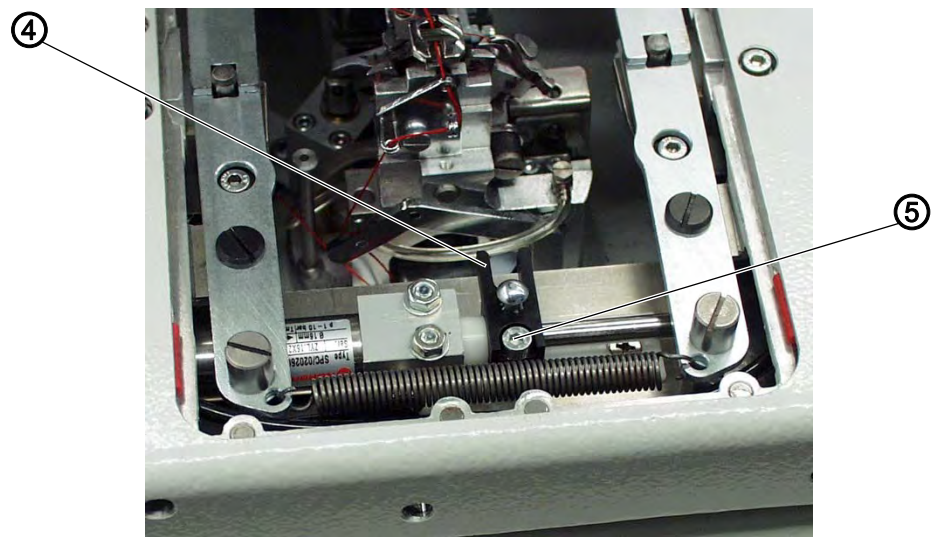
(4) - Guide   (5) - Screw

To check that the setting is correct:

Step

1. Remove both clamping plates.

Correction

Cutting pressure

Fig. 106: Short cutter, setting the cutting pressure (4)
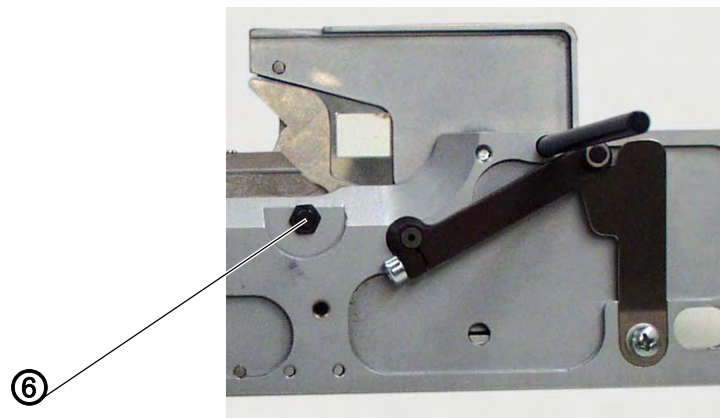
(6) - Nut

Step

1. Loosen the nut (6).

2. Using the screw (7) set the cutting pressure.
    The cutting pressure must be set such that a good cutting result can
    be achieved with the smallest possible cutting pressure.

Fig. 107: Short cutter, setting the cutting pressure (5)
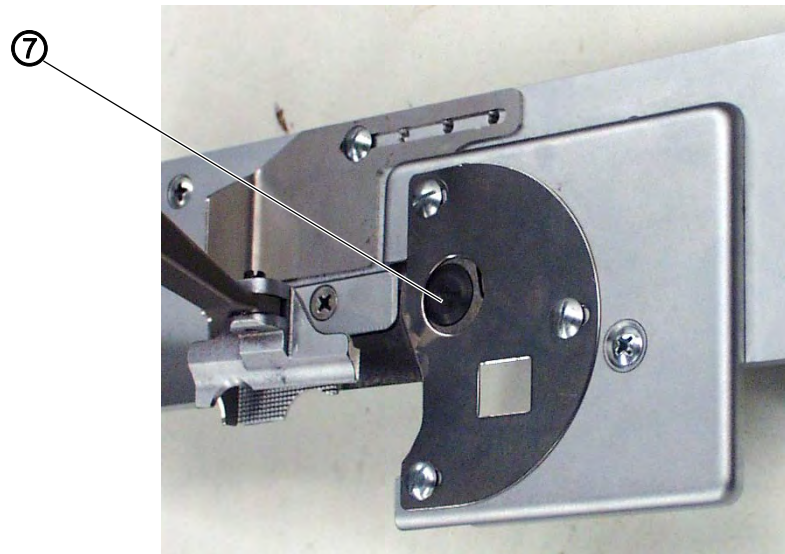
(7) - Screw

3. Tighten the nut (6).

4. Perform cutting test by hand with looper thread or gimp thread. When doing so, check the ease of movement of the blade.

Jaws

Fig. 108: Short cutter, setting the cutting pressure (6)
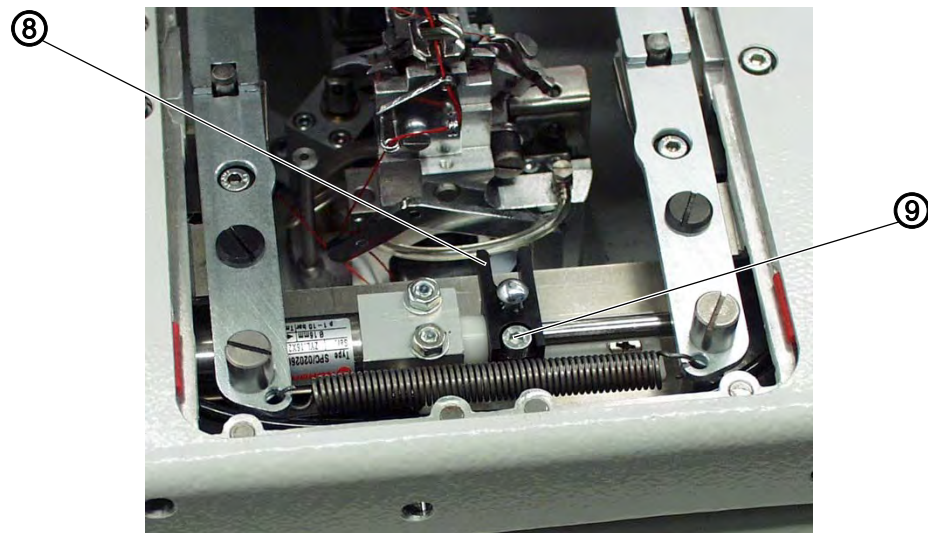
(8) - Guide   *(9) - Screw*

Step

1. Loosen the screw (9).

2. Move the guide (8) on the piston rod until this and the plastic connector lie against the cylinder.

3. Tighten the screw (9).

4.2.2 Setting the overlap

Richtige Einstellung

The cutting edges of both scissor blades (10) and (11) must move over each other before their turning point at a distance of approx. 1 mm.

It must be possible to insert the clamping plates without them becoming stuck.

Correction

Fig. 109: Short cutter, setting the overlap (1)
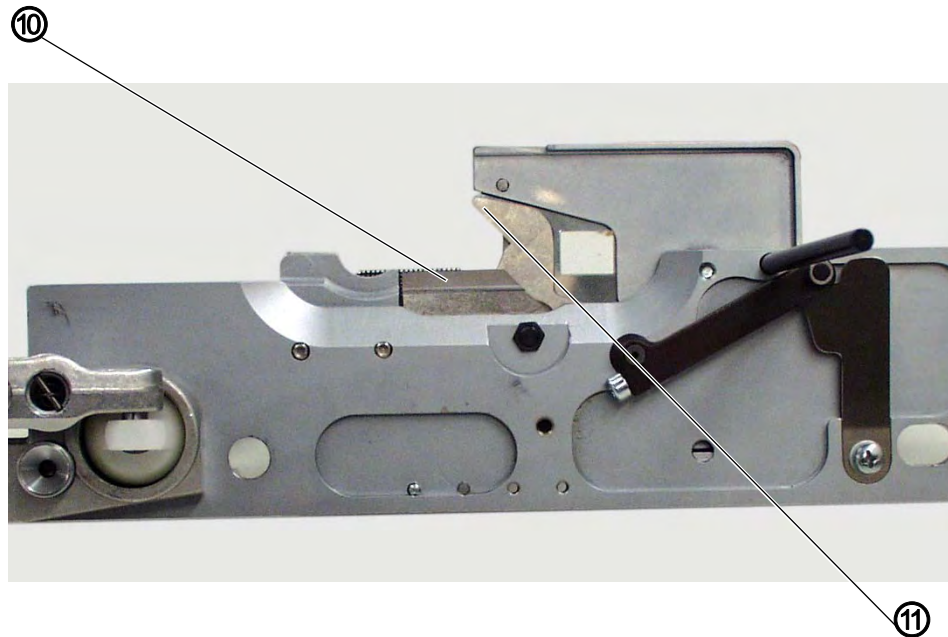
(10) - Scissor blade   (11) - Scissor blade

Step

1. Open the scissor blades (10) and (11) completely.

Fig. 110: Short cutter, setting the overlap (2)
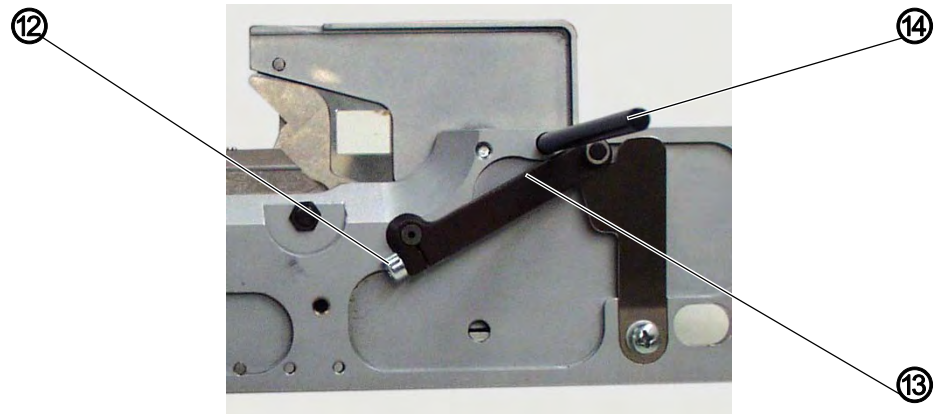
(12) - Screw   (14) - Locking pin
(13) - Lever

2. Loosen the screw (12).

3. Insert the locking pin (14) in the borehole.

4. Turn the lever (13) against the locking pin (14).

5. Tighten the screw (12).

4.2.3 Setting the looper thread clamp

Fig. 111: Setting the looper thread clamp (1)
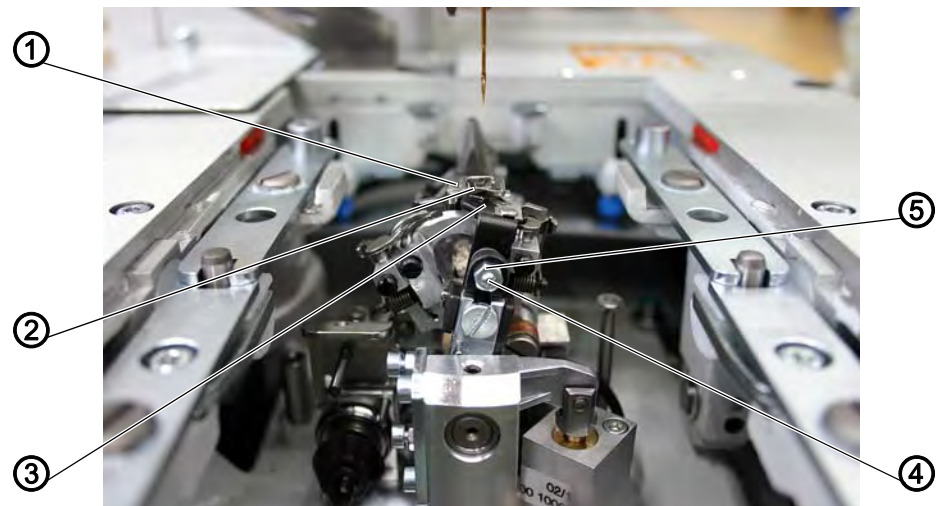
(1) - Throat plate   (4) - Screw
(2) - Thread slot   (5) - Nut
(3) - Looper thread clamp

After the sewing process, the needle thread blade associated with the looper thread clamp (3) performs the cutting movement.

With this cutting movement, the thread slot (2) is briefly cleared in the throat plate.

While the fabric support plate moves to the end position, the looper thread is pulled into the thread slot (2).

On the return movement of the needle thread blade, the thread clamp (3) moves to 1 mm beyond the edge of the thread slot (2) and holds the looper thread clamped.

Correction

Clamping pressure

Step

1. Loosen the nut (5).

2. Turn the screw (4) such that the looper thread clamp (3) which is under gentle spring pressure does not get stuck on the edge of the throat plate (1) on its return movement.

↳ The looper thread clamp (3) glides past the face of the throat plate (1) and its clamping pressure is effective.

3. Tighten the nut (5).

Right end position

Step

1. Loosen the nut (5).

Fig. 112: Setting the looper thread clamp (2)

(6) - Throat plate   (9) - Screw
(7) - Thread slot   (10) - Nut
(8) - Looper thread clamp
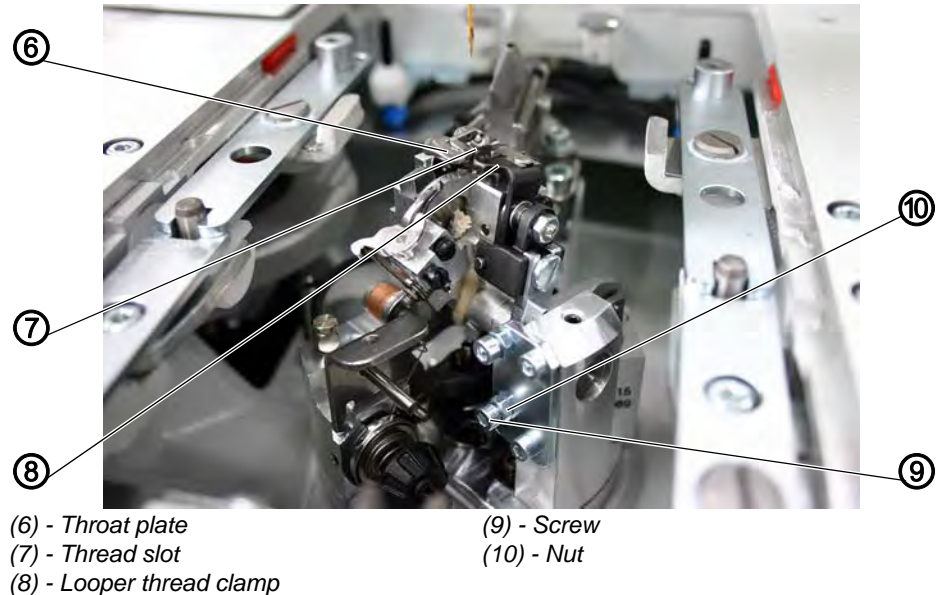
2. Turn the screw (9) until the right edge of the looper thread clamp (8) has moved into its right end position approx. 1 mm beyond the right edge of the recess at the thread slot (7).

3. Tighten the nut (10).

Height of the looper thread clamp

Fig. 113: Setting the looper thread clamp (3)

(11) - Throat plate   (14) - Screw
(12) - Thread slot   (15) - Holder
(13) - Looper thread clamp
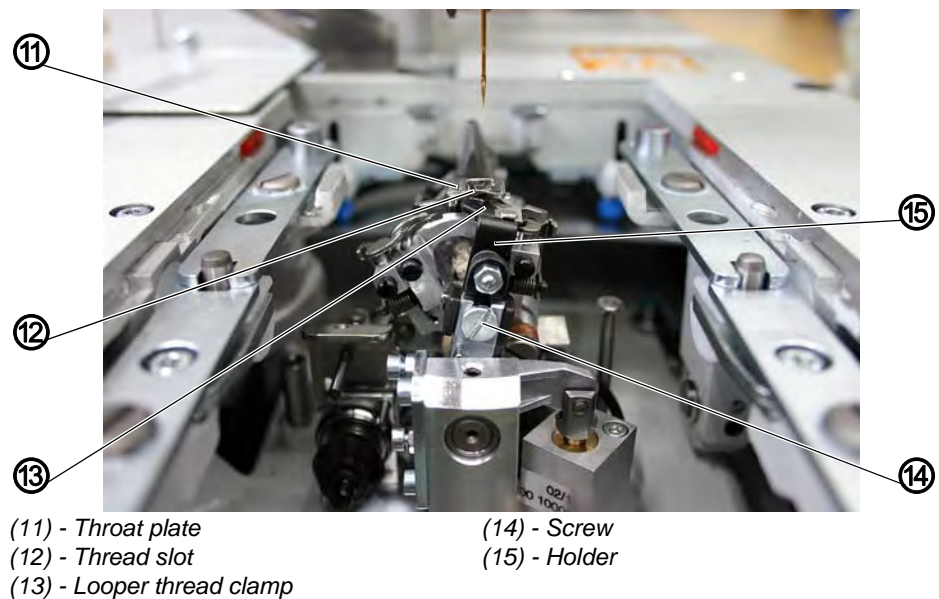
Step

1. Loosen the screw (14).

2. Set the holder (15) at a height whereby in the right-hand end position, the upper edge of the looper thread clamp (13) and the top side of the throat plate (11) are level with one another.

3. Tighten the screw (14).

4. By swiveling the holder (15) check whether the needle thread blade can move unhindered between the underside of the throat plate and the spreader/spreader end stop.

4.3   Setting the gimp advancing device

Only for the 581-141 and 581-341!

Fig. 114: Setting the gimp advancing device (1)
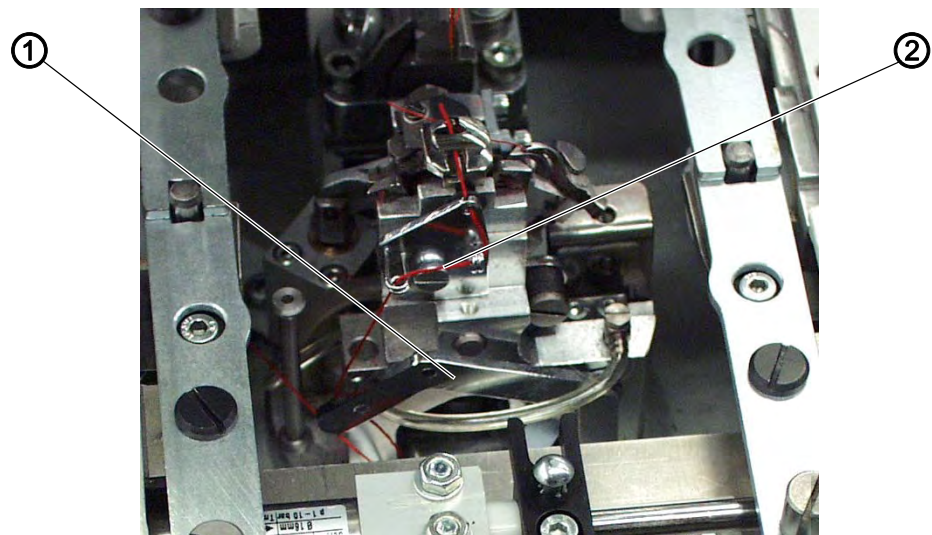
(1) - Drop weight   (2) - Gimp thread

Correct setting

The drop weight (1) pulls the gimp thread (2) back to the correct starting length.

