DÜRKOPP ADLER

195

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. 139*).

Consider the instructions part of the product and store them in a place where they are readily available.

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 a setting.

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 damage during transport
- 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 forklift to transport the machine. Raise the machine max. 20 mm and secure it to prevent it from slipping off.

Setup

The connecting cable must have a power plug approved in the relevant country. The power plug may only be assembled to the power 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:

- Set up the machine/put the machine into operation
- Perform maintenance work and repairs
- Perform work on electrical equipment

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

Operation

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 removed or deactivated. If it is essential to remove 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 settings

NOTICE

Property damage may occur!

Risk of machine damage from incorrect order.

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

Order

The setting positions for the machine are interdependent.

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

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

3.2 Laying the cables

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.

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.

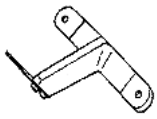
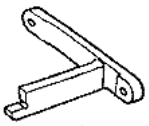
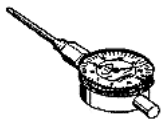
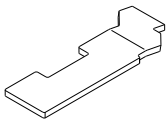
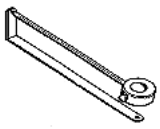
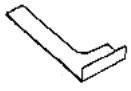
Important

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

3. Cut off any overlapping cable ties.

3.3 Using adjustment aids

The following adjustment aids are used to accurately set up the machine and check the settings made.

Adjustment aid	Figure	Order number	Setting
1 Gage		0195 002962	• Position of the lower shaft bearing (possible alternative: 933 735 + 2 mm)
2 Gage		0195 002966	• Position of the hook drive housing (possible alternative: 933 739K + 2.5 mm)
3 Locking peg (accessory pack)		9301 022608	• Lock the handwheel in place at one of the positions **A** to **F**
4 Dial gage		0171 00981	• Measure the needle evasive movement of the hook drive
5 Gage		0171 290010	• Set the slant of the hook to 89° 30’
6 Gage		0933 080192	2-piece gage set: Pointer and gage • Even hook movement for symmetry
7 Gage		0933 000740	• Set the height of the thread take-up disk
8 Gage (accessory pack)		0933 000758	• Set the pusher eccentric for the feed dog
9 Gage		0491 079996	• Set the quick stroke function of the sewing feet

Adjustment aid	Figure	Order number	Setting
10 Adjusting plate		0195 002980	• Set the stitch length limit of the adjusting wheels
11 Dipstick (accessory pack)		0965 000871	• Check oil level in hook drive housing 📖 *p. 127*
12 Gage		0195 002988	• for the thread cutter (cutting test outside of the machine)

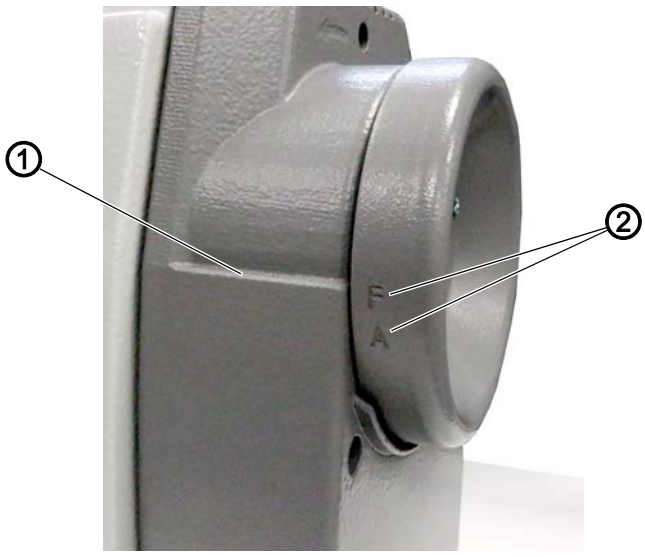
Information

The locking peg (3), the gage (8), and the dipstick (11) are included with the machine as standard tools in the accessory pack.

The locking peg (3) can be used to lock the handwheel in place at positions **A** to **F** (📖 *p. 16*).

3.4 Setting the handwheel into position

Fig. 1: Setting the handwheel into position



(1) - Marking *(2) - Letter*

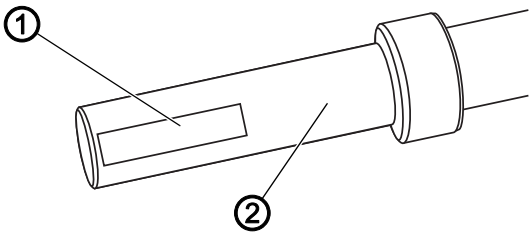
Some settings require that the handwheel be moved to a certain position.

To set the handwheel to the desired position:

1. Turn the handwheel until the desired letter (2) is parallel to the marking (1).

3.5 Flats on shafts

Fig. 2: Flats on shafts



(1) - Flat
(2) - Shaft

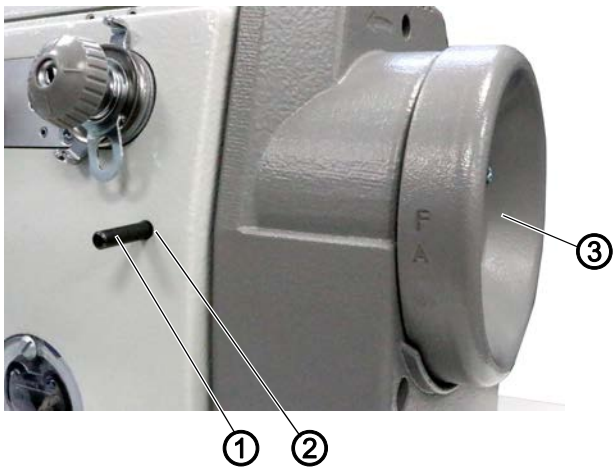
Some shafts have flat surfaces at the points where the components are screwed on. This stabilizes the connection and makes setting easier.

Important

Always ensure that the screws are completely flush with the surface.

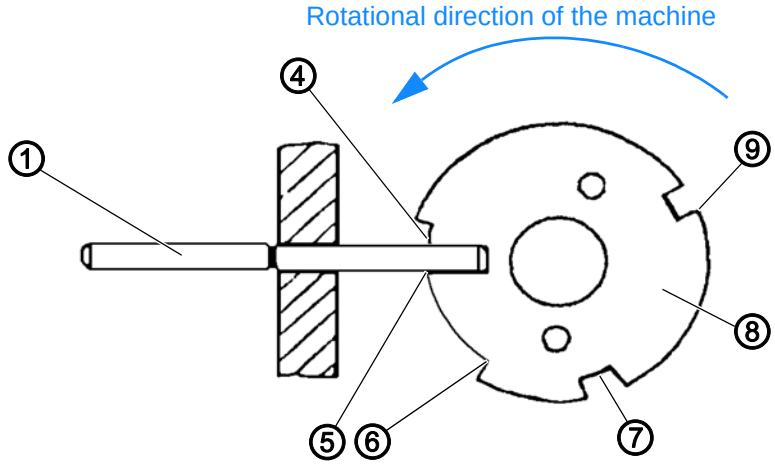
3.6 Locking the machine in place

Fig. 3: Locking the machine in place (1)



(1) - Locking peg
(2) - Locking opening
(3) - Handwheel

Fig. 4: Locking the machine in place (2)



(1) - Locking peg
*(4) - Position **F***
*(5) - Position **A***
*(6) - Position **E***
*(7) - Position **D***
(8) - Adjusting disk
*(9) - Position **B***

The machine head is equipped with adjustment aids that allow for a quick and accurate setting of all elements.

These adjustment aids include the handwheel (3), which is labeled with the letters **A, B, D, E** and **F**, and a built-in adjusting disk (8) that has five different holes.

You use a locking peg (1) to set the individual setting positions. The locking peg (1) is included with the machine as a standard tool in the accessory pack.

Locking the machine in place

To lock the machine in place:

1. Turn the handwheel (3) to the position described for the setting.
2. Insert the locking peg (1) into the locking opening (2).
3. Turn the handwheel (3) slightly forward or backward until the peg engages in the corresponding hole.

   Position **A** of the adjusting disk (8) has the deepest slot.

   Positions **B**, **D**, **E** and **F** have the same depths.

The positions serve the following functions:

Position	Position	Setting
A	Needle bar 2 mm behind the bottom dead center	• Position of the adjusting disk (8) on the arm shaft • Timing of the feeding foot feed movement • Reference time of the synchronizer
B	Needle bar at the top dead center	• Thread pick-up disk • Stroke and pusher eccentric • Distance of the feeding foot bar to the sewing foot bar • Standstill of feed dog and feeding foot when the hand lever is pressed
D	Seam penetration	• Eccentric for lifting gear • Timing of the feeding foot stroke movement
F		• Position of the lower toothed belt wheel, loop stroke and needle bar height
E and **F**		• Symmetry of the hook movement

Removing the lock

To remove the lock:

1. Pull the locking peg (1) out of the locking opening (2).

↳ The machine is no longer locked in place.

3.7 Tilting and erecting the machine head

NOTICE

Property damage may occur!

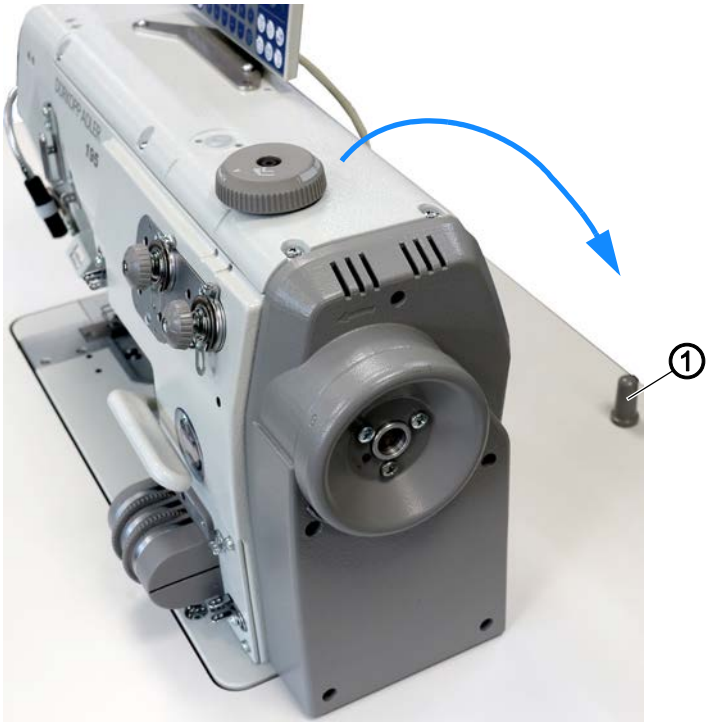
Damage to the machine is possible due to incorrect touching.

Do not touch the control panel when tilting or erecting the machine head. ALWAYS touch the machine on the machine arm.

Order

To access the components on the underside of the machine, you need to tilt the machine head first.

Fig. 5: Tilting and erecting the machine head



(1) - Tilt protection device

Tilting the machine head

To tilt the machine head:

1. Carefully tilt the machine head up to the tilt protection device (1).

Erecting the machine head

To erect the machine head:

1. Erect the machine head.

3.8 Removing the covers

WARNING

Risk of injury from sharp parts!

Punctures possible.

Switch off the machine before removing covers.

For many types of setting 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 setting work then specifies only the cover that needs to be removed at that particular time.

3.8.1 Removing and placing the arm cover

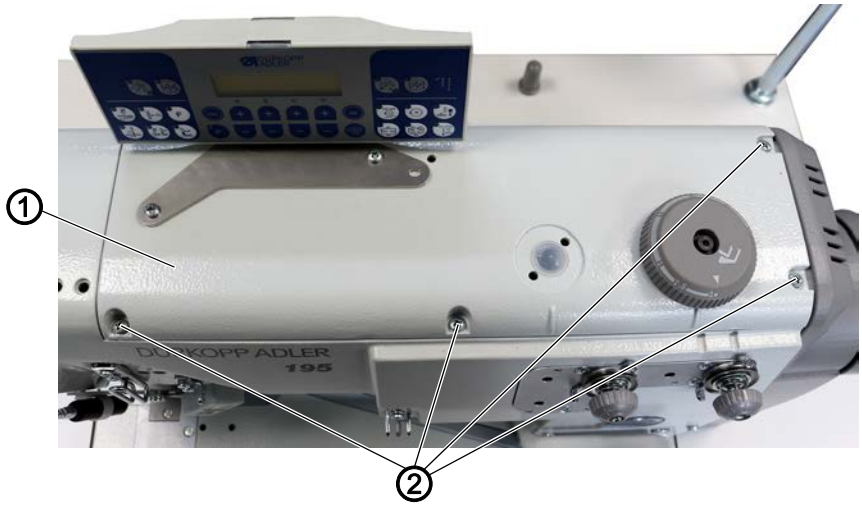
NOTICE

Property damage may occur!

Cable at the control panel may be crushed or torn off.

Do not kink, crush or tear off the cable at the control panel.

Fig. 6: Removing and placing the arm cover (1)



(1) - Arm cover

(2) - Screw

Fig. 7: Removing and placing the arm cover (2)

(1) - Arm cover *(2) - Screw*

Removing the arm cover

To remove the arm cover:

1. Loosen the 6 screws (2).

Important

The control panel is tightened to the arm cover and connected to the machine.

2. Carefully remove the arm cover (1) without crushing or kinking the cable of the control panel.

Placing the arm cover

To place the arm cover:

1. Place the arm cover (1).
2. Tighten the screws (2).

3.8.2 Removing and placing the head cover

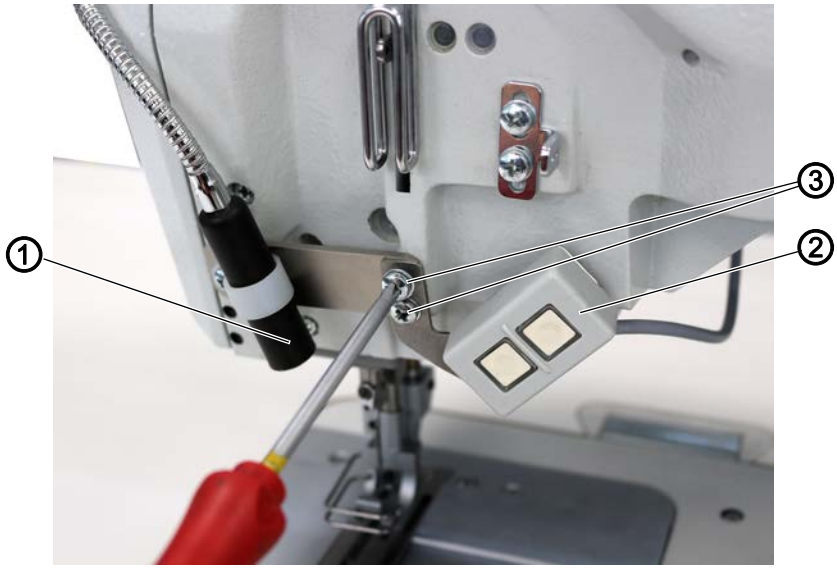
Order

1. Disassemble the external lamp.
2. Remove the head cover.

To remove the head cover:

Disassembling the external lamp

Fig. 8: Removing and placing the head cover (1)



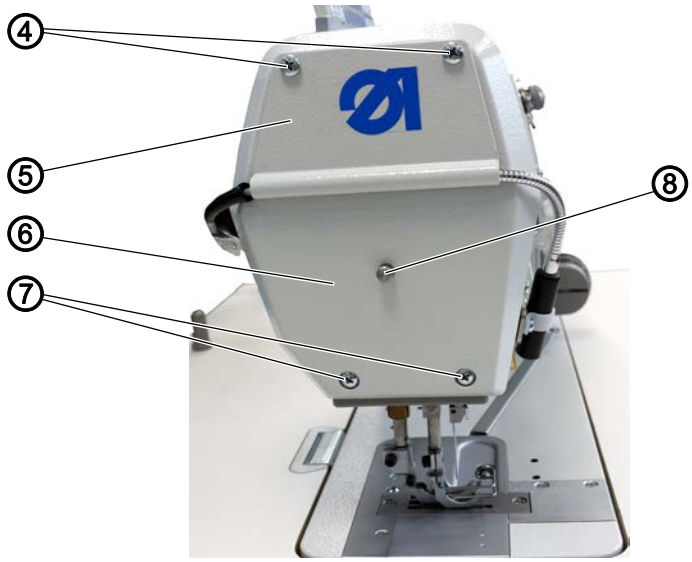
(1) - External lamp
(2) - Push buttons
(3) - Screw

1. Loosen the screws (3).

Fig. 9: Removing and placing the head cover (2)

The external lamp (1) and the push buttons (2) are now hanging down loosely.

Fig. 10: Removing and placing the head cover (3)



(4) - Screw
(5) - Bracket
(6) - Head cover
(7) - Screw
(8) - Locking button

2. Loosen the screws (4).
3. Carefully remove the bracket (5) and set the external lamp down on the tabletop.

Important

The external lamp is now disassembled, but still connected. Do not pull on it.

Removing the head cover

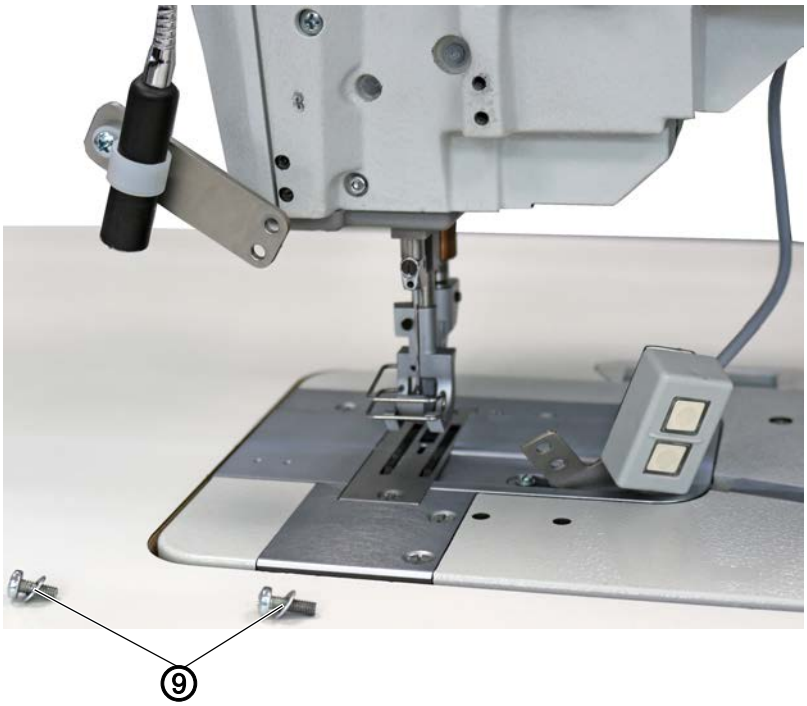
4. Loosen the screws (7).
5. Remove the head cover (6).

Placing the head cover and assembling the external lamp

To place the head cover:

1. Place the head cover (6) such that the locking button (8) is inserted properly.
2. Tighten the screws (7).
3. Tighten the bracket (5) using the screws (4).

Fig. 11: Removing and placing the head cover (4)



(9) - Washer

4. Tighten the external lamp (1) and the push buttons (2) using the screws (3).

   Do not forget the washers (9) when doing so.

3.8.3 Removing and placing the rear cover

Fig. 12: Removing and placing the rear cover

(1) - Rear cover *(2) - Screw*

Important

When removing and replacing the rear cover, make sure not to pull off or pinch any cables.

Removing the rear cover

To remove the rear cover:

1. Loosen the screws (2).
2. Remove the rear cover (1).

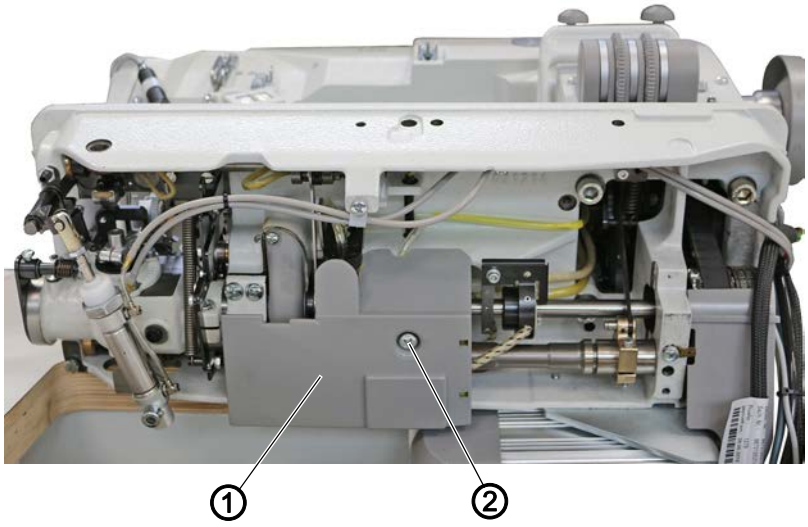
Placing the rear cover

To place the rear cover:

1. Assemble the small rear cover (1) and tighten it with the 3 screws (2).

3.8.4 Removing and placing the oil collection tray on the underside of the machine

Fig. 13: Removing and placing the oil collection tray on the underside of the machine



(1) - Oil collection tray *(2) - Screw*

Removing the oil collection tray on the underside of the machine

To remove the oil collection tray on the underside of the machine:

1. Tilt the machine head (📖 *p. 19*).
2. Loosen the screw (2).
3. Remove the oil collection tray (1).

Placing the oil collection tray on the underside of the machine

To place the oil collection tray on the underside of the machine:

1. Place the oil collection tray (1).
2. Re-tighten the screw (2).

3.8.5 Removing and placing the grease cap

Fig. 14: Removing and placing the grease cap (1)

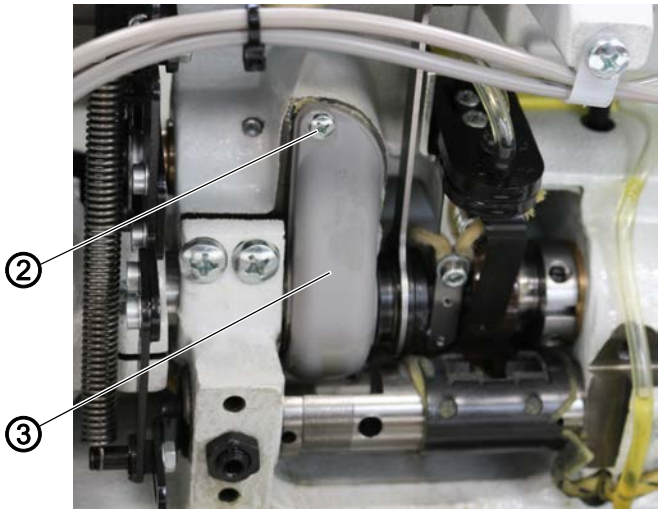
(1) - Screw

Removing the grease cap

To remove the grease cap:

1. Loosen the screw (1).
2. Tilt the machine head (📖 *p. 19*).

Fig. 15: Removing and placing the grease cap (2)

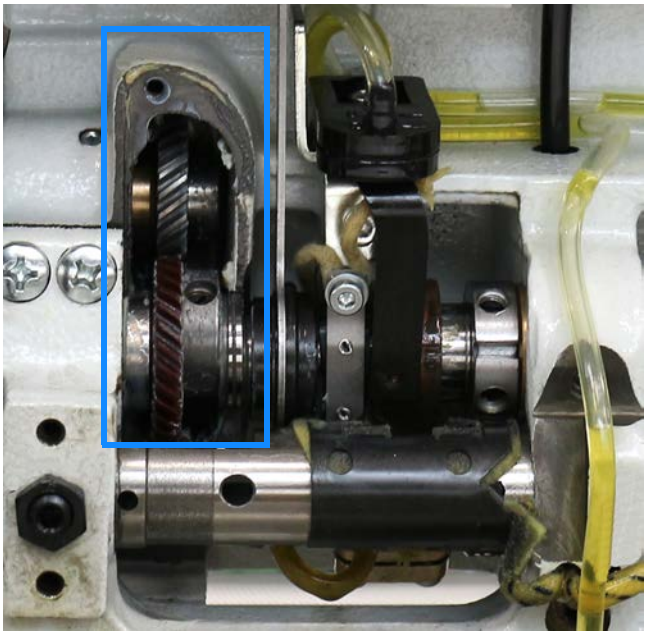


(2) - Screw *(3) - Grease cap*

3. Remove the lower cover (📖 *p. 25*).
4. Loosen the screw (2).
5. Remove the grease cap (3).

Placing the grease cap

Fig. 16: Removing and placing the grease cap (3)



To place the grease cap:

1. Place the grease cap (3).
2. Tighten the screw (2).
3. Place the lower cover (📖 *p. 25*).
4. Erect the machine head (📖 *p. 19*).
5. Tighten the screw (1).

3.8.6 Removing and placing the toothed belt cover

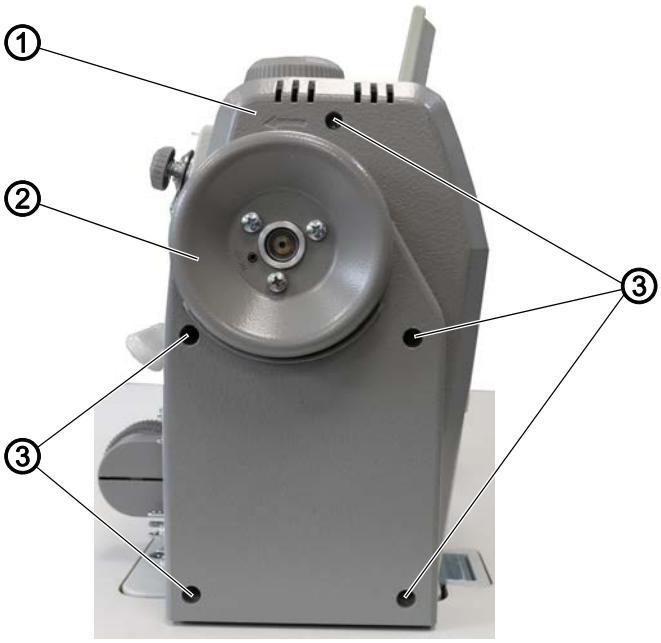
NOTICE

Property damage may occur!

Damage to cables by crushing, kinking or pinching.

Place the toothed belt cover without crushing, kinking or pinching any cables.

Fig. 17: Removing and placing the toothed belt cover



(1) - Toothed belt cover
(2) - Handwheel
(3) - Screw

Removing the toothed belt cover

To remove the toothed belt cover:

1. Remove the handwheel (2) (📖 *p. 29*).
2. Loosen the 5 screws (3).
3. Remove toothed belt cover (1).

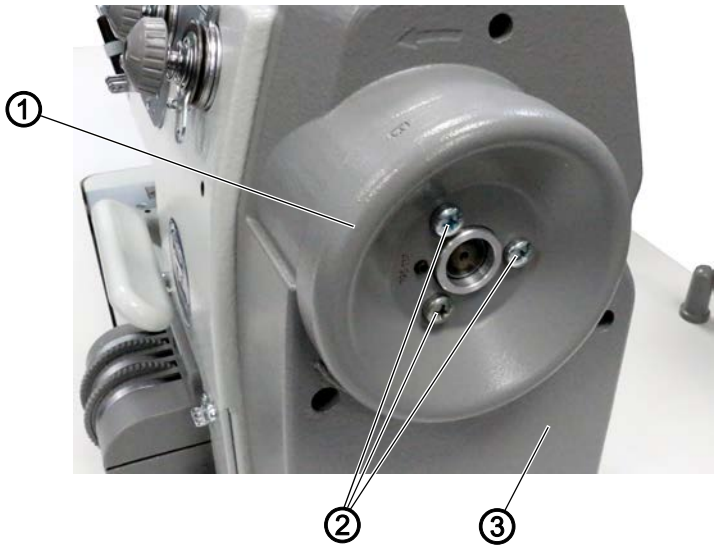
Placing the toothed belt cover

To place the toothed belt cover:

1. Carefully place the toothed belt cover (1) without crushing, kinking or pinching any cables.
2. Tighten the 5 screws (3).
3. Place the handwheel (2) (📖 *p. 29*).

3.9 Removing and placing the handwheel

Fig. 18: Removing and placing the handwheel



(1) - Handwheel
(2) - Screw
(3) - Toothed belt cover

To remove the handwheel:

1. Loosen the screws (2).
2. Remove the handwheel (1).

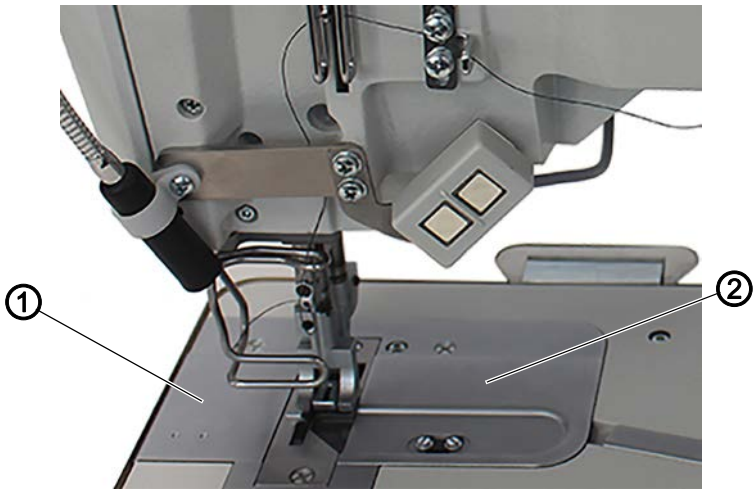
To place the handwheel:

1. Position the handwheel (1) such that it lines up with the toothed belt cover (3).
2. Tighten the handwheel (1) using the screws (2).

