DÜRKOPP ADLER

827/827-M

Service Instructions

IMPORTANT
READ CAREFULLY BEFORE USE
KEEP FOR FUTURE REFERENCE

1 About these instructions

These instructions have been prepared with utmost care. They contain information and notes intended to ensure long-term and reliable operation.

Should you notice any discrepancies or if you have improvement requests, then we would be glad to receive your feedback through **Customer Service** (📖 *p. 109*).

Consider these instructions as part of the product and keep it easily accessible.

1.1 For whom are these instructions intended?

These instructions are intended for:

- Specialists:
  This group has the appropriate technical training for performing maintenance or repairing malfunctions.

With regard to minimum qualification and other requirements to be met by personnel, please also follow the chapter **Safety** (📖 *p. 9*).

1.2 Representation conventions – symbols and characters

Various information in these instructions is represented or highlighted by the following characters in order to facilitate easy and quick understanding:

Proper setting

Specifies proper setting.

Disturbances

Specifies the disturbances that can occur from an incorrect setting.

Cover

Specifies which covers must be disassembled 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 service, maintenance, and installation

Steps to be performed via the software control panel

The individual steps are numbered:

1. First step
2. Second step

… The steps must always be followed in the specified order.

- Lists are marked 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.

Information

Additional information, e.g. on alternative operating options.

Order

Specifies the work to be performed before or after an adjustment.

References

📖 Reference to another section in these instructions.

Safety Important warnings for the user of the machine are specifically marked. Since safety is of particular importance, hazard symbols, levels of danger and their signal words are described separately in the chapter **Safety** (📖 *p. 9*).

Location information If no other clear location information is used in a figure, indications of **right** or **left** are always from the user's point of view.

1.3 Other documents

The machine includes components from other manufacturers. Each manufacturer has performed a hazard assessment for these purchased parts and confirmed their design compliance with applicable European and national regulations. The proper use of the built-in components is described in the corresponding manufacturer's instructions.

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 resulting from:

- Breakage and transport damages
- Failure to observe these instructions
- Improper use
- Unauthorized modifications to the machine
- Use of untrained personnel
- Use of unapproved parts

Transport

Dürkopp Adler cannot be held liable for breakage and transport damages. Inspect the delivery immediately upon receiving it. Report any damage to the last transport manager. This also applies if the packaging is not damaged.

Leave machines, equipment and packaging material in the condition in which they were found when the damage was discovered. This will ensure any claims against the transport company.

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

2 Safety

This chapter contains basic information 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 so can result in serious injury and property damage.

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 the DIN VDE 0105.

For the following work, switch off the machine at the main switch or disconnect the power plug:

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

Missing or faulty parts could impair safety and damage the machine. Only use original parts from the manufacturer.

Transport

Use a lifting carriage or stacker to transport the machine. Raise the machine max. 20 mm and secure it to prevent it from slipping off.

Setup

The connection cable must have a power plug approved in the relevant country. The power plug may only be assembled to the connection cable by qualified specialists.

Obligations of the operator

Follow the country-specific safety and accident prevention regulations and the legal regulations concerning industrial safety and the protection of the environment.

All the warnings and safety signs on the machine must always be in legible condition. Do not remove!
Missing or damaged warnings and safety signs must be replaced immediately.

Requirements to be met by the personnel

Only qualified specialists may:

- Setting up the machine
- Performing maintenance work and repairs
- Performing work on electrical equipment

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

Operation

Check the machine during operating for any externally visible damage. Stop working if you notice any changes to the machine. Report any changes to your supervisor. Do not use a damaged machine any further.

Safety equipment

Safety equipment should not be disassembled or deactivated. If it is essential to disassemble or deactivate safety equipment for a repair operation, it must be assembled and put back into operation immediately afterward.

2.2 Signal words and symbols used in warnings

Warnings in the text are distinguished by color bars. The color scheme is based on the severity of the danger. Signal words indicate the severity of the danger.

Signal words

Signal words and the hazard they describe:

Signal word	Meaning
DANGER	(with hazard symbol) If ignored, fatal or serious injury will result
WARNING	(with hazard symbol) If ignored, fatal or serious injury can result
CAUTION	(with hazard symbol) If ignored, moderate or minor injury can result
CAUTION	(with hazard symbol) If ignored, environmental damage can result
NOTICE	(without hazard symbol) If ignored, property damage can result

Symbols

The following symbols indicate the type of danger to personnel:

Symbol	Type of danger
	General
	Electric shock

Symbol	Type of danger
	Puncture
	Crushing
	Environmental damage

Examples Examples of the layout of warnings in the text:

DANGER

Type and source of danger!

Consequences of non-compliance.

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 ignored.

WARNING

Type and source of danger!

Consequences of non-compliance.

Measures for avoiding the danger.

↳ This is what a warning looks like for a hazard that could result in serious or even fatal injury if ignored.

CAUTION

Type and source of danger!

Consequences of non-compliance.

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 ignored.

CAUTION

Type and source of danger!

Consequences of non-compliance.

Measures for avoiding the danger.

↳ This is what a warning looks like for a hazard that could result in environmental damage if ignored.

NOTICE

Type and source of danger!

Consequences of non-compliance.

Measures for avoiding the danger.

↳ This is what a warning looks like for a hazard that could result in property damage if ignored.

3 Working basis

3.1 Order of the adjustments

Order

The adjustment positions for the machine are interdependent.

Always comply with the order of individual adjustment steps as specified.

It is absolutely essential that you follow all notices regarding prerequisites and subsequent adjustments that are marked with  in the margin.

NOTICE

Property damage may occur!

Risk of machine damage from incorrect order.

It is essential to follow the working order specified in these instructions.

3.2 Laying the cables

Ensure that all cables are laid in the machine such that the function of moving parts is not hampered.

To lay the cables:

1. Lay any excess cabling neatly in proper cable snakes.
2. Bind together the cable loops with cable ties.

Important

Tie loops wherever possible to fixed parts.
The cables must be secured firmly.

3. Cut off any overlapping cable ties.

NOTICE

Property damage may occur!

Excess cables can impair the functioning of moving machine parts. This impairs the sewing function and can result in damage.

Lay excess cable as described above.

3.3 Removing the covers

WARNING

Risk of injury from sharp and moving parts!

Puncture or crushing possible.

Switch off the machine before removing or assembling covers.

For many types of adjustment work, you will have to remove the machine covers first in order to access the components.

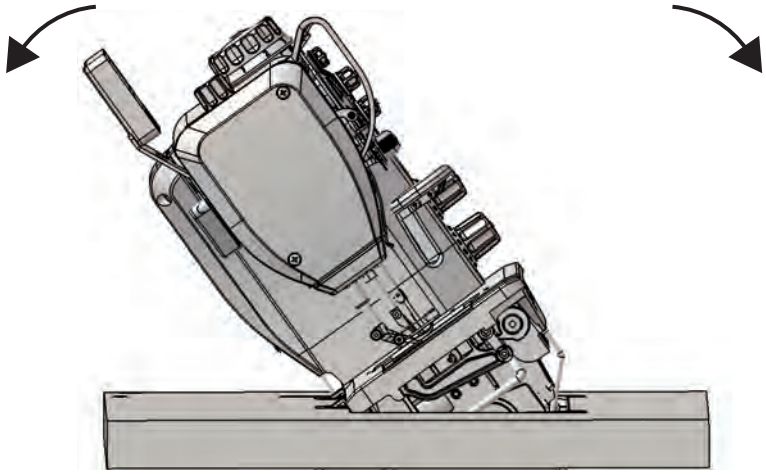
This chapter describes how to remove and then assemble the individual covers again. The text for each type of adjustment work then specifies only the cover that needs to be removed at that particular time.

3.3.1 Access to the underside of the machine

Cover

To access the components on the underside of the machine, you must tilt the machine head.

Fig. 1: Access to the underside of the machine



Tilting the machine head

To tilt the machine head:

1. Tilt the machine head as far as it will go.

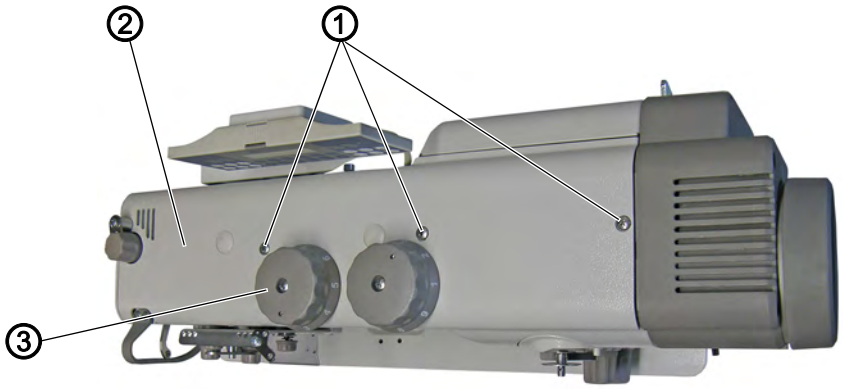
Erecting the machine head

To erect the machine head:

1. Erect the machine head.

3.3.2 Disassembling and assembling the arm cover

Fig. 2: Disassembling and assembling the arm cover



(1) - Screws
(2) - Arm cover
(3) - Sewing foot stroke adjusting wheel

Disassembling the arm cover

To remove the arm cover:

1. Turn the adjusting wheel for the sewing foot stroke (3) to **2**.
2. Loosen the screws (1).
3. Disassemble the arm cover (2).

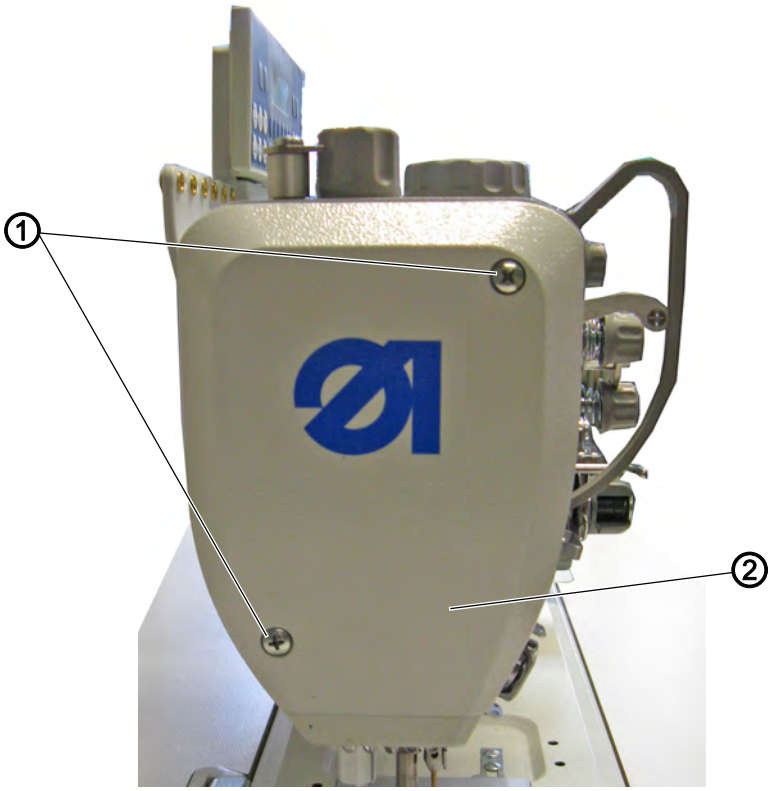
Assembling the arm cover

To assemble the arm cover:

1. Turn the adjusting wheel for the sewing foot stroke to 2.
2. Assemble the arm cover (2).
3. Tighten the screws (1).

3.3.3 Disassembling and assembling the head cover

Fig. 3: Disassembling and assembling the head cover



(1) - Screws *(2) - Head cover*

Disassembling the head cover

To disassemble the head cover:

1. Loosen the screws (1).
2. Disassemble the head cover (2).

Assembling the head cover

To assemble the head cover:

1. Assemble the head cover (2).
2. Tighten the screws (1).

3.3.4 Disassembling and assembling the valve cover

Fig. 4: Disassembling and assembling the valve cover

(1) - Screws *(2) - Valve cover*

Disassembling the valve cover

To disassemble the valve cover:

1. Loosen the screws (1).
2. Disassemble the valve cover (2).

Important

When disassembling the cover, make sure not to tear off any cables.

Assembling the valve cover

To assemble the valve cover:

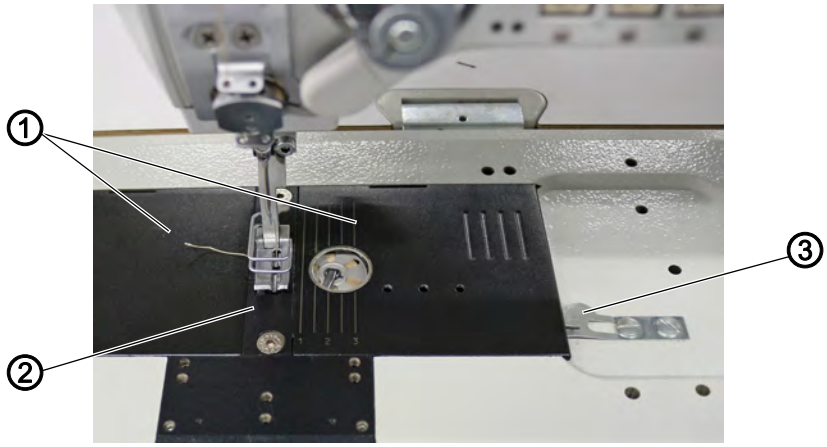
1. Assemble the valve cover (2).
2. Tighten the screws (1).

Important

When assembling the cover, make sure not to pinch any cables.

3.3.5 Opening and closing the throat plate slide

Fig. 5: Opening and closing the throat plate slide



(1) - Throat plate slide
(2) - Throat plate
(3) - Clamping spring

Opening the throat plate slide

To open the throat plate slide:

1. Press the clamping spring (3) downwards.
2. Push the throat plate slide (1) apart.

Closing the throat plate slide

To close the throat plate slide:

1. Screw the throat plate slide (1) to the throat plate (2).

3.3.6 Disassembling and assembling the throat plate

Fig. 6: Disassembling and assembling the throat plate

(1) - Screws
(2) - Throat plate
(3) - Bobbin case nose

Disassembling the throat plate

To disassemble the throat plate:

1. Open the throat plate slide (📖 *p. 18*).
2. Loosen the screws (1).
3. Disassemble the throat plate (2).

Assembling the throat plate

To assemble the throat plate:

1. Insert the throat plate (2).
   Ensure that the bobbin case nose (3) is in the cutout of the throat plate.
2. Tighten the screws (1).
3. Close the throat plate slide.

3.3.7 Disassembling and assembling the feed dog

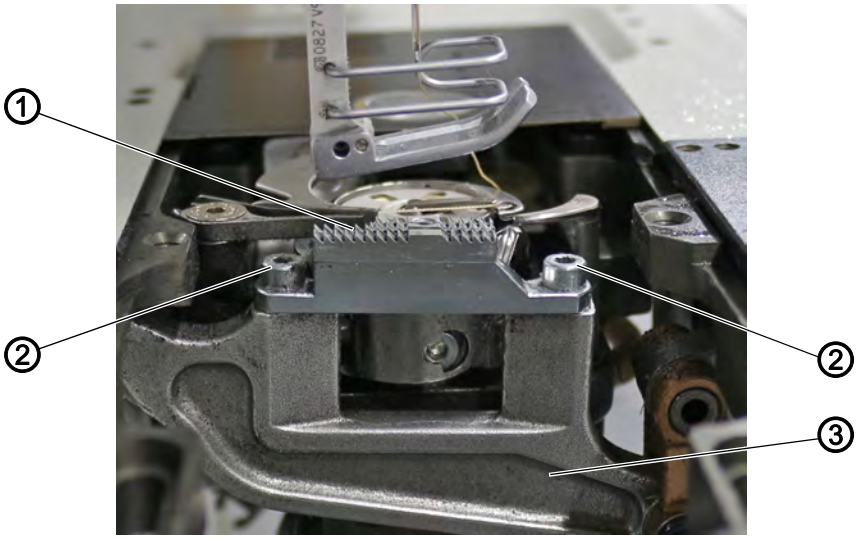
WARNING

Risk of injury from sharp and moving parts!

Puncture or crushing possible.

Switch off the machine before you disassemble or assemble the feed dog.

Fig. 7: Disassembling and assembling the feed dog



(1) - Feed dog
(2) - Screws
(3) - Feed dog carrier

Disassembling the feed dog

To disassemble the feed dog:

1. Disassemble the throat plate (📖 *p. 19*).
2. Loosen the screws (2).
3. Disassemble the feed dog (1) from the feed dog carrier (3).

Assembling the feed dog

To assemble the feed dog:

1. Assemble the feed dog (1) onto the feed dog carrier (3).
2. Tighten the screws (2).
3. Assemble the throat plate (📖 *p. 19*).

Important

Check the feed dog position in motion and with the stitch length at its maximum by turning the handwheel. The feed dog must not hit against the throat plate.

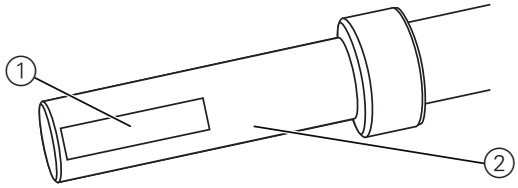
Order

Then check the following adjustment:

- Feed dog (📖 *p. 38*)

3.4 Flats on shafts

Fig. 8: Flats on shafts



(1) - Flat *(2) - Shaft*

Some shafts have flat surfaces at the points where the components are screwed on. This stabilizes the connection and makes adjustment easier.

For all adjustments on the surface, the first screw in the direction of rotation is screwed onto the surface.

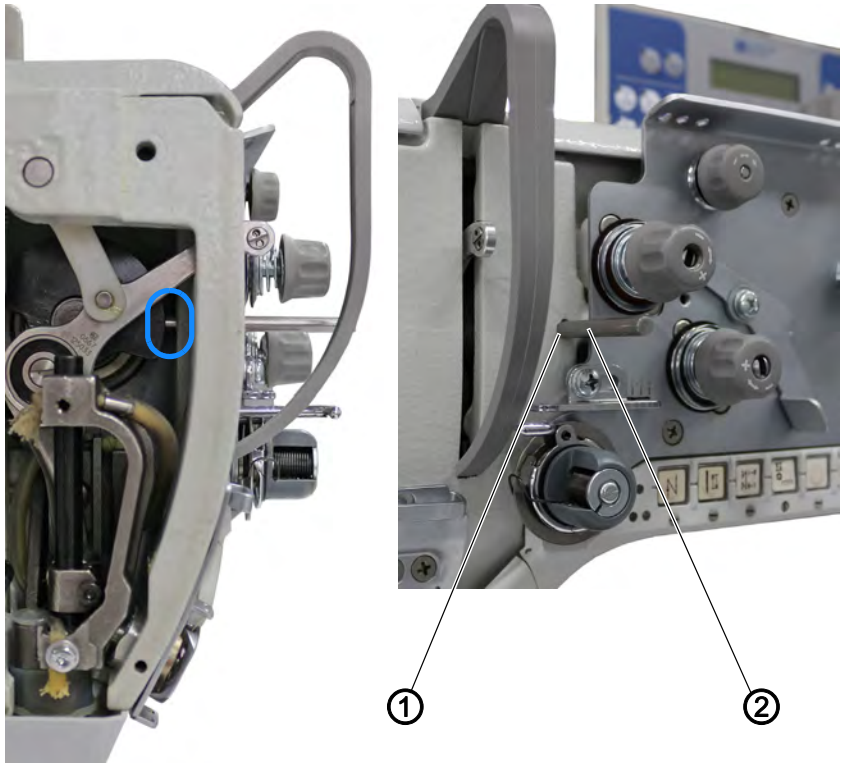
Important

Always ensure that the screw faces are completely flush with the surface.

3.5 Locking the machine in place

For some adjustments, the machine must be locked in place. To do this, the locking peg (3) from the accessory pack is inserted into a slot on the arm shaft crank, blocking the arm shaft.

Fig. 9: Locking the machine in place



(3) - Locking opening

(3) - Locking peg

Locking the machine in place

To lock the machine in place:

1. Remove the plug from the locking opening (1).
2. Turn the handwheel until the slot is in front of the locking opening (1).
3. Insert the locking peg (2) into the slot.

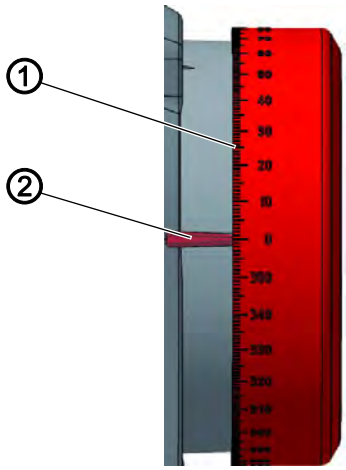
Removing the lock

To remove the lock:

1. Pull the locking peg (2) out of the slot.
2. Insert the plug into the locking opening (1).

3.6 Adjusting the handwheel into position

Fig. 10: Adjusting the handwheel into position



(1) - Graduated scale *(2) - Marking*

For some adjustments, the graduated scale (1) on the handwheel has to be moved to a certain position.