The path of the drop weight must be limited by the screw (3) such that at the start of sewing, the gimp thread is as short as possible, but can still be securely sewn in.

This is the case when the gimp thread end extends approx. 4 mm out of the gimp thread hole of the throat plate.

Fig. 115: Setting the gimp advancing device (2)
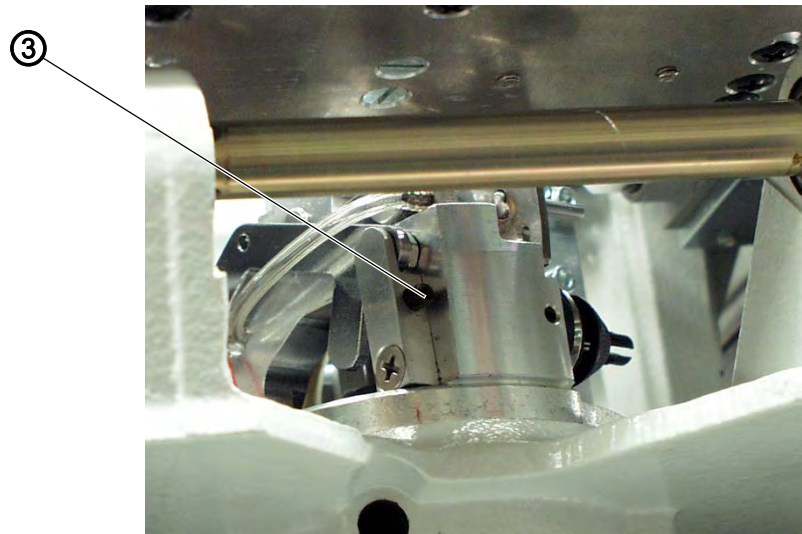
(3) - Screw

Correction

Step

1. Screw the screw (3) in = long gimp thread end.

Or:

1. Screw the screw (3) out = shorter gimp thread end.

4.4 Lengthening the end threads (sewing equipment)

Only for the 581-141 and 581-341!

The end threads from the buttonhole underside can be lengthened using a sewing equipment which is delivered with a spacer plate in the accessory pack.

Fig. 116: Lengthening the end threads (1)

(1) - Screws   *(2) - Cover*
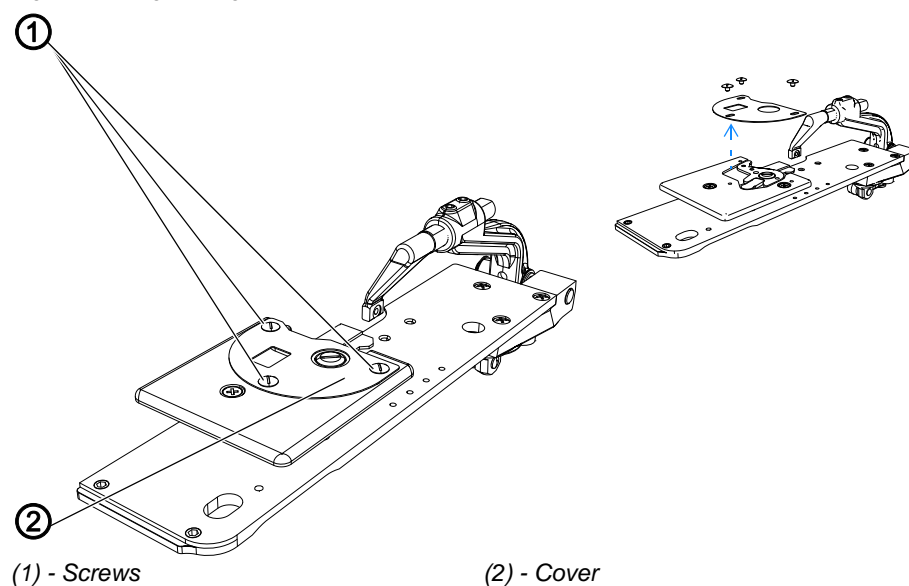
To lengthen the end threads:

Step

1. Loosen the screws (1) and remove the cover (2).

2. Screw the spacer plate (3) with the screws (4) onto the blade.

Fig. 117: Lengthening the end threads (2)

(3) - Spacer plate   *(5) - Cover*
(4) - Screws
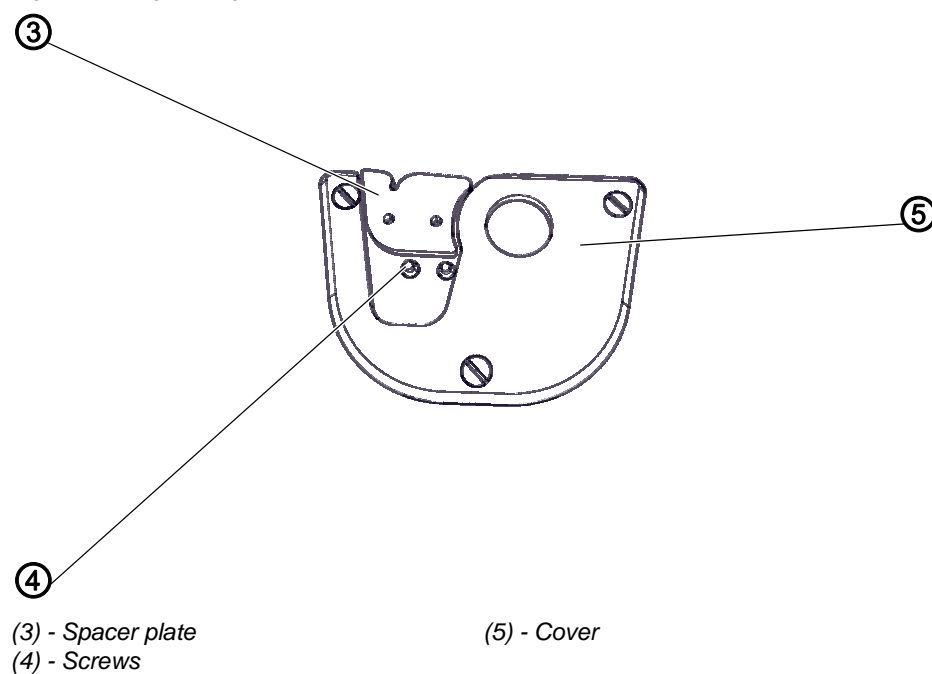
3. Secure the new cover (5) with the screws (1).

4.5 Short cutter for looper thread

Only for the 581-112 and 581-312!

After the seam end, the needle thread blade performs its cutting movement. Simultaneously, the short cutter is brought into the starting position (Fig. B) to cut the looper thread. In this process, the looper thread slides in front of the cutting edge of the blade.

After that, the short cutter is switched back (Fig. A). By switching back, the looper thread is caught and cut.

Fig. 118: Checking the short cutter
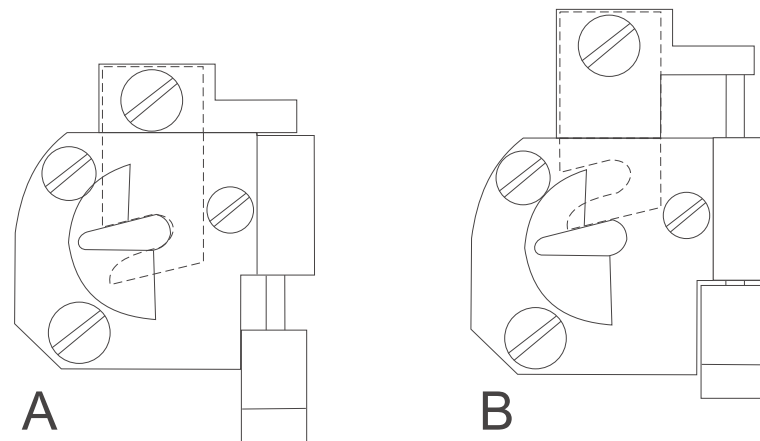
Correct setting

To ensure that the looper thread is securely clamped at the start of the seam, the spring must press the blade against the blade plate.

The clamping pressure must be set such that the looper thread is securely held. If the clamping pressure is set too high, the starting stitches are pulled too tightly together.

4.5.1 Setting the starting position

Correct setting

In both positions A and B of the short cutter, the blade (1) may not be visible in the throat plate hole (2) and the distance between the throat plate (4) and the fork (3) must be approx. 5 mm.

Fig. 119: Short cutter, setting the starting position (1)
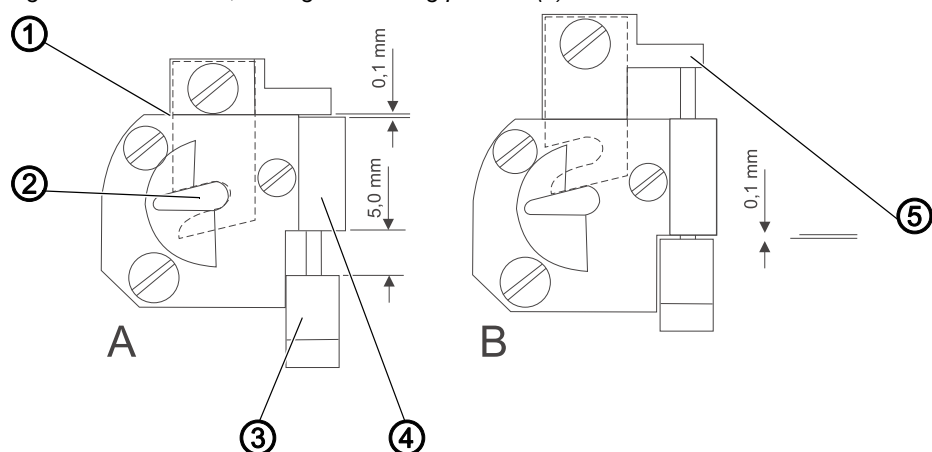
(1) - Blade
(2) - Throat plate hole
(3) - Fork

(4) - Throat plate
(5) - Blade holder

The fork (3) and the blade holder (5) may not touch the throat plate (4) in any position of the blade (1).

To check that the setting is correct:

Step

1. Switch on the machine.

✍ The short cutter is in the starting position A.

WARNING
Risk of injury from moving, cutting and pointed parts.
Crushing, cutting and puncture wounds possible.
When performing settings on the running machine, do so with great caution.

2. Check the blade position in the throat plate. The blade (1) may not be visible in the throat plate hole (2).

3. Check the distance between the blade holder (5) and the throat plate (4) (Fig. A).

4. Check that the dimension between the fork (3) and the throat plate (4) is 5 mm.

5. Start an output test on the control panel (📖 *5.10.6 Multitest*, p. 149).

6. Select the function *Y00*.

7. Press the OK key.

✍ The short cutter and the needle thread cutter are switched simultaneously.

8. Check the blade position in the throat plate. The blade (1) may not be visible in the throat plate hole (2).

9. Check the distance between the fork (3) and the throat plate (4) (Fig. B).

Correction

Fig. 120: Short cutter, setting the starting position (2)
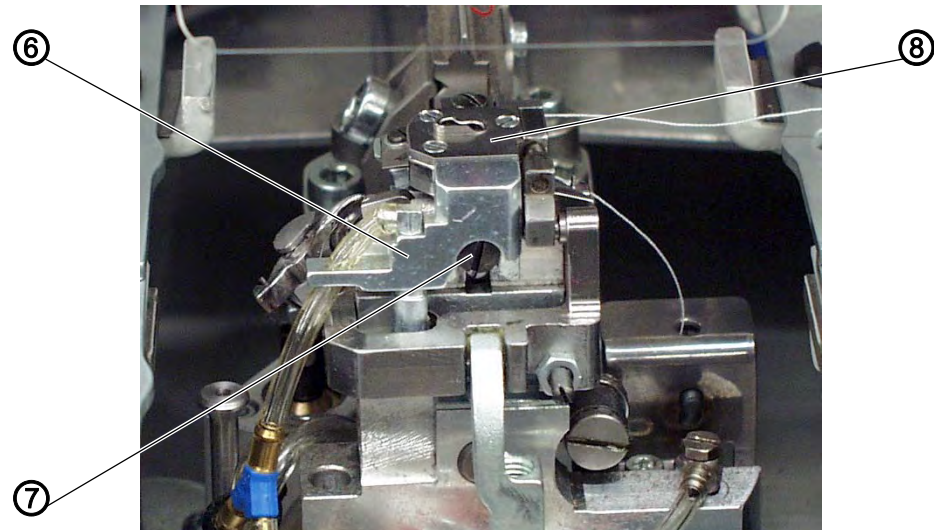
(6) - Air suction device   (8) - Throat plate
(7) - Screw

Step

1. Loosen the screw (7).

2. Remove throat plate (4) and air suction device (6).

3. Turn the fork (3) such that the dimension is 5 mm.

NOTICE

Property damage due to not being properly secure.

During operation, the thread of threaded parts can come loose of its own accord.

Secure threaded parts with adhesive.

Fig. 121: Short cutter, setting the starting position (3)
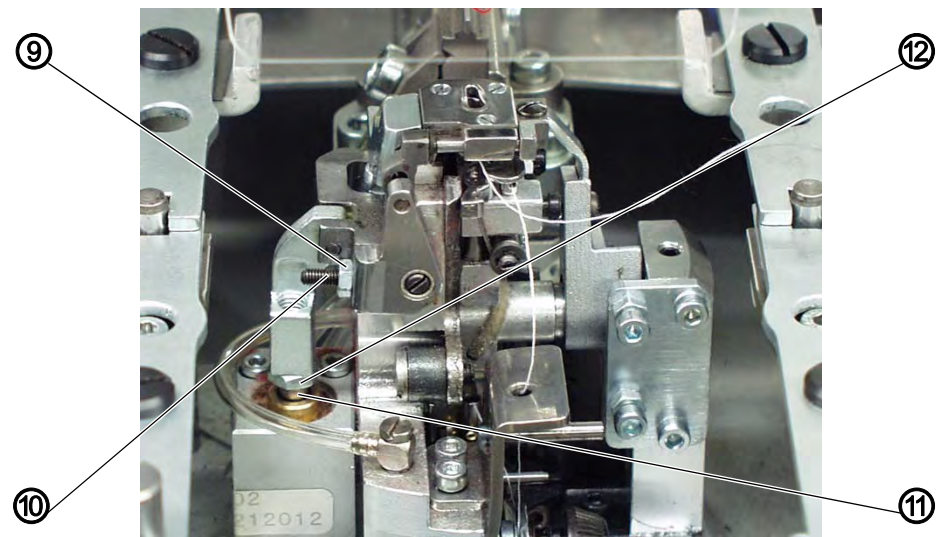
(9) - Nut
(10) - Screw

(11) - Piston rod
(12) - Nut

Correction, starting position A

Step

1. Loosen the nut (9).
2. Turn the screw (10).
3. Tighten the nut (9).

Correction, switching position B

Step

1. Loosen the nut (12).
2. Turn the piston rod (11).
3. Retighten the nut (12).

4.5.2 Setting the cutting pressure

✓ **Correct setting**

The cutting pressure must be set such that the looper thread is cut cleanly and clamped. If the cutting pressure is too high, this can lead to increased wearing of the blade and to the starting stitches being pulled together too tightly.

Correction

Fig. 122: Short cutter, setting the cutting pressure (1)

(1) - Air suction device   (3) - Throat plate
(2) - Screw
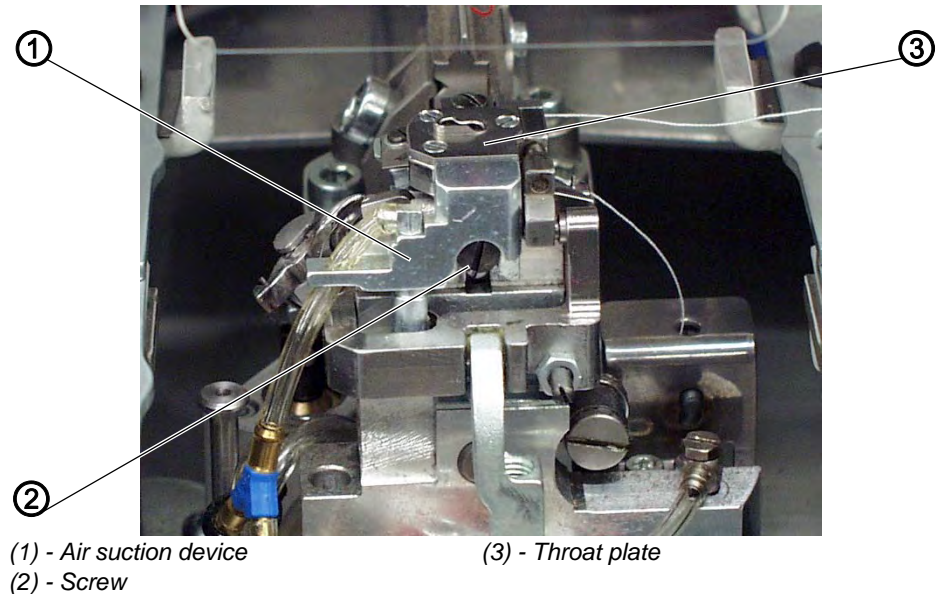
🔧 **Step**

1. Loosen the screw (2).

2. Remove throat plate (3) and air suction device (1).

3. Open the slide (5) of the throat plate (3) by hand so that the slide is in Position B.

Fig. 123: Short cutter, setting the cutting pressure (2)

(4) - Throat plate hole   (5) - Slide
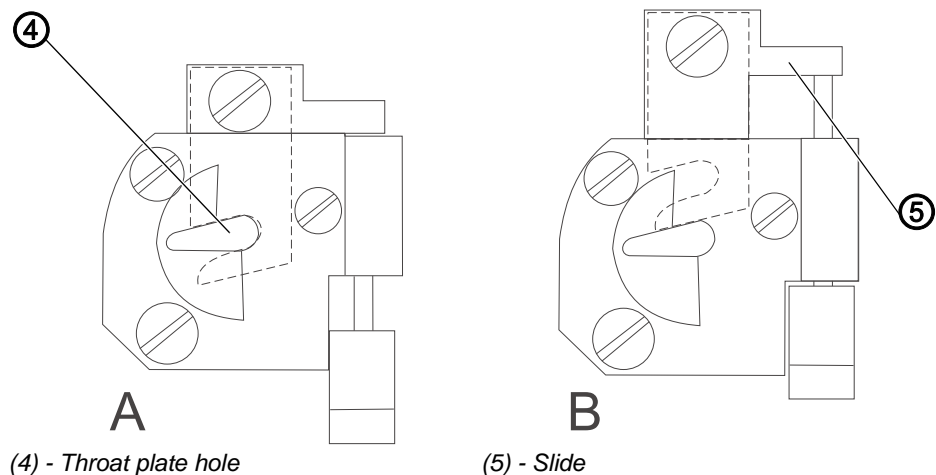
4. Guide the looper thread through the center of the throat plate hole (4).

5. Move the slide (5) by hand to produce Position A. When pushing, you should be able to feel a light pressure. The looper thread must be cut through completely and caught after cutting.