3.10 Opening and closing the hook covers

Opening the hook covers

Fig. 19: Opening and closing the hook covers (1)



(1) - Left hook cover *(2) - Right hook cover*

To open the hook covers:

1. Carefully pry open hook covers (1) and (2) using, for instance, a pair of tweezers.

Fig. 20: Opening and closing the hook covers (2)

2. Remove both hook covers (1) and (2).

Fig. 21: Opening and closing the hook covers (3)

Closing the hook covers

To close the hook covers:

1. Insert the left hook cover (1) into the cutout on the left next to the throat plate.
2. Push the left hook cover (1) against the cutout and downward at the rear and the front, respectively.

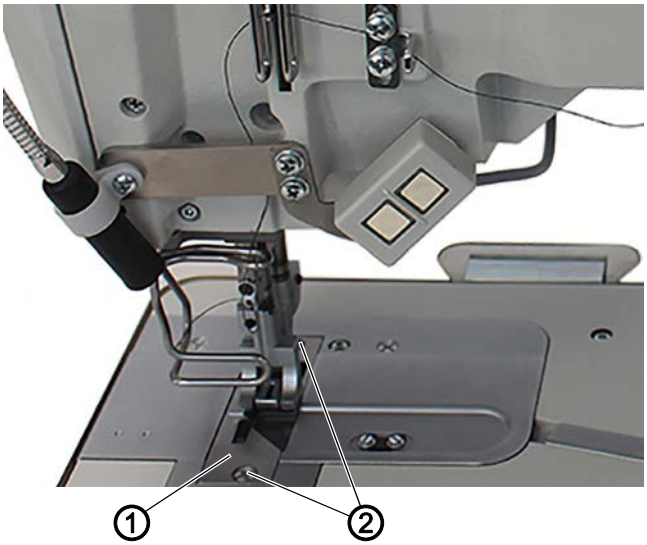
↳ The left hook cover (1) audibly clicks into place.

3. Insert the right hook cover (2) into the cutout on the right next to the throat plate.
4. Push the right hook cover (2) against the cutout and downward at the rear and the front, respectively.

↳ The right hook cover (2) audibly clicks into place.

3.11 Disassembling and assembling the throat plate

Fig. 22: Disassembling and assembling the throat plate (1)



(1) - Throat plate *(2) - Screw*

Disassembling the throat plate

To disassemble the throat plate:

1. Lock the sewing feet in place at the top (📖 *Operating Instructions*).
2. Open the hook covers (📖 *p. 30*).
3. Loosen the 2 screws (2).
4. Remove the throat plate (1).

Fig. 23: Disassembling and assembling the throat plate (2)

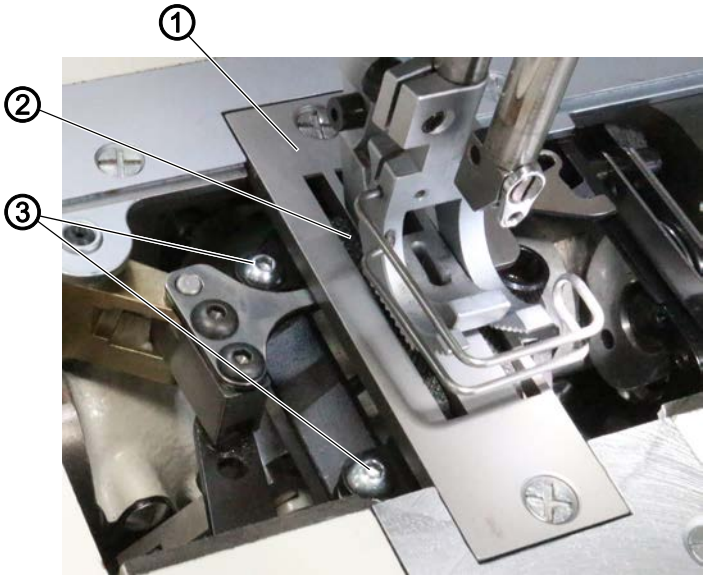
Assembling the throat plate

To assemble the throat plate:

1. Insert the throat plate (1).
2. Tighten the screws (2).
3. Close the hook cover (📖 *p. 30*).

3.12 Disassembling and assembling the feed dog

Fig. 24: Disassembling and assembling the feed dog



(1) - Throat plate
(2) - Feed dog
(3) - Screw

Proper setting

The feed dog (2) does not touch the throat plate (1) with the maximum permissible stitch length.

Disassembling the feed dog

To disassemble the feed dog:

1. Open the hook covers (📖 *p. 30*).
2. Disassemble the throat plate (1) (📖 *p. 31*).
3. Loosen the screw (3).
4. Remove the feed dog (2).

Assembling the feed dog

To assemble the feed dog:

1. Place the feed dog (2) onto the feed dog carrier.
2. Tighten the screw (3).
3. Assemble the throat plate (📖 *p. 31*).
4. Close the hook covers (📖 *p. 30*).

Order

Then check the following setting:

- Feed dog (📖 *p. 80*)

4 Setting the adjusting disk relative to the arm shaft crank

WARNING

Risk of injury from moving parts!

Crushing possible.

Switch off the machine before you set the adjusting disk.

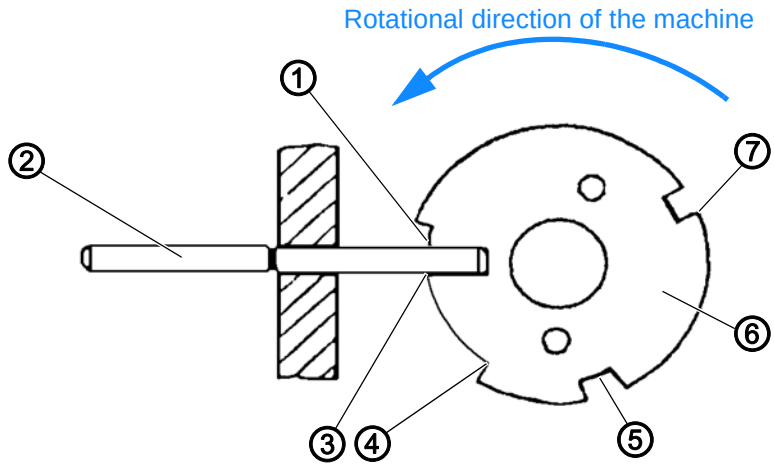
NOTICE

Property damage may occur!

Damage to the machine.

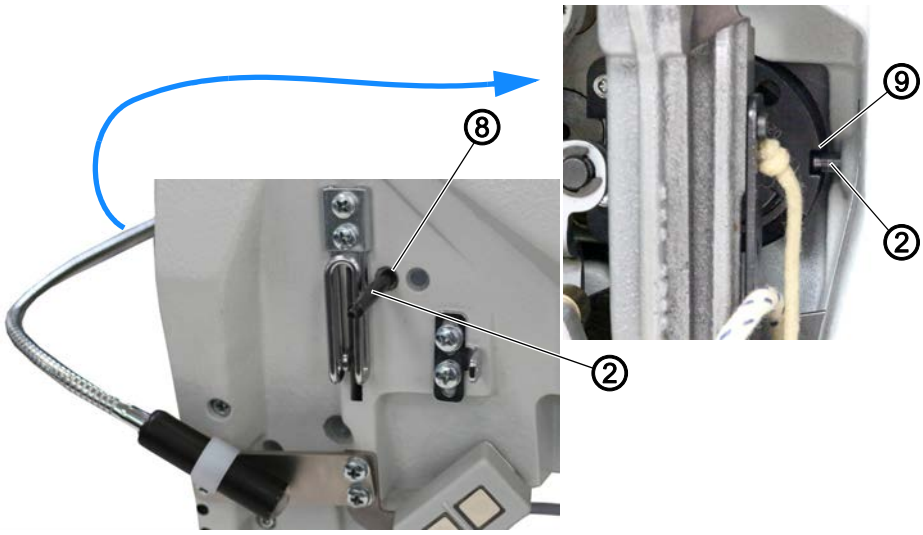
After completing the setting process, make sure to fully position the toothed belt on the toothed belt wheel.

Fig. 25: Setting the adjusting disk relative to the arm shaft crank (1)



*(1) - Position **F***
*(2) - Locking peg (locking peg **3,** p. 14)*
*(3) - Position **A***
*(4) - Position **E***
*(5) - Position **D***
(6) - Adjusting disk
*(7) - Position **B***

Fig. 26: Setting the adjusting disk relative to the arm shaft crank (2)



(8) - Locking opening *(9) - Slot in the arm shaft crank*

Position **A** (3) of the adjusting disk must be in a line with the slot in the arm shaft crank (9). Only in this position are all other settings correct that are made with the help of the adjusting disk.

Cover

- Remove the arm cover (📖 *p. 20*).
- Remove the head cover (📖 *p. 22*).

To set the adjusting disk:

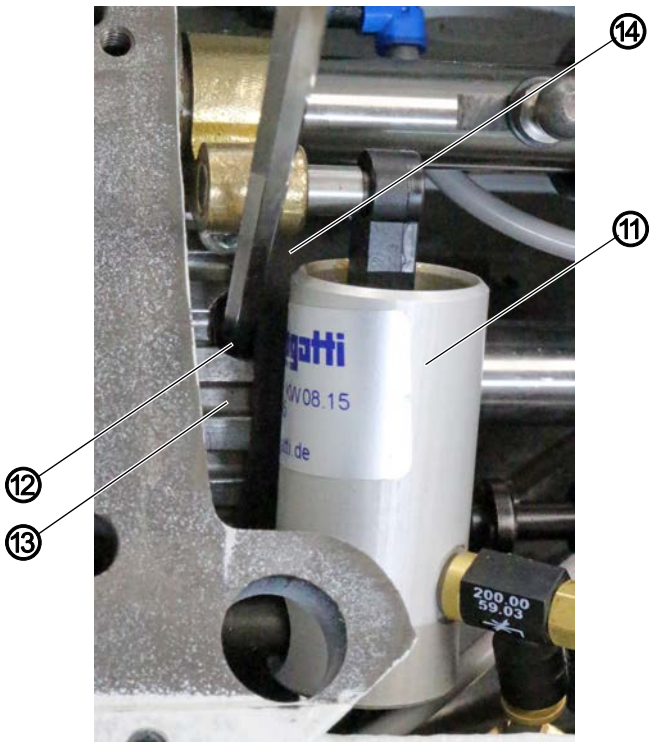
1. Insert the 1st locking peg (2) through the locking opening (8) and into the slot of the arm shaft crank (9).

Fig. 27: Setting the adjusting disk relative to the arm shaft crank (3)

(10) - Locking washer *(11) - Cylinder*

2. To allow for the cylinder (11) to be moved, loosen the locking washer (10) using a screwdriver.
3. To gain access to the screw in the belt pulley, move the cylinder (11) to the side by a few millimeters (the figure below shows the machine from the rear).

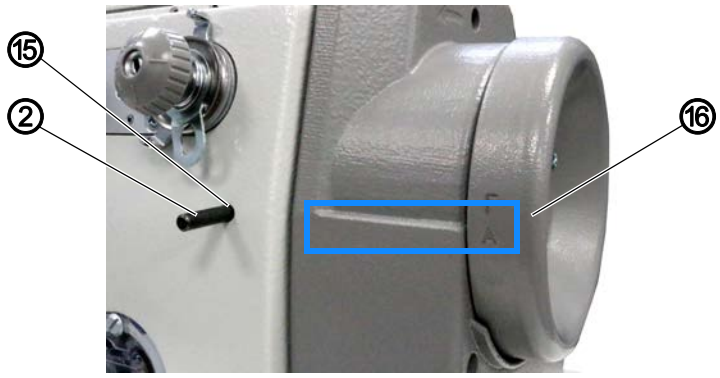
Fig. 28: Setting the adjusting disk relative to the arm shaft crank (4)



(11) - Cylinder
(12) - Threaded pin
(13) - Toothed belt wheel
(14) - Toothed belt

4. Turn the handwheel until the threaded pin (12) in the toothed belt (13) can be accessed from the top.
5. If necessary, move the toothed belt (14) slightly to the left to gain access to the threaded pin (12).
6. Loosen the threaded pin (12).

Fig. 29: Setting the adjusting disk relative to the arm shaft crank (5)



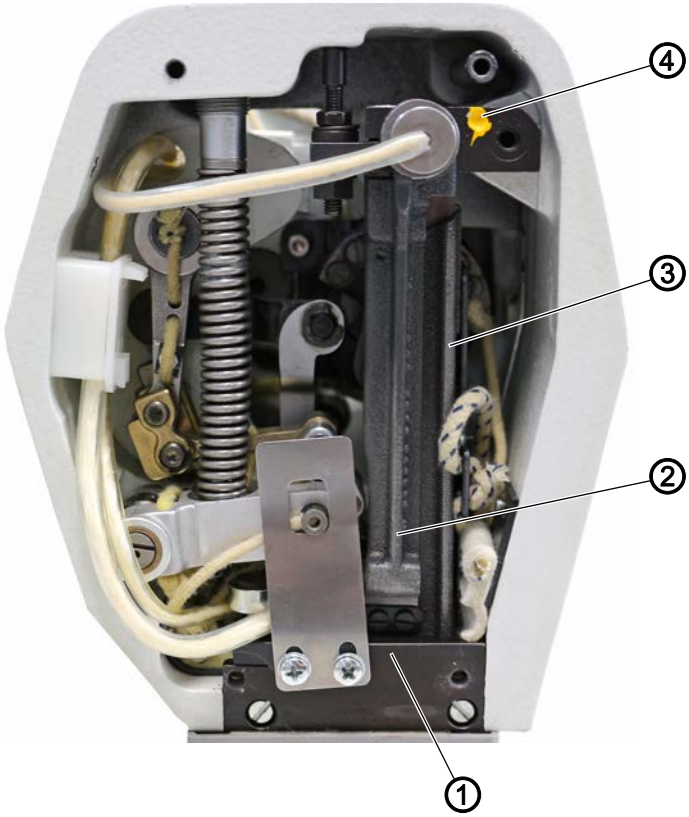
*(2) - Locking peg (locking peg **3** 🕮 p. 14)*
(16) - Handwheel
(15) - Locking opening

7. Turn the handwheel (16) to position **A** (3).
8. Use the locking opening (15) to insert a 2nd locking peg (2) and lock the machine in place at position **A** (3) of the adjusting disk (6).
9. If the machine cannot be locked in place at position **A** (3), slightly adjust the position of the toothed belt wheel (13).
10. Tighten the threaded pin (12).
11. If necessary, slide the toothed belt (14) slightly back to the right.

    The toothed belt (14) must be positioned completely on top of the toothed belt wheel (13).
12. Slide the cylinder (11) all the way back to the right.
13. Secure the cylinder (11) with the locking washer (10).
14. To remove the lock, pull out both locking pegs (2) (🕮 *p. 16*).

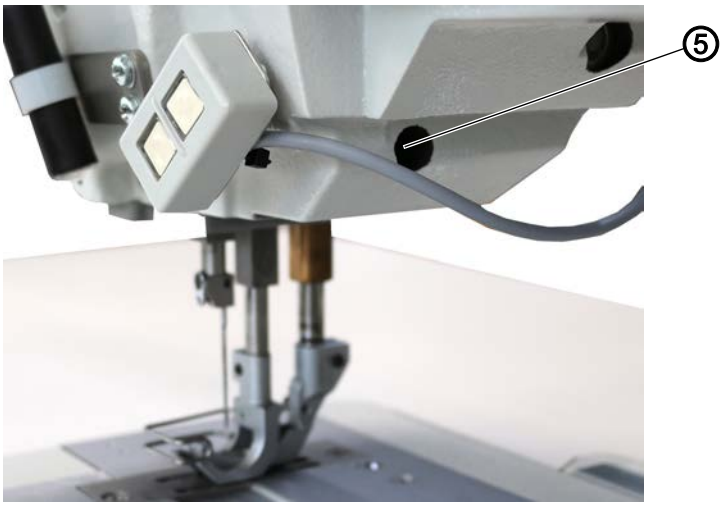
5 Needle bar linkage

Fig. 30: Needle bar linkage (1)



(1) - Guide pin (not visible)
(2) - Part with feeding foot bar
(3) - Part with needle bar
(4) - Screw (sealed)

Fig. 31: Needle bar linkage (2)



(5) - Guide pin

The needle bar linkage of class 195 is split into two sections. The stationary part with the needle bar (3) is screwed directly to the body casting. The other part with the feeding foot bar (2) is fitted so that it can move freely.

The screw (4) is secured against twisting with yellow paint and housed inside the machine arm.

Proper setting

Guide pins (1) and (5) have been set at the factory in such a way that the needle bar linkage can move smoothly and without play.

Important

Do not change the positions of guide pins (1) and (5).

5.1 Setting the linkage holder

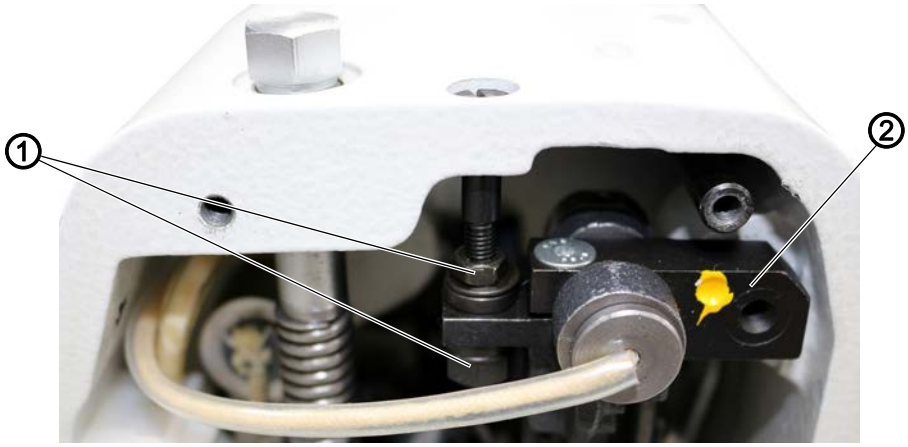
WARNING

Risk of injury!

Crushing, cutting and punctures are possible.

Set the linkage holder only when the machine is switched off.

Fig. 32: Linkage holder



(1) - Nut *(2) - Linkage holder*

Proper setting

The linkage holder (2) must be in the horizontal position.

Cover

- Remove the head cover (📖 *p. 22*).

To set the linkage holder:

1. Tighten the nuts (1) so that the linkage holder (2) is in the horizontal position.

5.2 Setting the distance between feeding foot bar and cloth pressure bar

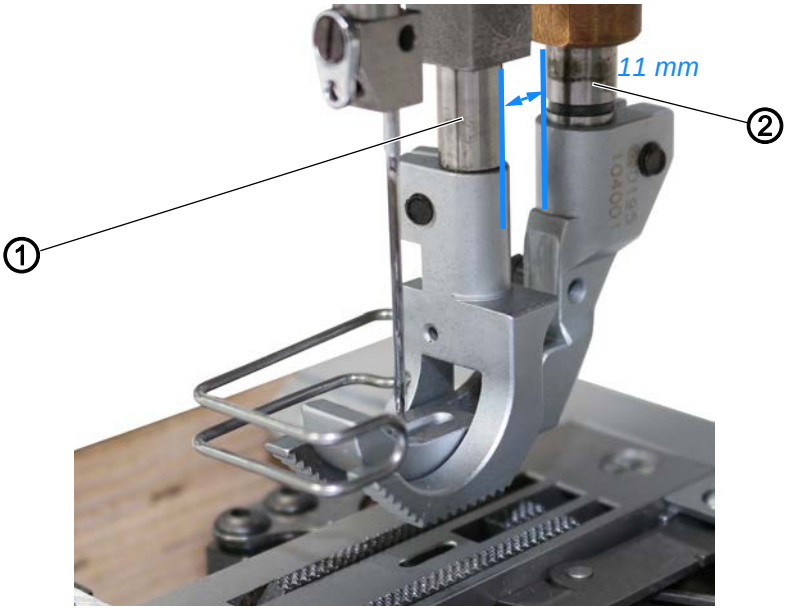
WARNING

Risk of injury!

Crushing, cutting and punctures are possible.

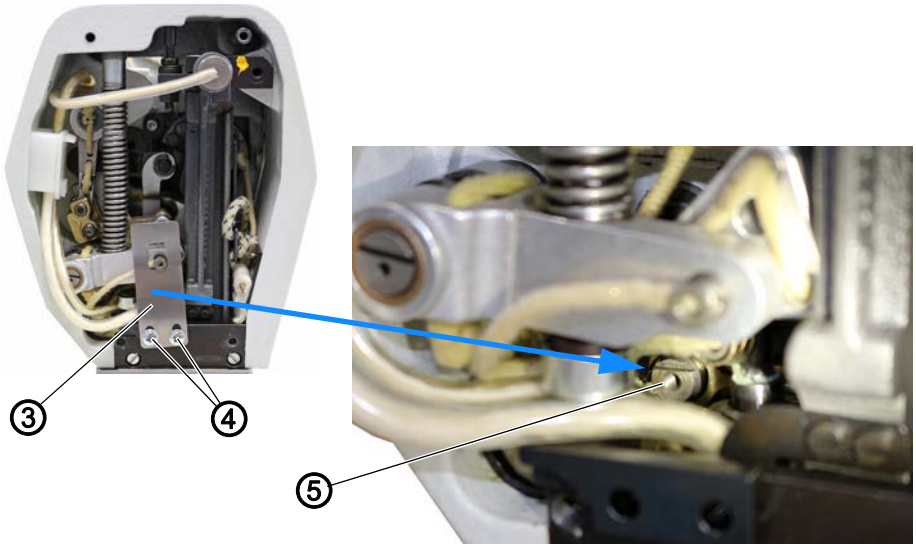
Only set the distance between feeding foot bar and cloth pressure bar when the machine is switched off.

Fig. 33: Setting the distance between feeding foot bar and cloth pressure bar (1)



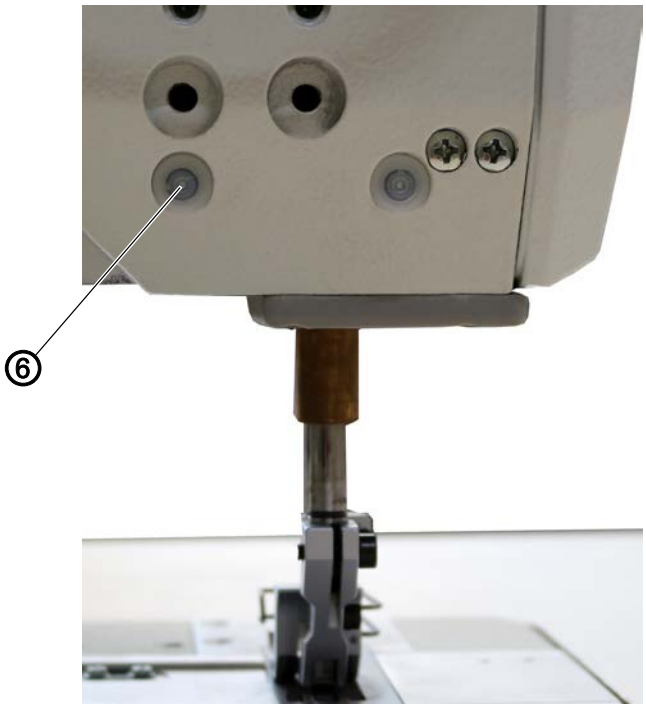
(1) - Feeding foot bar
(2) - Cloth pressure bar

Fig. 34: Setting the distance between feeding foot bar and cloth pressure bar (2)



(3) - Support plate
(4) - Screw
(5) - Eccentric

Fig. 35: Setting the distance between feeding foot bar and cloth pressure bar (3)



(6) - Plug

Proper setting

When the machine is locked in place at position **B**, the distance between the feeding foot bar (1) and the cloth pressure bar (2) should be 11 mm.

Cover

- Remove the head cover (📖 *p. 22*).

To set the distance between the feeding foot bar and the cloth pressure bar:

1. Lock the machine in place at position **B** (📖 *p. 16*).
2. Remove the plug (6).
3. Loosen the threaded pin behind the plug (6).
4. Loosen the screws (4).
5. Remove the support plate (3).
6. Set the eccentric (5) to a distance of 11 mm between the feeding foot bar (1) and the cloth pressure bar (2).
7. Tighten the threaded pin behind the plug (6).

6 Adjusting wheels

6.1 Setting the adjusting wheels for stitch length, stitch length limit and stitch condensing

NOTICE

Property damage may occur!

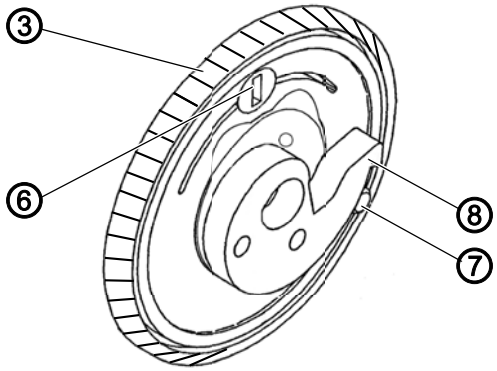
Damage to the machine

If assembling sewing equipment with a shorter stitch length to the machine, set the adjusting wheel for the stitch length.

Fig. 36: Setting the adjusting wheels for stitch length, stitch length limit and stitch condensing (1)

(1) - Adjusting screw
(2) - Adjusting wheel (for bottom feed)
(3) - Adjusting wheel (for top feed)
(4) - Cover
(5) - Marking

Fig. 37: Setting the adjusting wheels for stitch length, stitch length limit and stitch condensing (2)



(3) - Adjusting wheel (for top feed)
(6) - Locking screw
(7) - Stop pin
(8) - Cam

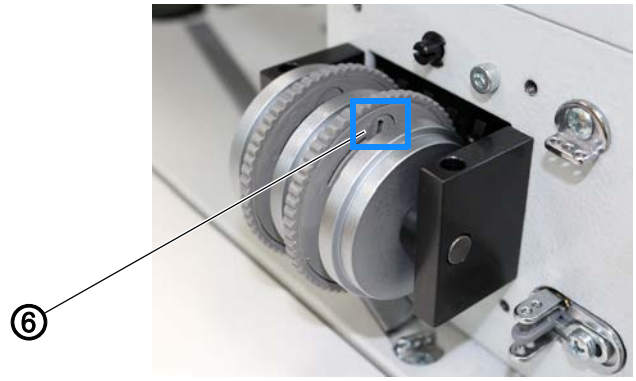
Setting stitch length and stitch length limit

Adjusting wheels (2) and (3) are equipped with an eccentric washer that possesses a cam (8). The cam (8) and the stop pin (7) limit the minimum and maximum stitch length.

To set the stitch length limit:

1. Set adjusting wheels (2) and (3) to the largest possible stitch length.
2. Unscrew the cover (4).

Fig. 38: Setting the adjusting wheels for stitch length, stitch length limit and stitch condensing (3)



(6) - Locking screw

3. Use the adjusting plate (gage **10**, 📖 *p. 14*) to set the slot of the locking screw (6) vertical.

↳ The lock is removed.

4. Use the adjusting wheel (3) to set the desired maximum stitch length.
5. Use the adjusting plate (gage **10**, 📖 *p. 14*) to set the slot of the locking screw (6) back to the horizontal position.
6. Place and tighten the cover (4).
7. Check the setting of adjusting wheels (2) and (3) by means of the marking (5).

Setting the stitch condensing

You can use the adjusting screw (1) to set the desired level of stitch condensing.

To set the level of stitch condensing:

1. To increase stitch condensing, turn the adjusting screw (1) towards **+**.
2. To reduce stitch condensing, turn the adjusting screw (1) towards **-**.

Important

To ensure a proper seam pattern, the stitch length **MUST** be at least 2.5 mm with stitch condensing enabled.

6.2 Setting the adjusting wheel for the sewing foot stroke

WARNING

Risk of injury!

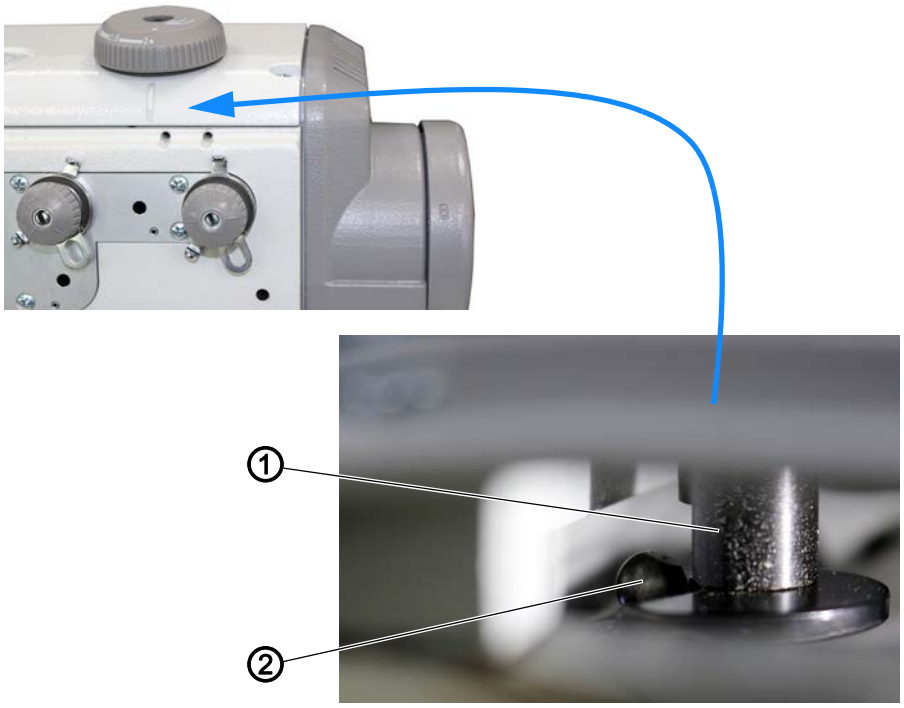
Crushing, cutting and punctures are possible.