To adjust the handwheel into position:

1. Turn the handwheel until the specified number on the graduated scale (1) is next to the marking (2).

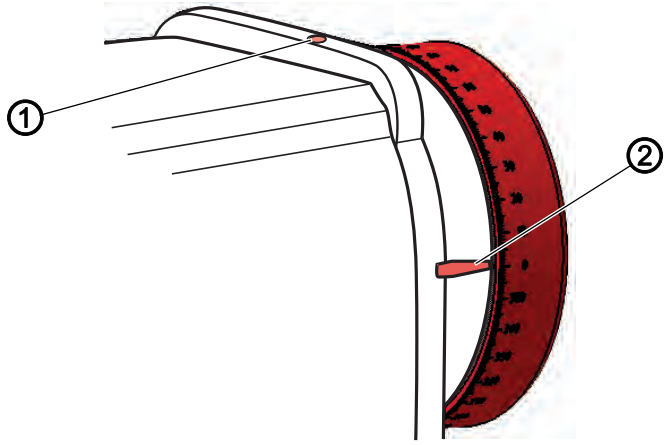
4 Adjusting the handwheel scale

Proper setting

1. Lock the machine in place at position 2 (📖 *p. 22*).

↳ The handwheel is at position 0°.
If a different degree number is next to the marking (2), then you will have to reset the graduated scale.

Fig. 11: Adjusting the handwheel scale



(1) - Screw opening *(2) - Marking*

To adjust the handwheel scale:

1. Lock the machine in place at position 2 (📖 *p. 22*).
2. Loosen the fastening screw for the handwheel through the screw opening (1).
3. Turn the handwheel so that the marking (2) points to the degree number 0°.
4. Tighten the fastening screw.
5. Turn the handwheel to 50° and tighten the 2nd fastening screw.

5 Positioning the arm shaft

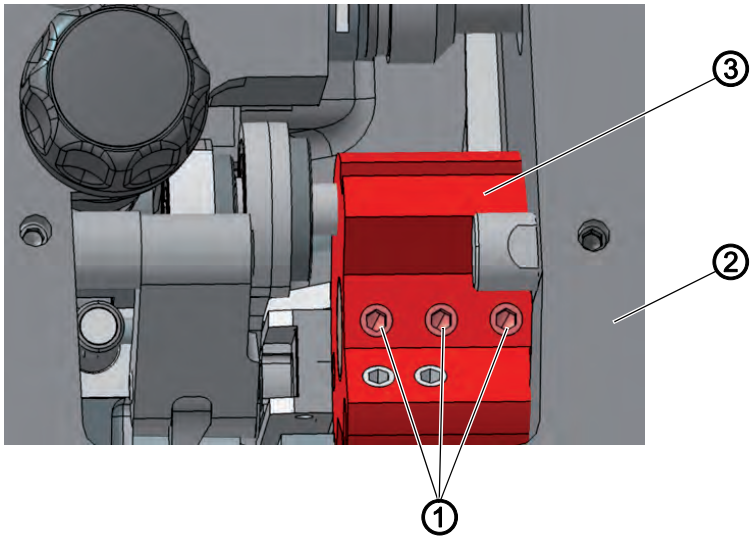
WARNING

Risk of injury from moving parts!

Crushing possible.

Switch off the machine before you check and set the position of the arm shaft crank.

Fig. 12: Positioning the arm shaft



(1) - Threaded pins
(2) - Machine casting
(3) - Arm shaft crank

Proper setting

The 3 threaded pins (1) on the arm shaft crank (3) are seated completely on the flat. The arm shaft crank (3) is flush with the machine casting (2)

To position the arm shaft:

1. Disassemble the arm cover (📖 *p. 17*).
2. Loosen the threaded pins (1).
3. Turn the arm shaft crank (3) such that the threaded pins (1) are seated completely on the flat of the arm shaft.
4. Push the arm shaft with the arm shaft crank (3) to the right as far as it will go and flush with the machine casting.
5. Tighten the threaded pins (1).

6 Positioning the toothed belt wheels

WARNING

Risk of injury from moving parts!

Crushing possible.

Switch off the machine before positioning the toothed belt wheels.

Proper setting

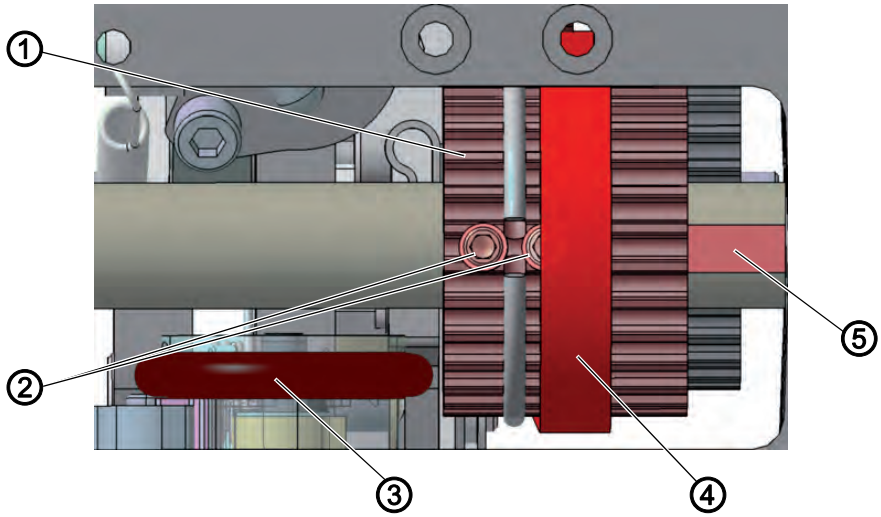
The two toothed belt wheels must be positioned above each other so that the toothed belt can run correctly. The winder wheel is directly next to the upper toothed belt wheel and determines its alignment.

Important

The position of the upper toothed belt wheel is defined by the distance to the winder wheel.
Therefore, you must first align the upper toothed belt wheel on the winder wheel and then align the lower toothed belt wheel so that the toothed belt runs correctly over both wheels.

6.1 Positioning the upper toothed belt wheel

Fig. 13: Positioning the upper toothed belt wheel



(1) - Upper toothed belt wheel
(2) - Threaded pins
(3) - Winder wheel
(4) - Toothed belt
(5) - Flat of arm shaft

Proper setting

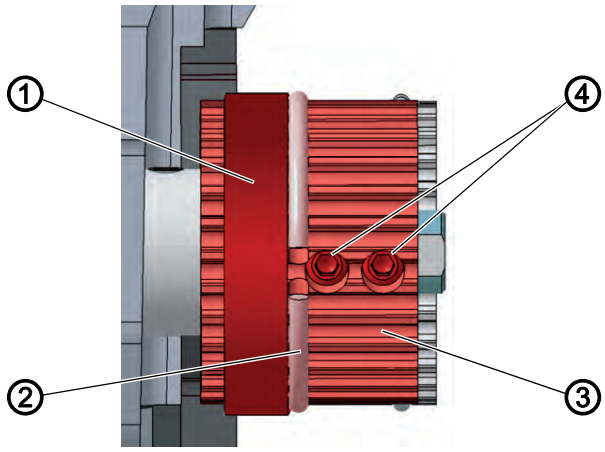
The 2 threaded pins (2) for the upper toothed belt wheel (1) are seated flush on the arm shaft (5).
The distance between the winder wheel (3) and the upper toothed belt wheel (1) must be 0.8 mm.
The toothed belt (4) runs correctly without running against the snap ring or slipping off.

To position the upper toothed belt wheel:

1. Disassemble the arm cover (📖 *p. 17*).
2. Push the toothed belt (4) sufficiently far to the side so that the 2 threaded pins (2) can be reached.
3. Loosen the threaded pins (2).
4. Turn the upper toothed belt wheel (1) so that the threaded pins (2) are seated flush on the flat of the arm shaft (5).
5. Move the upper toothed belt wheel (1) to the side so that the distance to the winder wheel (3) is 0.8 mm.
6. Tighten the threaded pins (2).
7. Push the toothed belt (4) back.

6.2 Positioning the lower toothed belt wheel

Fig. 14: Positioning the lower toothed belt wheel



(1) - Toothed belt
(2) - Snap ring
(3) - Lower toothed belt wheel
(4) - Threaded pins

Proper setting

The 2 threaded pins for the lower toothed belt wheel (3) are seated flush on the flat of the lower shaft.
The toothed belt (1) runs correctly without running against the snap ring (2) or slipping off.

To position the lower toothed belt wheel:

1. Tilt the machine head (📖 *p. 14*).
2. Loosen the threaded pins (4).
3. Turn the lower toothed belt wheel (3) such that the threaded pins (4) are seated on the flat of the arm shaft.

4. Move the lower toothed belt wheel (3) sufficiently far to the side so that the toothed belt (1) makes contact with the snap ring (2) without being pushed away.
5. Tighten the threaded pins (4).

7 Stitch length adjusting wheel

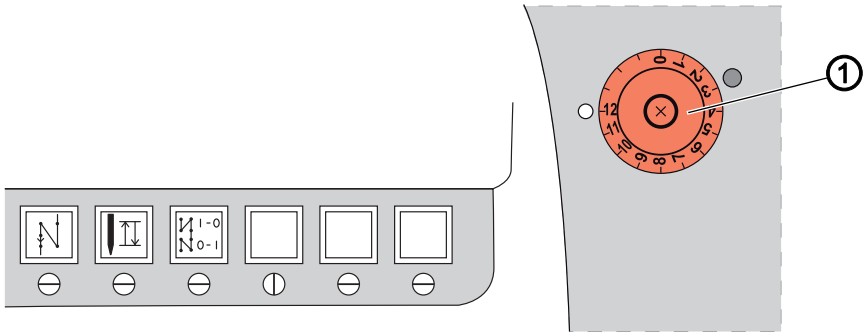
WARNING

Risk of injury from moving parts!

Crushing possible.

Switch off the machine before you set the stitch length adjusting wheel.

Fig. 15: Adjusting the stitch length adjusting wheel



(1) - Stitch length adjusting wheel

The stitch length adjusting wheel (1) on the machine column determines the stitch length.

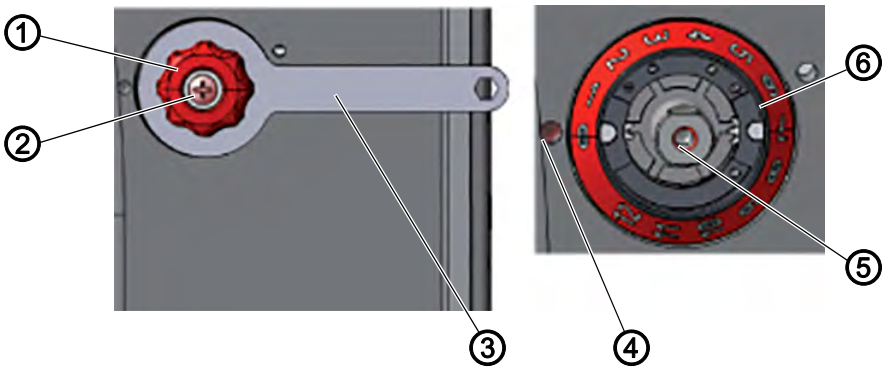
7.1 Adjusting the stitch length adjusting wheel

Proper setting

1. Adjust the stitch length adjusting wheel to 0.

↳ No play on the stitch regulator gear.
The plates for the gear are parallel; the frame cannot be moved.

Fig. 16: Adjusting the stitch length adjusting wheel (1)



(1) - Stitch length adjusting wheel
(2) - Screw
(3) - Wrench
(4) - Adjusting mark
(5) - Shaft
(6) - Scale

To adjust the stitch length adjusting wheel:

1. Tilt the machine head (📖 *p. 14*).
2. Hold the stitch length adjusting wheel (1) in place using the wrench (4).
3. Loosen the screw (2).
4. Remove the stitch length adjusting wheel (1) from the shaft (5).

NOTICE

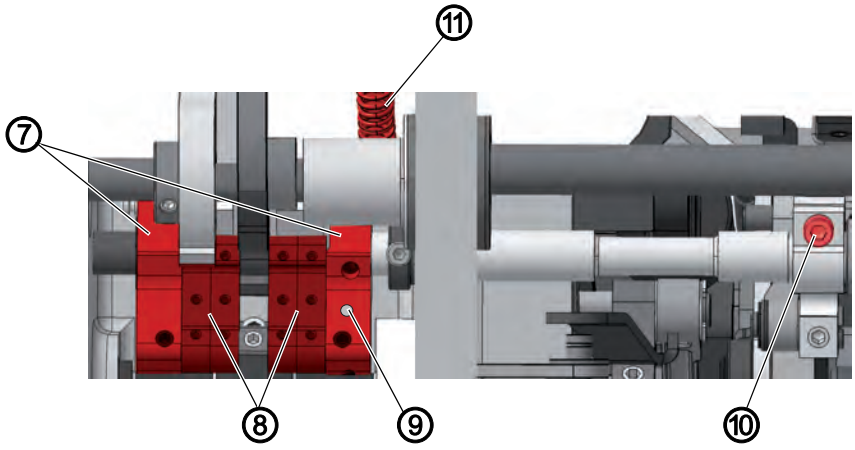
Property damage may occur!

Risk of breakage.
The stitch regulator parts may get stuck, resulting in the maximum stitch length no longer being achieved.

Do not turn the shaft too far to the right.

5. Carefully turn the shaft (5) clockwise using a 10 mm wrench.

Fig. 17: Adjusting the stitch length adjusting wheel (2)



(7) - Frame for the stitch regulator gear
(8) - Plates for the stitch regulator gear
(9) - Hole
(10) - Screw
(11) - Tension spring

6. Push the stitch regulator to check whether the frame for the stitch regulator gear (7) can be moved.
7. As soon as the frame of the stitch regulator gear (7) stops moving, remove the wrench from the shaft (5).
8. Turn the scale (6) so that the 0 is exactly next to the adjusting mark (4).
9. Place the stitch length adjusting wheel (1) onto the shaft (5) and tighten it with the wrench (3).

Important

10. Check whether the plates for the stitch regulator gear (8) are parallel to one another.

If the plates of the stitch regulator gear (8) are not parallel to one another:

11. Remove the tension spring (11).
12. Loosen the screw (10).
13. Manually position the plates (8) so that they are parallel.
14. Tighten the screw (10).
15. Attach the tension spring (11).

7.2 Adjusting the stitch length limit

If not all of the stitch lengths are available during sewing operation, a limit can be placed on the maximum stitch length that can be set.

12, 9, or 6 mm can be selected as the maximum stitch length. The appropriate throat plate must be selected for the selected maximum stitch length. The throat plate cutout must be large enough to prevent the feed dog from hitting the edges of the throat plate at the front and rear dead center.

NOTICE

Property damage may occur!

Risk of damaging the feed dog due to incorrect throat plate size.

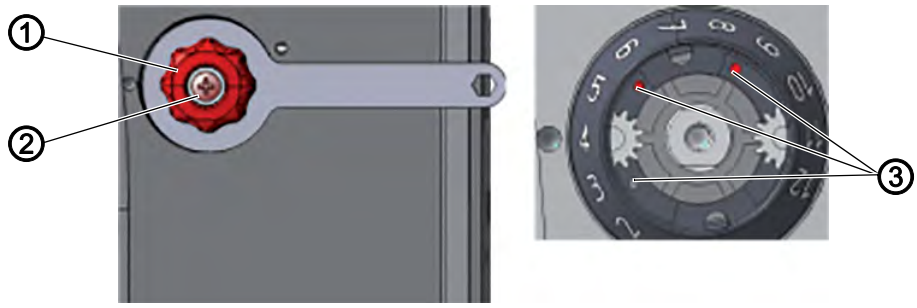
Ensure that an appropriate throat plate is used for the selected maximum stitch length.

Proper setting

Turn the stitch length adjusting wheel clockwise as far as it will go.

↳ The stitch length adjusting wheel can only be turned up to the set maximum stitch length.

Fig. 18: Adjusting the stitch length limit



(1) - Stitch length adjusting wheel
(2) - Screw
(3) - Mark-off slots

To adjust the stitch length limit:

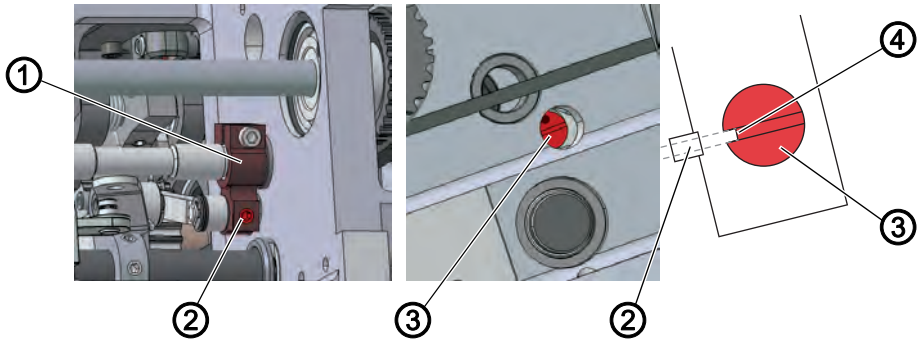
1. Adjust the stitch length adjusting wheel (1) to 0.
2. Hold the stitch length adjusting wheel (1) using a wrench.
3. Loosen the screw (2).
4. Remove the stitch length adjusting wheel (1).
5. Loosen the threaded pin from one of the 3 mark-off openings (3).
6. Screw the threaded pin into the mark-off opening for the required maximum stitch length. The slots are marked with numbers for the stitch length.
7. Turn the scale so that the 0 is exactly next to the adjusting mark.
8. Assemble the stitch length adjusting wheel (1) and hold it using a wrench.
9. Tighten the screw (2).

7.3 Adjusting the eccentric for the forward and backward stitches

Proper setting

The forward and backward stitches are the same length.
As a test, sew a seam forward, stop, and sew a seam backward. The insertions of the forward and backward stitches have to lie within one another.

Fig. 19: Adjusting the eccentric for the forward and backward stitches



(1) - Block
(2) - Threaded pin
(3) - Eccentric
(4) - Recess

To adjust the eccentric for forward and backward stitches:

1. Tilt the machine head (📖 *p. 14*).
2. Loosen the threaded pin (2).
3. Turn the eccentric (3) through the hole.

   Initial position
   The slot in the eccentric (3) is parallel to the threaded pin (2), the recess (4) faces the front.

   - Turn clockwise: the forward stitch becomes larger, the backward stitch smaller
   - Turn counterclockwise: the forward stitch becomes smaller, the backward stitch larger
4. Tighten the threaded pin (2).

8 Needle bar linkage

WARNING

Risk of injury from moving parts!

Crushing possible.

Switch off the machine before aligning the needle bar linkage.

Proper setting

1. Adjust the stitch length adjusting wheel to 0.

↳ The needle must enter the needle hole precisely in the center.

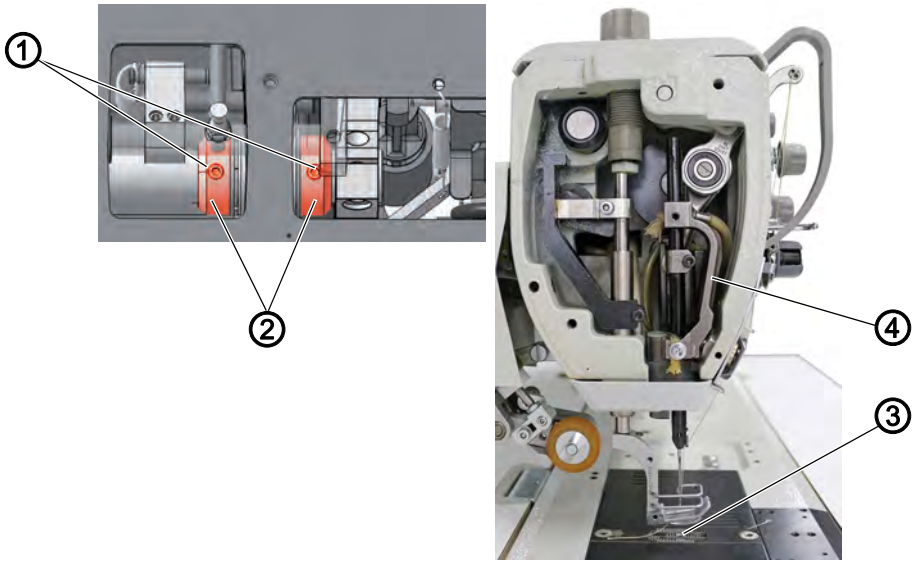
Order

First, check the following adjustment:

- A straight and undamaged needle has to be inserted (🕮 *Operating Instructions*)

8.1 Aligning the needle bar linkage sideways

Fig. 20: Aligning the needle bar linkage sideways (1)

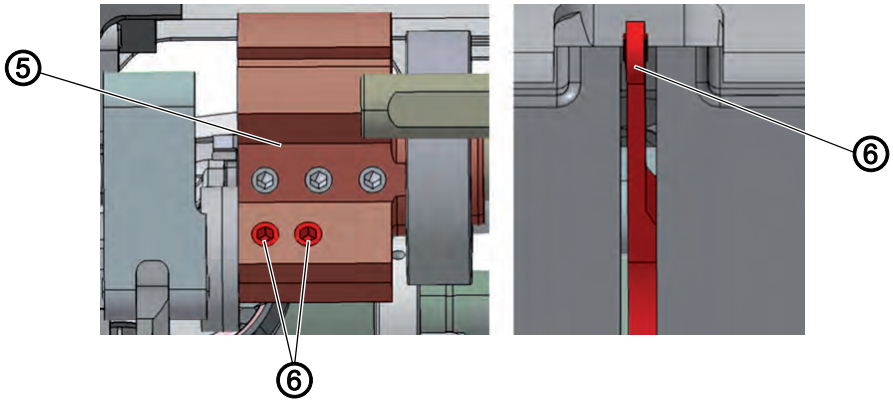


(1) - Threaded pins
(2) - Set collars
(3) - Needle hole
(4) - Needle bar linkage

To align the needle bar linkage sideways:

1. Disassemble the arm cover (🕮 *p. 15*).
2. Disassemble the head cover (🕮 *p. 16*).
3. Adjust the stitch length adjusting wheel to 0.
4. Loosen the threaded pins (1) for the set collars (2).