6. Loosen the screw (7).

7. Move the spring plate (6).

Fig. 124: Short cutter, setting the cutting pressure (3)
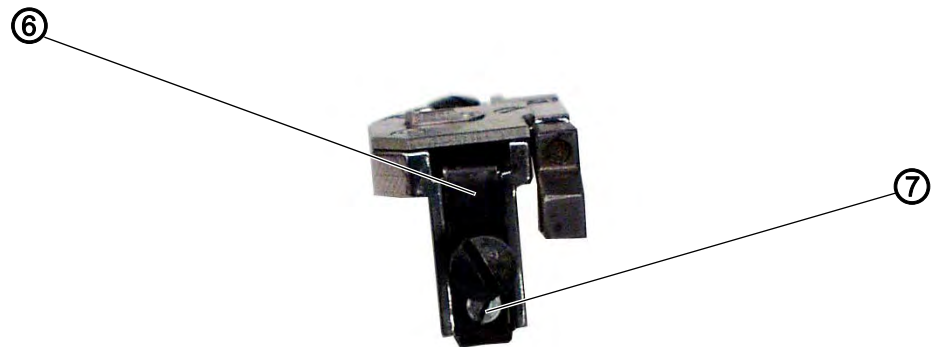
(6) - Spring plate   *(7) - Screw*

8. Tighten the screw (7).

9. Re-insert the throat plate (3) and air suction device (1) and secure with the screw (7).

4.5.3 Changing the blade

Fig. 125: Short cutter, changing the blade
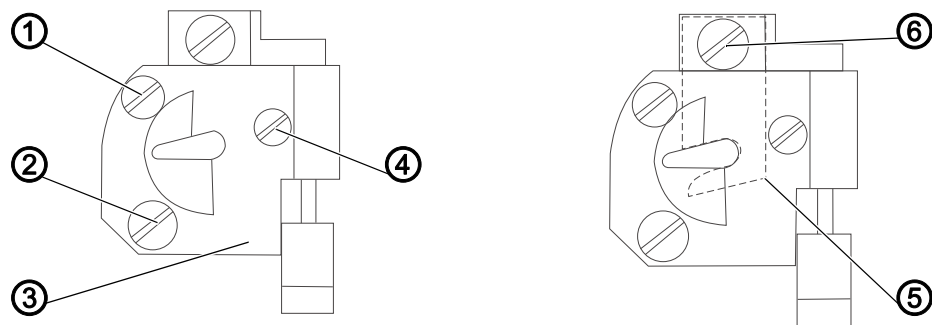
(1) - Screw   *(4) - Screw*
(2) - Screw   *(5) - Blade*
(3) - Blade plate   *(6) - Screw*

The parts of the blade set can be replaced if required:

• Spring plate

• Blade plate

• Blade

To replace the blade set:

Step

1. Loosen the screws (1), (2) and (4) of the blade plate.
2. Remove the blade plate (3).
3. Loosen the screw (6).
4. Remove the blade (5).
5. Insert the new blade (5) and tighten with screw (6).
   There must be a sleeve on the screw (6).
   The blade must be attached to the slide such that it is movable.
6. Position the new blade plate (3) and tighten with screws (1) and (4).
7. Using the screw (2) set the cutting pressure (📖 *S. 57*).

5 Programming

5.1 Software description

There are 2 modes at user level:

• Sequential mode
• Single buttonhole mode

The main menu comprises the following fields depending on the mode:

• Sequential number (1) or buttonhole number (8)
• Buttonhole sequence (2) or empty row
• Thread tension (7)
• Cutting length or eyelet diameter (6)
• Cutting mode (5)
• Counter (4)

Fig. 126: Sequential mode
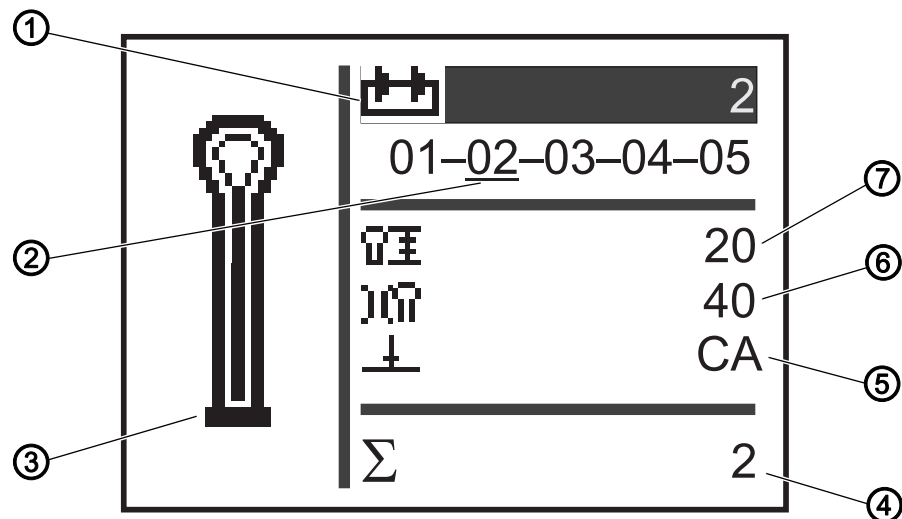
(1) - Sequential number
(2) - Buttonhole sequence
(3) - Buttonhole shape
(4) - Piece counter

(5) - Cutting mode
(6) - Cutting length
(7) - Thread tension

Fig. 127: Single buttonhole mode
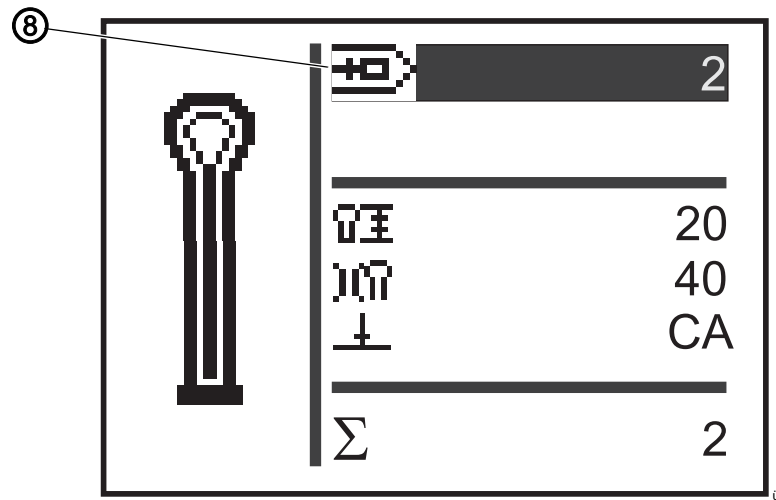
(8) - Buttonhole number

It is possible to see which field is active by the white lettering on a dark background.

For subclasses 312, 321 and 341, there is also monoflex mode, as 2 blade positions are possible.

Active monoflex mode is indicated by display of a bar next to the buttonhole shape:

Fig. 128: Monoflex mode
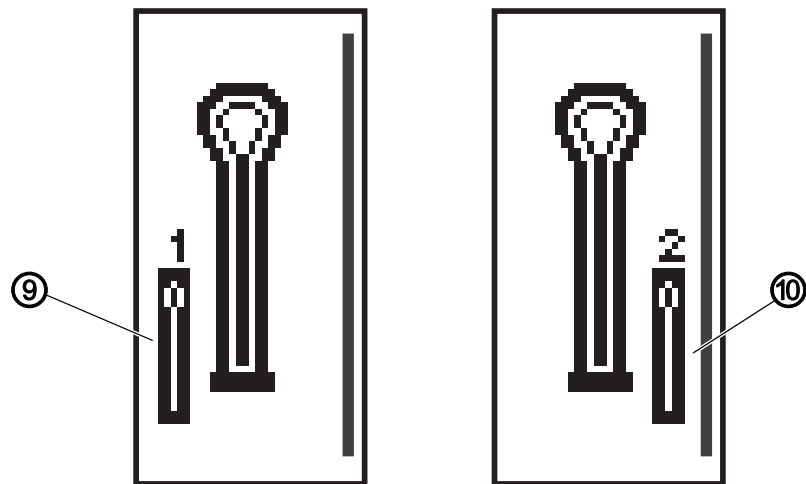
(9) - Blade position 1   *(10) - Blade position 2*

5.1.1 Structure

The machine menu is divided into levels. In the main menu, the most important information for sewing operation is displayed (user level).

There are further levels in addition to the user level:

• Setting mode, to program buttonholes (P level)
• Setting mode, to program buttonhole sequences (S level)
• Service mode, to perform service work (F level); this is password-protected

A menu item in these levels can also contain further sub-menu items.

5.1.2 Operating modes

Depending on the setting, when the machine is in sequential mode it will be in one of the following operating modes:

• Automatic operation
• Manual operation
• Light barrier mode (if available)

Automatic operation

In the sequence shown on the display, arrows are displayed between the buttonhole shapes. It is possible to see the currently selected buttonhole from the bar below the number.

Fig. 129: Display for automatic operatio

$$05 \rightarrow \underline{09} \rightarrow 02 \rightarrow 04$$

After sewing a buttonhole, the control changes automatically to the next buttonhole shape. After sewing the last buttonhole, the control changes back to the first buttonhole shape within the sequence.

Manual operation

In the sequence shown on the display, lines are displayed between the buttonhole shapes. It is possible to see the currently selected buttonhole from the bar below the number.

Fig. 130: Display for manual operation

$$05 - \underline{09} - 02 - 04$$

The control does **not** change automatically between the buttonhole shapes. Changes are made manually using the buttons ◀ or ▶.

Light barrier mode

If the light barrier kit is installed, it is possible to work in light barrier mode.

Either the lapel or the front edge is detected by 2 light barriers, and the corresponding program is automatically selected.

Precisely 2 programs must be entered in the sequence. Light barrier mode can be recognized by the symbol (1).

Fig. 131: Light barrier mode
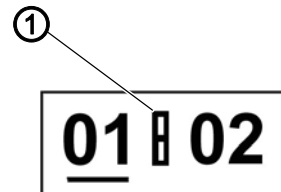
(1) - Symbol

5.2 User level

On the user level, the most important information for sewing operation is displayed.

5.2.1 Basic operation

You can change the values at user level by pressing the corresponding button on the control panel (📖 *S. 16*).
Depending on where the cursor is positioned, the values change either in 1-step or 10-step increments.

Depending on the setting in the sequence menu, either sequential mode or single buttonhole mode is available (📖 *S. 119*).

You can tell which mode is activated by the fact that it is highlighted in the topmost field of the display after switching on (📖 *S. 112*).

5.2.2 Single buttonhole mode

On the user level, you can select a buttonhole from 50 pre-programed buttonholes.

Fig. 132: Single buttonhole mode
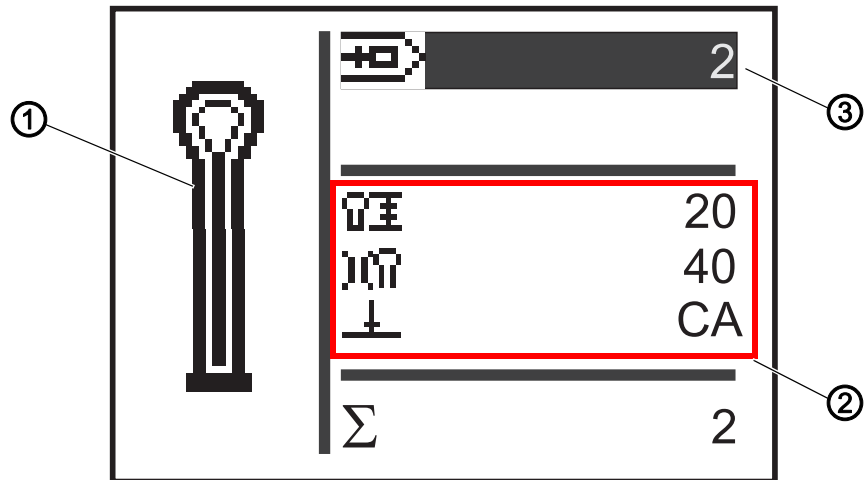
(1) - Buttonhole shape   *(3) - Buttonhole number*
(2) - Values

To select a pre-programmed buttonhole:

1. Using the ▲ button, navigate to the field **Buttonhole number** (3).

2. Press the OK button.

 The cursor flashes.

3. Select the desired buttonhole number using the buttons ▲ or ▼.
   As a selection aid, the current buttonhole shape (1) and the most important corresponding values (2) are displayed.

4. Confirm the selection with the OK button.

5.2.3 Sequential mode

Depending on the setting, the machine will be in either automatic, manual or light barrier mode (*S. 112*). In sequential mode you can switch between programmed buttonholes in the sequence at any time, unless you are working in light barrier mode.

There are 2 steps for selecting a buttonhole in sequential mode:

Order

1. Select a sequential number.
2. Select a buttonhole.

Fig. 133: Sequential mode

(1) - Buttonhole shape   (3) - Sequence
(2) - Values   (4) - Sequential number
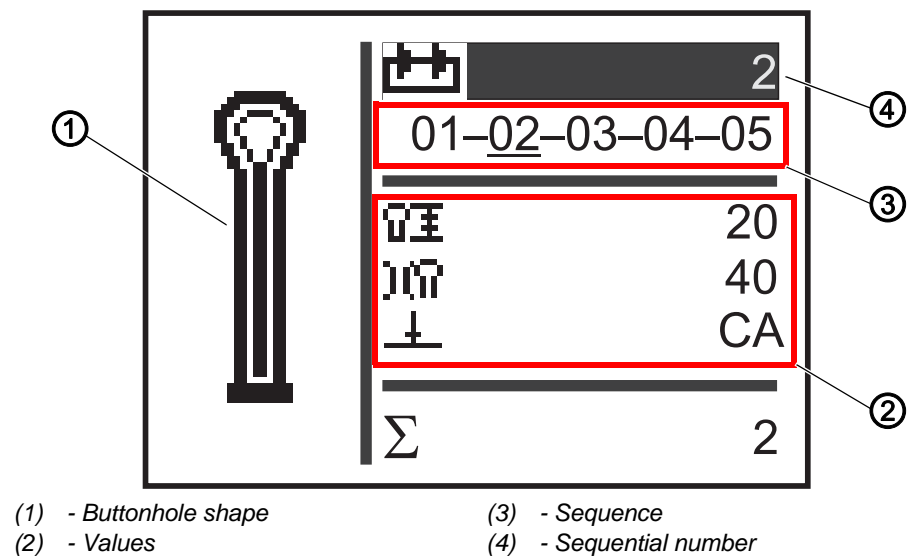
Selecting a sequential number

To select the sequential number:

1. Using the ▲ button, navigate to the field **Sequential number** (4).

2. Press the OK button.
   The cursor flashes within the desired row.

3. Select the desired number using the buttons ▲ or ▼.

4. Confirm the selection with the OK button.

Selecting a buttonhole

To select a buttonhole:

1. Select the buttonhole within the sequence shown using the buttons ◀ or ▶.

   ✎ The desired buttonhole is marked with a bar.
   As a selection aid, the current buttonhole shape is displayed in the **Buttonhole shape** (1) field and the corresponding values are displayed in the **Values** (2) area.

Selecting the operating mode

To select the operating mode:

1. Use the buttons ▲ or ▼ to navigate to the field **Sequence** (3).

2. Press the OK button.

3. Use the button ▲ to change the operating mode.

   ✎ The arrows between the buttonhole shapes appear or disappear as appropriate.

4. Confirm the selection with the OK button.

5.2.4 Setting the cutting length

On the display, the field (1) indicates the cutting length. You can set the cutting length.

Fig. 134: Setting the cutting length in sequential mode
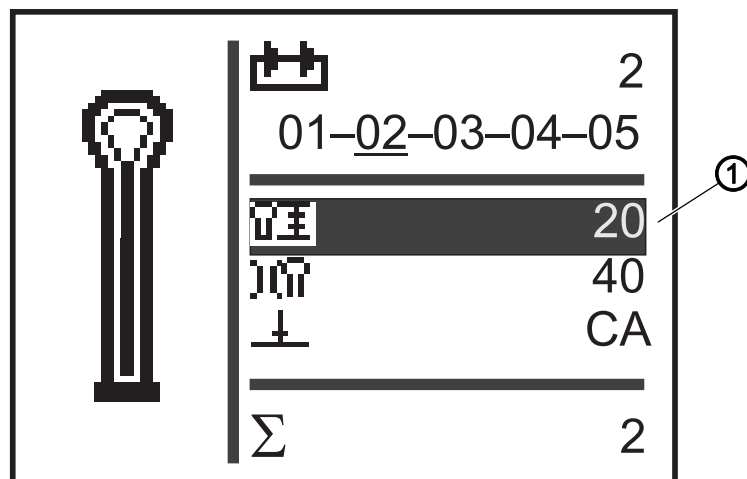
(1) - Cutting length

To set the cutting length:

1. Use the button ▼ to navigate to the field **Cutting length** (1).

2. Press the ⏺ button.

↳ The cursor flashes.

3. Use the buttons ▲ or ▲ to set the desired value.

4. Confirm with the ⏺ button.

5.2.5 Setting the thread tension

On the display, the field (1) indicates the thread tension during sewing. You can set the thread tension.

Fig. 135: Setting the thread tension in sequential mode
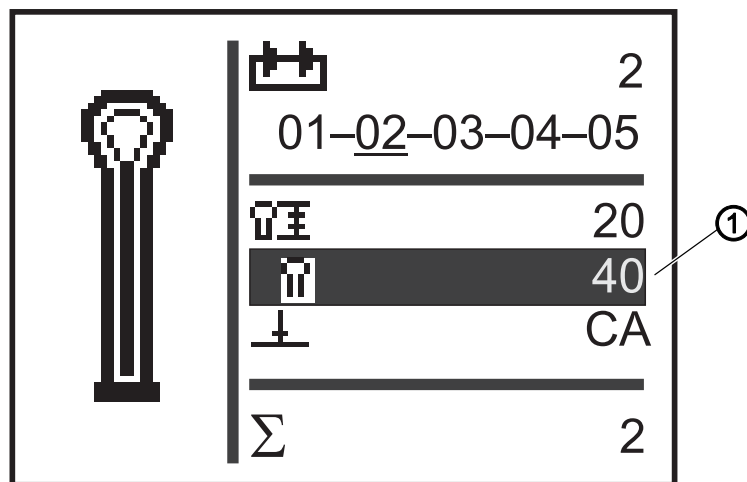
(1) - Thread tension field

To set the thread tension:

1. Use the button ▼ to navigate to the field **Thread tension** (1).

2. Press the ⏺ button.

↳ The cursor flashes.