Only set the adjusting wheel for the sewing foot stroke when the machine is switched off.

Fig. 39: Setting the adjusting wheel for the sewing foot stroke (1)

(1) - Curve

Fig. 40: Setting the adjusting wheel for the sewing foot stroke (2)



(1) - Curve *(2) - Ball head*

The adjusting wheel can only be turned clockwise and counterclockwise until the curve (1) abuts on the ball head (2).

When the adjusting wheel (3) has been turned clockwise as far as it will go, the

- smallest value should be set
- adjusting wheel (3) should have the least amount of play

Fig. 41: Setting the adjusting wheel for the sewing foot stroke (3)

(3) - Adjusting wheel (for sewing foot stroke)

(4) - Screw

Cover

- Remove the toothed belt cover (📖 *p. 28*).

To set the adjusting wheel for the sewing foot stroke:

1. Turn the adjusting wheel (3) until the curve (1) abuts on the ball head (2).

↳ There must not be any play between the curve (1) and the ball head (2).

2. Check at which position the adjusting wheel (3) is set.
3. If the adjusting wheel is not set to 2 mm (smallest setting), loosen the screw (4).
4. Turn the adjusting wheel (3) until set to 2 mm.

↳ The curve (1) must not shift while you do so.

5. Tighten the screw (4).
6. Verify that there is still no play between curve (1) and ball head (2) when the adjusting wheel (3) is set to 2 mm.
7. Correct the setting again if necessary.

6.3 Setting the potentiometer

WARNING

Risk of injury!

The machine remains switched on when the potentiometer is set.

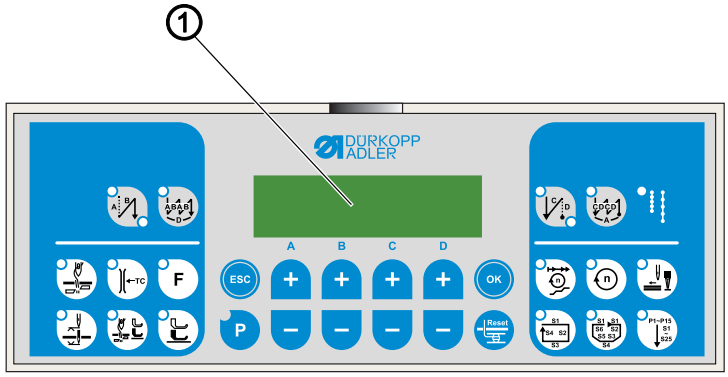
Work with caution when the machine is switched on; do not press the pedal inadvertently.

The potentiometer adjusts the number of stitches to the set sewing foot stroke and reduces the speed if the sewing foot stroke is too high.

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.

Fig. 42: Setting the potentiometer (1)



(1) - Display

Cover

- Remove the arm cover (📖 *p. 20*).

To set the potentiometer:

1. Press the **P** and **Reset** buttons at the same time.

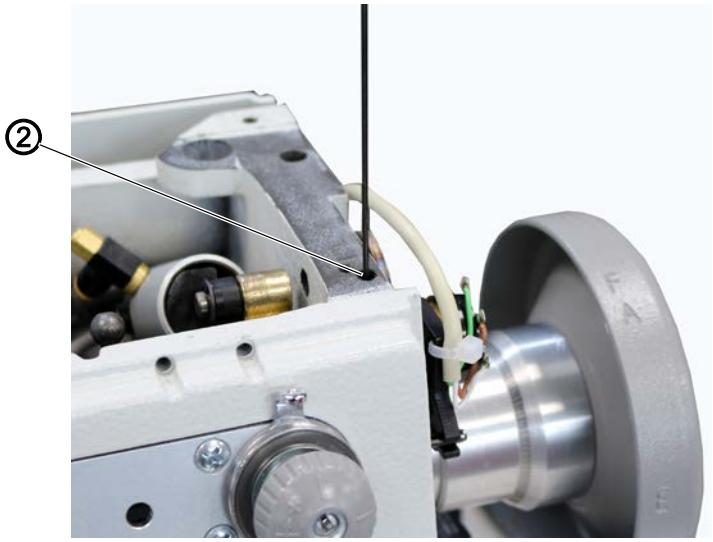
↳ The display (1) shows the current level.

The potentiometer is set at technician level `t 10 04`.
If the display (1) indicates a different level:

2. Call up the technician level using the **Plus/Minus** buttons:
   As the case may be, press the **Plus/Minus** button below the letter or the number until the display indicates `t 10 04`.

3. Press the **OK** button.

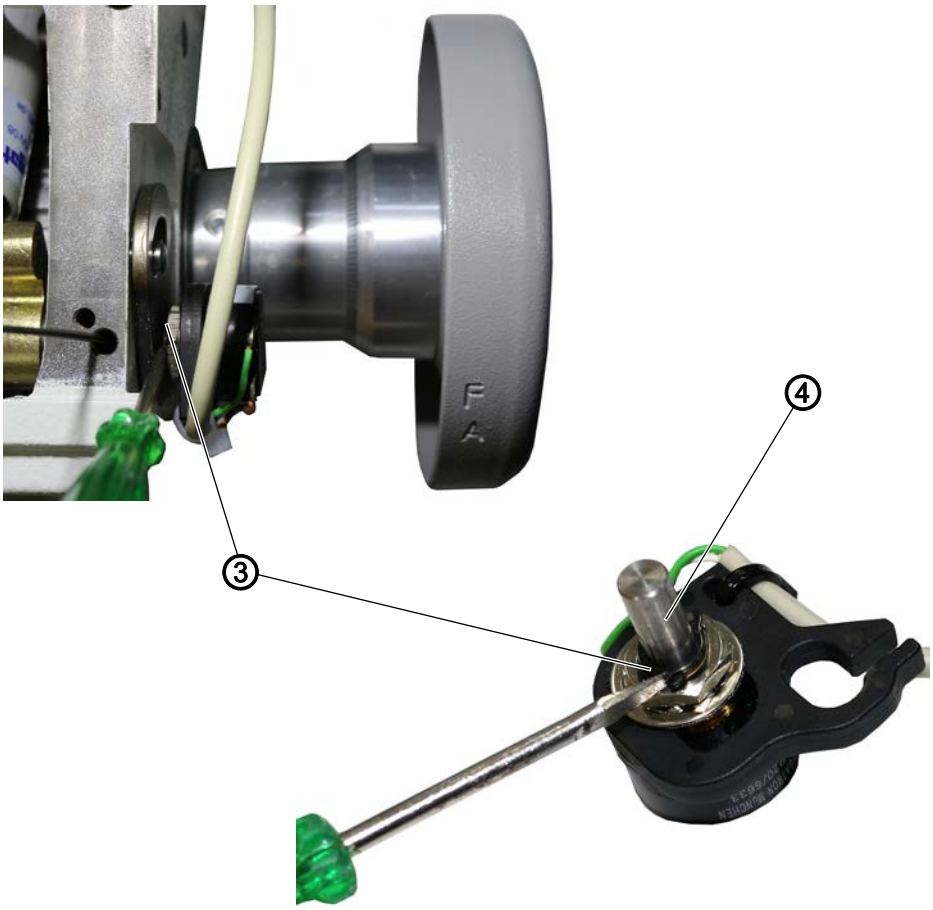
Fig. 43: Setting the potentiometer (2)



(2) - Hole

4. Loosen the threaded pin through the hole (2).

Fig. 44: Setting the potentiometer (3)



(3) - Locking ring

(4) - Potentiometer axle

5. Turn the potentiometer axle (4) such that the left display shows **1** in the first instance and the relevant maximum speed next to it.

   To do so, use a small screwdriver to loosen or tighten the locking ring (3).

6. Tighten the threaded pin through the hole (2) without changing the value shown in the display.

7. On the **OP1000**, press the **ESC** button 2 times.

Important:

8. Switch off the machine at the main switch.

9. Switch on the machine at the main switch.

↳ Restarting the machine will save the new settings.

6.4 Setting the maximum stroke stop

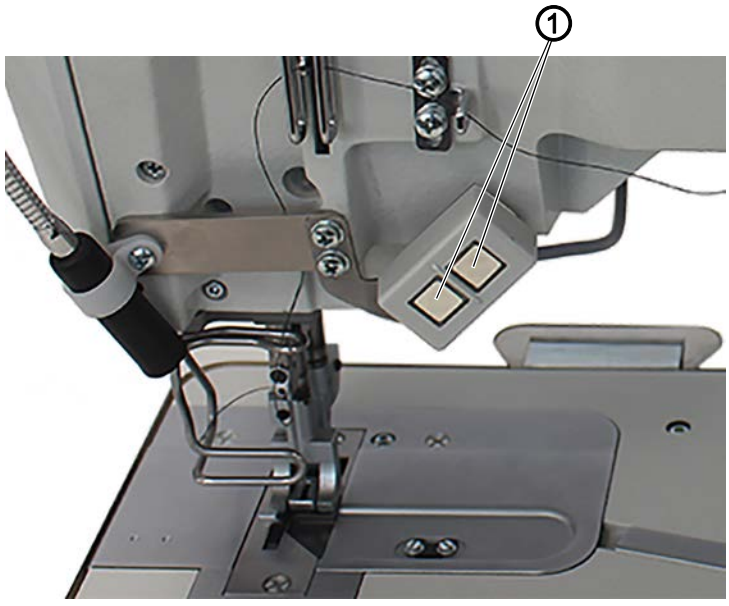
WARNING

Risk of injury!

Crushing, cutting and punctures are possible. The maximum stoke height is not in effect unless the machine is switched on.

Work with caution when the machine is switched on; do not press the pedal inadvertently.

Fig. 45: Setting the maximum stroke stop (1)



(1) - Button

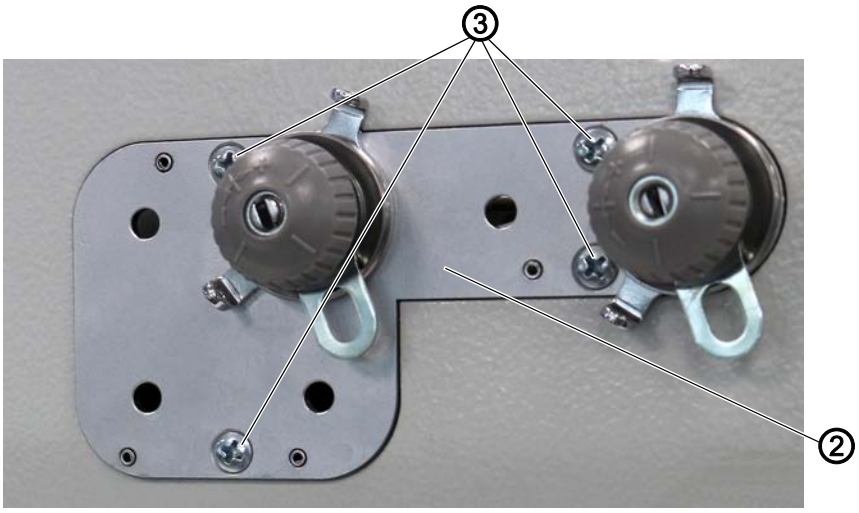
When the maximum stroke is switched on, the maximum stroke height of the sewing feet should be 7 mm.

Information

The maximum stroke can be switched on and off using the knee button and/or a button (1) when the machine is switched on and the corresponding button (1) has been assigned the quick stroke adjustment function (📖 *Operating Instructions*).

The knee button is optional.

Fig. 46: Setting the maximum stroke stop (2)

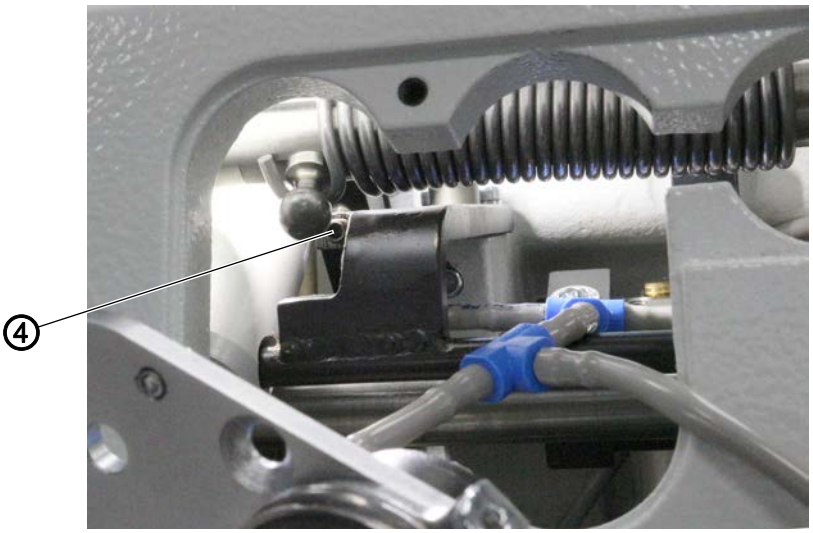


(2) - Tensioning plate *(3) - Screw*

To set the stop for the maximum stroke:

1. If necessary, remove needle and hook thread from the tensioner elements.
2. Loosen the screws (3).
3. Remove the tensioning plate (2).

Fig. 47: Setting the maximum stroke stop (3)



(4) - Threaded pin

4. Ensure that the needle is at the top dead center and switch on the machine (📖 *Operating Instructions*).
5. To switch the maximum stroke on, press button (1).

↳ The maximum stroke height must not exceed 7 mm.

6. Adjust the stroke height if necessary:
   - Increase the stroke height: Screw in the threaded pin (4) further
   - Reduce the stroke height: Unscrew the threaded pin (4) further

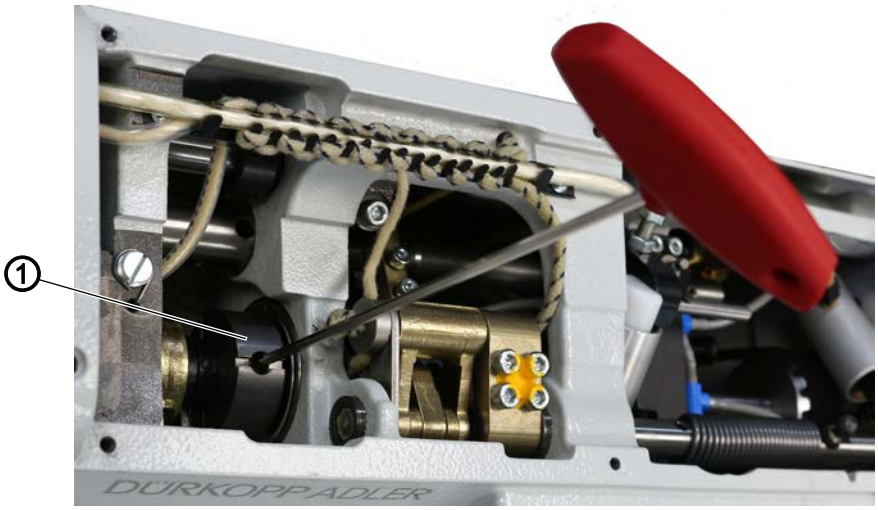
7 Setting the balance weight

Subclasses **195-171120-01** and **195-171521-01** (part numbers 0195 990001 and 0195 990002) are equipped with a balance weight.

Cover

- Remove the arm cover (📖 *p. 20*).

Fig. 48: Setting the balance weight



(1) - Balance weight

To set the balance weight:

1. Lock the machine in place at position **A** (📖 *p. 16*).
↳ The hole of the pusher eccentric points up vertically.
2. Loosen the threaded pin in the hole of the balance weight (1).
3. Set the balance weight (1) vertical.
4. Tighten the threaded pin in the hole of the balance weight (1).
↳ The balance weight (1) is set properly.

8 Sewing feet

8.1 Setting the timing of the feeding foot feed movement

WARNING

Risk of injury!

Crushing, cutting and punctures are possible.

Only set the timing of the feeding foot feed movement when the machine is switched off.

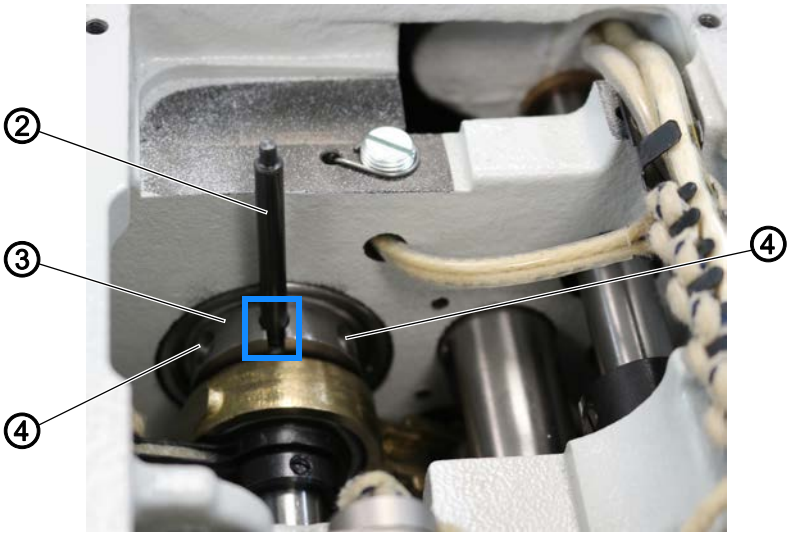
Fig. 49: Setting the timing of the feeding foot feed movement (1)

(1) - Stitch adjustment lever

Proper setting

The sewing foot must not move when the stitch adjustment lever (1) is pressed with the stitch length set to the largest value and the machine locked in place at position **B**.

Fig. 50: Setting the timing of the feeding foot feed movement (2)



*(2) - Locking peg (locking peg **3**, 🕮 p. 14)*
(3) - Pusher eccentric
(4) - Threaded pin

Cover

- Remove the arm cover (🕮 *p. 20*).

To set the timing of the feeding foot feed movement **with** the **locking peg**:

1. Lock the machine in place at position **A** (🕮 *p. 16*).
2. Loosen the threaded pins (4).
3. Insert the locking peg (2) into the mark-off hole of the pusher eccentric (3) and move it to the vertical position.
4. Tighten the threaded pins (4).

To set the timing of the feeding foot feed movement **without the locking peg**:

1. Lock the machine in place at position **B** (🕮 *p. 16*).
2. Loosen the threaded pins (4).
3. Turn the pusher eccentric (3) on the arm shaft such that the feeding foot remains at rest when the stitch adjustment lever (1) is pressed.

8.2 Setting the stroke adjusting range and the timing of the feeding foot stroke movement

WARNING

Risk of injury!

Crushing, cutting and punctures are possible.

Only set the stroke adjusting range and the timing of the feeding foot stroke movement when the machine is switched off.

NOTICE

Property damage may occur!

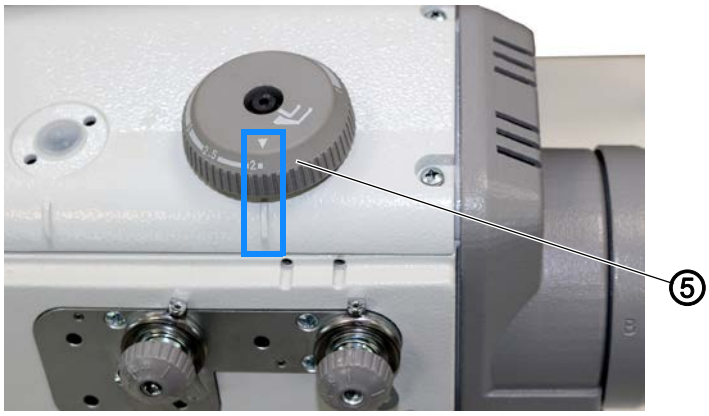
Damage to the machine.

Ensure that the eccentric is at its initial position: The slot must be horizontal in the upper semicircle.

Fig. 51: Setting the stroke adjusting range and the timing of the feeding foot stroke movement (1)

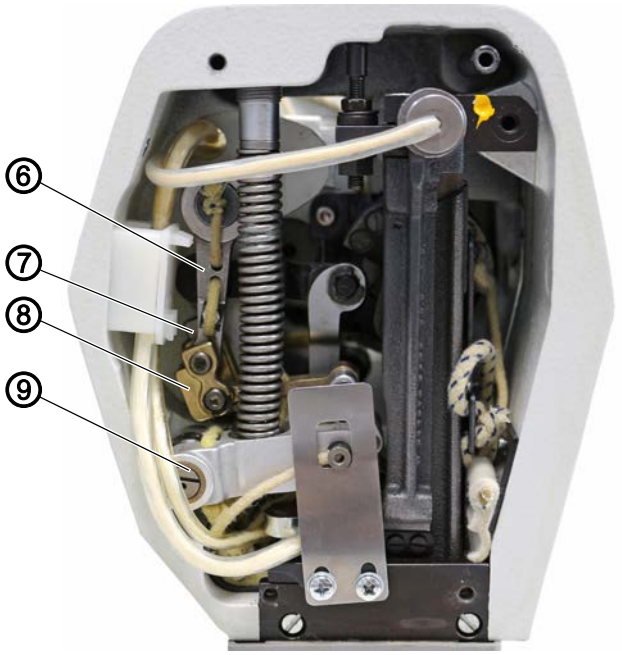
*(1) - Gage (gage **9**, 🕮 p. 14)*
(2) - Block
(3) - Screw
(4) - Stroke rocker

Fig. 52: Setting the stroke adjusting range and the timing of the feeding foot stroke movement (2)



(5) - Adjusting wheel (for the stroke height)

Fig. 53: Setting the stroke adjusting range and the timing of the feeding foot stroke movement (3)



(6) - Stroke lever
(7) - Locking pin
(8) - Sliding block
(9) - Eccentric

Proper setting

When the stroke height at the adjusting wheel is set to 2 mm, the sewing feet should be at the following height:

- Feeding foot: 2 mm
- Presser foot: 1.8 mm

Cover

- Remove the arm cover (📖 *p. 20*).
- Remove the head cover (📖 *p. 22*).

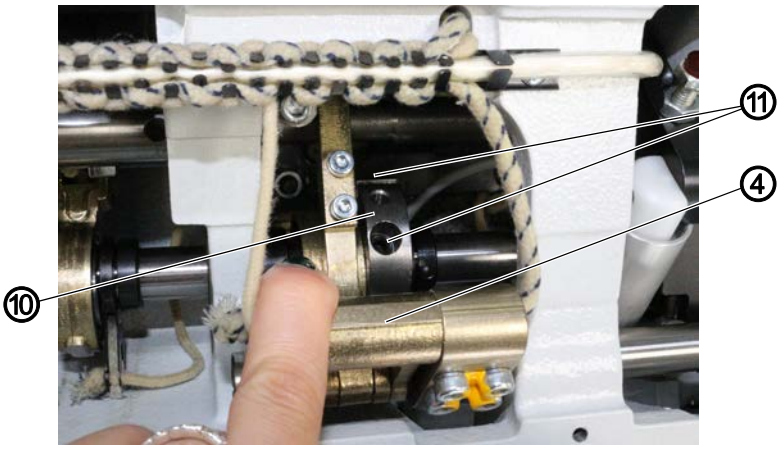
To set the stroke adjusting range:

1. Loosen the screws (3).
2. Place the gage (1) on the cast walls of the machine arm (see 1st figure at the top).
3. Swivel the block (2) until the pin of the stroke rocker (4) abuts on the gage (1).
4. Slide the block (2) against the bush for the axial fixing of the shaft.
5. Re-tighten the screws (3).
6. Remove the gage (1).

To time the stroke movement of the feeding foot:

1. Lock the machine in place at position **D** (📖 *p. 16*).

Fig. 54: Setting the stroke adjusting range and the timing of the feeding foot stroke movement (4)



(4) - Stroke rocker *(11) - Threaded pin*
(10) - Stroke eccentric

2. Loosen the threaded pins (11) on the stroke eccentric (10).
3. Turn the stroke eccentric (10) on the arm shaft so that when the stroke rocker (4) moves, the stroke lever (6) remains at rest.

Fig. 55: Setting the stroke adjusting range and the timing of the feeding foot stroke movement (5)

*(12) - Locking peg (locking peg **3**, 📖 p. 14)* *(13) - Locking opening*

4. Insert the 2nd locking peg (12) into the locking opening (13).

↳ The sliding block (8) of the rocker must abut on the locking pin (7).

Important

The eccentric (9) must be at its initial position: The slot is horizontal in the upper semicircle.

8.3 Setting the precise sewing foot timing

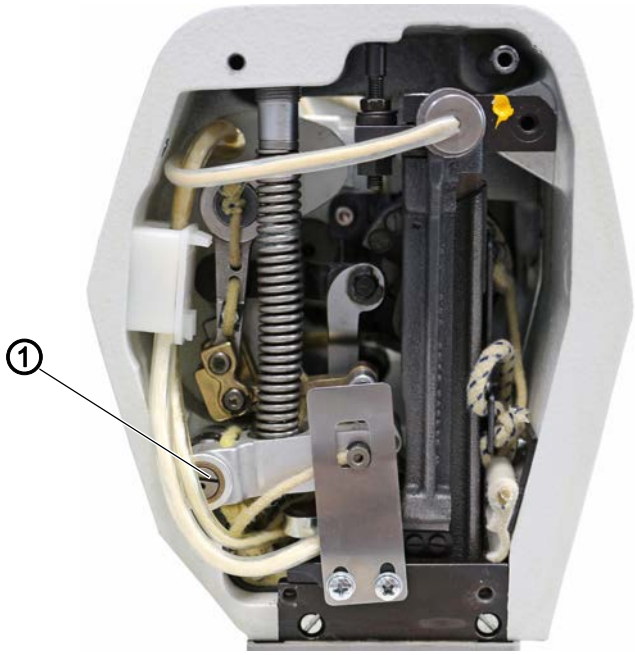
WARNING

Risk of injury!

Crushing, cutting and punctures are possible.

Only set the precise sewing foot timing when the machine is switched off.

Fig. 56: Setting the precise sewing foot timing



(1) - Eccentric

Proper setting

When the machine is locked in place at position **D**, both sewing feet must rests on the throat plate.

Cover

- Remove the head cover (📖 *p. 22*).

To set the precise sewing foot timing:

1. Lock the machine in place at position **D** (📖 *p. 16*).
2. Slightly shift the eccentric (1) at its initial position (slot is horizontal in the upper semicircle).

9 Sewing foot lift

9.1 Setting the height of the raised sewing feet (lift limitation)

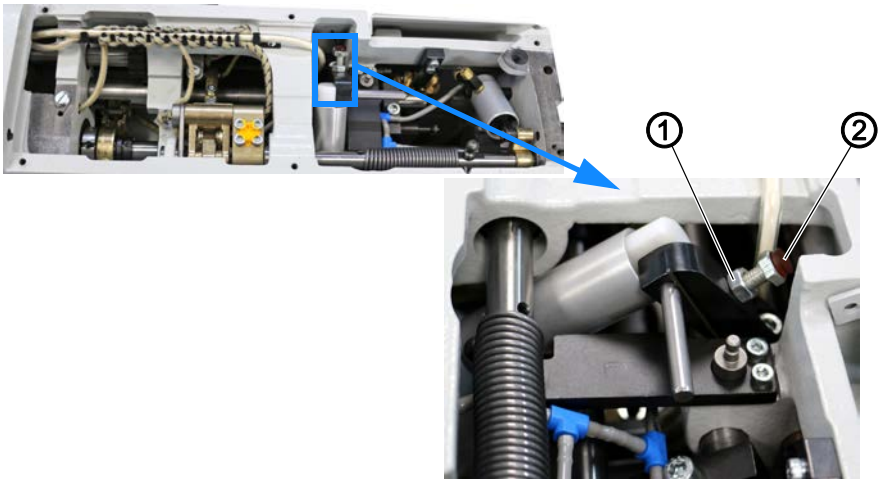
WARNING

Risk of injury!

The machine is switched on when you set the height of the raised sewing feet.

Work with caution when the machine is switched on; do not press the pedal inadvertently.

Fig. 57: Setting the height of the raised sewing feet (lift limitation)



(1) - Nut

(2) - Stop screw

The sewing feet remain lifted for as long as the pedal is pressed in position **-2**.

Proper setting

The distance between the raised sewing feet and the throat plate is limited to a maximum of 17 mm.

The lifting height should be set such that, when the needle is at the top dead center, the needle tip does not protrude from under the sewing feet (at a lifting height of 15 mm).

When working with particularly thick sewing feet, e.g. piping feet, you must reduce the distance as much as necessary to prevent a collision with the needle bar.

Cover

- Remove the arm cover (📖 *p. 20*).

To set the height of the raised sewing feet:

1. Loosen the nut (1).
2. Adjust the stop screw (2) accordingly.

↳ The further the stop screw (2) protrudes, the lower the height to which the sewing feet can be raised with the pedal at position **-2**.