Fig. 21: Aligning the needle bar linkage sideways (2)



(5) - Arm shaft crank
(6) - Threaded pins
(7) - Thread lever

5. Loosen the threaded pins (6).
   Make sure that the threaded pins stay on the surface.
6. Move the needle bar linkage (4) sideways such that the needle pierces exactly in the center of the needle hole (3).
7. Push the set collars (2) inwards as far as they will go.
8. Tighten the threaded pins (1).
9. Align the thread lever (7) exactly in the middle of the slot.
10. Tighten the threaded pins (6).

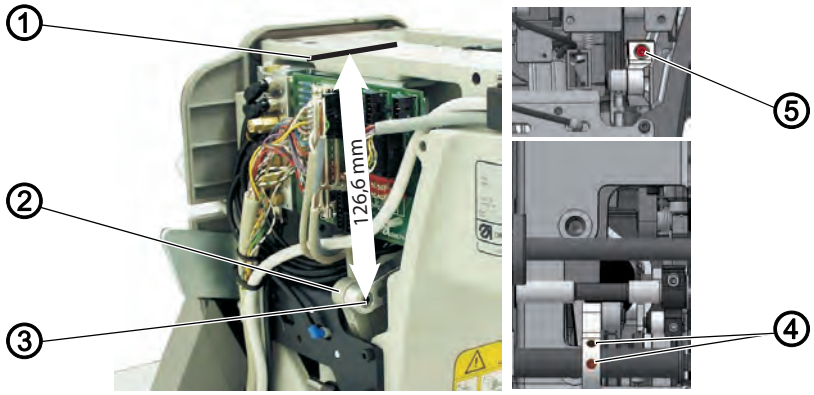
Order

Then check the following adjustment:

- Looping stroke position (📖 *p. 44*)
- Distance between hook and needle (📖 *p. 44*)

8.2 Aligning the needle bar linkage in the sewing direction

Fig. 22: Aligning the needle bar linkage in the sewing direction



(1) - Arm surface
(2) - Lever
(3) - Center of bolt
(4) - Threaded pins
(5) - Screw

Proper setting

1. Adjust the stitch length adjusting wheel to 0.

↳ The lever (2) is positioned so that the distance from the arm surface (1) to the middle of the bolt (3) is 126.6 mm.

To align the needle bar linkage in the sewing direction:

1. Adjust the stitch length adjusting wheel to 0.
2. Loosen the threaded pins (4).
3. Loosen the screw (5).
4. Position the lever (2).
5. Tighten the threaded pins (4).
6. Tighten the screw (5).

Order

Then check the following adjustment:

- Looping stroke position (📖 *p. 44*)

9 Adjusting the feed dog

WARNING

Risk of injury from moving parts!

Crushing possible.

Switch off the machine before adjusting the feed dog.

The position and the movement of the feed dog and needle bar have to be coordinated such that the needle pierces exactly in the center of the needle hole of the feed dog.

Order

First, check the following adjustment:

- Needle bar linkage(📖 *p. 35*)

9.1 Adjusting the feed dog position

Proper setting

The feed dog is exactly in the center of the throat plate cutout, both sideways and in the sewing direction.
If the stitch length is 0, the needle pierces exactly in the center of the needle hole.

9.1.1 Moving the feed dog on the feed dog carrier

Fig. 23: Moving the feed dog on the feed dog carrier

(1) - Feed dog
(2) - Screws
(3) - Feed dog carrier

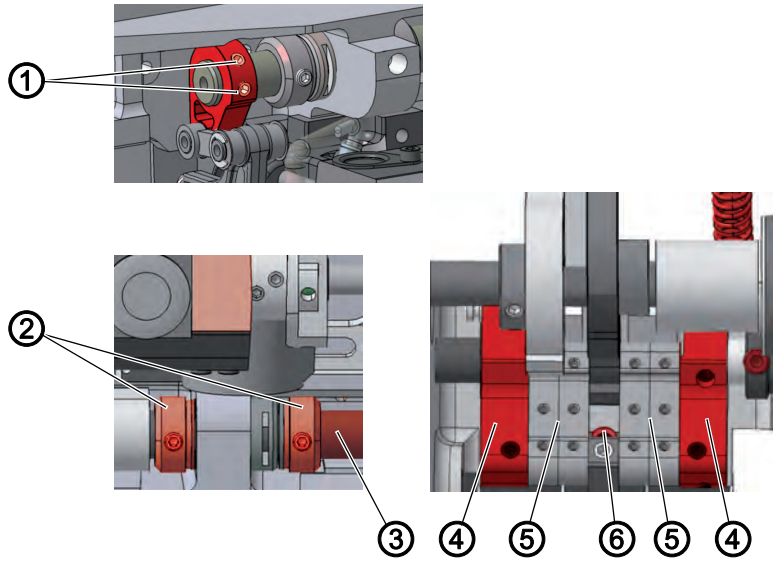
To move the feed dog on the feed dog carrier:

1. Disassemble the throat plate (📖 *p. 19*).
2. Loosen the screws (2).

3. Move the feed dog (1) on the feed dog carrier (3).
   Place the removed throat plate next to it as an aid for orientation so that the feed dog (1) can be screwed on straight.
4. Tighten the screws (2).

9.1.2 Moving the feed dog carrier

Fig. 24: Moving the feed dog carrier



(1) - Threaded pins
(2) - Set collars
(3) - Pusher shaft
(4) - Adjusting frame
(5) - Plates
(6) - Screw

The feed dog carrier is connected to the stitch regulator gear via the pusher shaft and can be moved on this shaft.

To move the feed dog carrier:

1. Tilt the machine head (📖 *p. 14*).
2. Adjust the stitch length adjusting wheel to 0.
3. Loosen the threaded pins (1).
4. Loosen the screw (6).
5. Loosen the threaded pins for the set collars (2).
6. Move the feed dog carrier cross-line to the sewing direction such that the feed dog is exactly in the center of the throat plate cutout.
7. Push the set collars (2) toward each other as far as they will go.
   Make sure that the pusher shaft (3) is tightened by the set collars.
8. Tighten the threaded pins for the set collars (2).
9. Tighten the screw (6).
10. Tighten the threaded pins (1).
    In the process, make sure that the feed dog height has the proper setting (📖 *p. 41*).

9.2 Adjusting the feed dog movement

The feed dog moves in an elliptical cycle. To align this correctly, the feed movement, the feed dog height, and the stroke movement of the feed dog all have to be set.

Order

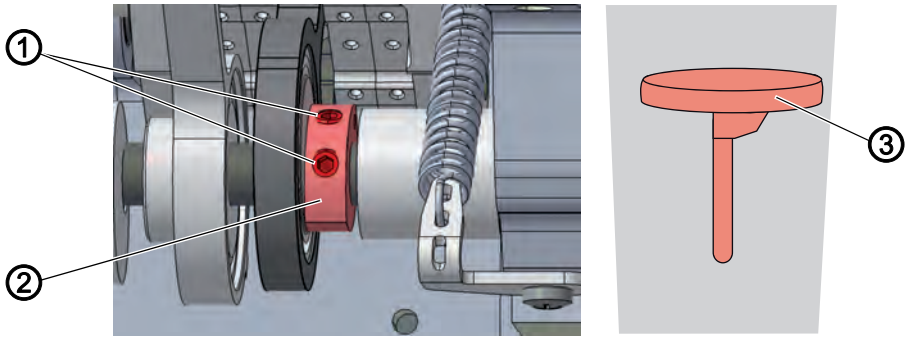
First, check the following adjustment:

- Feed dog position (📖 *p. 38*)

9.2.1 Adjusting the feed movement

The proper adjustment for the feed movement is checked at standstill and set using the pusher eccentric.

Fig. 25: Adjusting the feed movement



(1) - Threaded pins
(2) - Pusher eccentric
(3) - Stitch regulator

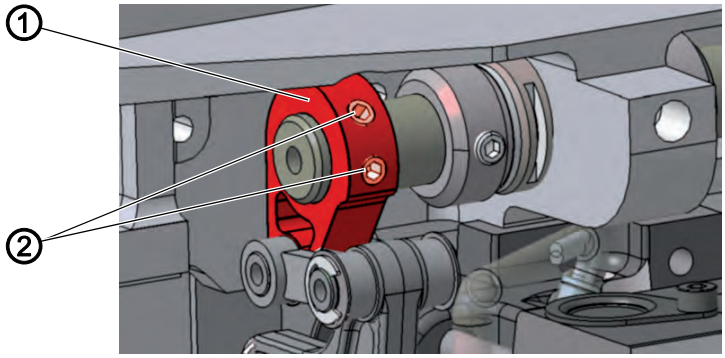
To adjust the feed movement:

1. Tilt the machine head (📖 *p. 14*).
2. Adjust the stitch length adjusting wheel to the maximum stitch length.
3. Loosen the threaded pins (1).
4. Move the handwheel into the 190° position.
5. Press the stitch regulator (3) down and observe how the feed dog and needle respond.
6. Turn the pusher eccentric (2) so that the feed dog and needle no longer move when the stitch regulator (3) is pressed.
7. Tighten the threaded pins (1).

9.2.2 Adjusting the feed dog height at top dead center

The feed dog reaches the maximum stroke height at top dead center when the handwheel is positioned at 190°.

Fig. 26: Adjusting the feed dog height at top dead center



(1) - Lever *(2) - Threaded pins*

Proper setting

1. Place the feed dog at the top dead center by turning the handwheel.

↳ The upper edge of the feed dog protrudes 0.5 mm above the throat plate.

To adjust the feed dog height at top dead center:

1. Tilt the machine head (📖 *p. 14*).
2. Move the handwheel into the 190° position.
3. Loosen the threaded pins (2) on the lever (1) at the left, above the hook.
4. Turn the lever (1) such that the upper edge of the feed dog protrudes 0.5 mm above the throat plate.
5. Tighten the threaded pins (2).

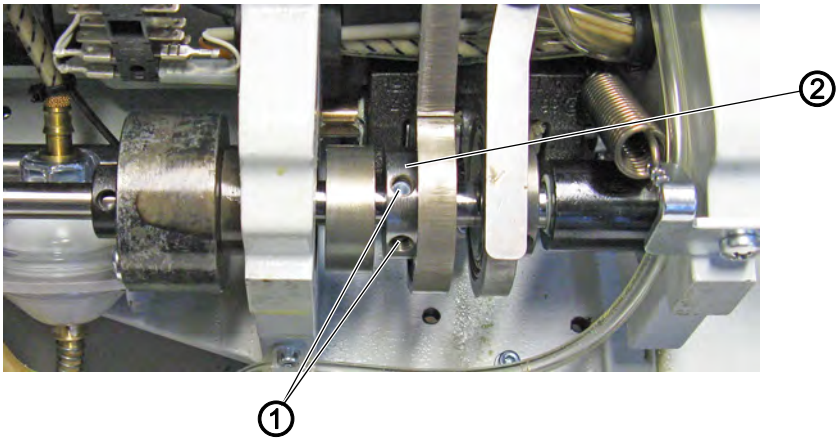
9.2.3 Adjusting the stroke movement

Order

First, check the following adjustment:

- Feed dog height (📖 *p. 41*)

Fig. 27: Adjusting the stroke movement



(1) - Threaded pins *(2) - Stroke eccentric*

Proper setting

At the front dead center (handwheel position 90°) and at the rear dead center (handwheel position 270°) for the feed dog, the upper edge of the feed dog is at the same height as the upper edge of the throat plate.

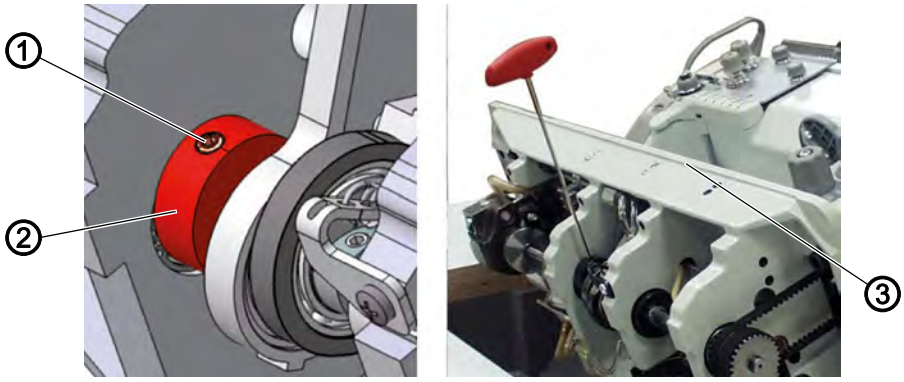
At 90°, the feed dog is in the upward movement; at 270°, in the downward movement.

To adjust the stroke movement:

1. Tilt the machine head (📖 *p. 14*).
2. Loosen the threaded pins (1).
3. Move the handwheel into the 90° position.
4. Turn the stroke eccentric (2) such that the upper edge of the feed dog is at the same height as the upper edge of the throat plate during the upward movement.
5. Tighten the threaded pins (1).

9.2.4 Adjusting the compensating weight

Fig. 28: Adjusting the compensating weight



(1) - Threaded pin
(2) - Compensating weight
(3) - Base plate

Proper setting

1. Move the handwheel into the 210° position.

↳ The threaded pin for the compensating weight is parallel to the base plate.

To adjust the compensating weight:

1. Move the handwheel into the 210° position.
2. Unscrew the threaded pin (1) and leave the allen key inserted in the threaded pin.
3. Turn the compensating weight (2) such that the threaded pin (1) is parallel to the base plate (3).
   Use the allen key inserted in the threaded pin as a means of orientation.
4. Tighten the threaded pin (1).

10 Position of the hook and needle

WARNING

Risk of injury from moving parts!

Crushing possible.

Switch off the machine before you check and set the position of the hook and needle.

NOTICE

Property damage may occur!

There is a risk of machine damage, needle breakage or damage to the thread if the distance between needle groove and hook tip is incorrect.

Check and, if necessary, reset the distance to the hook tip after inserting a needle with a new size.

10.1 Adjusting the looping stroke position

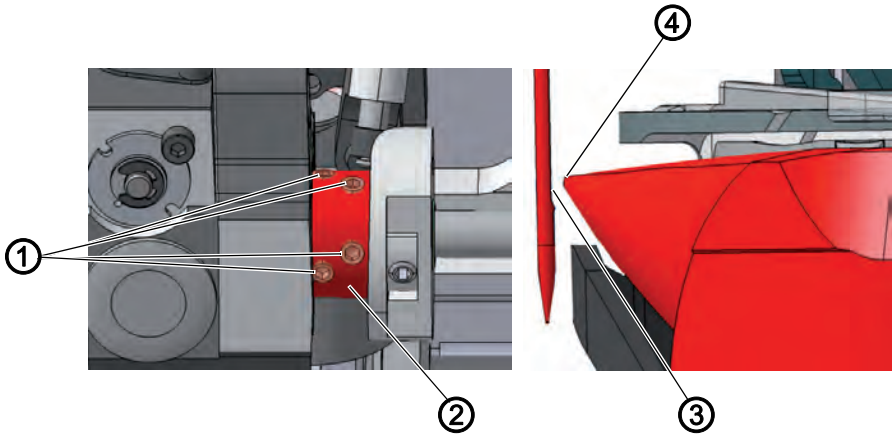
The looping stroke is the path length from the bottom dead center of the needle bar up to the position where the hook tip is exactly on the vertical center line of the groove for the needle.
The looping stroke is precisely 2 mm.

Order

First, check the following adjustments:

- Needle bar linkage(🕮 *p. 35*)
- A straight and undamaged needle has to be inserted (🕮 *Operating Instructions*)

Fig. 29: Adjusting the looping stroke position



(1) - Threaded pins
(2) - Set collar
(3) - Groove
(4) - Hook tip

Proper setting

1. Lock the machine in place at position 1 (📖 *p. 22*).

↳ The hook tip points exactly to the vertical center line of the needle.

Disturbance

- Skip stitches

To adjust the looping stroke position:

1. Tilt the machine head (📖 *p. 14*).
2. Disassemble the feed dog (📖 *p. 20*).
3. Lock the machine in place at position 1 (📖 *p. 22*).
4. Adjust the stitch length adjusting wheel to 0.
5. Loosen all 4 threaded pins (2) for the set collar (1).
6. Turn the hook such that the hook tip (4) points exactly to the vertical center line of the needle.
7. Tighten the threaded pins (2) for the set collar (1).

Order

Then check the following adjustments:

- Needle guard (📖 *p. 48*)
- Timing of cutting by the thread trimmer (📖 *p. 63*)

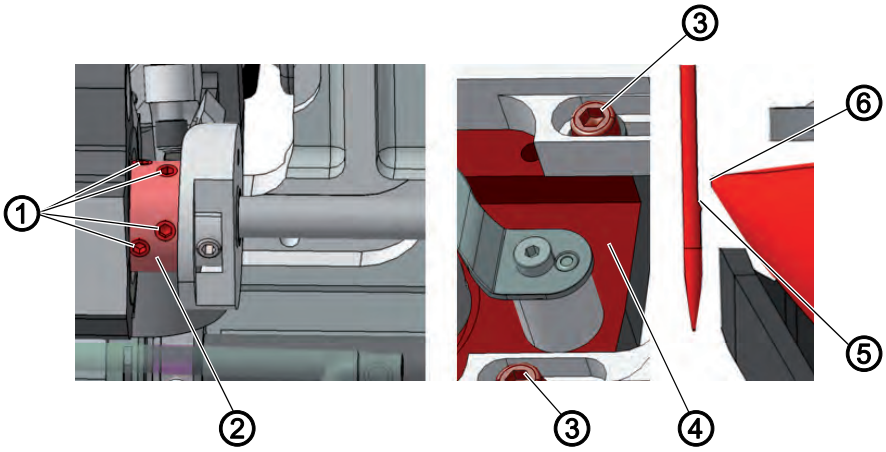
10.2 Adjusting the hook side clearance

Order

First, check the following adjustments:

- A straight and undamaged needle has to be inserted (📖 *Operating Instructions*)
- Needle bar linkage(📖 *p. 35*)
- Looping stroke position (📖 *p. 44*)

Fig. 30: Adjusting the hook side clearance



(1) - Threaded pins
(2) - Set collar
(3) - Screws
(4) - Hook support
(5) - Groove
(6) - Hook tip

Proper setting

1. Lock the machine in place at position 1 (📖 *p. 22*).

↳ The distance between the hook tip and the groove of the needle is no greater than 0.1 mm.

To adjust the hook side clearance:

1. Tilt the machine head (📖 *p. 14*).
2. Open the throat plate slide (📖 *p. 18*).
3. Lock the machine in place at position 1 (📖 *p. 22*).
4. Loosen the screws (3).
5. Loosen the threaded pins (1) for the set collar (2).
6. Move the hook support (3) sideways such that the distance between the hook tip (6) and the groove for the needle (5) is 0.1 mm at most, without the hook tip (6) touching the needle.
7. Tighten the screws (3).

Order

Then check the following adjustment:

- Needle guard (📖 *p. 48*)

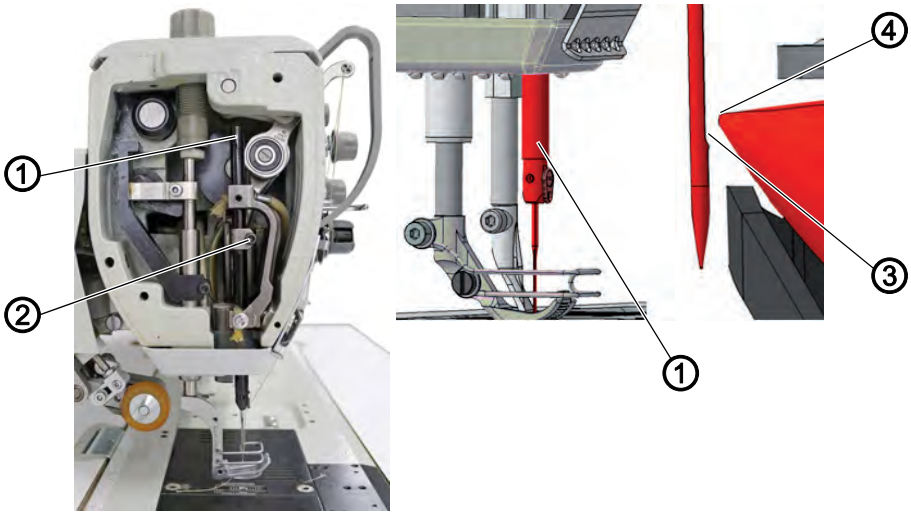
10.3 Adjusting the needle bar height

Order

First, check the following adjustments:

- A straight and undamaged needle has to be inserted (📖 *Operating Instructions*)
- Looping stroke position (📖 *p. 44*)

Fig. 31: Adjusting the needle bar height



(1) - Needle bar
(2) - Screw
(3) - Groove
(4) - Hook tip

Proper setting

1. Lock the machine in place at position 1 (📖 *p. 22*).
2. Adjust the stitch length adjusting wheel to 0.

↳ The hook tip is level with the lower third of the groove on the needle.

Disturbance

- Damage to the hook tip
- Jamming of the needle thread
- Skip stitches
- Thread breaking
- Needle breakage

To adjust the needle bar height:

1. Disassemble the head cover (📖 *p. 16*).
2. Lock the machine in place at position 1 (📖 *p. 22*).
3. Adjust the stitch length adjusting wheel to 0.
4. Loosen the screw (2).
5. Move the height of the needle bar (1) such that the hook tip (4) is in the middle of the lower third of the groove for the needle.
   When doing so, take care not to twist the needle to the side.
   The groove (3) must face toward the hook.