3. Use the buttons ▲ or ▼ to set the desired value.

4. Confirm with the ⏺ button.

5.2.6 Setting the cutting mode

On the display, the field (1) indicates the cutting mode. The cutting mode determines when and whether a buttonhole is to be cut during the sewing process.
For cutting mode, you can switch between the following parameters:

Parameters for cutting mode

Parameter	Function
0	= No cutting
CA	= Cut after the seam end (Cut After)
CB	= Cut before the seam beginning (Cut Before)

Fig. 136: Setting cutting mode in sequential mode
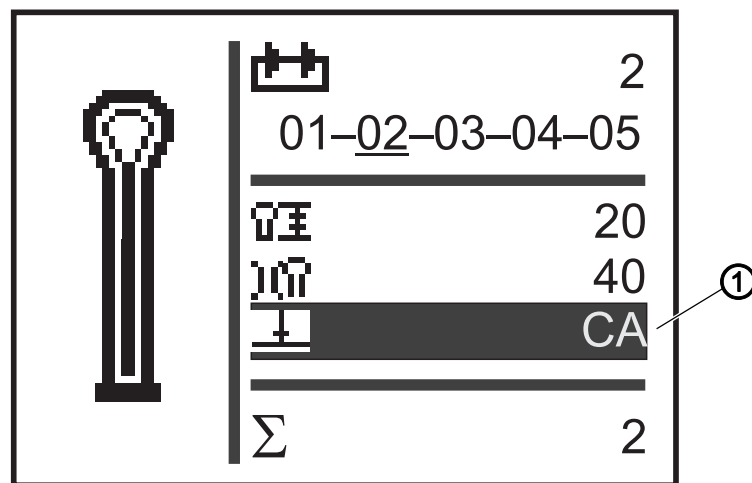
(1)   - Cutting mode

To set the cutting mode:

1. Use the ▼ button to navigate to the field **Cutting mode** (1).

2. Press the ⏺ button.

   ⤷ The cursor flashes.

3. Use the buttons ▲ or ▼ to set the desired value.

4. Confirm with the ⏺ button.

5.2.7 Resetting the piece counter

The machine is equipped with a piece counter that counts the number of sewn buttonholes. After the Σ symbol (1) the current value (e.g. 2) is displayed. The piece counter value is retained after the machine is switched off.

The piece counter counts up to a maximum of 9999 buttonholes. When this value is exceeded, the count starts again at 0.

Fig. 137: Resetting the piece counter
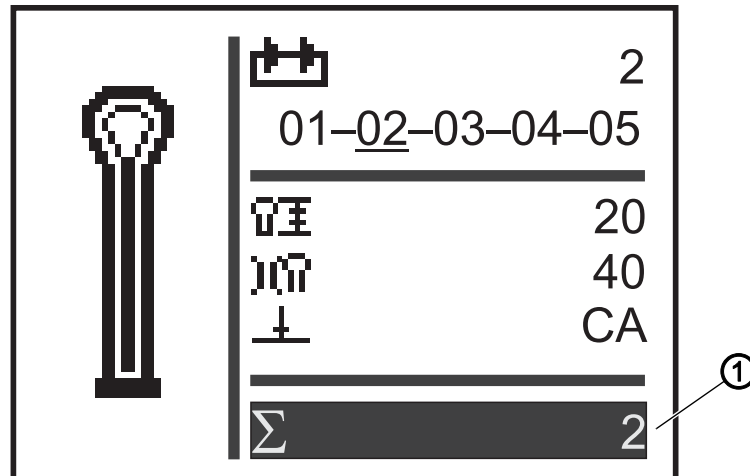
(1)   - Piece counter field

To reset the piece counter:

1.   Use the ▼ button to navigate to the field **Piece counter** (1).

2.   Press the [OK] button.

↳   The menu bar changes.

3.   Hold the [OK] button for approx. 2 seconds.

↳   The piece counter is set to *0* and the display changes back to the main menu (📖 *S. 113*).

5.3   Buttonhole programming

The buttonholes are programmed on the P level.
The respective characteristics of the buttonhole, e.g. buttonhole length and eye shape, can be set for all bartack forms.

!   Important

Once you press the [OK] button, you can no longer sew!

!   Important

If you change the bartack form of a buttonhole program, all values of this buttonhole are reset to the preset value.

Information

Not all buttonhole shapes and variants can be sewn with every subclass or item of sewing equipment.

To program a buttonhole:

1. Press the 🆗 button.

 ✎ The setting mode for the individual buttonholes is started.

2. Using the button 🔼, navigate to the field **Buttonhole number** (📖 *S. 114*).

3. Press the 🆗 button.

4. Select the desired buttonhole number using the buttons 🔼 or 🔽.

5. Press the 🆗 button.

6. Using the buttons 🔼 or 🔽 select the bartack form ᵁˑᵁ.

7. Press the 🆗 button.

8. Select the desired bartack using the buttons 🔼 or 🔽.

Bartack forms

No bartack	Taper bar	Cross tack	Round tack	Eyelet
‖	Ψ	⊔	⊔	○

9. Confirm the selection with the 🆗 button.

Using the button ◀ you can move one level higher and set further values (see the following list of menu items and sub-menu items).

Or, you can quit the setting mode using the 🔲 button.

List of menu items and sub-menu items

Value	Description
	Length settings
	Cutting length: The cutting length can be adjusted, depending on the sewing direction, from 6 mm to max. 50 mm.
	Eyelet diameter (only for eyelet machines)
	Stitch length in the buttonhole seam: Distance from stitch to stitch within the seam (from 0.5 mm to 2 mm).
	Number of stitches in the eyelet (only for eyelet machines): Number of evenly distributed stitches in the entire eyelet.
	Overlap in the eyelet (only for eyelet machines): Overlap of seam beginning and seam end.
	Thread cutting length: The length of the needle thread and of the looper thread end can be changed on the 581-112 or 581-312 on the buttonhole underside. Condensing stitches increase the seam safety at seam beginning and seam end.
	Stitch length of the condensing stitches at seam beginning: Distance from stitch to stitch within the condensing at seam beginning.
	Stitch length of the condensing stitches at seam end: Distance from stitch to stitch within the condensing at seam end.
	Number of condensing stitches at seam beginning: Number of stitches within the condensing at seam beginning.
	Number of condensing stitches at seam end: Number of stitches within the condensing at seam end.
	Needle thread tension
	Sewing tension: Electronically regulated sewing tension within the sewing cycle.
	Cutting tension: Reduced needle thread tension for the needle thread cutter.
	Sewing start tension: The length of the initial thread inserted can be regulated by changing the thread tension at the start of sewing.
	Eye settings
	Eye shape: 7 different eye shapes can be programmed.
	Number of stitches in the eye: Min. 4 to max. 25 stitches can be set in the rounding of the buttonhole eye.

Value	Description
	Eye angle: The buttonhole eye can be inclined slightly to the left or right.
	Zigzag stitch adjustment: The mechanically set zigzag stitch width can be reduced by up to 1.0 mm or increased by up to 0.5 mm.
	Cutting settings
	Cutting mode: Depending on the sewing direction, the buttonhole can be cut either after (CA), before (CB) or not at all (0).
	Cutting area: Distance between the two inner punctures of the forward and return seam.
	Multiflex mode cutting range: 1 = Total cut, 2 = Middle cut, 3 = Eye cut or edge cut/bar cut
	Cutting length for total cut: The cutting length can be shorted by max. 2 mm.
	Cutting position for middle cut: The position can be specified as a percentage and increases from the eye position (0 %) to the rearmost position (100 %).
	Cutting correction in the x-direction: The blade position within the buttonhole can be pushed to the left or right.
	Cutting correction in the y-direction: The blade position within the buttonhole can be pushed forward or back.
	Cutting pressure correction: Automatic adjustment (4 stages) of the cutting force for the buttonhole blade depending on the buttonhole length. - up to 14 mm buttonhole length (eyelets) 2 stages - from 15 mm to 30 mm buttonhole length 3 stages - from 31 mm buttonhole length 4 stages In this menu item, you can increase or reduce the preset cutting force, depending on the buttonhole length.
	Flexible cutting: Monoflex mode 581-312 or 581-321 or 581-341
	Taper bar settings
	Taper bar length: The taper bar length can be adjusted, depending on the sewing direction and buttonhole length, from 2 mm to max. 36 mm.
	Zigzag stitch width in the taper bar: The zigzag stitch width applicable for the entire buttonhole can be reduced in the taper bar.
	Overlap in the taper bar: Overlap of the forward and return seams in the taper bar.
	Height of the bartack incline: The length of the taper in the bartack is adjustable.

Value	Description
	Cross tack settings
	Cross tack length: Total length of the cross tack. The setting range is automatically adjusted depending on the selected cutting space and the zigzag stitch width.
	Stitch length in the cross tack: Distance from stitch to stitch within the cross tack (from 0.5 mm to 2 mm).
	Zigzag stitch width in the cross tack: The zigzag stitch width can be reduced or increased in the cross tack.
	x-position of the cross tack: The entire cross tack can be moved slightly to the left or right.
	Seam length in the cross tack: Overlap of the forward and return seams with the cross tack.
	Round tack settings
	Number of stitches in the round tack: Min. 6 to max. 12 stitches can be set in the round tack or 4 to 10 stitches in the lower semi-circle.
	Zigzag stitch width in the round tack: The zigzag stitch width applicable for the entire buttonhole can be reduced in the round tack.
	Seam start position: The seam beginning can be either in the round tack or within the forward seam.
	Overlap in the seam: Overlap of seam beginning and seam end in the seam.
	Seam starting position within the seam: Position of the seam beginning within the forward seam can be changed from the start of the seam (100 %) to the eye (0 %).
	Overlap in the round tack: Overlap of seam beginning and seam end in the round tack.
Gimp	**Gimp monitoring (only for additional equipment 581-141 and 581-341):** Monitoring on/off, as to whether the gimp thread is inserted.
	Following buttonhole: Number of the buttonhole that is sewn directly after this buttonhole without opening the clamps. This makes it possible to carry out double passes.
	Speed: Revolutions per minute.

5.4 Sequence programming

The sequences are programmed on the S level.

Important

Once you press the ⑤ button, you can no longer sew!

To program a sequence:

1. Press the ⑤ button.
↳ The setting mode for the individual sequences is started.

2. Use the △ button to navigate to the **Sequential number** field (▢ *S. 115*).

3. Press the ⓄⓀ button.
↳ The following appears on the display:

Fig. 138: Programming sequences (1)
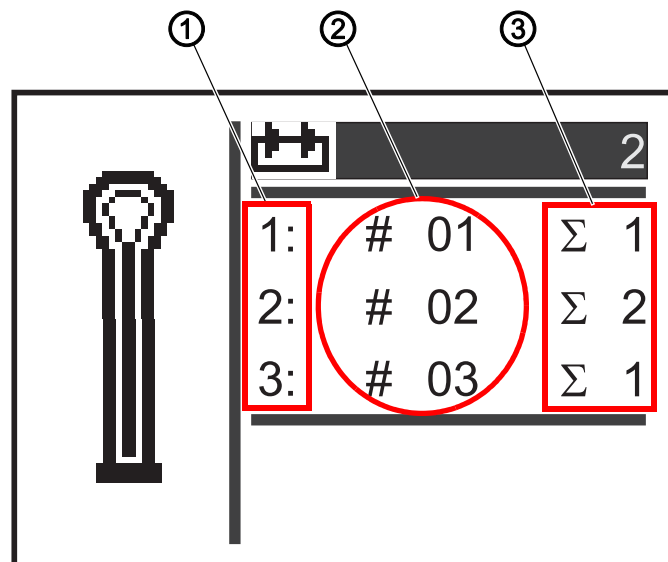
(1) - Position within the sequence   *(3) - Number of buttonholes*
(2) - Buttonhole number

4. Select the desired sequential number using the buttons △ or ▽.

5. Press the ⓄⓀ button.
↳ The following appears on the display:

Fig. 139: Programming sequences (2)
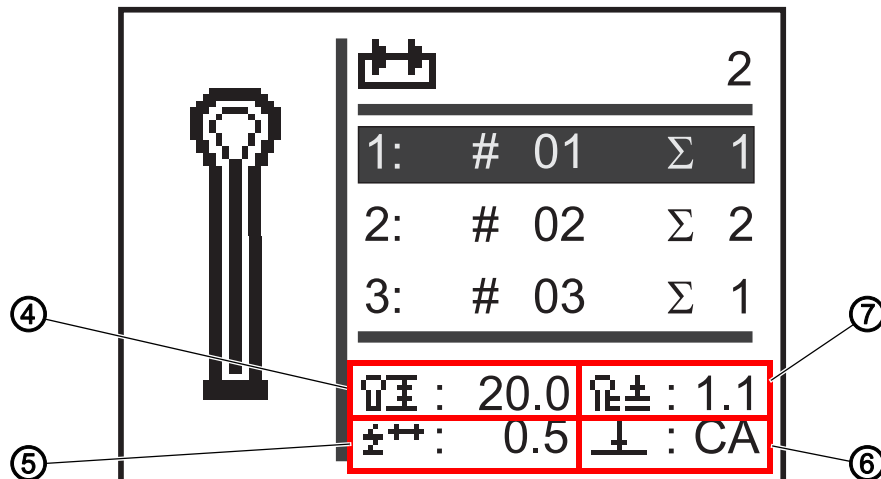
(4) - Cutting length	(6) - Cutting mode
(5) - Zigzag stitch adjustment	(7) - Stitch length

6. Use the buttons ▲ or ▼ to select the position desired for the buttonhole within the sequence (1st column of the display).

↳ The cursor shows the current position.

7. Press the OK button.

8. Use the buttons ▲ or ▼ to select the desired buttonhole number (2nd column of the display).

↳ The buttonhole shape is displayed.

9. Press the OK button.

10. Use the buttons ▲ or ▼ to set the desired number of buttonholes (3rd column of the display).

11. Confirm with the OK button.

You can add further buttonhole programs. Start again with step 1.

5.4.1 Deleting a buttonhole at the end of a sequence

To delete a buttonhole at the end of a sequence:

1. Use the buttons ▲ or ▼ to select the last but one line of the programmed buttonhole sequence.

2. Press the OK button.

3. Use the buttons ▲ or ▼ to select the buttonhole program *0*.

4. Confirm with the 🆗 button.

✎ The selected buttonhole is deleted.

When you want to quit setting mode, press the ⎋ button. This will take you back to the user level.

5.4.2 Adding a buttonhole at the end of a sequence

To add a buttonhole at the end of a sequence:

1. Use the ▼ button to select the last line of the programmed buttonhole sequence.

2. Press the 🆗 button.

3. Select the desired buttonhole program using the buttons ▲ or ▼.

4. Press the 🆗 button.

When you want to quit setting mode, press the ⎋ button. This will take you back to the user level.

5.4.3 Inserting a buttonhole within a sequence

It is not possible to insert buttonholes individually into the sequence. Note the current sequence programming and change the sequence accordingly (📖 *S. 119*).

You can also switch off sequential mode.

5.4.4 Switching off sequential mode

If you want to use single buttonhole mode instead of sequential mode, switch off sequential mode.

To switch off sequential mode:

1. Press the Ⓢ button.

2. Use the button ▲ to navigate to the field **Sequential number** (📖 *S. 115*).

3. Press the 🆗 button.

4. Use the ▼ button to select the sequential number *0*.

5. Press the 🆗 button.

✎ The sequential mode is switched off.

6. Press the ⎚ button.

✎ The setting mode is ended. This will take you back to the user level.

5.5 Service mode

In service mode, there are machine functions that can be used for servicing work. Service mode is password-protected in order to prevent unintentional incorrect machine settings.

To set the machine, you must make the following settings on the control panel:

• Subclass (📖 *S. 137*)

• Buttonhole without bartack

• Zigzag stitch = 0.0

• Cutting area = 0.0

5.6 Activating the technician level

In service mode, you have access to machine functions that can be used for servicing work. Service mode is protected with a code, in order to prevent unintentional incorrect machine settings during use. All settings in service mode are performed at technician level.

To enable the technician level:

1. Press the `F` button on the control panel.

ꙮ The input mask for the code appears on the display.

2. Using the arrow buttons enter the code 2548.

3. Press the `OK` button.

ꙮ The service menu appears on the display:

Fig. 140: Activating the technician level
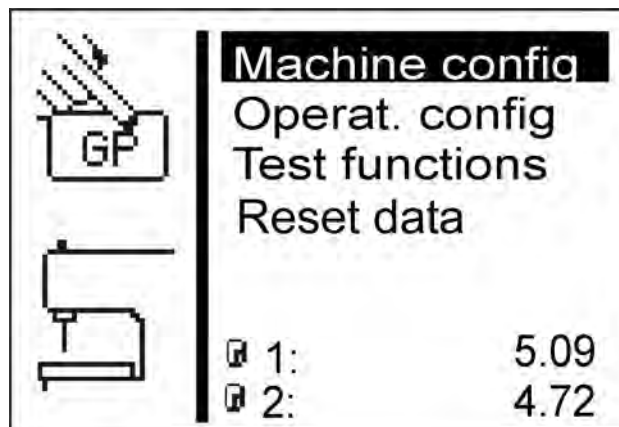
You can select the individual menus using the arrow buttons. The selected menu is activated by pressing the `OK` button.

To exit service mode:

1. Press the 🔲 button.
   ↳ The control switches back to the main menu.

5.7 Buttonhole cycle

On the technician level, you can check the cycle time of a buttonhole or the net sewing time required to finish a buttonhole.

Fig. 141: Buttonhole cycle
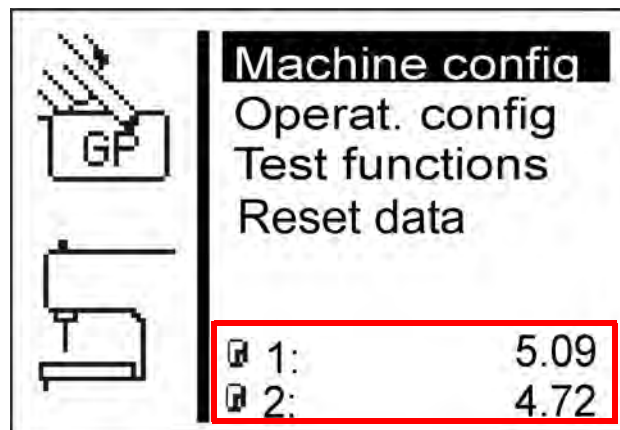
To view the buttonhole cycle:

1. Activate the technician level (📖 *S. 128*).
   ↳ The bottom portion of the screen shows 2 time entries.
   - ▣ 1: Cycle time (measured from the time sewing starts to the time the upper material clamps open)
   - ▣ 2: Sewing time (measured from the time sewing starts to the time sewing ends)
   ↳ Changes to the parameters have an effect on cycle time and sewing time.

5.8   Menu structure

The following table provides an overview of the menu structure in the service menu.

Magenta: Menu items for technician-level settings and information.