3. Tighten the nut (1).

9.2 Setting the intercept buffer

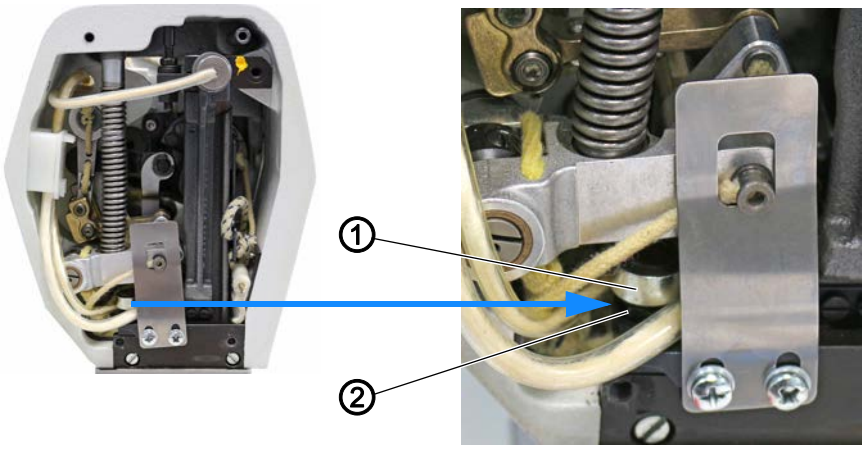
WARNING

Risk of injury!

Crushing, cutting and punctures are possible.

Only set the intercept buffer with the machine switched off.

Fig. 58: Setting the intercept buffer



(1) - Intercept buffer

(2) - Counternut

The intercept buffer prevents the sewing feet from resting directly on the throat plate.

Proper setting

The distance between throat plate and sewing feet should be 0.2-0.8 mm depending on the sewing material.

Cover

- Remove the head cover (📖 *p. 22*).

To set the intercept buffer:

1. Turn the handwheel until the sewing feet are at the same height.
2. Check to see if there is a forceful transport of the material.
3. Loosen the counternut (2) if necessary.
4. Set the intercept buffer (1) accordingly.
5. Tighten the counternut (2).

9.3 Setting the height of the locked sewing feet

WARNING

Risk of injury!

Crushing, cutting and punctures are possible.

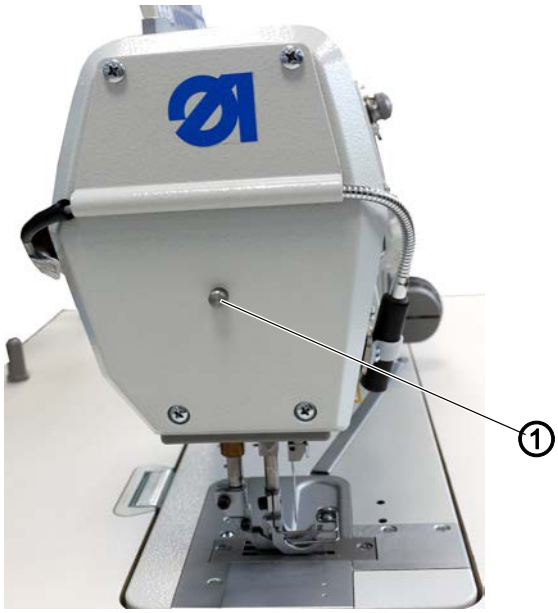
Do not check and adjust the height of the locked sewing feet unless the machine is switched off.

The sewing feet can be locked in place in raised position with a press of the button on the head cover.

Proper setting

The distance of the raised and locked sewing feet to the throat plate should be 10 mm.

Fig. 59: Setting the height of the locked sewing feet (1)



(1) - Locking button

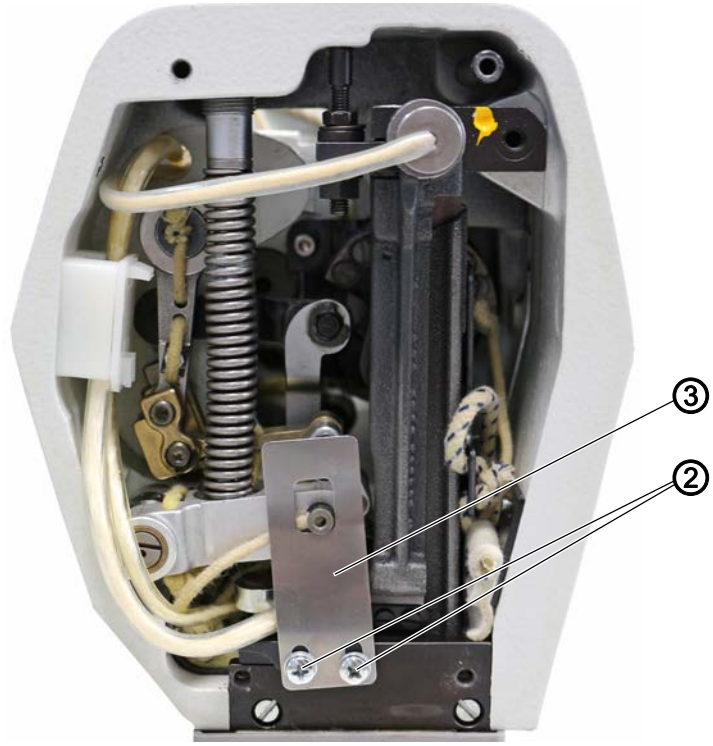
To check the height of the locked sewing feet:

1. To lift the sewing feet, press and hold the pedal in position **-1** or **-2**.
2. Press the locking button (1) on the head cover.
3. Release the pedal (position **0**).

↳ The sewing feet are now locked in place.

4. Measure the height of the locked sewing feet.
5. Adjust the height of the locked sewing feet if necessary.

Fig. 60: Setting the height of the locked sewing feet (2)



(2) - Screw *(3) - Support plate*

Cover

- Remove the head cover (📖 *p. 22*).

To set the height of the locked sewing feet:

1. Loosen the screws (2).
2. Change the position of the support plate (3).
3. Re-tighten the screws (2).

10 Setting the left lower shaft bearing

WARNING

Risk of injury!

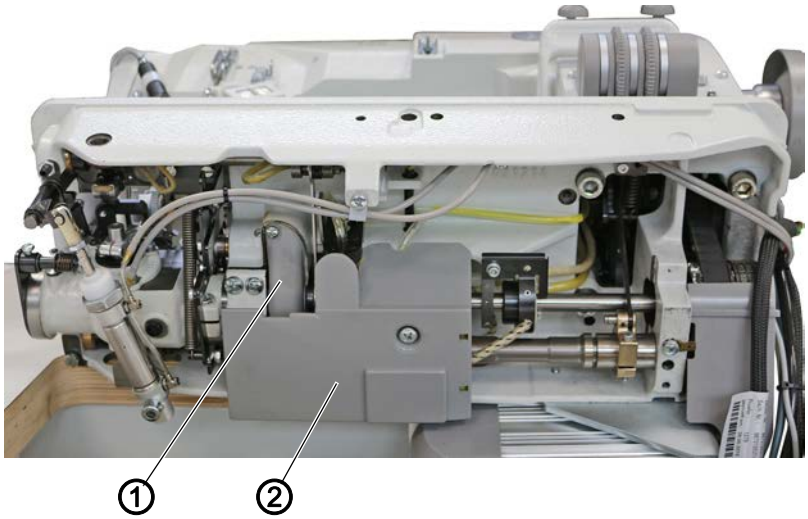
Crushing, cutting and punctures are possible.

Only set the left lower shaft bearing when the machine is switched off.

Proper setting

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

Fig. 61: Setting the left lower shaft bearing (1)



(1) - Grease cap

(2) - Oil collection tray

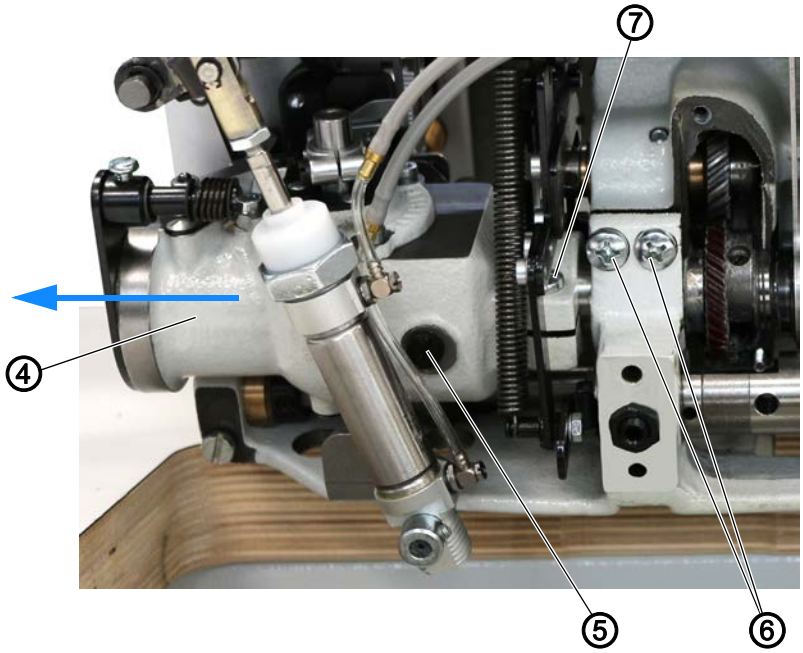
Cover

- Remove the oil collection tray (2) (🕮 *p. 25*).
- Remove the grease cap (1) (🕮 *p. 26*).

To set the left lower shaft bearing:

1. Tilt the machine head (🕮 *p. 19*).
2. Disassemble the throat plate (🕮 *p. 31*).
3. Disassemble the thread cutter.
4. Disassemble the hook carrier with needle guard and hook.

Fig. 62: Setting the left lower shaft bearing (2)



(3) - Hook drive housing
(4) - Screw
(5) - Screw
(6) - Screw

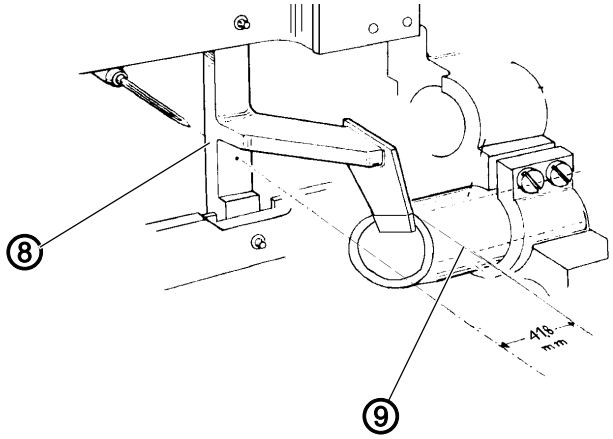
5. To drain the oil from the hook drive housing (4), loosen the screw (5) and erect the machine head.

↳ The oil drains from the hook drive housing (4) into the oil pan.

The oil must be drained from the hook drive housing (4) as it will otherwise exit on the side when the hook drive housing (4) is pulled off.

6. Loosen the screw (7) along with all elements screwed to the lower shaft.
7. Carefully pull the hook drive housing (4) off to the left along with the lower shaft.

Fig. 63: Setting the left lower shaft bearing (3)



*(7) - Gage (gage **1**, 🕮 p. 14)*

(8) - Lower shaft bearing

8. Tighten the gage (8) on the throat plate support.
9. Loosen the screws (6).
10. Press the lower shaft bearing (9) up to the gage (8).
11. Re-tighten the screws (6).
12. Assemble and set the hook drive housing (4) and the lower shaft (🕮 *p. 66*).
13. Fill the hook drive housing (4) with **DA 10** lubricating oil (🕮 *p. 125*).
14. Check the oil level of the hook drive housing (4) (🕮 *p. 127*).

11 Setting the hook drive housing

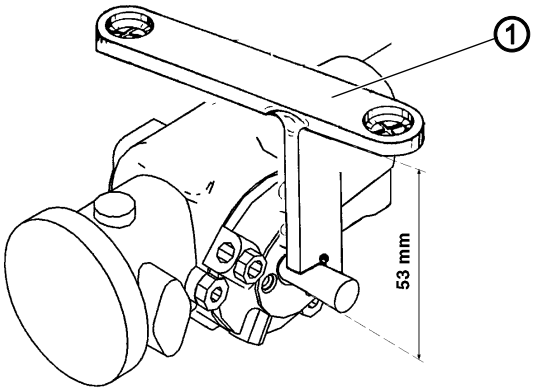
WARNING

Risk of injury!

Crushing, cutting and punctures are possible.

Only set the hook drive housing when the machine is switched off.

Fig. 64: Setting the hook drive housing



*(1) - Gage (gage **2**, p. 14)*

Proper setting

The needle tip should point to the center of the hook shaft. The lower edge of the hook shaft runs parallel to the underside of the throat plate.

The distance between the upper edge of the throat plate support and the lower edge of the hook shaft is 53 mm.

To set the hook drive housing:

1. Disassemble the throat plate (*p. 31*).
2. Disassemble the thread cutter.
3. Disassemble needle guard, hook and hook carrier.
4. Tighten the gage (1) on the throat plate support.
5. Press the hook shaft up to the gage (1).
6. Tighten the hook drive housing.
7. Assemble and set all previously disassembled parts.

12 Setting the needle evasive movement of the hook (ellipsis width)

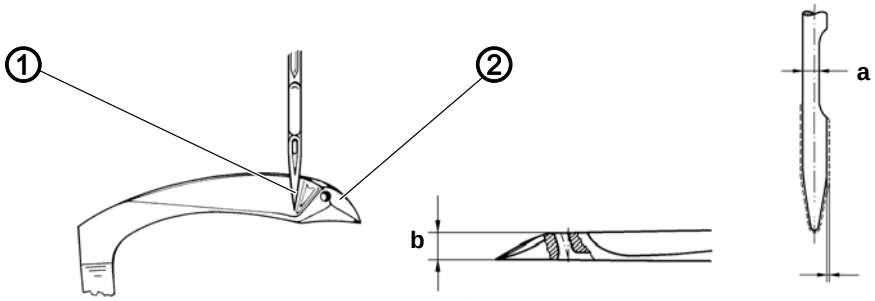
WARNING

Risk of injury!

Crushing, cutting and punctures are possible.

Do not check and set the needle evasive movement of the hook unless the machine is switched off.

Fig. 65: Setting the needle evasive movement of the hook (1)



(1) - Tip of the needle
(2) - Hook
***a** - Needle thickness*
***b** - Hook thickness*

Proper setting

The needle evasive movement is set properly when the distance to the needle is 0.1 mm while the hook is moving from right to left. While the hook is moving from left to right, the tip (1) of the descending needle abuts on the back of the hook (2); see position shown above.

The precise dimension of the needle evasive movement depends on the needle system and the needle thickness.

It must be calculated using the following formula:

E = a + b + 0.1 + X

Example using a 934 SIN/Nm 110 needle

Needle thickness at a = 0.7 mm

Hook thickness at b = 1.4 mm

Distance of hook tip to needle = 0.1 mm

For larger needle thickness 110 Nm X *= 0.1 mm

Ellipsis width E = 2.3 mm

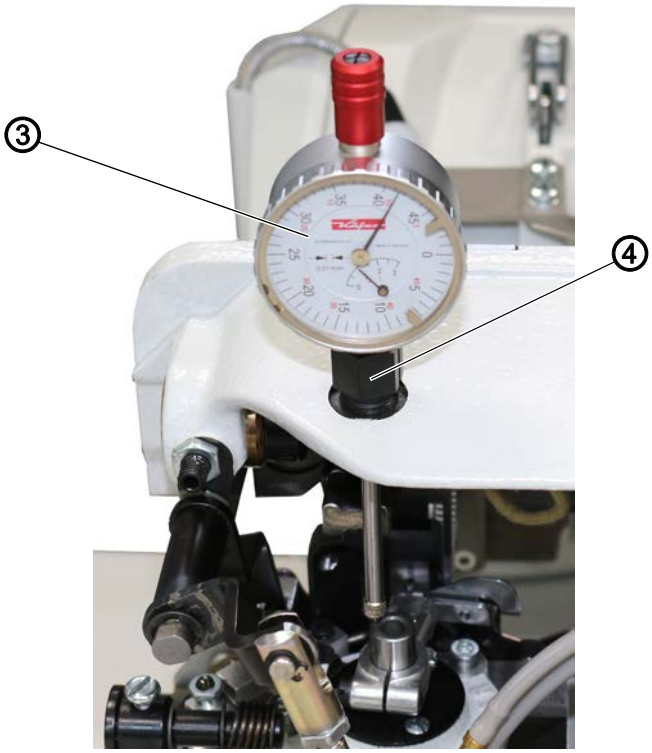
*X = larger dimension a for larger needle thicknesses

X for Nm 100	= 0 mm
X for Nm 110 and 120	= 0.1 mm
X from Nm 130	= 0.2 mm

To perform the setting, move the lower shaft axially:

To the right	= ellipsis width is smaller
To the left	= ellipsis width is larger

Fig. 66: Setting the needle evasive movement of the hook (2)



*(3) - Dial gage (dial gage **4**, 🕮 p. 14)* *(4) - Clamping sleeve*

To test the ellipsis width:

1. Tilt the machine head (🕮 *p. 19*).
2. Screw in the clamping sleeve (4).
3. Insert the dial gage (3).
4. To move the hook shaft to the lowest position, turn the handwheel.
5. Set **0** on the dial gage (3).
6. To move the hook shaft to the highest position, turn the handwheel.

↳ The difference must match the previously calculated ellipsis width.

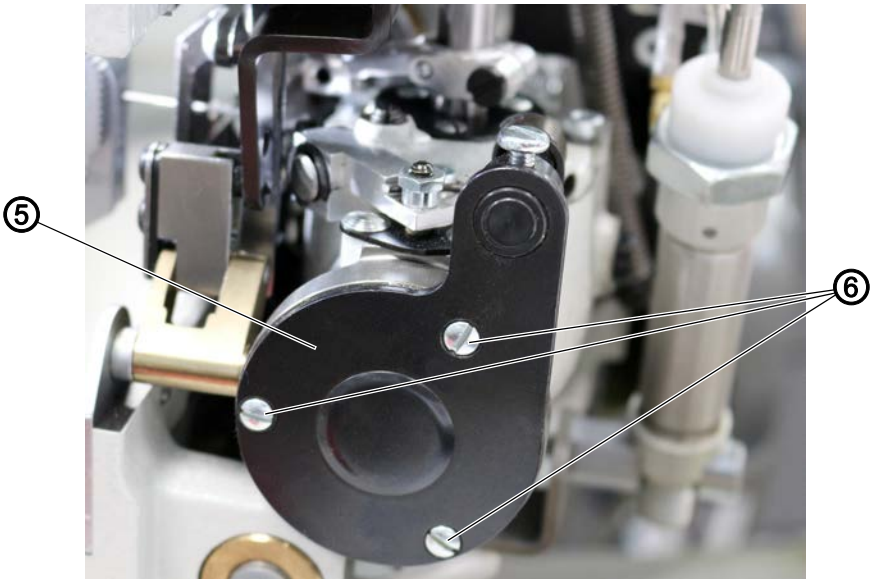
To set the ellipsis width, you must move the rocker bolt in the hook housing in axial direction.

The ellipsis width changes by only half of the amount by which the position of the rocker bolt is altered. For instance, sliding the rocker bolt 0.2 mm changes the ellipsis width by 0.1 mm.

To set the ellipsis width:

1. Tilt the machine head (📖 *p. 19*).

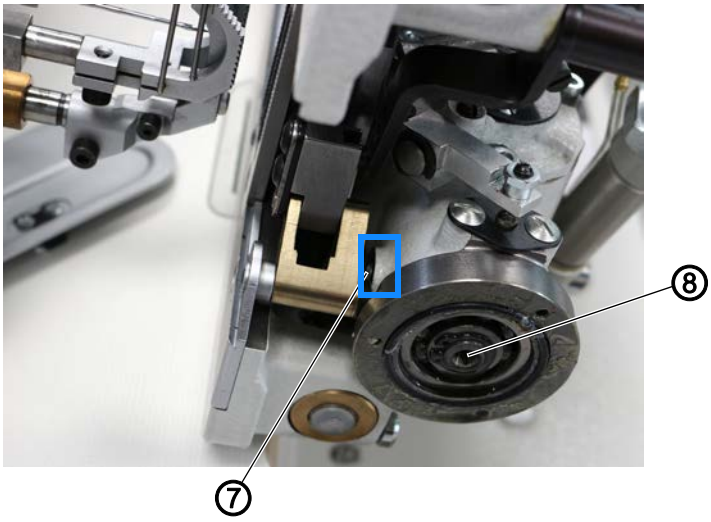
Fig. 67: Setting the needle evasive movement of the hook (3)



(5) - Cover *(6) - Screw*

2. Have a clean cloth ready as there is the possible of a few drops of oil leaking when you remove the cover (5).
3. Loosen the screws (6) to take off the cover (5).
4. Take off the cover (5) and catch any leaking oil using the clean cloth.

Fig. 68: Setting the needle evasive movement of the hook (4)



(7) - Threaded pin *(8) - Rocker bolt*

5. Screw the M4 screw into the face of the rocker bolt (8).
6. Loosen the threaded pin (7).
7. To slide the rocker bolt (8), push or pull the M4 screw:
   - Ellipsis width increases: Slide the rocker bolt (8) to the left
   - Ellipsis width decreases: Slide the rocker bolt (8) to the right
8. Check the oil level (📖 *p. 125*).

13 Setting the symmetry of the hook

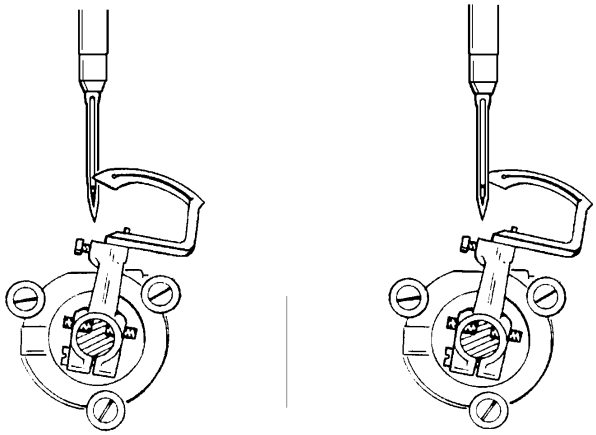
WARNING

Risk of injury!

Crushing, cutting and punctures are possible.

Make sure the machine is switched off before checking and setting the symmetry of the hook.

Fig. 69: Setting the symmetry of the hook (1)



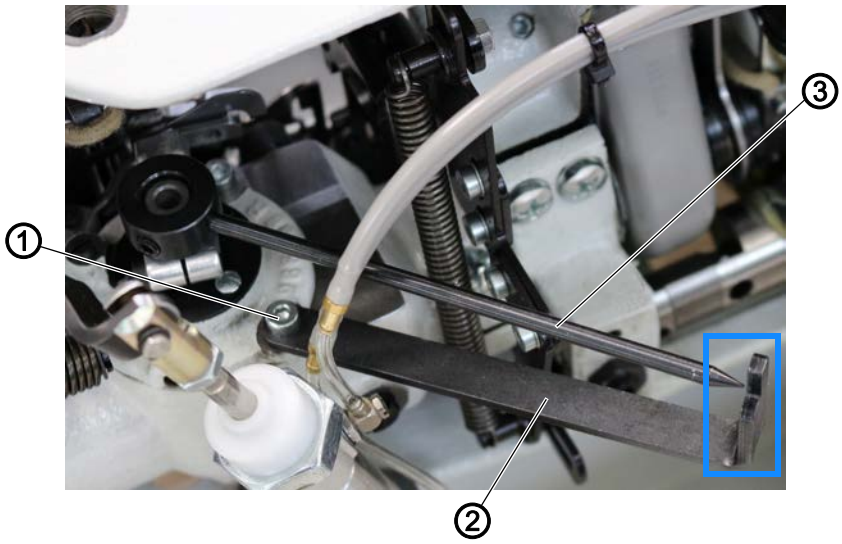
*Position slot **E*** *Position slot **F***

Proper setting

The symmetry setting means that the hook tip is lined up with the middle of the needle when the machine is locked in place at position **E** and position **F**.

The hook tip should be in front of and behind the needle in position **E** and position **F**, respectively.

Fig. 70: Setting the symmetry of the hook (2)



(1) - Screw
*(2) - Gage (gage **6**, p. 14)*
(3) - Pointer

To check the symmetry of the hook:

1. Tilt the machine head (📖 *p. 19*).
2. Tighten the gage (2) using the screw (1).
3. Assemble the pointer (3) as shown.
4. Lock the machine in place at position **E** (📖 *p. 16*).
5. Align the pointer (3) with the marking on the gage (2).
6. Turn the handwheel to position **F**.

↳ The pointer (3) should make a pendulum movement to the left and back to the marking on the gage (2).

To set the symmetry of the hook:

1. Loosen the fastening screws on the toothed belt wheel.
2. Turn the lower shaft such that the pointer (3) is above the marking on the gage (2) both at position **E** and **F**.
3. Tighten the fastening screws of the toothed belt wheel again.

14 Setting the hook in the hook carrier

WARNING

Risk of injury!

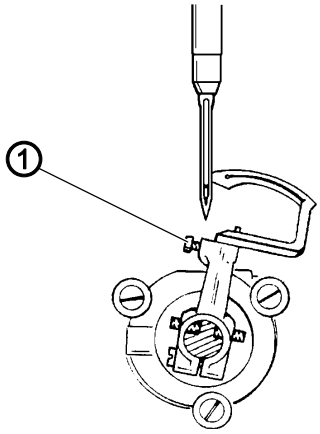
Crushing, cutting and punctures are possible.

Make sure the machine is switched off before checking and setting the hook in the hook carrier.

Proper setting

The front of the hook should be at an angle of 89° 30‘ relative to the edge of the apparatus cutout.

Fig. 71: Setting the hook in the hook carrier (1)

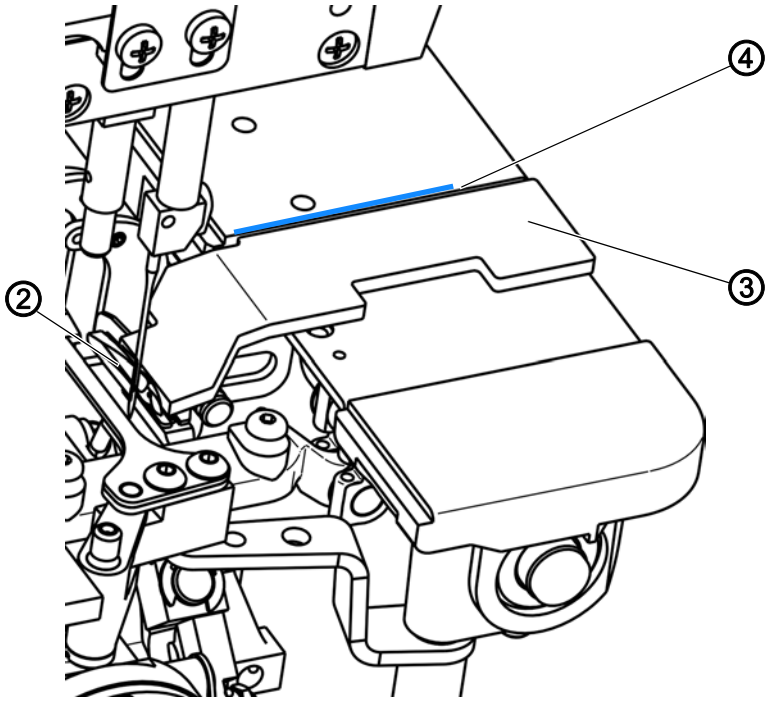


(1) - Screw

To set the hook in the hook carrier:

1. Loosen the screw (1) of the hook carrier.

Fig. 72: Setting the hook in the hook carrier (2)



(2) - Hook
(3) - Gage
(4) - Edge

2. Position the gage (3) at the edge (4).
3. Move the hook (2) to the correct position.
4. Re-tighten the screw (1).

15 Setting loop stroke and needle bar height

WARNING

Risk of injury!

Crushing, cutting and punctures are possible.

Make sure the machine is switched off before checking and setting the hook in the hook carrier.

Proper setting

The loop stroke is 3.5 mm.

When the needle has risen 3.5 mm from the bottom dead center in rotational direction, the hook tip must be at the middle of the needle.

When the hook eye is at the middle of the needle, the needle eye and the hook eye should be at the same height.

Fig. 73: Setting loop stroke and needle bar height (1)

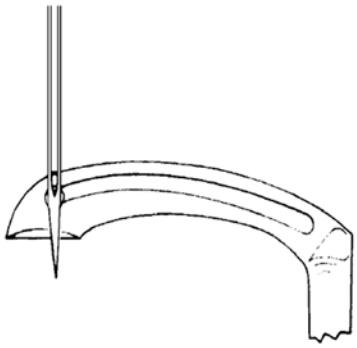
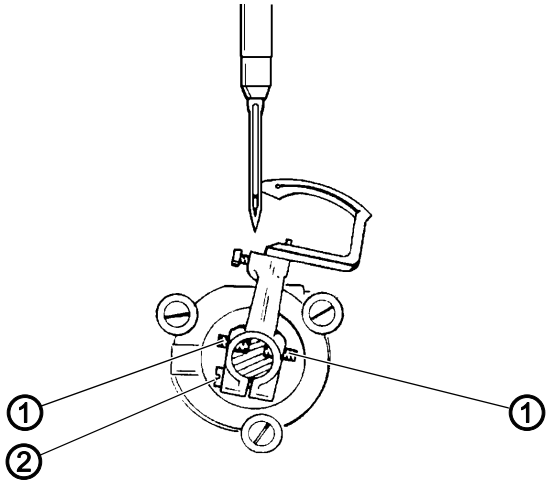


Fig. 74: Setting loop stroke and needle bar height (2)



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

To set the loop stroke and the needle bar height:

1. Insert a new needle (📖 *Operating Instructions*).

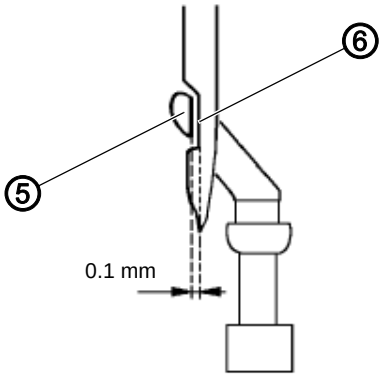
2. Lock the machine in place at position **E** (📖 *p. 16*).
3. To position the hook tip behind the needle to the middle of the needle, loosen screw (2) and turn the 2 screws (1) accordingly.
4. Remove the lock (📖 *p. 16*).