6. Tighten the screw (2).
7. Remove the lock.

Order

Then check the following adjustment:

- Needle guard (📖 *p. 48*)

10.4 Adjusting the needle guard

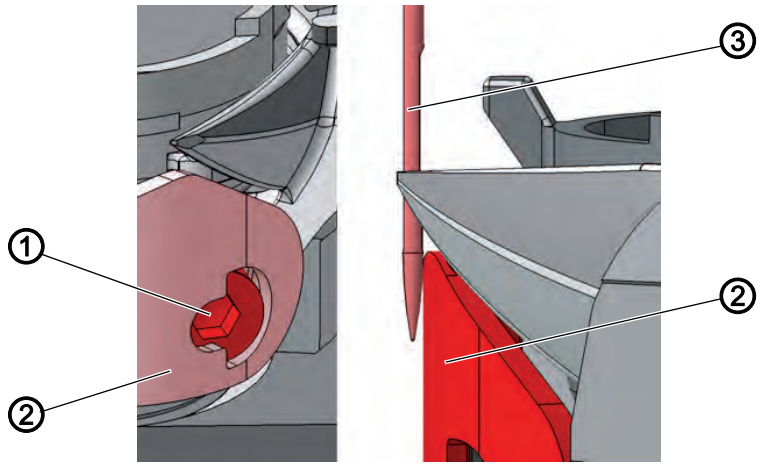
The needle guard prevents contact between needle and hook tip.

Order

First, check the following adjustments:

- Looping stroke position (📖 *p. 44*)
- Hook side clearance (📖 *p. 46*)
- Needle bar height (📖 *p. 47*)
- A straight and undamaged needle has to be inserted (📖 *Operating Instructions*)

Fig. 32: Adjusting the needle guard



(1) - Screw
(2) - Needle guard
(3) - Needle

Proper setting

1. Lock the machine in place at position 1 (📖 *p. 22*).

↳ The needle guard pushes the needle just enough away so that it cannot be touched by the hook tip.

To adjust the needle guard:

1. Disassemble the feed dog (📖 *p. 20*).
2. Turn the handwheel and check how far the needle guard (2) pushes the needle away.

3. Turn the screw (1) such that the needle guard (2) just pushes the needle (3) far away enough so that it cannot be touched by the hook tip:
   - **To push away more forcefully:** turn counterclockwise
   - **To push away less forcefully:** turn clockwise

11 Bobbin case lifter

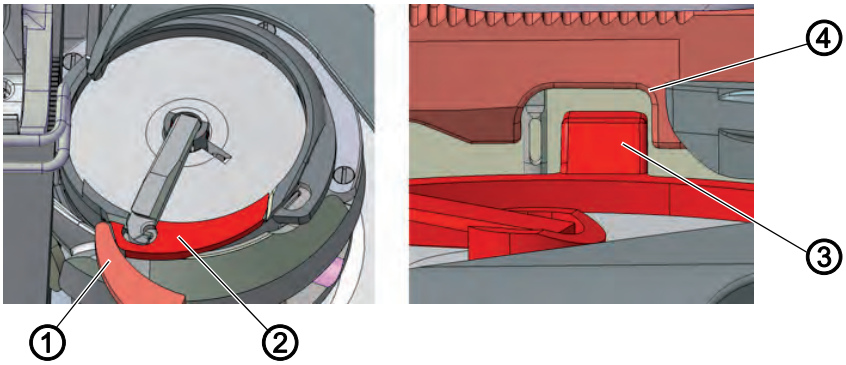
WARNING

Risk of injury from moving parts!

Crushing possible.

Switch off the machine before adjusting the bobbin case lifter.

Fig. 33: Bobbin case lifter



(1) - Bobbin case lifter
(2) - Bobbin case
(3) - Nose of the bobbin case
(4) - Slot

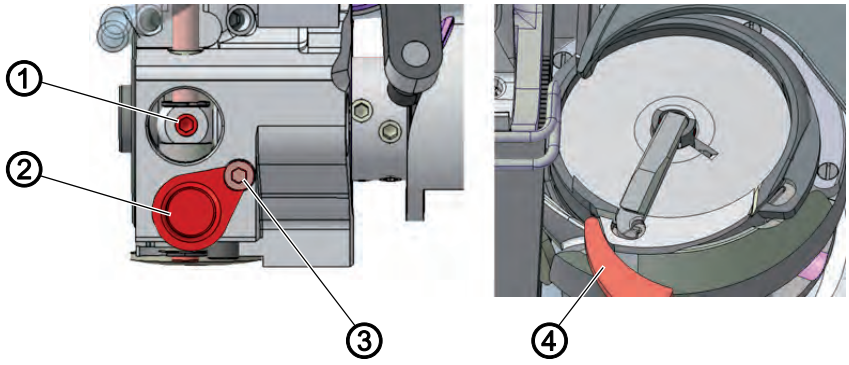
The hook pulls the needle thread through between the nose of the bobbin case (3) and the slot (4) in the throat plate.
The bobbin case lifter (1) now pushes the bobbin case (2) away so that a gap appears for the thread.
If the hook tip is located below the bobbin case lifter (1), the bobbin case lifter (1) must open so that the thread can also slide past in that position.
So that the thread can slip through without a problem, the width of the lifting gap and the timing of opening have to be set.

Disturbance

- Thread breaking
- Formation of loops on the bottom side of the seam
- Loud machine noise

11.1 Adjusting the lifting gap

Fig. 34: Adjusting the lifting gap



(1) - Threaded pin
(2) - Cover
(3) - Screw
(4) - Bobbin case lifter

Proper setting

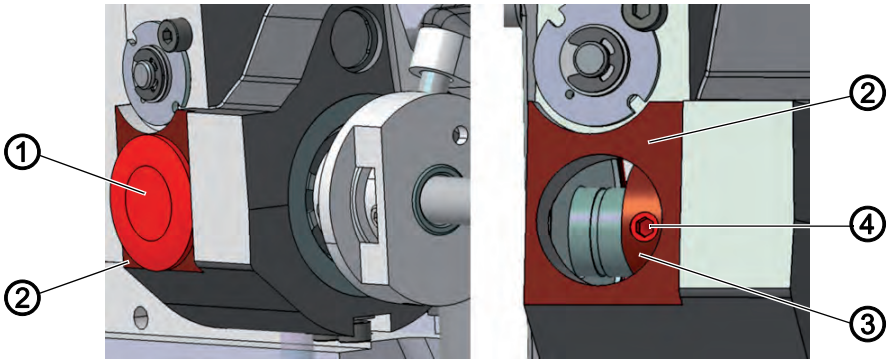
The needle thread slides through unobstructed between the nose of the bobbin housing and the recess in the throat plate.

To adjust the lifting gap:

1. Tilt the machine head (📖 *p. 14*).
2. Open the throat plate slide (📖 *p. 18*).
3. Loosen the screw (3).
4. Push the cover (2) downwards.
5. Loosen the threaded pin (1).
6. Adjust the bobbin case lifter such that the gap between the nose of the bobbin case and the slot in the throat plate is just big enough to allow the needle thread to slip through without a problem.
   While doing so, ensure that the gap is not so big that the middle part of the hook swings back and forth, hitting the slot in the throat plate.
7. Tighten the threaded pin (1).
8. Push the cover (2) upwards.
9. Tighten the screw (3).

11.2 Adjusting the timing for opening

Fig. 35: Adjusting the timing for opening



(1) - Plug
(2) - Hook housing
(3) - Control cam
(4) - Threaded pin

Proper setting

The bobbin case lifter starts to open exactly at the point when the hook tip is located below the bobbin case lifter after the loop is taken up.
In 1-needle machines, this happens when the handwheel position is approx. 100°.
In 2-needle machines, this happens when the handwheel position is approx. 100° for the right-hand hook, and when the handwheel position is approx. 300° for the left-hand hook.
For 100° or 300°, the threaded pin of the control cam (4) is exactly in the middle of the opening. (Insert allen key in the threaded pin for orientation.)

To adjust the timing for opening:

1. Tilt the machine head (📖 *p. 14*).
2. Remove the plug (1) on the bottom side of the hook housing (2).
3. Loosen the threaded pin (4) through the opening.
4. Turn the handwheel until the hook tip is exactly below the bobbin case lifter.
5. Use the allen key to turn the control cam (3) so that the bobbin case lifter opens at the correct point in time.
6. Tighten the threaded pin (4).
7. Insert the plug (1) into the opening.

11.3 Adjusting the sewing foot lifting height

The adjusting wheel on the machine arm determines how high the presser foot will be raised during sewing.

WARNING

Risk of injury from moving parts!

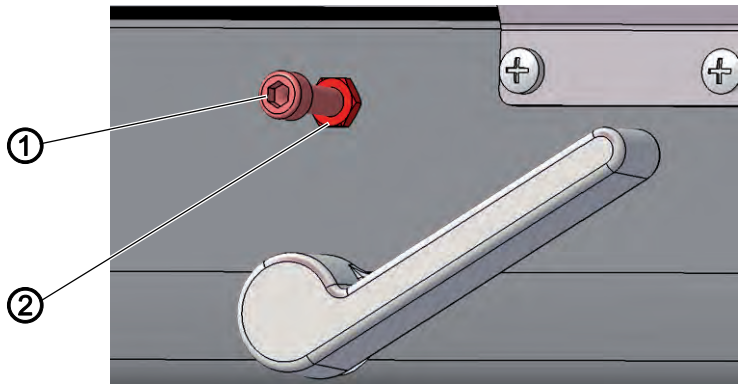
Crushing possible.
The machine must remain switched on to allow for the lifting height of the sewing foot to be set

Do NOT place your hands under the sewing foot when it is being lowered.

When the pedal is pressed back halfway, the sewing feet can be raised during sewing, e. g. to move the sewing material.

When the pedal is pressed completely back, the sewing feet will be raised after the thread is cut so that the sewing material can be exchanged.

Fig. 36: Adjusting the sewing foot lifting height



(1) - Screw *(2) - Counternut*

To adjust the lifting height of the sewing foot:

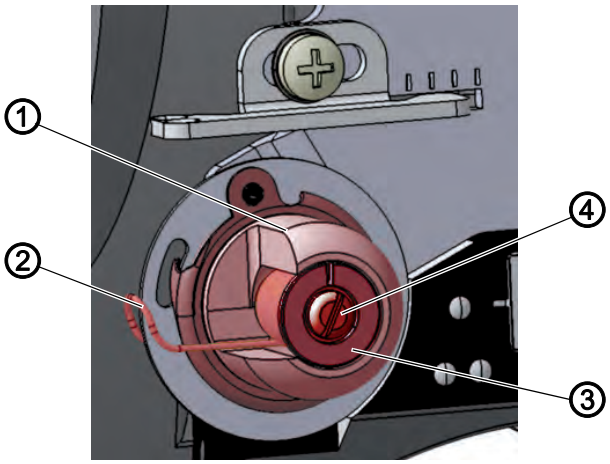
1. Loosen the counternut (2) for the adjusting wheel (1).
2. Turn the adjusting wheel (1) to adjust the distance between the raised sewing feet and the throat plate:
   - **Raise the sewing feet to a lesser height:** turn clockwise
   - **Raise the sewing feet higher:** turn counterclockwise
3. Tighten the counternut (2) for the adjusting wheel (1).

12 Needle thread tension

Adjusting the thread tensioning spring

The thread tensioning spring holds the needle thread under tension from the top dead center of the thread lever up to the point when the needle eye plunges into the sewing material.

Fig. 37: Adjusting the thread tensioning spring



(1) - Stop collar
(2) - Spring
(3) - Tension disk
(4) - Screw

Proper setting

Initial position: The thread tensioning spring does not contact the stop until the needle eye has plunged into the sewing material.

Important

The adjustment for the thread tensioning spring must be varied according to the sewing material and the required sewing result.

To adjust the thread tensioning spring:

1. Loosen the screw (4).
2. Turn the stop collar (1) to set the spring travel:
   - Longer spring travel: turn counterclockwise
   - Shorter spring travel: turn clockwise
3. Turn the tension disk (3) to set the spring tension:
   - Greater spring tension: turn counterclockwise
   - Lower spring tension: turn clockwise

Important

Do not twist the stop collar (1) when doing so.

4. Tighten the screw (4).

13 Winder

WARNING

Risk of injury from moving parts!

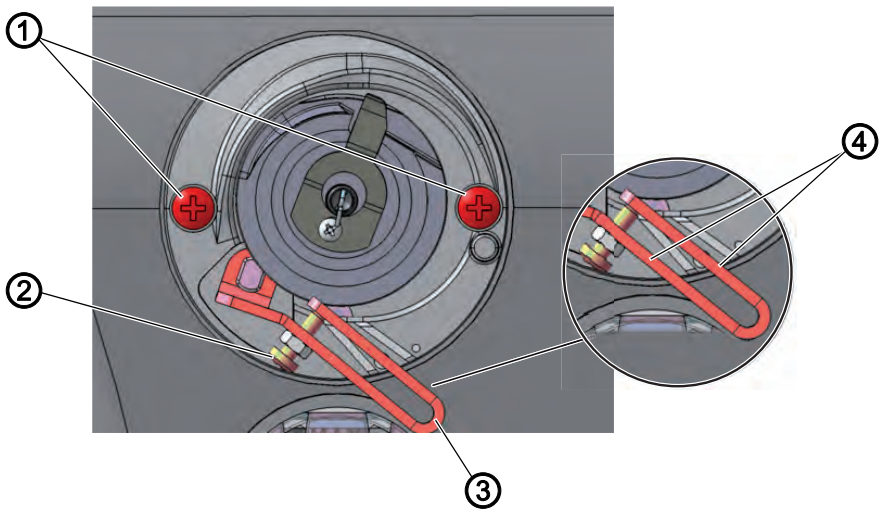
Crushing possible.

Switch off the machine before adjusting the winder.

13.1 Adjusting the winder

Adjusting the winder filling quantity

Fig. 38: Adjusting the winder filling quantity



(1) - Screws
(2) - Screw
(3) - Winder lever
(4) - Shank

Proper setting

The winder wheel runs smoothly and without axial play.
The winding process will stop automatically when the required filling quantity of the bobbin is reached.

To adjust the winder filling quantity:

1. Disassemble the arm cover (📖 *p. 15*).
2. Loosen the screws (1).
3. Remove the winder.

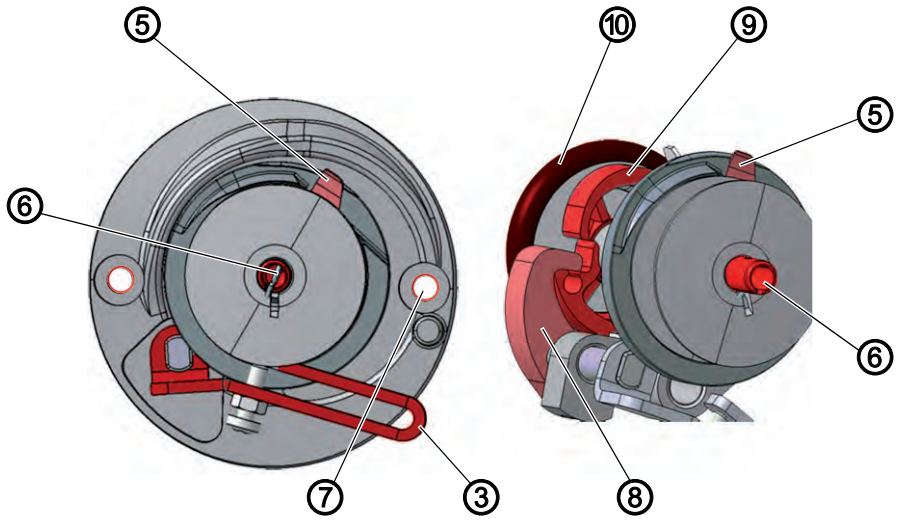
The position of the arms (4) on the winder lever (3) determines the filling quantity:

- Arm (4) parallel: automatic winding stop at 0.5 mm below the edge of the winder
- Arm (4) closer together: automatic winding stop with larger filling quantity
- Arm (4) further apart from each other: automatic winding stop with smaller filling quantity

4. Turn the screw (2):
   - Arms (4) closer together: turn counterclockwise
   - Arms (4) further apart from each other: turn clockwise
5. Put the completely filled bobbin onto the winder.
6. Fold the winder lever (3) upwards as far as it will go to the thread.

Adjusting the winder spacing

Fig. 39: Adjusting the winder spacing



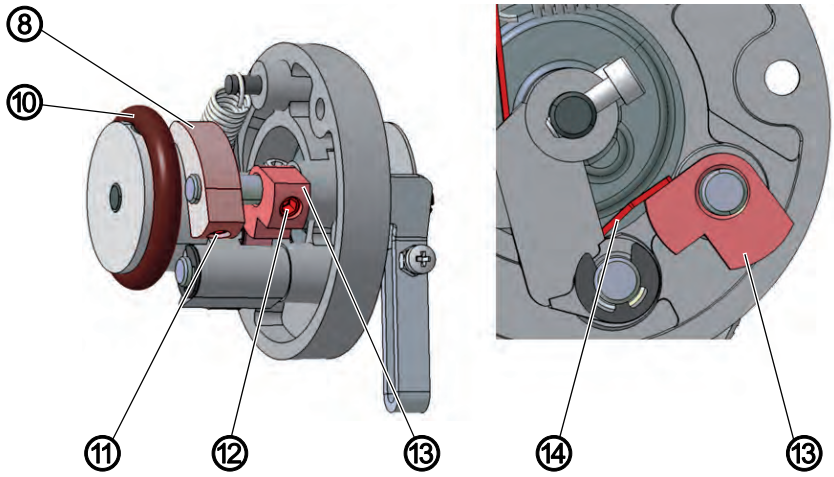
(3) - Winder lever
(5) - Thread-pulling knife
(6) - Winder spindle
(7) - Right-hand screw hole
(8) - Block
(9) - Locking disk
(10) - Winder wheel

To adjust the winder spacing:

1. Turn the winder spindle (6) such that the thread-pulling knife (5) is at the top right and is facing the right-hand screw hole (7).
2. Loosen the threaded pin in the block (8).
3. Adjust the winder lever (3) so that the distance between the thread on the bobbin and the winder lever is 2-3 mm.
4. Adjust the block (8) such that it is resting against the locking disk (9).
5. Adjust the block (8) such that its distance to the winder wheel (10) is 0.5 mm.
6. Tighten the threaded pin in the block (8).

Adjusting the winder run

Fig. 40: Adjusting the winder run



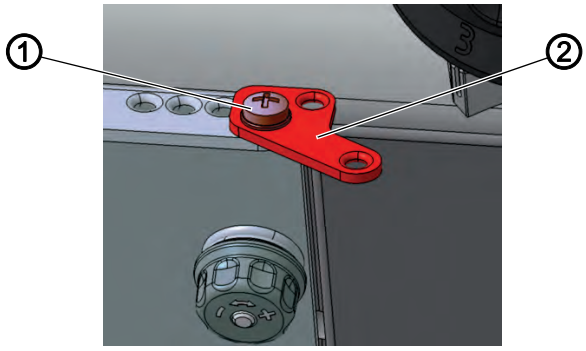
(8) - Block
(10) - Winder wheel
(11) - Threaded pin
(12) - Threaded pin
(13) - Switch cam
(14) - Leaf spring

To adjust the winder run:

1. Loosen the threaded pin (12).
2. Adjust the switch cam (13) such that it is just contacting the leaf spring (14) when the block (8) has engaged in the locking disk.
3. Adjust the switch cam (13) such that the winder lever (3) has no axial play.
4. Tighten the threaded pin (12).
5. Re-assemble the winder.

13.2 Adjusting the hook thread guide

Fig. 41: Adjusting the hook thread guide



(1) - Screw *(2) - Hook thread guide*

The position of the hook thread guide determines how the hook thread is wound onto the bobbin.

Proper setting

The hook thread is wound on evenly over the entire width of the bobbin.

To adjust the hook thread guide:

1. Loosen the screw (1).
2. Turn the hook thread guide (2):
   - To the front: The hook thread will be wound on further to the front
   - To the rear: The hook thread will be wound on further to the rear

14 Thread trimmer

WARNING

Risk of injury from sharp and moving parts!

Puncture or crushing possible.

Switch off the machine before adjusting the thread trimmer.

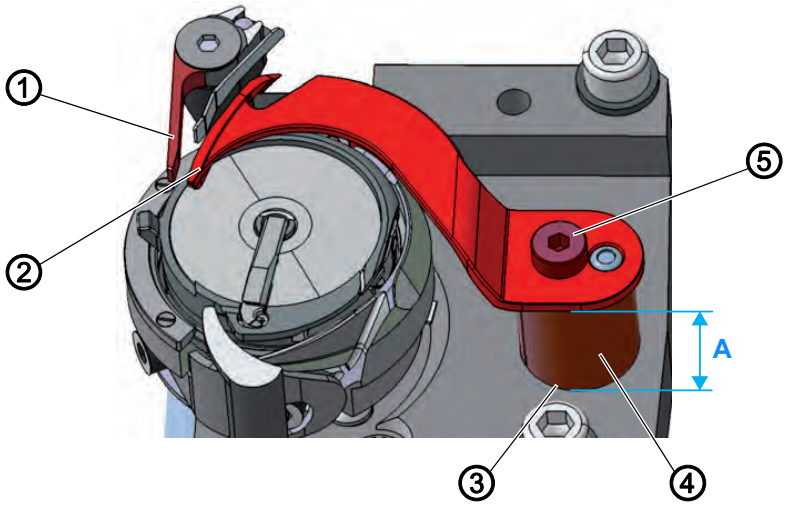
14.1 Adjusting the height of the thread-pulling knife

The height of the thread-pulling knife is factory-set such that the distance **A** between the upper edge of the knife carrier and the hook bearing screw-on surface is 10.7 ± 0.05 mm. Fine adjustment is made by means of washers between the knife carrier and the thread-pulling knife.