Structure of the OP5000 service menu

Menu item	Numerical	Function	Subitems	Subitems	Reference
Machine config	1	Used to stipulate the basic settings of the machine which shall apply in all programs			📖 *S. 132*
	1.1		Load. pos.		📖 *S. 132*
	1.2		ZZ range		📖 *S. 134*
	1.3		Thread mon.		📖 *S. 135*
	1.4		Cut. time		📖 *S. 136*
	1.5		E-group		📖 *S. 137*
	1.5.1			Subclass	
	1.5.2			Equipment	
	1.6		Threading pos.		📖 *S. 139*
	1.6.1			Standard	
	1.6.2			Parallel	
	1.7		Operation mode		📖 *S. 140*
	1.7.1			Standard	
	1.7.2			Sample	
	1.7.3			Tandem	
	1.7.4			Indexer	
	1.8		Tension data		📖 *S. 141*
	1.9		Multiflex		📖 *S. 142*
	1.9.1			Mode	
	1.9.2			X-Corr. L	
	1.9.3			X-Corr. R	
	1.9.4			Y-Corr.	
	1.9.5			Blocklength	
	1.9.6			Knife L	
	1.9.7			Knife R	
	1.10		ZZ offset		📖 *S. 143*
	1.11		Cut control		📖 *S. 144*
	1.12		Spec.funct.		📖 *S. 144*

Menu item	Numerical	Function	Subitems	Subitems	Reference
User config.	2	Used to change language, and technical settings			📖 *S. 145*
	2.1		Language		📖 *S. 145*
	2.1.1			Deutsch	
	2.1.2			English	
	2.1.3			Numbers	
	2.2		Start Mode		📖 *S. 146*
	2.3		Sew.lamp		📖 *S. 147*
	2.4		Key tones		📖 *S. 148*
Test functions	3	Used to quickly check the input and output elements, change sewing processes and trace back events			📖 *S. 149*
	3.1		Multitest		📖 *S. 149*
	3.1.1			Output test	
	3.1.2			Input test	
	3.1.3			Auto input tst	
	3.1.4			Sew. motor tst	
	3.1.5			Step.motor tst	
	3.1.6			Flash test	
	3.1.7			RAM test	
	3.2		Sewing proc.		📖 *S. 155*
	3.2.1			Step by step	
	3.2.2			Start ref.	
	3.2.3			St.cont.operat	
	3.2.4			Looper adjust.	
	3.3		Import/Export		📖 *S. 161*
	3.3.1			Import	
	3.3.2			Export	
	3.4		Events		📖 *S. 161*
	3.4.1			All events	
	3.4.2			Latest events	
Data transfer	4	Load/save files			
	4.1		Import		📖 *S. 163*
	4.2		Export		📖 *S. 164*
Reset data	5	Reset data			📖 *S. 165*

5.9 Menu item `Machine config`

The menu item `Machine config` allows you to determine the basic settings for the machine which apply to all programs. In this menu item, the following subitems are available for selection:

- Load. pos. (📖 *S. 132*)
- ZZ range (📖 *S. 134*)
- Thread mon. (📖 *S. 135*)
- Cut. time (📖 *S. 136*)
- E-group (📖 *S. 137*)
- Threading mode (📖 *S. 139*)
- Operation mode (📖 *S. 140*)
- Tension data (📖 *S. 141*)
- Multiflex (📖 *S. 142*)

5.9.1 Load. pos.

In the subitem `Load. pos.` you can set the desired loading position.

Parameters in the `Load. pos.` subitem

Icon	Entry	Meaning	Possible Value range	Preset value
	Load. pos.	Loading position: Distance from the cutting point	0-68	68

To set the loading position:

1. Select (📖 *S. 128*) `Machine config` in service mode.

2. Press the OK button.

✦ The following appears on the display:

Fig. 142: Load. pos.

```
┌─────────────────────────────────┐
│  ┌─┐          Load.pos      68  │
│  │ │          Zig-zag        2  │
│  │ └─┐        Thread mon.    0  │
│  └───┘        Cut. time     90  │
│  ─────────────────────────────  │
│   ┌─┐                           │
│  Y│ │         E-group           │
│  ┼─┼─         Threading mode    │
│  ─────────────────────────────  │
│               Operation mode    │
│               Tension data      │
│               Multiflex         │
│               ZZ offset     1.1 │
│               Cut control     1 │
│               Spec.funct.     2 │
│               Serial numbers    │
└─────────────────────────────────┘
```

3. Press the 🆗 button.

    ⇨ *68* appears on the display.
       The preset value is identical to the seam start position.

4. Enter the desired value using the arrow buttons.

5.9.2 Zigzag stitch width

In the subitem `ZZ range` you can check the zigzag stitch width.

On eyelet machines, you can set the zigzag stitch width.

NOTICE

Property damage may occur!

There is a risk of breaking when there are different zigzag stitch widths set within the sewing equipment.

Set both the electronic and mechanical zigzag stitch widths to narrow or both to wide.
Check the mechanical zigzag stitch width.

Parameters in the `ZZ range` subitem

Icon	Entry	Meaning	Possible value range	Preset value
	ZZ range	Zigzag stitch width: • 1 = Narrow • 2 = Wide	1-2	

To check the zigzag stitch width:

1. Select (*S. 128*) `Machine config` in service mode.

2. Press the [OK] button.

3. Press the ▼ button as often as required until `ZZ range` is highlighted on the display.

Fig. 143: ZZ range


```
Load.pos      68
Zig-zag        2
Thread mon.    0
Cut. time     90

E-group
Threading mode
```
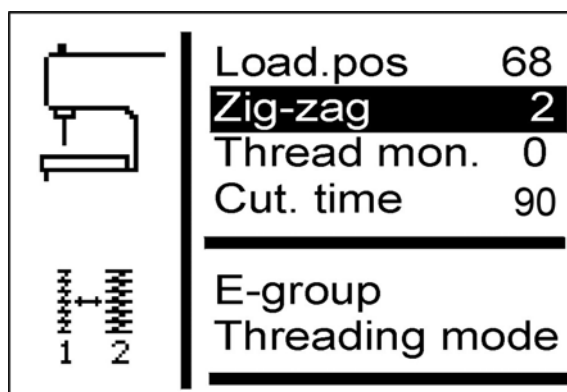
Under `ZZ range` the set value (here: `2`) is displayed.

You can only adjust the zigzag stitch width using the corresponding sewing equipment (*S. 137*).

5.9.3 Thread mon.

In the subitem *Thread mon.* the thread monitor for the needle thread is set.

Parameters in the *Thread mon.* subitem

Icon	Entry	Meaning	Possible value range	Preset value
🔆	Thread mon.	Number of stitches after which the sewing process is canceled due to a thread breakage	0-14	7

To set the remaining thread monitor:

1. Select (📖 *S. 128*) *Machine config* in service mode.

2. Press the [OK] button

3. Press the [▼] button as often as required until *Thread mon.* is highlighted on the display.

Fig. 144: Thread mon.
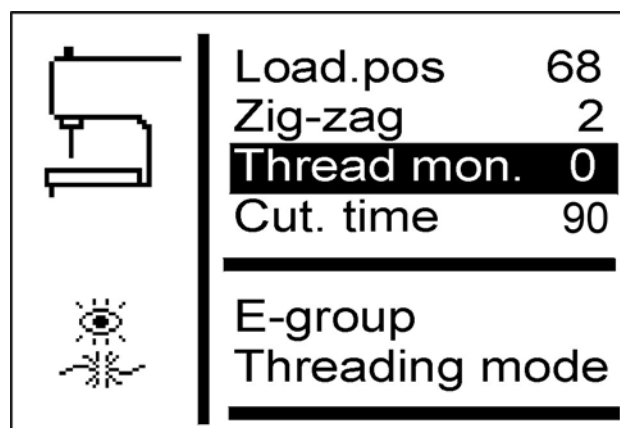
4. Press the [▼] button.

✎ *7* appears on the display.

5. Enter the desired value using the arrow buttons.

5.9.4 Cut. time

In the subitem *Cut. time* you can set the switch-on time of the cutting block individually. As a result, the sewing material to be worked on is cut cleanly and such that it is not unnecessarily long.

Parameters in the *Cut. time* subitem

Icon	Entry	Meaning	Possible value range	Preset value
🯄🕐	Cut. time	Switch-on time of the cutting block in ms	70-300	90

To set the switch-on time of the cutting block:

1. Select (📖 *S. 128*) *Machine config* in service mode.

2. Press the 🆗 button.

3. Press the 🔽 button as often as required until *Cut. time* is highlighted on the display.

Fig. 145: Cut. time
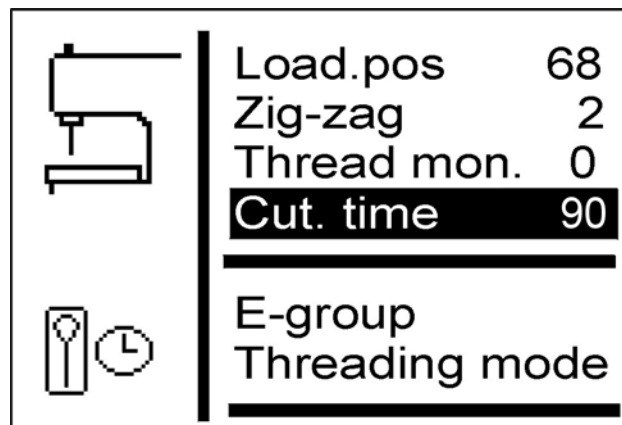
4. Press the 🆗 button.
5. Enter the desired value using the arrow buttons.

5.9.5 E-group

You can insert different sewing equipment. In the subitem `E-group` you enter the selected sewing equipment.

Parameters in the `E-group` subitem

Icon	Entry	Meaning	Possible value range	Preset value
	E-group	see following table		

To set the sewing equipment:

1. Select (*S. 128*) `Machine config` in service mode.

2. Press the OK button.

3. Press the ▼ button as often as required until `E-group` is highlighted on the display.

Fig. 146: E-group (1)

4. Press the OK button.

✦ The following appears on the display:

Fig. 147: E-group (2)

5. Press the ▼ button to select *Equipment*.

6. Press the 🆗 button.

7. Enter the selected sewing equipment.

Subclass	Sewing equipment, narrow	Sewing equipment, wide
112	E1101 E1151 E1190	E1121 E1171 E1195
121	E1201 E1202 E1204	E1221 E1222 E1224
141	E1401 E1403	E1421 E1423
151	E1501 E1502 E1504 E1551 E1553 E1590	E1521 E1522 E1524 E1571 E1573 E1595
312	E3101	E3121
321	E3201	E3221
341	E3401	E3421

ℹ️ **Information**

For subclasses 141 and 314 it is also possible to set acquired length packages in the *E-group* subitem.

5.9.6 Threading position

The subitem *Threading position* is used to set how the machine is set up.

Parameters in the *Threading position* subitem

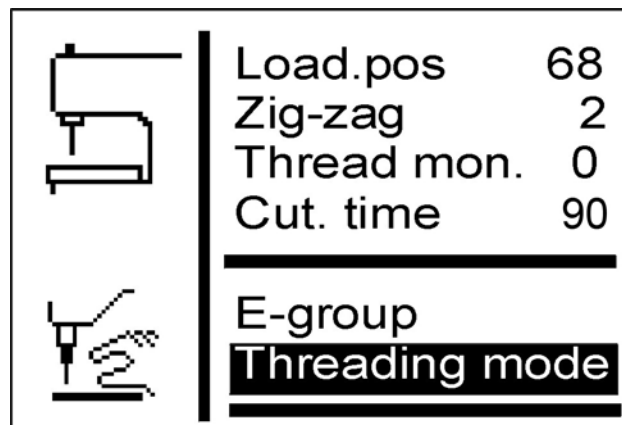| Icon	Entry	Meaning	Possible value range	Preset value
	Threading pos.	• Standard = Normal insertion • Longitudinal = Lateral insertion		

To set the threading position:

1. Select (*S. 128*) *Machine config* in service mode.

2. Press the OK button.

3. Press the ▼ button as often as required until *Threading position* is highlighted on the display.

Fig. 148: Threading position

4. Press the OK button.

↳ *Standard* appears on the display.

5. Press the ▼ button.

↳ *Parallel b/h* appears on the display.

5.9.7 Operation mode

The subitem *Operation mode* is used to set the operating mode.

Parameters in the *Operation mode* subitem

Icon	Entry	Meaning	Possible value range	Preset value
	Operation mode	• **Standard** = Normal sewing • **Sample** = Machine stops before the buttonhole is cut • **Tandem** = Connection to a 2nd machine • **Indexer** = Machine is installed on an indexer		

You can check buttonholes in sample mode.
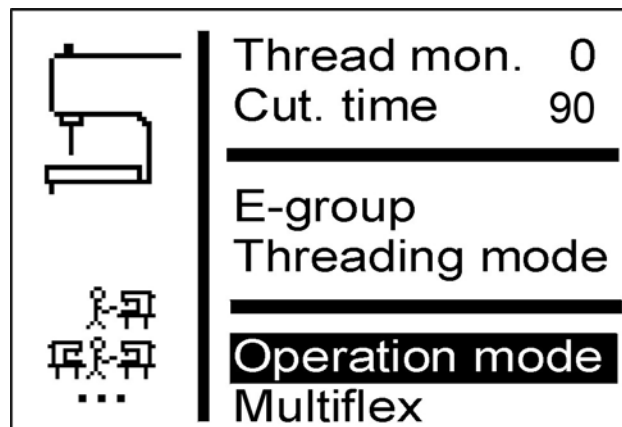
To set the operating mode:

1. Select (*S. 128*) *Machine config* in service mode.

2. Press the [OK] button.

3. Press the ▼ button as often as required until *Operation mode* is highlighted on the display.

Fig. 149: Operation mode

4. Press the [OK] button.

↳ *Standard* appears on the display.

5. Press the ▼ button as often as required until the desired value appears.

5.9.8 Tension data

In the subitem *Tension data* you can set the characteristic values for the magnets of the needle thread tension.

Important

Only change the characteristic values when you install a new magnet! The corresponding values will be enclosed with the magnet in a new order.

To set the tension data:

1. Select (📖 *S. 128*) *Machine config* in service mode.

2. Press the 🆗 button.

↳ The following appears on the display:

Fig. 150: Tension data

3. Press the 🔽 button as often as required until *Tension data* is highlighted on the display.

4. Press the 🆗 button.

↳ Value 1 is highlighted on the display.

5. If you want to change the highlighted characteristic value, press the 🆗 button.

   If you want to change a different characteristic value, press the 🔽 button as often as required until that value is highlighted.

5.9.9 Multiflex (581-321 and 581-341 only)

The subitem *Multiflex* is used to set the integrated cutting system.

Parameters in the *Multiflex* subitem

Icon	Entry	Meaning	Possible value range	Preset value
	Multiflex	• Mono • Multi		

Mono mode

• X-correction left buttonhole
• X-correction right buttonhole
• Y-correction for both buttonholes

Multi mode

• X-correction left buttonhole
• X-correction right buttonhole
• Y-correction for both buttonholes
• Block length
• Blade number for left blade
• Blade number for right blade

To set the cutting system:

1. Select (*S. 128*) *Machine config* in service mode.
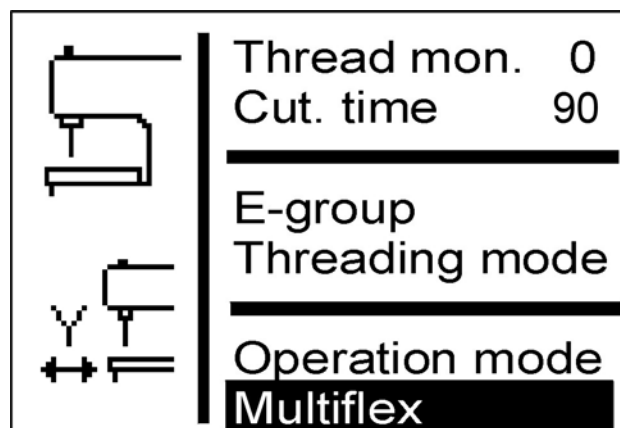
2. Press the OK button.

3. Press the ▼ button as often as required until *Multiflex* is highlighted on the display.

Fig. 151: Multiflex

---

4. Press the ⌗ button.

↳ *Mono* appears on the display.

5. Press the ▼ button.

↳ *Multi* appears on the display.

6. Press the ⌗ button.

Blades and their shape

Part number	Blade number	Shape
0580 332000	31	With eye 2.8 x 4.3 x 36 mm
0580 332010	21	With eye 2.1 x 3.2 x 36 mm
0580 332020	02	Middle cut without eye 8mm
0580 332030	33	Only eye 2.8 x 4.3 mm
0580 332040	23	Only eye 2.1 x 3.2 mm
0580 332050	01	Without eye 36 mm
0580 332060	32	Middle cut with eye 2.8 x 4.3 x 8 mm
0580 332070	22	Middle cut with eye 2.1 x 3.2 x 8 mm
0580 332100	82	Eyelet ∅ 1.0 mm
0580 332110	83	Eyelet ∅ 1.5 mm
0580 332120	84	Eyelet ∅ 2.0 mm
0580 332130	86	Eyelet ∅ 3.0 mm
0580 332140	88	Eyelet ∅ 4.0 mm

5.9.10 ZZ offset

The subitem *ZZ offset* is used to set the compensation for the zigzag stitch offset.

Parameters in the *ZZ offset* subitem

Icon	Entry	Meaning	Possible value range	Preset value
	ZZ offset	Zigzag stitch offset	0.8-1.6	1.3

5.9.11 Cut control

The subitem `Cut control` is used to set the cutting monitoring.

Parameters in the `Cut control` subitem

Icon	Entry	Meaning	Possible value range	Preset value
	Cut control	• 0 = Off • 1 = On	0-1	1

5.9.12 Spec.funct.

You can set the following special functions:

• Only open clamps in the loading position (1)
• Subsequent sewing pattern (2)
• Extended min or max limits (4)
• Open clamps together (8)
• Extra-long buttonholes (16)

Up to 31 combinations are possible here.

5.10 Menu item `User config.`

In the `User config.` menu item, you can specify further machine settings relating to the user.

In this menu item, the following subitems are available for selection:

- `Language` (📖 *S. 145*)
- `Start mode` (📖 *S. 146*)
- `Sew.lamp` (📖 *S. 147*)
- `Key tones` (📖 *S. 148*)

5.10.1 Language

In the `Language` menu item, select the desired language (German or English or numerical).

Parameters in the `Language` subitem

Icon	Entry	Meaning	Possible value range	Preset value
🏳	Language	Setting the language for the user interface	• Deutsch • English • Numerical	

To select the language:

1. Select (📖 *S. 128*) `User config.` in service mode.

2. Press the 🆗 button.

✎ The following appears on the display:

Fig. 152: Language (1)

3. Press the 🆗 button.

✎ The following appears on the display:

Fig. 153: Language (2)
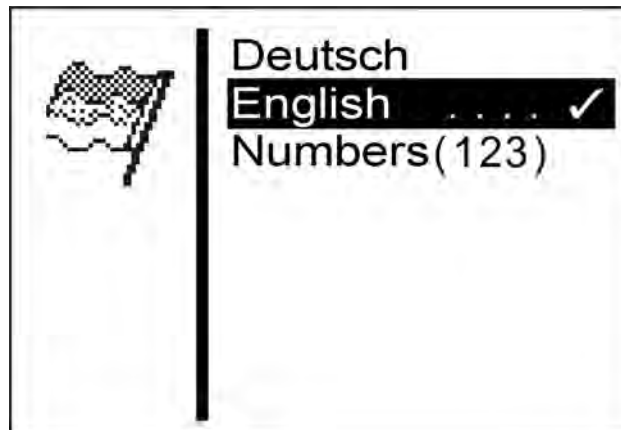
4. Press the ▼ button as often as required until the desired language is highlighted.