Fig. 75: Setting loop stroke and needle bar height (3)

(3) - Plug *(4) - Hole*

5. Remove the plug (3) from the hole (4).
6. Loosen the screw used to assemble the needle bar through the hole (4).
7. Set the needle bar height such that the lower edge of the needle eye and the hook eye are at the same height.
8. Tighten the screw used to assemble the needle bar through the hole (4).

Fig. 76: Setting loop stroke and needle bar height (4)



(5) - Hook tip *(6) - Groove*

9. Shift the hook carrier in axial direction to set a distance of 0.1 mm between hook tip (5) and groove (6).
10. Tighten the screw (1).
11. Check the symmetry of the hook (positions **E** and **F**) (📖 *p. 71*).
12. Insert the plug (3) back into the hole.

16 Needle guard and needle guard plate

16.1 Setting the needle guard

WARNING

Risk of injury!

Crushing, cutting and punctures are possible.

Only set the needle guard with the machine switched off.

The movable needle guard is supposed to prevent the needle from being deflected into the path of the hook.

Proper setting

When the hook tip moves to the left and reaches the needle, the needle guard automatically swings towards the needle. In this position, the needle must touch the needle guard.

The timing of the needle guard movement cannot be altered.

Fig. 77: Setting the needle guard (1)

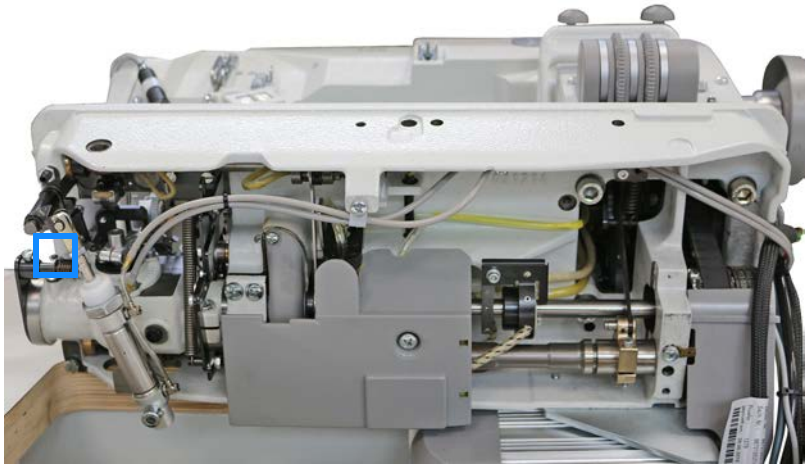
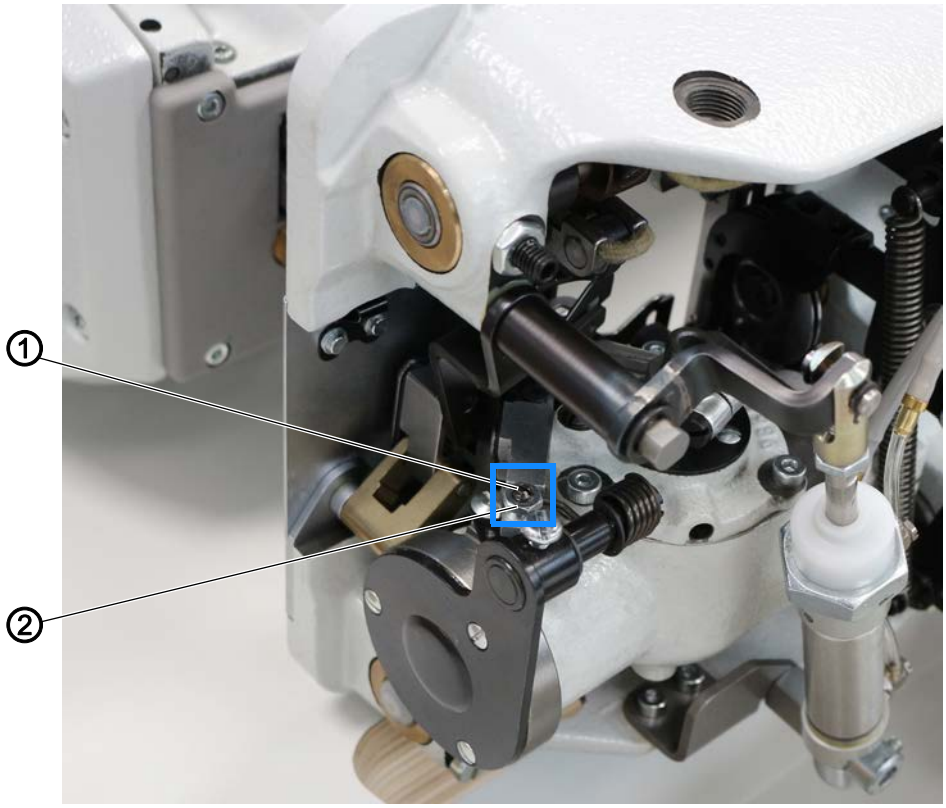


Fig. 78: Setting the needle guard (2)



(1) - Screw *(2) - Nut*

To set the needle guard:

1. Turn the handwheel until the hook moves to the left and reaches the needle.
2. Tilt the machine head (📖 *p. 19*).
3. Loosen the nut (2).
4. Use the screw (1) to move the needle guard towards the needle until it is close enough for you to push it into the area of the hook.

   The needle must not be pushed aside any more than is required.
5. Tighten the nut (2).

16.2 Setting the needle guard plate

WARNING

Risk of injury!

Crushing, cutting and punctures are possible.

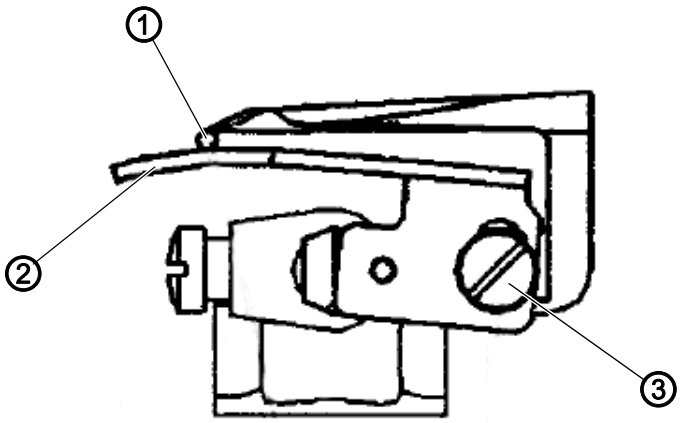
Only set the needle guard plate when the machine is switched off.

The needle guard plate is supposed to prevent the needle from being deflected when the loop is taken up on **machines without a thread cutter**.

Proper setting

When the hook tip moves to the left and reaches the needle, it must not be possible to press the needle against the direction of sewing.

Fig. 79: Setting the needle guard plate



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

To set the needle guard plate:

1. Open the hook covers (📖 *p. 30*).
2. Disassemble the throat plate (📖 *p. 31*).
3. Loosen the screw (3).
4. Set the needle guard plate (2) such that the needle (1) passes freely between hook and needle guard plate (2).
5. Tighten the screw (3).

17 Feed dog

17.1 Setting the feed dog position in the throat plate cutout

WARNING

Risk of injury!

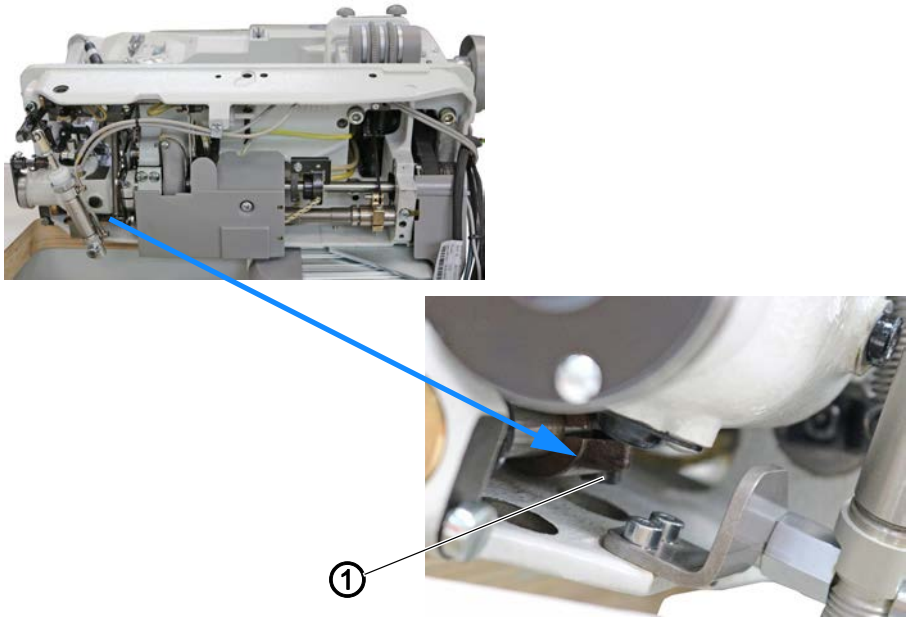
Crushing, cutting and punctures are possible.

Only set the feed dog position in the throat plate cutout when the machine is switched off.

Proper setting

The feed dog should be aligned so that it strikes no side of the throat plate at the greatest possible stitch length.

Fig. 80: Setting the feed dog position in the throat plate cutout (1)

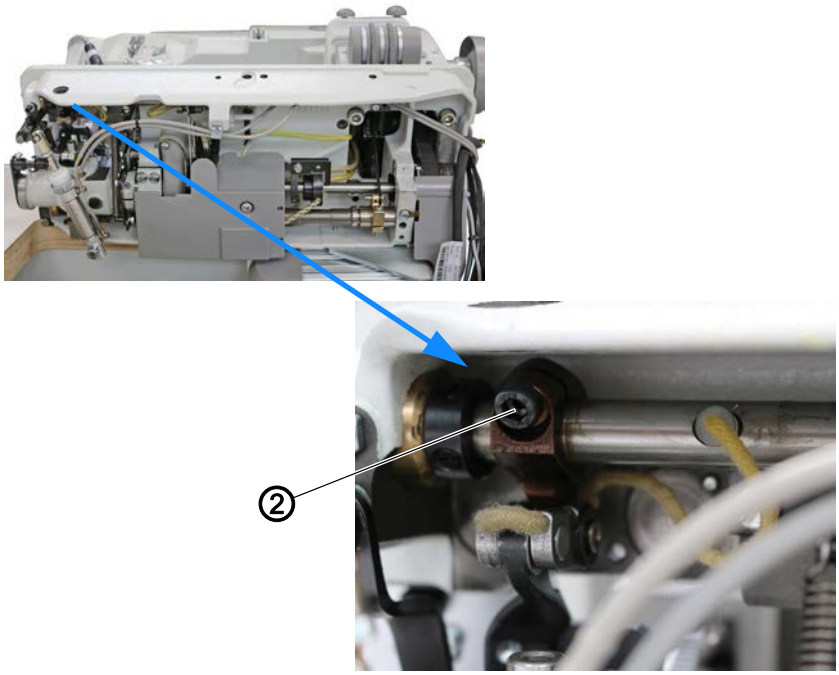


(1) - Screw

To set the feed dog position **in the feed direction**:

1. Tilt the machine head (📖 *p. 19*).
2. Loosen the screw (1) on the advance lever.
3. Place the feed dog at the appropriate position.
4. Tighten the screw (1) on the advance lever.

Fig. 81: Setting the feed dog position in the throat plate cutout (2)



(2) - Screw

To set the feed dog position **in lateral direction**:

1. Adjust the position of the feed dog on its feed dog carrier to correct minor deviations.
2. Major deviations require that you loosen the screw (1) on the advance lever.
3. Loosen the screw (2) on the stroke lever.
4. Adjust the position of the feed dog carrier.
5. Tighten the screw (2).
6. Tighten the screw (1).

17.2 Setting the height of the feed dog

WARNING

Risk of injury!

Crushing, cutting and punctures are possible.

Only set the height of the feed dog when the machine is switched off.

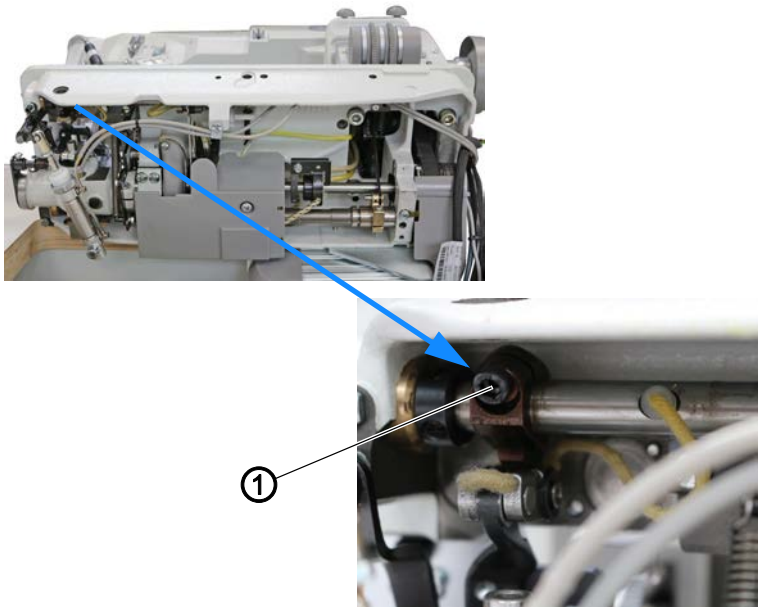
Proper setting

When at its highest position, the feed dog should protrude from the throat plate by 0.8 mm (with the machine locked in place at position **B**).

To check the height of the feed dog:

1. Lock the sewing feet at the top dead center (📖 *Operating Instructions*).
2. Lock the machine in place at position **B** (📖 *p. 16*).
3. Use a feeler gage to measure the height of the feed dog.

Fig. 82: Setting the height of the feed dog



(1) - Screw

To set the height of the feed dog:

1. Tilt the machine head (📖 *p. 19*).
2. To adjust the height of the feed dog when necessary, loosen the screw (1) on the stroke lever.
3. Adjust the height of the feed dog.
4. Tighten the screw (1).

17.3 Setting the thrust movement of the feed dog

WARNING

Risk of injury!

Crushing, cutting and punctures are possible.

Only set the thrust movement of the feed dog when the machine is switched off.

NOTICE

Property damage may occur!

Damage to the machine.

Set the thrust movement of the feed dog such that the feed dog does not come into contact with the throat plate at the maximum stitch length.

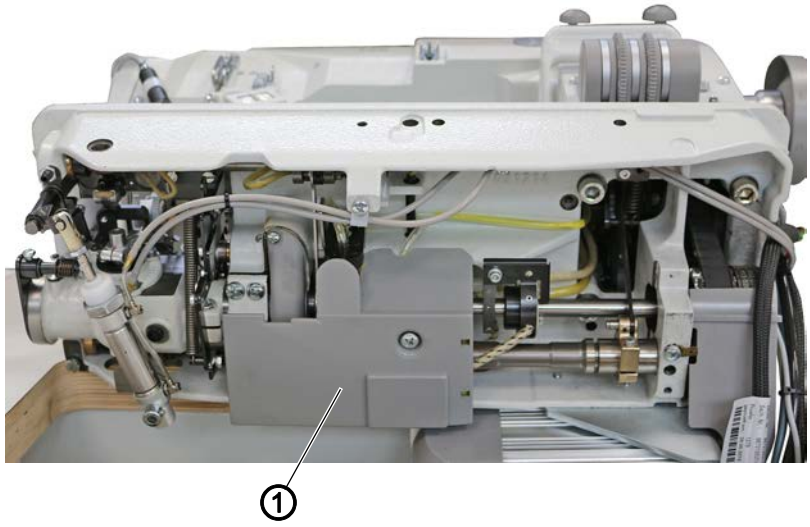
Proper setting

To ensure proper stitch drawing, the feed dog should complete a slight subsequent advance after the needle bar has reached the top dead center.

Cover

- Remove the oil collection tray (1) (📖 *p. 25*).

Fig. 83: Setting the thrust movement of the feed dog (1)

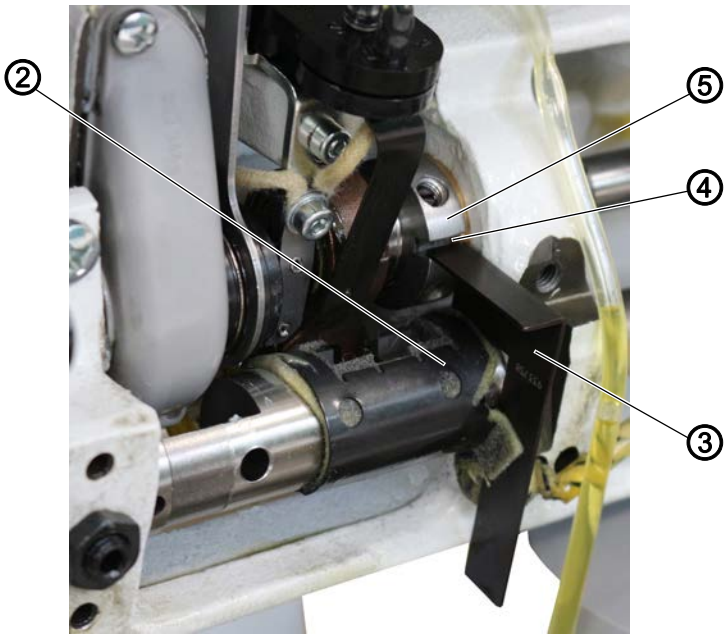


(1) - Oil collection tray

To set the thrust movement of the feed dog:

1. Tilt the machine head (📖 *p. 19*).

Fig. 84: Setting the thrust movement of the feed dog (2)



(2) - Stitch adjustment linkage
*(3) - Gage (gage **8**, 🕮 p. 14)*
(4) - Slot
(5) - Pusher eccentric

2. Loosen the screws of the pusher eccentric (5).
3. Lock the machine in place at position **B** (🕮 *p. 16*).
4. Insert the gage (3) into the slot (4).
5. Turn the pusher eccentric (5) such that the edges of the gage (3) rest on the stitch adjustment linkage (2).
6. Tighten the screws of the pusher eccentric (5).
7. Check if the lower shaft has axial play.

17.4 Setting the stroke movement of the feed dog

WARNING

Risk of injury!

Crushing, cutting and punctures are possible.

Only set the stroke movement of the feed dog when the machine is switched off.

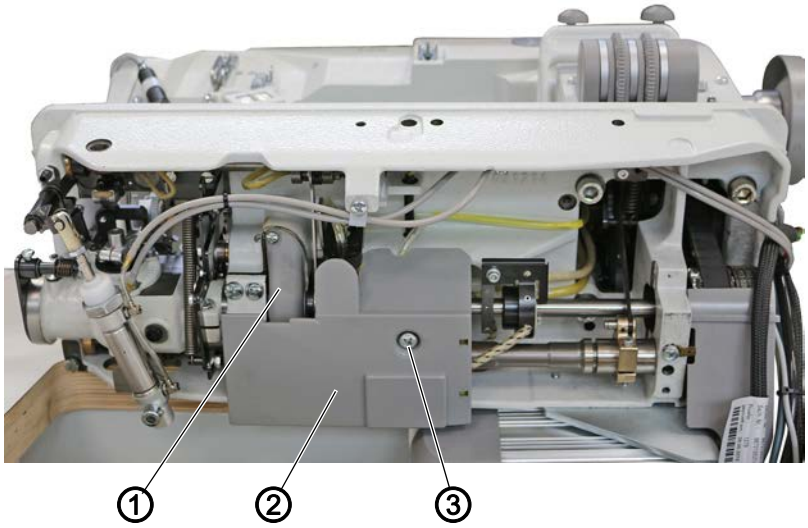
Proper setting

When the needle tip reaches the needle hole, the ascending and descending tooth points of the feed dog should be level with the throat plate.

Cover

- Remove the oil collection tray (2) (📖 *p. 25*).
- Remove the grease cap (1) (📖 *p. 26*).

Fig. 85: Setting the stroke movement of the feed dog (1)

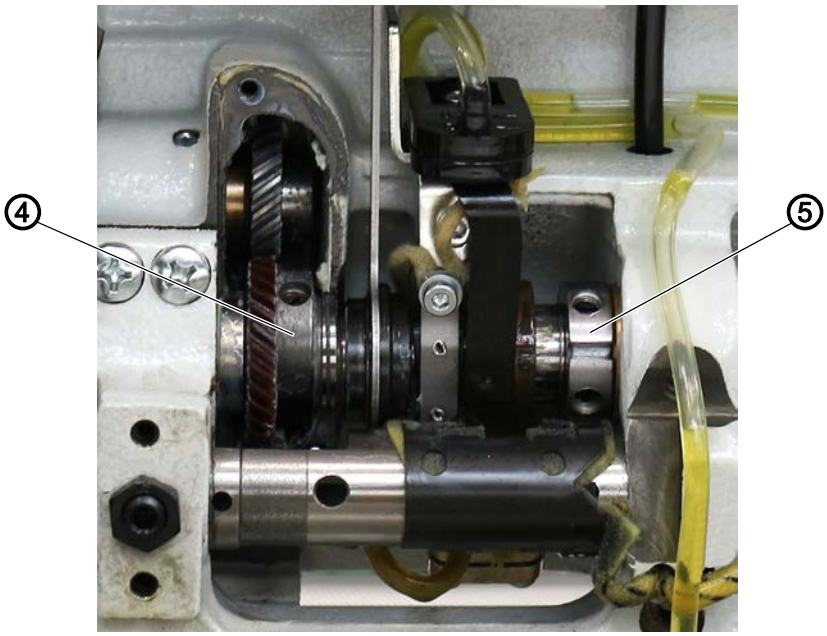


(1) - Grease cap
(2) - Oil collection tray
(3) - Screw

To set the stroke movement of the feed dog:

1. Tilt the machine head (📖 *p. 19*).
2. Loosen the screw (3).
3. Lock the machine in place at position **B**.

Fig. 86: Setting the stroke movement of the feed dog (2)



(4) - Stroke eccentric *(5) - Pusher eccentric*

4. Turn the stroke eccentric (4) so that the 1st screw of the stroke eccentric (4) in rotational direction is at the same height as the 2nd screw of the pusher eccentric (5).

17.5 Setting the initial position of the stitch regulator for top feed

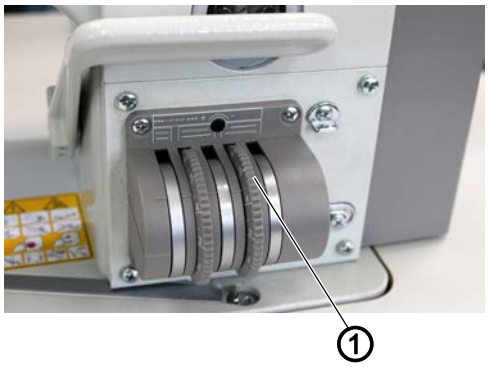
WARNING

Risk of injury!

Crushing, cutting and punctures are possible.

Only set the initial position of the stitch regulator for top feed when the machine is switched off.

Fig. 87: Setting the initial position of the stitch regulator for top feed (1)



(1) - Adjusting wheel (for stitch length during top feed)

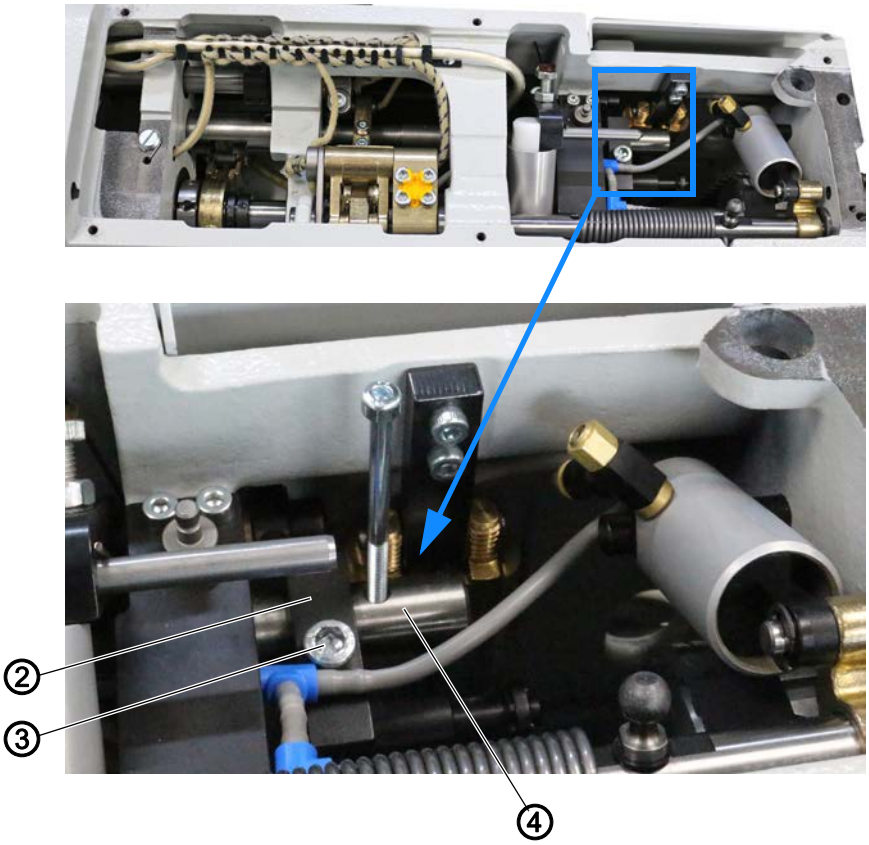
Cover

- Remove the arm cover (📖 *p. 20*).

To set the initial position of the stitch regulator for top feed:

1. Set the adjusting whee (1) to position **2**.

Fig. 88: Setting the initial position of the stitch regulator for top feed (2)



(2) - Clamping block
(3) - Screw
(4) - Shaft

2. Loosen the screw (3) on the clamping block (2).
3. Screw the M4 screw into the thread of the shaft (4) and set it vertical.

↳ The initial position of the stitch regulator for top feed has been set.

4. Tighten the screw (3) on the clamping block (2).
5. Check the synchronization of top feed and bottom feed and adjust it if necessary (📖 *p. 88*).

17.6 Setting the synchronization of top and bottom feed

WARNING

Risk of injury!

Crushing, cutting and punctures are possible.

Only set the synchronization of top and bottom feed when the machine is switched off.

Checking the synchronization of top and bottom feed

Fig. 89: Setting the synchronization of top and bottom feed (1)

(1) - Adjusting wheel (for stitch length during bottom feed)

(2) - Adjusting wheel (for stitch length during top feed)

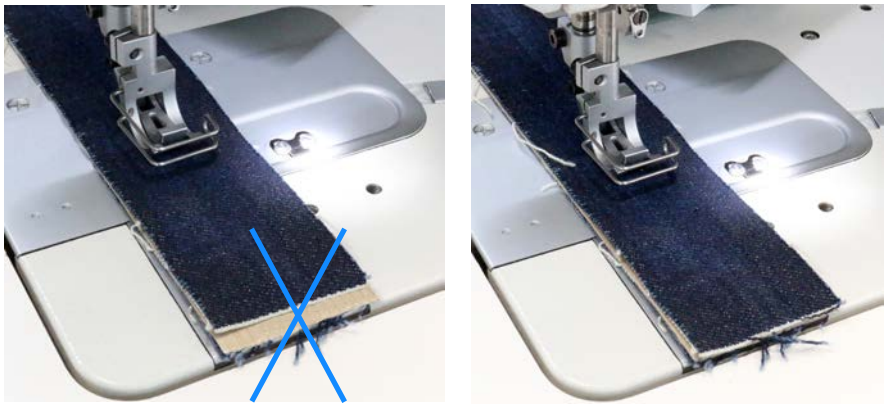
To check the synchronization of top and bottom feed:

1. Set adjusting wheels (1) and (2) to the same stitch length.

   The longer the stitch length, the easier it is to check the synchronization.
2. Remove the needle.
3. Place 2 layers of fabric exactly on top of one another.

   You need to pick 2 layers of fabric that slide well on top of each other, e.g. fabric backed with slideway lining (mat. no. 0699 973927).
4. Switch on the machine (📖 *Operating Instructions*).
5. To feed the 2 layers of fabric, press the pedal to position **1**.
6. Check if both layers of fabric are fed in sync.

Fig. 90: Setting the synchronization of top and bottom feed (2)



***No** synchronization - top feed greater than bottom feed*

Synchronization

Setting the synchronization of top and bottom feed

To set the synchronization of top and bottom feed:

1. If both layers of fabric are not fed in sync, set the initial position of the stitch regulator for top feed (📖 *p. 86*).
2. Check the synchronization of top and bottom feed again.
3. If both layers of fabric are not fed in sync, set the initial position of the stitch regulator for bottom feed (📖 *p. 90*).