Important

When changing the knives, make sure that you do not lose the washers.

Fig. 42: Adjusting the height of the thread-pulling knife



(1) - Counter blade
(2) - Thread-pulling knife
(3) - Hook bearing screw-on surface
(4) - Knife carrier
(5) - Screw

Proper setting

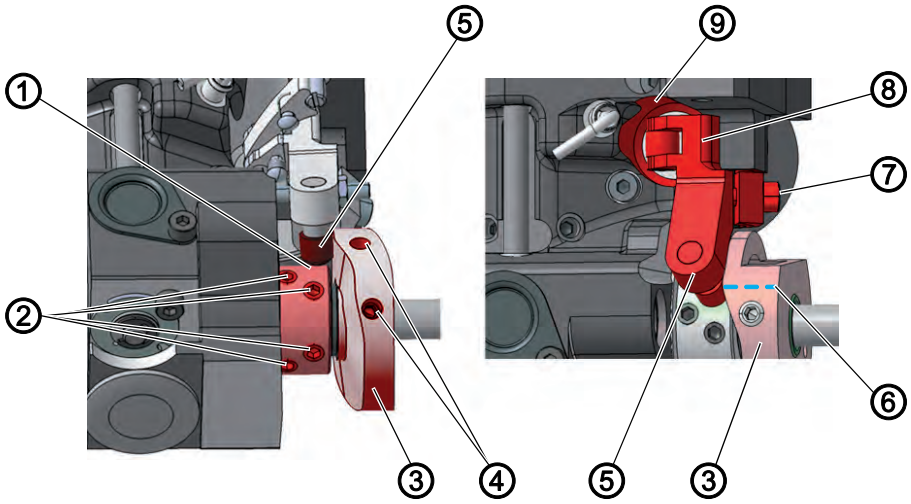
The thread-pulling knife (2) pivots as close as possible above the hook and is at the same height as the counter blade (1).

To adjust the height of the thread-pulling knife:

1. Open the throat plate slide (p. 18).
2. Loosen the screw (5).
3. Disassemble the thread-pulling knife (2).
4. Place as many washers between thread-pulling knife (2) and knife carrier (4) as necessary to ensure that the upper edges of counter blade (1) and thread-pulling knife (2) are at the same height.
5. Non-required washers on the top side between the thread-pulling knife (2) and screw (5) should be kept.
6. Tighten the screw (5).

14.2 Adjusting the cutoff curve

Fig. 43: Adjusting the cutoff curve (1)



(1) - Set collar
(2) - Threaded pins
(3) - Control cam
(4) - Threaded pins
(5) - Roller
(6) - Widest extent
(7) - Clamping screw
(8) - Lever
(9) - Solenoid

Proper setting

The control cam (3) makes direct contact with the set collar (1).
The distance between the widest extent (6) of the control cam (3) and the roller (5) is 0.1 mm at most.
In resting position, the circle mark on the cutting edge of the thread-pulling knife is exactly next to the tip of the counter blade.

To adjust the cutoff curve:

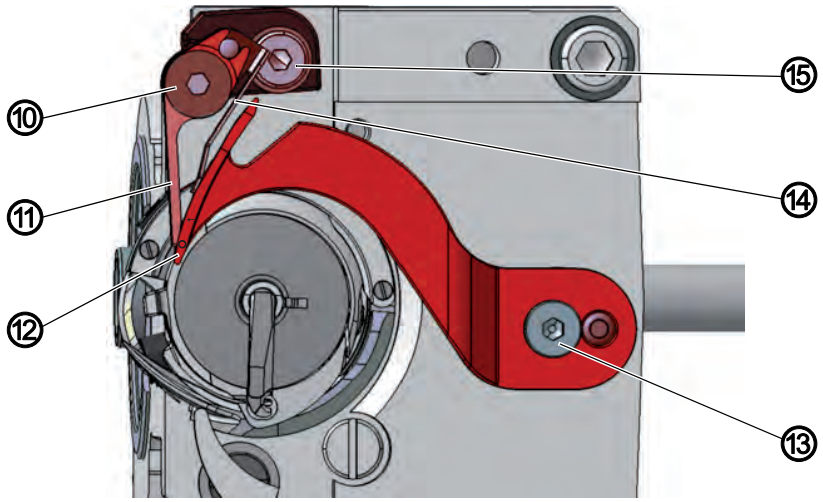
1. Tilt the machine head (p. 14).
2. Open the throat plate slide (p. 18).
3. Loosen the threaded pins (2).
4. Push the set collar (1) as far as it will go to the left.
5. Tighten the threaded pins (2).

Important

The set collar (1) and control cam (3) are both mutually used as a stop and must not be loosened at the same time.
Tighten the threaded pins (2) before you loosen the threaded pins (4).

6. Loosen the threaded pins (5).
7. Press the lever (8) against the solenoid (9).
8. Turn the control cam (3) such that its widest extent (6) is at the top, next to the roller (5).
9. Move the control cam (3) such that the distance between its widest extent (6) and the roller (5) is 0.1 mm at most.
10. Tighten the threaded pins (4).
11. Loosen the clamping screw (7).

Fig. 44: Adjusting the cutoff curve (2)



(10) - Screw
(11) - Counter blade
(12) - Thread-pulling knife
(13) - Screw
(14) - Hook thread clamp
(15) - Screw

12. Turn the thread-pulling knife (12) such that the circle mark is exactly next to the tip of the counter blade (11).
13. Tighten the clamping screw (7) such that the lever (8) has no axial play.
14. Loosen the threaded pins (2).
15. Push the set collar (1) to the right as far as it will go and against the control cam (3).

Important

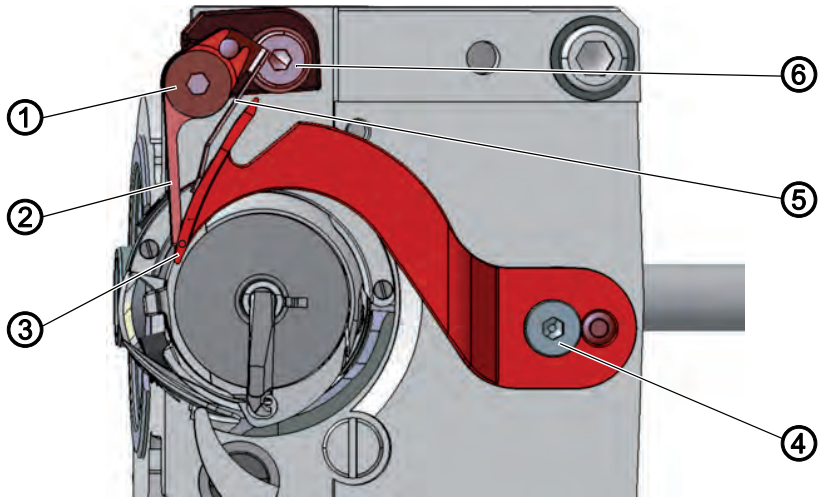
Check the looping stroke position (📖 *p. 44*).

16. Tighten the threaded pins (2).

14.3 Adjusting the cutting pressure

The shape of the thread-pulling knife automatically creates the required cutting pressure as soon as the thread-pulling knife and counter blade make contact.

Fig. 45: Adjusting the cutting pressure



(1) - Screw
(2) - Counter blade
(3) - Thread-pulling knife
(4) - Screw
(5) - Hook thread clamp
(6) - Screw

Proper setting

In resting position, the hook thread clamp makes contact with the thread-pulling knife without any pressure being applied. Any 2 threads with the greatest strength used for sewing can be neatly cut simultaneously.

Disturbance

- Increased knife wear when the pressure is too great
- Problems when sewing if the hook thread clamp is too high
- Problems in cutting the thread

To adjust the cutting pressure:

1. Open the throat plate slide (📖 *p. 18*).
2. Turn the handwheel until the thread-pulling knife (3) can be swung out by hand.
3. Loosen the screw (1).
4. Position the thread-pulling knife (3) such that the arrow mark is exactly next to the tip of the counter blade (2).
5. Turn the hook thread clamp (5) such that it rests against the thread-pulling knife (3).
6. Turn the counter blade (2) such that it rests against the thread-pulling knife (3).
7. Tighten the screw (1).

Important

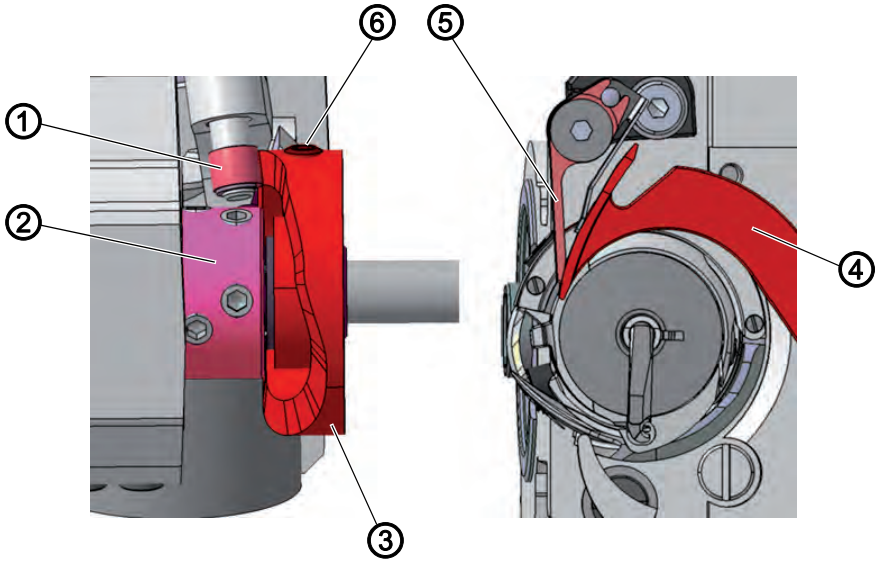
Check the position of the cutters, since the counter blade can easily become warped when the screw is being tightened.

14.4 Adjusting point in time for cutting

Information

The control cam for the right-hand needle or the right-hand hook support is identified by an **R** and an arrow for the direction of rotation.
The control cam for the left-hand needle or the left-hand hook support is identified by an **L** and an arrow for the direction of rotation.

Fig. 46: Adjusting point in time for cutting



(1) - Roller
(2) - Set collar
(3) - Control cam
(4) - Thread-pulling knife
(5) - Counter blade
(6) - Threaded pins

Proper setting

The threads are cut when the thread lever is at the top dead center (handwheel position 60°).

To adjust the point in time for cutting:

1. Tilt the machine head (📖 *p. 14*).
2. Open the throat plate slide (📖 *p. 18*).
3. Loosen the threaded pins (6).
4. Turn the handwheel until the thread-pulling knife (4) can be swung out by hand.
5. Pivot the thread-pulling knife (4) as far forward until the circle mark is exactly next to the tip of the counter blade (5).
6. Adjust the handwheel position to 60°.
7. Push the control cam (3) to the left as far as it will go and against the set collar (2).

8. Turn the control cam (3) such that the roller (1) runs up at the contour of control cam (3) and the widest extent of the control cam is at handwheel position 60° at the highest point.
9. Tighten the threaded pins (6).
10. Check adjustment:
    - Insert the thread into thread-pulling knife (4) and slowly turn the handwheel.
    - Check the handwheel position at which the thread is cut.
11. If necessary, repeat adjustment steps 1 – 7 until the cut takes place at 60°.

15 Puller

CAUTION

Risk of injury from moving parts!

Crushing possible.

Only set the puller when the machine is switched off.

Fig. 47: Puller

The carrier roller is lifted automatically during the sewing foot lift and the bartack.

You set the puller at the control panel (🕮 *p. 91*).

The maximum feed length of the intermittent puller is 7 mm.

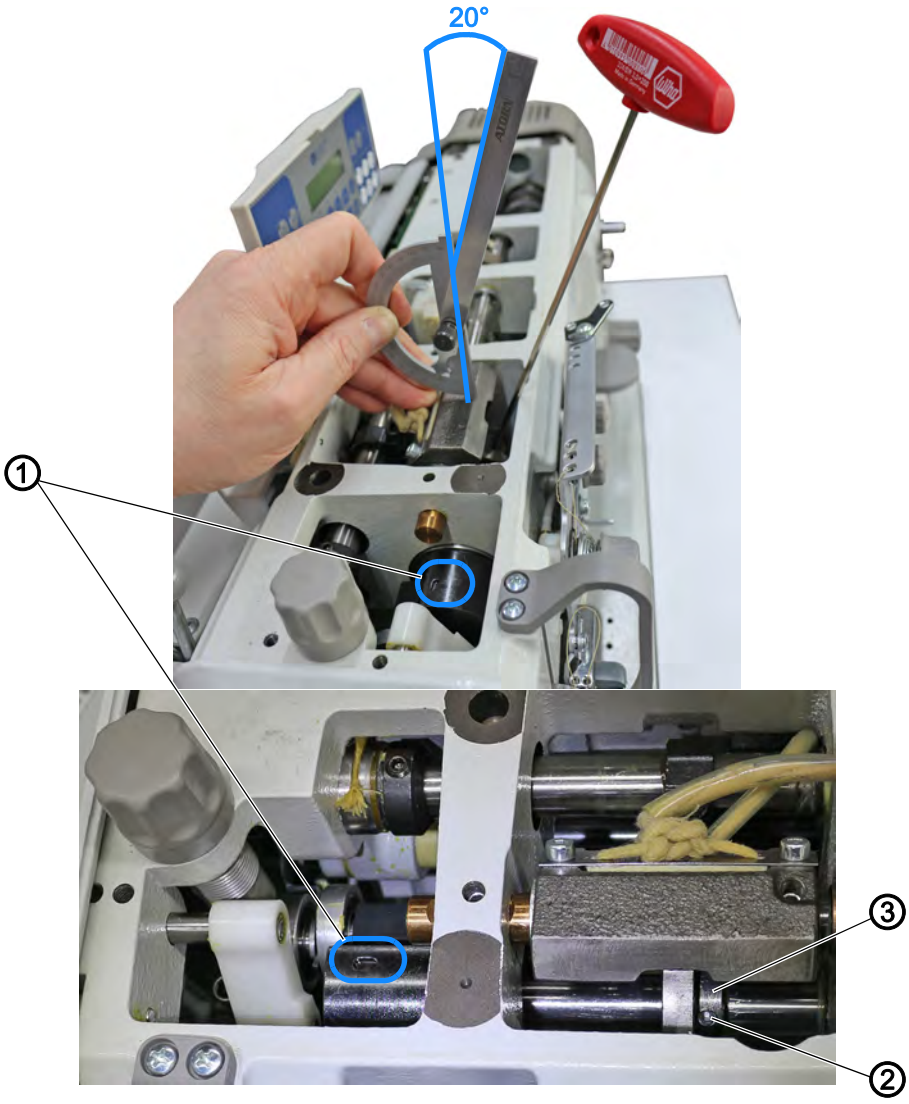
15.1 Adjusting the synchronization of feed dog and puller

Proper setting

Feed dog and puller operate in sync.
The movements of carrier roller and feed dog end simultaneously.

The synchronization of feed dog and puller ensures that the sewing material remains under tension between sewing foot and carrier roller. This prevents ruffing on the seam during stitch formation.

Fig. 48: Adjusting the synchronization of feed dog and puller



(1) - Small arresting groove
(2) - 1st screw in the direction of rotation
(3) - Eccentric

To adjust the synchronization of feed dog and puller:

1. Disassemble the arm cover (📖 *p. 15*).
2. Turn the handwheel until the small arresting groove (1) (3 mm) on the arm shaft crank is pointing up.

↳ In this position, the 1st screw in the direction of rotation (2) on the eccentric (3) is situated in front of the small arresting grove (1) at approx. **20°**.

3. Assemble the arm cover.
4. Check if feed dog and puller are running in sync.
5. Correct the adjustment if feed dog and puller are NOT running in sync.
   - Loosen both screws on the eccentric (3)

↳ The eccentric (3) can be turned on the shaft with minimal force.

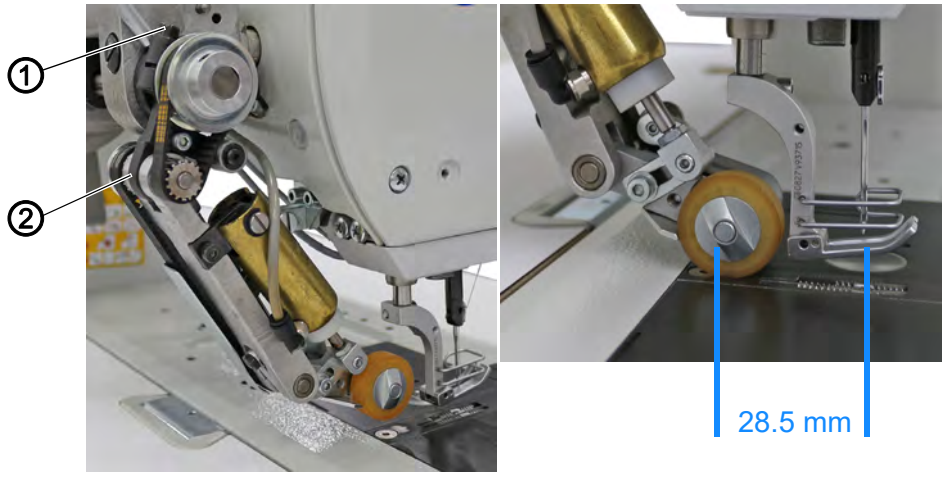
- Turn the eccentric (3) on the shaft
- Tighten the eccentric (3)
- Assembling the arm cover
- Check if feed dog and puller are running in sync and make adjustments if necessary

15.2 Adjusting the distance between carrier roller and needle

Proper setting

The distance between the middle of the carrier roller and the middle of the needle is 28.5 mm.

Fig. 49: Adjusting the distance between carrier roller and needle



(1) - Screw *(2) - Rocker*

To adjust the distance between the carrier roller and needle:

1. Loosen the screw (1).
2. Turn the rocker on the axle (2).

   ↳ The distance between the middle of the carrier roller and the middle of the needle is 28.5 mm.
3. Tighten the screw (1).

Order

Proceed by adjusting the carrier roller stroke (📖 *p. 69*).

15.3 Adjusting the carrier roller stroke

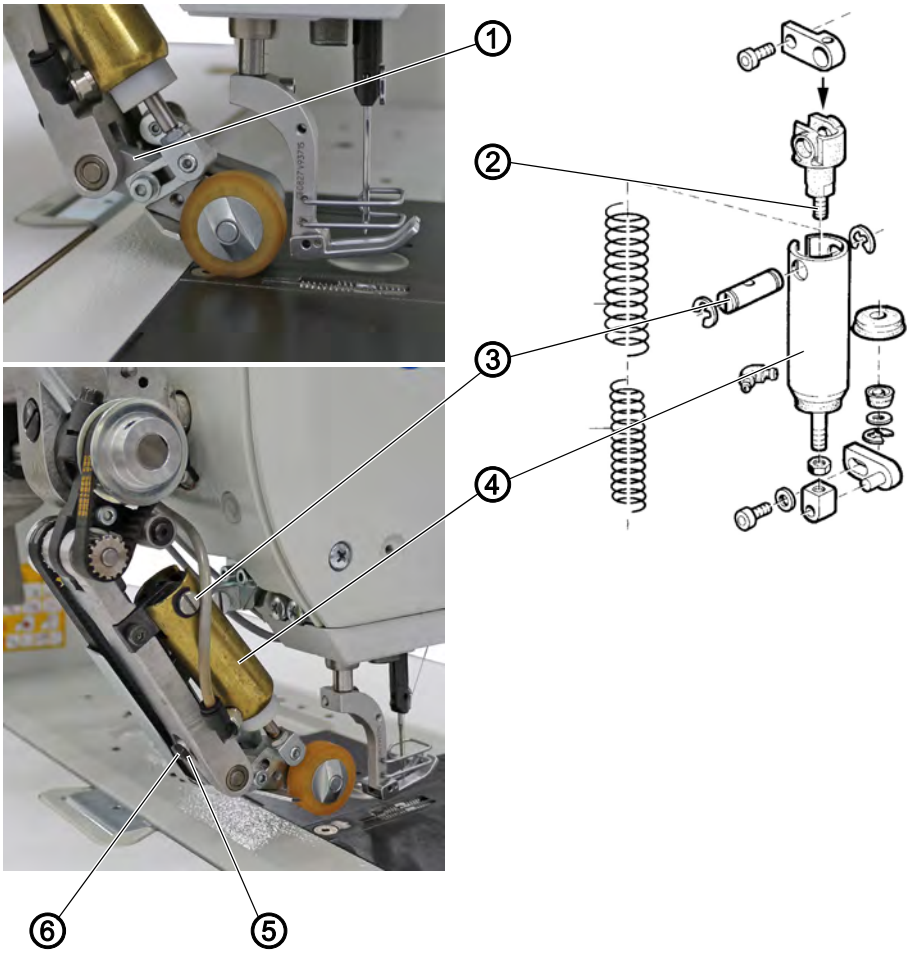
Proper setting

When in the **upper end position**, the raised carrier roller must not come into contact with the sewing foot.
After the carrier roller has been placed on the throat plate, the rocker must still be deflecting by approx. 1 mm in the **lower end position** before the stop of the lever reaches its end position.