5. Press the OK button.

5.10.2 Start mode

In the subitem *Start mode* you can convert the way in which the machine buttons function. There are 2 settings here.
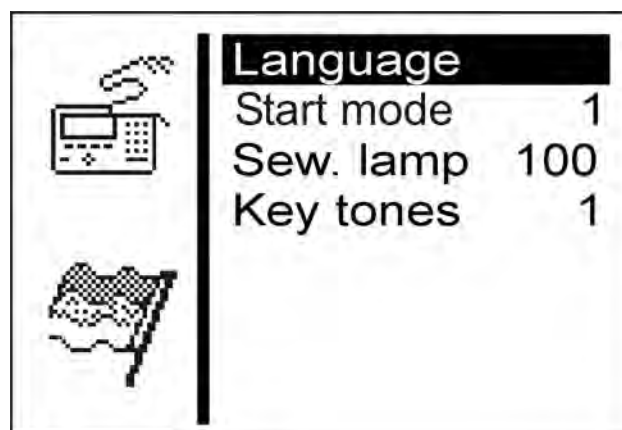
Parameters in the *Start mode* subitem

Icon	Entry	Meaning	Possible value range	Preset value
🔢	Start mode	• **1 =** *Button 1*: Clamping plates are opened / closed. *Button 2*: The sewing process only starts when the clamping plates are closed • **2 =** *Button 1*: Clamping plates are opened / closed. *Button 2*: The sewing process starts. The clamping plates are automatically closed	1-2	2

To convert the way in which the buttons function:

6. Select (📖 *S. 128*) *User config.* in service mode.

7. Press the OK button.

↳ The following appears on the display:

Fig. 154: Start mode
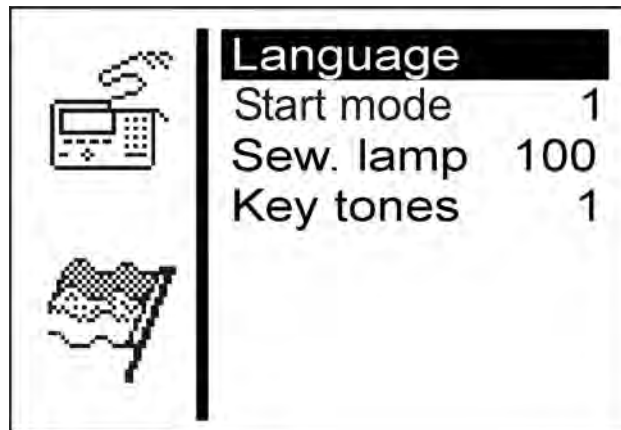
8. Press the ▼ button so that *Start mode* is highlighted on the display.

9. Press the [OK] button.

↳ *2* appears on the display.

10. Press the ▼ button.

↳ *1* appears on the display.

11. Press the [OK] button.

5.10.3 Sew.lamp

In the subitem *Sew.lamp* you can set the brightness of the sewing lamp, if this additional equipment is installed.

Parameters in the *Sew.lamp* subitem

Icon	Entry	Meaning	Possible value range	Preset value
	Sew.lamp	• 0 = Off • 100 = Maximum brightness	0-100	100

To set the brightness of the sewing lamp:

1. Select (📖 *S. 128*) *User config.* in service mode.

2. Press the [OK] button.

↳ The following appears on the display:

Fig. 155: Sew.lamp
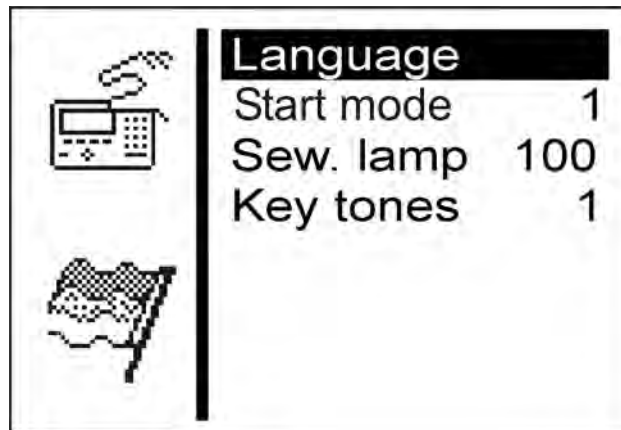
3. Press the ▼ button as often as required until *Sew.lamp* is highlighted on the display.

4. Press the OK button.

   ⇨ *100* appears on the display.

5. Press the ▼ button as often as required until the desired brightness is achieved.

6. Press the OK button.

5.10.4 Key tones

In the subitem *Key tones* you can set the button tones.

Parameters in the *Key tones* subitem

Icon	Entry	Meaning	Possible value range	Preset value
🔇	Key click	• 0 = Off • 1-50 = Peep duration in ms for every button press	0-50	0

To switch the button tones on:

1. Select (📖 *S. 128*) *User config.* in service mode.

2. Press the OK button.

   ⇨ *Language* appears on the display.

3. Press the ▼ button as often as required until *Key tones* is highlighted on the display.

4. Press the OK button.

   ⇨ *0* appears on the display.

5. Set the desired peep duration using the arrow buttons.

5.10.5 Menu item `Test functions`

In the menu item `Test functions` you can perform function tests on the input and output elements, check the sewing process and retrace events.

In this menu item, the following subitems are available for selection:

- Multitest (*S. 149*)
- Sewing proc. (*S. 155*)
- Events (*S. 161*)

The subitems have further subitems.

5.10.6 Multitest

In the subitem `Multitest` you can use the software to test whether specific elements are functioning. Additional measuring equipment is not required.

To select the `Multitest` subitem:

1. Select (*S. 128*) `Test functions` in service mode.
2. Press the OK button.
   - The following appears on the display:

Fig. 156: Multitest
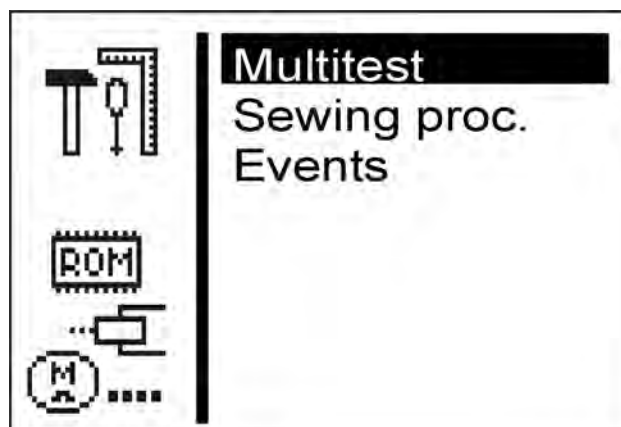
3. Press the ◾ button.

✑ The following options are available:

- *Output test*
- *Input test*
- *Auto input tst*
- *Sew. motor tst*
- *Step.motor tst*
- *Flash test*
- *RAM test*

Output test

NOTICE

Property damage may occur!

Testing an output element can lead to collisions with other machine elements. There is a risk of breaking.

Before switching on each output element, make sure that this cannot collide with other components.

In the subitem *Output test* you can test the individual output elements.

To perform an output test:

1. Select *Output test*.

2. Press the ◾ button.

3. Using the arrow buttons, select the desired output element (see *following table*).

✑ The current status is displayed:

- 0 = Output not activated
- 1 = Output activated

4. Press the ◾ button.

✑ The output is switched over.

Functions of the operating elements

Output	Function
Y01	Needle thread cutter; for 581-112 and 581-312 additional looper thread cutter
Y02	Looper thread tension
Y03	Fabric clamp
Y04	Spreader
Y05	Needle thread advancing device
Y06	Slitter
Y07	Slitter
Y08	Looper thread advancing device; only on the 581-121 and 581-321
Y09	Needle thread catcher to the sewing material
Y10	Open the needle thread catcher
Y11	Needle thread catcher to the needle
Y12	Looper thread cutter; only on the 581-121, 581-141 and 581-321, 521-341
Y13	Multiflex blade
Y14	Multiflex cutting block
Y15	Slitter

You can quit the output test using the 🔲 button.

Input test

In the subitem *Input test* you can test the individual input elements.

To perform an input test:

1. Select *Input test*.

2. Press the 🔲 button.

3. Using the arrow buttons, select the desired input element (see *following table*).

4. The current status is displayed:
   - 0 = Input not activated
   - 1 = Input activated

Functions of the input elements

Input	Function
S03	Cutting punch position
S04	Light barrier mode
S05	Light barrier mode
S09	Button 1
S10	Button 2
S11	Pedal 1
S12	Pedal 2
S13	Pedal 3
RefN	Sewing motor
RefX	X-axis
RefY	Y-axis
RefZ	Z-axis

You can quit the input test using the ⎋ button.

Auto input tst

In the subitem *Auto input tst* you can test the function of all input elements.

To perform the automatic input test:

1. Select *Auto input tst*.

2. Press the OK button.

   ✔ When the status of an input is changed, this input is automatically displayed.

3. You can quit the automatic input test using the ⎋ button.

Sew. motor tst

> ### *NOTICE*
>
> **Property damage may occur!**
>
> Testing the sewing motor can lead to collisions with other machine elements. There is a risk of breaking.
>
> It is essential that the clamping plates are removed before performing the sewing motor test.

In the subitem *Sew. motor tst* you can test the sewing motor.

During the test, the speed can be increased in intervals of 100.

To carry out the sewing motor test:

1. Select *Sew. motor tst*.

2. Press the ⌗ button.

3. Use the ▲ button to increase the speed.

4. Use the ▼ button to reduce the speed.

5. Quit the motor test using the ⎋ button.

Step.motor tst

NOTICE

Property damage may occur!

Testing the stepper motor can lead to collisions with other machine elements. There is a risk of breaking.

It is essential that the clamping plates are removed before performing the stepper motor test.

In the subitem *Step.motor tst* you can test the stepper motors.

The stepper motors are tested using the associated reference switches.

To perform the stepper motor test:

1. Select *Step.motor tst*.

2. Press the OK button.

3. With the buttons ◀ or ▶ select the corresponding stepper motor X … Z.

4. Using the ▲ or ▼ buttons, the stepper motor moves forward or back 20 steps.

X = X-direction (transverse movement of the fabric support plate)

Y = Y-direction (longitudinal movement of the fabric support plate)

Z = Z-direction (rotation of the sewing mechanism)

5. Quit the stepper motor test using the ESC button.

Flash test

In the subitem *Flash test* you can test the flash memory by displaying a checksum.

To carry out a flash test:

1. Select *Flash test*.

2. Press the OK button.

↳ *Busy* appears on the display.
When the flash test ends, the calculated checksum is displayed on the left and *OK* or *Error* on the right.

3. Quit the flash test using the ESC button.

RAM test

In the subitem *RAM test* you can test the working memory.

To carry out a RAM test:

1. Select *RAM test*.

2. Press the OK button.

↳ *Busy* appears on the display.
   When the RAM test is ended, one of two events is displayed:
   - OK = Working memory is working properly
   - Error = Error in the working memory

3. Quit the RAM test using the ESC button.

5.10.7 Sewing proc.

WARNING
Risk of injury from sharp and moving parts! Crushing, cutting or punctures possible. Do not perform any maintenance or setting works during testing.

In the subitem *Sewing proc.* you can test the sewing process.

To select the *Sewing proc.* subitem:

1. Select (📖 *S. 128*) *Test functions* in service mode.

2. Press the OK button.

↳ The following appears on the display:

Fig. 157: Sewing proc.
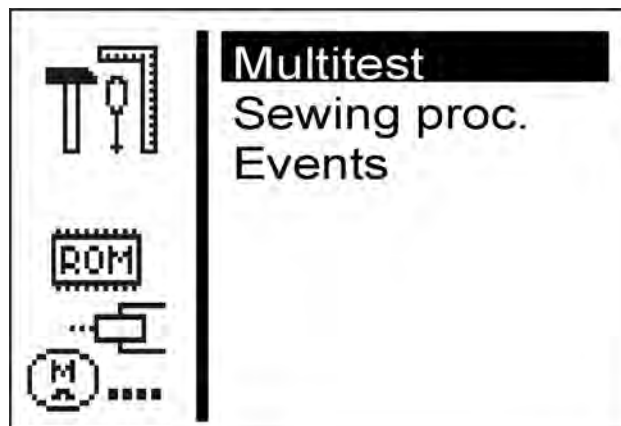
3. Press the ▼ button so that `Sewing proc.` is highlighted on the display.

4. Press the ⏺ button.

↳ The following options are available:

- `Step by step`
- `Start ref.`
- `St.cont.operat`
- `Looper adjust.`

Step by step

In the subitem `Step by step` sewing is stopped at various points during the sewing process. The stop points make it easier to check and set the machine.

To start the test program:

1. Press the ⏺ button.

↳ The set value has the following meaning:

- 0 = Normal sewing process, the test program is switched off.
- 1 = After switching the valves for the needle thread catcher, the sewing process is stopped.
- 2 = After switching the valves for the relevant thread cutting system, the sewing process is stopped.
- 3 = After switching each valve, the sewing process is stopped.

You can quit the test program by pressing ⏺ and then ◀.

Start ref.

In the subitem `Start ref.` you can start a reference run.

With the aid of the reference run, you can perform basic machine settings.

To start a reference run:

1. Select `Start ref.`

2. Press the ⏺ button.

St.cont.operat

In the subitem *St.cont.operat* you can start a continuous run.

Before the start of sewing, a security prompt is first displayed, which must be confirmed with *Yes*.

To start a continuous run:

1. Select *St.cont.operat*.

2. Press the OK button.

Looper adjust.

In the subitem *Looper adjust.* you can check the sewing tool settings. To this end the sewing motor moves to the pinning points for calibration (📖 *Service Instructions)* and then to the various settings to check the looping stroke, needle stroke, needle protection and spreader positions.

To check the sewing tools:

1. Select *Looper adjust*.

2. Press the OK button.

🖑 The machine performs a reference run. The following appears on the display:

Fig. 158: Looper adjust. (1)
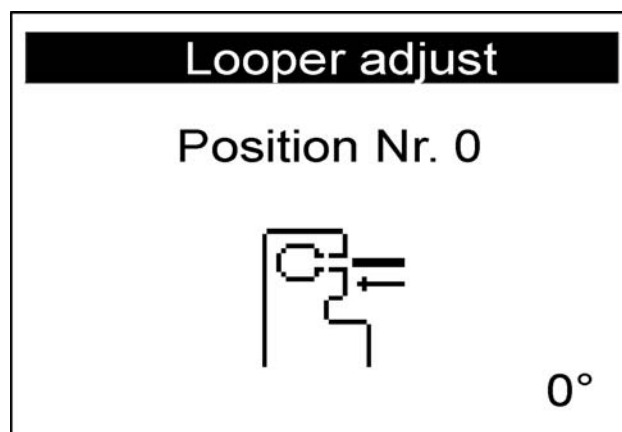
Fig. 159: Looper adjust. (2)

(1) - Arresting pin

3. Insert the arresting pin (1) and check whether the pin is engaged in the slot of the arm shaft.
   In this position, the needle bar must be at top dead center.

4. Press the OK button.
   ✎ The following appears on the display:

Fig. 160: Looper adjust. (3)
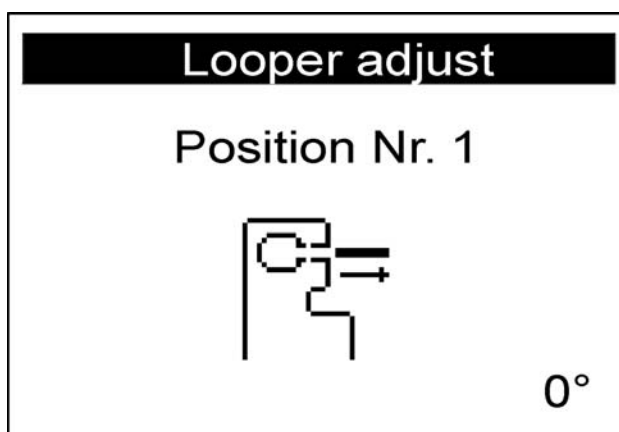
5. Remove the arresting pin (1) again.

6. Press the ⟨OK⟩ button.

↳ The sewing motor moves into the test position 2 (looping stroke left).
   The following appears on the display:

Fig. 161: Looper adjust. (4)
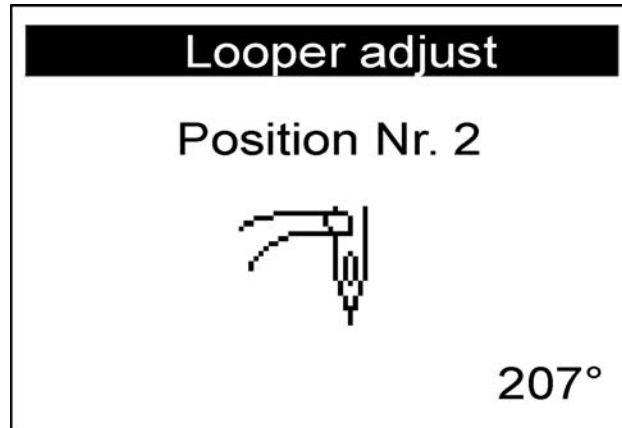
7. Check whether the tip of the left looper is at the center of the needle.

If you have to change the looper setting, proceed as follows:

1. Press the ⟨OK⟩ button.

↳ The machine moves back into the position 0.

2. Swivel the machine up.

↳ The screws for the looper setting are now accessible.

3. Change the looper setting.

4. Swivel the machine down.

5. Press the ⟨OK⟩ button.

↳ The sewing motor moves back into the test position 2 again.

6. Check the looper setting.

7. Press the ⟨OK⟩ button.

↳ The sewing motor moves into the test position 3 (looping stroke right).
   The following appears on the display:

Fig. 162: Looper adjust. (5)
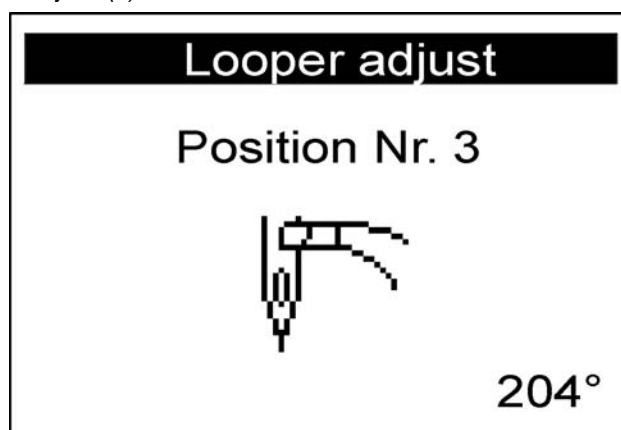
You can check the looper setting and, if required, set as described previously.

When you press the OK button, the next test position of the sewing tool appears on the display (see *following table*).

! **Important**

When setting the needle bar height, you need to choose the position such that the entire needle eye can be seen below the left looper tip!

Positions and settings

Position	Setting
4	Needle bar height
5	Needle guard, left
6	Needle guard, right
7	Spreader, left open
8	Spreader, left closed
9	Spreader, right open
10	Spreader, right closed

5.10.8 Events

In the subitem *Events* you can retrace events.

To select the *Events* subitem:

1. Select (📖 *S. 128*) *Test functions* in service mode.

2. Press the 🆗 button.

3. Select *Events*.

4. Press the 🆗 button.

☞ The following options are available:

- *All events*
- *Latest events*

All events

In the subitem *All events* all events that have occurred are displayed.

An explanation of the error messages is provided on 📖 *S. 159*.

Example:

Fig. 163: All events

To call up all events:

1. Select *All events*.

2. Press the 🆗 button.

☞ All events are displayed.

You can also display other events by pressing the F button.

You can quit the subitem using the ESC button.

Latest events

In the subitem *Latest events* the events that occurred most recently are displayed.