17.7 Setting the initial position of the stitch regulator for bottom feed

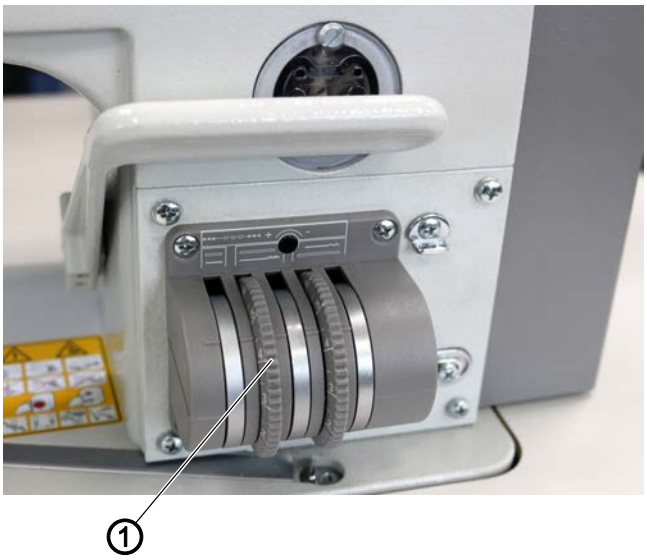
WARNING

Risk of injury!

Crushing, cutting and punctures are possible.

Only set the initial position of the stitch regulator for bottom feed when the machine is switched off.

Fig. 91: Setting the initial position of the stitch regulator for bottom feed (1)

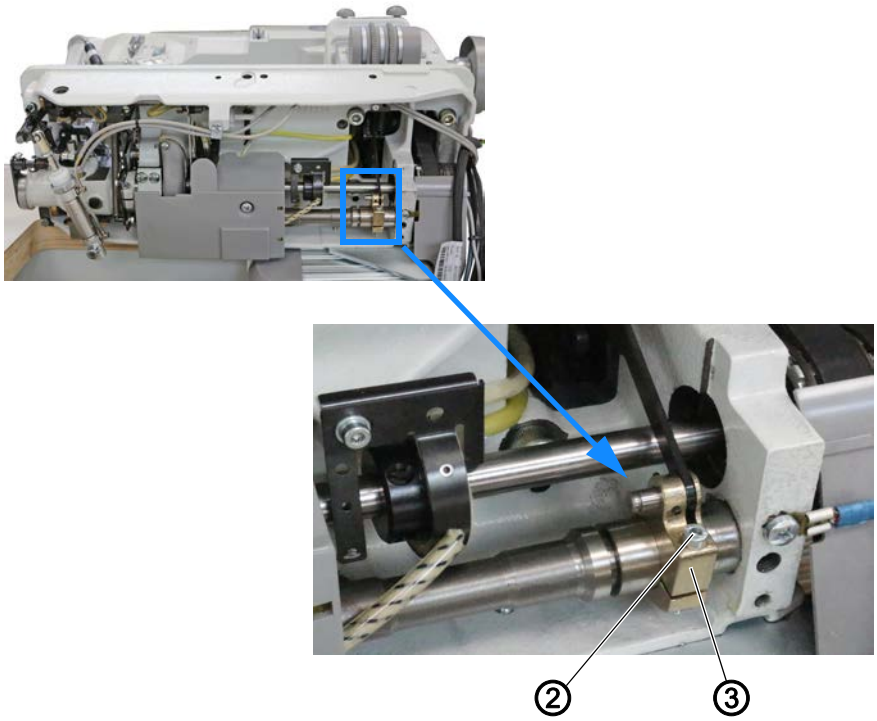


(1) - Adjusting wheel (for stitch length during bottom feed)

To set the initial position of the stitch regulator for bottom feed:

1. Set the adjusting wheel (1) to the same stitch length as the length used for top feed.
2. Tilt the machine head (📖 *p. 19*).

Fig. 92: Setting the initial position of the stitch regulator for bottom feed (2)



(2) - Threaded pin

(3) - Clamping block

3. Loosen the threaded pin (2).
4. Move the clamping block (3) on the shaft.
5. Tighten the threaded pin (2).
6. Check if top and bottom feed are now in sync (📖 *p. 88*).

18 Setting the thread take-up disk

WARNING

Risk of injury!

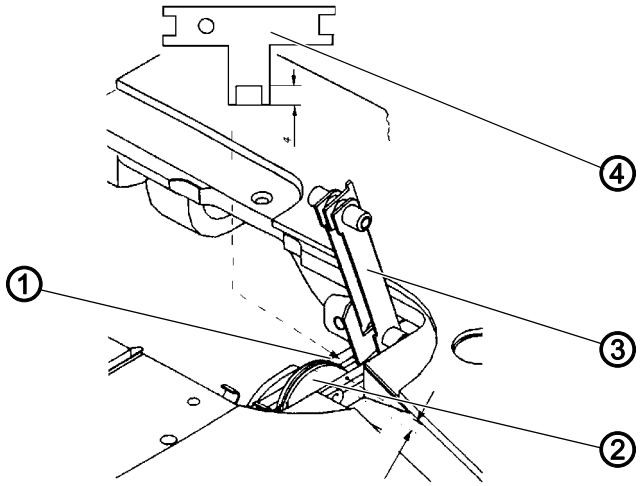
Crushing, cutting and punctures are possible.

Only set the thread take-up disk when the machine is switched off.

Proper setting

When the machine is locked in place at position **B** (top dead center), the thread take-up disk (2) should be 4 mm above the carrier plate (1).

Fig. 93: Setting the thread take-up disk (1)

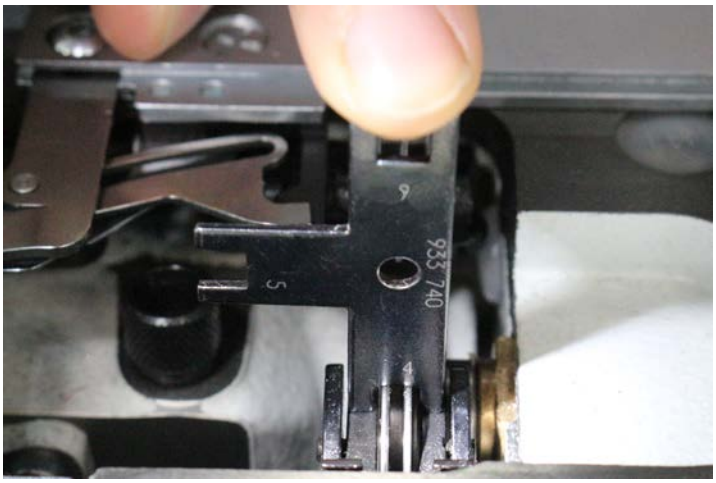


(1) - Carrier plate
(2) - Thread take-up disk
(3) - Hook thread bobbin case retainer
*(4) - Gage (gage **7**, p. 14)*

To set the thread take-up disk:

1. Open the hook covers (*p. 30*).
2. Lift the hook thread bobbin case retainer (3) from its latching.
3. Loosen the threaded pins of the thread take-up disk (2).
4. Lock the machine in place at position **B** (*p. 16*).
5. Turn the thread take-up disk (2) accordingly.
   Use the gage (4) to set the correct measurement.

Fig. 94: Setting the thread take-up disk (2)



6. Tighten the take-up disk (2) and the screws.

19 Setting the retention spring on the hook

WARNING

Risk of injury!

Crushing, cutting and punctures are possible.

Only set the retention spring on the hook when the machine is switched off.

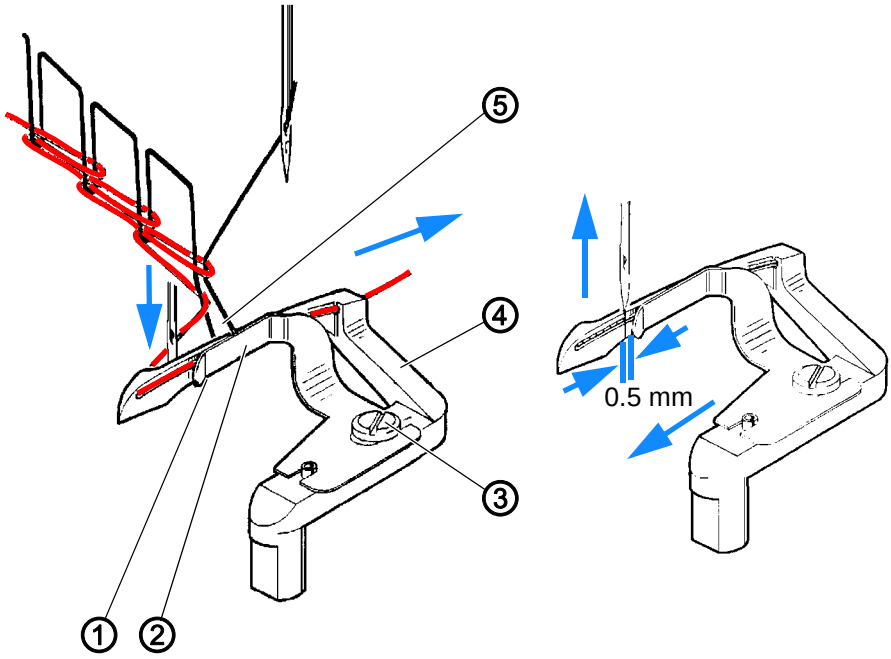
Proper setting

Machines with thread cutter require that the needle thread loop slide beyond the holding point between retention spring and hook while the hook is moving from right to left.

While the hook is moving from left to right, the needle thread loop should be held at the holding point until the descending needle has plunged into the so-called thread triangle to the left of the needle thread loop.

When needle and hook move upward and to the left, respectively, the needle tip should move past the retention spring at a distance of approx. 0.5 mm.

Fig. 95: Setting the retention spring on the hook



(1) - Holding point
(2) - Retention spring
(3) - Screw
(4) - Hook
(5) - Needle thread loop

To set the retention spring on the hook:

1. Open the hook covers (📖 *p. 30*).
2. Align the retention spring (2) such that it abuts flush on the hook (4).

   While doing so, make sure that the greatest pressure is exerted at the holding point (1).
3. Loosen the screw (3).
4. Shift the retention spring (3) until the distance amounts to 0.5 mm.
5. Check the contact pressure on the hook (4) with the machine fully assembled and hook and needle thread inserted.
6. Tilt the machine head (📖 *p. 19*).
7. Check the stitch formation described above when the hook moves from right to left and from left to right.
8. Adjust the contact pressure if necessary:
   - To reduce the contact pressure: Align the retention spring (2) if the needle thread loop (5) is not pushed beyond the holding point (1).
   - To increase the contact pressure: Align the retention spring (2) if the needle thread loop (5) is not held at the holding point (1) until the needle plunges into the thread triangle on the left in front of the needle thread loop (5).

20 Setting the thread cutter

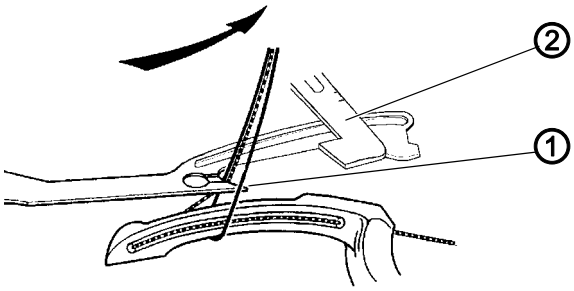
WARNING

Risk of injury!

Crushing, cutting and punctures are possible.

Only set the thread cutter with the machine switched off.

Fig. 96: Setting the thread cutter



(1) - Point *(2) - Counter blade*

Subclass 195-171521-01 is equipped with a thread cutter.

Proper setting

During thread cutting, needle and hook thread are picked up behind the hook by the movable blade (1) and pressed against the cutting edge of the counter blade (2).

20.1 Disassembling the thread cutter

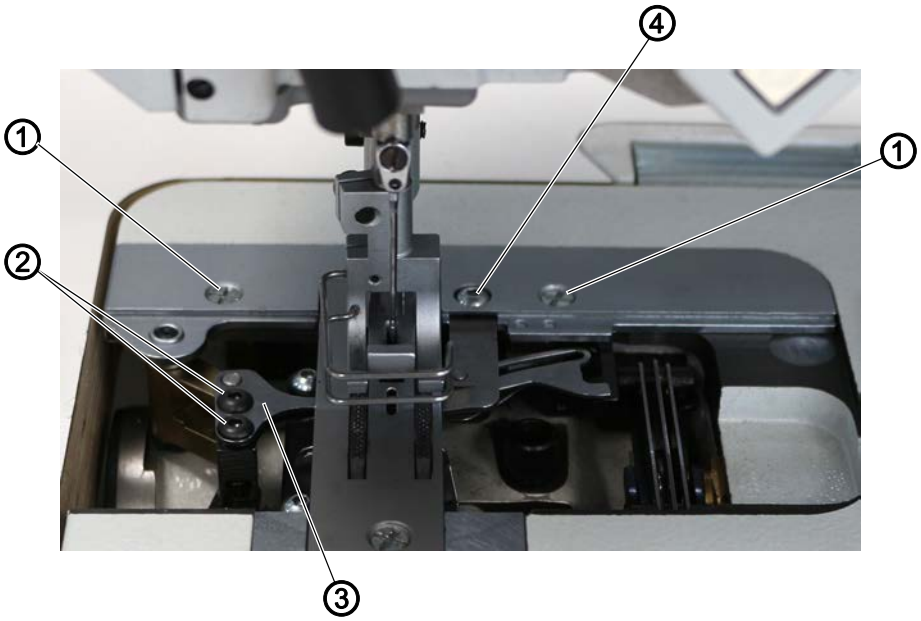
WARNING

Risk of injury!

Crushing, cutting and punctures are possible.

Only disassemble the thread cutter with the machine switched off.

Fig. 97: Disassembling the thread cutter (1)

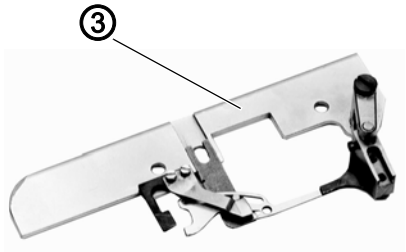


(1) - Screw
(2) - Threaded pins
(3) - Thread cutter
(4) - Screw

To disassemble the thread cutter:

1. Open the hook covers (📖 *p. 30*).
2. Disassemble the throat plate (📖 *p. 31*).
3. Remove the needle (📖 *Operating Instructions*).
4. Loosen the 2 screws (1).
5. Loosen the screw (4).
6. Remove the thread cutter (3).

Fig. 98: Disassembling the thread cutter (2)



(3) - Thread cutter (view from the bottom)

20.2 Performing a manual cutting test

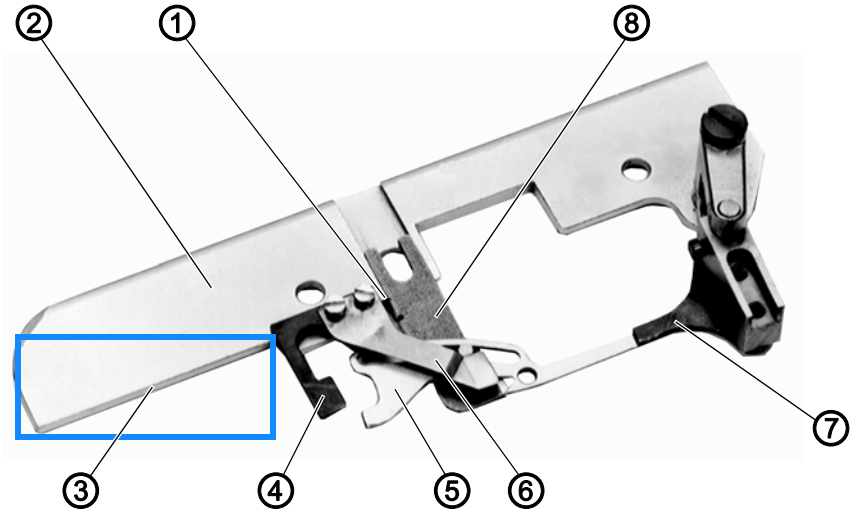
WARNING

Risk of injury!

Crushing, cutting and punctures are possible.

Only perform a manual cutting test when the machine is switched off.

Fig. 99: Performing a manual cutting test (1)



(1) - Notch
(2) - Mounting plate
(3) - Edge
(4) - Support plate
(5) - Movable blade
(6) - Thread clamping plate
(7) - Intermediate plate
(8) - Counter blade

To perform a manual cutting test:

1. Disassemble the thread cutter (📖 *p. 97*).

Fig. 100: Performing a manual cutting test (2)

*(9) - Gage (gage **12**, 📖 p. 14)*

2. Tighten the thread cutter on top of the gage (9).
3. Tighten the counter blade (8) so that the notch (1) is level with the edge (3) of the mounting plate (2).

   To do so, insert a screwdriver into the 2nd notch and move the counter blade (8).

   ↳ The thread clamping plate (6) should keep the cut end of the hook thread slightly clamped to ensure the proper beginning of the next seam.

Disturbance

If set too tight, the thread clamping plate (6) may cause ruffing at the seam beginning.

4. Carefully align the support plate (4) to ensure that the movable blade (5) is not pushed aside by the counter blade (8) when cutting thick threads.
5. Perform a cutting test with the desired thread.
6. If the cut made is not clean, check if the movable blade (5) is sharp.
7. Replace the movable blade (5) if necessary (📖 *p. 102*).
8. If necessary, set the movable blade (5) to its cutting position by carefully aligning the intermediate plate (7) until the cut is made reliably.
9. Unscrew the thread cutter from the gage (9).
10. Assemble the thread cutter back into the machine.

20.3 Setting the position of the movable blade

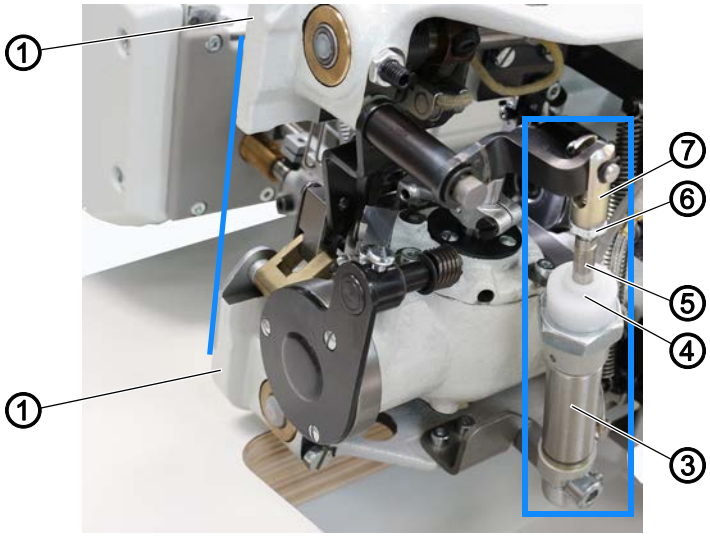
WARNING

Risk of injury!

Crushing, cutting and punctures are possible.

Only set the position of the movable blade when the machine is switched off.

Fig. 101: Setting the position of the movable blade (1)



(1) - Machine housing
(3) - Cylinder
(4) - Threaded bush
(5) - Piston rod
(6) - Counternut
(7) - Fork head

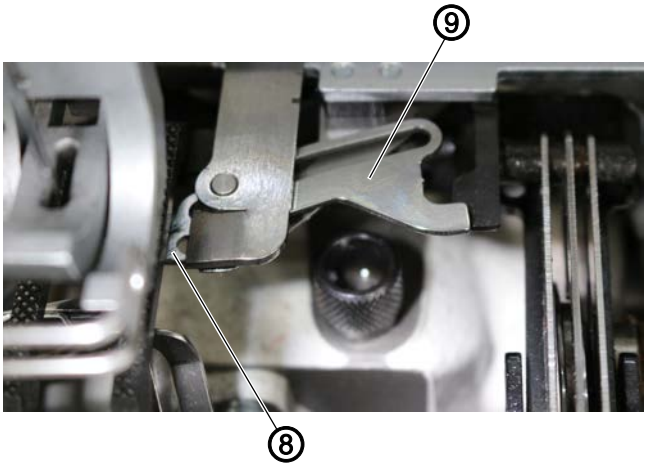
To set the position of the movable blade:

1. Before you can set the right and the left position of the thread cutter manually, you need to disconnect the machine from the compressed air system.
2. Open the hook covers (📖 *p. 30*).
3. Tilt the machine head (📖 *p. 19*).

Right position

4. Manually move the thread cutter to the right end position.
5. Use the fork head (7) to set the right position and secure it using the counternut (6).

Fig. 102: Setting the position of the movable blade (2)

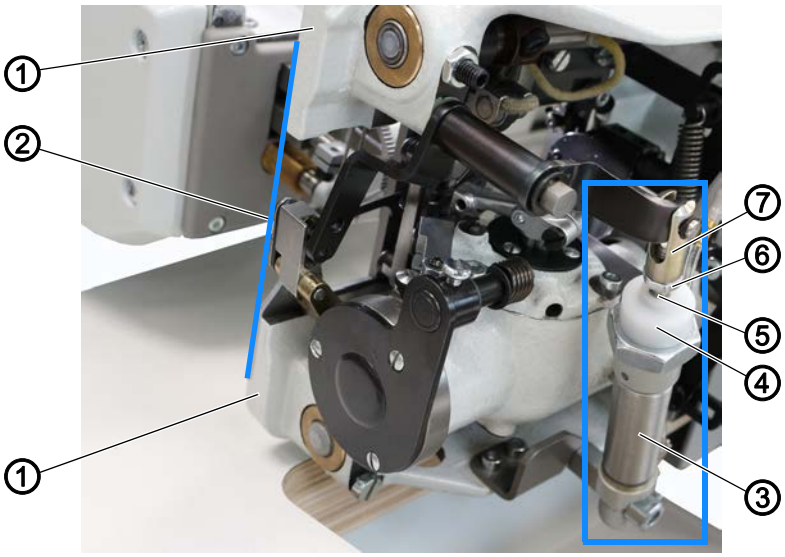


(10) - Stationary knife
(11) - Movable blade

↳ The thread cutter moves to the right end position:
The cutting edge of the movable blade (9) must protrude over the blade of the stationary knife (8) by approx. 1 mm.

Left position

Fig. 103: Setting the position of the movable blade (3)



(1) - Machine housing
(2) - Edge
(3) - Cylinder
(4) - Threaded bush
(5) - Piston rod
(6) - Counternut
(7) - Fork head

6. Manually move the thread cutter to the left end position.

↳ The cylinder (3) is retracted. The left position has already been set at the factory.

7. Slightly loosen the counternut (6).
8. Set the fork head (7) on the piston rod (5) such that the outer edge (2) of the thread cutter is flush with the outer edge of the machine housing (1).

9. If the setting is not quite correct yet, slightly twist the threaded bush (4).
10. Check the left position of the movable blade again.

20.4 Replacing the movable blade

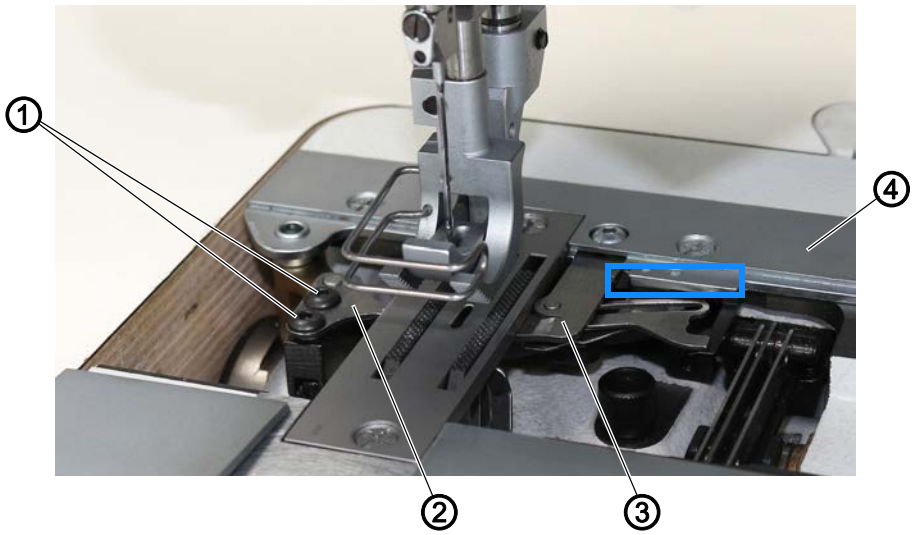
WARNING

Risk of injury!

Crushing, cutting and punctures are possible.

Only replace the movable blade when the machine is switched off.

Fig. 104: Replacing the movable blade (1)

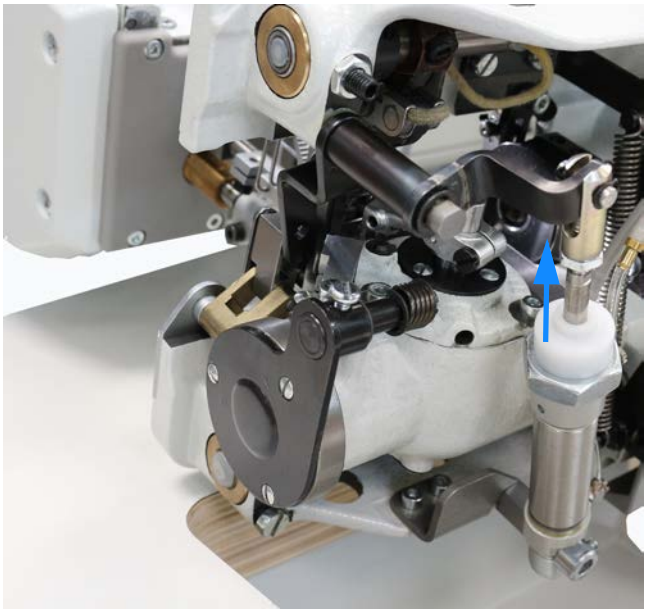


(1) - Threaded pin
(2) - Movable blade
(3) - Counter blade
(4) - Mounting plate

To replace the movable blade of the thread cutter:

1. Open the hook covers (📖 *p. 30*).
2. Loosen the threaded pins (1).
3. Remove the old movable blade (2).
4. Insert a new movable blade (2).
5. Tighten the threaded pins (1).
6. Align the counter blade (3) so that the notch is level with the edge of the mounting plate (4).
7. Tighten the counter blade (3).
8. Test the cut.

Fig. 105: Replacing the movable blade (2)



9. Check the end position of the movable blade (2) and set it if necessary (📖 *p. 100*).

20.5 Setting the thread advancing device for needle and hook thread

WARNING

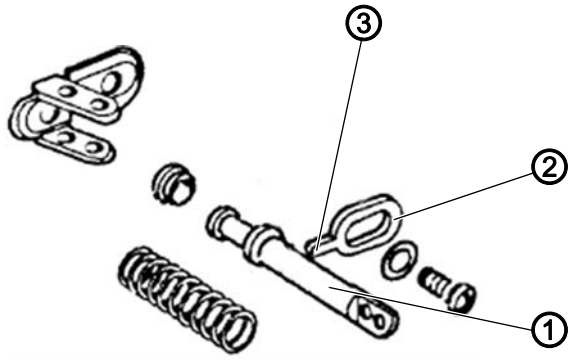
Risk of injury!

Crushing, cutting and punctures are possible.

Do not disassemble and set the thread advancing device for needle and hook thread unless the machine is switched off.

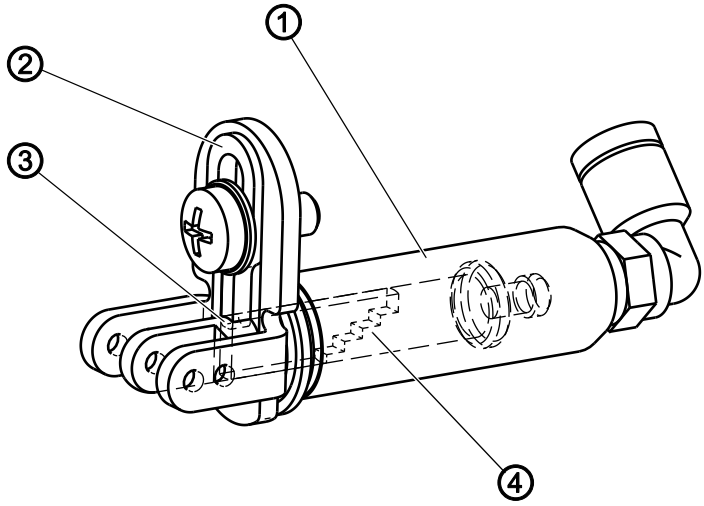
The thread tensioners are opened and the thread advancing devices are pressed while the thread is being cut.
The advanced and slack needle and hook threads ensure proper stitch formation at the seam beginning.

Fig. 106: Setting the thread advancing device for needle and hook thread (1)



(1) - Thread advancing device
(2) - Stop
(3) - Nose

Fig. 107: Setting the thread advancing device for needle and hook thread (2)



(1) - Thread advancing device
(2) - Stop
(3) - Nose
(4) - Flight of steps

The thread advancing houses a flight of 5 steps. Depending on how far the stop is placed inside the thread advancing device, the nose will hit one of these steps when the device is extending.

Proper setting

No more needle and hook thread than is required should be advanced as this determines the length of the thread end remaining at the seam beginning.

To set the thread advancing device for needle and hook thread:

1. Adjust the stop (2) on the thread advancing device (1):
   - **Advance less thread**: The stop (2) may protrude further into the thread advancing device (1).

↳ The thread advancing device (1) extends less far.

   - **Advance more thread**: The stop (2) may protrude less far into the thread advancing device (1).

↳ The thread advancing device (1) extends further.

21 Edge cutter

Class **195-671120-01** (mat. no. 0195 990003) is equipped with an edge cutter.