Important

If using a **steel carrier roller**, you need to ensure that there is a still a light gap in the lower end position. The steel carrier roller must NOT rest on the throat plate.

Fig. 50: Adjusting the carrier roller stroke



(1) - Rocker
(2) - Bolt
(3) - Threaded pin
(4) - Cylinder
(5) - Counternut
(6) - Threaded pin

To adjust the **upper end position**:

1. Turn the bolt (2).

↳ The slot of the bolt (2) is parallel to the cylinder axis.

2. Turn the threaded pin (3) to limit the stroke of the cylinder (4).

To adjust the **lower end position**:

1. Loosen the counternut (5).
2. Turn the threaded pin (6).
   - lifting: Turn the threaded pin (6) clockwise
   - lowering: Turn the threaded pin (6) counterclockwise
3. Tighten the counternut (5).

15.4 Adjusting the carrier roller pressure

Fig. 51: Adjusting the carrier roller pressure

(1) - Cylinder *(2) - Screw*

To adjust the carrier roller pressure:

1. Loosen the screw (2).
2. Move the cylinder (1).
   - To reduce pressure: Slide the cylinder (1) to the back
   - To increase pressure: Slide the cylinder (1) to the front
3. Tighten the screw (2).

Order

Proceed by adjusting the upper end position of the carrier roller stroke (📖 *p. 69*).

15.5 Adjusting the fabric deflector

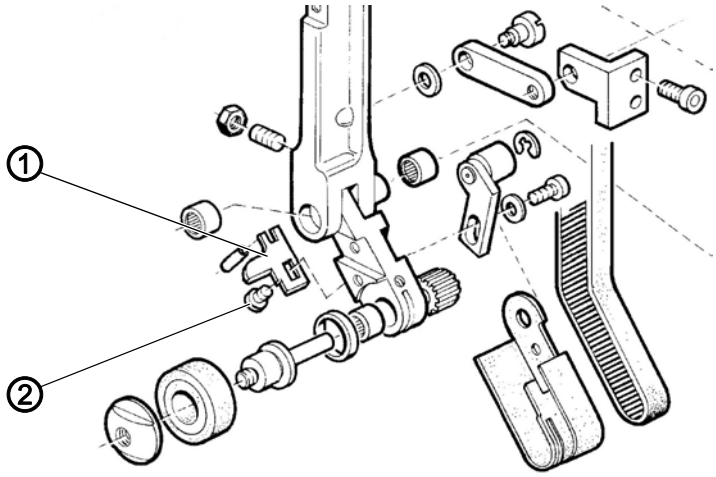
Proper setting

The fabric deflector keeps the sewing material from entering into the slot. The fabric deflector abuts closely on the carrier roller, leaving just enough space for the carrier roller to move freely.

Important

If using a steel carrier roller, you need to make sure to remove the fabric deflector.

Fig. 52: Adjusting the fabric deflector



(1) - Fabric deflector *(2) - Screw*

To adjust the fabric deflector:

1. Loosen the screw (2).
2. Adjust the fabric deflector (1).

↳ The fabric deflector abuts closely on the carrier roller, leaving just enough space for the carrier roller to move freely.

3. Tighten the screw (2).

15.6 Adjusting the toothed belt tension

NOTICE

Property damage may occur!

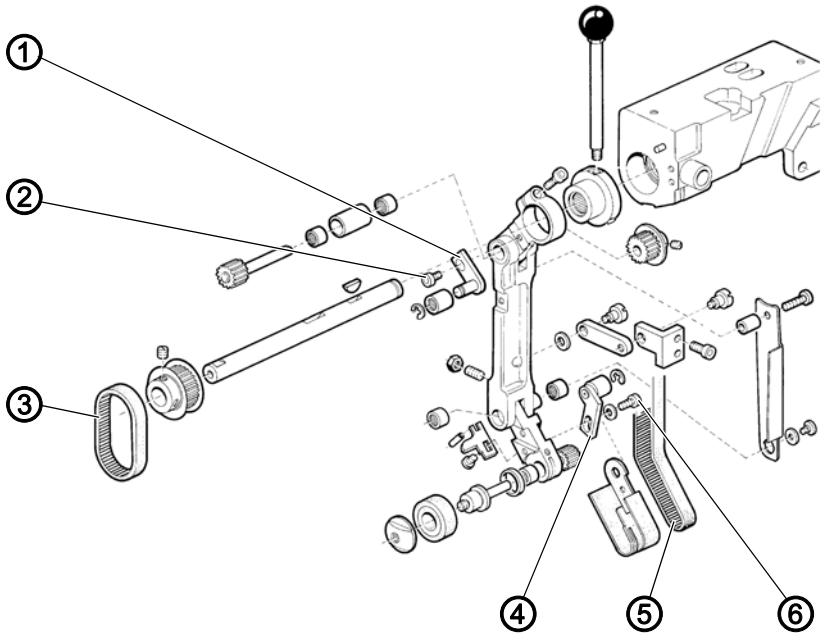
Malfunctions and excessive wear.

Do not set the toothed belt tension too high.

Proper setting

The toothed belt is tensioned enough to ensure an exact transmission of the step lengths.

Fig. 53: Adjusting the toothed belt tension



(1) - Lever
(2) - Screw
(3) - Toothed belt
(4) - Lever
(5) - Toothed belt
(6) - Screw

To adjust the **upper toothed belt tension**:

1. Loosen the screw (2).
2. Move the lever (1) to adjust the tension of the toothed belt (3).
3. Tighten the screw (2).

To adjust the **lower toothed belt tension**:

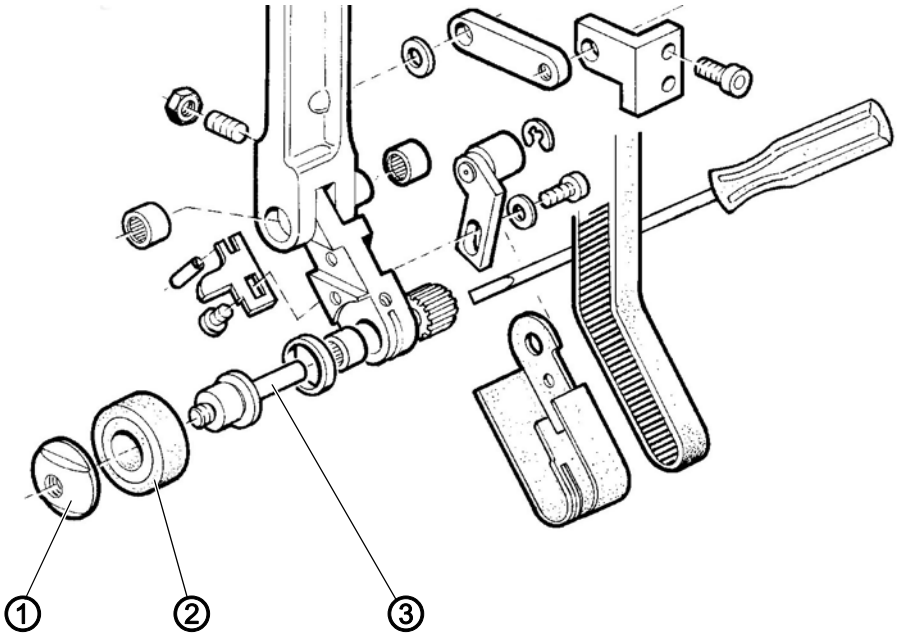
1. Loosen the screw (6).
2. Move the lever (4) to adjust the tension of the toothed belt (5).
3. Tighten the screw (6).

15.7 Changing the carrier roller

Important

When exchanging a Vulkollan carrier roller for a steel carrier roller, you need to readjust the lower end position of the carrier roller stroke (📖 *p. 70*).
If using a steel carrier roller, you need to make sure to remove the fabric deflector.

Fig. 54: Changing the carrier roller



(1) - Nut
(2) - Carrier roller
(3) - Axle

To change the carrier roller:

1. Remove the nut (1).
   CAUTION: Left-handed thread!
2. Lock the axle (3) with a screw driver.
3. Change the carrier roller (2).
4. Insert the nut (1) and tighten.

16 Adjusting the potentiometer

WARNING

Risk of injury from moving parts!

Crushing possible.
The machine remains switched on when the potentiometer is set.

Carry out all work with great caution.

The potentiometer adjusts the s.p.m. to the set sewing foot stroke and reduces the s.p.m. if the sewing foot stroke is too much.

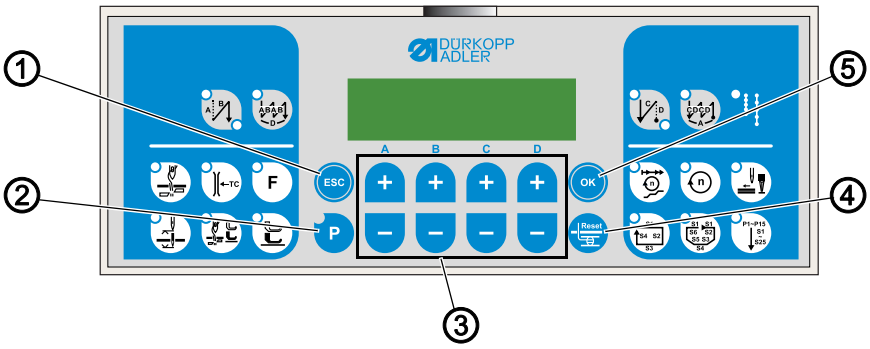
Proper setting

After accessing the technician level and pressing the OK button, the left display will show *1* in the first instance and the relevant maximum speed next to it.

Cover

- Disassemble the arm cover (📖 *p. 15*)

Fig. 55: Adjusting the potentiometer (1)



(1) - ESC button
(2) - P button
(3) - Plus/Minus buttons
(4) - Reset button
(5) - OK button

To adjust the potentiometer:

1. Switch off the machine.
2. Keep the buttons **P** (2) and **Reset** (3) pressed down simultaneously and switch on the machine when doing so.

↳ The display starts.

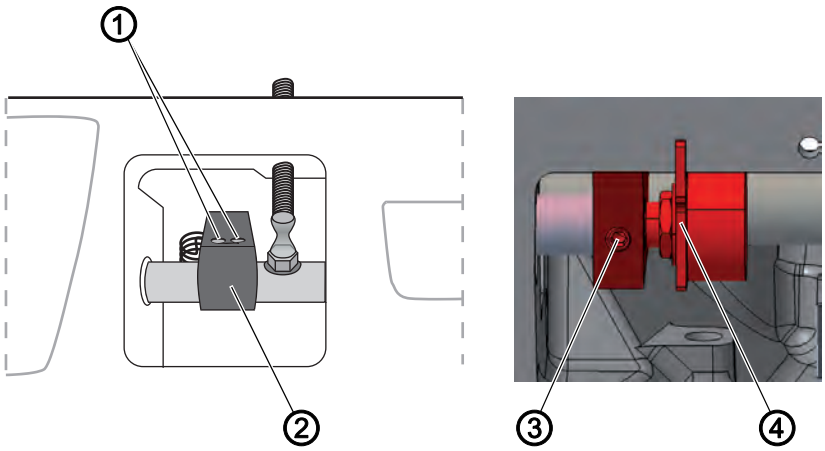
3. Release the buttons **P** (2) and **Reset** (3).

↳ The display indicates the current level.

The potentiometer is set at technician level `t 10 04`.
If the display indicates a different level:

4. Call up the technician level using the **Plus/Minus** buttons (3):
   As the case may be, press the Plus or Minus button below the letter or the number until the display indicates `t 10 04`.
5. Press the **OK** (5) button.

Fig. 56: Adjusting the potentiometer (2)



(1) - Threaded pins
(2) - Block
(3) - Threaded pin
(4) - Potentiometer

6. Check whether the lifting gear plates are flush.

If the plates are not flush:

7. Loosen the threaded pins (1).
8. Adjust the connecting clamp (2) for the lifting cylinder such that the plates are flush.
9. Tighten the threaded pins (1).
10. Loosen the threaded pin (3).
11. Turn the potentiometer axle such that the left display shows *1* in the first instance and the relevant maximum speed next to it.
12. Tighten the threaded pin (3) without changing the value shown in the display.
13. Press the **ESC** button 2 times.

Important

14. Switch off the machine.
15. Switch on the machine.

↳ Switching off and on will save the adjustment.

17 Safety release clutch

WARNING

Risk of injury from moving parts!

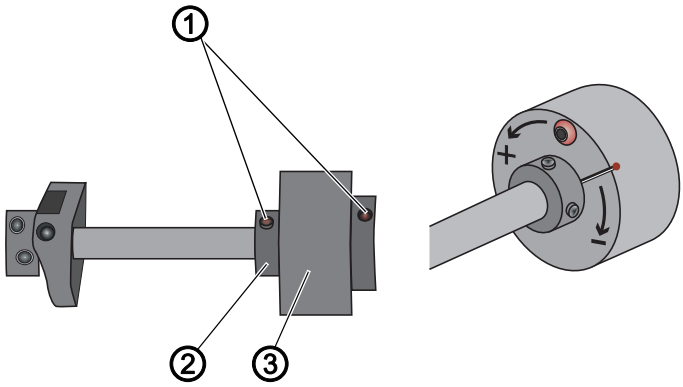
Crushing possible.

Switch off the machine before you adjust the safety release clutch.

The safety release clutch disengages in the event of the thread jamming and thus prevents the hook from being misadjusted or damaged.

17.1 Attaching the safety release clutch

Fig. 57: Attaching the safety release clutch



(1) - Threaded pins
(2) - Left-hand set collar
(3) - Safety release clutch

Proper setting

The 4 threaded pins (1) on the two set collars next to the safety release clutch (3) must be parallel to one another. After the safety release clutch has disengaged, they are no longer parallel.

To latch the safety release clutch:

1. Tilt the machine head (📖 *p. 14*).
2. Turn the left set collar (2) such that the threaded pins (1) are parallel to one another.

↳ The safety release clutch latches into place.

17.2 Adjusting the torque

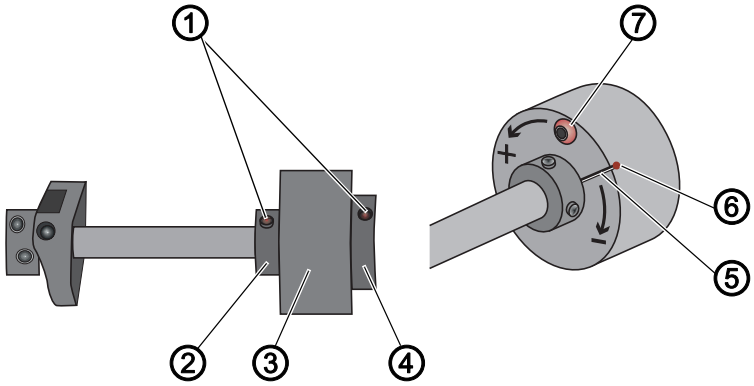
NOTICE

Property damage may occur!

If you change the torque, it could be that the coupling will not disengage although this would be required.
This could cause machine damage, e.g. in the event of the thread jamming.

Do NOT change the factory adjustment.
Make sure that the torque remains at 8 Nm.

Fig. 58: Adjusting the torque



(1) - Threaded pins
(2) - Left-hand set collar
(3) - Safety release clutch
(4) - Right-hand set collar
(5) - Adjustment slot
(6) - Marking point
(7) - Screw

Proper setting

The machine is set at the factory so that the torque is 8 Nm when the marking point (6) is exactly above the adjustment slot (5) of the disk.

To adjust the torque:

1. Tilt the machine head (📖 *p. 14*).
2. Loosen the screw (7).
3. Using the screw driver, turn the disk on the adjustment slot (5) so that 8 Nm is reached for the torque.
   - Increase force: turn in the direction **+**
   - Decrease force: turn in the direction **-**
4. Tighten the screw (7).

18 Integrated motor

DANGER

Risk of injury from electricity!

Unprotected contact with electricity can result in serious injuries or death.

Work on the electrical system must ONLY be carried out by qualified electricians or appropriately trained and authorized personnel.
ALWAYS pull the power plug before working on the electrical equipment.

WARNING

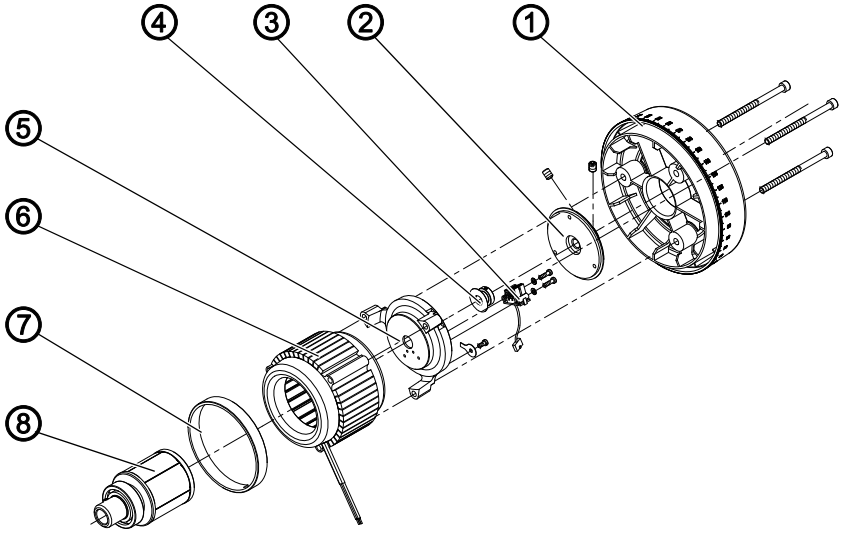
Risk of injury from moving parts!

Crushing possible.

The machine may only be disassembled and assembled by trained specialists.

18.1 Overview of the components

Fig. 59: Overview of the components

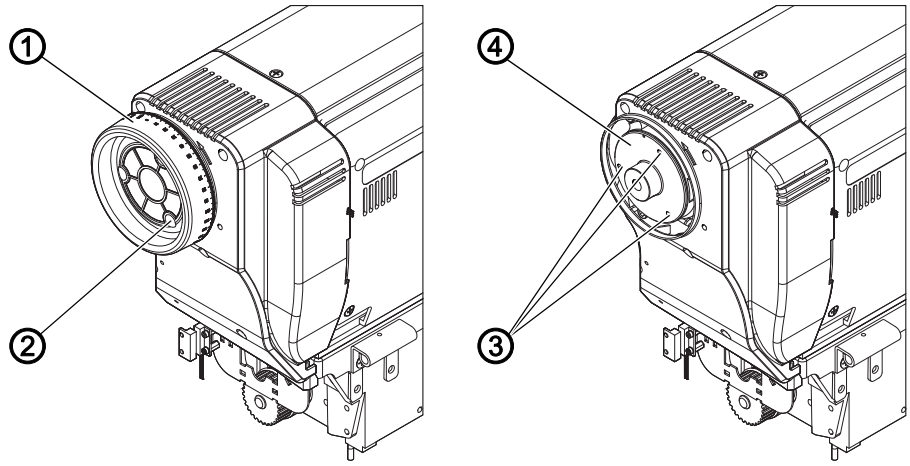


(1) - Handwheel
(2) - Handwheel flange
(3) - Encoder
(4) - Encoder disk
(5) - Cover plate
(6) - Stator
(7) - Ring
(8) - Rotor

18.2 Disassembling the drive

18.2.1 Disassembling the handwheel and handwheel flange

Fig. 60: Disassembling the handwheel and handwheel flange



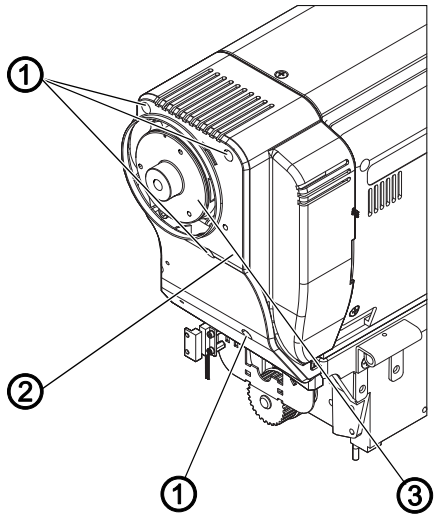
(1) - Handwheel
(2) - Screws
(3) - Threaded pins
(4) - Handwheel flange

To disassemble the handwheel and handwheel flange:

1. Loosen all 3 screws (2) on the handwheel (1).
2. Loosen all threaded pins (3) and disassemble the handwheel flange (4).

18.2.2 Disassembling the cover

Fig. 61: Disassembling the cover



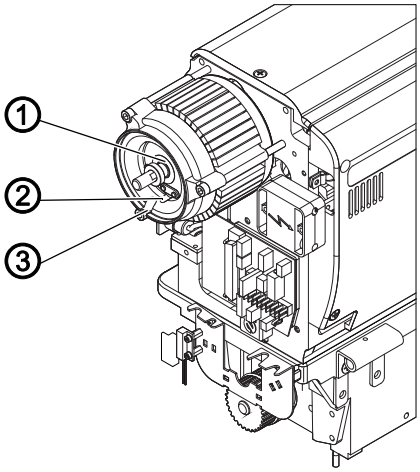
(1) - Screws
(2) - Cover
(3) - Handwheel flange

To disassemble the cover:

1. Loosen all 5 screws (1).
2. Disassemble the cover (2) from the side.

18.2.3 Disassembling the encoder

Fig. 62: Disassembling the encoder



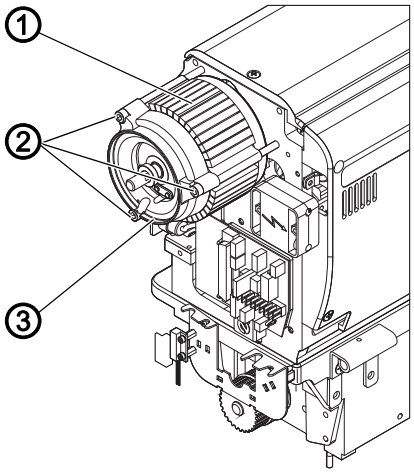
(1) - Encoder disk
(2) - Encoder
(3) - Retaining plate

To disassemble the encoder:

1. Unscrew the retaining plate (3).
2. Loosen both screws on the encoder (2).
3. Undo the screw on the encoder disk (1).
4. Carefully and uniformly pull the encoder (2) and encoder disk (1) away from the shaft.