An explanation of the error messages is provided on ▯ *S. 159.*

Example:

Fig. 164: Latest events


```
          Latest events
1  E7558  Z          780046
           S            8064
2  E3210  Z          628043
           S            8063
3  E3210  Z          613112
           S            8063
```

To call up the latest events:

1. Select *Latest events*.

2. Press the [OK] button.

 The latest events are displayed.

You can quit the subitem using the [ESC] button.

5.11 Menu item `Data transfer`

The menu item `Data transfer` allows you to save or load buttonhole programs to or from a USB key.

In this menu item, the following subitems are available for selection:

• `Import` (□ *S. 163*)
• `Export` (□ *S. 164*)

5.11.1 Import

The menu item `Import` allows you to load buttonhole programs from a USB key onto the machine.

To select the `Import` subitem:

1. Select (□ *S. 128*) `Data transfer` in service mode.

2. Press the OK button.

↳ The following appears on the display:

Fig. 165: Import (1)
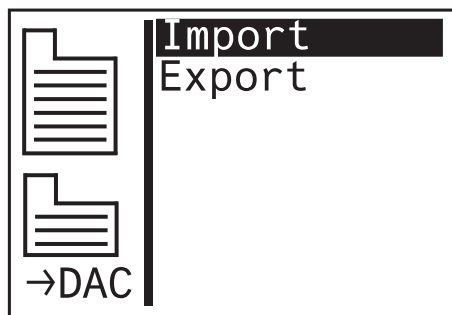
3. Press the OK button.

↳ The data is imported.

If the buttonhole programs originate from a machine with a different sub-class or from a different item of sewing equipment, the following information appears on the display:

Fig. 166: Import (2)
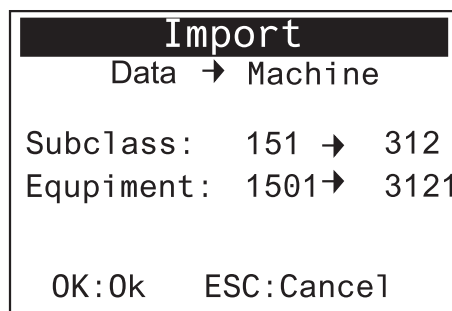
4. Press the ⏣ button to import the data.

↳ The data is imported, and the display returns to *Import/Export*.

5. Press the ⏣ button to cancel the data import.

5.11.2 Export

The menu item *Export* allows you to save buttonhole programs from the machine to a USB key.

To select the *Export* subitem:

1. Select (📖 *S. 128*) *Data transfer* in service mode.

2. Press the ⏣ button.

3. The following appears on the display:

Fig. 167: Export (1)
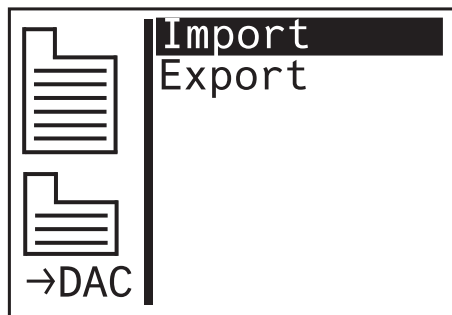
4. Press the ▼ button and select *Export*.

↳ The following appears on the display:

Fig. 168: Export (2)
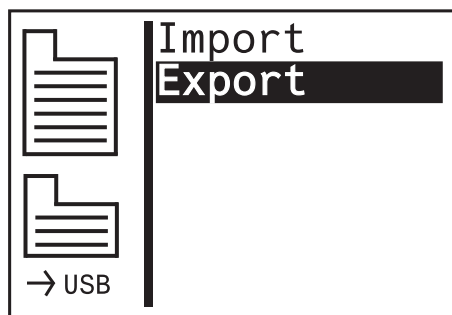
5. Press the ⏣ button to save the data to the USB key.

↳ The data is exported, and the display returns to *Import/Export*.

5.12 Menu item `Reset data`

NOTICE

Data loss due to reset!

All settings are lost during a reset.

Before resetting, make sure that you have saved all the important data.

In the menu item `Reset data` you can reset programs and parameters to the delivery state if the machine is no longer working correctly. For security reasons, you are asked to input the code once again.
Only the calibration values and the set subclass are retained.

6 Maintenance

This section describes simple maintenance work that needs to be carried out on a regular basis, in order to extend the service life of the machine and achieve the desired seam quality.

WARNING
Risk of injury from moving, cutting and pointed parts.
Crushing, cutting and puncture wounds possible.
Only perform maintenance work when the machine is switched off.

Overview of works to be performed

Work to be performed	Operating hours			
	8	**40**	**160**	**500**
Machine				
Remove lint accumulations	●			
Clean sewing dust from the area under the throat plate	●			
Check the oil level	●			
Check and clean the toothed belt			●	
Lubricate the cutting punch			●	
Lubricate the clamping arm at the felt			●	
Pneumatic system				
Check the water level in the pressure controller	●			
Clean filter element in the maintenance unit	●			
Check the leak tightness of the system			●	

6.1 Cleaning

The machine must be cleaned of sewing dust and thread residue daily. A clean machine provides protection from faults.

NOTICE
Property damage due to contamination!
Sewing dust and thread residue can damage the machine.
Clean the machine as described here.

To clean the machine:

⚒ **Step**

1. Clean the area of the looper, thread cutter, throat plate and the sewing head of sewing dust, thread residue and cutting waste.
    If a vacuum is available, it is recommended to vacuum the thread residue.

2. If required, empty the cutting waste from the suction container.

6.2 Lubricating

CAUTION
⚠ **Skin injuries due to contact with oil.**   Oil can cause a rash if it comes into contact with the skin.   Wash the affected area thoroughly after any skin contact.

The machine must be lubricated at regular intervals (📖 *S. 166*).
Lubrication involves the following tasks:

• Checking the oil level
• Lubricating the machine

Checking the oil level

The central oil lubrication supplies all bearing points with oil from the oil reservoirs. It is therefore important to make sure that the oil level is always between the minimum and maximum level markings.

⚒ **Step**

1. Check the oil level in the oil reservoirs daily (📖 *Operating Instructions, Topping up the oil*).

ATTENTION
⚠ **Risk of environmental damage from oil!**   Oil is a pollutant and must not enter the wastewater system or the ground.   Collect waste oil carefully.   Dispose of waste oil and oily machine parts in accordance with the applicable statutory regulations.

Use only **DA 10** lubricant or an equivalent oil conforming to the following specifications to top up the oil reservoirs:

• Viscosity at 40 °C: 10 mm²/s

• Flash point: 150 °C

You can obtain the oil from our sales offices under the following part numbers:

Container	Part no.
250 ml	9047 000011
1 l	9047 000012
2 l	9047 000013
5 l	9047 000014

Lubricating the machine

Fig. 169: Lubricating the machine (1)
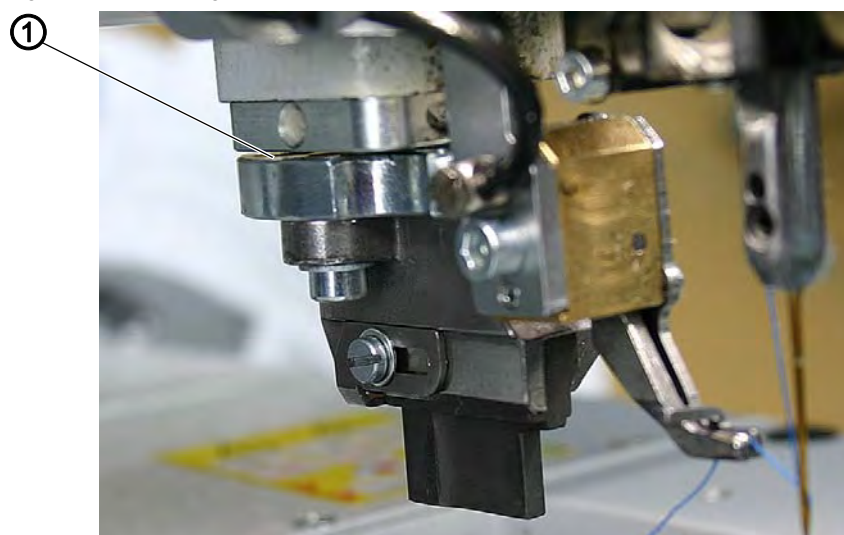
(1) - Cutting punch

Step

1. Lubricate the cutting punch (1).

Fig. 170: Lubricating the machine (2)

(2) - Cam plate

2. Lubricate the felt at the cam plate (2).

Fig. 171: Lubricating the machine (3)
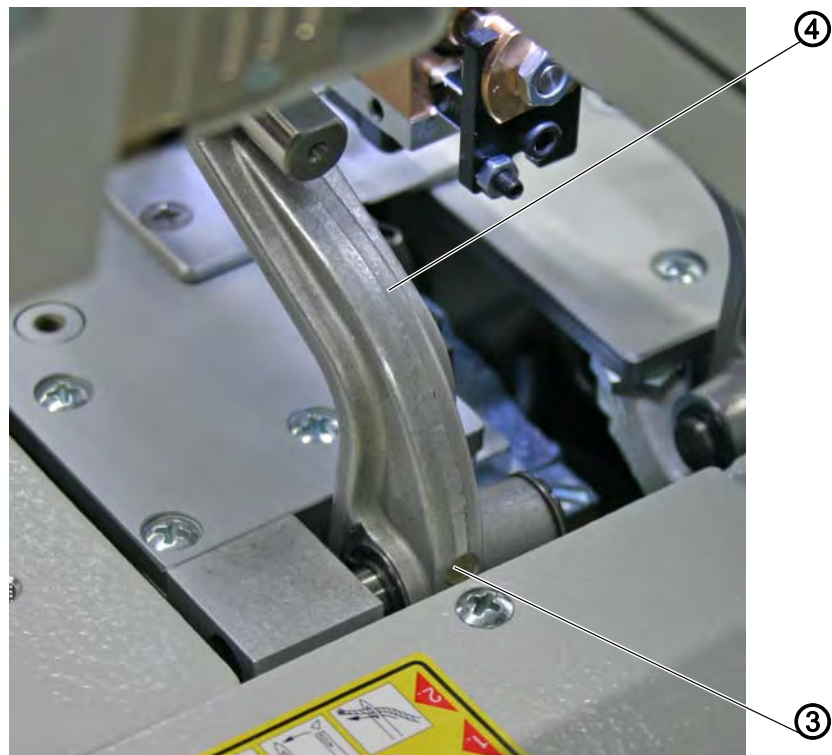
(3) - Felt   *(4) - Clamping arm*

3. Lubricate the felts (3) of the clamping arms (4).

6.3   Maintaining the pneumatic system

Fig. 172: Checking the water level

(1) - Filter element   *(3) - Drain screw*
(2) - Water separator
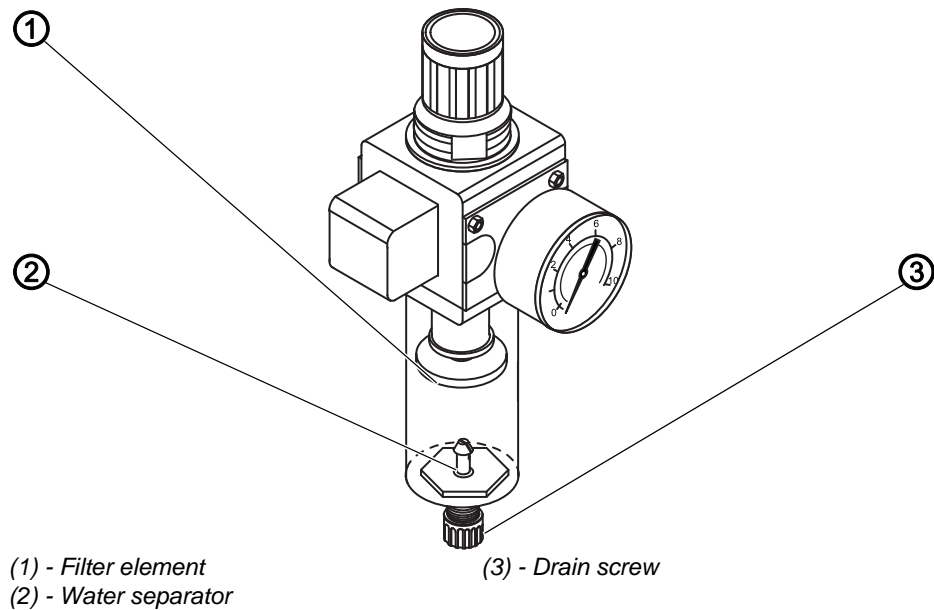
🔧   **Step**

1.   Check the water level in the pressure controller daily.
     The water level must not rise to the level of the filter element (1).
     After unscrewing the drain screw (3), drain the water under pressure
     from the water separator (2).

6.4   Changing the cutting blocks and blade

Depending on the area of application, you must change the cutting blocks
and blade after six months at the earliest. You can change the cutting
length by changing the cutting blocks. The method for changing the cutting
blocks or the blade differs depending on the subclasses.

6.4.1 Subclass without multiflex

Changing the cutting block

Fig. 173: Changing the cutting block, Classic

(1) - Screw   *(2) - Cutting block*
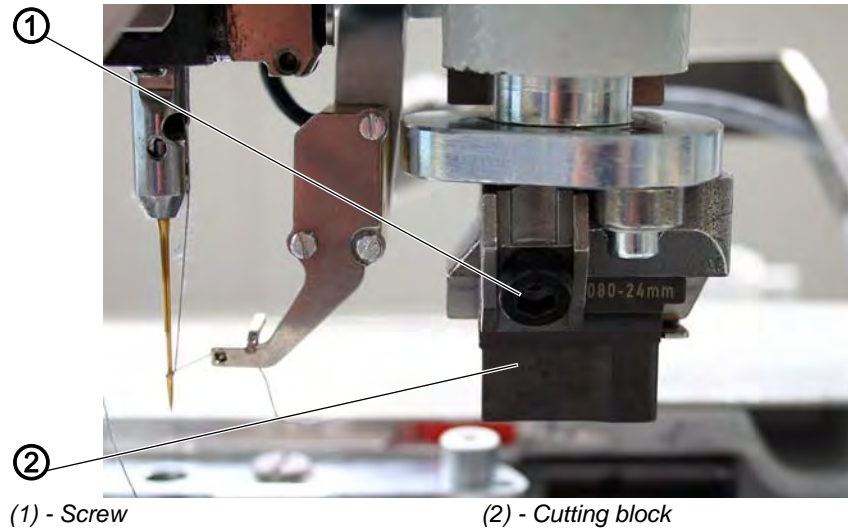
Step

1. Loosen the screw (1) (Allen key in the accessory pack).
2. Pull the cutting block (2) forward and remove.
3. Insert the new cutting block and push to the end stop.
4. Retighten the screw (1).

Changing the blade

Fig. 174: Changing the blade, Classic

(3) - Blade   *(4) - Screw*
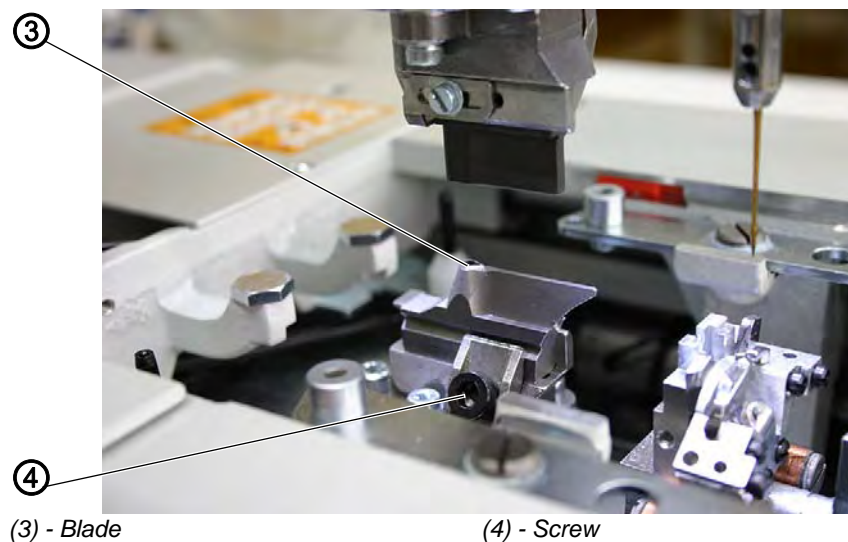
Step

1. Loosen the screw (4).

2. Pull the blade (3) forward and remove.

3. Insert the new blade and push to the end stop.

4. Retighten the screw (4).

6.4.2 Subclass with multiflex

Changing the cutting block

Fig. 175: Changing the cutting block, Multiflex
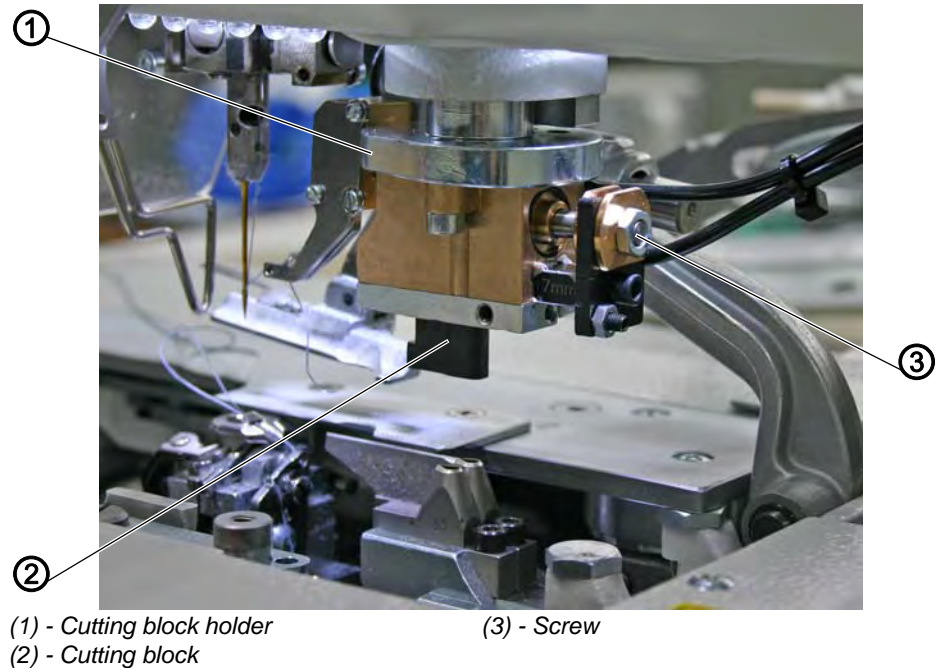
(1) - Cutting block holder   (3) - Screw
(2) - Cutting block

Step

1. Disconnect the compressed air hose from the compressed air supply.

2. Press the cutting block holder (1) down carefully with a screwdriver.

3. Loosen the screw (3).

4. Pull the cutting block (2) out to the left.

5. Push the new cutting block (2) into the guide and tighten the screw (3).

6. Reconnect the compressed air hose.

When the compressed air is connected (*Operating Instructions*), the cutting block holder automatically moves back up.

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i **Information**

If you want to use a cutting block with a different length, you must make the appropriate setting on the control panel (see chapter **Multiflex** ($\square$ *S. 142*)).