21.1 Setting the knife stroke

WARNING

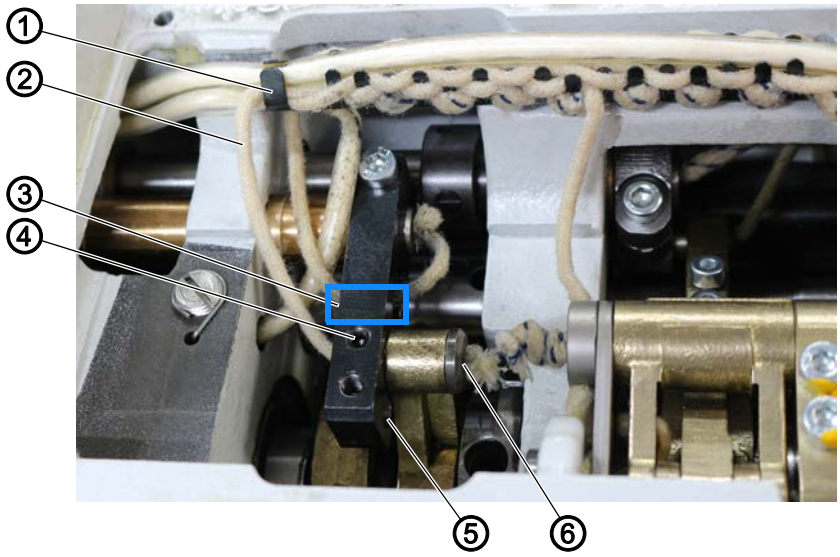
Risk of injury!

Crushing, cutting and punctures are possible.

Only set the knife stroke with the machine switched off.

The knife stroke set at the factory amounts to 8 mm. The knife stroke can be reduced to 6 mm. This allows the machine to operate more quietly.

Fig. 108: Setting the knife stroke



(1) - Bracket
(2) - Wick
(3) - Hole
(4) - Threaded pin
(5) - Hole
(6) - Bolt

Cover

- Remove the arm cover (📖 *p. 20*).

To change the knife stroke:

1. Take the wick (2) out of the bracket (1).
2. Loosen the threaded pin (4).
3. Pull the bolt (6) with the wick (2) out and insert it into the hole (5).
4. Tighten the setscrew (4).
5. Pull the wick (2) back through the hole (3) and insert it into the bracket (1).

21.2 Setting the top blade in seam direction

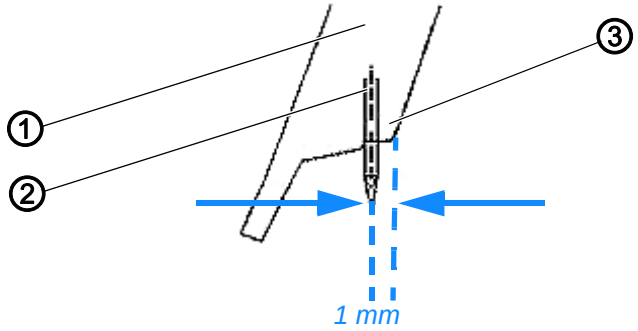
WARNING

Risk of injury!

Crushing, cutting and punctures are possible.

Set the top blade only when the machine is switched off.

Fig. 109: Setting the top blade in seam direction (1)



(1) - Top blade
(2) - Needle
(3) - Front tip

Proper setting

When the top blade is at the bottom dead center with the edge cutter switched on, the front tip of the knife blade should be approx. 1 mm in front of the needle.

Fig. 110: Setting the top blade in seam direction (2)

(4) - Threaded pins *(5) - Fastening plate*

To set the top blade in seam direction:

1. Turn the handwheel until the top blade (1) is at the bottom dead center.
2. Loosen the threaded pins (4) until the fastening plate (5) abuts on the cast body, but can still be slid.
3. Move the fastening plate (5) until the front tip (3) of the knife blade is approx. 1 mm in front of the needle (2).
4. Tighten the threaded pins (4).

21.3 Setting the cutter bar standstill during shut-off

WARNING

Risk of injury!

Crushing, cutting and punctures are possible.

Only set the standstill of the cutter bar with the machine switched off.

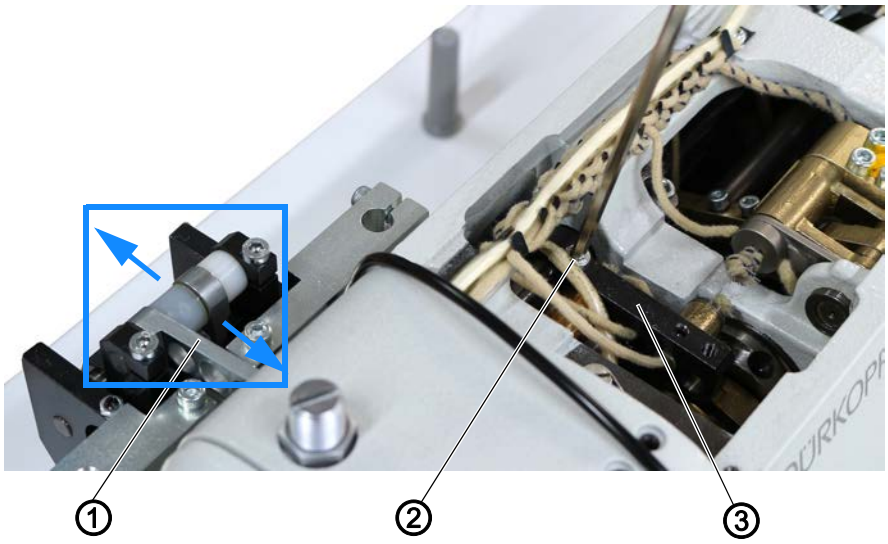
Proper setting

When the edge cutter is switched off, the cutter bar should only make the slightest movement (a complete standstill is not possible).

Cover

- Remove the arm cover (📖 *p. 20*).

Fig. 111: Setting the cutter bar standstill during shut-off



(1) - Pull rod
(2) - Screw
(3) - Clamping piece

To set the cutter bar standstill during shut-off:

1. Loosen the screw (2) on the clamping piece (3).
2. Turn the pull rod (1) such that the cutter bar makes only the slightest movement when the handwheel is turned.
3. Re-tighten the screw (2).

21.4 Setting the height and lateral position of the top blade

WARNING

Risk of injury!

Crushing, cutting and punctures are possible.

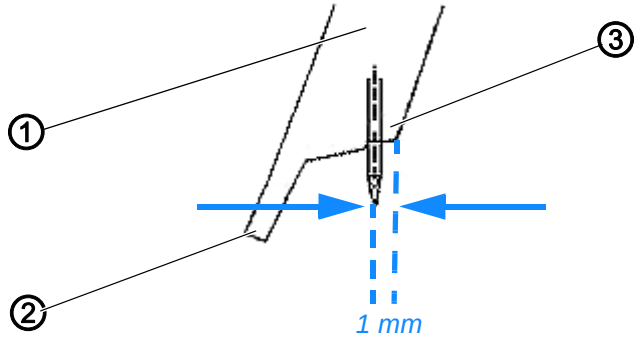
Only set the height and lateral position of the top blade with the machine switched off.

Proper setting

When the edge cutter is switched on and at the bottom dead center, the front tip of the top blade should reach the cutting edge of the bottom blade.

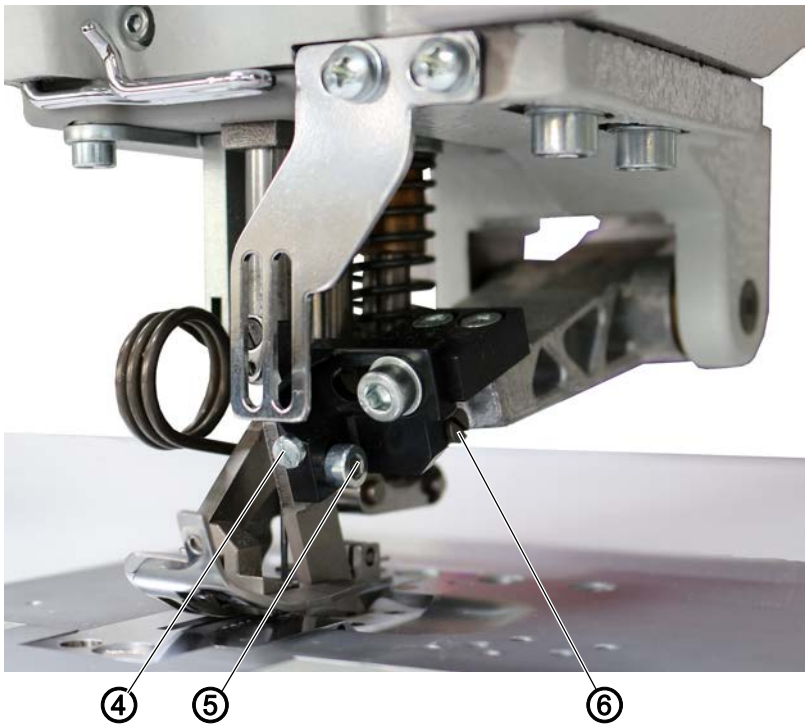
The lateral position of the top blade should be aligned such that the long point abuts on the bottom blade at the top dead center.

Fig. 112: Setting the height and lateral position of the top blade (1)



(1) - Top blade
(2) - Long point
(3) - Front tip

Fig. 113: Setting the height and lateral position of the top blade (2)



(4) - Screw
(5) - Screw
(6) - Screw

To set the height and lateral position of the top blade:

1. Switch on the edge cutter.
2. Turn the handwheel until the top blade (1) is at the bottom dead center.
3. Loosen the screw (4).
4. Loosen the screw (5).
5. Adjust the top blade (1) such that the front tip (3) reaches the cutting edge of the bottom blade.
6. Tighten the screw (4).
7. Tighten the screw (5).
8. Turn the handwheel until the top blade is at the top dead center.
9. Loosen the screw (6).
10. Align the point of the blade with the counter blade.
11. Tighten the screw (6).
12. Carry out a cutting test.
13. Adjust the settings again if necessary.

21.5 Setting the eccentric on the upper shaft

WARNING

Risk of injury!

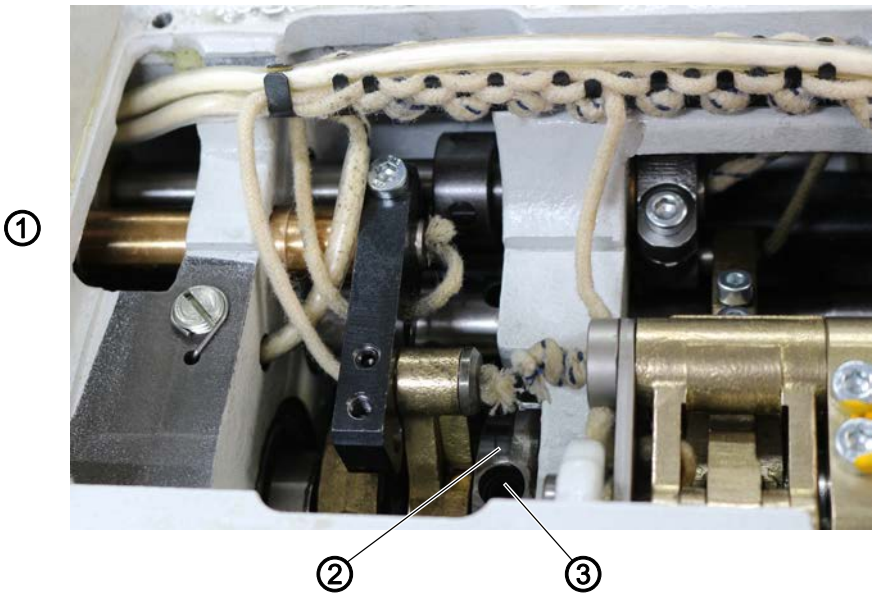
Crushing, cutting and punctures are possible.

Only set the eccentric on the upper shaft with the machine switched off.

Proper setting

In the 1st needle position (lower edge of the needle eye level with the upper edge of the throat plate), the 1st screw in the rotational direction of the blade drive eccentric should line up with the pull rod.

Fig. 114: Setting the eccentric on the upper shaft



(1) - Blade drive eccentric
(2) - Pull rod
(3) - Screw

Cover

- Remove the arm cover (📖 *p. 20*).

To set the eccentric on the upper shaft:

1. Loosen the screws on the blade drive eccentric (1).
2. Turn the handwheel until the machine is in the 1st needle position.
3. Adjust the blade drive eccentric (1) such that the 1st screw lines up with the pull rod (2).
4. Tighten the screws on the blade drive eccentric (1) again.

22 Adapting the thread guides to thicker needle/hook threads

WARNING

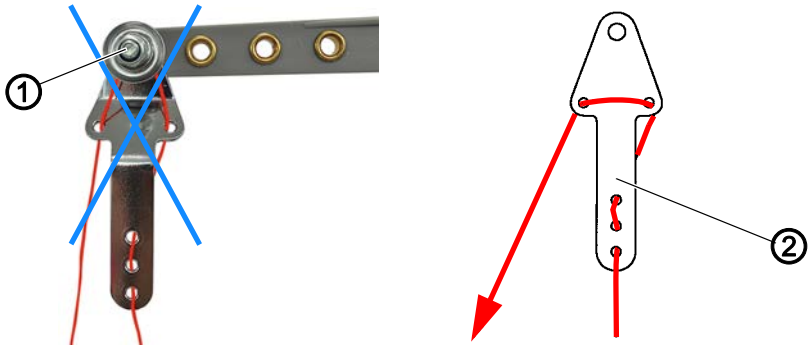
Risk of injury!

Crushing, cutting and punctures are possible.

Only adapt the thread guides to thicker needle/ hook threads when the machine is switched off.

When using needle/hook threads thicker than 25/3 Nm, e.g. for airbag seams, you need to adjust the thread guide.

Fig. 115: Adapting the thread guide to thicker needle/hook threads (1)

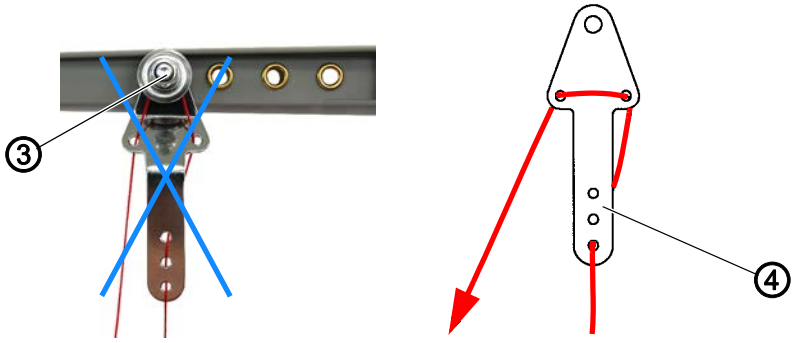


(1) - Tensioner element (needle thread) *(2) - Thread guide (needle thread)*

To adjust the **needle thread guide**:

1. As shown above, insert the needle thread at the thread guide (2) on the unwinding bracket and do not guide it around the tensioner element (1).

Fig. 116: Adapting the thread guide to thicker needle/hook threads (2)



(3) - Tensioner element (hook thread) *(4) - Thread guide (hook thread)*

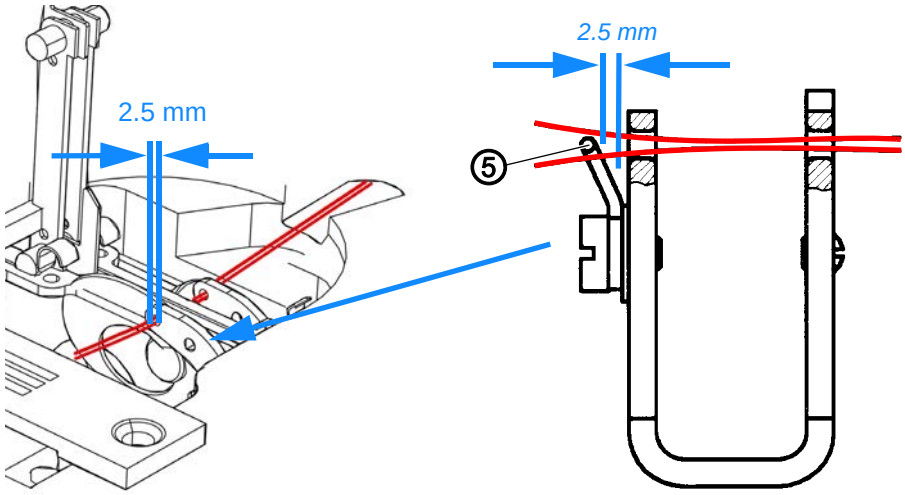
To adjust the **hook thread guide**:

1. As shown, insert the hook thread at the thread guide (4) on the unwinding bracket and do not guide it around the tensioner element (3).

23 Inserting the thread divider on 2-needle machines

The hook threads on 2-needle machines must be kept separate by means of a thread divider. This device prevents the threads from becoming entangled before being inserted at the hooks.

Fig. 117: Thread divider on 2-needle machines



(5) - Thread divider

To insert the thread divider on 2-needle machines:

1. Bend the thread divider (5) in such a way that the distance between thread guide and wire is 2.5 mm.

Information

Make sure that both hooks are installed correctly. A 2nd hook is included in the accessory pack.

Replacement hooks can be ordered under the following part numbers:

- Hook for left needle: Part number **0195 005055 a**
- Hook for right needle: Part number **0195 004753 a**

24 Programming

Fig. 118: Programming

(1) - Control panel OP1000

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.

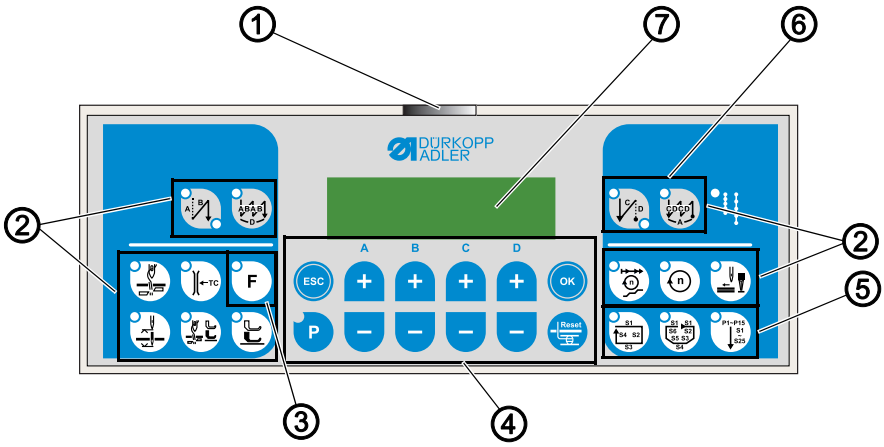
Information

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

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

24.1 Buttons on the control panel

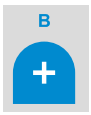
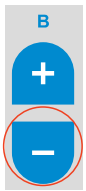
Fig. 119: Buttons on the control panel

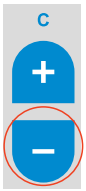


(1) - POWER LED
(2) - Thread button group
(3) - Function button
(4) - Programming button group
(5) - Seam program button group
(6) - LED for 2nd Stitch length
(7) - Display

OP1000 buttons and functions

Button	Function
Thread button group	
 Stitch condensing at seam beginning	• Sets stitch condensing at seam beginning
 Stitch condensing at seam end	• Sets stitch condensing at seam end
 Thread cutter	• Activates or deactivates the thread cutter
 Needle position after sewing stop	• Sets the needle position after sewing stop
 Sewing foot lift after thread cutter	• Activates or deactivates the sewing foot lift after the thread cutter
 Sewing foot lift after sewing stop	• Activates or deactivates the sewing foot lift after sewing stops
 Soft start	• Activates or deactivates the soft start

Button	Function
 Speed	• Reduces the motor speed
 **Function button**	• Activates or deactivates any stored function
Programming button group	
 ESC	• Ends parameter mode
 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

Button	Function
 C-	• Decreases parameter • Selects subprogram
 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

24.2 Activating the tensioner lift

NOTICE

Production of loose stitches!

When sewing corners with active tensioner lift and simultaneous sewing foot lift, the machine will produce a loose stitch.

Do not activate the pneumatic tensioner lift when lifting the sewing feet unless the sewing feet are NOT lifted during the seam.

The factory setting for the machine is such that the tensioner will remain closed during a seam regardless of whether the sewing feet are lifted or not.

Opening the tensioner while the sewing feet are lifted and the seam is not yet completed makes sense, for instance, when you DO NOT sew corners.

To activate the tensioner lift:

1. Press the P and Reset buttons at the same time.
↳ You are on the technician level.
2. Use the buttons under the display to select the parameter **t 09 00**.
3. Use **+/-** to enter the desired value (📖 *Parameter list 195*).
4. Confirm with OK.

24.3 Activating stitch condensing

Stitch condensing can be set for the beginning and/or the end of the seam using the control panel.

The stitch length with which the machine is supposed to sew during stitch condensing must be set mechanically (📖 *p. 43*).

To set stitch condensing at the seam beginning:

1. Press the button.
↳ The LED at the bottom right on the button lights up.
2. Use the B**+/-** buttons to set the desired number of stitches.
3. Begin sewing.
4. To deactivate stitch condensing at the beginning, press the button again.

To set stitch condensing at the seam end:

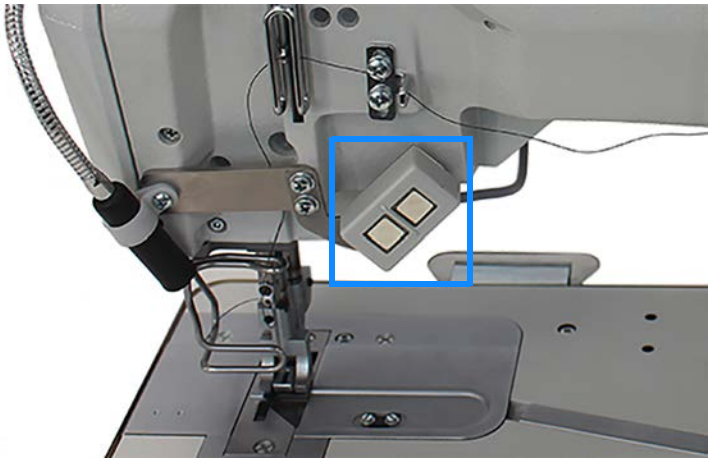
1. Press the button.

↳ The LED at the bottom right on the button lights up.

2. Use the B**+/-** buttons to set the desired number of stitches.
3. Begin sewing.
4. To deactivate stitch condensing at the beginning, press the button again.

24.4 Assigning functions to buttons on the push button panel

Fig. 120: Assigning functions to buttons on the push button panel



The two buttons on the push button panel can be assigned different functions. Possible function assignments are:

- Suppress stitch condensing
- Manual stitch condensing
- Single stitch
- Needle up/down
- Edge cutting (function module 1)
- Quick stroke adjustment

To assign a function to a button on the push button panel:

1. Press the and buttons at the same time.

↳ You are on the technician level.

2. Press the button on the push button panel that you wish to assign a function until the display on the control panel changes.

↳ The control panel shows the value currently set for the button.

3. Use **+/-** to enter the desired value; see Parameter list 195, parameter **t 51 20**, for information on which function is assigned which value.

4. Confirm with OK.
5. Press the ESC button.

↳ The machine is ready to sew again.

24.5 Assigning a function to the knee button

Fig. 121: Assigning a function to the knee button

(1) - Toggle switch *(2) - Knee button*

The knee button (2) can be assigned 2 different functions. The functions are selected in sewing mode via the position of the toggle switch (1) (**1** or **0**).

To assign a function to the knee button (2):

1. Press the P button.
2. Set the toggle switch (1) to the desired position (**1** or **0**).
3. If the toggle switch (1) is, for instance, set to the bottom position, the new function is saved to the **0** position.
4. Keep the knee button (2) pressed for a few seconds.

↳ P flashes.
The display shows a numerical value / the parameter (📖 *Parameter list 195*).

5. Use the buttons **+** or **-** to set the numerical value to the desired value associated with the new function (📖 *Parameter list 195*).
6. Confirm with OK.

25 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				
Remove lint accumulations: Underside of throat plate Feed dog rows Area around the hook	●			
Check the oil level in the reservoir		●		
Pneumatic system				
Check the operating pressure	●			
Check the water level in the water separator	●			
Check oil level in the mist lubricator			●	
Check the oil supply of the mist lubricator			●	
Clean the filter element in the compressed air maintenance unit				●
Check the tightness of the system				●

25.1 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

To clean the machine:

1. Remove any lint and thread remnants using a compressed air gun or a brush.
2. Remove any lint and cutting waste from the oil pan.

25.2 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 must be lubricated at regular intervals (📖 *p. 126*). Complete the following steps when lubricating the machine:

- Checking the oil level
- Lubricating the machine head
- Lubricating the hook

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 mm^2/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

25.2.1 Lubricating the machine head

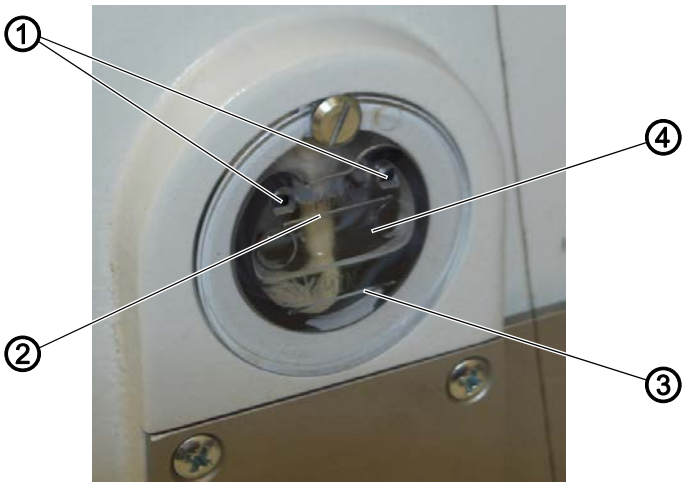
NOTICE

Property damage from incorrect oil level!

Too little or too much oil can cause damage the machine.

Check the oil level as described and top off oil

Fig. 122: Lubricating the machine head



(1) - Filler opening
(2) - Maximum level marking
(3) - Minimum level marking
(4) - Inspection glass

Checking the oil level

Proper setting

The oil level must always be between the minimum level marking (3) and the maximum level marking (2) at the inspection glass (4).

Topping off the oil

NOTICE

Property damage from incorrect oil!

Incorrect oil types can result in damage to the machine.

Use only oil that corresponds to the following specifications.

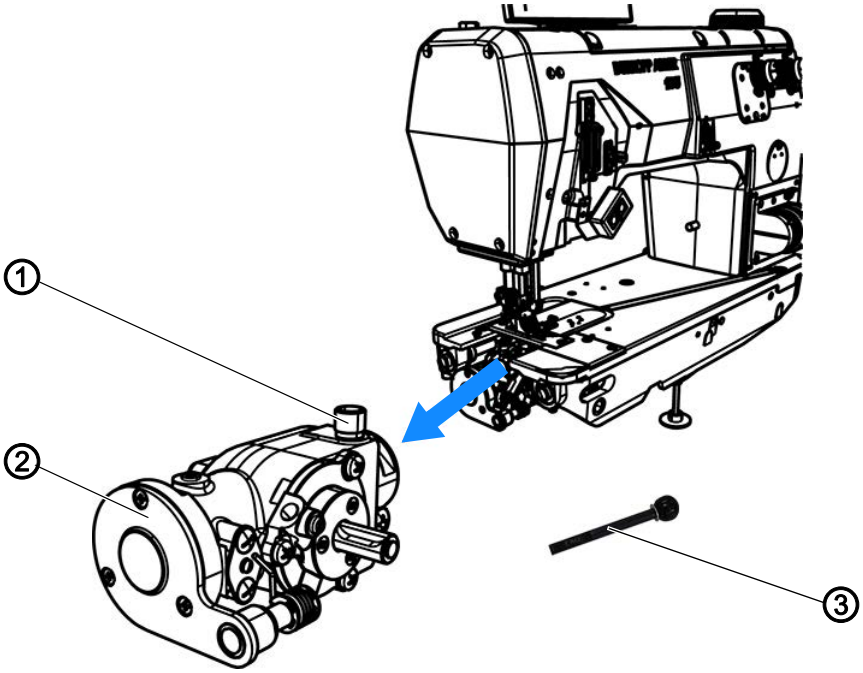
To top off the oil when necessary:

1. Fill oil through the filler opening (1) to a maximum of 2 mm below the maximum level marking (2).

25.2.2 Lubricating the hook

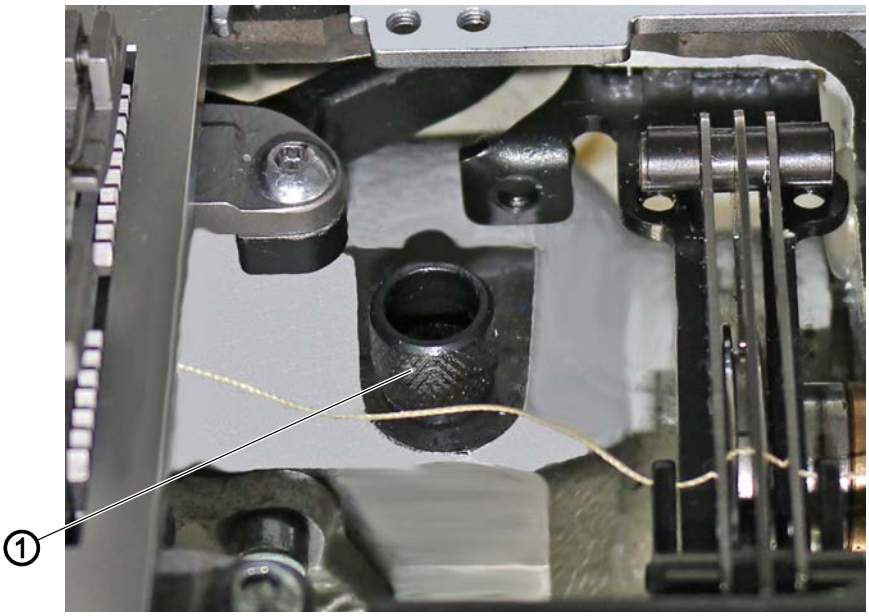
Hook drive housing and screw plug can be accessed under the right hook cover.