18.2.4 Disassembling the stator

Fig. 63: Disassembling the stator



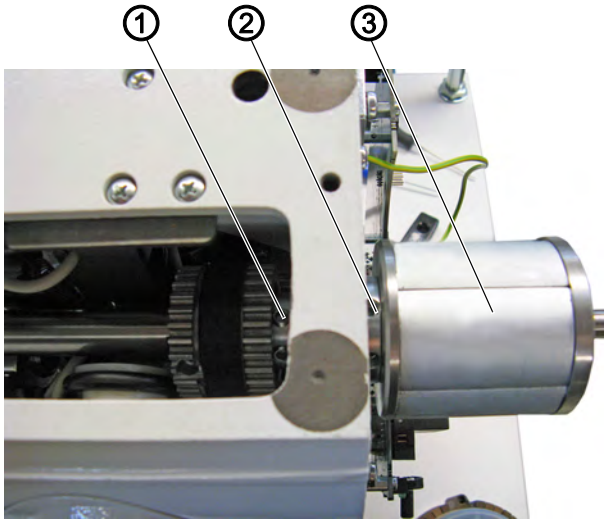
(1) - Stator with ring
(2) - Screws
(3) - Cover plate

To disassemble the stator:

1. Loosen the screws (2).
2. Remove the cover plate (3).
3. Remove the stator with ring (1).

18.2.5 Disassembling the rotor

Fig. 64: Disassembling the rotor



(1) - Threaded pins
(2) - Threaded pins
(3) - Rotor with deep groove ball bearing

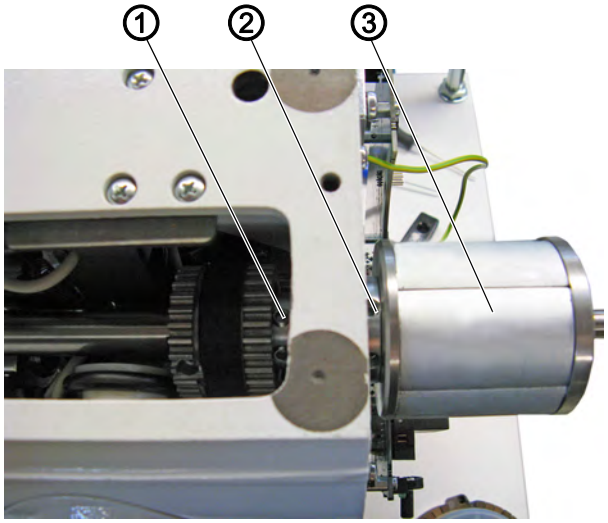
To disassemble the rotor:

1. Remove the arm cover (📖 *p. 15*).
2. Loosen the threaded pins (1), (2).
3. Remove the rotor with deep groove ball bearing (3).

18.3 Assembling the drive

18.3.1 Assembling the rotor

Fig. 65: Assembling the rotor



(1) - Threaded pins
(2) - Threaded pins
(3) - Rotor with deep groove ball bearing

To assemble the rotor:

1. Push the rotor with deep groove ball bearing (3) onto the shaft until the deep groove ball bearing is resting against the stop.
2. Tighten all threaded pins (1), (2) firmly in place, observing the surface of the shaft in doing so: Tighten the first screw in the direction of rotation firmly in place on the surface.

18.3.2 Assembling the stator

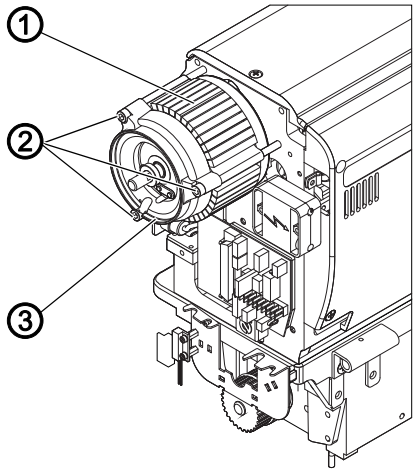
NOTICE

Property damage may occur!

The stator can be attracted by applying magnetic force.

Work carefully and in a controlled manner.

Fig. 66: Assembling the stator



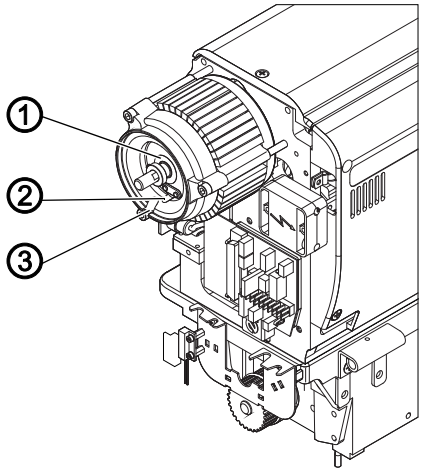
(1) - Stator with ring
(2) - Screws
(3) - Cover plate

To assemble the stator:

1. Push the stator with ring (1) onto the shaft, paying attention to the ring gap for the cable.
2. Assemble the cover plate (3).
3. Evenly tighten the screws (2) firmly in place so that a uniform gap exists between the cover plate (3) and shaft.

18.3.3 Assembling the encoder

Fig. 67: Assembling the encoder



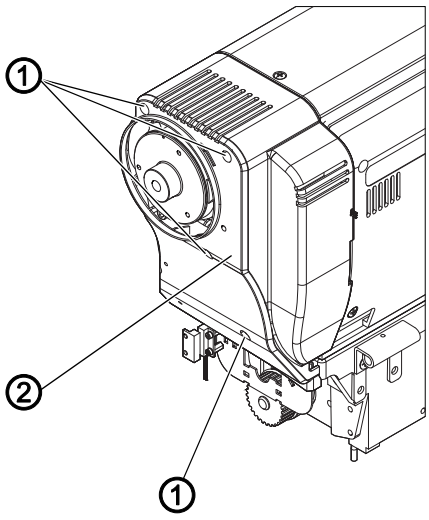
(1) - Encoder disk
(2) - Encoder
(3) - Retaining plate

To fit the encoder:

1. Push the encoder (2) and encoder disk (1) onto the shaft.
2. Align the encoder disk (1) so that it runs in the middle of the encoder (2).
3. Tighten the encoder disk (1) and encoder (2) firmly in place.
4. Tighten the retaining plate (3).

18.3.4 Assembling the cover

Fig. 68: Assembling the cover



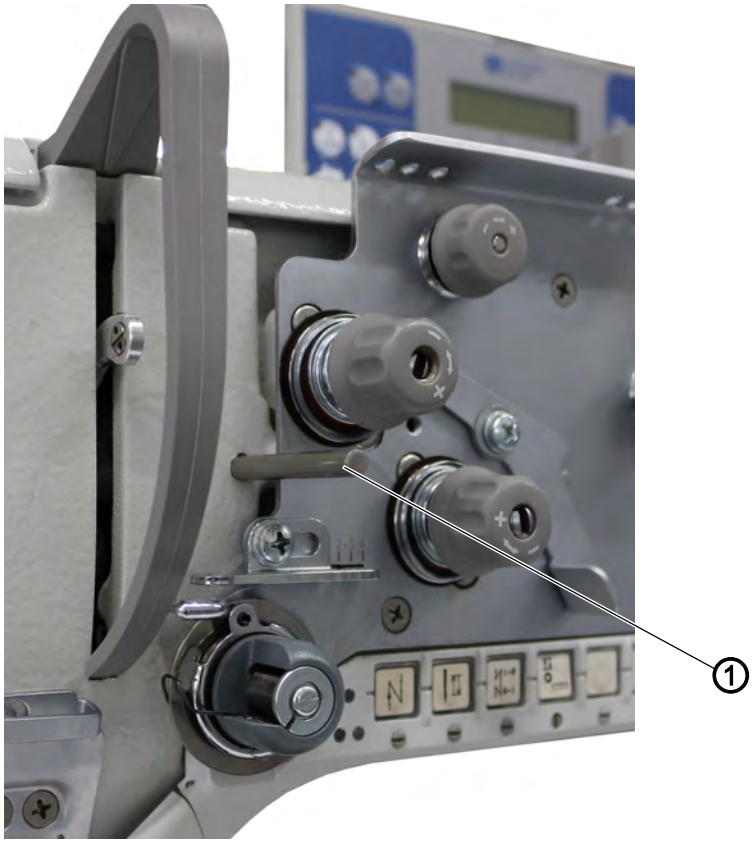
(1) - Screws
(2) - Cover

To place the cover:

1. Position the cover (2) at the side.
2. Tighten the screws (1).

18.3.5 Locking the machine in place

Fig. 69: Locking the machine in place



(1) - Locking peg

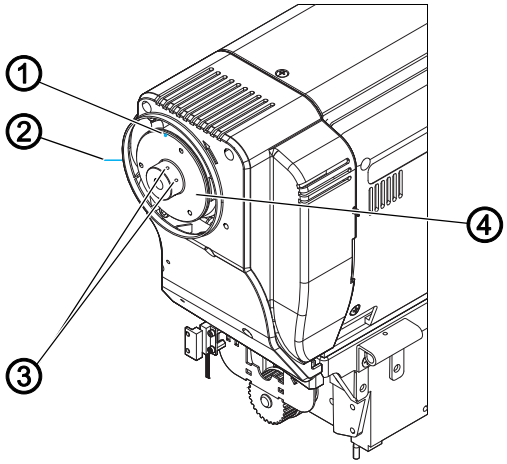
To lock the machine in place:

1. Lock the machine in place using the locking peg (1).

↳ The needle is in the top dead center position.

18.3.6 Assembling the handwheel flange

Fig. 70: Assembling the handwheel flange



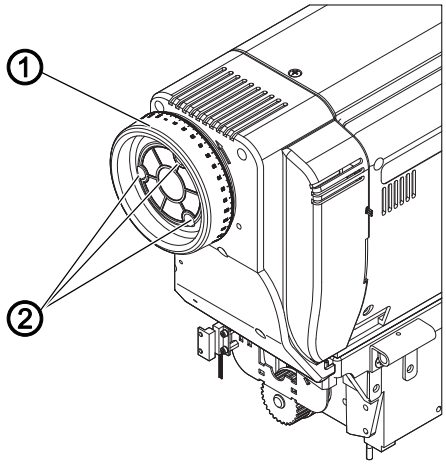
(1) - Handwheel flange marking
(2) - Cover marking
(3) - Threaded pins
(4) - Handwheel flange

To assemble the handwheel flange:

1. Attach the handwheel flange (4) so that the two markings (1), (2) are in line.
2. Tighten both threaded pins (3) firmly in place.
   In doing so, make sure that there is a distance of approx. 0.5 - 1 mm between the handwheel flange (4) and the cover plate.

18.3.7 Assembling the handwheel

Fig. 71: Assembling the handwheel



(1) - Handwheel
(2) - Screws

To assemble the handwheel:

1. Attach the handwheel (1) and tighten all 3 screws (2).
2. Adjust the reference position via the control; see 🕮 *Instructions for use DAC comfort*.

19 Programming

All software settings are performed using the OP1000 control panel.

The control panel is composed of a display and buttons.

Using the control panel you can:

- Use groups of buttons to select machine functions
- Read service and error messages.

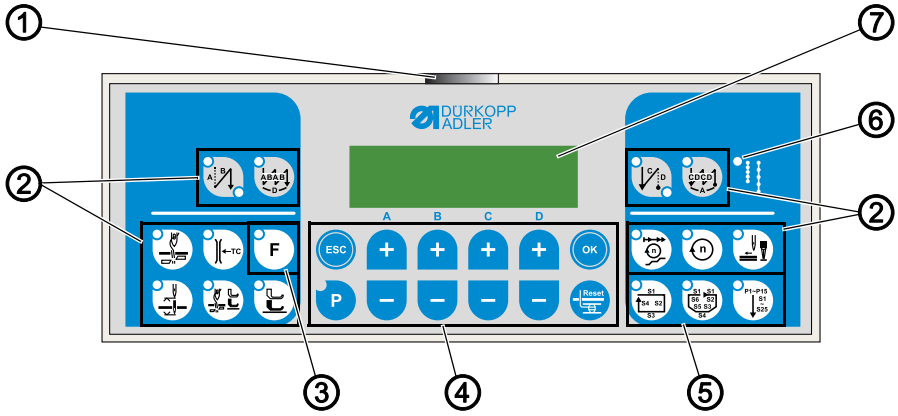
Information

This chapter describes the machine-specific functions of the OP1000 control panel.

Refer to the 🕮 *Instructions for use DAC basic/classic* for further information on the control and the OP1000 control panel.

You will find the machine-specific parameters in the 🕮 *parameter list*.

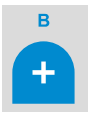
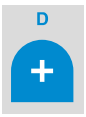
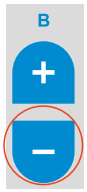
Fig. 72: Programming



(1) - Power LED
(2) - Thread button group
(3) - Function button
(4) - Programming button group
(5) - Seam program button group
(6) - LED for 2nd stitch length
(7) - Display

OP1000 buttons and functions

Button		Function
Thread button group		
	Start bartack	• Sets the start bartack
	Multiple start bartack	• Sets the multiple start bartack
	End bartack	• Sets the end bartack
	Multiple end bartack	• Sets the multiple end bartack
	Thread trimmer	• Activates or deactivates the thread trimmer
	Thread clamp	• Activates or deactivates the thread clamp
	Needle position after sewing stop	• Sets the needle position after sewing stop
	Sewing foot lift after thread trimmer	• Activates or deactivates the sewing foot lift after the thread trimmer
	Sewing foot lift after sewing stop	• Activates or deactivates the sewing foot lift after sewing stops
	Soft start	• Activates or deactivates the soft start
	Speed	• Reduces the motor speed
	**Function button**	• Activates or deactivates any stored function
Programming button group		
	ESC	• Ends parameter mode

Button	Function
 A+	• Increases parameter • Changes user level • Selects subprogram
 B+	• Increases parameter • Changes to next higher category • Selects subprogram
 C+	• Increases parameter • Selects subprogram
 D+	• Increases parameter • Selects subprogram
 OK	• Calls parameter or saves it
 P	• Starts or ends the parameter mode
 A-	• Decreases parameter • Changes user level • Selects subprogram
 B-	• Decreases parameter • Changes to next lower category • Selects subprogram
 C-	• Decreases parameter • Selects subprogram

Button	Function
 D-	• Decreases parameter • Selects subprogram
 Reset	• Resets the (piece) counter
Seam program button group	
 Seam program I	• Activates seam program I
 Seam program II	• Activates seam program II
 Seam program III	• Sets seam program III

19.1 Adjusting the electropneumatic switching of the carrier roller

To adjust the electropneumatic switching of the carrier roller:

1. Press the P button.
2. Enter the parameters for the automatic stitch loosening device: `t 14 00`.
   - Use **A+** to set the value to t.
   - Use **B+** to set the value to 14.
   - Use **D+** to set the value to 00.
3. Press the OK button.
4. Enter the desired mode:
   - Use **D+** to enter the value **0**: do not raise
   - Use **D+** to enter the value **1**: raise on sewing foot lift
   - Use **D+** to enter the value **2**: raise on bartack
   - Use **D+** to enter the value **3**: raise on bartack and sewing foot lift
5. Press the OK button to save the setting.
6. To switch to sewing mode, press the ESC button.

For additional parameter settings, refer to 🕮 *Parameter list*.

19.2 Adjusting the stitch count before the carrier roller is lowered

To adjust the stitch count before the carrier roller is lowered:

1. Press the P button.
2. Enter the parameters for the s.p.m. before the carrier roller is lowered: `t 14 03`.
3. Use the buttons **A+, B+, C+** and **D+** to enter the desired s.p.m.
4. Press the OK button to save the setting.
5. To switch to sewing mode, press the ESC button.

For additional parameter settings, refer to 🕮 *Parameter list*.

20 Maintenance

WARNING

Risk of injury from sharp parts!

Punctures and cutting possible.

Prior to any maintenance work, switch off the machine or set the machine to threading mode.

WARNING

Risk of injury from moving parts!

Crushing possible.

Prior to any maintenance work, switch off the machine or set the machine to threading mode.

This chapter describes maintenance work that needs to be carried out on a regular basis to extend the service life of the machine and achieve the desired seam quality.

Maintenance intervals

Work to be carried out	Operating hours			
	8	40	160	500
Machine head				
Removing lint and thread remnants	●			
Cleaning the motor fan mesh		●		
Check the oil level	●			
Check the hook lubrication		●		
Checking the toothed belt		●		
Pneumatic system				
Check the water level in the pressure controller	●			
Cleaning the filter element				●

20.1 Cleaning

WARNING

Risk of injury from flying particles!

Flying particles can enter the eyes, causing injury.

Wear safety goggles.
Hold the compressed air gun so that the particles do not fly close to people.
Make sure no particles fly into the oil pan.

NOTICE

Property damage from soiling!

Lint and thread remnants can impair the operation of the machine.

Clean the machine as described.

NOTICE

Property damage from solvent-based cleaners!

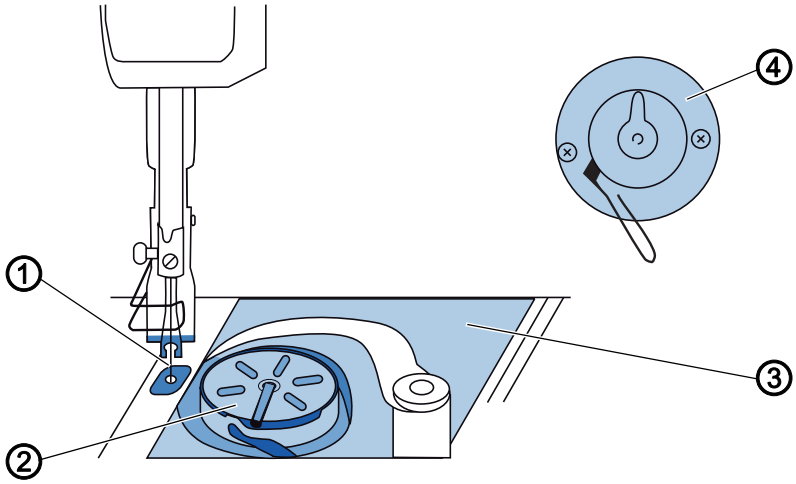
Solvent-based cleaners will damage paintwork.

Use only solvent-free substances for cleaning.

20.1.1 Cleaning the machine

Lint and thread remnants should be removed after every 8 operating hours using a compressed air gun or a brush. If very fluffy sewing material is being sewn the machine must be cleaned more frequently.

Fig. 73: Cleaning



(1) - Area around the needle
(2) - Hook
(3) - Area under the throat plate
(4) - Cutter on the winder

Areas particularly susceptible to soiling:

- Cutter on the winder for the hook thread (4)
- Area under the throat plate (3)
- Hook (2)
- Area around the needle (1)

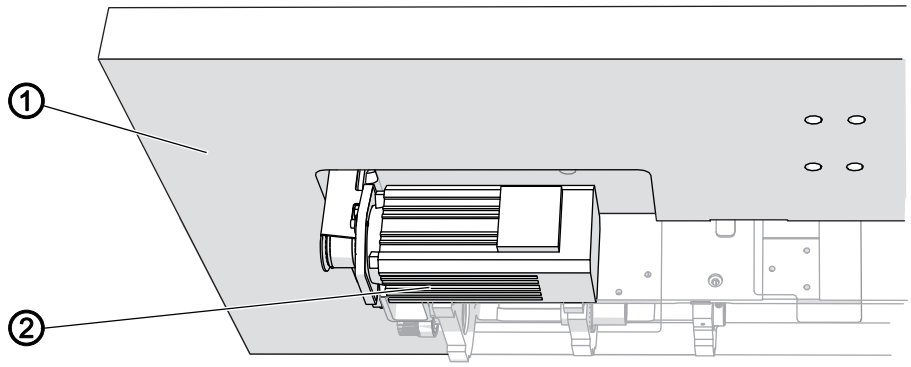
To clean the machine:

1. Remove any lint and thread remnants using a compressed air gun or a brush.

20.1.2 Cleaning the motor fan mesh

The motor fan mesh must be cleaned once a month using a compressed air gun. When very fluffy material is used for sewing, the motor fan mesh must be cleaned more frequently.

Fig. 74: Cleaning the motor fan mesh



(1) - Tabletop *(2) - Motor fan mesh*

To clean the motor fan mesh.

1. Remove any lint and thread remnants using a compressed air gun.

20.2 Lubricating

CAUTION

Risk of injury from contact with oil!

Oil can cause a rash if it comes into contact with skin.

Avoid skin contact with oil.
If oil has come into contact with your skin, wash the affected areas thoroughly.

NOTICE

Property damage from incorrect oil!

Incorrect oil types can result in damage to the machine.

Only use oil that complies with the data in the instructions.

CAUTION

Risk of environmental damage from oil!

Oil is a pollutant and must not enter the sewage system or the soil.

Carefully collect up used oil.
Dispose of used oil and oily machine parts in accordance with national regulations.