Changing the blade

Fig. 176: Changing the blade with multiflex
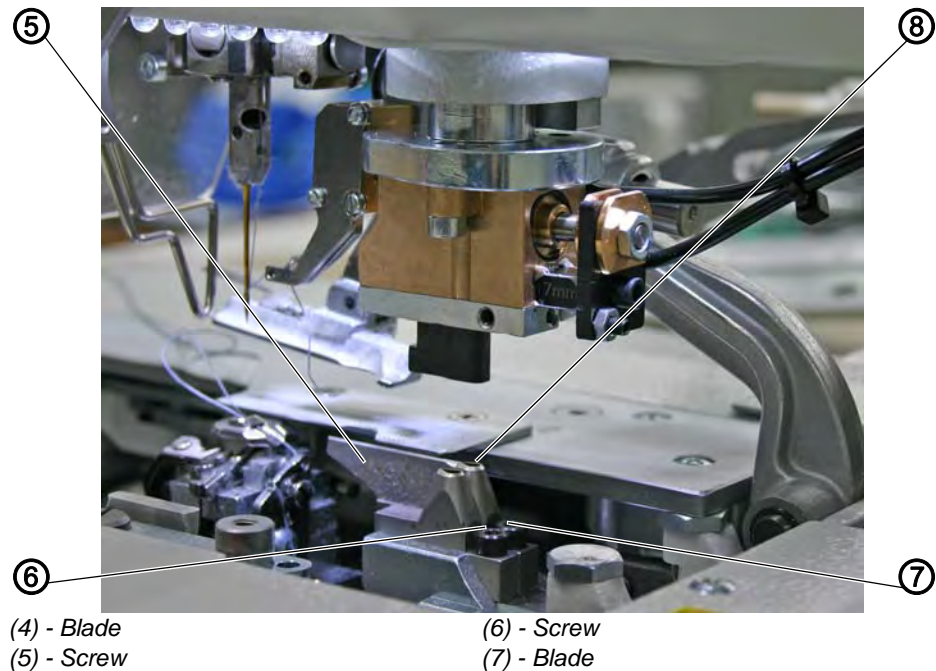
(4) - Blade   (6) - Screw
(5) - Screw   (7) - Blade

$\mathscr{S}$ **Step**

1. Loosen screw (5) or (6) (Allen key in the accessory pack).
2. Remove blade (4) or (7).
3. Insert the new blade and tighten with screw (5) or (6).

! **Important**

If you cannot remove the blade, slightly loosen the screw of the second blade.

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i **Information**

If you want to use a blade with a different shape, you must make the appropriate setting on the control panel (see chapter **Multiflex** ($\square$ *S. 142*)).

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7 Decommissioning

A number of activities must be performed if the machine is to be shut down for a longer period of time or completely decommissioned.

	WARNING
⚠️	**Risk of injury due to a lack of care!** Severe injuries possible. ONLY clean the machine when it is switched off. Avoid contact with oil residues. Allow ONLY trained personnel to disconnect the machine.

Decommission the machine as follows:

Step

1. Switch off the main power switch located centrally under the sewing material support surface.
2. Unplug the power plug.
3. Disconnect the pneumatic connection.
4. Remove residual oil from the oil pan under the sewing material support surface using a cloth.
5. Cover the control panel to protect it from soiling.
6. Cover the controller to protect it from soiling.
7. Cover the entire machine if possible to protect it from soiling and damage.

8 Disposal
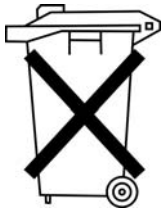
The machine must not be disposed of in the normal household waste.

The machine must be disposed of in an appropriate and correct manner according to the national regulations.

ATTENTION
Risk of environmental damage from incorrect disposal! Incorrect disposal of old oil can result in severe environmental damage. ALWAYS observe the legally prescribed regulations for disposal.

When disposing of the machine, be aware that it consists of a range of different materials (steel, plastic, electronic components, etc.). Observe the applicable national regulations for disposal.

9 Technical data

Technical data	Unit	581
Machine type		Sewing machine
Sewing stitch type		Double chain stitch 404
Number of needles		1
Needle system		579
Needle strength	[Nm]	125
Sewing thread thickness	[Nm]	30/3 - 120/3
Sewing length	[mm]	max. 50
Cutting length	[mm]	max. 50
Thickness of sewing material	[mm]	max. 12
Stitch length	[mm]	0.5 - 2
Speed, max.	[rpm]	2500
Speed, factory	[rpm]	2000
Mains voltage	[V]	190 - 240
Mains frequency	[Hz]	50/60
Operating pressure	[bar]	6
Length	[mm]	1060
Width	[mm]	750
Height	[mm]	1050

10 Troubleshooting

10.1 Customer service

Contacts for repairs or in the event of problems with the machine:

Dürkopp Adler AG

Potsdamer Str. 190
33719 Bielefeld, Germany

Tel. +49 (0) 180 5 383 756
Fax +49 (0) 521 925 2594
Email: service@duerkopp-adler.com
Internet: *www.duerkopp-adler.com*
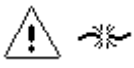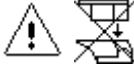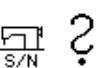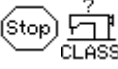
10.2 Software messages

Should an error occur that is not described here, please contact Customer Service. Do not try to repair the error yourself.

10.2.1 Information messages

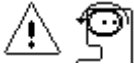| Symbol	Description	Remedial action
	At the start of sewing, the needle is not in the upper initial position or is on the wrong side	• Turn the handwheel until the message disappears
	The machine is in the threading position and is then ready for sewing.	• After threading, press the button on the head cover to return to sewing mode
	The thread breaks during sewing	• Press the button on the head cover to move to the threading position
	At the start of sewing the needle is in the threading position	• Press the button on the head cover • Switch the machine off and on again
	No compressed air available, or the pressure is too low	• Switch off the machine • Ensure the supply of sufficient compressed air • Switch on the machine
	A prohibited cutting combination was selected (ONLY for Multiflex)	• In the control, check and adjust the data for the blade and cutting block set • If necessary, insert and set an appropriate blade and cutting block
	The sewing process stops (ONLY for 141, 341 with integrated and activated gimp monitoring)	• The sewing process can be continued with the **OK** button or button 2, or stopped with the **ESC** button or button 1
	The serial number of the machine has not been entered	• Press the **OK** button • Contact DA service
	Machine ID not found	• Check the plug
	Wrong class The software does not match the class	• after 5 seconds, a screen appears with the display of the class • Continue with **YES**: **Caution!** the update will overwrite all existing data Continue with **NO**: Abort • Order and load the correct software

10.2.2 Error messages

If an error occurs, the (Error) symbol appears on the display, followed by a four-digit number combination.

.

Error	Meaning	Possible cause	Remedial action
1000	Sewing motor fault	• Encoder plug (Sub-D, 9-pin) not connected or defective • Encoder defective	• Check the connection of the encoder cable and replace, if necessary
1001	Sewing motor fault	• Sewing motor plug not connected or defective	• Check the connection of the sewing motor cable • Test sewing motor phases (R = 2.8 Ω, high impedance to PE) • Replace the encoder • Replace the sewing motor • Replace the control
1002	Sewing motor insulation error		• Check motor phase and PE for low-impedance connection • Replace the encoder • Replace the sewing motor
1004	Sewing motor fault	• Incorrect direction of rotation	• Replace the encoder • Check plug assignment and change, if necessary • Check wiring in machine distributor and change it, if necessary • Test motor phases and check for correct value
1005	Sewing motor current feed fault	• Sewing motor blocked • Encoder cable not connected or defective • Encoder defective	• Remove the blockage • Check the encoder cable and replace, if necessary • Replace the sewing motor
1006	Sewing motor fault	• Max. speed exceeded • Sewing motor cable defective • Sewing motor defective	• Switch the machine off and on again • Replace the encoder • Perform reset • Replace the sewing motor • Contact customer service
1007	Error in the reference run		• Replace the encoder • Eliminate stiff movement in the machine
1008	Sewing motor encoder error		• Replace the encoder
1010	Sewing motor synchronization error	• External synchronizer plug (Sub-D, 9-pin) not connected	• Connect plug of external synchronizer to control, use correct connection (Sync) • Replace the reference switch or synchronizer • Only required for machines with transmission!

Error	Meaning	Possible cause	Remedial action
1011	Sewing motor synchronization error (Z pulse)		• Switch off the control, use handwheel to turn and switch on the control again • If error is not corrected, check encoder
1012	Sewing motor synchronization error		• Replace the synchronizer
1051	Sewing motor timeout	• Cable to sewing motor reference switch defective • Reference switch defective	• Replace the cable • Replace reference switch (9815 935006)
1052	Sewing motor overcurrent	• Sewing motor cable defective • Sewing motor defective • Control defective	• Replace the sewing motor cable • Replace the sewing motor • Replace the control
1053	Line voltage too high	• Line voltage too high	• Check the line voltage
1054	Internal short circuit		• Replace the control
1055	Sewing motor overload	• Sewing motor is sluggish or is blocked • Sewing motor defective • Control defective	• Eliminate sluggishness/blockage • Replace the sewing motor • Replace the control
1056	Sewing motor overtemperature	• Sewing motor not moving freely • Sewing motor defective • Control defective	• Eliminate sluggishness • Replace the sewing motor • Replace the control
1058	Sewing motor speed is greater than the setpoint	• Reference switch defective • Sewing motor defective	• Replace reference switch (9815 935006) • Replace the sewing motor
1060	PowerParts		• Replace the control
1062	Sewing motor IDMA auto-increment	• Disturbance	• Switch the machine off and on again
1120	Software error	• Parameter not initialized	• Perform software update
1203	Sewing motor: Position not reached		• Switch the machine off and on again • Perform software update • Contact Customer Service
1302	Sewing motor current feed fault	• Sewing motor blocked • Encoder cable not connected or defective • Encoder defective	• Remove the blockage • Check the encoder cable and replace, if necessary • Replace the sewing motor
1330	Sewing motor not responding		• Switch the machine off and on again • Perform software update • Contact Customer Service
1342 – 1344	Sewing motor fault	• Internal error	• Switch the machine off and on again • Perform software update • Contact Customer Service

Error	Meaning	Possible cause	Remedial action
1410	Sewing motor: Thread cutter speed is not achieved	• Encoder defective • Sewing motor defective	• Switch the machine off and on again • Replace the encoder • Replace the sewing motor • Contact customer service
1411	Sewing motor: Thread cutter position is not achieved	• Thread cutter position is not achieved	• Switch the machine off and on again • Perform software update • Contact Customer Service
1412	Sewing motor: Stop position after turning backward is not achieved	• Stop position after turning backward is not achieved	• Switch the machine off and on again • Perform software update • Contact Customer Service
1420	Sewing motor current feed fault	• Sewing motor blocked • Encoder cable not connected or defective • Encoder defective	• Remove the blockage • Check the encoder cable and replace, if necessary • Replace the sewing motor
1421	Sewing motor timeout	• Cable to sewing motor reference switch defective • Reference switch defective	• Replace the cable • Replace reference switch (9815 935006)
1430	Sewing motor: Positioning speed is not achieved	• Sewing motor cable defective • Sewing motor defective • Control defective	• Switch the machine off and on again • Replace the encoder • Replace the sewing motor • Contact Customer Service
1431	Sewing motor: Stop position	• Internal sewing motor fault	• Reduce the positioning speed • Perform software update
1450	Internal sewing motor fault	• Internal sewing motor fault	• Switch the machine off and on again • Perform software update • Replace the control • Contact Customer Service
1498 – 1499	Internal sewing motor fault	• Internal sewing motor fault	• Switch the machine off and on again • Perform software update • Replace the control • Contact Customer Service
21	Stepper motor X-axis		•
22	Y-axis stepper motor		•
23	Z-axis stepper motor		•
.. .. 02	Stepper motor current feed fault	• Stepper motor not moving freely or blocked • Encoder cable not connected or defective • Stepper motor cable is not connected or is faulty • Encoder defective • Stepper motor defective	• Eliminate sluggishness/blockage • Check the encoder cable and replace, if necessary • Replace the encoder • If the stepper motor is not supplied with current: • Check the stepper motor cable and replace, if necessary • Replace the stepper motor

Error	Meaning	Possible cause	Remedial action
.. .. 03	Stepper motor step losses	• Stiff mechanical movement or blockage	• Eliminate mechanical sluggishness or blockage
.. .. 21		• Encoder plug (Sub-D, 9-pin) not connected or defective • Encoder defective	• Check the connection of the encoder cable and replace, if necessary
.. .. 22	Magnet wheel search timeout		• Check connection cables • Check stepper motor for stiff movement
.. .. 30	Stepper motor not responding		• Perform software update • Replace the control
.. .. 41	Stepper motor not responding	• Stepper motor card defective	• Perform software update • Replace stepper motor card
.. .. 52	Stepper motor overcurrent	• Stepper motor defective • Control defective	• Replace the stepper motor • Replace the control
.. .. 53	Stepper motor overvoltage	• Line voltage too high	• Check the line voltage
.. .. 55	Stepper motor overload	• Stepper motor not moving freely or blocked • Stepper motor defective • Control defective	• Eliminate sluggishness/blockage • Replace the stepper motor • Replace the control
.. .. 56	Stepper motor overtemperature	• Stepper motor not moving freely • Stepper motor defective • Control defective	• Eliminate sluggishness • Replace the stepper motor • Replace the control
.. .. 62	Stepper motor IDMA auto-increment	• Disturbance	• Switch the machine off and on again
3100 – 3103	Machine: Voltage fault	• Temporary line voltage interruption	• Check line voltage and stabilize, if required
3221 – 3222	Machine: Thread tension regulation	• Internal error	• Switch the machine off and on again • Perform software update • Contact Customer Service
3300 – 3507	Fault in the machine control	• Internal error	• Switch the machine off and on again • Perform software update • Contact Customer Service
3508		• Needle position faulty	• Retighten the drive belt
3509 – 3724	Fault in the machine control	• Internal error	• Switch the machine off and on again • Perform software update • Contact Customer Service
4201	No USB key inserted		• Insert USB key
4208	Checksum error	• File faulty	•
4209	Error while saving the file	• The file to be saved is faulty	•

Error	Meaning	Possible cause	Remedial action
4210	Error while loading the file	• No data on the USB key	• Insert a USB key containing data
4460 – 4468	Control panel OP5000	• Disturbance	• Switch the machine off and on again • Perform software update • Replace the control panel
6000 – 6299	Driver error	• Internal error	• Switch the machine off and on again • Perform software update • Contact Customer Service
6361	Machine ID not found		• Check the plug
6365	Internal memory faulty	• Control defective	• Replace the control
6400 – 6999	Driver error	• Internal error	• Switch the machine off and on again • Perform software update • Contact Customer Service
7551 – 7559	Communication with the control panel interface	• Internal error • Cable disturbance • Cable to the control panel interface is faulty	• Switch the machine off and on again • Eliminate source of disturbance • Perform software update • Replace the cable • Contact customer service
7651 – 7659	Communication with the control panel interface	• Internal error • Cable disturbance • Cable to the control panel interface is faulty	• Switch the machine off and on again • Eliminate source of disturbance • Perform software update • Replace the cable • Contact Customer Service
8151 – 8161	IDMA error	• Internal error • Disturbance • Control defective	• Switch the machine off and on again • Perform software update • Replace the control • Contact Customer Service
8251 – 8258	Fault during ADSP booting or booting	• Internal error • Disturbance	• Switch the machine off and on again • Perform software update • Contact Customer Service
9000 – 9004	Seam appearance fault	• Internal error	• Switch the machine off and on again • Perform software update • Reset the data (📖 *Service Instructions*) • Contact Customer Service
9009	Cutting punch is not in position	• Cutting position sensor	• Check the plug and cable and replace, if required • Replace the distributor board

10.3 Errors in the sewing process

Meaning	Possible causes	Remedial action
Thread break	• The needle and looper threads are incorrectly threaded	• Check the threading path (📖 *Operating Instructions, Operation*)
	• Needle is bent or sharp-edged • Needle is not correctly inserted into the needle bar	• Replace the needle • Insert the needle into the needle bar
	• Thread used is unsuitable	• Use the recommended thread (📖 *S. 4*)
	• Thread tensions are too tight for the thread used	• Check the thread tensions (📖 *Operating Instructions, Operation*)
	• Thread-guiding parts, e.g. thread tubes, thread guide or thread take-up disk are sharp-edged	• Check the thread path
	• Throat plate, looper or spread were damaged by the needle	• Have parts reworked by qualified specialists

Meaning	Possible causes	Remedial action
Missed stitches	• The needle and looper threads are incorrectly threaded	• Check the threading path (📖 *Operating Instructions, Operation*)
	• Needle is blunt or bent • Needle is not correctly inserted into the needle bar	• Replace the needle • Insert the needle into the needle bar
	• Needle strength used is unsuitable	• Use the recommended needle strength (📖 *9 Technical data*, p. 178)
	• Reel stand is incorrectly fitted	• Check the reel stand (📖 *Operating Instructions, Set-up*)
	• Thread tensions are too tight	• Check the thread tensions (📖 *Operating Instructions, Operation*)
	• Sewing material is not held correctly	• Check the clamping pressure (📖 *S. 38*)
	• Sewing material is not spread or is insufficiently spread	• Check the spread (📖 *S. 32*)
	• After resetting the zigzag stitch width, the looper stroke was not corrected	• Set the looping stroke (📖 *S. 61*)
	• Incorrect parts are installed for the desired sewing equipment	• Check parts using the equipment sheet
	• The looper or spreader is misaligned	• Check individual settings
	• Throat plate, looper or spread were damaged by the needle	• Have parts reworked by qualified specialists
Loose stitches	• Thread tensions are not adjusted to the sewing material, the sewing material thickness nor to the thread used	• Check the thread tensions
	• The needle and looper threads are incorrectly threaded	• Check the threading path (📖 *Operating Instructions, Operation*)
Needle break	• Needle strength is not suitable for the sewing material or the thread	• Use the recommended needle
Seam beginning is not secure	• Residual tension for the needle thread is too strong	• Adjust residual tension

Meaning	Possible causes	Remedial action
Buttonhole is not clean	• Cutting pressure is insufficient	• Increase the cutting pressure (📖 *S. 57*)
	• Switch-on time of the cutting block is too short	• Increase switch-on time ((📖 *S. 136*))
	• Cutting edge of blade is blunt or chipped	• Replace and set blade (📖 *S. 43*)
	• A cutting block that does not correspond to the blade is used	• Replace cutting block and set (📖 *S. 50*)
Sewing mechanism rotation is faulty	• Toothed belt is not sufficiently tensioned	• Retighten the toothed belt, or replace if required
	• Toothed belt and toothed disks are dirty	• Clean the toothed belt and disks, if required replace the toothed belt
	• Sewing mechanism collides with other parts	• At a low speed, check the movement of the sewing mechanism and watch out for possible collisions
	• Set collars on the looper turret or needle bar drives are too tight	• Check the set collars, set a small amount of play if required: Looper stroke (📖 *S. 61*), needle bar height (📖 *S. 65*) and spreader plate (📖 *S. 71*)
	• Stiffness of individual parts	• Check all parts related to the sewing mechanism rotation
Fabric support plate transport is faulty	• Fabric support plate collides with other parts	• At a low speed, check the movement of the fabric support plate and watch out for possible collisions

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