Fig. 123: Lubricating the hook (1)



(1) - Screw plug
(2) - Hook drive housing
(3) - Dipstick

Fig. 124: Lubricating the hook (2)



(1) - Screw plug

Checking the oil level

NOTICE

Property damage from incorrect oil level!

Too little or too much oil can cause damage the machine.

Top off oil as described.

To measure the oil level, you will need the dipstick (3) included in the accessory pack.

To check the oil level:

1. Keep the dipstick (3) ready.
2. Open the right hook cover (📖 *p. 30*).
3. Loosen the screw plug (1) on the filler opening.
4. Insert the dipstick (3) into the hook drive housing (2).
5. After a few seconds, pull the dipstick (3) out of the hook drive housing (2).

Fig. 125: Lubricating the hook (3)

(3) - Dipstick
(4) - Minimum level marking
(5) - Maximum level marking

6. Check if the oil level is between the minimum level marking (4) and the maximum level marking (5).
7. Tighten the screw plug (1) if the oil level is sufficient.
8. Top off the oil if the oil level is low.

Topping off the oil

To top off the oil in the hook drive housing:

1. Open the right hook cover (📖 *p. 30*).
2. Loosen the screw plug (1) on the filler opening.

Important

Only top off the oil a little at a time. When finished, check the oil level.
If necessary, repeat these 2 steps several times until the oil level is just below the maximum level marking (5) of the dipstick (3).
There must not be too much oil in the hook drive housing.

3. Carefully refill oil through the filler opening no higher than the maximum level marking (5) of the dipstick (3).
4. Check the oil level again.
5. If necessary, repeat step 2 and 3 until the oil level is just below the maximum level marking (5) of the dipstick (3).
6. Tighten the screw plug (1).

25.3 Servicing the pneumatic system

25.3.1 Setting the operating pressure

NOTICE

Property damage from incorrect setting!

Incorrect operating pressure can result in damage to the machine.

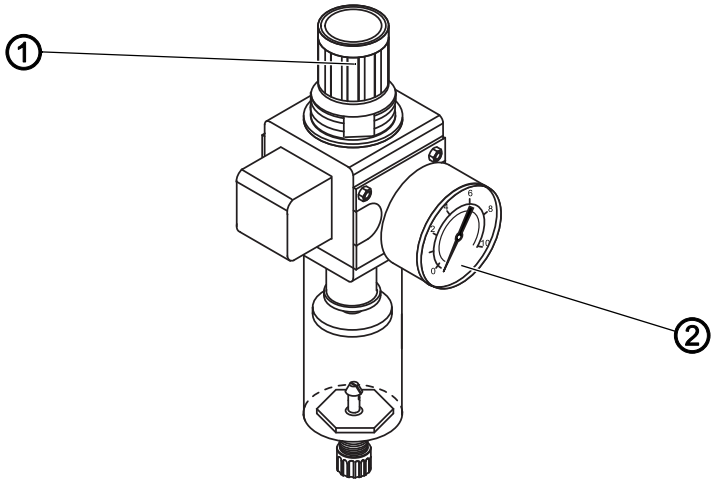
Ensure that the machine is only used when the operating pressure is set correctly.

Proper setting

Refer to the **Technical data** (📖 *p. 149*) 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. 126: Setting the operating pressure



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

To set 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.

25.3.2 Draining the water condensation

NOTICE

Property damage from excess water!

Excess water can cause damage to the machine.

Drain water as required.

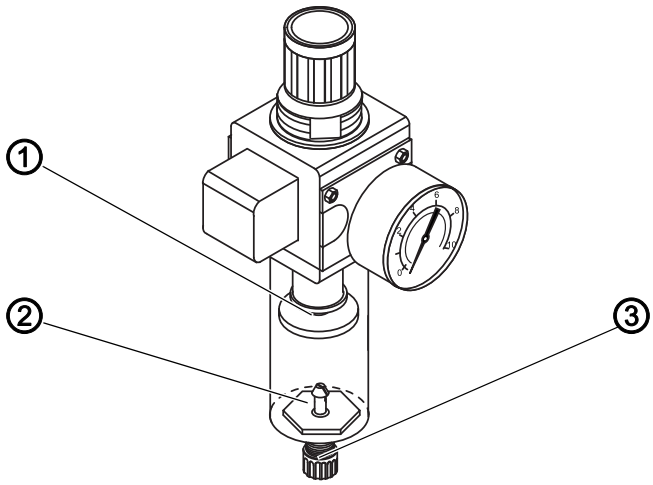
Water condensation accumulates in the water separator (2) of the pressure controller.

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. 127: Draining the water condensation



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

To drain water condensation:

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

25.3.3 Cleaning the filter element

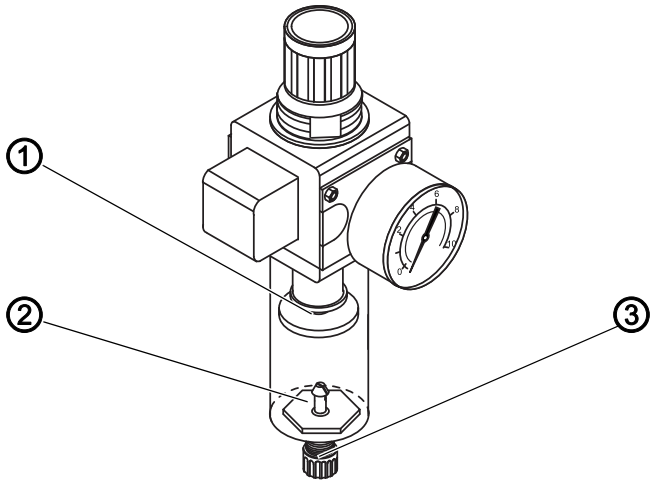
NOTICE

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. 128: Cleaning the filter element



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

To clean the filter element:

1. Disconnect the machine from the compressed air supply.
2. Drain the water condensation (📖 *p. 131*).
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 valve (3).
10. Connect the machine to the compressed air supply.

25.4 Parts list

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

www.duerkopp-adler.com

26 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.

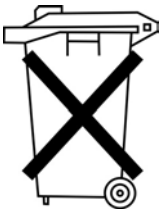
27 Disposal

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.

28 Troubleshooting

28.1 Customer Service

Contact for repairs and issues with the machine:

Dürkopp Adler AG

Potsdamer Str. 190
33719 Bielefeld, Germany

Tel. +49 (0) 180 5 383 756
Fax +49 (0) 521 925 2594
Email: service@duerkopp-adler.com
Internet: www.duerkopp-adler.com

28.2 Messages of the software

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

Error code	Type	Possible cause	Remedial action
1000	Error	Sewing motor encoder plug (Sub-D, 9-pin) not connected	• Connect encoder cable to the control, use correct connection.
1001	Error	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	Error	Sewing motor insulation fault	• Check motor phase and PE for low-impedance connection • Replace encoder • Replace sewing motor

Error code	Type	Possible cause	Remedial action
1004	Error	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	Error	Motor blocked	• Eliminate stiff movement in the sewing machine • Replace encoder • Replace the motor
1006	Error	Maximum speed exceeded	• Replace encoder • Perform reset • Check machine class (t 51 04)
1007	Error	Error in the reference run	• Replace encoder • Eliminate stiff movement in the sewing machine
1008	Error	Encoder error	• Replace encoder
1010	Error	External synchronizer plug (Sub-D, 9-pin) not connected	• Connect cable of external synchronizer to control, use correct connection (Sync) • Only required for machines with transmission!
1011	Error	Encoder Z pulse missing	• Switch off the control. Turn handwheel and switch on the control again • If error is not corrected, check encoder
1012	Error	Synchronizer fault	• Replace the synchronizer
1052	Error	Sewing motor overcurrent, internal current increase >25 A	• Check selection of class • Replace control • Replace sewing motor • Replace encoder
1053	Error	Sewing motor overvoltage	• Check selection of class • Replace control
1054	Error	Internal short circuit	• Replace control
1055	Error	Sewing motor overload	• Eliminate stiff movement in the sewing machine • Replace encoder • Replace sewing motor
1203	Information	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 position (thread lever at top dead center)

Error code	Type	Possible cause	Remedial action
2020	Information	DACextension box not responding	• Check connection cables • Check LEDs of DACextension box • Software update
2021	Information	Sewing motor encoder plug (Sub-D, 9-pin) not connected to DACextension box	• Connect encoder cable to DACextension box using the correct connection
2101	Error	DA stepper card 1 reference run timeout	• Check reference sensor
2103	Error	DA stepper card 1 step losses	• Check for stiff movement
2120	Information	DA stepper card 1 not responding	• Check connection cables • Check LEDs of DACextension box • Software update
2121	Information	DA stepper card 1 encoder plug (Sub-D, 9-pin) not connected	• Connect encoder cable to the control, use correct connection
2122	Information	DA stepper card 1 flywheel position not found	• Check connection cables • Check stepper motor 1 for stiff movement
2155	Error	DA stepper card 1 overload	• Check for stiff movement
2201	Error	DA stepper card 2 reference run timeout	• Check reference sensor
2203	Error	DA stepper card 2 step losses	• Check for stiff movement
2220	Information	DA stepper card 2 not responding	• Check connection cables • Check LEDs of DACextension box • Software update
2221	Information	DA stepper card 2 encoder plug (Sub-D, 9-pin) not connected	• Connect encoder cable to the control, use correct connection
2222	Information	DA stepper card 2 flywheel position not found	• Check connection cables • Check stepper motor 2 for stiff movement
2255	Error	DA stepper card 2 overload	• Check for stiff movement
3100	Error	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

Error code	Type	Possible cause	Remedial action
3101	Error	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	Error	Low voltage failure (2nd threshold) (mains voltage < 150 V AC)	Check mains voltage - Stabilize mains voltage • - Use generator
3103	Information	Low voltage warning (1st threshold) (mains voltage < 180 V AC)	Check mains voltage - Stabilize mains voltage • - Use generator
3104	Warning	Pedal is not in position 0	• When switching the control on, take your foot off the pedal
3105	Error	U24 V short circuit	Disconnect 37-pin plug; if error persists, replace control • - Test inputs/outputs for 24 V short circuit
3106	Error	U24 V (I^2T) overload	• One or more magnets defective
3107	Error	Pedal not connected	• Connect analog pedal
3108	Information	Speed limited due to insufficient mains voltage	• Check mains voltage
3109	Warning	Operation lock	• Check tilt sensor on machine
3150	Information	Maintenance necessary	• Information on lubricating the machine
3151	Warning	Maintenance necessary (operation cannot continue unless parameter t 51 14 is reset, see the operating instructions of the machine)	• Service is urgently required
3155	Information	No release for sewing process	Parameter t 51 20 – t 51 33 = 25 • - Input signal for sewing process release required
3160	Information	Stitch loosening device	• Stitch loosening cannot be performed
3170	Information	Poor signal of the material thickness sensor	• Check the mechanical positioning of the sensor
3215	Information	Bobbin stitch counter (info value 0 reached)	• Change bobbin, set counter value - press counter reset button
3216	Information	Remaining thread monitor left	• Change the left bobbin

Error code	Type	Possible cause	Remedial action
3217	Information	Remaining thread monitor right	• Change the right bobbin
3218	Information	Remaining thread monitor left and right	• Change left and right bobbin
3219	Information	Mode for winding the bobbin is active	• Cutting off the thread
3223	Information	Skip stitch detected	-
3224	Information	Bobbin failed to rotate	-
6353	Error	Internal EEprom communication error	• Switch off the control, wait until the LEDs are off and then switch on again
6354	Error	External EEprom communication error	• Switch off the control, wait until the LEDs are off, check connection for machine ID, switch on control again
6357	Error	Short circuit EEprom	Switch off the control, wait until the LEDs are off, check connection for machine ID, switch on control again - Replace control • - Replace machine ID
6360	Information	No valid data on external EEprom (internal data structures are not compatible with the external data storage device)	• Software update
6361	Information	No external EEprom connected	• Connect machine ID
6362	Information	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 • - Software update
6363	Information	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 • - Software update
6364	Information	No valid data on internal EEprom and external EEprom not 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 • - Software update

Error code	Type	Possible cause	Remedial action
6365	Information	Internal EEprom defective	• Replace control
6366	Information	Internal EEprom defective and external data not valid (emergency operating features only)	• Replace control
6367	Information	Internal EEprom defective and external EEprom not connected (emergency operating features only)	• Replace control
7202	Information	DACextension box boot error	Check connection cables - Software update • - Replace DACextension box
7203	Information	Checksum error during update	Check connection cables - Software update • - Replace DACextension box
7212	Information	DA stepper card 1 boot error	Check connection cables - Software update • - Replace DACextension box
7213	Information	Checksum error occurred while updating DA stepper card 2	Check connection cables - Software update • - Replace DACextension box
7222	Information	DA stepper card 2 boot error	Check connection cables - Software update • - Replace DACextension box
7223	Information	Checksum error occurred while updating DA stepper card 2	Check connection cables - Software update • - Replace DACextension box
7801	Information	Software version error (DAC classic only; only the functions of the DAC basic will remain available)	Software update • - Replace the control
7802	Information	Software update error (DAC classic only; only the functions of the DAC basic will remain available)	Another software update • - Replace the control
7803	Information	Communication error (DAC classic only; only the functions of the DAC basic will remain available)	Restart of the control - Software update • - Replace the control
8401	Error	Watchdog	Software update - Machine ID reset • - Replace the control
8402-8405	Error	Internal error	Software update - Machine ID reset • - Replace the control

Error code	Type	Possible cause	Remedial action
8406	Error	Checksum error	Software update • - Replace the control
8501	Error	Software protection	• The DA tool must always be used for software updates

28.3 Errors in sewing process

Meaning	Possible causes	Remedial action
Thread breakage	• Needle thread and hook thread have not been threaded correctly	• Check the thread path
	• Needle is bent or sharp-edged • Needle is not inserted correctly into the needle bar	• Replace needle • Insert the needle 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-takeup disk are sharp-edged	• Check the thread path
	• Throat plate, hook or spread have been damaged by the needle	• Have parts reworked by qualified specialists
Missing stitches	• Needle thread and hook thread have not been threaded correctly	• Check the thread path
	• Needle is blunt or bent • Needle is not inserted correctly into the needle bar	• Replace needle • Insert the needle into the needle bar
	• The needle thickness used is unsuitable	• Use recommended needle thickness
	• The reel stand is assembled incorrectly	• Check reel stand
	• Thread tensions are too tight	• Check thread tensions
Missing stitches	• Sewing material is not held correctly	• Check clamping pressure
	• The loop stroke was not corrected when changing the zigzag stitch width	• Set the loop stroke
	• Incorrect parts used for the desired sewing equipment	• Check the parts based on the equipment sheet
	• 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 the thread path

Meaning	Possible causes	Remedial action
Needle breakage	• Needle thickness is unsuitable for the sewing material or the thread	• Use recommended needle
Seam beginning not secure	• Residual tension is too tight for the needle thread	• Adjust residual tension

29 Technical data

Data and characteristic values

Technical data	Unit	195-171120-01	195-171521-01	195-671120-01
Machine type		Special sewing machine		
Type of stitches		Double chain stitch 401		
Hook type		Crossline		
Number of needles		1		
Needle system		933		
Needle strength (depending on equipment)	[Nm]	110-160		
Thread strength	[Nm]	Up to 20/3		
Maximum clearance under the sewing feet: During sewing During lifting	 [mm] [mm]	 10 17		
Knife stroke (convertible)	[mm]			6 and 8
Cutting margin (depending on E-No.)	[mm]			4.5-12
Stitch length (depending on equipment)	[mm]	Max. bottom feed length 8 mm, Max. top feed length 10 mm,		
Speed maximum, (depending on the sewing foot stroke)	[min^{-1}]	4000 (automatic speed reduction depending on sewing foot stroke)		
Speed on delivery	[min^{-1}]	4000		
Feed dog stroke above the throat plate	[mm]	0.8		
Needle distance (depending on two-needle equipment)	[mm]	3.2 mm, 6 mm or 8 mm		
Needle bar stroke	[mm]	35		
Sewing foot stroke	[mm]	2.5-7		
Mains voltage	[V]	230		
Mains frequency	[Hz]	50/60		
Operating pressure	[bar]	6		
Air consumption [per cycle]	[NL]	0.8		
Length	[mm]	550		

Technical data	Unit	195-171120-01	195-171521-01	195-671120-01
Width	[mm]	210		
Height	[mm]	470		
Weight	[kg]	90		

Characteristics

- Max. number of stitches 4000/min., depending on stitch length and sewing foot stroke
- No “drifting” of the sewing material at high number of stitches, i.e. constant stitch lengths at different numbers of stitches
- Particularly smooth operation and non-marking sewing material transport, particularly for thin sewing material, thanks to innovative set-down pressure reduction
- Max. bottom feed length 8 mm, max. top feed length 10 mm,
  Can be set independently using adjusting wheels
- Sewing foot stroke (alternate lifting of the feet) max. 7 mm, depending on the number of stitches; the sewing foot stroke can be set using an adjusting wheel
- Clearance under the sewing feet
  During lifting, max .17 mm
  During sewing, max .10 mm
- Automatic, central oil wick lubrication with inspection glass for checking the oil level in the reservoir
- Hook drive operating in the oil bath
- Simple thread paths
- No automatic opening of the thread tensioner when sewing corners, i.e. proper stitch pull when sewing corners
- Automatic adaptation of the hook thread quantity to the stitch length; also adjustable for balloon stitch
- Built-in adjusting disk with position marks on the handwheel for quick and precise checking of the machine settings
- New, compact construction thanks to DA modular design
- Integrated cable duct on the back of the arm
- Single-piece belt guard
- Particularly easy to service thanks to removable head and arm cover
- Base plate dimensions 477 x 178 mm

30 Appendix

30.1 Wiring diagram

Fig. 129: Wiring diagram (1)

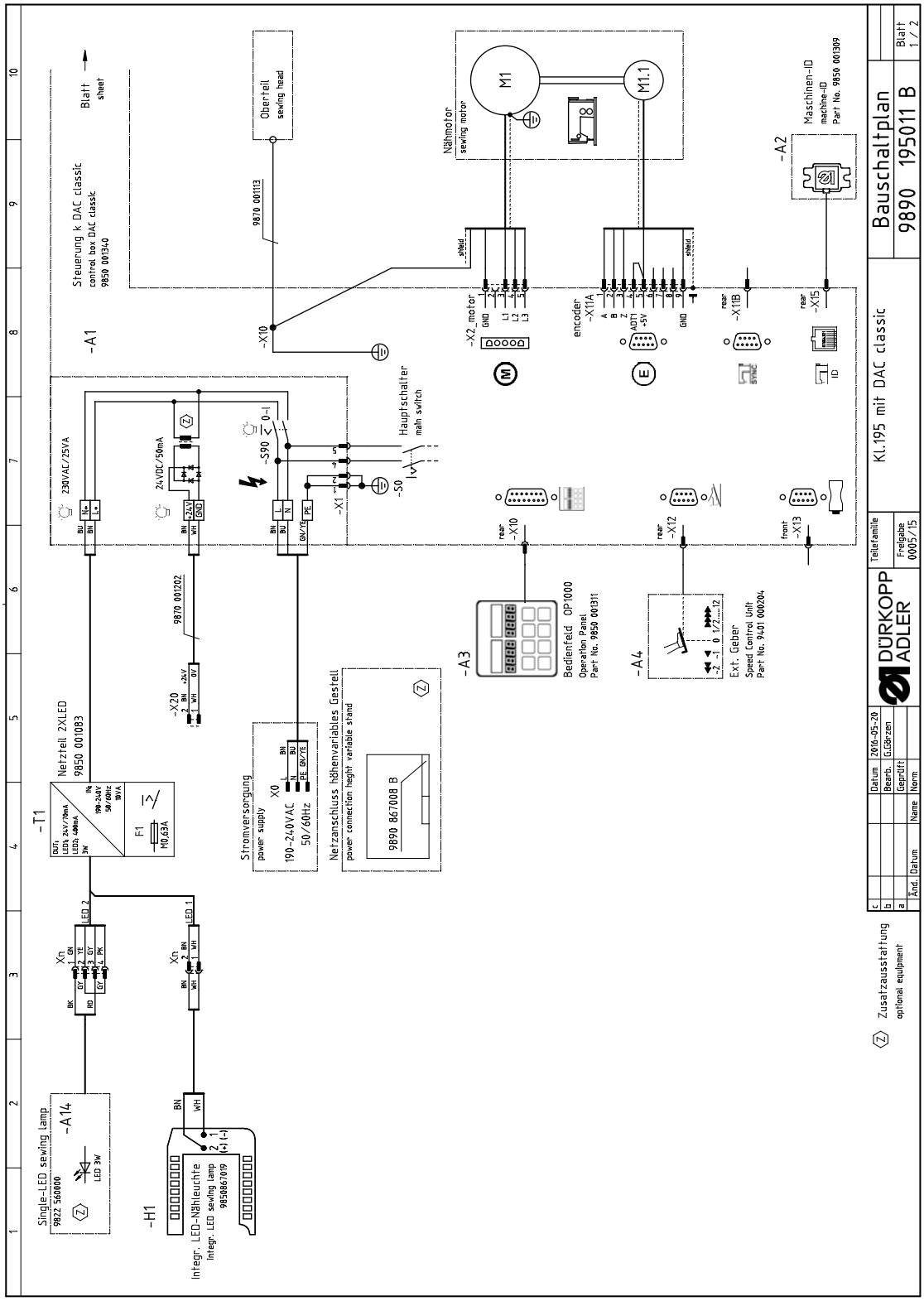
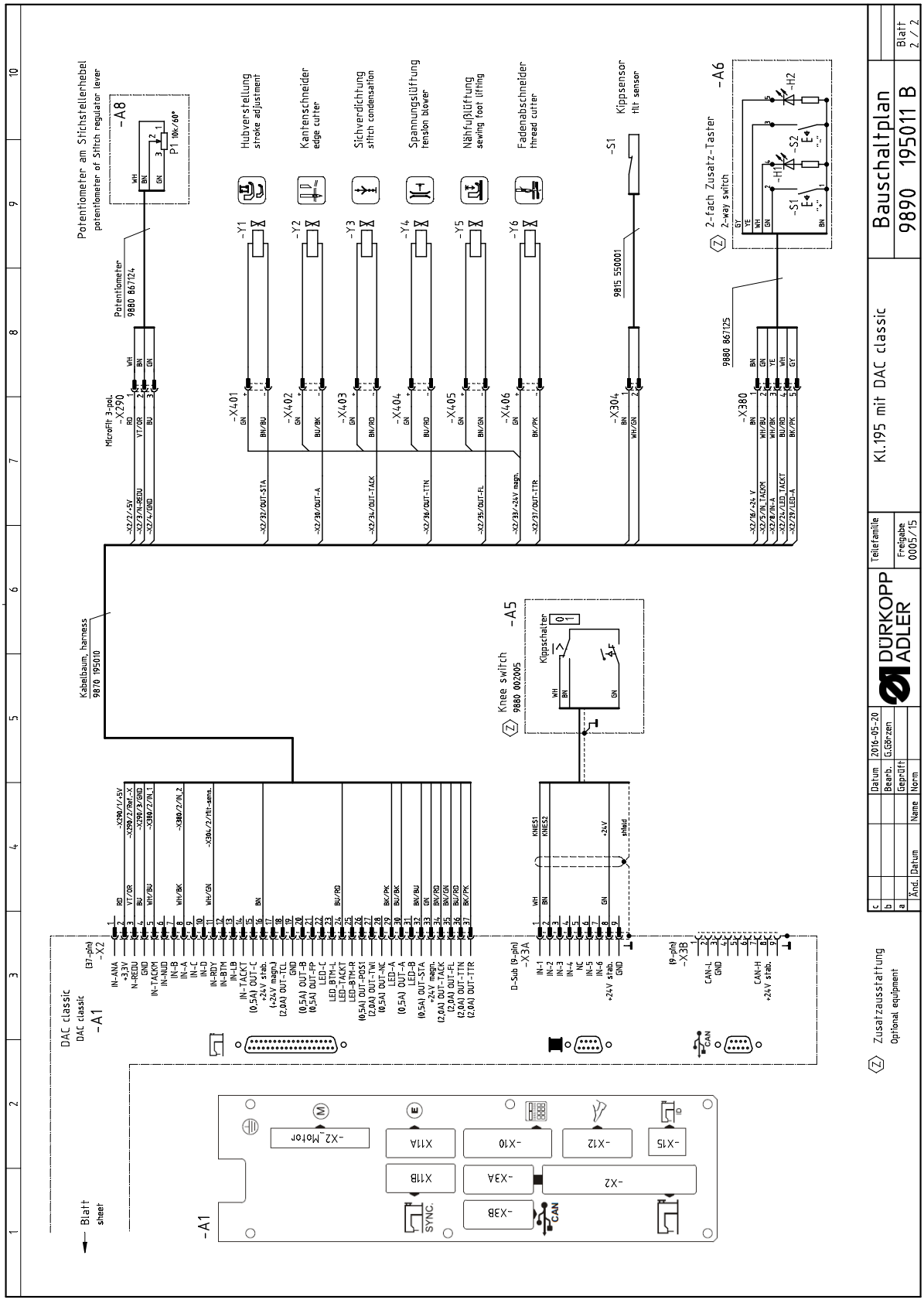
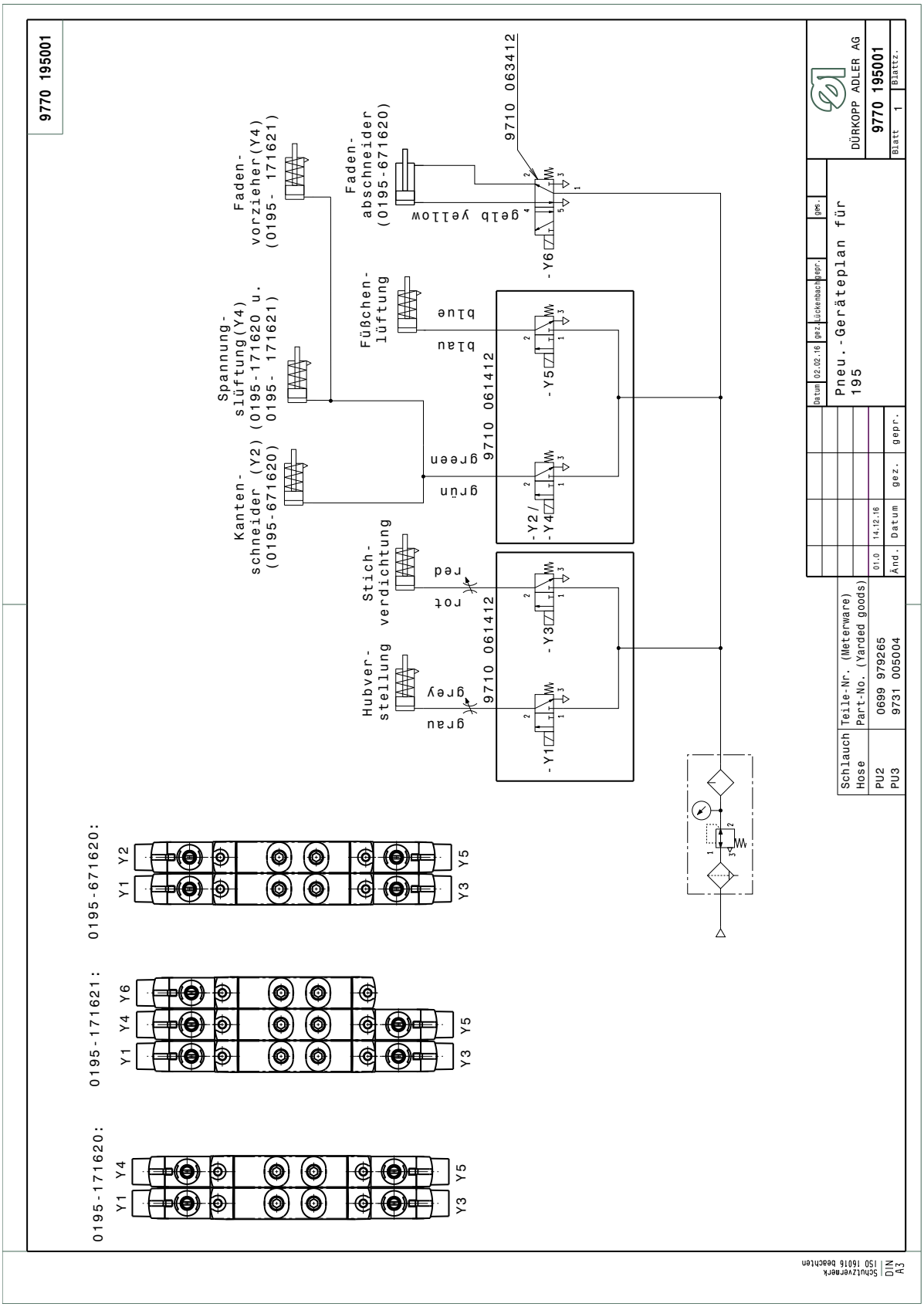


Fig. 130: Wiring diagram (2)



30.2 Pneumatic diagram

Fig. 131: Pneumatic diagram



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