The machine is equipped with a central oil-wick lubrication system.
The bearings are supplied from the oil reservoir.

For topping off the oil reservoir, use only lubricating oil **DA 10** or oil of equivalent quality with the following specifications:

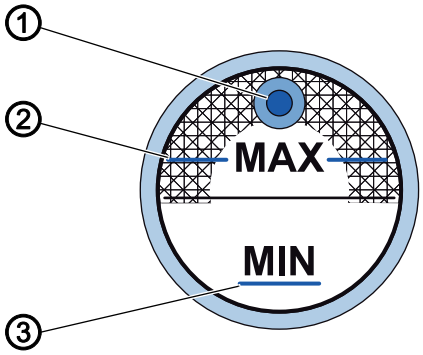
- Viscosity at 40 °C: 10 mm²/s
- Flash point: 150 °C

You can order the lubricating oil from our sales offices using the following part numbers:

Container	Part no.
250 ml	9047 000011
1 l	9047 000012
2 l	9047 000013
5 l	9047 000014

20.2.1 Lubricating the machine head

Fig. 75: Lubricating the machine head



(1) - Oil filler opening
(2) - MAX marking
(3) - MIN marking

Proper setting

The oil level must not raise above the MAX marking (2) or drop below the MIN marking (3).
If the oil level falls below the minimum level marking (3), the oil level indicator lights up in red.

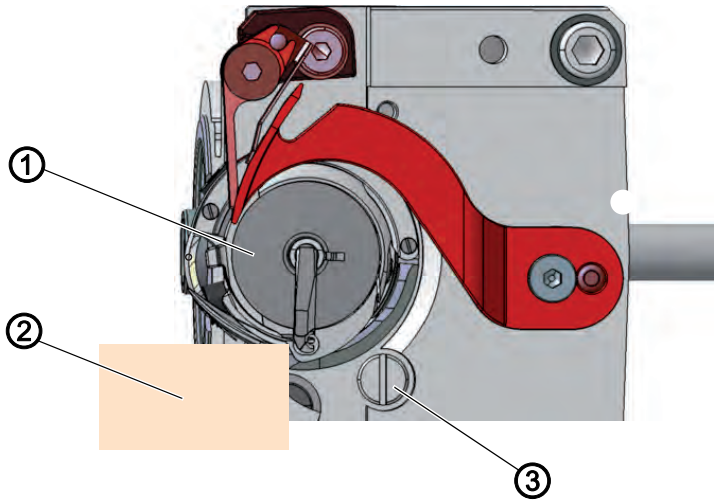
To top off the oil:

1. Fill oil through the oil filler opening (1) up to the MAX marking (2).
2. Turn the machine off, then on again after refilling oil.

↳ The red light will turn off.

20.2.2 Adjusting the hook lubrication

Fig. 76: Adjusting the hook lubrication



(1) - Hook
(2) - Blotting paper
(3) - Screw

The approved oil quantity for hook lubrication is a factory specification. Hold a piece of blotting paper (2) next to the hook (1) while sewing.

Proper setting

After sewing a stretch of approx. 1 m, the blotting paper (2) will have been sprayed with a thin and even film of oil.

To adjust the hook lubrication:

1. Open the throat plate slide (📖 *p. 18*).
2. Turn the screw (3):
   - Release more oil: turn counterclockwise
   - Release less oil: turn clockwise

Important

The released amount of oil does not change until the operating time has run a few minutes. Sew for several minutes before you check the adjustment again.

20.3 Servicing the pneumatic system

20.3.1 Adjusting the operating pressure

NOTICE

Property damage from incorrect adjustment!

Incorrect operating pressure can result in damage to the machine.

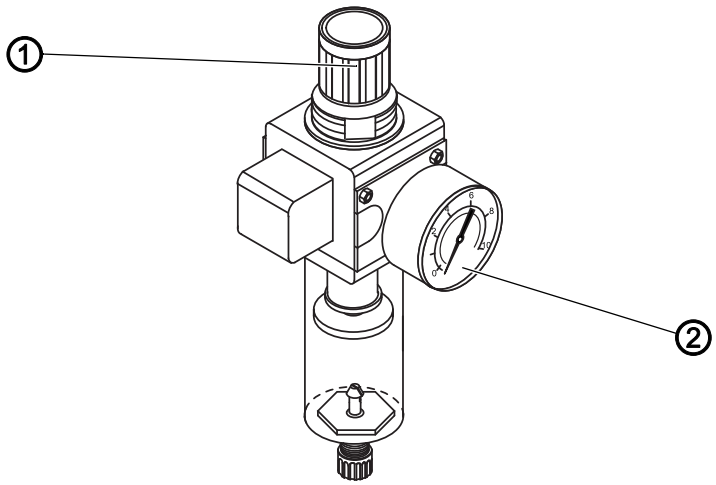
Ensure that the machine is only used when the operating pressure is set correctly.

Proper setting

Refer to the **Technical data** (📖 *p. 117*) chapter for the permissible operating pressure. The operating pressure cannot deviate by more than ± 0.5 bar.

Check the operating pressure on a daily basis.

Fig. 77: Adjusting the operating pressure



(1) - Pressure controller *(2) - Pressure gage*

To adjust the operating pressure:

1. Pull the pressure controller (1) up.
2. Turn the pressure controller until the pressure gage (2) indicates the proper setting:
   - Increase pressure = turn clockwise
   - Reduce pressure = turn counterclockwise
3. Push the pressure controller (1) down.

20.3.2 Draining the water condensation

NOTICE

Property damage from excess water!

Excess water can cause damage to the machine.

Drain water as required.

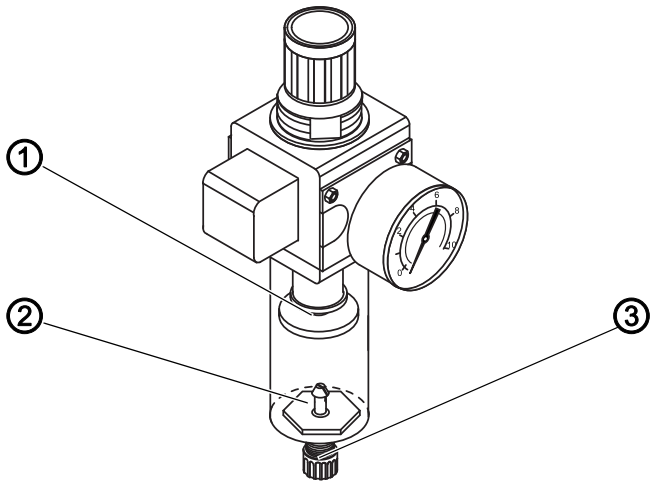
Water condensation accumulates in the water separator (2) of the pressure controller.

Proper setting

Water condensation must not rise up to the level of the filter element (1).

Check the water level in the water separator (2) on a daily basis.

Fig. 78: Draining the water condensation



(1) - Filter element
(2) - Water separator
(3) - Drain screw

To drain water condensation:

1. Disconnect the machine from the compressed air supply.
2. Place the collection tray under the drain screw (3).
3. Loosen the drain screw (3) completely.
4. Allow water to drain into the collection tray.
5. Tighten the drain screw (3).
6. Connect the machine to the compressed air supply.

20.3.3 Cleaning the filter element

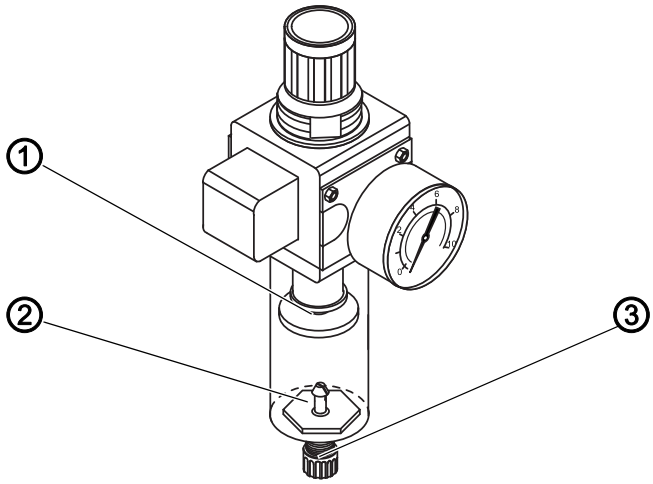
NOTICE

Damage to the paintwork from solvent-based cleaners!

Solvent-based cleaners damage the filter.

Use only solvent-free substances for washing out the filter tray.

Fig. 79: Cleaning the filter element



(1) - Filter element
(2) - Water separator
(3) - Drain screw

To clean the filter element:

1. Disconnect the machine from the compressed air supply.
2. Drain the water condensation (📖 *p. 101*).
3. Loosen the water separator (2).
4. Loosen the filter element (1).
5. Blow out the filter element (1) using the compressed air gun.
6. Wash out the filter tray using benzine.
7. Tighten the filter element (1).
8. Tighten the water separator (2).
9. Tighten the drain screw (3).
10. Connect the machine to the compressed air supply.

20.4 Checking the toothed belt

WARNING

Risk of injury from moving parts!

Crushing possible.

Switch off the machine before checking the toothed belt.

The condition of the toothed belt must be checked once a month.

Proper setting

The toothed belt exhibits no cracks or fragile areas.
When pressed with a finger, the toothed belt must yield no more than 10 mm.

Important

A damaged toothed belt must be replaced immediately.

20.5 Parts list

A parts list can be ordered from Dürkopp Adler. Or visit our website for further information at:

www.duerkopp-adler.com

21 Decommissioning

WARNING

Risk of injury from a lack of care!

Serious injuries may occur.

ONLY clean the machine when it is switched off.
Allow ONLY trained personnel to disconnect the machine.

CAUTION

Risk of injury from contact with oil!

Oil can cause a rash if it comes into contact with skin.

Avoid skin contact with oil.
If oil has come into contact with your skin, wash the affected areas thoroughly.

To decommission the machine:

1. Switch off the machine.
2. Unplug the power plug.
3. If applicable, disconnect the machine from the compressed air supply.
4. Remove residual oil from the oil pan using a cloth.
5. Cover the control panel to protect it from soiling.
6. Cover the control to protect it from soiling.
7. Cover the entire machine if possible to protect it from contamination and damage.

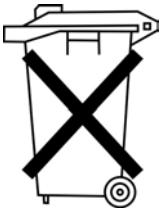
22 Disposal

CAUTION

Risk of environmental damage from improper disposal!

Improper disposal of the machine can result in serious environmental damage.

ALWAYS comply with the national regulations regarding disposal.



The machine must not be disposed of in the normal household waste.

The machine must be disposed of in a suitable manner in accordance with all applicable national regulations.

When disposing of the machine, be aware that it consists of a range of different materials (steel, plastic, electronic components, etc.). Follow the national regulations when disposing these materials.

23 Troubleshooting

23.1 Customer Service

Contact for repairs and issues with the machine:

Dürkopp Adler AG

Potsdamer Str. 190
33719 Bielefeld, Germany

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Fax +49 (0) 521 925 2594
Email: service@duerkopp-adler.com
Internet: www.duerkopp-adler.com

23.2 Messages of the software

Please contact customer service if an error occurs that is not described here. Do not attempt to correct the error yourself.

23.2.1 Information messages

Code	Possible cause	Remedial action
1203	Position not reached (during thread cutting, reversal, etc.)	• Check and, if necessary, change controller settings • Mechanical changes to the machine (e.g. thread cutting setting, belt tension, etc.) • Check the position (thread lever at top dead center)
2020	DACextension box not responding	• Check connection cables • Check LEDs of DACextension box • Perform a software update
2021	Sewing motor encoder plug (Sub-D, 9-pin) not connected to DACextension box	• Connect encoder cable to DACextension box using the correct connection
2120	DA stepper card 1 not responding	• Check connection cables • Check LEDs of DACextension box • Perform a software update

Code	Possible cause	Remedial action
2121	DA stepper card 1 encoder plug (Sub-D, 9-pin) not connected	• Connect encoder cable to the control, use correct connection
2122	DA stepper card 1 rotor position not found	• Check connection cables • Check stepper motor 1 for stiff movement
2220	DA stepper card 2 not responding	• Check connection cables • Check LEDs of DACextension box • Perform a software update
2221	DA stepper card 2 encoder plug (Sub-D, 9-pin) not connected	• Connect encoder cable to the control, use correct connection
2222	DA stepper card 2 rotor position not found	• Check connection cables • Check stepper motor 2 for stiff movement
3103	Low voltage warning (1st threshold) (mains voltage < 180 V AC)	• Check mains voltage • Stabilize the mains voltage • Use generator
3104	Pedal is not in position 0	• When switching the control on, take your foot off the pedal
3108	Speed limited due to insufficient mains voltage	• Check mains voltage
3109	Operation lock	• Check tilt sensor on machine
3150	Maintenance necessary	• Information on lubricating the machine
3151	Maintenance necessary (operation cannot continue unless parameter *t 51 14* is reset)	• Service is urgently required
3155	No release for sewing process	• Parameter *t 51 20* - *t 51 33* = 25 • Input signal for sewing process release required
3160	Stitch loosening device, stitch loosening cannot be performed	
3215	Bobbin stitch counter (info value 0 reached)	• Change bobbin, set counter value, press counter reset button
3216	Remaining thread monitor left	• Change the left bobbin
3217	Remaining thread monitor right	• Change the right bobbin
3218	Remaining thread monitor left and right	• Change left and right bobbin
3223	Skip stitch detected	
3224	Bobbin failed to rotate	
6360	No valid data on external EEprom (internal data structures are not compatible with the external data storage device)	• Perform a software update

Code	Possible cause	Remedial action
6361	No external EEprom connected	• Connect machine ID
6362	No valid data on internal EEprom (internal data structures are not compatible with the external data storage device)	• Check machine ID connection • Switch off the control, wait until the LEDs are off and then switch on again • Perform a software update
6363	No valid data on internal and external EEprom (software version is not compatible with the internal data storage device, emergency operating features only)	• Check machine ID connection • Switch off the control, wait until the LEDs are off and then switch on again • Perform a software update
6364	No valid data on internal EEprom and no external EEprom connected (the internal data structures are not compatible with the external data storage device, emergency operating features only)	• Check machine ID connection • Switch off the control, wait until the LEDs are off and then switch on again • Perform a software update
6365	Internal EEprom defective	• Replace control
6366	Internal EEprom defective and external data not valid (emergency operating features only)	• Replace control
6367	Internal EEprom defective and external EEprom not connected (emergency operating features only)	• Replace control
7202	DACextension box boot error	• Check connection cables • Perform a software update • Replace DACextension box
7203	Checksum error during update	• Check connection cables • Perform a software update • Replace DACextension box
7212	DA stepper card 1 boot error	• Check connection cables • Perform a software update • Replace DACextension box
7213	Checksum error occurred while updating DA stepper card 2	• Check connection cables • Perform a software update • Replace DACextension box
7222	DA stepper card 2 boot error	• Check connection cables • Perform a software update • Replace DACextension box
7223	Checksum error occurred while updating DA stepper card 2	• Check connection cables • Perform a software update • Replace DACextension box

Code	Possible cause	Remedial action
7801	Software version error (DAC classic only; only the functions of the DAC basic will remain available)	• Perform a software update • Replace control
7802	Software update error (DAC classic only; only the functions of the DAC basic will remain available)	• Perform software update again • Replace control
7803	Communication error (DAC classic only; only the functions of the DAC basic will remain available)	• Restart the control • Perform a software update • Replace control

23.2.2 Error Messages

Code	Possible cause	Remedial action
1000	Sewing motor encoder plug (Sub-D, 9-pin) not connected	• Connect encoder cable to the control, use correct connection
1001	Sewing motor error: Sewing motor plug (AMP) not connected	• Check connection and plug in, if necessary • Test sewing motor phases (R = 2.8 Ω, high impedance to PE) • Replace encoder • Replace sewing motor • Replace control
1002	Sewing motor insulation fault	• Check motor phase and PE for low-impedance connection • Replace encoder • Replace sewing motor
1004	Sewing motor error: Incorrect sewing motor direction of rotation	• Replace 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	Motor blocked	• Eliminate stiff movement in the machine • Replace encoder • Replace the motor
1006	Maximum speed exceeded	• Replace encoder • Perform reset • Check class (parameter `t 51 04`)
1007	Error in the reference run	• Replace encoder • Eliminate stiff movement in the machine
1008	Encoder error	• Replace encoder
1010	External synchronizer plug (Sub-D, 9-pin) not connected	• Connect cable of external synchronizer to control, use correct connection (Sync)
1011	Encoder Z pulse missing	• Switch off the control, use handwheel to turn, and switch on the control again If error is not corrected, check encoder
1012	Synchronizer fault	• Replace synchronizer
1052	Sewing motor overcurrent, internal current increase > 25 A	• Check selection of class • Replace control • Replace sewing motor • Replace encoder

Code	Possible cause	Remedial action
1053	Sewing motor overvoltage	• Check selection of class • Replace control
1054	Internal short circuit	• Replace control
1055	Sewing motor overload	• Eliminate stiff movement in the machine • Replace encoder • Replace sewing motor
2101	DA stepper card 1 reference run timeout	• Check reference sensor
2103	DA stepper card 1 step losses	• Check machine for stiff movement
2155	DA stepper card 1 overload	• Check machine for stiff movement
2201	DA stepper card 2 reference run timeout	• Check reference sensor
2203	DA stepper card 2 step losses	• Check machine for stiff movement
2255	DA stepper card 2 overload	• Check machine for stiff movement
3100	AC-RDY timeout, intermediate circuit voltage did not reach the defined threshold in the specified time	• Check mains voltage If the mains voltage is OK, replace the control
3101	High voltage fault, mains voltage, longer duration >290 V	• Check mains voltage If nominal voltage is continuously exceeded, stabilize it or use a generator
3102	Low voltage failure (2^{nd} threshold) (mains voltage < 150 V AC)	• Check mains voltage • Stabilize the mains voltage • Use generator
3105	U24 V short circuit	• Disconnect 37-pin plug If the error is not corrected: Replace control • Test inputs and outputs for 24 V short circuit
3106	U24 V (I^2T) overload	• One or several magnets defective
3107	Pedal not connected	• Connect the pedal
6353	Internal EEprom communication error	• Switch off the control, wait until the LEDs are off and then switch on again
6354	External EEprom communication error	• Switch off the control, wait until the LEDs are off, check connection for machine ID, and switch on control again

Code	Possible cause	Remedial action
8401	Watchdog	• Perform a software update • Perform a machine ID reset • Replace control
8402 - 8405	Internal error	• Perform a software update • Perform a machine ID reset • Replace control
8406	Checksum error	• Perform a software update • Replace control
8501	Software protection	• The DA tool must always be used for software updates

23.3 Errors in sewing process

Error	Possible causes	Remedial action
Unthreading at seam beginning	Needle thread tension is too firm	Check needle thread tension
Thread breaking	Needle thread and hook thread have not been threaded correctly	Check threading path
	Needle is bent or sharp-edged	Replace needle
	Needle is not inserted correctly into the needle bar	Insert the needle correctly into the needle bar
	The thread used is unsuitable	Use recommended thread
	Thread tensions are too tight for the thread used	Check thread tensions
	Thread-guiding parts, such as thread tube, thread guide or thread take-up disk, are sharp-edged	Check threading path
	Throat plate, hook or spread have been damaged by the needle	Have parts reworked by qualified specialists

Error	Possible causes	Remedial action
Skip stitches	Needle thread and hook thread have not been threaded correctly	Check threading path
	Needle is blunt or bent	Replace needle
	Needle is not inserted correctly into the needle bar	Insert the needle correctly into the needle bar
	The needle thickness used is unsuitable	Use recommended needle thickness
	The reel stand is assembled incorrectly	Check the assembly of the reel stand
	Thread tensions are too tight	Check thread tensions
	Throat plate, hook or spread have been 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 or the thread used	Check thread tensions
	Needle thread and hook thread have not been threaded correctly	Check threading path
Needle breakage	Needle thickness is unsuitable for the sewing material or the thread	Use recommended needle thickness

24 Technical data

Data and characteristic values

Technical data	Unit	827-160122	827-260122	827-160122-M	827-260122-M	827-260020-M	827-189122-M	827-289122-M
Type of stitches		Lockstitch 301						
Hook type		Vertical hook						
Number of needles		1	2	1	2	2	1	2
Needle system		134-35						
Needle strength	[Nm]	130		160				
Thread strength	[Nm]	20/3		10/3				
Stitch length	[mm]	7/7					9/9	
Speed maximum	[min^{-1}]	3800						
Speed on delivery	[min^{-1}]	3400						
Mains voltage	[V]	230						
Mains frequency	[Hz]	50 - 60						
Operating pressure	[bar]	6					6	
Length	[mm]	690						
Width	[mm]	220						
Height	[mm]	460						
Weight	[kg]	62						

Characteristics

Single and twin-needle double lockstitch flatbed sewing machine with bottom feed and needle feed. For light to moderately heavy sewing material with needle thickness of Nm 80-130.

Technical features

- Stitch length max. 7mm
- With electromagnetically actuated thread trimmer
- The clearance under the sewing feet when lifted is max. 16 mm (can only be achieved in combination with DC drives)
- The machines are equipped with new push buttons that are ergonomically arranged for easy operation of bartack, bartack suppression and needle up/down
- DLC coating of needle bar, presser bar and presser foot bar for oil-reduced operation
- Anti-friction coating on throat plate and throat plate slide to reduce the friction between sewing material and the sewing equipment during sewing
- Automatic wick lubrication with inspection glasses for oil level indication
- Large vertical hook with CTB bobbins
- Safety snap-on coupling prevents any misadjustment or damage to the hook in the event of a thread jamming

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